

# B.C. ROCKHOUNDER MAGAZINE

Issue# 1 - 2021



# EDITOR'S NOTE

Well here we are into the first issue for 2021, with vaccines on the way and potential light at the end of tunnel visible, at least as far as our ability to gather and get after the group activities we enjoy. I am sure that everyone is as excited as I am to get back out there and into the shops, field trips and club get togethers.

With that said, I hope you enjoy the vicarious adventures you find in this edition, and like so many times before, I would like to once again encourage all our members to consider submitting a story, article, pictures or other content to this publication. It is intended to be for the membership and by the membership, and while I am honoured to continue to do my best to keep things rolling, I think we all need to hear more than my cave man chatter!



Thankfully (as you will see) the majority of this edition is carried by a stupendous submission by Georgina Selinger, a more well written and well educated rock hound than I. Please send in your submissions to one of the emails below and join in the fun! Please... save us from more cave man chatter!

## FACEBOOK

**ROCKHOUNDER@SHAW.CA**

**ROCKHOUNDER@BCLAPIDARY.COM**

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Greg Carson, Editor

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| <b>CLUB NAME</b>                    | <b>CONTACT</b>           | <b>EMAIL</b>                          |
|-------------------------------------|--------------------------|---------------------------------------|
| 1120 ROCK CLUB                      | President                | president@kelowna.rocks               |
| ABBOTSFORD ROCK & GEM CLUB          | Michelle Floris          | marsharargentino@gmail.com            |
| ALBERNI VALLEY ROCK & GEM CLUB      | Les Bontron              | lbontron@telus.net                    |
| COURTENAY GEM & MINERAL CLUB        | Russell Ball             | dj_fossil@hotmail.com                 |
| COWICHAN VALLEY ROCKHOUND CLUB      | Jennifer Proctor         | jeproctor@shaw.ca                     |
| CREATIVE JEWELLERS GUILD OF BC      | Silvia McIntosh          | info@creativejewellersguild.com       |
| CRESTON VALLEY PROSPECTORS          | Glen Groves              | kggroves@hotmail.com                  |
| DELTA ROCKHOUNDS GEM & MINERAL CLUB | Stephen King             | stgking@icloud.com                    |
| FRASER VALLEY ROCK & GEM CLUB       | Carol Alexander          | cjapaints@hotmail.com                 |
| GOLDEN ROCK & FOSSIL CLUB           | Info                     | gldrockandfossilclub@gmail.com        |
| HASTINGS CENTRE ROCKHOUNDS CLUB     | Paul Pinsker             | pinsker@novuscom.net                  |
| HIGH COUNTRY ROCKHOUND CLUB         | Jan Kohar<br>Gord Lavery | gkohar@telus.net<br>glavery@telus.net |
| INTERLAKES ROCKHOUNDERS             | Elsie Babcock            | greem@shaw.ca                         |
| KOKANEE ROCK CLUB                   | Udo Matern               | xldigger@shaw.ca                      |
| LAKES DISTRICT ROCK & GEM CLUB      | Helen Brown              | rkbrown49@hotmail.com                 |

| <b>CLUB NAME</b>                      | <b>CONTACT</b>    | <b>EMAIL</b>                |
|---------------------------------------|-------------------|-----------------------------|
| MAPLE RIDGE LAPIDARY CLUB             | Anne Gapper       | annegapper1@gmail.com       |
| PARKSVILLE & DISTRICT ROCK & GEM CLUB | Dawn Ryan         | dawnspinner@gmail.com       |
| PENTICTON GEOLOGY & LAPIDARY CLUB     | Jerome Albo       | arnoldalbo@gmail.com        |
| PORT MOODY ROCK & GEM CLUB            | Darrell Akerstrom | djakerst@sfu.ca             |
| PRINCETON ROCK & FOSSIL CLUB          | Maureen Parsley   | meparsley@gmail.com         |
| QUESNEL TUMBLING RIVERS ROCK CLUB     | Jackie Kimmie     | quesnelrockhounds@gmail.com |
| RAFT RIVER ROCKHOUNDS                 | Kate Cullinane    | zucciniloaf@gmail.com       |
| RICHMOND GEM & MINERAL CLUB           | Darlene Howe      | darhowe@shaw.ca             |
| RIPPLE ROCK GEM & MINERAL CLUB        | Steve Cooley      | scooley@uniserve.com        |
| SELKIRK ROCK & MINERAL CLUB           | Frank Fowler      | ffowler@telus.net           |
| SHUSWAP ROCK CLUB                     | Florence Jervis   | shuswaprockclub@gmail.com   |
| SURREY ROCKHOUND CLUB                 | Gord Venn         | gordvenn@shaw.ca            |
| THOMPSON VALLEY ROCK CLUB             | Edna Park         | ednapark@telus.net          |
| VERNON LAPIDARY & MINERAL CLUB        | Tony Heisterkamp  | fishatwork@telus.net        |
| VICTORIA LAPIDARY & MINERAL SOCIETY   | President         | president@vlms.ca           |

# An 8600 km Trip to Tuktoyaktuk, NWT, July 2019

*Submitted by Georgina Selinger, Abbotsford Rock & Gem Club*

We headed out on Highway 1 through the Fraser Canyon and North on Highway 97. The 1st night we stayed in an old gravel pit outside Williams Lake, then on to Prince George, Highway 16, through Burns Lake and Smithers to Moricetown. The current village of Moricetown was built during the early 1900s but has been a fishing place for First Nations on the Bulkley River Canyon for thousands of years. It is worth the time to stop and watch them fish off the rocks down in the rushing water. They were catching 6 – 8 salmon an hour the day we stopped, which I thought impressive. However, in the 1980s they were catching 80 an hour. There is a museum and lovely campsite on the hill above the canyon, a worthwhile and relaxing stop.



At Kitwanga we headed directly north on the Stewart Cassiar Highway 37, through Dease Lake. We stayed at Sawmill Creek Campsite, a lovely free campsite on the lake. Jade City is just under 2 hours from Dease Lake. The size of the saws and equipment is impressive, as are the boulders. I have to admit though, I fell in love with the 'Star Marble' carvings they had in their shop. They said it was crystalized marble from the Yukon. This region is said

to be home to 92% of the world's nephrite jade. The Bunce family from the reality show, Jade Fever, has been hard rock and glacial deposit placer mining in the Cassiar Mountains and Turnagain River basin for about 35 years.



Jade Slab close up from the previous image

## Jade boulder saw



Another half hour further is gorgeous Boya Lake. The bottom of the lake is composed of marl, a mixture of glacial silt and shell fragments. Marl is a white calcium carbonate clay that forms in the water and then settles, often unevenly, onto the lake bottom. It forms when enough carbonate from dissolving limestone reacts with calcium in the water. The crystal clear aqua-marine colour is caused by light reflecting off the marl on the bottom.

If you travel to the Yukon camping, their territorial campsites are big, firewood is provided and in 2019 the cost was only \$12 a night. If you are over 65 and a Yukon resident, it was free. Although the fees are going up in 2022 to \$20 a night with seniors paying 50%, it is still better all-round than our provincial sites.

There were two sternwheelers named SS Klondike. The 1st one ran freight between Whitehorse and Dawson City from 1929 to 1936. The 2nd one, an almost exact replica of the first ran from 1937 to 1950. It is now a national historic site which you can wander through, in Whitehorse YT. Also in Whitehorse is the Yukon Beringa Interpretive Centre with wonderful exhibits including Beringa, Ice Age animals and First Peoples. The art was created for the exhibits by a variety of local and non-local artists. It recreates a time when vast glaciers covered most of North America, locking up much of the world's water as ice. During these glacial periods, global sea levels dropped as much as 100 – 150 metres revealing the floor of the Bearing Sea and creating a connection of land between Alaska and Siberia. This land bridge was part of the area we now call Beringa, an area stretching from the Yukon to Siberia. Ice Age Beringa was home to a mix of strange and familiar animals.



The SS Klondike



During the cold glacial times, woolly mammoth, steppe bison and scimitar cat roamed the treeless plains alongside caribou, muskox and grizzly bear.

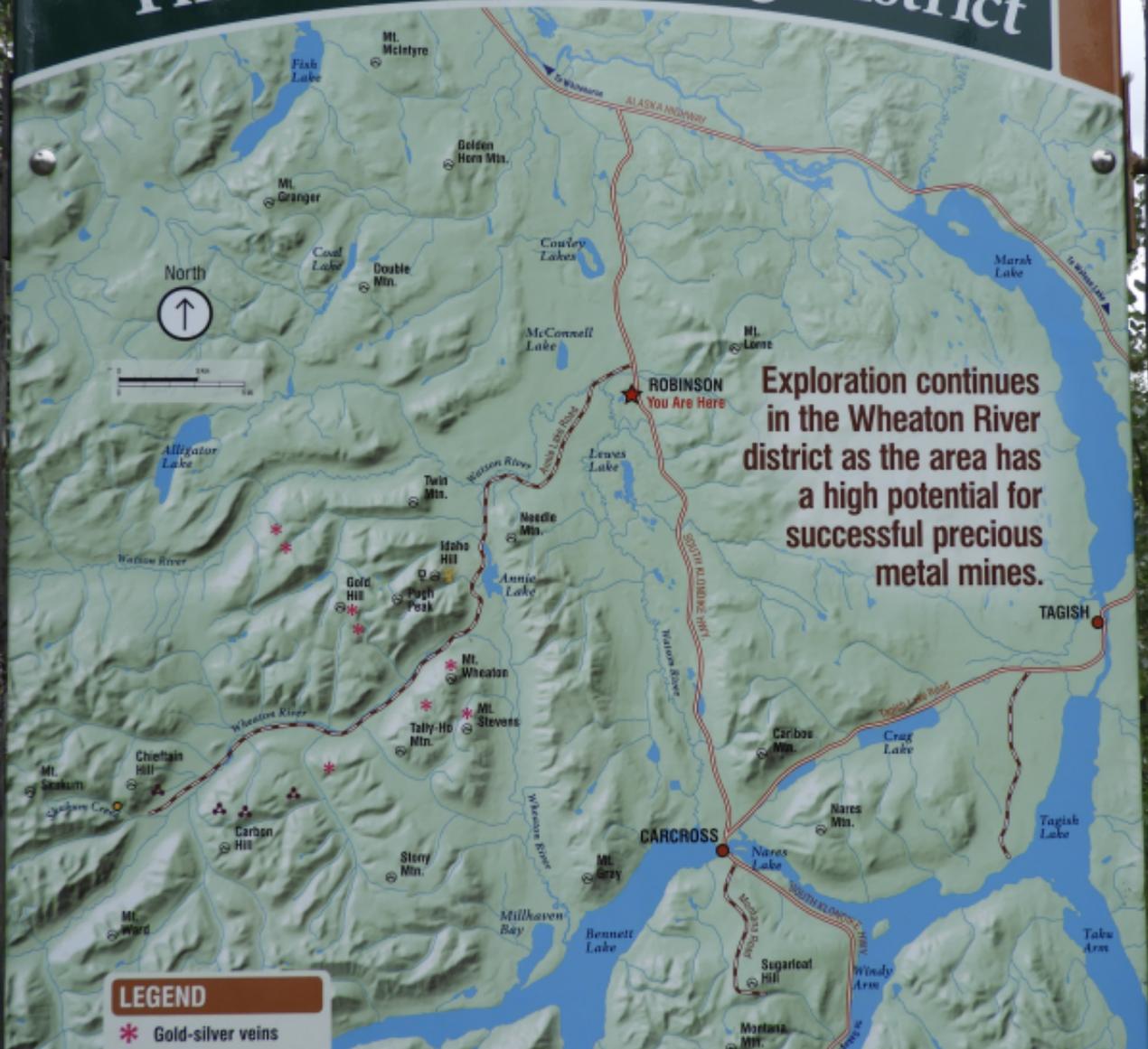
Carcross is a small village on the Klondike Highway an hour south of Whitehorse, and just outside of town, home to the 'smallest desert' in the world. While it is referred to as a desert, it is actually a series of northern sand dunes covering approximately 1 square mile, or 640 acres. (Imperial numbers I can visualize rather than metric). The area's climate is too humid to be considered a true desert. The sand was formed during the last glacial period when large glacial lakes formed and deposited silt. When the lake dried, the dunes we left behind (see image on previous page).

On our way back to Whitehorse we stopped at the Robinson Roadhouse, in what is known as the Wheaton Mining District. The Wheaton and Watson district miners came to Robinson siding to pick up freight and mail, and ship out their ore. It was a natural gathering place and, at the peak of the 1906 gold rush, William Grainger and Herman Vance claimed 160 acres on each side of the railway as a townsite. Charles McConnell became the postmaster in 1909 and settled there to establish a ranch. Many of the miners left the region during the First World War and the post office closed in 1915. McConnell stayed on at Robinson where he managed the roadhouse, operated a saw mill and logging operation and mined for coal in the district.



**The Robinson Roadhouse**

# The Wheaton Mining District



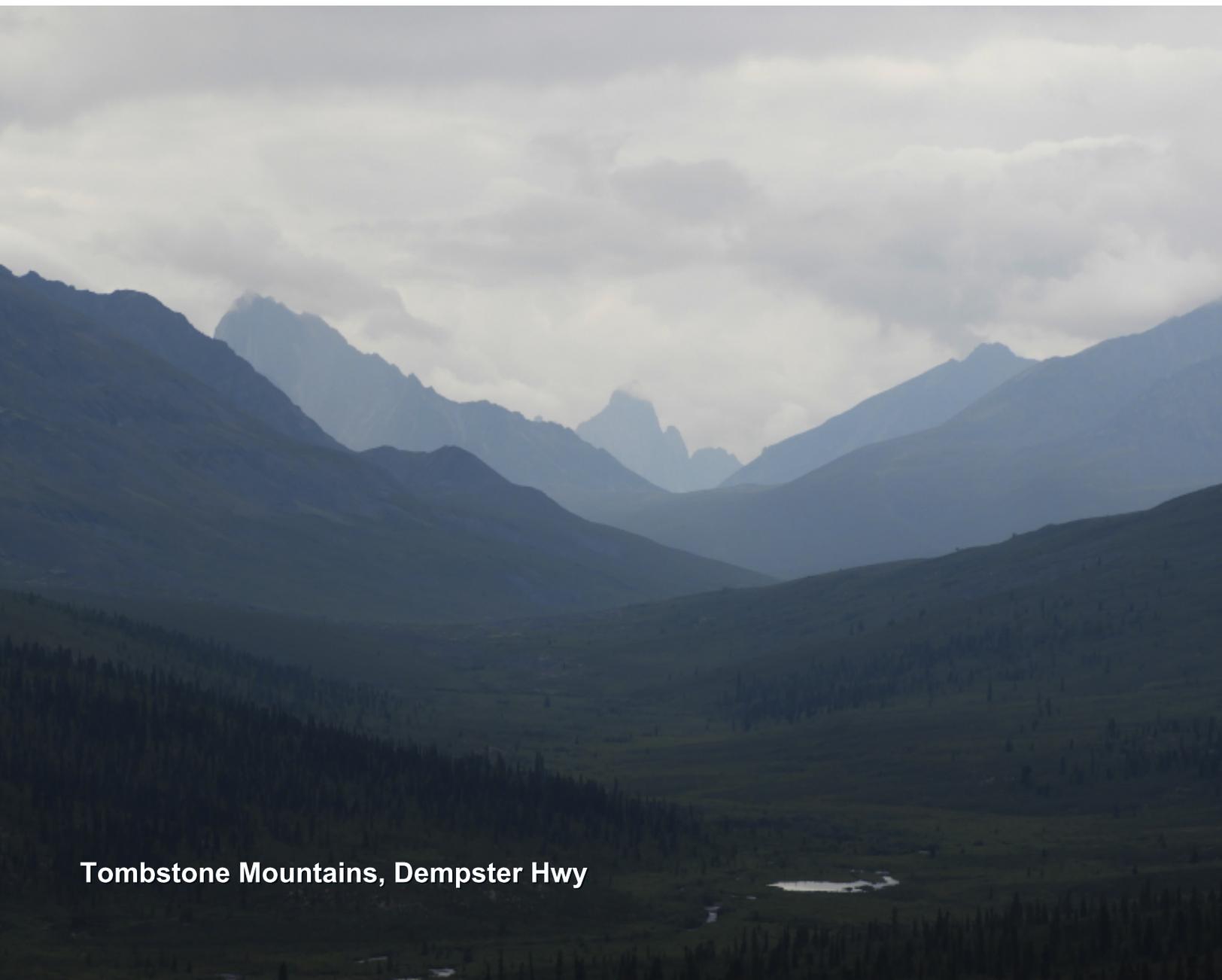
Prospectors located silver in the Wheaton River district in 1893 and shipped samples to Juneau, Alaska where they caused some excitement. There were no maps to the strike and none of the prospectors returned so their "lost mine" became legendary. In 1898, W. P. Schnabel located the early workings on Idaho Hill where he and his partners started a mine. They built an aerial tramway and shipped out ten tons of silver ore in 1905. Overly-optimistic reports from miners on Montana Mountain, south of Carcross, attracted more prospectors to the area in 1906. The discovery of free gold (not mixed with other minerals) led to a staking rush on Gold Hill. More than 700 claims were staked and a few rich pockets of ore were found. The Wheaton mining district is rich in other minerals as well. The price of antimony, used in batteries and solder, was very high during World War I.

White Pass & Yukon Route offered relatively low shipment rates from Robinson to the port at Skagway to encourage development of the region. Silver and stibnite (the natural sulfide of antimony) were mined on Carbon Hill and Chieftain Hill but the deposits were small and too expensive to mine after the war. Mineral exploration of the region continued with little success until 1981 when the price of gold increased and improved exploration techniques included geochemical prospecting. An underground mine north of Mount

Skukum was developed and produced 78,000 ounces of gold between 1986 and 1988. (Credit to:sightsandsights.ca)

Paul and Liz Wray have their home and a small shop (The Rock Shop) on the Klondike Highway, just out of Whitehorse. I bought some specimens from Paul and he gave us a map of local mine dumps in the Yukon Copper Belt, so we could look for pyrite, calcite, bornite, massive epidote, wollastonite and chalcopyrite. Check out You Tube – “Yukon Rockhounding – Cool Rocks are Everywhere!”

North to Dawson City, a small town which was a base during the 19th century Klondike Gold Rush, with several preserved frontier style buildings and boardwalks. We stopped in at the Visitor Centre to check on road conditions on the Dempster Highway to Inuvik. As they grade the gravel road 24/7 in the long summer days, we didn't expect any problems as we are used to gravel back country roads. The Dempster Highway starts 40 kms east of Dawson City and travels 736 kms to Inuvik, NWT. Construction began on the highway in January 1959 but high costs and bickering between federal and Yukon governments kept progress at a snail's pace until 1961 when it stopped all together, with only 115 kms of



**Tombstone Mountains, Dempster Hwy**

roadbed built.

Nothing happened until 1968 when the Americans discovered huge reserves of oil and gas at Prudhoe Bay, Alaska. The Canadian government was afraid that the US would develop the massive oil field with no consultation, consideration or benefits to its next door neighbour. However, the seasonal weather extremes that regularly dropped below the limits of the mercury thermometer in the winter, and total darkness in December and January, had to be dealt with. The highway is unique in design and construction.

Another challenge was permafrost, a moisture-laden subsoil rock-hard when frozen and mush when disturbed. So the highway needed to be built on top of a gravel berm as much as 7 feet high in order to insulate the permafrost in the soil underneath. The highway was officially opened on August 18th, 1979, touted as a two lane, gravel surfaced, all weather highway. The Third Royal Canadian Armed Forces Engineer Regiment from Chilliwack BC built the two major bridges over the Ogilvie and Eagle Rivers. A creek in the area was named Engineer Creek for the Canadian Army Engineers. Ferries still handle traffic over the Peel River at Fort McPherson and over the Mackenzie River at Arctic Red River.



**Sapper Hill - Dolomite Cliffs**

The dolomite limestone cliffs of Sapper Hill overlook Engineer Creek and campground. Sapper is the nickname for army engineers and the hill is named in honour of the Third Royal Canadian Army Engineers who constructed the Ogilvie and Eagle River Bridges. A day hike takes you to the cliffs where you can often see peregrine falcons and golden eagles. As we travelled north, many of the roads doubled as air strips, with signs on the side warning travellers not to stop or park.

Arriving at the Arctic Circle we were just 60 kms south of the Northwest Territories. The gravel roads were really good so far and warrant the name 'highway'. Shortly after driving into the NWT, we saw a grizzly bear and two herds of barren ground caribou. A huge benefit on this road is that it is wide with basically no traffic, so you can just stop where you are and take pictures! We saw lots of black bear, marmot, a bob cat or lynx and fox on the trip as well.





At 59 kms south of Inuvik, where we planned to spend the night, we heard a 'pop' and realized we had blown a tire. As Ray was jacking up the truck to change it, I noticed the two tires on the trailer on that side were touching. A spring hanger had broken and luckily the tires on the trailer didn't blow out. However, it meant we couldn't pull it into town. Eventually a flatbed truck picked up the trailer and off we went. Our tow driver got permission for us to stay in the shop's industrial site, saving us at least \$100 in camping fees. The portable welder cost \$150, a spare for the truck cost \$ 370, and BCAA covered the tow. Not so bad I guess, since a case of 24 cold beer in Inuvik costs \$74, uncooled was \$62. Inuvik has 56 days of 24 hour daylight from late June into August and 30 days of total darkness, mostly in December.



We did a day trip of 280 kms return, to Tuktoyaktuk on the Inuvik Tuktoyaktuk Highway (Northwest Territories Highway 10). All gravel again, having opened to the public in November, 2017. This road was much rougher than the Dempster Highway. Good thing we couldn't take the trailer! The road is the first 'all-weather road to Canada's Arctic Coast'. The idea for the highway had been considered for decades; however, final approval was not until 2013,

with construction beginning in 2014. Before the construction of the all-weather highway, the Tuktoyaktuk Winter Road, an ice road, connected Inuvik with Tuktoyaktuk during the winter months across the frozen Mackenzie River delta channels and the frozen Arctic Ocean, which was up to 1,000 m (3,300 ft) deep underneath the highway. The concept of an all-season highway from Inuvik to Tuktoyaktuk was first raised in the 1960s. In 1974, Public Works Canada completed a survey and technical study of a 140 km (87 mi) route between the towns. Construction of the highway began in January 2014, and was completed in two directions, with one crew working from the Inuvik side and a second working from the Tuktoyaktuk side. Permafrost presented a challenge for construction of the highway, with the surface melting, leaving much of the construction area under water. The first three years of the project saw crews working 24 hours per day, in the extreme cold and high winds of the arctic winter. By April 2016 the road was fully connected, but not open to traffic. The highway opened on November 15, 2017 and includes eight bridges and 359 culverts. With the completion of the highway, the original Tuktoyaktuk Winter Road was permanently closed at the end of the 2017 winter season.

Driving into Tuk you see what looks like hills off in the distance. They are actually permafrost, ice domes called Pingos. There are as many as 1350 pingos along the coastline

around Tuk. The largest, Ibyuk Pingo, is 16 stories high. For centuries pingos have been used by Inuvialuit for navigation and as lookout points for hunting. Visitors to Tuk can't miss these imposing hills, and eight of these massive hills form the Pingo Canadian Landmark, on the shore of the Beaufort Sea. Community tours may include a chilly visit to the interior of a pingo, where alternating layers of ice and soil are clearly visible, and where the ice is hollowed out into storage lockers - a place for community members to store frozen game through the summer. Pingos originate in drained lakes, where groundwater seeps below the frozen surface, and forces it upward. The largest pingo is growing at the rate of about two centimeters a year.



The vastness of the land, sky and clouds is beautiful and awe inspiring, as was a rain storm we drove through in the Richardson Mountains in the Yukon. The wind was blowing the deluge of rain in swirls like a blizzard making visibility near zero. Then the road became slime and we were scooting around on it from side to side, but terrified to stop. We came up on a couple of women in a camperized van who had stopped and every time she tried to move ahead, the back end slid closer to the ditch. Thankfully we were a few yards from a campsite and once she was able to inch forward, we both went in for the night. It took 4 scrubblings to get all the mud off our trailer and truck.

Luckily the rain stopped and the wind kept blowing, so we were able to drive out the next morning. On the drive back south we stopped to look at huge conglomerate boulders

located in what geologists call the Whitehorse Trough. This area consists of 200-to 170-million-year-old sedimentary and volcanic rocks that formed in a deep-sea basin and adjacent chain of volcanic islands. The rounded conglomerate boulders came from the now-eroded volcanic islands laying to the west, and were deposited as gravelly rivers and fan-deltas that developed toward the east. Similar conglomerate deposits extend from south of Atlin, British Columbia to north of Carmacks, indicating that the Whitehorse Trough basin was at least 600 km long. Fossils in the rocks show that this basin was covered by sea water until about 170 million years ago.



Another beautiful free campsite was at Morchuea Lake, south of Dease Lake. South west of the lake is volcanic Mount Edziza. Mount Edziza Provincial Park, established in 1972, encompasses over 230,000 hectares of the Tahltan Highlands in northwestern British Columbia. This remote park showcases a spectacular volcanic landscape that includes lava flows, basalt plateaus, cinder fields and cinder cones. Mount Edziza whose peak reaches 2,787 metres, is a composite volcano consisting of thin basalt flows and a central dome of andesite, dacite and rhyolite with a glaciated crater nearly 2,500 metres in diameter. The eruption that built the mountain and its central cone began four million years ago. Successive lava flows raised the dome above the encircling plateau and spread lava over an area 65 kilometres by 25 kilometres. The last basalt flow occurred only 10,000 years ago, at which time it solidified in place and plugged the central vent. In the years since Mount

Edziza became dormant, numerous small eruptions have taken place around it, creating more than 30 cinder cones. Perfectly symmetrical Eve Cone rises 150 metres above the plateau, as do aptly named Coffee and Cocoa craters. It is estimated that these cones were formed no more than 1,300 years ago and are basically unaltered by erosion and devoid of vegetation. There is no vehicle access to Mount Edziza Provincial Park, and there are only a very few basic facilities. This isolated wilderness area, which can only be accessed via trails or a float plane, offers wilderness camping, hiking, fishing, hunting, nature study, and wildlife viewing.



**Morchuea Lake, with Mt Edziza in background**

Continuing home we drove to Terrace for a family visit and a trip to the Nisga'a Lava Beds and out to the Pacific coast to the village of Gingolx. Nisga'a Memorial Lava Bed Park, the first provincial park managed jointly by a First Nation and British Columbia, offers spectacular natural features and a dramatic introduction to Nisga'a culture. The Nisga'a alkali basalt flow in the Nass Valley is one of the youngest and most accessible volcanic features in the province. As the lava spilled from the crater an estimated 250 years ago, it followed a creek bed downslope to Lava Lake and down the Tseax Valley to the Nass



## Lava Beds

River. The lava travelled at different speeds depending on the steepness of the slope.

Some types of lava flow and interesting features include:

Tree Cast - Formed by burned out tree trunks leaving holes in the lava.

Lava Tube - Formed as the top layer cooled and hardened. The crust insulated the lava flowing inside which eventually flowed out, leaving the crust as the roof and walls of the tube.

Pahoehoe - Lava that often has a smooth surface or is ropey in form.

AA - Rough and jagged lava.

Blocky - Large chunks of lava.

This region also contains cinder cones, tree moulds, lava tubes and caves, spatter cones, and Lava Lake. Some lava flow features are very delicate and need protection. Lichens cover the majority of lava flow and a single footprint can set back hundreds of years of growth.



**Pool in the Lava Beds**

I also found it interesting how the highway was numbered 113. The number 113 is historically significant to the Nisga'a. In 1887, a Nisga'a chief travelled to Victoria to meet with provincial government representatives, demanding self-government. That did not come until 113 years later, in 2000, when the Nisga'a Final Agreement was passed in Parliament.

I hope you enjoy this read and may be inspired to travel to the North. It was truly an amazing trip, some of it we had done years ago. If you have time, go into Skagway, maybe take a trip on the White Pass railroad through the Klondike area or further north into the Alaska panhandle.

Happy trails and rockhounding!

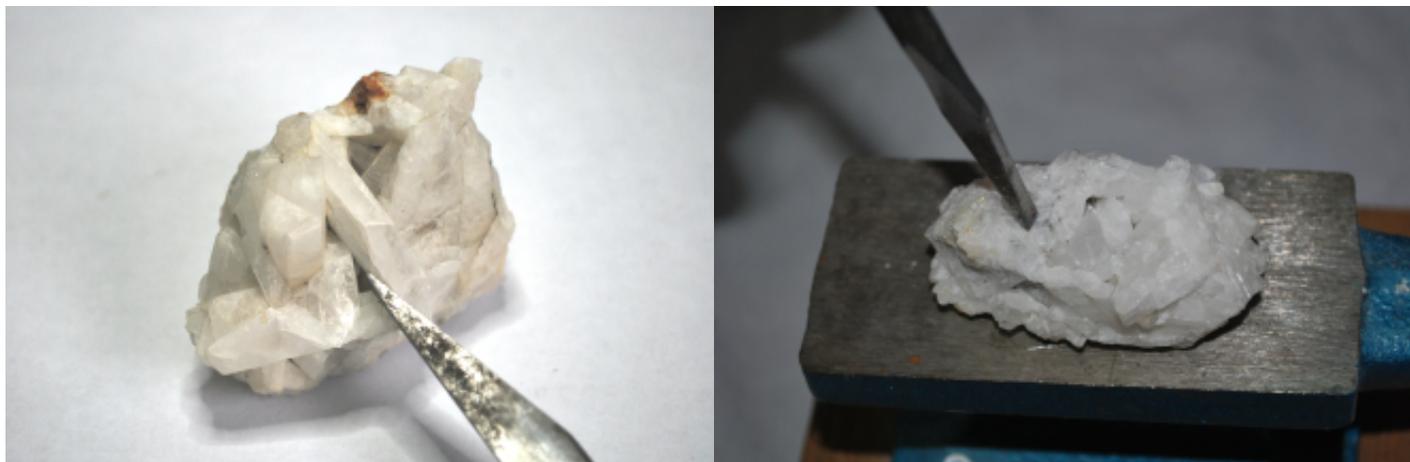
# Smashing Quartz Crystals on the Mini Anvil

by Greg Carson

Well, they left me alone with a hammer, chisel and some broken up quartz plates that I dug out of Four Brothers with Trevor Christie... So I guess it was inevitable that I would end up smashing them - It's my schtick after all. I had these two pieces of plate left after completing clean up on all my other materials from the dig, and stared at them for a long time before deciding to try to see if I could extract anything useful out of them. They had been banged out of the host rock, banged around in my vehicle on the way home and then soaked extensively in muriatic acid to get rid of most of the iron staining. I considered the odds against my actually succeeding after such thorough abuse, but I also thought, I bet someone else has something similar in their stash and wondered the same thing, but couldn't bring themselves to smash. I will smash 'em for you.



I started each with a careful examination to try to pick what material I wanted to try to save and where to place the chisel. For this I used my 3lb sledge (lightly), small chisel and my mini-anvil. The anvil is always my go to when smashing samples or crushing rock for pigment.



Then I gave each one a single tap with the little sledge - I figured one solid hit would create less fracturing than multiple hits, even if they were lighter. Following the first hit, I inspected the new pieces and chose where to land the second strike. As you will see on the following page, the results were pretty much what I had expected, with most of the pieces shattering into a lot of little pieces - surprisingly, not many were sharp.



Well, at least none of the bits and pieces will go to waste! They will become the basis for my next tumbler batch, adding a little free grit and cushion to the next set of jaspers I put through the beast.

# Shining Stones without Power Equipment - Options

by Greg Carson

I see a lot of chatter online (and hear some directly when people see my polished cabs) from folks wondering how to get a shine or polish on a stone without running lapidary equipment or using any other power tools. The responses always run from the heaviest varathanes down to nail polish, from bees wax to table polish, as well as using wet dry sandpaper by hand (or other abrasives). So I thought I would explore a couple of these for those who haven't yet tried them, and then share the results, pass or fail, with the readers here. But... let me just say that the best hands down way to get a beautiful piece is to cut and polish it with proper lapidary equipment. It is faster and almost always results in a much better finished product.

Method 1 - Mod Podge. It is very inexpensive, available at any hobby store, and non-toxic. The only downside is that if applied heavily, it can make the item feel a bit tacky. This can be fixed with acrylic spray, but I didn't bother as I wasn't going to regularly be handling the pieces.

I found a small piece of Jasper that was quite smooth for the first example, and a larger stone (uncertain ID) with a rougher surface to see how the base material would impact the results. I had to play with the lighting in the images a fair bit to try to show the differences clearly.

I watered the Mod Podge down roughly 3-1 with regular tap water just to thin it up a little bit and then applied it with a small paint brush I had around. I was surprised by how much the rougher surface on the stone on the right generated bubbles! These would turn out to be a fun little surprise after drying.





Above you see the jasper piece turned out quite well - lots of shine and colour, depending on the angle of the light. This was actually good for me as I love collecting tiny pieces of red jasper that could only be polished this way. Below you can see that the rough grain of the stone took the shine but without losing the texture. If you look closely around the edge of where I put the Mod Podge, you can still see the bubble line! These actually hardened like this, although no one would notice unless I pointed it out, but this was good to know. If I ever do this to another rough stone, I will not dilute the Mod Podge first - I suspect the water allowed more bubbling than the full strength thicker product would have. I placed both of these pieces on a window sill that has direct light and that I often fail to dust - I will revisit in three months and report in the next issue if there is any decay or discolouration to the finish.



## Method Two - Wet/Dry Sandpaper (Bonus - filling holes with Cyanoacrylate)

This time I took two methods and combined them - this first was to use wet/dry sandpaper to take a polish all the way to 3000 grit, which is the top standard grit wheel on a Genie or Titan machine, and also to select a stone that was flawed with a hole and back fill with cyanoacrylate, better known by the common trade names of Crazyglue or Superglue.

I had a small piece of jasper that I had started to turn into an earring using a Genie, when I found a hollow portion that spread fairly deep into the piece and that I felt would likely fracture on the wheels of the machine. I set it aside with this article in mind, so here we are. Full Disclosure: The piece is quite small and I had to play with three different lights including the camera flash to try to show the parts I wanted, so you will see some wander in the colouration. It is the same piece of stone, I promise you.



Here you can see the line across the bottom of the stone. It went nearly a third of the way through and I had to use a sharpened piece of wood to stir the superglue into the crevasse and then add a little more glue.



The second image is after the final glue application. I knew I would be sanding all the excess off anyway, and wanted to give it enough to settle in as much as possible so I overfilled and left for an hour to set up. Even doing that, there still ended up being a little divot on the one side. (See next image on next page)

I then took the stone and using nothing but some water drops on the stone and sandpaper, and the flat edge of my desk, began working it down through the grits. Now I have done this before so had a lot of different grit wet/dry paper on hand - I like to use a lot of different grits as I find that it is much faster and creates a better overall product (and is easier on the hands) than jumping large numbers. You could probably skip some of the steps I took and still have success.

I started with 400 grit as I knew the stone was already around that level from my work on the machine before I discovered the hole. I then progressed through 600, 800, 1000, 1500, 2000, 2500 and finally 3000 grit. All in all, it only took about 30 minutes and small pieces of each grit



sandpaper, while dipping the stone in a small glass of water - staging through the grits really does help speed up the process.

The top image above is as the piece looked with dried glue and no sanding, with the little divot showing. Directly above you can see the final face on the left, and on the right I turned the piece on edge to display the other side of the hole I backfilled, and so you can see that the little divot collected a bit of powdered rock. I also worked that second side around the repair, but full disclosure, I didn't bother to do the whole length of the piece on that side.

The camera doesn't do the final shine justice. The main face, including the repair line, shines just as well as if I had polished it on a professional machine, and the repair line isn't too intrusive.

I hope this short article helped encourage you to try different things - keep all those little tiny specimens and hit them with different treatments, experiment, play! I will be back next issue with the results of the Mod Podge aging, as well as presenting an article about using rotary tools and the different attachments to shape, polish and otherwise abuse the materials I have gathered.

Got any ideas about what you might want to see tried here? Maybe give it a go yourself, document it and share your adventure with us!



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