

# LAPHOUND NEWS

VICTORIA LAPIDARY & MINERAL SOCIETY

PO Box 48164 Uptown PO  
Victoria, BC V8Z 3L0



**Volume 63-1 :: Feb 2020**

**Website :: [www.vlms.ca](http://www.vlms.ca)**

## VLMS Board

<b>President :</b>	Doug MacLeod	<a href="mailto:vlms@vlms.ca">vlms@vlms.ca</a> (250-888-8440)
<b>Vice-President :</b>	Mel Fenton	<a href="mailto:gotstonedjewelry@gmail.com">gotstonedjewelry@gmail.com</a> (250-589-1245)
<b>Registrar:</b>	Becci Simmons	<a href="mailto:membership@vlms.ca">membership@vlms.ca</a> (250-476-2676)
<b>Past-President:</b>	Allana Shilito	<a href="mailto:mrz_p@hotmail.com">mrz_p@hotmail.com</a> (250-857-2153)
<b>Secretary:</b>	Sarah Hamilton	<a href="mailto:secretary@vlms.ca">secretary@vlms.ca</a> (250-974-7272)
<b>Treasurer:</b>	Dave Jackson	<a href="mailto:treasurer@vlms.ca">treasurer@vlms.ca</a> (778-676-1150)
<b>At Large:</b>	Debbie Frank	<a href="mailto:gemfinders@telus.net">gemfinders@telus.net</a> (250-360-6434)
	Rae DeFrane	<a href="mailto:constellocean@gmail.com">constellocean@gmail.com</a> (250-589-9723)
	Brian McMillan	<a href="mailto:soniamac@telus.net">soniamac@telus.net</a> (250-385-2700)
	John Anderson	<a href="mailto:johnsusannah@telus.net">johnsusannah@telus.net</a> (250-812-9303)

## VLMS Committees

<b>Programs:</b>	Karol Jorgensen	<a href="mailto:kmarcj@gmail.com">kmarcj@gmail.com</a> (403-559-6165)
	Arlene Modderman	<a href="mailto:tothetoo@shaw.ca">tothetoo@shaw.ca</a> (250-656-5136)
<b>Librarian:</b>	Kathryn Hawkins	<a href="mailto:librarian@vlms.ca">librarian@vlms.ca</a> (250-652-4940)
<b>Show Chair:</b>	Alanna Shilito	<a href="mailto:showcommittee@vlms.ca">showcommittee@vlms.ca</a> (250-857-2153)
<b>Field Trips:</b>	Sean Maier	<a href="mailto:fieldtrips@vlms.ca">fieldtrips@vlms.ca</a> (250-382-6119)
<b>Webmaster:</b>	Becci Simmons	<a href="mailto:web@vlms.ca">web@vlms.ca</a> (250-478-2676)
<b>Workshop:</b>	Brian McMillan	<a href="mailto:soniamac@telus.net">soniamac@telus.net</a> (250-385-2700)
	Doug McLeod	<a href="mailto:lapidaryworkshop@vlms.ca">lapidaryworkshop@vlms.ca</a> (250-888-8440)
<b>Editor:</b>	Gary Brooke	<a href="mailto:gab.bns@gmail.com">gab.bns@gmail.com</a> (250-475-3440)
<b>Social:</b>	Susannah Andersen	<a href="mailto:johnsusannah@telus.net">johnsusannah@telus.net</a> (250-812-9303)
	Barb MacKenzie	<a href="mailto:barb.mackenzie@shaw.ca">barb.mackenzie@shaw.ca</a> (250-727-0954)
<b>Events:</b>	Nick Aktarian	<a href="mailto:xresos@yahoo.com">xresos@yahoo.com</a> (250-589-1434)
<b>Island Zone:</b>	Dave Jackson	<a href="mailto:dehavillanddave@yahoo.ca">dehavillanddave@yahoo.ca</a> (778-676-1150)
	Sarah Hamilton	<a href="mailto:sarahstarfish@gmail.com">sarahstarfish@gmail.com</a> (250-974-7272)
	Doug MacLeod	<a href="mailto:wesmac12@gmail.com">wesmac12@gmail.com</a> (250-888-8440)



# The Newsroom

## Announcements

### March Rock and Gem Show

A reminder to all club members that this annual Rock and Gem show is scheduled for March 20-22, 2020 at the Da Vinci Center, 195 Bay Street, Victoria, BC (in Vic West).

Victoria Lapidary & Mineral Society presents Victoria's original **A Family Favorite Event**

# ROCK & GEM SHOW 2020



**WHEN**  
Fri. March 20<sup>th</sup>, 12:30 pm to 8:30 pm  
Sat. March 21<sup>st</sup>, 10:00 am to 6:00 pm  
Sun. March 22<sup>nd</sup>, 9:30 am to 4:00 pm

**WHERE**  
Leonardo Da Vinci Centre  
195 Bay Street, Victoria, BC  
(at Wilson St.)

**Vendors & Demonstrators**  
All Canadian Vendors and Demonstrators ~ Catered ~ Fossils ~  
Silversmithing ~ Rock Polishing ~ Beads ~ **WireWraps** ~  
~ Gold-Panning ~ Metaphysical items ~ Crystals ~  
~ Meteorites ~ **Rough** Rock ~ and so much more ~

**ADMISSION**  
Adults: \$5  
Seniors/Students: \$4  
Family (4): \$12  
Weekend Passes: \$10  
Children 12 & under: free  
Admission at door - cash only

\*\*Doors will close to new admissions 30 minutes prior to closing  
\*\*Patrons with mobility restrictions are encouraged to use the  
10:00 - 11:00 am time to join us at the back ramp. Care support  
workers get free entry.



It is never too early to start getting ready for our Annual Show. Mark it in your calendars and stay tuned as to how you can help make our annual, hosted event to continue to be a show-stopping success – each VLMS member is expected to volunteer 2 hours of their time, over the course of the 3 day event, to assist in the logistics associated with this show. Planning meetings have already started – to volunteer, contact Allana or Sarah. Volunteers are needed for setup, operation (Fri-Sun), and take down.

### **Abbotsford Mineral Excursion**

Planning is in the works for the now-annual excursion to the Abbotsford Mineral Excursion. The club subsidizes the cost of two coach-style buses to take members on a return trip from the Tsawassen ferry terminal to the BC Gem Show in Abbotsford. We will be catching the first ferry at 7:00 am and board the awaiting buses at the Tsawassen ferry terminal at 9:00 am. The buses will take us to the BC Gem show at the Abbotsford Exhibition Park, and return us later in the day in time to catch the 5 pm ferry home to Victoria. There is a nominal fee for each participant to cover the cost of the bus transportation. Also, each member is responsible for their own transportation to and from the ferry on the Victoria side, as well as, ferry costs, food and, of course, shopping money. The Saturday tailgate sale, the showcases, demonstrations and more rocks, crystals, books than you can count await you at this, the biggest rock show in BC. Watch for a membership email with particulars coming soon.

### **Club Events**

#### ***Annual General Meeting***

The 2020 Annual General Meeting was held on January 6, 2020 at the Les Passmore Senior Centre. The results are listed below:

#### **Elected positions:**

**President:** Doug MacLeod

**Vice President:** Mel Fenton

**Secretary:** Sarah Hamilton

**Treasurer:** David Jackson

**Registrar (Membership):** Becci Simmons

**Members At Large:** Rae DeFrane, Brian McMillan, John Andersen, Debbie Frank

#### **Appointed Positions:**

**Social Committee:** Susannah Andersen, Barb MacKenzie

**Library:** Kathryn Ann Hawkins

**Programs:** Karol Jorgensen, Arlene Modderman

**Newsletter:** Gary Brooke

**Webmaster:** Becci Simmons

**Field Trips:** Sean Maier

**Show Chairman:** Allana Shilito, Sarah Hamilton

**Meeting Events:** Nick Aktarian

**Island Zone:** Dave Jackson, Sarah Hamilton, Doug MacLeod

**October Show Chair:** Vanessa Steffens

## Meetings

The next meeting is scheduled as follows:

**Date:** Mar 2, 2020

**Place:** Burnside Lawn Bowling Clubhouse, 274 Hampton Road, Victoria, BC

**Time:** 7:30 pm.

## Field Trips

The February field trip is scheduled for Feb 23, 2020. Weather permitting, the plan is to visit an old mine site near East Sooke park. Please let Sean or Doug know if you plan to attend in order to arrange for meeting place and rides.

## Programs

Here is the tentative Meeting Program Schedule for the 2020 calendar year:

March: Victoria Bailey, Twisted Fern Silver Lace Jewelry & Sculpture will do a presentation on her craft.

April: We are looking to fill this date and have some feelers out– taking suggestions also.

May: Club Auction

June: Strawberry Social

July/August: no meetings

September: Tentative: Doug Dumka and Charlotte Meredith (Geologists) Topic to be Announced

October: Alanna Shillito Presenting a Kids Program – will happen early in the meeting. Kids can also bring what they have collected over the summer for identification.

November: Dave Mullett - Topic to be Announced – Most likely about his upcoming trip to Switzerland to find treasures

December: Christmas Party

## Courses

Two new basic lapidary courses are planned subject to participant rosters being filled - if you are an existing member who is looking for courses and have not yet been contacted, please send an email to [vlmsworkshop@gmail.com](mailto:vlmsworkshop@gmail.com) .

As our previously planned silversmithing course was cancelled due to a scheduling conflict we are now able to confirm that a full silversmithing course will run on two consecutive Sundays: February 23th and March 1st. We also hope to host another course before the summer's end.

## Reports

### President (Doug)

I am still getting my feet wet learning how things operate but look forward to working with everyone. As is known, the Lapidary and Silversmithing side of the club has always been active. It was very nice to see the good response to getting the Mineral side active again. If anyone has any ideas for club projects please let me know. I know it's early but would like to see the picnic happen again this year. I can be contacted for any reason at [vlms@vlms.ca](mailto:vlms@vlms.ca) .

### **Rock and Gem Show (Allana, Sarah)**

This year's March meeting will be the last chance for some members to volunteer to help at the March show – our premiere club fund-raiser. Door/Ticket Sales, Security, Membership and Workshop volunteers are needed for all of the show hours during the March 20-22 timeframe. For members who might be away for the weekend, there is still an opportunity to volunteer as we need people for the set-up and for take-down. Note, Greaves Moving and Storage will be delivering our gear directly to the Ad Vinci Center (and transporting gear back to storage) thereby eliminating the need for members to perform this function.

Because this show is our only annual fund raiser, the club must take great responsibility in ensuring the show is profitable. This means that established vendors count on us to provide appropriate advertising, a well-appointed venue and complementary vendors that uphold the prestige associated with this event; it is not an easy task. If your business would like to be placed on a waiting list for this event then it is required that you provide photos of your work and kiosk display (with no humans) as your resume. Membership alone, in the VLMS or BCLS, is not sufficient to guarantee securing a vending spot. Unique vendors ensure customer satisfaction and money well-distributed to our happy vendors.

Volunteers get into the show for free. Please sign up with Vanessa at the upcoming March 2<sup>nd</sup> meeting.

### **Membership (Becci)**

As of Feb 3, 2020 there were 128 members.

Please let me know if you need a name badge – first one is free whereas replacements are not (\$16). Please be advised that it takes two weeks to obtain them.

### **Field Trips (Sean)**

Successful field trips to Blue Grouse Mine beach (November) and to Island View beach (December) concluded the 2019 field trip season. The January 2020 field trip was cancelled due to weather.

### **Social Committee (Susannah)**

A get-well card was sent out in January to Lena Gagnon who was feeling under the weather – as evidenced by her participation in our February meeting, she has made a recovery. A note of apology was also sent recently to Rose-Marie Spicher and Brian MacMillan for the Club's "dropping of the ball" in not sending a get-well card when Brian was ailing in November. For future reference, I urge all members to keep the Social Committee informed and up-to-date on individual health and circumstance issues so that we might respond in a timely manner.

### **Library (Kathryn)**

Please remember to return your VLMS library books, at this time many are outstanding. Books can be returned at our monthly meetings or returned to the workshop if that is more convenient. For any books not back after our next meeting, expect a phone call as a reminder. We are still looking for donations of books and magazines for our book sale at the Rock and Gem show this March. Most in demand are books to identify minerals, but anything related to rocks/minerals (identification or where to find), geology, dinosaurs, jewelry and even beading magazines are also popular.

Contributions of items for this sale can be brought to our monthly meetings, or even dropped off to us at the Da Vinci Centre during the Rock and Gem Show. The more money we can make with this sale, the better opportunity we have to update and improve our VLMS Library! Do you search our library and not find what you are looking for or are interested in? If there are any specific books or topics you want to see in our library please let me know.

### **Island Zone (Dave)**

There has been no activity to report from the Island Zone.

### **Treasurer (Dave)**

VLMS has taken a small step into the 21<sup>st</sup> Century with Sage Accounting. Traditionally, our club bookkeeping has always been done with the double-entry General Journal. The new system limits the number of accounts to match the number of columns in the Journal. In our case, that is only six expense and income accounts, plus the cash and bank accounts.

Over the Christmas holidays, I set up our books on the Sage Accounting system. This allows us the flexibility to create many new bookkeeping accounts. These additional accounts permit a much higher resolution view into the club financial activities. For example, both of the Rock and Gem shows now have separate accounts. This allows us to see with greater detail how each show performs, individually and year to year. Similarly, the Workshop expense and income accounts are now divided into several separate accounts. Courses, drop-in fees, and rock sales are now recorded under separate accounts. Other examples are the Gemboree event, field trips, auctions, members events, library, and food expenses. All of these transactions were previously grouped as Miscellaneous.

In order to gain a better understanding of our financial activities, I re-entered all the financial entries going back to January 1, 2018. VLMS now has complete Financial Statements for 2018 and 2019. If any club members are interested in seeing them, please feel free to see me at the members meetings. As required by “generally accepted accounting principles”, I will continue to maintain the old paper system until year end of 2020.

Finally, in the past, vendors to our Rock and Club shows have had to pay with cash or cheque only. We were one of very few organizations who could not accept an e-transfer for vendor fees. I am very pleased to say that our trial run to accept e-transfers has been very successful.

### **Workshop (Doug)**

Things are going well in the Lapidary Workshop. Attendance is keeping up quite well. Some of the recent course students are attending. One of them has Faceting experience so we likely will get our Faceting machine back in action. Shop users are looking forward to manning the Workshop tables at the March Show.

Two basic lapidary courses were recently completed - there is a good mix of single people, a family and retirees.

The once monthly Sunday Metalsmithing workshop is going well with numbers of qualified members moderately increasing each month. To participate in the metalsmithing workshop members must be

in good standing, have their own silver and have had some prior metalsmithing experience as these workshops are not instruction led, but rather a sharing, learning and practicing environment....not to mention the good eats and company. Drop in fee is still only \$5 and the next scheduled workshop dates are Sundays March 8th, April 19th, May 10th and June 14th. For further information on metalsmithing workshops or silversmithing courses please contact [silversmithing@vlms.ca](mailto:silversmithing@vlms.ca)

### **Editor (Gary)**

Most of the information presented in these newsletters is solicited. Unsolicited contributions are welcome – contact [gab.bns@gmail.com](mailto:gab.bns@gmail.com). Please remember to volunteer for the March Rock and Gem show.

## **February Programs Presentation**

The Programs presentation at the last (February) meeting was given by Russ Ball from the Courtenay Rock and Gem club – his subject matter was fossils. Presented below is a smorgasbord of pictures taken at the meeting.



*Figure 1. Russ Ball.*



*Figure 2. The fossils.*



*Figure 3. Russ Ball holding court.*





*Figure 5. Sarah checking out the pneumatic scribe.*



*Figure 6. Kathryn and Leni check out the fossil table.*



Figure 7. Using the pneumatic scribe.

## Fun Facts

### *Lappy the Lapphound*

“ All that glitters isn’t gold  
.....but it might be opal!!!!



### *Foxy the Foxhound*

“ Diamonds are a girls’ best friend  
.....cubic zirconia... not so much !!!!



## Charlie Gives an Impromptu Course on Minerals

Charlie the Chihuahua found herself in an uncomfortable space – with Pippa the Poodle’s urging, she had agreed to give an informal lecture on some basic Mineral Facts (as she called them) to Lappy and Chief Inspector Bailey-Cooper the Border Collie. The Chief Inspector headed up the Esquimalt Police Department’s K-9 division in which Lappy had recently been promoted to Inspector status. As it happens, Lappy and the Chief Inspector had once again been selected for a secondment, this time to their Tucson equivalent, in order to help solve a case involving gem-theft from a mining claim south of Tucson near the Mexican border – the secondment was to be effective within the week. Both Lappy and the Chief Inspector had established their reputations in such matters in a previous Arizona case (cf.,

Laphound News Vol 61-2, May 2018) and one local to Vancouver Island (cf. Laphound News Vol 62-2, May 2019). Despite the fact that both Lappy and the Chief Inspector had a pretty good general knowledge of rocks and things, the gemstones involved in the present case are blue opals<sup>1</sup> from the Southern Skies mining operation, approximately 20 km north of the Mexican border and 20 km west of Rio Rico (on Hwy 19 that runs due south from Tucson to the Mexican border). The Chief Inspector felt that both he and Lappy would benefit from hearing from an expert in mineral science – Charlie (being a Graduate Student at the UVic Institute of Earth and Ocean Sciences) fit the bill both technically and from the point of view of expediency.

The Southern Skies mining claims in southern Arizona cover an area of approximately 160 acres and are special in the sense that they are designated as “no entry” – only authorized personnel may have access to the claims. This makes sense since the Southern Skies Blue Opal is strictly controlled e.g., one cannot buy gemstone in the “rough” but rather must purchase Southern Skies jewelry in order to obtain samples of the gems. The issue at hand concerns the appearance of “contraband rough” (i.e., blue Southern Skies opal) for sale on the web. Unknown at this point is the origin of this contraband – Southern Skies officials suspect that someone (or persons unknown) were actually trespassing on the claims and illegally retrieving significant amounts of the gems which, in turn, were being sold. Alternatively, but less likely, was a new discovery of the blue opals in a completely different location, thereby making their sale completely legit. However, irregularities and secrecy associated with actual attempts to purchase opal from the website only served to heighten suspicion of wrongdoing. The K-9 units had been called in for assistance in the case – they could operate efficiently on a 24-7 basis (on site) and cover large areas quickly.

Charlie was nervous not because she didn’t know her stuff but rather she knew how complicated the terminology-rich subject matter could be when discussing minerals in general – she worried that she would not be able to simplify things enough for Lappy and the Chief Inspector in the short time that she had. Some basic knowledge about opals and related minerals would be essential for the two sleuths in the event that they had to “stop and search” individuals on or near the mining claims. Charlie had done a bit of research on the geology in the area of the Southern Skies claims and decided to start with some basic facts to start her presentation. After giving the K-9 boys a brief outline of what to expect, she began.

**Charlie:** “I will start with a few definitions. These will help you if you have to perform further research on the your own via the web”

**Charlie (continuing):** “Generally speaking, based on what I can glean from a quick scan of the literature, the geology, in the area of the Southern Skies mining claims, is volcanic in nature with lava, tuff, fine-grained intrusive rock, and diverse pyroclastic rocks evident. These compositionally variable volcanic rocks include basalt<sup>2</sup>, andesite<sup>3</sup>, dacite<sup>4</sup>, and rhyolite<sup>5</sup>. Thick felsic (feldspars<sup>6</sup> and quartz<sup>7</sup>) volcanic sequences form prominent cliffs and range fronts in this part of Arizona as well as regionally extensive ash-flow tuffs, such as the Apache Leap tuff east of Phoenix. Note that basalt and andesite are felsic whereas the dacite and rhyolite are mafic (i.e., a healthy representation of magnesium and iron). The area is quite rough with many deep washes surrounded by terrain of a few hundred metres”

Lappy and the Chief Inspector were furiously taking notes as Charlie spoke – they were assisted by Foxey, Pippa and Dottie the Doberman, although the latter had more “doodles” on her paper than notes!

**Lappy (inquisitively):** “Are there any active volcanoes in the area?”

**Charlie (giggling):** “No, the geologic material you will encounter is roughly 10-40 ma (by the way, “ma” refers to millions of years before present).”

**Chief Inspector (relieved):** “Thank goodness for that. What is tuff? Also, what is an intrusive rock? And what does pyroclastic mean?”

**Charlie (quick to respond):** “Tuff is rock that has formed from ash ejected from a volcano. Similarly, pyroclastic rocks are those that have been ejected from a volcanic eruption. In contrast, an intrusive rock is one that is formed within the Earth’s crust – it is typically derived from magma that does not reach the surface.”

**Chief Inspector (starting to get the picture):** “This is very instructive – can you tell us more about the opals specifically?”

**Charlie (somewhat relieved that it seemed to be going well):** “Yes, but first I want to give a brief overview of the silicates since they form the basic underpinning of so many minerals and gemstones including opal. You will likely encounter chalcedony<sup>8</sup> (and hence agate<sup>9</sup>) in addition to quartz – so I will expand on them as well since you should know the difference. “

**Chief Inspector:** “Okay, proceed please.”

**Charlie (proceeding slowly):** “In geology the term silicate describes the most widespread of the minerals. Silicates are made up of oxygen and silicon which are the two most abundant elements in the earth’s crust. We typically classify silicates by their unique structure – they are comprised of  $\text{SiO}_4$  molecules connected as tetrahedrons (triangular-based pyramids). The oxygen atoms occupy the vertices of the tetrahedron with the silicon atom at the centre. It is important to note that each oxygen atom is shared with the silicon atom of a different tetrahedron – therefore, each silicon atom effectively sees only half of the oxygen atoms and the chemical formula for silicate material is  $\text{SiO}_2$  and not  $\text{SiO}_4$ . There are six mineral subclasses of silicates based on how the tetrahedrons are used in the formation of molecules of the mineral, namely (i) nesosilicates (each molecule consists of a single tetrahedron) – olivine<sup>10</sup> is an example; (ii) sorosilicates (each molecule consists of two tetrahedrons) - hemimorphite<sup>11</sup> is an example; (iii) inosilicates (molecules consist of single and double chains of tetrahedrons) - jadeite<sup>12</sup> is an examples of a single chain structure whereas actinolite<sup>13</sup> is an example of a double chain structure; (iv) cyclosilicates (molecules consists of a ring of tetrahedrons) – Beryl<sup>14</sup> is an examples of a ring structure; (v) phyllosilicates (molecules are arranges as sheets) – mica<sup>15</sup> is an example of a sheet structures (vi) tectosilicates (molecules consist of 3D lattice-type frameworks of tetrahedrons) – quartz and

any of the feldspars (e.g., amazonite<sup>16</sup>) are examples of this kind of lattice structure.”

**Lappy (breathing out):** “Pheewww....that is a lot of information. Are any of these silicates found here on Vancouver Island?”

**Charlie (matter-of-factly):** “Yes, most of these silicates are found here to greater and lesser extents.”

**Chief Inspector (on task):** “Where does opal fit in?”

**Charlie (somewhat distracted by Lappy):** “Right, let’s see now....yes, where were we? .... ohh, quartz, chalcedony and opals. In mineralogy, quartz usually refers to a transparent, macro-crystalline silicate material (trigonal crystal structure visible to the naked eye) and is one of the most abundant minerals in the Earth’s crust. Chalcedony is a combination of cryptocrystalline (crystals are so tiny that they are not visible to the naked eye) quartz and moganite (up to 20%). Moganite is variation of quartz that has its own unique monoclinic crystal structure. Agate is a type of chalcedony that has typically precipitated out, over long periods of time, from a silicate solution inside voids in the magma – the result, when viewed in cross-section, is a concentrically, layered or banded appearance. Agate is usually transparent. Onyx<sup>17</sup> is similar but has straight, parallel layers and is typically opaque. In contrast, opal is a hydrated amorphous (no crystal structure) silicate material containing up to 20% water by weight. Because it is amorphous, it is labeled a mineraloid and not a mineral proper. Opal also precipitates out from silicate solutions that ran through cracks and voids in a host medium. Similar to quartz and chalcedony, precipitation occurs over long periods of time under conditions of extreme temperature and pressure – these conditions vary and help determine the outward variability of the appearance of the end product. For example, under certain conditions, opal-silicate molecules precipitate out with a repetitive layering structure that can resonate with different wavelengths associated with white light. In such cases the opal (called precious opal) displays a “play of color” in which the repetitive layering of the SiO<sub>2</sub> molecules cause diffraction of white light into colors of the rainbow – the Southern Skies opal is a precious opal. Common opal does not possess the same layered molecular structure and hence does not exhibit flashes of color. It is sometimes possible to see the layering in opal simply by tracking the regions of a stone that exhibit a flash of color. What I find interesting about some of the examples of the Southern Skies blue opal that I have seen on the web is that they seem to exhibit some gross layering (of different colors but not related to flash) – indicating some combination of agate/onyx and opal. Of course, without an actual sample this is speculation on my part.”

**Chief Inspector (saturated with information):** “Okay, it looks as those we have to be careful to distinguish any opal samples from ordinary quartz and chalcedony. Is that a fair statement?”

**Lappy (chiming in):** “And we do that by looking for flashes of color?”

**Charlie (nodding in agreement):** “Those are certainly the first steps you should take. Obviously there are more sophisticated techniques (and more invasive) but they would be hard to implement in the field.”

All the while, Foxey and Pippa had been doing their best to keep a complete set of notes. Pippa was so proud of her new friend Charlie for the way in which she handled the presentation. Foxey was a bit worried as usual about her “beau”, Lappy, and the dangers he might face on this latest caper. Dottie was only slightly embarrassed about her “notes” or lack thereof – she spent the majority of her time drawing hearts around Fin’s name (the Chief Inspector’s name).

**Foxy (knowingly):** “Dottie, do you have any notes you would like to contribute?”

**Dottie (quickly crumpling up her sheet of paper):** “You lost me when you mentioned the word – geology!!”

**Chief Inspector (coming to the rescue):** “It’s okay, Dottie, I think we have enough to go on – don’t you think Lappy?”

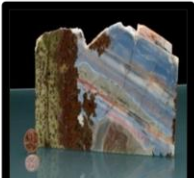
**Lappy (nodding enthusiastically):** “I agree – I can’t wait to get started.”


## Acknowledgements

Once again I would like to thank all those members who contributed to this Newsletter – it continues to be only as useful and complete as the information you provide.

## Appendix

### Fun Facts Rocks and Gems (all information obtained from Wikipedia on the web)

1.  **Southern Skies Blue Opal** is a breccia made of quartz, epidote, altered basalt and pumpellyite. The stone is named after Dallas Road right here in our very own city, Victoria. It is considered the unofficial stone of British Columbia’s capital city. Dallasite is found in Triassic volcanic rocks of Vancouver Island and is considered the third most important gem material in the province.

2.  **Basalt** is a mafic extrusive igneous rock formed from the rapid cooling of magnesium-rich and iron-rich lava exposed at or very near the surface of a terrestrial planet or a moon. More than 90% of all volcanic rock on Earth is basalt. Basalt lava has a low viscosity, due to its low silica content, resulting in rapid lava flows that can spread over great areas before cooling and solidification. Flood basalt describes the formation in a series of lava basalt flows.

3.



Andesite is an extrusive igneous volcanic rock of intermediate composition, with fine-grained material intermingled with crystals of variable size. In a general sense, it is the intermediate type between basalt and rhyolite, and ranges from 57 to 63% silicon dioxide ( $\text{SiO}_2$ ). Andesite is typically formed at convergent plate margins but may also occur in other tectonic settings.

4.



Dacite is an igneous, volcanic rock. Like andesite, it is fine-grained with variable sized crystals embedded. Dacite is intermediate in composition between andesite and rhyolite and contains mostly silicates associated with feldspars. It usually forms in fractures or between layers of existing geologic material.

5.



Rhyolite is an igneous, volcanic rock, of felsic (rich in feldspar and quartz but low on magnesium and iron) with composition typically  $> 69\%$  silicate ( $\text{SiO}_2$ ). It may have any texture from glassy to fine-grained with crystal inclusions. It is the extrusive equivalent to granite.

6.



Feldspar is a rock-forming silicate mineral that makes up about 41% of the Earth's continental crust by weight. Feldspars crystallize from magma as veins in both intrusive and extrusive igneous rocks and are also present in many types of metamorphic rock. Feldspars can contain either Potassium, Sodium, and Calcium.

7.



Quartz is rich in silicon and is the second most abundant mineral in Earth's continental crust, second only to feldspar. There are many different varieties of quartz, several of which are semi-precious gemstones. Since antiquity, varieties of quartz have been the most commonly used minerals in the making of jewelry and hardstone carvings, especially in Eurasia.

8.



Chalcedony is a cryptocrystalline form of silica, composed of very fine intergrowths of quartz and moganite. These are both silica minerals, but they differ in that quartz has a trigonal crystal structure, while moganite is monoclinic. Agate Chalcedony differs from ordinary chalcedony in that the growth of silica occurs in well-defined layers.

9.



Agate is a rock consisting primarily of cryptocrystalline silica, chiefly chalcedony, alternating with microgranular quartz. It is characterized by its fineness of grain, layering and variety of color. Although agates may be found in various kinds of host rock, they are classically associated with volcanic rocks and can be common in certain metamorphic rocks..

10.



Olivine is a magnesium iron silicate that is a common mineral in Earth's subsurface but weathers quickly on the surface. Olivine gemstones are called peridot and chrysolite. Olivine rock is usually harder than surrounding rock and stands out as distinct ridges in the terrain.

11.



Hemimorphite is a component of calamine lotion. It is a sorosilicate mineral, historically mined from zinc and lead ores, that has hemimorph development of crystals i.e., its crystals are terminated by dissimilar faces. Hemimorphite most commonly forms crystalline crusts and layers, also massive, granular, rounded and reniform aggregates, concentrically striated, or finely needle-shaped, fibrous or stalactitic, and rarely fan-shaped clusters of crystals.

12.



Jadeite is a inosilicate mineral with a monoclinic crystal system. Jadeite is formed in metamorphic rocks under high pressure and relatively low temperature conditions. Rocks that consist almost entirely of jadeite are called jadeitite. Jadeitite is resistant to weathering, and boulders of jadeitite released from the serpentine-rich environments in which they formed are found in a variety of environments.

13.



Actinolite is an inosilicate mineral that forms prism or needle-like crystals. It is rich in magnesium, iron and calcium. Actinolite is commonly found in metamorphic rocks, combined with intrusive igneous rocks. It also occurs as a product of metamorphism of magnesium-rich limestones. Fibrous actinolite is one of the six recognised types of asbestos.

14.



Beryl is a mineral composed of beryllium aluminium cyclosilicate. Well-known varieties of beryl include emerald and aquamarine. Naturally occurring, hexagonal crystals of beryl can be up to several meters in size, but terminated crystals are relatively rare. Pure beryl is colorless, but it is frequently tinted by impurities; possible colors are green, blue, yellow, red (the rarest), and white.



15.



Mica is a sheet silicate (phyllosilicate) mineral that includes several closely related materials having nearly perfect basal cleavage. All are monoclinic (crystal structure), with a tendency towards pseudo-hexagonal crystals and are similar in chemical composition. The nearly perfect cleavage, which is the most prominent characteristic of mica, is explained by the hexagonal sheet-like arrangement of its atoms.

16.



Amazonite is a green tectosilicate mineral that is a variety of the potassium feldspar called microcline. Its name is taken from that of the Amazon River, from which green stones were formerly obtained, though it is unknown whether those stones were amazonite. Green and greenish-blue varieties of potassium feldspars are designated as amazonite.

17.



Onyx primarily refers to the parallel banded variety of the silicate mineral chalcedony. Onyx is a variety of layered chalcedony that has parallel bands. The colors of its bands range from white to almost every color. Commonly, specimens of onyx contain bands of black and/or white.