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Unearthing the past—the diatomaceous earth mine on Gabriola Island

by Jenni Gehlbach

I am very grateful to Marie Cates (née Rowan) for sharing her memories of her grandfather and showing me family photographs and letters about Gabriola's diatomaceous earth mine. Thanks also go to Virginia Lee (née Chow) and Edward Chow for telling me about their father's family and enterprises. Kathryn Gagnon, Curator-Manager of Cowichan Valley Museum and Archives, and her staff were thoroughly helpful, and, as always, Nick Doe did sterling work talking to old-timers on the island, investigating the old mine site, and burrowing in his extensive research library.

Talking to old-timers on Gabriola Island about its industrial past is both rewarding and frustrating. Memories slip, misinformation is unwittingly passed, essential pieces of information are omitted, contradictions emerge, people die untimely, and records are lost or destroyed. The results for a researcher can be confusing and unreliable, but occasional delights of discovery emerge, as well as enduring puzzles. This has been the case with the history of the diatomaceous earth mine that existed briefly on the Rowan family's Gabriola land.

Local records of the diatomaceous earth mine

Gabrielans have forgotten much of the history of the diatomaceous earth (diatomite) mine. For example, Lois, who was married to Jimmy C. Rowan, came to Gabriola Island long after her father-in-law's business had shut down, so she remembers only some of what Jimmy and other family members told her. She said:¹

They had a plant behind where we built our house up there. You went past the house to get to the plant. And they took the soil out of the swamp. I think it was mostly Chinamen

who worked up there. ...must have used machinery because there were bags of it up there.

As far as I know, it only came from one swamp on Rowan property. They had 160 acres up there...Jimmy said...it was just on our property [not the neighbours'].

Sadly, after James Harvey Rowan, the mine operator, died in 1968, the family burned nearly all the paper records of his company, and very few physical traces of the operation remain today. So when I first started this research, it was all a bit of a mystery. Indeed, Hazel Windecker, who knew the Rowans well, remarked: "They were always a bit secretive about it". Still, I had some public records to go on. In 1972, a geologist wrote:²

Prior to World War II, small quantities of diatomaceous earth were excavated from the larger swamps on Gabriola Island. This material was dried and processed for use, primarily as a cosmetic base. The industry, carried on by members of the Rowan family, ceased in the early 1940s. Diatomaceous earth is present in many of the swamps on the island.

¹ Interview with Kit Szanto and Charlotte Cameron for the Gabriola Museum on November 16, 2006.

² John Alden Packard, Jr., *Paleoenvironment of the Cretaceous Rocks, Gabriola Island, British Columbia*, p.55, Thesis presented for the Masters of Science Degree at Oregon State University, June 1972.

So far, so good—none of these details seemed unusual. Certainly, there is swampy land in that area, and diatomaceous earth can still be found in Gabriola's wetlands on the Commons Land and in Rosheen and Bob's *Good Earth* Market Garden. Ministry of Mines reports continued to mention Gabriola's diatomite deposit as late as 1947.

Lois Rowan's reference to "Chinamen" working there was not surprising to me because Chinese labourers had also been used extensively in Gabriola's brickyard although they didn't settle on the island.³ But with most of the Rowan family's records gone, how was I to find out more about the mine's brief history?

Discovering the company

A search of the Canadian Ministry of Mines records revealed a report that at Dutchmans Swamp, freshwater diatomaceous mud was located in an elliptical basin, 0.9 to 1.5 metres thick (3–5 ft.).⁴ The swamp was said to be 2.4 km from the north end of Gabriola Island. It stated:

In 1939, a small plant owned by the *West Coast Silica Products Company* was in operation processing the diatomaceous earth. The mill processed about 1.5 to 2.0 tonnes of calcined material,⁵ which was stockpiled at the site. Excavations indicate that the diatomite was a high-grade deposit....

This confirmed what I knew already, but now I also had the name of the mining

company and would be able to retrieve its records from the Corporate Registry.

But then, I came across an old newspaper clipping that really startled me. The *Nanaimo Free Press* reported on August 7, 1939:

New Industry

Wah Sing Chow, prominent Chinese businessman and interpreter of Duncan, is a partner in a new enterprise for this part of British Columbia—a diatomite plant located on Gabriola Island. After three months of construction and experimentation, the plant is now producing the material, which in its raw state is diatomaceous earth, formed by minute plant organisms known as diatom[e]s.

Absolutely no-one I had spoken to on Gabriola about this enterprise had given any hint that a Chinese businessman from Duncan might have been involved in running "Rowan's" mine, and I pondered my own and their assumptions. But the timing of this new enterprise seemed unfortunate; the same edition of the *Nanaimo Free Press* carried another report from Shanghai:

Poland Ready to fight; Japanese Bomb Britons

...Furthering their drive to blockade the Chinese coast, Japanese naval authorities announced they would close at 11 a.m. tomorrow the port of Himen in Chekiang Province, 250 miles south of Shanghai.

Foreign consuls here were notified and requested that their shipping and nationals withdraw from the port and vicinity, which, the warning said, "is destined to become an area of hostilities".

These press clippings certainly pinpoint the beginning of the mine to the summer of 1939, and further investigation confirmed Wah Sing Chow's involvement.

³ *Gabriola's Industrial Past—the Brickyard* in *SHALE* 15, May 2007.

⁴ MINFILE #092GSW047 Gabriola Island Diatomite. This report says the deposit is high grade, but the original 1939 memo says apparently it was not.

⁵ Calcined diatomaceous earth has been heated to drive off moisture and burn off organic matter. A few years ago, Nick Doe "mined" a small amount of the diatomaceous earth and baked it in our oven in an old wok, getting a very fine peachy-pink powder that looked remarkably like face powder.

A memo from the Chief Mining Engineer at the Department of Mines to the Associate Mining Engineer of the Department of Buildings on September 11, 1939, said:

Mr Eardley-Wilmot of the Ottawa Department of Mines called at my office recently and informed me that Mr. W.S. Chow, Box 181, Duncan, who apparently is the Manager of the *West Coast Silica Products Company*, Gabriola Island, is operating a small plant on what is called the Dutchmans Swamp, 1½ miles from the north end of Gabriola Island.

Apparently Mr. Chow has a small mill from 1½ to 2 tons capacity of calcined material, but at the present time he has no market.

A search at BC's Corporate Registry shed some light on the business arrangement between Chow and Rowan, though how they met remained a mystery. Clearly some investigation in Duncan was needed to ferret out what is known of Chow and his involvement. And I needed to find more Rowan family members who might remember the mine and mill.

I had lots of questions: Who discovered the diatomaceous earth in Dutchmans Swamp and recognized its business potential? How did Rowan and Chow meet? How did a Duncan merchant become involved in what we had assumed to be a Gabriola business? Even the name "Dutchmans Swamp" seemed very odd because the Scottish-born Rowan family bought their 160 acres from the family of its pre-emptor John White Penberthy, who was English.

First contact between Chow and Rowan

Marie Cates is a granddaughter of James Harvey Rowan, the diatomaceous earth mine operator on Gabriola. She lives in Nanaimo now, but at one time she and her husband owned the land where the diatomite had

been processed long before. Among her family records she has a hand-written letter that pinpoints the beginnings of the association between her grandfather and Wah Sing Chow of Duncan. It reads:

PO Box 259
Duncan, BC

Feb 15, 1939

Dear Mr. Rowan:

Since I saw you a few days ago, I am considering our future plans and I am trying to line up with my previous connection. But before I can establish any favorable contact I must have some samples. So kindly send me about 20 lbs of the crude material taken from the field. You need not calcine it as I can do it down here. You just put the sample in a sack or paper box and hand it to the Island Freight at Nanaimo for delivery collect. I will attend to it when [it] arrive[s].

Please send this sample as soon as possible.

Now I must close with best regards to Mrs. Rowan & family and hope that our co-operation will bring success to our future contemplation.

Yours faithfully, W.S. Chow.

Another letter, typewritten, followed shortly, dated March 1, 1939, which reads:

Dear Mr. Rowan:

I received your letter and sample dated Feb. 25th. The samples you sent are exactly the same as those you sent me some time ago. I have calcined some of them. Yesterday, I have completed construction of a model refining plant and it works satisfactorily. Today I have refined the calcined samples which you sent and some of my own calcined and they turned out to be high-grade filter aids.

The density of these Diatomite [samples] runs variously from 10 lbs. to 12.2 lbs. per cubic foot. The finished product is almost equal to the Super-Cel by-flow product of the

P.O. Box 259, Duncan, B.C.
Feb. 15th 1939.

Mr. James H. Rowan
R.R. No. 1
Gabriola, B.C.
Dear Mr. Rowan:-

Since I saw you a few days ago, I am considering our future plans and I am trying to line up with my previous connection. But before I can establish any favorable contact, I must have some samples. So kindly send me about 20 lbs. of the crude material taken from the field. You need not calcine it as I can do it down here. You just put the sample in a sack or paper box and hand it to the Island freight at Nanaimo for delivery collect. I will attend to it when it arrives.

Please send this sample as soon as possible.

With much love with best regards to Mrs. Rowan & family, and hope that our cooperation will bring success to our future contemplation.

Yours faithfully,
W.S. Chow.

Letters from Wah Sing Chow to James Harvey Rowan, left Feb. 15, 1939, right March 1, 1939, proposing they start a diatomaceous mining operation on Gabriola together. See text for transcriptions.

P.O. Box 259, Duncan, B.C.
March 1st 1939

Mr. James H. Rowan
R.R. No. 1
Gabriola, B.C.
Dear Mr. Rowan:-

I received your letter and sample dated Feb. 25th. The samples you sent are exactly the same as those you sent me some time ago. I have calcined some of them. Yesterday I have completed construction of a model refining plant and it works satisfactory. Today I have refined the calcined samples which you sent and some of my own calcined and they turned out to be high grade filter-aids.

The density of these Diatomite runs various from 10 lbs. to 12.2 lbs. per cubic foot. The finished product is almost equal to the super-cel by-flow product of the Celite production. Some of these sample are contained a certain amount of clay, which I believed to have been taken from the top soil. It is unquestionably that this earth is suitable for sugar filtration, provided it is processed properly.

I am sending you samples of the finished products. Samples marked ~~XXXX~~ No. 2 R and No. 3R are produced from the calcined material you sent me and others are produced from my own calcined. No. 2 indicates grade having 100-150 mesh fine and No. 3 indicates grade having 200 to 250 mesh fine. There is of course a sample of the remaining sand and grit left from the separation. Now I am desirous that you should come down and see my actual working ~~XXXX~~ model plant and discuss our future plans. Or if you wish I shall come up to see you. Kindly write or phone before you come.

Yours faithfully,
W.S. Chow

our future plans. Or if you wish, I shall come up to see you. Kindly write or phone before you come.

Yours faithfully, W.S. Chow

Discovery and enterprise

The Cowichan Valley Museum's archives hold several key newspaper reports about the beginning of Chow and Rowan's operation. A report filed on July 29, 1939, in Victoria's *Daily Colonist* said that after three months of construction and experimentation, a plant was already in operation on Gabriola producing six tons a day of diatomaceous earth suitable for insulating material and filtration.⁷ It included a picture of Wah Sing Chow and

Celite⁶ production. Some of these samples [are] contained a certain amount of clay, which I believed to have been taken from the top soil. It is unquestionabl[e] that this earth is suitable for sugar filtration, provided it is processed properly.

I am sending you samples of the finished products. Samples marked No. 2R and No. 3R are produced from the calcined material you sent me and others are produced from my own calcined. No. 2 indicates grade having 100-150 mesh fine and No. 3 indicates grade having 200 to 250-mesh fine. There is of course a sample of the remaining sand and grit left from the separation. Now I am desirous that you should come down and see my actual working model plant and discuss

⁶ CELITE is the name used in industry for filters made of graded diatomaceous earth. Super-Cel is a food grade filter material.

⁷ Published in Victoria's *Daily Colonist*, Sunday July 30, 1939. The article is from Nanaimo and wrongly names Wah Sing Chow (a well-known and respected Duncan citizen) as "Mah Chow Sing" and inaccurately refers to the diatomaceous earth as "diatomaceous peat".

James Harvey Rowan together with several employees.

A few days later, on August 3, 1939, an article in the *Cowichan Leader* about the new plant headlined “Enterprise of Duncan Chinese Brings New Industry to Island” reported that the enterprise had seven employees and that:

The Gabriola Island earth was discovered when the late James Rowan, father of the present owner of the farm, started a fire on his swamp, which he could not extinguish. He saw the peculiar white powder that resulted, and sent a sample to the Chamber of Mines for analysis.

The *Daily Colonist* article said this discovery had occurred in 1928.

Apparently, in the late 1930s, the enterprising Chow had been looking for diatomaceous earth of marketable quality and quantity, and the *Cowichan Leader* went on to report:

Wah Sing Chow believes that the Gabriola Island deposit is the best quality ever found in Canada. He heard about it through his interest in another diatomite plant in Vancouver in 1936, which did not operate successfully owing to the unsuitability of the material, obtained from the Quesnel area.

This report also said: “Chow heard about it and applied his scientific knowledge, gained through extensive study since he left Duncan High School”. He designed the Gabriola plant, building a model of it above his store on Government Street in Duncan (shown above). The article continued:

The plant, run by a 22-hp gasoline engine has a capacity of around four tons a day, which could be stepped up to six tons a day. With the supply of marketable material available,



Wah Sing Chow, who is remembered as being a most enterprising man, built a model of the proposed Gabriola diatomite processing plant above his store on Station Street (junction with Government Street) in Duncan.

Courtesy Gordon Chow

it is expected to run for between five and 10 years.

Wah Sing Chow is manager of the plant, coming home to Duncan only at weekends.

West Coast Silica Products

Three men signed a Memorandum of Association on August 16, 1939, (filed and registered on August 27, 1939). It declared that their new company's name was to be *West Coast Silica Products Limited* and it would be situated on Gabriola Island. The three men were:

- James Yuen Lim, Merchant of 75 Pender East, Vancouver, BC
- Wah Sing Chow, Merchant of Duncan, BC
- James Harvey Rowan, Carpenter of Gabriola, BC.

The declared objectives of their Company were:

To remove, process, and manufacture diatomaceous earth and all by-products thereof, and to sell and otherwise deal in the same both wholesale and retail.

The share capital of the Company was declared to be \$20,000, divided into 20,000 one-dollar shares. Public share offerings were prohibited and the number of company members limited to 50, exclusive of employees.

It was also agreed that, "No Director shall be disqualified by his office from contracting with the Company either as a vendor, purchaser, or otherwise". Declaring a Director's interest in this way ensured that the Director would not be liable to account to the Company for any profit made "on the side".

West Coast Silica Products was officially incorporated on August 17, 1939, before W.L. Llewellyn, Deputy Registrar of Companies, and was granted Incorporation Certificate #16843. The official Notice of Directors and Registered Office was made on September 1, 1939, witnessed by W.S. Chow and James Y. Lim, overseen by Vancouver Solicitor J. Lorne Pyke. On September 2, 1939, *West Coast Silica Products* allocated 10,000 shares (both documents were filed and registered October 2):

- 5000 ordinary shares, par value \$1 to James Harvey Rowan, carpenter of Gabriola Island, BC
- 5000 ordinary shares, par value \$1 to Wah Sing Chow, merchant, of Duncan, BC.

So Rowan and Chow were equal financial partners in the business, though the Ministry of Mines refers to Chow as the Manager of the mine. Presumably, Rowan's principal contribution was the use of his land with the diatomaceous earth deposit. James Yuen Lim was the Treasurer, apparently without significant shares. Five hundred more shares were allotted during October and

November that year (filed and registered November 22, 1939):

- 200 ordinary shares, par value \$1 to Fred Wong Hunt, Merchant of Lillooet, BC
- 100 ordinary shares, par value \$1 to Wing Eng, Merchant of Viceroy, Saskatchewan
- 200 ordinary shares, par value \$1 to Shung Lim, Merchant of Port Alice, BC.

Treasurer, James Y. Lim, signed both share declaration documents.

James Yuen Lim's Vancouver business

James Yuen Lim's Chinese name was Lin Juzhen⁸ and he was a prestigious member of Vancouver's Chinese community. The Lim family owned the pioneer *Jinliyuan Company*, also written as *Gim Lee Yuen Limited*. Paul Yee writes:⁹

Lin established the company which administered an import and export business between Canada and Asia. He occupied a high position in the Lin [benevolent] Association while serving as director of the Vancouver Chinese Public School.

⁸ James Yuen Lim died in Vancouver in 1957, aged 71, so he was about 53 years old when *West Coast Silica Products* was formed.

⁹ The information about this building is from *Saltwater City: An Illustrated History of the Chinese in Vancouver* by Paul Yee, Douglas and McIntyre, 2006. Dr. Imogene Lim, who is a descendant of James Yuen Lim's family and a professor of anthropology at Vancouver Island University, investigated the original site of the Lim family's pioneer business at 75-77 Pender Street East. The information about the Lin/Lim family, their names and their business is from *East Asian cultural and historical perspectives: histories and society* by Steven Tötösy de Zepetnek and Jennifer W. Jay, University of Alberta—Research Institute for Comparative Literature, 1997.



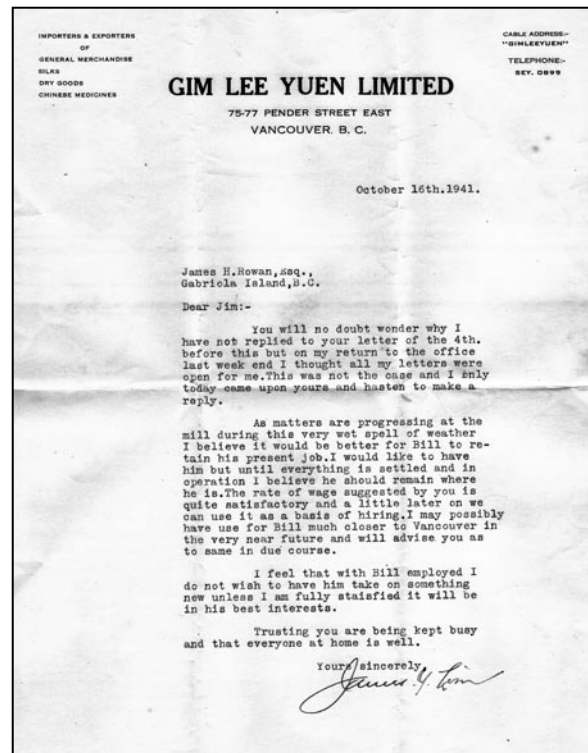
James Yuen Lim (Lin Juzhen) ran an import-export business in Vancouver called *Gim Lee Yuen*. He was treasurer of Chow and Rowan's company though it is unlikely he ever set foot on Gabriola. Probably, it was Lim, and not Chow or Rowan, who dealt with the end-customers.

Gim Lee Yuen Limited occupied a three-storey building constructed in 1908 at 75-77 Pender Street East in Vancouver. That building is gone now, but the company still exists at 53, Pender Street East. Its 1941 letterhead described the company as:

IMPORTERS & EXPORTERS OF GENERAL MERCHANDISE, SILKS, DRY GOODS, AND CHINESE MEDICINES.

Demise of Chow and Rowan's registered company

Judging by the filed corporate documentation, *West Coast Silica Products* didn't last long and had limited activity, though the company did not properly file required reports, so it may have been more active than is apparent from the documentation. A memo from the BC Registrar of Companies, H.G. Garrett, to



Letter from James Lim to James H. Rowan discussing possibilities of employment of young Bill Rowan. Dated Oct. 16, 1941. It suggests that the Gabriola operations did continue during the war, even though official company documents suggest otherwise.

West Coast Silica Products dated March 26, 1941, stated:

Companies Act Section 163

You are hereby notified that you are in default with your Annual Return under this Act. Your early attention is required.

No report since incorporation, August 17, 1939.

A letter two years later dated June 23, 1943, notified them that they had failed to file "certain returns, notices, or documents" for two or more consecutive years, and that if they didn't reply within a month or fulfill their "lawful requirements" a notice of expiration would be placed in the Gazette after 14 days, and two months after that

notice they could be struck off the Register of Companies.

Solicitor J. Lorne Pyke—at 75, Pender East, Vancouver, the address of Lim's company—sent a letter on August 12, 1943, to W.L. Llewellyn, Registrar of Companies in Victoria. In it, he acknowledged that Reports were due August 15 1940, '41, '42 and '43 and stated that the Company Register correctly records share allotments in October and November 1939, but noted that although another entry in the Share Certificate book showed another allotment of 600 shares on December 9, 1939 to three shareholders, there was no record of any "Return of Allotment" as to these shares, and questioned whether the returns were made. He mentioned a possible further delay in the filing of reports while this was sorted out. Regarding the situation at the mine, he said:

Briefly the position of the Company is, that since the outbreak of war its plant has been lying dormant on Gabriola Island it being impossible to acquire further most necessary machinery. There is an investment of some thousands of dollars involved and the Company therefore trusts, if such be necessary, that at this late hour sufficient time may be granted to permit the necessary filings and the keeping of the Company in existence.

It is not clear from the record whether the problems acquiring the needed machinery were financial or logistical in times of war, but the company appears to have become defunct. Certainly there are no annual reports in the corporate file at the Registry and no papers later than this 1943 correspondence.

The 1947 Ministry of Mines report on structural materials and industrial minerals merely notes the existence of a diatomite



James Harvey Rowan and son William David in Vancouver. If they weren't there to discuss business with James Lim, they could have been.

deposit at Gabriola Island, with no indication of mining activity.

Puzzles—when did it end and who were the customers?

James Harvey Rowan's granddaughter Marie showed me a letter dated October 16, 1941 from the company treasurer, James Y. Lim (on "*Gim Lee Yuen Limited*" letterhead) to her grandfather, which mentions that "matters are progressing at the mill during this very wet spell of weather" and discusses the possibility of a future job "much closer to Vancouver" for Rowan's son Bill (Marie's father). So clearly, annual reports notwithstanding, the Gabriola mine was still operating in the fall of 1941. The letter, which is very friendly in tone, clearly infers that Bill Rowan, who would have

been 20 years old, was working there with his father at that time.

Wah Sing Chow's oldest son Edward is a retired Civil Engineer who lives in Vancouver.¹⁰ He was a teenager in school, graduating in 1945, when the diatomaceous earth mine was operating on Gabriola, but he sometimes came over to the island during school holidays when his Dad was working there. When I discussed with him the rapid demise of *West Coast Silica Products* and Eardley-Wilmot's report in 1939 that at first the Company "had no market" he was quite puzzled. He is under the impression that the Gabriola diatomaceous earth mine operated throughout the war years, only collapsing afterwards.

As to the market for the diatomaceous earth, the Rowan family and other Gabriolans have only ever mentioned its use in the production of cosmetics. For example, Earl Easthom told Nick Doe several years ago that Rowan's market had been mostly in China and a little in California (Hollywood was mentioned), and that it was for making cosmetics—face powder. Other local old-timers tell similar stories. Yet, the March 1939 letter from Chow to Rowan specifically mentioned that the Gabriola calcined diatomite sample was sugar-filtration grade.

In contrast, Edward Chow told me that he was sure that the company had two major markets, both in Canada: the finest powder was used for cosmetics and the coarser product was used in the manufacture of "gunpowder". He believes that this latter

use was the major reason for the business being started. Also, in a tribute to Wah Sing Chow, his daughter Virginia Lee wrote of his war years in Canada: "His patriotism led him to commute to a Gulf Island where he manufactured special clay into explosives."¹¹

Although diatomaceous earth is not used to make gunpowder, it was used for making *dynamite*. By mixing nitro-glycerine, a very dangerous compound, with diatomite, the nitro-glycerine becomes more stable and is much safer to transport and handle. Alfred Nobel, a chemist, patented this mixture as "dynamite" in 1867.

Eardley-Wilmot wrote in 1928 that because of the high percentage of non-explosive filler in this type of explosive, "the use of diatomite has largely been discontinued in this industry", but added: "However, diatomite is still used to a small extent by some explosive manufacturers in the western part of the American continent and in parts of Europe..."¹²

Diatomaceous earth mining in Canada

Diatomaceous earth^{13 14} is the deposit (usually white or cream-coloured) from

¹⁰ His sister Virginia said Edward was artistic, and wrote that he "designed all of our posters..." His float made to look like a tank attracted much publicity and won first prize in the Dominion Day Parade in 1944. Interestingly, the one thing that James Harvey Rowan's daughter Dorothy remembers about Edward Chow is that he was an artist.

¹¹ This was in an In Memoriam tribute to her parents Wah Sing Chow and Helen Lai Yee Lowe Chow, written by Virginia Lee (née Chow) and published in the *Vancouver Sun* and/or *Province* on May 2, 2008.

¹² *Diatomite—Its Occurrence, Preparation, and Uses*, by V.L. Eardley-Wilmot, Canada Department of Mines, 1928.

¹³ Information from Canada Department of Mines, Geological Survey Memoir 118, 1920.

¹⁴ Diatomaceous earth is not to be confused with "fuller's earth", although fuller's earth does sometimes contain minor amounts of diatomite. Fuller's earth is any non-plastic clayey soil that can be used to decolourize, filter, and purify animal, mineral, and vegetable oils and greases. It was also sometimes used in movies to simulate explosions

siliceous shells of algae known as “diatoms”. The largest are smaller than a pinhead and the average visible only under a good microscope.

V.L. Eardley-Wilmot reported that in the 1920s, diatomaceous earth was found all over Canada, but mainly in the Maritimes and BC. The best quality then came from Quesnel, and as late as 1983, the Ministry of Mines report said that the diatomite facility at Quesnel had been relocated and rebuilt after several years of shutdown:

The 100-tonne per day capacity [at Quesnel] is at present about 50 per cent utilized. Calcined diatomaceous earth is used in absorbents, for hydroponic gardening, pozzolan,¹⁵ and lightweight aggregate. Clayburn Industries are developing a special lightweight refractory/ insulation and brick for aluminum smelters based on Quesnel diatomite. The bricks presently used are imported from Europe.

Although many diatomite deposits occur in southern Vancouver Island, they are shallow and contaminated by silts. There was a deposit at Quamicham Lake, Duncan: “one to two feet of impure and gritty diatomite” over six acres on EP Hassel and Hadwin’s ranches on west and northeast sides of lake.

Some diatomite deposits are marine deposits, and some are millions of years old and occur in rocky outcroppings, as at Quesnel,¹⁶ but others are recent deposits in wetlands only thousands of years old, as in Gabriola’s Dutchmans Swamp. The procedure for mining diatomaceous earth in very wet areas was described by Eardley-Wilmot in 1928 as follows:

because, being very fine, it throws up a much larger plume of dust than regular dirt.

¹⁵ *Pozzolan* is a term loosely used for any material that reacts with calcium hydroxide to form cement. It was originally a sandy volcanic ash from Pozzuoli in Italy.

¹⁶ Miocene sediments, 5–23 million years old.

It is generally better to drain the deposit if this can be done economically... Some deposits are covered with a thick overburden of mud or silt, are interbedded with seams of sand or other impurities, and the thickness of the diatomite varies. In these deposits, preliminary draining would reveal the nature of the deposit and would enable open quarrying operations and a proper selection of the diatomite and rejection of the impurities. The material can be removed by shovelling into trucks running on previously laid rails on the top of the deposit. On the other hand, with underwater dredging all the material is liable to be mixed together and it is, moreover, difficult to determine the limits of the deposit. In a drained deposit, the material is very soft and wet and it is usual to excavate it by means of a bucket dredge, the bottom of the pit being kept free from water by pumps or adequate drainage where possible.

In wet deposits the excavated diatomite is piled up to drain and is then spread out to air-dry, after which it is usually completely dried in a rotary furnace or kiln. ...It takes from one to two months to dry the material to 5 or 6 percent absorbed moisture.

The only known Ministry of Mines report that might refer to production on Gabriola is for 1939 when 45 tons were taken from the Nanaimo and Alberni District (no details). For comparison, production from the Cariboo and Quesnel District that year was 403 tons.

The uses of mined diatomaceous earth

Diatomite’s chemical composition, minute size, hardness, and porosity make it useful in a number of ways. When treated and separated into powders of varying fineness, it is used as an abrasive and polishing agent in metal polishes, soaps, metal powders, and match heads. The purer products are used in the manufacture of siliceous glazes and



Wah Sing Chow (left) and James Rowan (third from left) are seen with some of their employees gathering diatomaceous peat for their factory on Gabriola Island. The earth is screened, dried and processed for insulation and filler purposes.

A terrible photograph, but quite possibly the only one that survives of the diatomaceous earth project on Gabriola. From the *Daily Colonist*, Victoria, Sunday July 30, 1939.

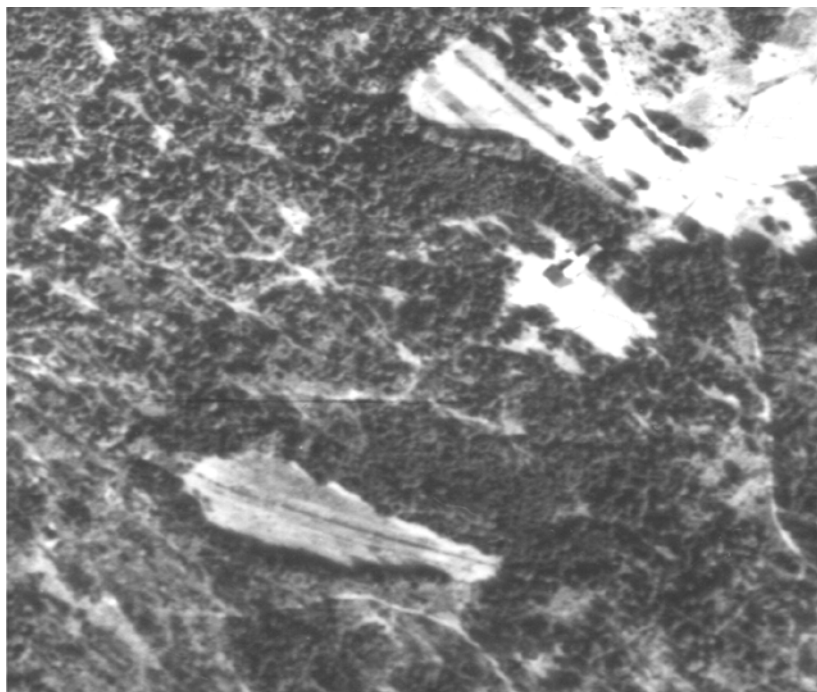
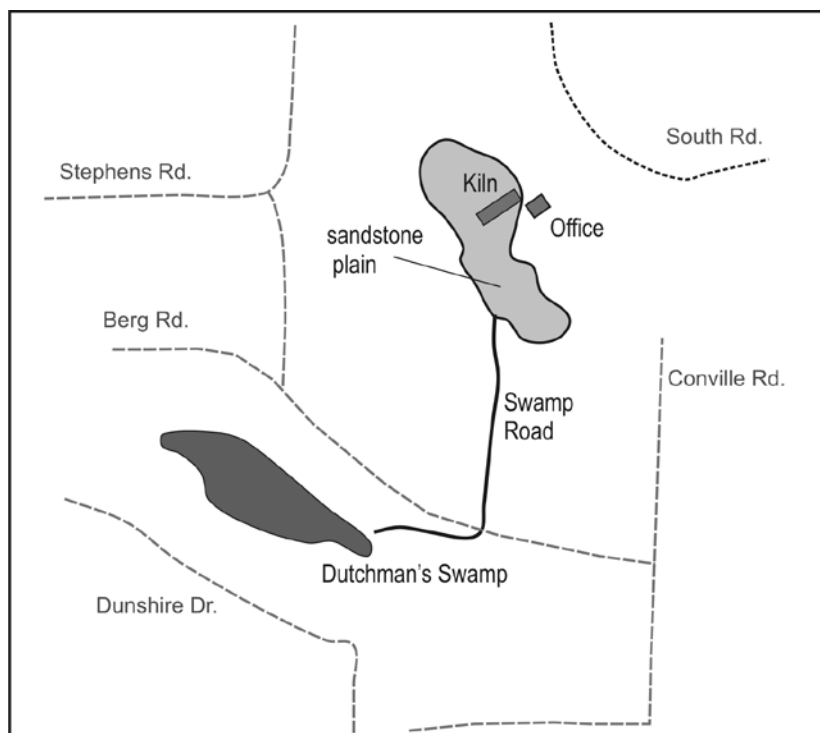
waterglass or sodium silicate. They are also used in filtration systems for syrups and swimming pools. The large amount of pore space within them prevents the passage of heat through the loosely packed earth or through blocks and bricks made of it. This property, combined with the ability to stand great heat without fusion, makes the earth useful for insulating linings for furnaces, ovens, safes, as well as in the walls of cold storage receptacles. It has also been used as an absorbent for corrosive liquids and liquid manures.

In 1926, a decade or so before Gabriola's mine started, diatomite was used in Canada mostly for filtering syrups (1538 tons) and for insulation (650 tons). Other miscellaneous uses totalled only 72 tons. At this time, diatomite imports from the USA

cost \$60 to \$200 per car lot depending on the grade and were tariff free, as were exports to USA. In 1933, Cariboo and Quesnel produced \$410-worth of diatomite. The August 3, 1939, article in the *Cowichan Leader* about Gabriola's mine reported that annual consumption of diatomaceous earth in Canada was estimated at 7000 tons, most of which was imported from the United States.

The mining process used on Gabriola

There is no indication that deep digging at the Dutchmans Swamp mine south of the present-day Berg Road was required. Indeed, the *Daily Colonist* article about



Map of the diatomaceous mine on Gabriola. Roads are shown as they exist now, not back in the 1930s.

The track known as "Swamp Road" runs north from the diatomaceous earth deposit in Dutchmans Swamp, known by some as "Epps or Epplers Pond", across what is now private land to the mill site on a sandstone plain where diatomaceous earth was laid out in the sun to dry before being processed.

The aerial photo of the map area was taken in 1945 (A9302-8 Fed. Dept. of Energy, Mines and Resources).

There is a substantial structure on the sandstone plain, which would be the kiln. The stripe running the length of Dutchmans Swamp may be a trench—there's no sign of it in a 1932 photo, but it shows up in modern satellite pictures as a change in vegetation. If it is a digging, the swamp was dry, which is curious since these days it retains surface water year round.

In a report in the *Quebec Chronicle-Telegraph*, Oct. 15, 1955, a local resident remarked that "now, the [diatomite] deposit is covered by a lake and steps are being made to drain off the water".



B. Operations at the deposit of Oxford Tripoli Company, Rhude pond, East New Annan, Colchester county, N.S.

Although there are no pictures of the Gabriola diatomaceous earth quarry, this picture of a similar operation from Nova Scotia dating from the 1920s gives an idea of what it must have been like. There were however no rail tracks along Swamp Road on Gabriola.

Gabriola's mine recorded that the diatomite was found only "seven inches below a natural surface growth". Marie Cates remembers that they had to "dig a long ditch", which you can trace in an aerial photograph of that time (*photo opposite*).

Chow's son, Edward, remarked that Chow and Rowan did most of the work themselves—they didn't need to hire people because they used machinery for a lot of the processing, but newspaper reports of the mine's start-up in the summer of 1939 said they had seven employees and the *Daily Colonist* reported that "it is expected that the crew will be increased to twenty-five in the near future". And Marie wrote to me, "I

also remember the 'Chinamen shacks', as they were called, where the workers from the mill lived."

Edward remembers that they used a horse and plough to loosen and turn the wet earth, and that Rowan's son sometimes helped with the ploughing. He doesn't remember which son—but we know for sure that the oldest son Bill (William David Rowan—Marie's father) worked there. Jimmy told Nick Doe that the wagons were hauled up from the swamp along a gently sloped trail parallel to what is now Berg Road before heading across to the mill. Margaret Taylor, who now owns land in that area, remembers being told by Clyde Coats that the wet



James H. Rowan and son William D. Rowan (Bill) at work in a hay field on their Gabriola property. The photograph has no date, but Bill was born in 1921 in Nanaimo.

mined material was laid out to dry in the sun on the flat sandstone at the top end of Swamp Road. The *Daily Colonist* reported that men then screened off the finer parts before carrying it to the circular kiln. You can see the screen in the photograph of Chow and Rowan on page 21.

Marie Cates wrote, "I remember the mill from when I was a child—it had a large oven/stove in it for processing before shipping out the diatomite," and Edward Chow recalls the earth was taken by wagon to a large wooden shed and loaded into a rotary kiln where it was baked to dry it out. The *Daily Colonist* reported:

A small fire is then started at the base of the kiln which soon climbs to the top, working its way through the self-burning (calcine) material. The process lasts four days. It is

allowed to cool for two days. It is then discharged from the kiln and carried to an air flotation plant for the separation process.

Jimmy told Nick that the separator in the Gabriola operation consisted of a simple fan mounted at one end of a long brick tunnel. As the diatomite was blown through the tunnel, the heavier particles dropped down first, and the deposited powder became progressively finer along the tunnel. Jimmy said the "best stuff"—the finest powder—was deposited at the far end. It could be that a proper cyclone, which Eardley-Wilmot described as being needed for such operations, was the missing piece of machinery that *West Coast Silica Products* was trying to obtain during the early war years. Edward Chow told me that the dried diatomite was passed through a grinder to

pulverize it and blown through a cyclone to separate and sort the powder by fineness and weight.¹⁷

The graded powder was packed into bags for shipping, and June Harrison¹⁸ records that “a vast amount was removed and taken away by truck for shipping to Vancouver”—presumably to *Gim Lee Yuen Limited*.

Eardley-Wilmot wrote that the powder was usually shipped in burlap bags, and Marie recalls seeing piles of burlap bags in the abandoned mill shed when she was disobediently playing there as a child. A pile of grown-over diatomaceous earth can still be found near the old kiln site on what was the Rowan's property.

British and Chinese immigrants

BC, like the rest of Canada, has been fruitful ground for enterprising and energetic immigrants, but it was a testing ground too for those hardy souls who came at the end of the nineteenth century undergoing the hardship of breaking new ground without social services or good roads, mostly leaving worse conditions behind them at home, and then having to endure the depression and wars of the early twentieth century. Pre-emptors of undeveloped land, settlers on farmlands, itinerant rural and urban labourers, and merchants all had their various stories of hard work and privation. Many also endured discrimination.

¹⁷ Marie's husband, Don Cates, remembers seeing a big cone-shaped piece of metal among the old remains of the mine and mill equipment, but there is no knowing now what it was.

¹⁸ June Lewis-Harrison, *The People of Gabriola—A History of our Pioneers*, p.143.

The White-Penberthy family of Gabriola

The land on which Gabriola's diatomaceous earth mine was situated was the NE ¼ of Section 12. John White Penberthy¹⁹ pre-empted it in August 1865, farming it and raising children Sara-Jane, Alice, and John with his wife Mary, a native-born Alaskan (recorded also as Russian-American). John White Penburthy Sr. was listed as 60 years old in the 1881 census, but as 65 in 1891. He died soon after this and his estate was probated in 1893, though I found no death record.

Young John Penberthy (born 1872) who was also a farmer, continued to live on Gabriola for several years with his mother. BC archives has a record of young John's death on Gabriola in 1907, aged only 35. Mary died in Nanaimo in 1922.

Daughter Sara-Jane (born 1867) disappeared from local records after her baptism in 1885, but in 1889, her sister Alice (born 1869) married Norwegian Ole Hansen (born 1861) in Nanaimo. The Hansens are listed in the Nanaimo South Extension (Gabriola, Valdes, and Mudge) 1901 census and by then Alice was using the Scandinavian version of her name “Alse”. Their family included 13 year-old William Stephenson, Alice's child from a previous marriage. Young William Stephenson had been listed in the 1891 census as living with John and Mary Penberthy on Gabriola, though Alice was not. Her marriage to Hansen was

¹⁹ Searching for names in old records is hazardous. The name “John White Penberthy” is variously given (with or without the White) in books and documents as John White Pemburthy, John White Pemberthy, John Penburthey White, John Whitepenlurthy (!), and John White Penburthy, etc., etc. Similarly, his son-in-law Ole Hansen first appears as Hansew in his marriage record, and John's daughter Alice is Alse in some census records. The census's “Jane” was Sara-Jane in her baptismal record.



James Harvey & Gertrude Rowan

recorded under both names Alice Stephenson and Alice Pemberthy on the same day.

I wonder whether Ole Hansen might have been the phantom “Dutchman” of Dutchmans Swamp—apparently British settlers used the term “Dutch” fairly indiscriminately in those days to describe Dutch, German, and Scandinavian immigrants.²⁰

²⁰ The swamp is also called “Epps Pond”, which is a derivative of the “Epplers Swamp” and “Epplers Spring” that appears in old Provincial Water Licence Records. It was so named by owner Gus Eppler *circa* 1960, but he was not Dutch.

The Rowan family of Gabriola

James H. Rowan Sr. was born in Scotland in 1862 and first came to North America as a coal miner. According to the 1911 Gabriola census, he immigrated into Canada in 1899. A 37 year-old married coal miner called James Rowan, born in Scotland, is listed (without his family) in the 1901 Nanaimo South Extension census. His Scottish wife, Anna, was born in 1866. She followed James to Canada in 1900 with their two sons James Harvey and John. But James Harvey had been born in Streator,²¹ Illinois in 1891, and his brother John in Scotland in 1895, so clearly the family had earlier emigrated to the USA and had returned to Scotland before emigrating to Canada.

Lois Rowan said that the Rowan family came to live on Gabriola in 1904, which is the same year James’ and Anna’s third son David Kemp was born. They bought their quarter section (160 acres) from the Penberthy family. James H. Rowan Sr. retired from coal mining and farmed his Gabriola land until he died in 1929—a year after he accidentally discovered the diatomaceous earth on his property. Billy Rowan told June Harrison that his grandparents raised their family in the original Penberthy homestead.

On June 1, 1919, James Harvey Rowan Jr. (who eventually became the diatomite miner) married Gertrude Jolley. She was

²¹ Streator was earlier called “Hardscrabble”. Vast beds of coal lie just beneath the surface throughout much of Illinois, and in 1866, Dr. Worthy S. Streator, a railroad promoter from Cleveland, Ohio, financed the region’s first mining operation. Land was sold to incoming miners at discounted prices, but the company retained mineral rights to the land. In 1870, Streator’s population was 1486, but by 1880 its population tripled as Scottish, English, Welsh, German, and Irish immigrants came to the area, followed later by scores of mostly Slovaks. (Wikipedia)

born in 1887, and her family had come to Gabriola in 1905 from Northamptonshire in England. He was a carpenter, building houses on Gabriola and also in Nanaimo and Vancouver—even Zeballos—coming home on weekends. His family lived for a while in New Westminster when he worked there.

Eventually James Harvey Rowan came back to live on his parents' Gabriola acreage and he is listed in 1935 in the Wrigley's Directory as a Gabriola carpenter. He would have been 48 years old when the diatomaceous earth mine started. He died in 1968, 77 years old.

James Harvey and Gertrude's five children were born between 1920 and 1930, and their sons Billy, Gerry, and Jimmy, operated a sawmill together on Gabriola from 1947 to the 1960s. They also worked periodically at the Gabriola brickyard. All three boys and their older sister Margaret have died, but the middle child Dorothy Foster (née Rowan) is 86 and still lives in Nanaimo at the time of writing. Rowan descendants still live on Gabriola, in Nanaimo, and elsewhere in BC. Jimmy C.'s son Bill has an excavation and trucking business in Nanaimo—another generation of hardworking, entrepreneurial Rowans shifting dirt.

The Chow family of Duncan

In 1873, at 12 years old, Suey Sing Chow borrowed \$200 from a neighbour in his village in Hoi Ping county in South China's Kwangtung Province and shipped out to California, working wherever he could to raise money. Unlike most Chinese immigrant labourers at that time, he was a Presbyterian and he had curly hair (as do several of his descendants). He was very religious and later in Canada was often nicknamed "Jesus Suey".

At 17, he returned to China to marry, but when he later wanted to return to America

his re-entry permit had expired, so in 1894 he paid his \$50 head tax and came to BC instead, leaving his wife (whose maiden name was Low Ting) behind in China.²²

When Suey Sing Chow first arrived on Vancouver Island, he worked for Butchart's Cement Works in Mill Bay,²³ but then he and a fellow villager, Duk Lee, went together to Lenora Mines at Mount Sicker to open the *Suey Lee Company* general store, catering to Chinese labourers in the boomtown there. When the Mount Sicker mines closed, many miners moved down to Duncan in the Cowichan Valley, and in 1907, Suey Sing Chow moved his store to Station Street in Duncan.

Suey Sing Chow continued to visit back and forth with his wife in China, fathering four sons, and eventually three of them also came to Canada. In 1908, at 10 years old, Suey's son, Wah Sing Chow, left his mother and older brother in China and joined his father in Duncan. He started his education in English at Zenith school and eventually graduated in 1917.²⁴ He had settled well,

²² In 1902, the Chinese head tax rose to \$100, and in 1903 to \$500 in an effort to stop Chinese immigration, which at the time, was very unpopular. From 1923 to 1947, immigration to Canada by people from China was barred. An apology for these racist policies was made by the Prime Minister in 2006.

²³ Reported in *Small City in a Big Valley—The Story of Duncan* by Tom Henry, published by Harbour Publishing. Also, *North Cowichan—A History in Photographs* by Bruce A. Hodding, published by the Corporation of the District of North Cowichan. Henry received much of his information about the Chow family from Virginia Lee (née Chow). Her notes to him are in the Cowichan Valley Museum's archives.

²⁴ Reports of the schools Wah Sing Chow attended are confused. Tom Henry writes that he graduated from Alderlea Public School. The *Cowichan Leader's* obituary of Chow published March 9, 1962, reported that he attended "a small village school", Zenith school, and got his senior matric at Duncan High School.

doing very well academically and earning the Good Citizenship Medal in his final year.

Eventually, Wah Sing took over his father's business, which had become *Suey Lee and Sons*, and Suey Sing Chow returned to China in 1920. His granddaughter, Virginia, remembered Suey Sing Chow in later years as a slightly built, mild-mannered, and devout man. She says that there were many conversions to Christianity in their family's village, but that when Suey Sing Chow died back in his home village, the family hired Taoist monks to bury him.

Wah Sing changed the name of the store again to *Chow Brothers Grocery*. Virginia wrote that Wah Sing's younger brother, Sing Wing, was "short-changed in finishing his English schooling on account of the obligation to tend to the store full-time". Later, the store was passed to Wah Sing's nephews Wai Dai Chow and Wai Hong Chow (Willie and Hank). Willie Chow told me that Suey Sing's three sons had run *Chow Brothers* together before he and Hank took it over.

In 1923, Wah Sing Chow married Lai Yee Lowe (Helen) and they became a leading couple in the Duncan community raising four sons and four daughters. Interestingly, although their marriage took place in the Chinese Presbyterian Church both Wah Sing and Lai Yee list their religious denomination as Confucian on their marriage certificate.

Wah Sing became the most prominent of Suey Sing Chow's sons, also owning a hotel, a restaurant, and a billiard hall in Duncan. His son, Edward, told me that he was very enterprising and interested in many things, and he also had a machine shop where he manufactured apparatus for his various enterprises. His daughter Virginia said he was a great cook and also a curious



Wah Sing Chow and Lai Yee Lowe (Helen) on their wedding day in May 1923.

inventor—he once designed a cork-lined suitcase that could be used as a lifejacket in an emergency at sea. He was an avid reader of *Popular Science* and *Popular Mechanics* magazines. She described him as a polite and soft-spoken man who always wore a suit, tie, and hat unless he was going to the lumberyard or an open market.

In addition to his various business and family interests, Wah Sing was very active in his community, joining the Chinese Freemasons (Chee Kung Tong), the Chinese Consolidated Benevolent Society, and the Rotary Club. He worked hard for local Chinese interests and, having studied law for a while under Barrister MacKenna,²⁵ acted as a court translator for the Chinese community. But Tom Henry reports that during the depression racial antagonism increased in Duncan, as elsewhere. Many in the community wanted Chinese competition removed from the job market, expropriation of Asian's property, and even to forbid intermarriage. Despite these racist attitudes, Henry writes that Wah Sing "continued to be gracious and generous. Every Christmas

²⁵ This was recorded by Virginia Lee (née Chow) in her *In Memoriam* tribute to her father.



Wah Sing Chow was very involved with civic life in Duncan and he organized the Chinese Community's contribution to the coronation celebrations for King George VI on May 12, 1937. The two young participants here are Georgina Thom & Dora Chang.

he distributed many turkeys to Duncan residents and merchants.”

Still, the unpleasant atmosphere caused Wah Sing and his family to return to China for several years in the 1930s for business and schooling. His daughter, Virginia, who now lives in Saratoga, California, wrote:

By 1931, frustrated over the Chinese Exclusion Act, the Great Depression, and his desire for filial piety toward his retired and widowed father, Wah Sing moved the family to China. After a stint as an auto mechanic in the village of Hoi Ping, he moved and opened a dry goods store in Canton. Helen managed the store while Wah Sing built apartments.²⁶

²⁶ Wai Dai Chow told me that in Hoi Ping (Kaiping), the family built one of the now-famous *diaolou*. It was a fortified tower with four storeys, one per family, built to protect against forays by bandits. These buildings, many dating from the 1920-30s, are now UNESCO World Heritage sites. (Wikipedia)

Wah Sing Chow's four oldest children, all born in Canada, were Edward, Virginia, Edmund, and Viola. They went to Chinese school while in China. Another daughter, Effie, was born in China. The other three children, two sons, Edwin and Edgson, and a daughter, Janie, were born after the family returned to Canada.

Wah Sing returned to BC in 1936 when the racial antagonism was abating somewhat, temporarily leaving his family in China, but they were in danger of being caught up in the Japanese invasion of South China.²⁷ Helen followed her husband back to Canada in 1937 followed by the five children and their nanny, who arrived back in 1938.

²⁷ Virginia wrote: “We actually left China fleeing the Japanese advancement towards Southern China. When our ship docked [at] Shanghai to refuel, all passengers had to line up on deck for the Japanese officers who came on board to inspect them. Shanghai was already taken by Japan.”

Virginia remembers that at first, the children didn't speak much English, so school was a struggle.

Despite all this trouble, Wah Sing Chow remained a patriotic Canadian, organizing the Chinese community's participation in the celebrations of King George VI's coronation and in the Canadian National Exhibition in Toronto in 1937. Virginia recounted:

The war years kept the couple extremely busy as they mobilized the Chinese communities to raise funds for "China relief" programs. Wah Sing volunteered for air raid patrol and sold war savings bonds.

Eventually, after World War II, Tom Henry writes that a number of Duncan's prominent businessmen and other leaders including Cyril Davie, a former MLA and Speaker of the House, apologized to Chow for their pre-war racist remarks.

Wah Sing Chow would have been 41 years old when the diatomaceous earth mine started on Gabriola just before the war. He lived the rest of his life in Duncan but died in California on May 2, 1962, while visiting one of his daughters. Many of Suey Sing Chow's descendants still live in Duncan and elsewhere in BC. The grocery store is no longer there, but Wai Dai's son, Gordon Chow, continues his family's entrepreneurial adventures in Duncan with a skateboard business (*Area 51*) on Station Street and on-line.

Remaining mysteries

So, we can piece together much of the history of this Gabriola enterprise by Chinese and Scottish immigrant BC families, but a few mysteries remain.

We can only speculate on who the Dutchman might have been.

We know nothing about the connections among the several shareholders of *West Coast Silica Products* and, because no Annual Reports were filed, we don't even know if the company made any money. We also know nothing about the diatomite business that Chow was involved in previously in Vancouver.

It is strange that memories differ as to how long the operation lasted. Old timers on Gabriola speak of the operation as being only before the war; yet, we know something was going on in 1941, and Edward Chow thought it went on all through the war years.

It is odd that there is such a discrepancy between various accounts of who bought the diatomite, and for what purpose. Is it possible that Rowan's side of the business was for cosmetics, and Chow's for explosives? Or maybe that the cosmetics story was a cover for a war-effort? Or that one account is simply incorrect? Or that both are correct, but memories are lopsided?

I think it most likely that the diatomite was shipped to *Gim Lee Yuen* in Vancouver, and it was that company rather than *West Coast Silica Products* that maintained contact with the end customers, so neither family knew who they were for sure. Certainly, although newspaper accounts suggested several uses for diatomaceous earth, they didn't name any customers.

And perhaps Chow and Rowan weren't the first to mine the diatomite. We know that the Snunéymux^w traded dog hair for goat hair with the Sliammon, who live just north of Powell River,²⁸ and that diatomite was used to absorb the natural oils in the goat hair. So it's possible the Snunéymux^w knew all about the deposits on Gabriola, and that they too had a use for them. ♦

²⁸ *SHALE* 3, p.26.