



Newsletter of the London Gem Mineral & Fossil Society London Ontario

We regret to announce the passing of Janet Ashley Pollock, former President of the CCFMS.

**1st May 2025
CLUB NEWS**

AGM Meeting, April 3, 2025

The AGM was an important meeting for LGMFS members. 5 executive and 20 members showed up for election night to vote and to discuss items minuted at our last executive meeting in March. Our President first handed out our agenda and circulated an attendance sheet. Upcoming events were announced and displayed on the front table for members to peruse and plan for. The Paris Show, Scarborough Club auction, KW Gem and Mineral show, and Gneiss Guy warehouse sale are coming up now and in the next few months. May and June speakers for our Club look very interesting! We are also investigating microphones for our speakers and improvement of visual equipment like projectors. A 4K projector is too expensive. The next items on the agenda were a treasurer report, a presentation of our Club's new brochure, and the plans for our London's long-awaited Gem and Mineral Show in Nov. 2025, and a confirmation that our banner has been finally recovered ready to be corrected to include Fossils. Additional LGMFS business discussed was honorary memberships, silent auction prices, and upcoming field trips. Hungry Hollow is scheduled for April 26, 2025, where compulsory waivers found on the front table can be picked up and signed. Waterloo's Earth Sciences Museum is booked for June 28, 2025. Mike Cardinal has volunteered to again host our annual BBQ at his place on June 21, 2025. The most important item on the agenda was an election of Executive Members. Following the CCFMS protocol, the election began when Tim Locke put

London Gem Mineral & Fossil Society

Meetings: Usually, 1st Thursday of each month 7:00 – 8:30 pm (September to June but not in January)

Meeting Place: Earl Nichols Arena
799 Homeview Place London Ontario

Membership: Single \$20, Family \$30, Student \$15

President: Tom Iannelli **519-641-0098**

Vice President: Tim Jokela

Secretary: Vacant

Membership: Judie Perrin **226-663-0236**

Facebook Admin: Judie Perrin **226-663-0236**

Treasurer: Judie Perrin **226-663-0236**

Program:* Albert Perrin **519-841-7599**

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CCFMS Website: News, Trips, Clubs etc.
www.ccfms.ca
LGMFS: www.facebook.com/londongemmineralsociety

***If any LGMFS members have something to present, please advise any of our board members, or me.**

forward a motion to vote on candidates listed on the agenda. All members voted unanimously for the listed candidates. Ray Mason moved that voted candidates be accepted, seconded by Mike Cardinal.

A mini silent auction followed the election incorporating the uncontested \$1 higher starting bids on the roller table but keeping 25 cent minimum bids on other items until further discussion. A very productive meeting with congratulations to our new Executive and honorary members, Ray Mason and Bob O'Donnell.

- President Tom Iannelli
- Vice President Tim Jokela (Jr.)
- Secretary Vacant
- Treasurer Judie Perrin
- Membership Judie Perrin
- Program Director Albert Perrin
- Newsletter Editor Albert Perrin
- (Diane Jaskot-author-AGM meeting)

This Month's Presentation

Our presenter this month will be Peter Wozniak, DVM, MD, CCFP, FCFP, Assistant Professor Faculty of Medicine U of Ottawa, Retired

Dr. Wozniak will give a presentation on his visit to Texas Boulder Canyon and the Kartchner Caverns

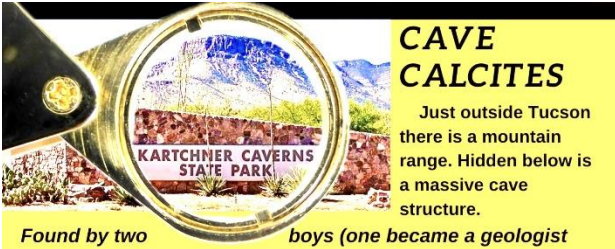
State Park in Arizona.

Peter is one of very few people in Canada, who holds degrees in both Veterinary and human medicine. His Doctoral degrees in Veterinary and Human medicine were from the Veterinary College, U of Guelph, and from the U of Ottawa respectively. He has spent most of his career as a full time Physician in a Cambridge clinic, and he is also distinguished as a consultant for several pharmaceutical companies and was an assistant Professor at the U of Ottawa. He has written and edited numerous publications which include research in the field of cardiology and lipidology. He has spoken at several symposia and has assisted in many clinical trials over his career. Peter has received many awards and has a long list of credentials.

His other interests include computer and digital technology, graphic art, photography, and gem and mineral collecting, to name a few. He also has equipment to test minerals.

Peter’s Presentation

His presentation will take you to Arizona 2.4 billion years ago and how two regions 14 kms apart transformed into totally different environments. Texas Canyon will overwhelm you with 47 feet tall Spherical Dragoon boulders. Further south, you will be taken underground into a 3.9 km long cave, with the interior decorated in numerous types of calcite formations. Caverns 122 meters (400 ft) by 73m (240 ft) and 19.5m (64 ft) tall will engulf you into a totally different reality.



CAVE CALCITES
 Just outside Tucson there is a mountain range. Hidden below is a massive cave structure.

Found by two boys (one became a geologist with NASA) a few years ago the cave was not opened to the public for 14yrs. The boys wanted to keep the cave safe from vandalism so a highly policed state park was created with environmental controls, zero tolerance for touching the formations and photography. The facility is 100% wheel chair accessible even through the cave.

A Digression to The Manual of Mineral Science

Here is a poem by an expert who dedicated his life to the Science of Minerals. Cornelius S. Hurlbut Jr. died 2005 at 99 years old. PhD from Harvard University and became a faculty member. He has written extensively about all aspects of minerals including their science, structure, crystallography, how to find

and study them, and wrote various versions of ‘Dana’s Manual of Minerology’. He was also the author of the 1979 & 1991 editions of ‘Gemology’ with two other authors.

This poem is from ‘The 23rd Edition of the Manual of Mineral Science’ by Cornelius Klein & Barbara Dutrow, 2007 by Wiley and Sons Inc.

There are extensive digital resources that include 1) Minerology Tutorials, 2) Mineral Chemistry, and 3) Detailed index screen showing links to mineral and crystal structures on the CD.

A Mineral Poem

A mineral is a wondrous thing,
 At least it is to me,
 For in its ordered structure
 Lies a world of mystery.
 The secrets that it has withheld
 For countless ages past
 And clung to most tenaciously
 Are being learned at last.
 Each year using new techniques
 Or with a new device,
 We make our knowledge more complete,
 Our data more precise.
 But let us not in trying to solve
 A mineral mystery
 Forget that minerals are a part
 Of natural history.
 Nor in our quest for more detail
 When probing an unknown,
 Forget that every mineral
 Has a beauty of its own.
 With progress in technology
 Each year sees new machines
 That try to copy nature
 By sophisticated means.
 But for the modern methods
 We cannot yet compete
 With the world of ordered beauty
 That lies beneath our feet.

Important Lithium Minerals, Uses, Mining

Uses

Batteries are the largest application, accounting for 87% of lithium use. Ceramics and glass follow with 4%, lubricating greases with 2%, continuous casting fluxes with 1%, and other uses comprise 6%. The latter is used for medical applications. There are other uses under development.

Mining

Mining involves extracting lithium, but not in the refined state. Rock mining or brine evaporation are used. The two most common methods are extracting lithium from e.g. spodumene ore from hard pegmatite deposits or pumping lithium-rich brine from underground and evaporating it to concentrate the lithium as an ore. These brine deposits are accumulations of saline groundwater that are enriched in dissolved lithium.



Spodumene -Lithium, aluminum, silicate,
 $\text{LiAl}(\text{SiO}_3)_2$ or $\text{LiAlSi}_2\text{O}_6$, Wikipedia



Spodumene under different lighting conditions

- 1) Halogen Light, 2) Longwave UV
- 3) Shortwave UV 4) Phosphorescence

*Copyright Jose Zendera (deceased), Mindat ID 3733 or Mindat: 1:1:3733.0

In hard rock mining, the ore is then crushed, concentrated, and chemically treated (e.g., roasting, leaching)

to produce lithium concentrate. More efficient mining methods are under development. Common lithium-ion battery chemistries use various lithium-metal oxides, such as those containing nickel, manganese, cobalt, or iron because of the extreme reactivity of Lithium with oxygen e.g. red flame, fires.

These are the most popular minerals for Lithium. Some of them are quite valuable for collectors.

Spodumene: The most common lithium-bearing mineral found in lithium ores.

Petalite: A lithium aluminum silicate mineral found in granitic pegmatites.

Lepidolite: A lithium mica mineral commonly found in some lithium ores. The name is still used but is obsolete. The names are now for a series formed by polyolithionite and lepidolite as a family of minerals, and trilithionite is a specific member of that family.

Amblygonite: a fluorophosphate mineral with the chemical formula $(\text{Li},\text{Na})\text{AlPO}_4(\text{F},\text{OH})$. **It's a rare semi-precious gemstone**, typically appearing white to light yellow, but can also be blue, green, pink, or lilac.

*The problems with these types of mining are air and water pollution/consumption, land degradation and damage to ecosystems. Drainage can cause Sink-holes.

New Types of Batteries being Developed

Lithium-Sulfur Batteries:

These have a high energy density and could lead to longer driving ranges and lighter battery packs.

Aluminum-Air Batteries:

These use oxygen from the air to create a lighter and potentially more efficient battery, as seen in an experimental car that drove 1,100 miles on a single charge, according to GreenCars.

Hydrogen Fuel Cell Vehicles (HFCVs):

Hydrogen Ion Batteries:

These were invented very recently by two Chinese researchers in Australia and much more work is required.

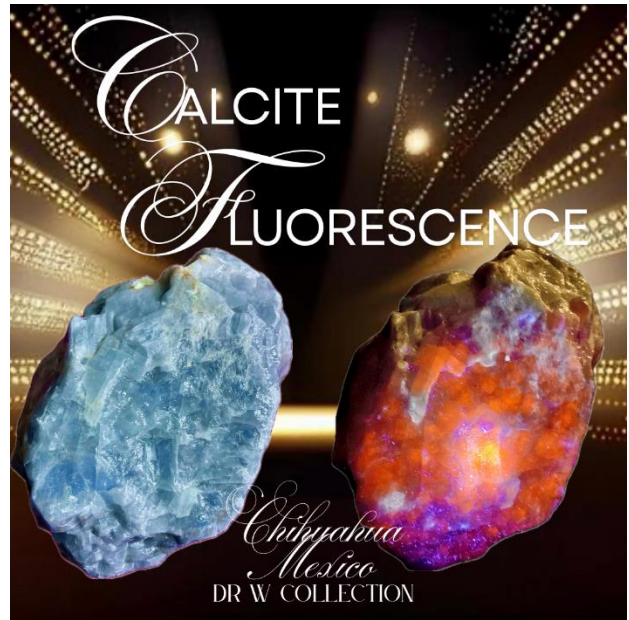
Optical Calcite and Iolite – photographer and author, Peter Wozniak

‘Calcite, specifically transparent varieties like Iceland spar, are believed to have been used by Vikings for navigation, possibly as "sunstones" to find the sun's position even on cloudy days. Calcite's unique property of birefringence, where light splits into two beams

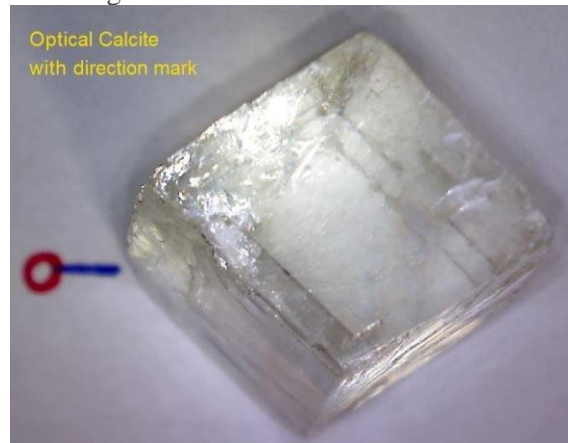
when passing through it, could have helped Vikings navigate by polarizing light'

'Iolite = Codierite keeping with the above theme. Iolite, also known as the "Viking's Compass", is a gemstone believed by some to have been used by Vikings for navigation, also to determine the sun's position on cloudy days. Legend suggests that Vikings used thin slices of iolite as polarizing filters, allowing them to locate the sun even when it was obscured by clouds'

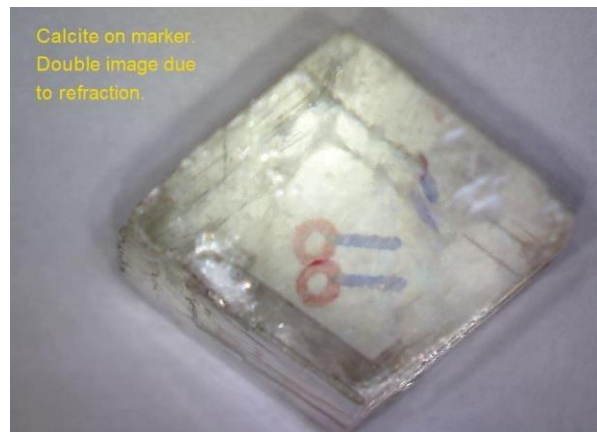
The photo below shows the doubling effect of Calcite.



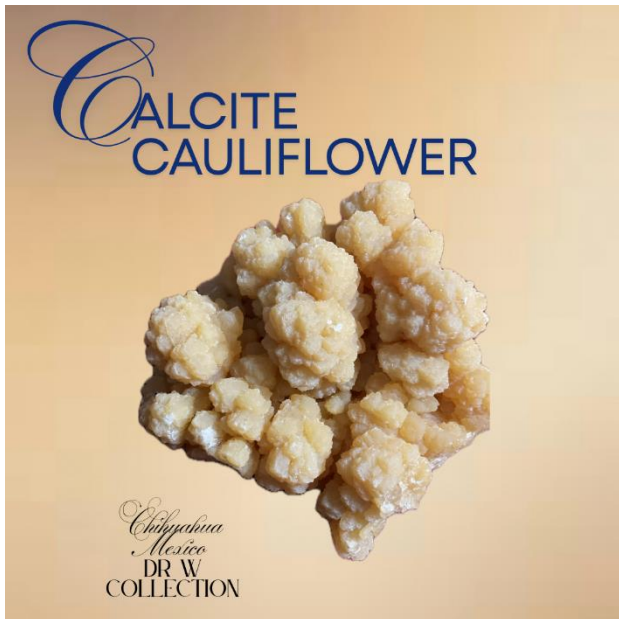
An old experiment done by Albert Perrin - Calcite Doubling. 3 Photos

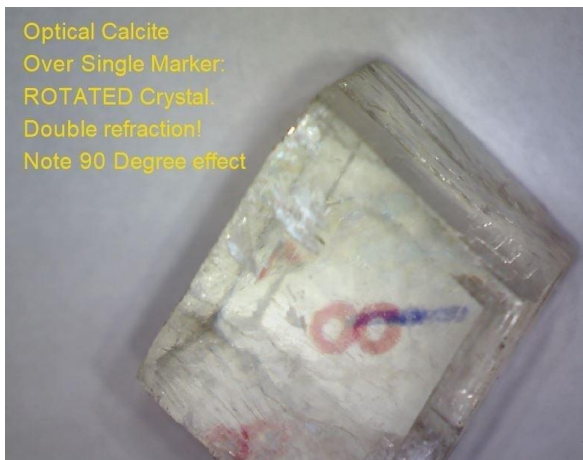


Optical Calcite with direction marker



Calcite on the direction marker-doubling effect





Calcite rotated showing new marker doubling effect
Principles of Electronic Materials and Devices, 4th edition re Birefringence.

A New Fossil

‘Inside out’ fossil reveals a new species with a perfectly preserved interior



The fossil *Keurbos susanae*—or Sue—in the rock. Credit: University of Leicester

A new species of fossil from 444 million years ago that has perfectly preserved insides has been affectionately named "Sue" after its discoverer's mom. Lead author Professor Sarah Gabbott from the School of Geography, Geology and the Environment, University of Leicester said, "Sue is an inside-out, legless, headless wonder. Remarkably, her insides are a mineralized time-capsule: muscles, sinews, tendons and even guts all preserved in unimaginable detail. And yet, her durable carapace, legs and head are missing—lost to decay over 440 million years ago.

The result of 25 years of work by the paleontologist, and published in the journal *Palaeontology*, the study details a new species of multisegmented fossil and is now officially named as *Keurbos*.

