

DECEMBER 2021



DIARY

December	4	10:00–14:00	Open to the Public Day – Rocks, gems, jewellery, mineral specimens to look at, chat about, or buy. NO MASK, NO ENTRY. All Covid-19 protocols still in force. STAY SAFE – GET VACCINATED.
December	12		CLUB CLOSED FOR THE HOLIDAYS
			THERE IS NO OPEN DAY ON 1 OR 8 JANUARY 2022



By Peter Rosewarne

Anyone dreaming of a white Christmas in South Africa is probably going to be disappointed and it is probably illegal to have such dreams anyway these days 😊. So, this month, by way of Season's Greetings to all members of whatever persuasion, we'll be having a light-hearted look at some minerals with Christmas and New Year links and some tongue-in-cheek descriptions of minerals in 'wintry' settings and very unusual *pseudomorphs* from around the world.

What better place to start than the Stirling Hill Mine in New Jersey, USA, where *Christmas ore* was mined up until 1986. This comprises of *calcite* and *willemite* and is so named because these minerals fluoresce red and green, respectively, under short-wave UV (SWUV) light, the so-called colours of Christmas (**Figure 1**). So, if you are wondering what present to buy your spouse or friend, get them a SWUV torch (hint: I haven't got one). There is also the Christmas Mine in Arizona, USA, a copper mine where *azurite*, *cuprite* and *diopside* occur.

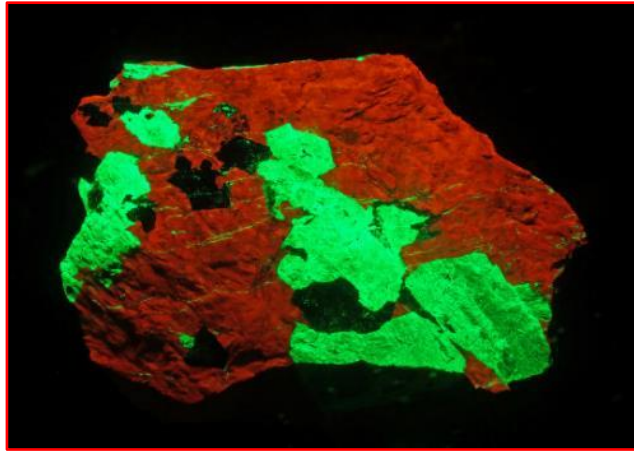


Figure 1: Christmas Ore

Have you ever wondered what minerals go into the formation of a traditional Christmas tree and the decorations that adorn it? Large percentages of the sulfur, phosphate (e.g. *foscorite* from Palaborwa) and potash mined world-wide go into the manufacture of fertilizers which are applied to cultivated trees. The lights and decorations on a traditional Christmas tree contain copper (e.g. *malachite*, *chalcopyrite*, *chalcocite*, *bornite*), tungsten (*scheelite*) and other metals, and coloured paints contain e.g. lithium and chromium, obtained from *spodumene* (Northern Cape pegmatites) and *chromitite* (Bushveld Complex), respectively. Birthstones for December are *turquoise*, *tanzanite* and *zircon*.

A final example of a 'stone' with a festive look about it is *goldstone*, an artificially produced glass containing what could be gold-coloured glitter but is actually small crystals of metallic copper (**Figure 2**). It is used as a lapidary material and also comes in a deep blue colour.



Figure 2: Goldstone

Moving on to New Year, there are many mines in the world called New Year Mine, including in the USA and Australia. In the USA these include a zinc mine in Nevada, one in Arizona where *brochantite*, *sphalerite* and *galena* were mined and a quarry in Montana. There are also New Year mines in South Australia and Queensland.

And now for a wacky look at minerals in 'wintry' guises/surroundings. We start with a clump of snowflakes with an unusual composition of *cerussite* instead of ice, making this a unique pseudomorph. This example is from Nakhlaht in Iran (**Figure 3**).



Figure 3: Cerussite Snowflake Cluster from Iran

Next is a snowdrift of quartz and feldspar forming around a *schorl* crystal from the Shigar Valley of Pakistan, as shown in Figure 4.



Figure 4: Schorl Crystal with Quartz and Feldspar Snowdrift

In **Figure 5** we have butterscotch sweets scattered down a snowy mountainside in Los Lamentos, Mexico. Not recommended for human consumption though as the sweets are made of lead molybdate, i.e. *wulfenite* and the snow is *calcite*; Two more unusual pseudomorphs! You can just make out people swarming around the crystals on the lower right-hand spur which gives an idea of their size. Looks like they managed to chomp a few smaller crystals on their way up. Butterscotch cracknel? And, like the lemon curd tart from a previous *Curiosity Corner*, a bit tough on the old gnashers. They also had to contend with a glacier at the foot of the mountain, with global warming contributing to the formation of large ice cubes, made out of another unusual pseudomorph, fluorite (**Figure 6**).

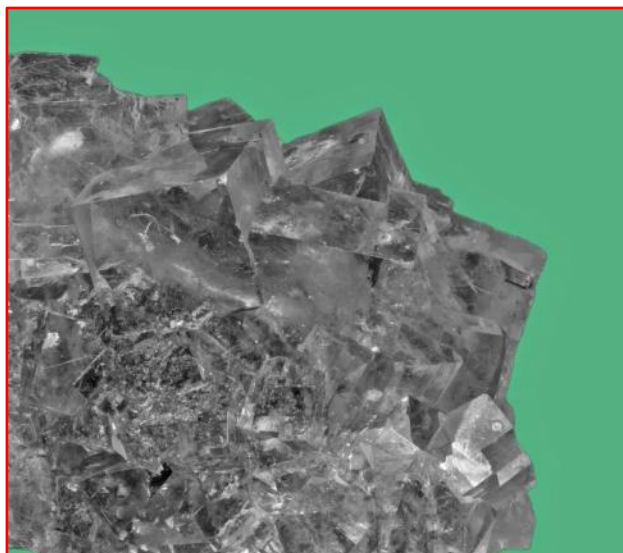


Figure 5: Butterscotch Wulfenite on Calcite Snow

Figure 6: Large ice Cubes at the Foot of a Glacier

Some *pyrite* parcels from Navajun in Spain awaiting opening are shown in **Figure 7** but they only contain fool's gold. **Figure 8** shows a fool about to open one of the parcels in a crystal pocket he has just uncovered.



Figure 7: Pyrite Parcels of Fool's Gold



Figure 8: Fool About to Open a Pyrite Parcel

This article wouldn't be complete without *snowflake obsidian*, with the snowflakes frozen in a black volcanic glass from an eruption in the USA (**Figure 9**). These snowflakes aren't made of ice, however, but *cristobalite*, a type of SiO_2 .



Figure 9: Snowflake Obsidian

It also wouldn't be complete without some turkey, so a final mineral is *turkey fat smithsonite* from Arkansas, USA, the photograph in **Figure 10** being courtesy of John Betts Fine Minerals. Looks like you could stick a knife into it and spread it.



Figure 10: Turkey Fat Smithsonite

On that note here's wishing all Cape Town club members a Merry Xmas, festive season or whatever form your year-end takes, and all the best for 2022. Look out for pseudomorphs amongst your presents, and a final reminder that I don't have a SW UV light...
Cheeeeeers!





From the Cabinet of Curiosities



Hackmanite is a variety of sodalite, named after Finnish geologist, Victor Axel Hackman. It can be pink to grey white to white. The sulfide content can give sodalite reversible photochromism or tenebrescence. The white stone on the left was photographed immediately it left a dark room. The same stone was then taken outside into strong sunlight, and within two minutes changed to a deep pink.

According to Wikipedia. “When hackmanite from Mont Saint-Hilaire (Quebec) or Ilímaussaq (Greenland) is freshly quarried, it is generally pale to deep violet but the colour fades quickly to greyish or greenish white. Conversely, hackmanite from Afghanistan and the Myanmar Republic (Burma) starts off creamy white but develops a violet to pink-red colour in sunlight. If left in a dark environment for some time, the violet will fade again”. This stone was bought from Jay Liebenberg who got it in Myanmar.

Describe your own original curiosity and send it to us with a photo.

FaceTips

SOMETHING VERY UNUSUAL: ENSTATITE



Enstatite 1.56 ct

Enstatite rough 11 g

Enstatite 6.48 ct

Four unidentified pieces of facet rough were sent to me by a friend as a present. At first I thought they may be andalusite because of the distinct yellow/greenish-brown pleochroism, but the refractive indices measured on a polished window were 1.660-1.670, which are too high for andalusite. There are not many possibilities with those RIs other than enstatite $[(Mg,Fe)SiO_3]$, but I had never seen facet-quality enstatite before so looked for some other confirmation. Luckily, viewed through a hand spectroscope enstatite has a clear and distinctive absorption line at 506 nm, and that confirmed these as enstatite. One piece of rough I am keeping as a standard for the spectroscope, and the other three I cut into a pair of 6 mm diameter round brilliants and a 12.4 mm long oval. The two directions of easy cleavage coupled with the differential hardness meant cutting on a 1200 lap was slow, to avoid fraying at the edges. The girdles were left a bit thick for the same reason. The small round brilliants are brighter than the bigger oval, but it is quite pretty despite being a bit dark. You can see why Fe-rich enstatites are called ‘bronzite’, although these stones are near end-member enstatite. **DM**

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