Context:
Gabriola, history

Citation:
Gehlbach J., Gabriola's millstone quarry, *SHALE* 19, pp.25–41, Nov. 2008

Errors and omissions:

References:

Gehlbach J., Gabriola's sandstone quarry—the earliest days, *SHALE* 21, pp.36–42, July 2009
Gehlbach J., The origins of quarrying for sandstone on Gabriola, *SHALE* 19, pp.3–10, Nov. 2008
Gehlbach J., Gabriola's dimension-stone quarry, *SHALE* 19, pp.11–24, Nov. 2008
Gehlbach J., Gabriolans and the sandstone quarries, *SHALE* 19, pp.42–52, Nov. 2008

Date posted:
December 16, 2012.

Gabriola's millstone quarry

by Jenni Gehlbach

Sandstone was first quarried on Gabriola in the late-19th century as a building material,[1] but demand fell off early in the new century because sandstone weathers more readily than granitic or volcanic rock. By 1920, sandstone was only being used as a building material in BC for restoration work. That, however, was not the end of sandstone quarrying on Gabriola. At the start of the 20th century, forest industries were flourishing all over North America, and the new pulp mills needed stones to grind wood into fibre. Sandstone was ideal for the job, and it made no sense to import it from England as was done in earlier times.[2]

The early history of millstones

In the 1800s, fibre crops such as linen or jute were the primary source for making paper. The paper was of high quality, but expensive. Then, in 1844, Charles Fennerity in Nova Scotia developed a method, similar to one developed in Germany a few years earlier, of grinding wood to separate the fibres from the natural glue (lignin) that holds them together. The first mill in Canada to use a grinding wheel to make paper pulp was built in 1846.

In BC, the first attempt at producing paper was made by the BC Paper Manufacturing Company on the Somass River in Alberni in July 1894;[3] however, the enterprise, which used jute fibre, was not a success. It was in 1909 that the first small pulpmills in BC came into operation. Newsprint production from wood began in BC at Powell River with the opening of one of the largest mills of its kind in the world in 1912.

The grinding stones used in the mechanical pulping process are called "pulpstones", though they are more commonly known outside the industry as "millstones". For these, good-quality sandstone was needed. V.L. Eardley-Wilmot writes:[4]

> The stones revolve from 220 to 225 rpm with a feed pressure of 60 to 125 pounds per square inch. Since the average stones used weigh from two to four tons each, and are subjected to enormous and unbalanced stresses and strains, the greatest care in the selection of the type of stone with the requisite physical properties is of utmost importance.

Pulp produced in this way is relatively coarse and weak, resulting in paper that discolours when exposed to light, and becomes brittle (as old newspapers do), because some lignin remains in the pulp and it deteriorates. Chemical pulping processes dissolve all the lignin, producing a better quality pulp, so nowadays some chemical pulp is usually blended with mechanical pulp.

Newsprint made from softwood is superior to that made from hardwood because softwood fibres are longer and stronger. The paper also receives printing ink more efficiently because softwood fibres are easier to compress.

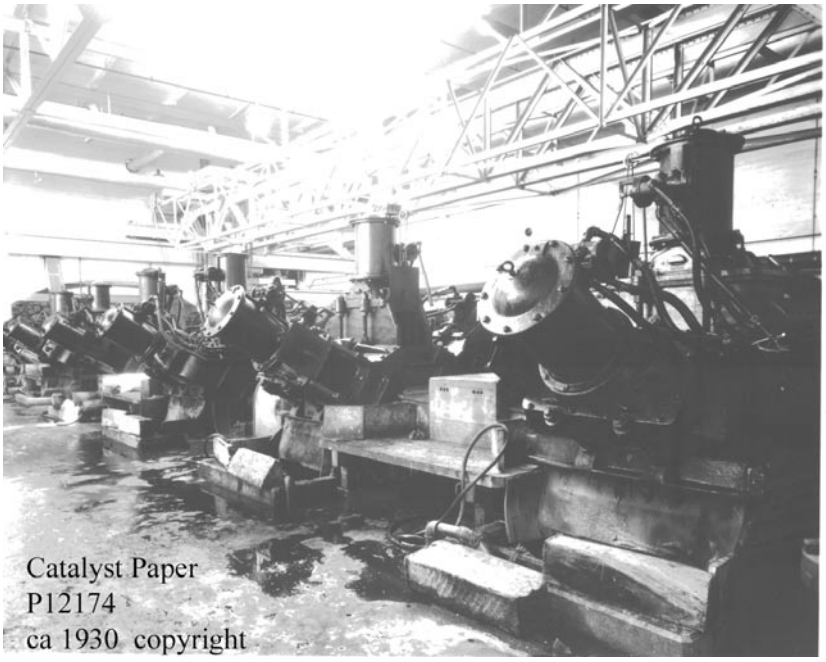
---

[1] *The dimension-stone quarry*, *SHALE* 19, pp.10–24, 2008.

[2] Douglas L. Crowell, *From pulpstones to bats*, Ohio Geological Survey, Summer 1996 (online).

[3] BCARS photographic file on the history of BC's Pulp-and-paper industry.

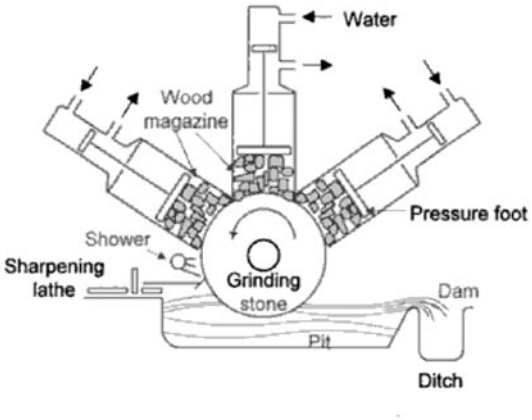
[4] V.L. Eardley-Wilmot, *Siliceous Abrasives*, Department of Mines Report 573, 1927.



work at the Powell River pulpmill, and worked briefly in the grinding room said:

A single cylindrical stone per grinder rotated in the machine. Blocks of wood were fed into the machine's pockets and were pressed against the stone by cylinders. I think each machine had three pockets.

A "grinderman" fed the wood blocks into the machine by hand as seen below; one man per grinder. In the photograph, down to his left, you can see the flap that minimized the splashing of pulp—the grinding surface of the revolving pulpstone would be visible if this flap were lifted. At Powell River, there were as many as four grinding rooms with various sizes of grinders and therefore sizes of wood blocks. In one they used blocks 32 inches long; in two others they were 24 inches long, and in another, later on, the blocks were a huge 64 inches long. Most blocks weighed 30 to 40 pounds but could go up to 100 pounds. They were delivered from the sawmill in a package called a



The grinding machines

Various configurations were used in the grinding machines, but typically several "pockets" of debarked wood blocks, were held under pressure against the revolving pulpstone. Large volumes of water were used to move the wood and to dilute and clean the pulp. John Campbell[5] who used to

Powell River Museum

[5] Told to Teedie Kagume of Powell River Museum in response to my question about the process.

"skip", which was four feet long and high, and a grinderman might go through as many as 12 skips per day.

The Powell River grinding room shown in the photograph on the previous page had 18 grinders, and hence 18 grindermen per shift, so it was a busy place. John Campbell told me:

> There were a number of [other] jobs associated with the grinders. The 'jiggerman' re-faced (jigged) the grinding stones so that they did their job well. The 'screen tender' made sure that the screen that the pulp went through was kept clear of debris and the 'hand barker' took the bark off any blocks…not already debarked in the sawmill.

Bill Thompson writes:[6]

> To maintain the quantity and quality of pulp produced, the surface of the stones had to be dressed (burred) with special tools to keep them rough. …The quality and texture of the finished newsprint depended on the uniformity of the pulp produced. Before the development of artificial stones, various grades of hard and soft sandstone were used. They were often dangerous to operate, as flaws in the composition could cause an explosion as the stones expanded and contracted under slight changes of temperature. Those natural stones needed burring from three to ten times in 24 hours, compared to once a week for artificial stones. Life of a natural stone seldom exceeded one year.

Pulp-and-paper plants in BC, as elsewhere in North America, at first imported their millstones, but delayed deliveries or poor-quality stones meant expensive shutdowns for the mills. In Ohio mills, before millstones were produced locally, they were imported[7] from Newcastle-upon-Tyne, England, and in 1915 the Stoke quarries in Derbyshire, England reported that they exported their millstones to Canada, America, and Scandinavia.[8]

J.A. & C.H. McDonald Co.

The J.A. and C.H. McDonald Company was created to take advantage of the millstone market in BC. As often happened in those days, the company was functioning several years before it officially incorporated. The 1926 Ministry of Mines Report says of the Newcastle Island quarry:

> During the last few years the owner, John McDonald, has organized a new industry so far as British Columbia is concerned, by cutting 'pulpstones', …which are used in the pulp-and-paper plants along the coast in place of the imported stones formerly in use. …Since Mr. McDonald has been furnishing 'pulpstones' the quarry has been kept in almost continuous operation.

Brothers John Alexander and Clement Harold McDonald signed a memorandum of association on January 19, 1925, and their new Company was incorporated the next day with $75,000 in $100 shares. Its stated objectives were:

> To take over as a going concern the business now carried on at 1571 Main Street…Vancouver…and…the assets and liabilities of the proprietors of that business in connection therewith; and to carry on the business of quarrymen, manufacturers, and dealers in rough and artificial stone or stone products, whether for building, paving, or any other purpose, and to purchase, lease, construct or otherwise acquire quarries, real property, buildings, and all other works or

[6] Bill Thompson, *The Powell River Story*, 2001.

[7] Douglas L. Crowell, www.dnr.state.oh.us/geosurvey/oh_geol/96_Summer/Pulp/tabid/7579/Default.aspx.

[8] *Stoke Pulpstones—a visit to a famous quarry*. We read here also that one pulpmill claimed that a 54-inch x 30-inch Stoke pulpstone supplied by Messrs. Percy J. Turner had been used to grind 3400 tons of pulp, beating a previous record. www.genuki.org.uk/big/eng/DBY/Stoke/pulpstones.html.

> conveniences which may seem…conducive to any of the objects of the company…

The McDonald brothers sold the goodwill of their previous, unincorporated firm to the new company for $27,200 by allotting themselves 136 shares each, and each also bought 45 shares with cash. During 1926, they bought another 30 shares each. The share distribution stayed like this until 1930 when the company transferred a further 211 shares to a widowed relative, Louise Elizabeth McDonald.

Among the Company's assets were listed Haddington Island Quarry,[9] valued at $16,500, as well as companies in Kamloops and Powell River, and the Poole Construction Company. Among their total liabilities of $34,160.16 were:[10]

- $6,500 loaned from the Bank of Montreal
- $9569 to W.J. Taylor of Haddington Island quarry
- $2,371.91 to W.S. McDonald.

They borrowed another $25,000 from Montreal Trust Company in October 1925, and the following year got a mortgage "to secure advances from time to time" from the Bank of Toronto. This was fully discharged in January 1930, when they transferred their arrangement for borrowing money to the Royal Bank of Canada.

As with dimension stone, the sandstone pulpstone quarry first operated on Newcastle and later on Gabriola. The Company cut pulpstones on Newcastle Island until 1932, employing ten men in 1930 and eight to twelve men in 1931, including a certified blaster, but by 1932 very little work was being done. Meanwhile, in January 1930, the astute Bill Coats had bought Vancouver Granite Company's old Gabriola quarry site for $1000.

Bill Coats told Frank Howard[11] that he:

> …rigged up the rear shaft of a Model A Ford as a miniature wood room of a pulp-and-paper mill. He mounted two small sandstone wheels on the shaft, one from Gabriola rock, and one from Newcastle Island rock. Blocks of wood sprayed with water were held against the grindstones, and the Ford put into gear.

After a few trials, Coats was convinced that Gabriola sandstone was superior and would be acceptable to the pulpmills and he must also have convinced the McDonald brothers because on June 22, 1931, he leased the quarry to them.

June Harrison writes[12] that he "leased the land…with the agreement that royalties would be paid on saleable stones", but Bill's son Clyde suggested to me that the deal was not so much about royalties, but about the company using Coats' store near the new

[9] Eric Van den Kerkhof of Adera Natural Stone Supply told me that the Haddington Island quarry has been in the same family's hands throughout its history—the Cowan family, who now live on Salt Spring Island. He said that Barnie Cowan was "old Jeb McDonald's granddaughter". I found Company records that identify John A. McDonald's wife as Margaret Innes McDonald. Barnie Innes Cowan was a Director of the Company in 1954/5—their unusual middle name suggests that Barnie and Margaret were related.

[10] Curiously, there was also a very tiny amount (under $5) owed to T.G. McBride and Co. who operated the Gabriola brickyard in the 1940s.

[11] Vancouver Sun Magazine Supplement, *The Millstones of Gabriola*, September 17, 1955.

[12] June Lewis-Harrison, *The People of Gabriola*, p.243, 1982.

Coats' family photograph

Above: The Coats' store and the wharf, now the ferry parking lot, as they were in 1940. Note the millstones in the central foreground. They still find a use today (*bottom left*).

wharf to supply goods and fuel, both here and on Newcastle Island. Probably both occurred.

Clyde, recalling his father's stories, told June:[13]

> Father was the agent for Imperial Oil and he supplied the stores for the company that operated the stone quarry. The Company had been working on Newcastle, maintaining that the grade of stone was better there. Dad showed them how the local stones were better …. He owned the land by then, but turned it over for the quarrying and the work started on the Island again.

So, the Newcastle operation was closed down and moved to Gabriola.

The Ministry's Annual Report said: "The entire equipment has been transferred from Newcastle Island to Gabriola Island and work was done for a short period during 1933." Clyde continued:[13]

[13] June Harrison, *The People…*, p.128.

> Then the company open[ed] a new area for the stones up from the ferry wharf, but there were too many concretions in those stones. They also tested up at the old schoolhouse plains, and the same result—too many faults. They moved back to the ferry wharf and continued to cut there.

From various government reports[14] we learn that in 1934, J.A. and C.H. McDonald Co., increased their sales of millstones from Gabriola about 100%, that Eugene Bottiselle was the quarry superintendent, and that no accidents occurred. Apparently, the proper quality of sandstone was rare in Canada, and Gabriola supplied British Columbia pulpmills, while New Brunswick stones were used in Nova Scotia, New Brunswick, and Quebec. During their production, Gabriola's millstones were sent not only to Port Alberni, Powell River, and Ocean Falls, but even to Scandinavia. Clyde Coats said that each stone sold for $450.

But the demand for sandstone millstones quickly disappeared and the life of Gabriola's millstone quarry was brief. In 1935, the quarry was in satisfactory working condition, but operated only intermittently, and although the quarry was noted in 1936 and 1937, no specific activity was reported. Locals and Ministry reports seem to agree that the Gabriola quarry stopped producing millstones in 1936.

Clyde said, "The market for the stones waned and, as exports to Finland closed, the need for the quarrying decreased." Pulpmills were still thriving though, and the main cause of the market's demise was the discovery that artificial stones[15] could be made relatively cheaply and that they would last four to five years in comparison to the sandstone, which would last only three to twenty months.

Bill Thompson writes that at Powell River, silicon carbide stones had already begun to replace sandstone in 1930, when the grinders became electrically driven rather than water-driven. In 1934, the Canadian Department of Mines reported that:

> The artificial pulpstones made of silicon carbide segments and more recently of fused alumina segments are gradually but surely replacing the natural stone. Probably about 125 of these manufactured stones are now in use in Canadian mills.

Artificial millstones are still used today in pulp-and-paper mills, though the technology has changed. The Norton company, part of Saint-Gobain Abrasives of Canada — "millstones for the 21st century"—supplies over 75% of the millstones worldwide, and their stones are mainly made of alumina.[16]

Although by 1936, quarrying had finished on Gabriola, J.A. & C.H. McDonald Company didn't disappear. In 1942, John McDonald incorporated Steelweld Limited, but some reporting technicality caused the company to be dropped from the Corporate Registry. It was reinstated in 1952, the same year that Clement H. McDonald died. By 1954, John A McDonald had died too, but the company remained in the McDonald family. In 1957, the company office was still listed at 1571 Main Street, Vancouver,

[14] *The Canadian Mineral Industry in 1934*, published by the Canadian Department of Mines; And similar reports for 1936 and 1937. Also, BC Ministry of Mines Annual Reports for 1934 and 1935.

[15] In 1891 Edward G. Acheson invented a silicon carbide abrasive, which he called "carborundum". By 1895 the newly formed Carborundum Company had begun manufacturing the abrasive commercially and by 1896 carborundum grinding wheels were being marketed.

[16] Their grinding stones are about 80% abrasive and 20% binder. The abrasive is *alumina* (white aluminum oxide, Al_2O_3) and the binder is clay and "fritta" (fused silicon dioxide, known as *silica*, SiO_2). Many pulpmills (like Nanaimo's Harmac Mill) use a chemical rather than a mechanical pulping process because it removes unwanted lignin more completely.

and the Ministry of Mines reported that they were operating the Haddington Island andesite quarry. In 1988, the J.A. and C.H. McDonald Company was amalgamated into Steelweld Limited, which still operates.

Gabriola's pulpstone quarriers in the 1930s

Earl Easthom (who at the time of writing still lives in the family home on Easthom Road) was born in 1916, the son of Dick Easthom who worked in the dimension stone quarry. He was a typically flexible young Gabriola worker, reminiscing[17]:

> My first job was working on the *Atrevida* [ferry]. After that I worked in the quarry and the brickyard. When the brickyard closed down I started logging, then in 1957, I bought my first fishing boat, *The Scrubby*…"

His daughter, Sheila Bradley, told me that in the 1930s, Earl worked first for a year and a half on Haddington Island cutting building stones and then at Granite Island cutting tombstones that were shipped to Vancouver. Back on Gabriola, he worked for $3 a day as the youngest member of the grinding-stone quarry crew, helping everyone and learning the process. He told Denise Izzard:

> I was trained by Holden Pruden, a 30-year-old East Indian, whose mother was the cook, and Italian stepfather, the quarry manager. However, there was one big problem. Pruden, who started the process, had a speech impediment, prefacing all his sentences with 'but', which impacted each complex step.

This is especially interesting because Nell Falen[18] was married to Holden Pruden, whom she says was an engineer and the stepson of the foreman at Quarry Bay on Nelson Island when her parents worked there in the 1940s. This is the same "Italian stepfather" whom Earl mentioned and must be the Superintendent Eugene Bottiselle named in Ministry Reports.

Jimmy Rollo[19] used his one-ton single axle truck to haul the huge stones from the quarry site to the barges. He told June Harrison: "I worked hauling millstones out too. There were a lot taken out".[20] Family and work connections are close and complex on this island. Later in his life, in 1968, Jimmy married Henry Arnold Easthom's widow,[21] Annie Elizabeth Easthom, née Juriet, whose father William Juriet had been the "gunpowder man" at the brickyard's shale quarry.

Alas, that is all we know of the Gabriola grinding-stone cutting crew—memories are short, many who would have known have since died, and we have no census information from this period. Nell Falen remembered taking the *Atrevida* ferry to Gabriola to help dismantle the quarry equipment after the quarry closed.

[17] This reminiscence was first published in Peggy Lewis-Imredy's book, *Gabriola Island*, which she put together for the Gabriola Three Schools' Reunion held at Silva Bay Resort in 1984.

[18] Nell Falen also told Carey Ditmars that her parents (the Stigsens) were caretaker and cook for the Vancouver Granite Company at Quarry Bay in the 1940s. She said that she was paid 50 cents a day to stand at the highest point of the quarry there and relay hand signals to the engineer from the quarryman about "how to move the boom and mainfall". Times Colonist, *Islander*, June 22, 1997.

[19] Jimmy was the grandson of James Rollo who arrived on Gabriola from Fife, Scotland around 1875, his sons George and John joining him later. In the 1880s, James pre-empted land with a lagoon near Lock Bay and more in the Horseshoe Road area. His son John married Helen MacLauchlan in 1892 and their son Jimmy was born in 1896 and died in 1986 on Gabriola.

[20] June Harrison, *The People…*, p.60.

[21] Henry Arnold Easthom died in 1931 when he was only 33.

Quarry operations

The grinding-stone quarry had more elaborate equipment than the dimension-stone quarry, both to cut and to finish the stones. In addition to the large derricks for shifting the cut stone and tools to trim the stone, a large powered cylindrical saw and core borer cut the stone cylinders from the rock, and a huge lathe was used to smooth the grinding face.

Cutting grinding stones was also a more complicated than cutting dimension stone. Workers would first level the area using plaster of Paris, and then incise circular grooves into the surface to guide the saw.

The steel cutting machine would then rotate slowly but very noisily to cut 40" deep in about 45 minutes. We are very fortunate to have a detailed first-hand account of the process from a local who worked at the millstone quarry. Earl Easthom told Denise Izzard[22] that he worked summers in the quarry, where about 40 millstones were produced each season. He said:

> In those days when the McDonald family owned the quarry, McDonald's mother had an old Cadillac, and they took out its engine for the three-man crew to run the drum.
>
> With an 8-inch trough for the circular saw to go in, we would saw one stone in the morning, and blow out its core in the afternoon. The noise of the drum cutting the stone could be heard all the way to Nanaimo but I couldn't hear anything more than 100 yards away.

The biggest cutter was a large, heavy drum-shaped steel saw almost five feet wide and nearly seven feet tall. Long narrow slots were cut all around the drum shape, and the saw teeth at the bottom were spaced every 27 inches. A similar narrow cylindrical saw was centred within the larger one to bore the axial hole in the stone. The saw's turning shaft was connected by a series of gears and belts to the engine.

The actual cutting was done, not by the "teeth" directly, but by jagged pieces of cast steel slightly larger than the saw's thickness. These abrasive pieces were caught in the slots of the saw and cooled and lubricated with a mixture of fresh and seawater as the sawing progressed.

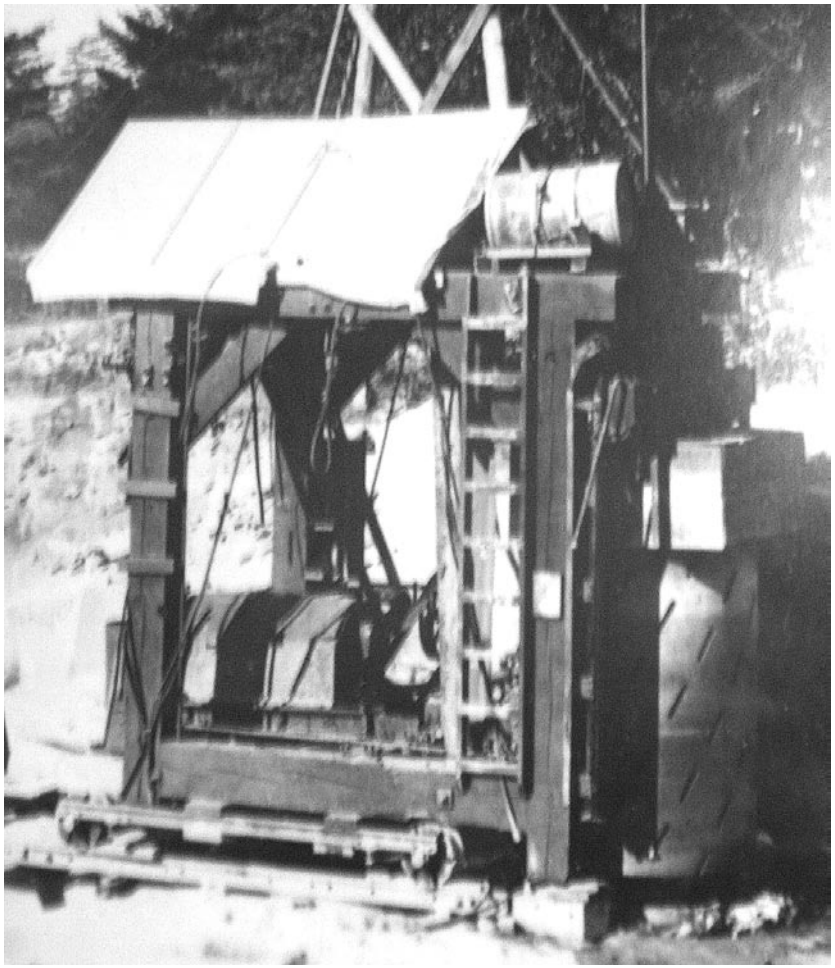
Earl Easthom described the cutting like this:

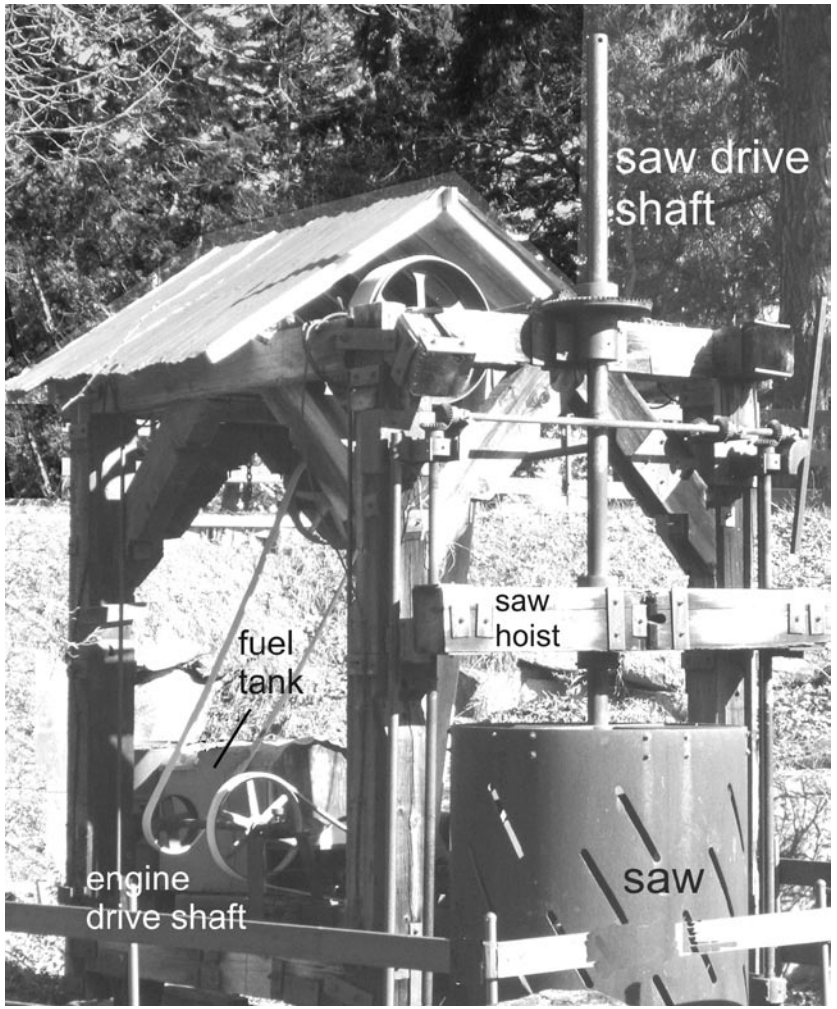
> When we cut the stone from the ground, we used shot made from steel ball bearings cut in quarters, which came in 100 lb bags. I would climb a 12 ft frame housing the circular saw, and throw half a tobacco can of shot into the drum, which had slots in it to carry fresh water—with a certain amount pumped from the sea—which seeped into the plaster of Paris, which held the shot until it hit the stone, cutting its centre. It took two hours to set up plaster of Paris in a 'wagon wheel', certainly bigger than a hub.
>
> After the vertical sawing, the cylinder of stone was still fixed in the rock at its base. To break it out, holes had to be drilled horizontally under the base of the rock cylinder so that small charges of black powder could be placed under the stone to blast it loose.

Describing the drilling and blasting process, Earl said:

> When the crew had finished drilling down to four feet to cover the depth of the stone, we would have to drill below the surface to finish it. In fact, for the very first millstone, I had to use a box lift called a 'skip', in which I worked while drilling into the side of the sheer cliff. When its core was blown, I would drill into the next millstone, standing in the hole of the first one. (And so…)

[22] Denise Izzard, Gabriola Sounder, October 12, 2002.





Left: A millstone cutting rig from the 1930s. The large cylindrical saw is on the right of the picture. The whole cutting machine was mounted on wheels so it could be moved into position along two narrow gauge rails laid out over the bedrock surface. It had a canvas roof.

Right: A working replica in Newcastle Island Park built by Ken Shepherd. Two pulleys driving belts to two other pulleys in the roof of the contraption can be seen connected to the engine drive (transmission) shaft. The smaller pulley belt drive is for the saw hoist, and the larger one is to rotate the saw. The saw and hoist are connected with bevel gears to their respective drive shafts, which for the hoist is threaded.

Left: A better view of the pulleys and belts driving the overhead shafts.

Above: Looking down inside the cylindrical saw showing the smaller inner saw used to cut the central shaft hole in the millstone.

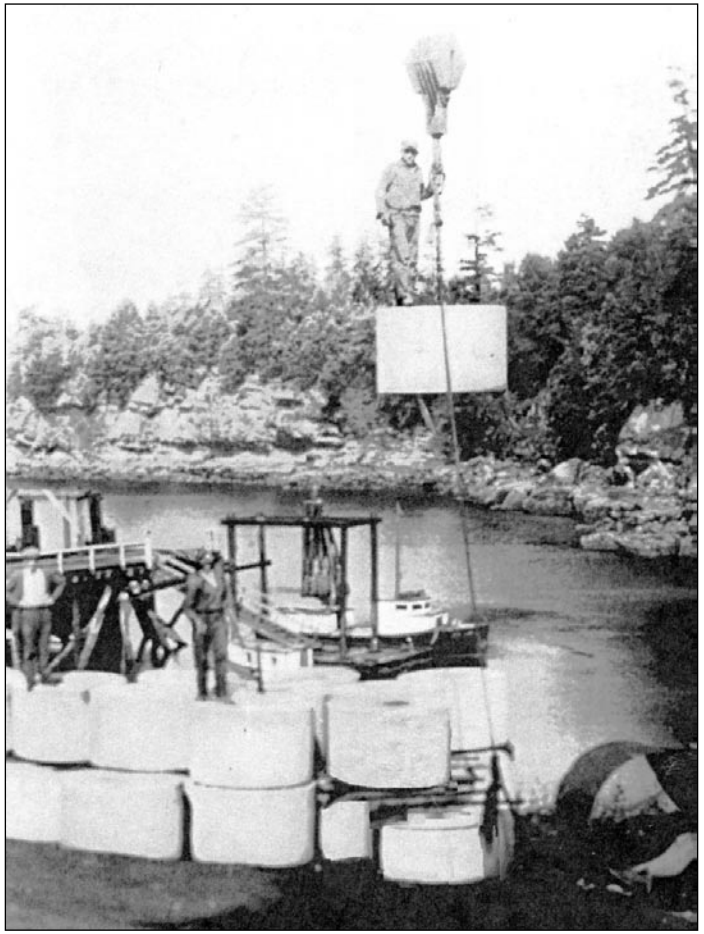
It took about three hours to cut a stone.

Top left: the sandstone surface was levelled, using if necessary plaster of Paris. Pilot holes were then cut to guide the saw.

Bottom left: The stones were cut on the edge of a cliff so that, when the right depth had been reached, a small hole could be bored horizontally through the cliff face to the bottom of the cut. If this was not possible, holes were drilled at an angle to reach the bottom of the cut or drilled through from an adjacent hole. The stone was broken away from its bed with a black powder charge. The two holes to the left of the charge tunnel in the photograph were a grip for a grapple (tongs) used to lift and transport the stone.

Below: Before shipping, the grinding surface was finished almost to a polish using a lathe.

Coats' family photographs



Above left: Shipping stones from Newcastle Island.

Above right: Shipping stones from Gabriola. The boat being loaded is the *Sea Lure* built by Bill Coats. Don't miss the worker taking a ride with the stone.

Coats' family photograph

Below left: Many stones however didn't meet the grade and were left behind. This pile of discards is in the Coats Millstone Reserve.

> And so the process continued, as I drilled from each empty millstone hole.
>
> After finding the easiest access to drill below the surface, I would use a measuring cup, and take enough black powder out of an old tobacco can, put enough into a 'pipe' of rolled paper to blow and lift off stone. The cap with powder, like a 22-calibre bullet, was placed on two slack six- or seven-foot wires, 40 feet away. I would be standing alongside a battery and when I saw a little smoke, I would run to the stone and with tamping stick, close the ends of the 'pipe', cork it in three feet of drill waste, composed of moist dirt and sand, run back, set the charge to lift core out—all based on Pruden's hesitant signal.

A derrick would then lift the free stone onto the surface before the final cuts were made and a lathe could complete the smoothing process on the grinding face. Earl told Denise Izzard:

> After the millstones were cut from the quarry, they were finished by lathe. Then a derrick with boom was used to lift them onto an ordinary flat deck truck which made its way down the road where another derrick with boom, waited to stockpile the millstones between the *White Hart* and water, until the scow came in at which point they were reloaded by derrick and boom, and shipped to Ocean Falls and Powell River for grinding pulp. Others were sent wherever the McDonald family had to place their orders.

Clyde Coats told me that steel cables were strung from the hill up behind the *White Hart* pub (as it was) over to the rocks on the far side of the bay beside the ferry dock, and the millstones were supported by these cables while being moved at the loading point near the dock. Discarded cables can still be found up behind the pub.

Jimmy Rollo, who worked at the quarry hauling stones told June Harrison: "There was a shipment to Powell River, fifty-two on the scow, small stones, and then a load of bigger ones for Finland."[23] The exact dimensions of the finished cylindrical stones varied according to client needs. They are variously said to have ranged from 3.5–5 ft. in diameter and from 2.5–4 ft. deep. The 1934 Ministry of Mines Annual Report says:

> The stones average about 5 feet in diameter, with a 3-foot grinding-face. The stones are faced, bored, and dressed ready for installation in mills before they leave the quarry. Blasting is done by electric battery and cable under the supervision of a certified blaster. No accidents were reported from this operation during 1934.

Working conditions and safety

Quarry work was seasonal and client driven, and the hours were long when orders had to be filled. The 1930 Annual Report said McDonald's Newcastle Island operation was "…under the direct supervision of Mr Donahue" and this is the same George Donahue who worked the previous year at Nelson Island's granite quarry, and whose skill at splitting rock smoothly Nell Falen admired. Nell recalled that the McDonald brothers fired their experienced foreman Donahue because he and his workers refused to work on Boxing Day to complete an order, protesting that it was a holiday just like Christmas Day. The Company replaced Donahue with a less-skilled foreman, whose sloppy work lost them money.

Arabella May Owen, Mark Bate's granddaughter, told Bill Merilees that the rates the McDonald Company paid its workers were: [24]

[23] June Harrison, *The People…*, p.60.

[24] Bill Merilees, *Newcastle Island—a Place of Discovery*, Heritage House, 1998, p.63.

Sheila Bradley photograph

Lifting stones from the bedrock was a dangerous operation. Earl Easthom steadying a stone and looking for flaws. Hoses are for cooling the saw and washing out slurry.

- foreman $10/day
- steam engineer $6/day
- certified blaster $5/day
- labourers $4/day.

Quarrying stone is still hard, dirty, and dangerous work—but was especially so in the days before mandatory goggles, earplugs, and protective clothing. Earl Easthom told June Harrison that the derrick came down twice while he worked at the quarry, both times fortunately without causing injury. Having lived and worked around quarries for many years, Nell Falen said:

> A quarry was not a pleasant place to work. The noise…was terrific. And nobody wore hearing protection. Everyone that worked in the quarries was always covered with dust. There were no facemasks or even hard hats in those days, and no steel-toed boots.

A new Quarries Regulation Act came into effect on January 31, 1931. Under this Act, Ministry-appointed Inspectors would inspect all quarries "from time to time" and had to be given free access. The regulations described how explosives and detonators should be stored, inspected, and handled. It described correct methods and precautions for blasting, and stressed the requirement for a certified blaster, such certification to be awarded by the Inspector of Mines. The regulations also described acceptable drilling operations and the need to control the resultant dust. They mandated the adequate fencing of dangerous machinery and quarry edges, and the provision of safety ropes for those climbing or working a quarry face. The owner had to provide a "good and sufficient supply of first-aid material and have at least one employee who is the holder of a certificate or proficiency in rendering first aid".

If an Inspector judged any of the working conditions to be hazardous, he had the power to shut the quarry down on the spot until things were put right. Less serious infractions were listed in writing with a requirement to correct them. All loss of life or serious injury had to be reported to the Chief Inspector of Mines or the District Inspector within twenty-four hours, and the site of the accident left undisturbed for thee days or until inspected. The penalties for wilful or careless infractions ranged all the way from $10 fines to imprisonment with hard labour for three months.

In 1935, the Ministry's Annual Report comments upon the large general increase in

quarrying over the previous year, with 536 men employed in quarries and sandpits, up from 377. It reported only one fatal accident (at the granite quarry on Nelson Island), saying that it was

> …largely due to the deceased block-holing with an air-drill with his back to the broken material on the quarry face. A small slide of material occurred and he could not see it or hear it because of the noise of the drill. Orders were issued prohibiting men from drilling with their back to potentially dangerous ground.

It is amazing and gratifying that Gabriola had such a clear safety record—no accidents were reported for the Gabriola quarry in the Ministry of Mines Annual Reports.

Rip-rap…

After Bill Coats died in 1980, Catherine and Clyde Coats donated several grinding stones to the Cowichan Forest Museum in Duncan through the Cowichan Valley Club, and the generosity of the Coats family has continued to benefit Gabriola by way of donation, lease, or provision of land for parks, the golf course, and parking. Clyde has loaned large photographs of quarrying operations and a typical millstone to the Gabriola Museum.[25]

Between 1979 and 1982, the Coats family's land around the ferry and the quarry was subdivided and easements assigned in complex legal manoeuvres. Since then, some lots have been sold, one leased for the *White Hart* pub, some converted to ferry and pub parking lots, and some rented out. The lots that remained in the Coats family during this period were transferred to Clyde Coats' company, "Gabriola General Construction Company".

A 1988 report[26] documented the status of abandoned quarries and identified reserves of stone that might be needed to restore heritage buildings. The report described Gabriola's quarry development and structure, and then said:

> Potential reserves of quarriable stone extend 20 metres southeast of the worked face; beyond this distance heavy forest cover prevents detailed examination.

On December 10, 1993, Coats' company generously transferred the covenanted historic quarry site to the Islands Trust Fund. At that time, the property had a declared market value of $100,000. After receiving the quarry site, the Islands Trust Fund prepared a Nature Reserve Management Plan, which was updated in 1997 when the Gabriola Land Conservancy (formerly Heartlands) became the on-island management group for the site. In 2000, The Islands Trust Fund, Gabriola Historical and Museum Society, and the Nanaimo and Area Land Stewards Society became the registered joint stewards of the covenanted lands. At that time, the Trust Fund manager in Victoria said:[27]

> The Trust Fund Board accepted the site, recognizing its historic significance to the Island, as well as its natural and scenic properties. Although protecting environmentally significant areas is our first priority, we are also interested in protecting important cultural areas on the islands.
>
> It's small at a fraction of a hectare and it's difficult, and sometimes dangerous, to traverse with its deep millstone holes and various cliffs. However, for those willing to take a risk, there is one site where millstone holes are easiest to see. One objective for the site is protecting its historical aspects, that

[25] The accompanying saw, exhibit 1996.029.01, was donated by the Peterson family.

[26] G.V. White, *Sandstone Quarries Along the Strait of Georgia*, Ministry of Energy, Mines…, 1987.

[27] Denise Izzard, Gabriola Sounder….

being the imperfect millstones, and the holes, which are filled with water, except in the driest of years.

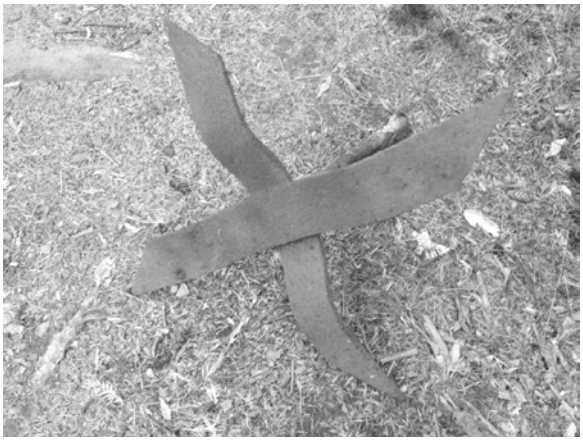
Back in 1939, in the Easter edition of *Anecho*—Gabriola's school newspaper—one child "D.C." wrote:

> This afternoon we went down to the rock quarry that is just across the road from Mr. Beck's. There are lots of holes where pulpstones have been taken out. In these water holes we found many frogs and frogs' eggs. Some of the frogs were green and others were brown. It was fun watching them jump and swim.
>
> Dorothy Westwood and Beverley Anderson took some of the eggs in the jelly to school and put them in jars. We are all waiting to see baby frogs.

But we live in more fearful and litigious times. The Coats Millstone Reserve has been temporarily closed pending creation of a safer environment for visitors to this fascinating historic site on Gabriola. ◊

Gabriola Museum Archives

Holes formed by cutting millstones in the Coats Millstone Reserve. The holes retain water throughout the summer and so provide habitat for moisture-loving amphibians, plants, and insects.



Part of what's left lying around in the 21st century.

Top: Square iron frame and cables. Perhaps part of the hoisting system at the quarry or ferry terminal?

Middle: Unknown fan-like tool. Used to clear the surface before drilling commenced?

Bottom left: Belt-drive pulley wheels.

Bottom right: Belt-drive wheel possibly used to raise and lower the saw or power the lathe.