



**The Mineralogical Society of Victoria**  
Incorporated

**Newsletter No. 199**

**June 2009**



Stilbite, Phillip Island, Vic  
3mm field of view

Print Post Approved PP332785/0015

The Mineralogical Society of Victoria Inc.  
P.O. Box 12162  
A'Beckett Street  
Melbourne Vic. 8006

**Patron:** Professor Ian Plimer FTSE, Hon FGS, FAIG, Hon SGA, BSc(Hons), PhD

**Office Bearers:**

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Vice President:	Volker Hoppe	Special Projects:	Dermot Henry
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**Newsletter:** Editor & Layout: Michael Hirst  
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**Membership Details:**

Joining Fee	\$5.00		
City Adult Member	\$25.00	Country Adult member	\$20.00
City Family membership (2 adults & children under 18)	\$35.00	Country Family Membership (2 adults & children under 18)	\$30.00
Student Member (full time)	\$15.00	Newsletter only	\$15.00

(N.B. - Country membership - more than 50 km from Melbourne G.P.O.)

Applications for membership can be obtained by writing to:-

The Secretary, Ms. Lesley Slattery,  
P.O. Box 12162,  
A'Beckett Street,  
Melbourne, Vic, 8006.  
or by telephone on (03) 9578 4029 (AH).

General meetings are held on the 1st Wednesday of each month (except January) commencing at 8.00 pm at the Royal Society of Victoria's Theatre, 8 Latrobe St. Melbourne.  
Visitors are most welcome.

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Newsletter of the Mineralogical Society of Victoria  
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**SPECIAL NOTE** The venue for General Meetings will remain the same – at the Royal Society Building. However, starting with the July meeting (AGM), we will meet on the second Monday of each month.

**FORWARD DIARY**

- Jun 3 General Meeting: Dr Stuart Mills, University of British Columbia – Topic to be Advised.
- Jun 20 (Saturday) Excursion – preliminary check of Lake Boga quarry. Refer to Excursions report for details
- Jun 21 Mineral Appreciation Group – At Nunawading Lapidary Club Rooms, Silver Grove, Nunawading. Topic: Minerals Containing Uranium and/or Thorium.
- Jun 28 Micro Group Meeting – at Muriel & George Lysiuk’s home. Topic: Minerals containing magnesium.
- Jul 13 (Monday) General Meeting and Annual General Meeting: Alex Blount – “Toxic and Hazardous Minerals”.  
**NOTE – Date is Monday 13 June.**
- Jul 19 Mineral Appreciation Group – At Nunawading Lapidary Club Rooms, Silver Grove, Nunawading. Topic: Mineral Lustre – Choose one ‘lustre’ and bring examples to represent it.
- July 26 Micro Group Meeting – at John Bosworth’s home. Topic: Halides (Dana Class IV) & *see* Micro Group Report.
- Aug 10 (Monday) General Meeting: Speaker to be advised.
- Aug 16 Mineral Appreciation Group – At Nunawading Lapidary Club Rooms, Silver Grove, Nunawading. Topic: Mica Group Minerals

**MINERAL RELATED EVENTS**

- Jun 6-8 32nd Joint Mineralogical Societies of Australasia Seminar, Queensland Museum, Southbank, Brisbane.  
Hosted by The Mineralogical Society of Queensland. <http://www.mineral.org.au/>

**NEXT ISSUE**

**PLEASE NOTE:-** Material for the June Newsletter to be with Michael Hirst by **July 29<sup>th</sup>**.

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## FROM THE COMMITTEE

We are pleased to announce that the Society will continue to hold its General Meetings at the Royal Society, at least until the end of the year. The next meeting will be held on 3 June (the first Wednesday of the month as usual) but, **from July, meetings will be held on the second Monday of the month and will be in the Supper Room only.** To help compensate for the substantial increase in the room rental fee at the Royal, from the next meeting, the door fee will rise from \$2.00 to \$4.00.



With renovations at the Royal nearing completion, the Society's library has moved from the area at the bottom of the stairs at the Royal to the meeting room opposite the Supper Room (on the left as you enter from the Victoria Street entrance). Please see John Bosworth or Jo Price if you are unsure of the procedure for borrowing any of the books or journals. The micro collections (Broken Hill, Victoria, Iron Monarch), are also available for loan - please contact Alex Blount.

The new Committee will be confirmed at the AGM in July. Some Committee members are not seeking re-election this coming year so, if you are considering joining us, please let Alex Blount know.

A special note to members to look out for an upcoming edition of the Catalyst TV program on ABC. We are informed that the Thursday June 11 edition of the show might feature a certain well-known Society member and the Lake Boga locality.

Just a reminder if you have not yet paid your annual subscription, it would be greatly appreciated if you could do so as soon as possible.

Lesley Slattery  
Hon Secretary

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## EXCURSIONS

### **Previous Fieldtrips**

#### **Sunday 29<sup>th</sup> March 2009: Pittong-**

On a pleasant but cool trip 11 people turned up. The usual dead sheep were present in the old shaft with the "lovely" aroma wafting over us. Not much feedback has been received as to minerals found but no Pittongite was reportedly found.



#### **April 25<sup>th</sup> 2009: Phillip Island.**

This trip was cancelled due to low interest.

### **Forward Diary**

#### **May 24<sup>th</sup>: Castlemaine**

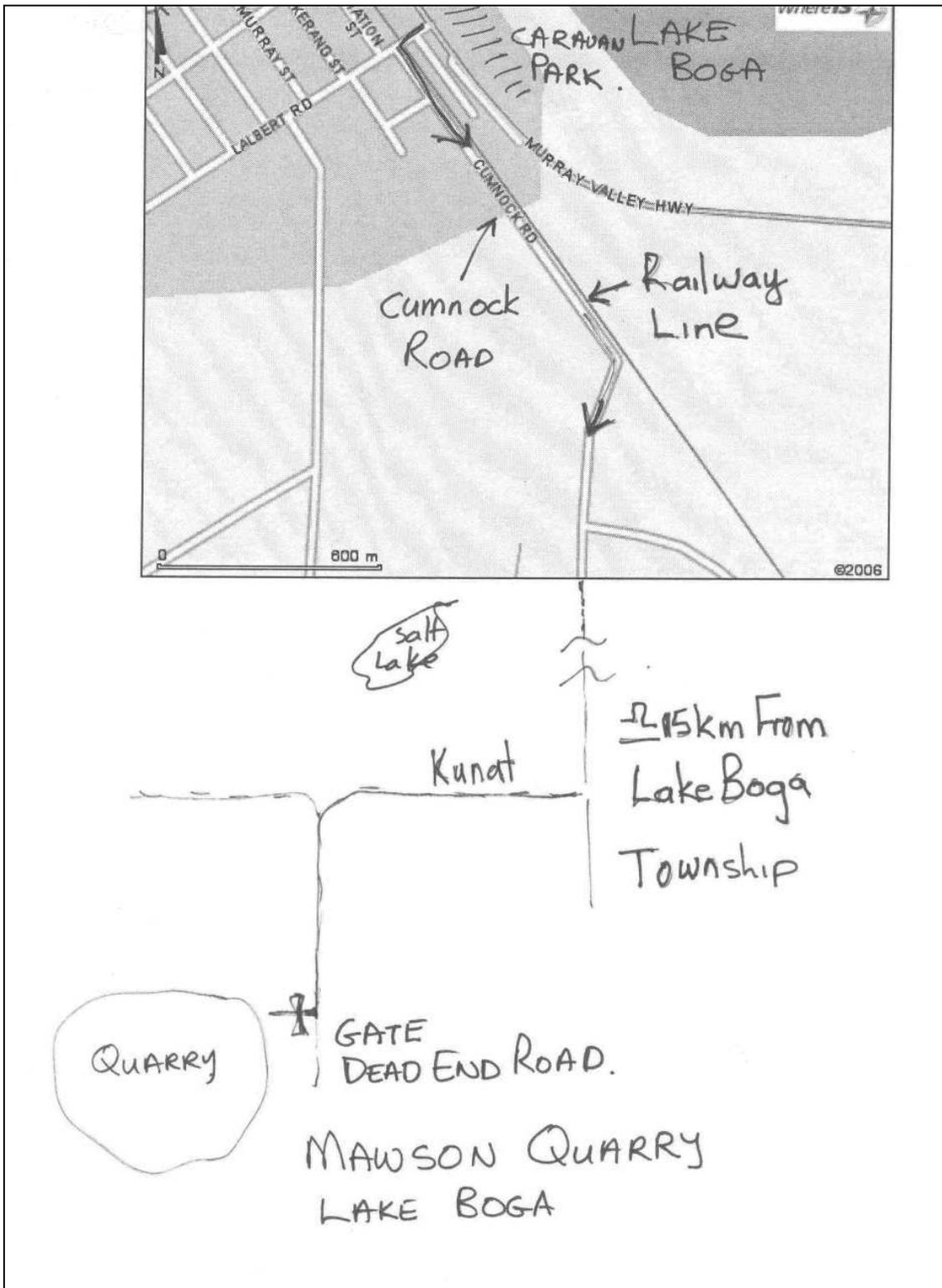
Visit to a sandstone quarry. Meet at 9.30am at Campbells Creek 2nd Hand Bookshop on the eastern side. Safety requirements are safety glasses, safety helmet, sturdy boots and gloves.

#### **June 20<sup>th</sup>: Lake Boga**

It's been a while that we have been to Lake Boga as reports coming from there haven't been good for collecting (quarrying is too deep in the quarry). Normally we don't run a fieldtrip in June due to the Symposium. This trip will be an investigation by the Fieldtrip Officer how the pickings are for a potential future trip and any person interested in also going is welcome **BUT MUST REGISTER** with Volker – 03 9578 4029.

Meet at 9.30 am at the gate, refer map below for location.

Safety requirements are: Safety helmet, safety glasses with side protection (not just prescription glasses) steel capped boots preferred but sturdy boots accepted, high visibility vest.



The committee is looking at some other localities and these will be notified in the next newsletter. The museum with Dermot and Bill are reviewing some new localities and we await their feedback.

Contact Volker for any fieldtrip queries on 9578 4029.  
Volker Hoppe

## PUBLICITY



### Micro Group Report

The March topic, “Minerals of Eastern Victoria, excluding zeolites” provided as usual a lot of good mineral conversation across the table, and listening to everybody’s knowledge on locations, new minerals, recent field trips, new publications and general information on minerals and other related subjects. And that is a much more interesting way to learn about minerals, and a lot better than reading a mineral book or sitting looking at a computer screen.

The topic wording was a subject on its own, as to just where eastern Victoria started.

One of the specimens passed around was from Howitt Plains, which had a note on it: “strange terminations” and everyone agreed that the base of the crystals was calcite but several suggestions were put forward as to what the small crystals on top of the calcite were.

The subject being Victoria, of course there was some very nice gold from different localities, nice copper specimens, a hercynite from Toombullup, and a very small, perfect specimen of a mounted stibnite crystal from Yarra Glen. There were several specimens left to be photographed, one was a nice green pyromorphite from Limestone Creek, and several small interesting crystals from the Anakies.

For all the members that went on the field trip to Womobi: they should look at their specimens and all their discards for a white, light, soft material as it could be szmikite,  $\text{MnSO}_4 \cdot \text{H}_2\text{O}$ , see page 225 in Fleischer’s Glossary of Mineral Species, 2008.

Everybody agreed it was another good mineral information-packed day had by all.

At the April meeting, on Minerals of the Northern Territory, by contrast there were lots of hand specimens, notably an opaque bluish-white beryl crystal about 10 x 8cm, a wide variety of epidotes, also zircons from Mud Tank.

Micros included :- lovely quartz sceptres with inclusions from a locality in the Harts Range; amethyst clusters with inclusions and curious surface features, from Victoria River Downs Station; copper, and malachite after azurite from the Redbank Mine, Wollgorang Station; mimetite and duftite from Mt. Bonnie; titanite, and ruby crystals from the Harts Range. Rum Jungle minerals included cerussite, malachite, pyromorphite, reichenbachite, wulfenite and mimetite. The mimetite occurs in green, yellow and white patches, and testing of the white crystals showed that they are phosphate-rich.

After the usual good discussion about the tabled minerals, some topics were tossed around to provide, we hope, something of interest for the winter meetings, and the program is:

28<sup>th</sup>. June at Muriel & George Lysiuk’s home, “Minerals containing magnesium”

26<sup>th</sup>. July at Margaret & John Bosworth’s home, Halides (Dana Class IV). *See* Mason & Berry, ‘Elements of Mineralogy’ “Halides... are primarily compounds of ...F, Cl, Br, I. In addition, some minerals classified as silicates, phosphates, etc., contain minor amounts of halogen elements. ..(and halides) occur in the oxidised zone of many ore deposits.”

The Group welcomes new members. Our meetings are informal and tea, coffee and cake are provided. It’s only necessary to bring your lunch, microscope and any minerals you may have for the day’s topic.

No minerals? No problem – come anyway as many minerals will be tabled for all to see, but if you haven’t attended one of these meetings before, do let the host of the day know you are coming so that there will be enough seats for everyone.

## **Mineral Appreciation Group Report**

The subject of the April meeting was the nicely vague “Minerals of Asia” which allowed the attendees to set their own boundaries on where “Asia” started and finished. Whilst some countries were obviously part of Asia, the definition was rather less obvious as we looked north and west towards parts of Russia and the borders of the Middle East.

We saw the anticipated array of impressive specimen material from China, India and Pakistan, but it was also interesting to see some of the more unusual species and locations from countries such as Japan, Vietnam and Taiwan. Examples included fluorite from Myanmar and fluorite included in quartz from China; blue aragonite and clear calcite and barite from China; various impressive zeolites, scolecite, apophyllite stilbite, prehnite and cavansite from the basalts of India; pyromorphite, stibnite, beryl (var goshenite), hubeite and many others from China; pargasite from Vietnam; graphite and spinel from Sri Lanka; and a variety of gem minerals from the pegmatites of Pakistan and into Afghanistan.

In May we considered the topic of “Minerals and Volcanics” which, whilst allowing some members to save time by bringing their Indian basalt minerals from the previous meeting, also allowed for a comparison of the species and forms available in different countries and regions. The majority of the material presented represented minerals hosted in basaltic rocks such as the zeolites and calcite/aragonites. However, a variety of examples were also available of minerals found in other volcanics such as in rhyolite lavas and directly volcanic minerals such as sulphur from gas vent deposits.

We considered examples of bixbyite and red beryl from the rhyolites of Utah USA; apophyllite, babingtonite and cavansite from the Deccan Trap basalts of India; natrolite, calcite and gmelinite/chabazite from Flinders; calcite, aragonite and gonnardite/natrolite from Bundoora; siderite from Narre Warren; thomsonite from Jindivik; quartz and others from the Mt Reid volcanics in Tasmania; tetrahedrite and arsenopyrite from Barraba in NSW; prehnite and adularia from Garrawilla in NSW; mordenite, sulphur and vivianite from the volcanic districts of New Zealand’s north island; “Pele’s Hair” habit of lava from Hawaii; zircons from Lake Bullen Merri; and a wide range of other species from Portland, Benambra, and the various scoria volcanoes and basalt lava flows of Victoria.

The meetings are an open show and discussion format and all society members are welcome to attend. Meetings typically aim for people to arrive around 10:00am for a 10:30am start, allowing time for people to unpack specimens. If you wish to attend, have any questions or have suggestions for topics you would like to see covered then please catch up with Alex Blount.

### **Society Micromineral Collections**

Broken Hill Collection – Alex Blount

Iron Monarch Collection – Alex Blount

Victorian Collection – Alex Blount

The collections currently contain over 600 micro-mineral specimens from their respective regions. We are always looking for new donations of specimens (preferably mounted but not essential), especially from new or recent finds, but updates or multiples of existing species are also appreciated.

The collections are available to all members to borrow on a monthly basis and they provide an excellent way to compare your own material from field-trips with ‘already identified’ reference specimens. If anyone wishes to borrow the collections or peruse a copy of the catalogue, please catch up with the curators listed above.

**FIELD NATURALISTS CLUB OF VICTORIA**  
*GEOLOGY SPECIAL INTEREST GROUP*



Meetings take place at 8pm at the FNCV Clubrooms at 1 Gardenia Street, Blackburn, 3130 (Melway 47 K10) Further information on the talks and excursions is available from Rob Hamson, 9557 5215 AH, [robhamson1949@hotmail.com](mailto:robhamson1949@hotmail.com), Clem Earp 9885 1548 AH or Noel Schleiger 9435 8408 AH.

Details of field trips appear in the issue of the *Field Nat News* published the month before the date of the excursion. As a voluntary organisation funded entirely by our members' subscriptions, we welcome visitors but there is a charge of \$2 per non-member for each meeting and \$5 per excursion attended to help cover our costs. Members of affiliated clubs pay \$2.50 for excursions.

Membership: Joint/Family \$85, Single \$65, Concession \$50, Student \$25. Further details from FNCV Office 9877 9860.

**GEOLOGY CALENDAR**  
**June – September 2009**

**Sunday 5<sup>th</sup> April - Excursion**

**Collecting Fossils at Waurm Ponds Quarry.** Sharks' teeth and more. Courtesy of Alex Walker, Quarry Manager and Blue Circle Cement. Details in *FNN*. Contact: Rob Hamson

**Wednesday 24<sup>th</sup> June - Uplift of the Strezlecki Ranges, relatively recent tectonism on a supposedly 'dead' continent.** Assc Prof John Webb, Environmental Science, Latrobe University.

**Wednesday 22<sup>nd</sup> July - Fake gold but real history, Victoria's gold nuggets.** Dermot Henry, Mngr Natural Sciences Collections, Museum Victoria.

**Sunday 26<sup>th</sup> July - Geology group excursion. Central Victoria, an excursion to 16km under Bendigo, one of the world's largest goldfields.** Geoff Turner project manager, Exploration Management Service, Bendigo.

**Wednesday 26<sup>th</sup> August - The Port Phillip Bay Channel Deepening Project.** Jeff Bazelmans. General Manager Environment with the Port of Melbourne's channel deepening project

**Wednesday 23<sup>rd</sup> September - Silver deposits in the Czech Republic, the rise and fall of two empires.** John Haupt, Foundation member of the Mineralogical Society of Victoria

Contact Ruth Robertson 03 9386 5521 [rutherob@hotmail.com](mailto:rutherob@hotmail.com)

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**WANTED**

Mineralogical Record Back Issues Vol 2 No 2 & Vol 2 No 5 for the **MinSoc Library**.

Please contact any committee member if you can assist with these.

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## THE MINSOC TRADING POST

For Sale

Microscope 15X, 30X good condition with box \$200.

Minerals of Broken Hill 1st edition Ex condition still in original cardboard packing cover.

Contact Volker Hoppe 03 9578 4029

Society members can submit brief descriptions of specimens, equipment or other mineral related items that they wish to sell, swap or give away.

At General Meetings there are often some minerals for sale after the meeting.

This is open to all – feel free to bring your minerals along.

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## RESOURCES, NEW PUBLICATIONS & REFERENCES OF INTEREST

If any Society members become aware of new publications relevant to mineralogy or existing items that they feel would be of benefit to members, please feel free to let a committee member know. Where appropriate, the Society can look to obtain copies for inclusion within the library.

**The Mineralogical Record:** Mar-Apr 2009

**Rocks & Minerals:** Mar-Apr 2009

**The UK Journal of Mines and Minerals:** No.30 2009



**Rocks &  
Minerals**

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## Lake Boga minerals to feature on ABC TV's Catalyst programme

Over the past few weeks reporters from the ABC TV science programme 'Catalyst' have completed filming for a story on the uranium minerals from the Lake Boga quarry. Their interest arose from my article in last year's Australasian Science magazine, which described the uranium minerals, our attempts to determine their age, and the significance of the occurrence for predicting the behaviour of uranium in groundwater over time. As Mineralogical Society members know, five uranium phosphates — torbernite, saleeite, metanatroautunite, ulrichite and lakebogaite — have been found at Lake Boga, the last two being new species. They owe their existence to the granite containing primary uraninite, copper sulphides and apatite-(CaF), which are subject to dissolution when attacked by acidic groundwater during weathering. However the uranium is locked up almost immediately in the form of insoluble secondary phosphate minerals. Dating experiments using the U–Th disequilibrium method, commenced by Stuart Mills in 2003 and later extended with more samples, suggest that these minerals largely crystallised during the period between about 100,000 and 500,000 years ago. If uranium phosphates are stable over such long time periods, there are implications for the long-term storage of uranium-bearing by-products.

The Catalyst program will go to air on Thursday June 11 and will feature interviews with Dr Roland Maas, who carried out the dating analyses, and me. Filming took place onsite at the quarry and in Dr Maas's laboratory. It's great to have a mineralogical story get some national coverage.

Bill Birch

# MINERALOGICAL TRAVELS IN EUROPE

By John Haupt

After attending the M&M 5 conference in Paris and the associated field excursion in the French Alps in 1994, we travelled south to Avignon in Provence. We hired a car and drove south east to the Cote d'Azur region. Whilst in the region, we just had to visit the famous mineral locality of Cap Garonne, which has yielded quite a few mineral species in common with Broken Hill. The mine is Mine du Cap Garonne, located on a pretty headland (Cap = Cape) jutting into the Mediterranean, near the village of Le Pradet, east of Toulon. Cap Garonne is a notable locality for micro minerals with 128 species being recorded, including 12 new species.

## History

In 1857, Messers Layel & Martel of Marseilles opened a quarry for sandstone paving stones at Cap Garonne. Their initial work uncovered copper and lead mineralization and in 1862 they were granted a concession to mine lead and copper. They brought in Italian miners to work the deposit. The extracted ore was sorted by women at the pithead and sent to Swansea in Wales for treatment, which was at that time was the European centre for copper extraction. However the mine was not profitable, principally due to the high cost of transporting the ore along the coast to Marseilles where it was loaded onto ships and sent to Swansea. In 1873 the mine was purchased by Mr Unwin of England, who developed the workings, expanded operations and reduced the mining costs. It became profitable until a fault was encountered in 1877. Mining ceased in 1884.

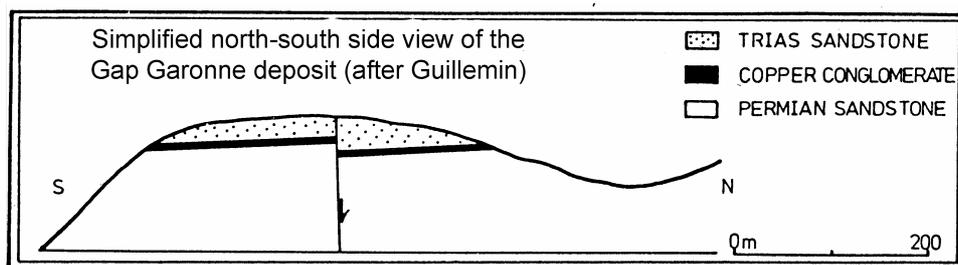
In 1892, Mr Roux (a local person) installed a treatment plant to make copper sulphate for use as a fungicide for the local grape growers, but it was unprofitable. In 1903 a further attempt was made to work the mine, which included an unsuccessful attempt to construct a railway line to transport the ore to Marseilles. Another attempt was also made to produce copper sulphate, but the hardness of the rock damaged the machinery and work was abandoned in 1907. Several other attempts were made to reopen the mine before it was finally abandoned in 1917.

Between 1933 and 1956, the underground workings were used to grow mushrooms.

Interest in the mineralogy of the deposit came from a thesis prepared by Mr Claude-Jean Guillemin in 1949, with another paper being published in 1952. His research identified 29 mineral species occurring at Cap Garonne and aroused the interest of French mineral collectors. The mine became a popular collecting site for micro minerals into the early 1980s, when work on a mining museum was commenced. The mineral Guilleminite from the Democratic Republic of Congo is named after him.

## Geology

The deposit occurs within a sedimentary sequence of reddish- to green schistose rocks alternating with beds of sandstone which were deposited in the Upper Permian. The Permian-Triassic boundary is represented by a light coloured bed of conglomerate consisting of quartzite boulders & gravel cemented with mica rich clays, which is overlain with Tertiary sandstone. The primary source of mineralization is considered to be hydrothermal deposits in the nearby Hercynian massif. The erosion of these deposits resulted in the remobilisation of the lead & copper into the sedimentary sequence. Later remobilization of copper & lead by percolating ground waters led to their redeposition in the conglomerate layer, producing a wide range of secondary minerals.



## Mine Museum

In 1984 local interest in the mine's heritage was recognized and work commenced to make the workings safe and establish a mining museum. This was opened in 1994. The museum provides an underground tour through the old workings and into a chamber where glass display cases with microscopes allow visitors to look at some of the Cap Garonne minerals.

## Mineralogy

A lead-copper deposit, the primary mineralization is galena, chalcopyrite, sphalerite, pyrite, bornite and tennantite. The leaching of these primary minerals by surface waters percolating through the conglomerate layer formed chalcocite and covellite, the main ore that was mined. Further leaching formed the secondary minerals, principally sulphates and arsenates, with oxidization forming carbonates and hydroxide minerals, such as azurite and malachite, which are particularly abundant in the deposit. Olivenite is the most common arsenate mineral. Minor amounts of other metallic elements in the deposit, such as silver, vanadium, titanium, uranium, molybdenum have resulted in the large number of mineral species that have been found in the small deposit.

There are 128 mineral species that occur at Cap Garonne. Most are small and it is a notable locality for collectors of micro minerals. It is the type locality for 12 mineral species as follows:

### **Camerolaite** $\text{Cu}_4^{2+}\text{Al}_2[\text{HSb}^{5+}\text{O}_4,\text{SO}_4](\text{OH})_{10}(\text{CO}_3)\cdot 2\text{H}_2\text{O}$ .

First described by Sarp and Perroud in 1988 and named after Michel Camerola, a mineral collector who collected the first specimen.

### **Capgaronnite** $\text{HgS}\cdot\text{Ag}(\text{Cl},\text{Br},\text{I})$

First described by Sarp, Mason & Mumme in 1990 and named after the locality, Cap Garonne.

### **Deloryite** $\text{Cu}_4^{2+}(\text{UO}_2)(\text{MoO}_4)_2(\text{OH})_6$

First described by Sarp & Chiappero in 1990 and named after Jean Claude Delory, a french mineral collector and land surveyor from Toulon France, who collected the first specimens.

### **Geminite** $\text{Cu}^{2+}(\text{As}^{5+}\text{O}_3\text{OH})(\text{H}_2\text{O})$

First described by Sarp & Perroud in 1987 and named from the Latin Gemini, the twins as the mineral is extensively twinned.

### **Guarinoite** $(\text{Zn},\text{Co},\text{Ni})_6(\text{SO}_4)(\text{OH},\text{Cl})_{10}\cdot 5\text{H}_2\text{O}$

First described by Sarp in 1991 and named after Andre Guarino, a mineral collector and medical technologist from Toulon, France.

### **Iltisite** $\text{HgS}\cdot\text{Ag}(\text{Cl},\text{Br})$

First described by Sarp in 1994 and named after Antoine Iltis who first found the mineral.

### **Mahnertite** $(\text{Na},\text{Ca})\text{Cu}_3^{2+}(\text{AsO}_4)_2\text{Cl}\cdot 5\text{H}_2\text{O}$

First described by Sarp in 1994 and named after Dr Volker Mahnert, Director of the Natural History Museum in Geneva, Switzerland.

### **Perroudite** $\text{Hg}_5\text{Ag}_4\text{S}_5(\text{Cl},\text{I},\text{Br})_4$

First identified by Sarp in 1987 and named after Mr Pierre Perroud, Professor in the Voltare College at Geneva, Switzerland for his work on Cap Garonne minerals. Bill Birch, Allan Pring and Ernie Nickel co-authored the paper, which also identified perroudite occurring at Broken Hill (NSW) and Coppin Pool (WA).

### **Pradetite** $\text{CoCu}_4(\text{AsO}_3\text{OH})_2(\text{AsO}_4)_2\cdot 9\text{H}_2\text{O}$

First described by Sarp in 1991 and named after Pradet, the nearest town to Cap Garonne.

### **Pushcharovskite** $\text{Cu}(\text{AsO}_3\text{OH})\cdot\text{H}_2\text{O}$

First described by Sarp in 1996 and named after Professor Dimitry Pushcharovskiy, crystallographer at the Moscow State University, Russia.

**Thérèsemanganite**  $(\text{Co,Zn,Ni})_6(\text{SO}_4)(\text{OH,Cl})_{10}\cdot 8\text{H}_2\text{O}$

First described by Sarp in 1996 and named after Thérèse Mangan of Toulon France, a former mathematics teacher and President of the Association of Friends of the Mine of Cap Garonne.

**Zdenekite**  $\text{NaPbCu}_5(\text{AsO}_4)_4\text{Cl}\cdot 5\text{H}_2\text{O}$

First described by Chiappero in 1993 and named after Dr Zdenek Johan, Director of Scientific Affairs, Bureau de Recherches Géologiques et Minières in Orléans, France.

**Contributors to Gap Garonne Mineralogy**

Following the mineral discoveries of Claude-Jean Guillemin mentioned earlier, the main contributors to Cap Garonne mineralogy have been from Geneva in Switzerland.

The pre-eminent contributor is Professor Dr Halil Sarp. Born in Turkey in 1944 at Karacasu in the Aegean region of Turkey, he completed his education at the University of Geneva in Switzerland. He became the Curator, Department of Mineralogy at the Natural History Museum in Geneva and held the Chair of Mineralogy at the University of Geneva. He has published over 100 papers on mineralogy and described over 40 new mineral species. Between 1987 and 2005 he identified 49 species at Cap Garonne, including 11 new mineral species. He retired in 2006 and currently teaches jewellery design with decorative stones and mineralogy programs at the Karacasu University High School in Turkey.

Professor Peirre Perroud at the Voltaire College in Geneva. Between 1984 and 1987 he identified 14 species from Cap Garonne. He is retired and currently maintains a website of mineral photographs - Athena Mineral Pictures.

Australian contributors include Bill Birch, Allan Pring & Ernie Nickel who co-authored the paper describing Perroudite. William Mumme at CSIRO co-authored the paper describing Capgarronite. Bill Birch first identified philipsbornite from Cap Garonne.

**References**

Sarp, H., Birch, W.D., Hlava, P.F., Pring., A., Sewell, D.K.B., Nickel. E.H., 1987: Perroudite, a new sulfide-halide of Hg and Ag from Cap Garonne, Var, France, and from Broken Hill, New South Wales, and Coppin Pool, Western Australia. *American Mineralogist*, 72, 1251-1256.

Van den Berg, W.W., 1987 : Cap Garonne Secondary Copper and Lead, Rock Bottom, p11-15.

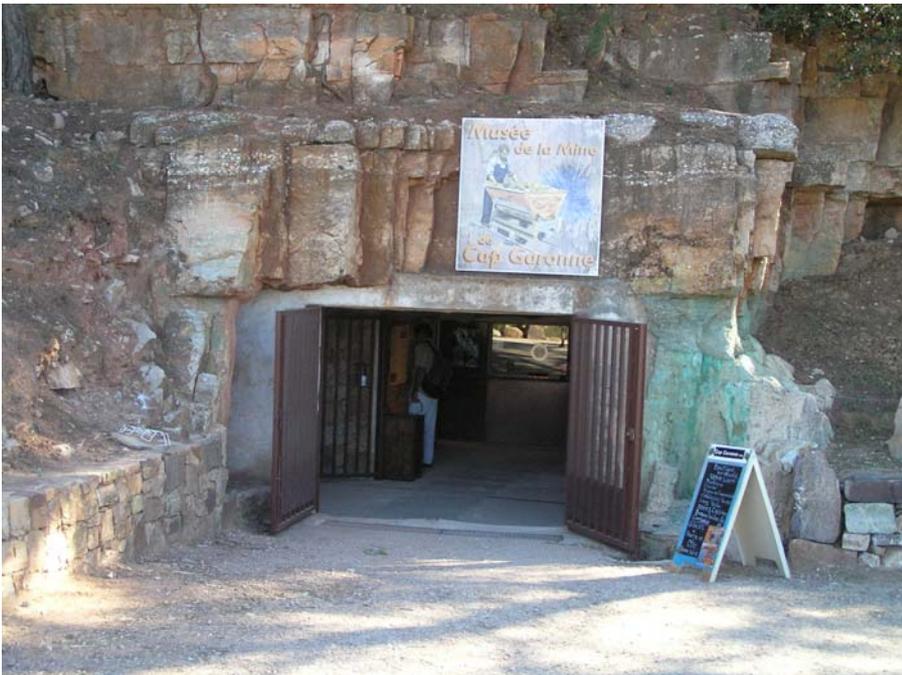
Website: Cap Garonne Museum - [www.mine-capgaronne.fr](http://www.mine-capgaronne.fr)

## Minerals found at Cap Garonne

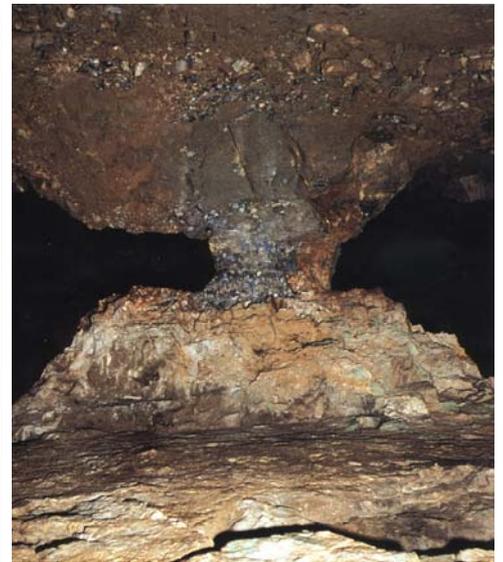
137 entries listed. 128 valid minerals. The 12 minerals with Cap Garonne as the type locality are shown in bold.

Adamite var: Cobaltoan	Cornubite	Paratacamite
Adamite var: Cuprian Adamite	Cornwallite	Parnauite
Agardite-(Y)	Covellite	<b>Perroudit</b>
Allophane	Cuprite	Pharmacosiderite
Alumopharmacosiderite	Cyanotrichite	Moorhouseite
Anglesite	<b>Deloryite</b>	Mottramite
Antlerite	Devilline	Olivenite
Arsenocrandallite	Diaboleite	Osarizawaite
Arsenogorceixite	Dickite	Philipsbornite
Arsenopyrite	Digenite	Plattnerite
Arsentsumbite	Dravite	Plumbojarosite
Arthurite	Duftite	Posnjakite
Atacamite	Dundasite	<b>Pradetite</b>
Azurite	Enargite	'Psilomelane'
Bariopharmacosiderite	Erythrite	<b>Pushcharovskite</b>
Barium-zinc- alumopharmacosiderite	Francevillite	Pyrite
Baryte	Galena	Pyromorphite
Bayldonite	Gartrellite	Quartz
Beaverite	<b>Geminite</b>	Rutile var: Strüverite
Beudantite	Gersdorffite	Sauconite
Boleite	Goethite	Schorl
Bornite	Gold	Schulenbergite
Botallackite	Gorceixite	Schultenite
Brochantite	Goudeyite	Scorodite
Calcite	Graphite	Serpierite
Caledonite	<b>Guarinoite</b>	Siderite
<b>Camerolaite</b>	Gypsum	Siderotil
<b>Capgaronnite</b>	Halloysite	Smithsonite var: Cobaltoan
Carbonatecyanotrichite	Helmutwinklerite	Smithsonite
Carminite	Hidalgoite	Spangolite
Céruélite	Illite	Sphalerite
Cerussite	<b>Iltisite</b>	Strashimirite
Chalcanthite	Kaolinite	Sulphur
Chalcocite	Langite	Tennantite
Chalcophyllite	Lavendulan	Tetrahedrite
Chalcopyrite	Limonite	<b>Thérèsemagnanite</b>
Chenevixite	Linarite	Tsumcorite
Chlorargyrite	<b>Mahnertite</b>	Tyrolite
Cinnabar	Malachite	'Wad'
Claraite	Mansfieldite var: Cuprian	Wroewolfeite
Clinoclase	Mansfieldite	Wulfenite
Conichalcite	Metazeunerite	Yvonite
Connellite	Mimetite	<b>Zdenekite</b>
Copiapite	Mixite	Zeunerite
Copper	Montmorillonite	Zircon

Source: Mindat



Left: Cap Garonne adit, now the museum's entrance.



Below & left: Old workings showing the narrow ore seam.

Mineral display inside the mine gallery.





Above: Capgaronnite. Photo: Cap Garonne Museum.



Above: Cyanotrichite. FOV 4mm. Photo & Specimen: J. Haupt.

Below: Adamite. Photo: Cap Garonne Museum.

Below: Mixite and olivenite. FOV 4mm. Photo & Specimen: J. Haupt.



Cyanotrichite.  
Photo: Cap Garonne  
Museum.