



Mineralogical Society of Western Australia (inc.)

April 2005

Volume 5, Issue 1

PRESIDENT'S REPORT.

$$E=MC^2$$

ENERGY required = MASS of detailed planning x SPEED at which it must be done.

This is the equation required to produce a seminar. I am pleased to report that your committee is expending more than enough energy to produce the required result.

The planning for the 2005 Seminar is well on track. A very interesting two day program has been arranged, followed by a fascinating four day field trip and the release of an extensive and detailed publication on the minerals to be found in the Kalgoorlie region.

At our recent meeting Mr. Peter Downes, from the W.A.Museum, gave a very informative and entertaining PowerPoint presentation of the minerals to be found in the Telfer area. Thank you Peter.

It is sad to report that some members are well overdue with their annual subscriptions. I am sure that it is simply an oversight that will be rapidly rectified.

I look forward to seeing you all at our next meeting.

NEW MEETING FORMAT.

In response to some suggestions made by our members and after some considerable debate at the last committee meeting. We have decided to revise the format of our meeting . We will be grateful for your observations, ideas and suggestions. In particular we want to make our meetings more hands on. This includes member participation by bringing along mineral specimens and having workshops to help advance our skill and knowledge, especially in being able to identify minerals. Each newsletter will have "Notice" of what category we would like members to bring along. The April meeting requires a specimen from the Cubic (Isometric) system.

Forward Diary 2005

February 2th
General Meeting

April 6nd
General Meeting

June 1nd
General Meeting

August 3th
Annual General Meeting

October 5th
General Meeting

December 7th
General Meeting

Newsletter Contents.

President's Report.

Report by Mark Jacobson
on the Tucson Gem and
Mineral Show
Tucson, AZ, USA.

Crystal Systems Guide.

AJMSS 2005 Registration
Forms.

Some Mineral Additions
To DR. SIMPSON'S
"MINERALS OF WESTERN
AUSTRALIA".

Wanted Notice

To help bolster our treasury with sufficient funds to organize and run the AJMSS, we are asking all members if they could please pay for their Seminar registration , as soon as possible. At the next club meeting would be appreciated.

Tucson Gem and Mineral Show Tucson, AZ, USA 10-13 February 2005

Report from Mark Jacobson

This year, as in other years, almost 40,000 people attended the numerous hotel and parking lot shows as well as the official show in the convention center. The official show theme was the minerals of China. China's minerals were celebrated with numerous mineral displays and a one-day symposium on the minerals of China. The show hosted a gathering of mineral people from around the world, including many Australian dealers, collectors and curators.

The array of Chinese minerals displayed included gemmy scheelites, light coloured aquamarines on muscovite, purple and green octahedral fluorite on quartz, cinnabars, helvites and spessartites on smoky quartz, and calcites. Keith Proctor, Bill Larsen and Gene Meieran displayed their incredible collections of euhedral gem crystals – spodumenes, euclases, tourmalines, topazes and beryls. The Smithsonian (USA) displayed some of the USA classics in their collection- the Jolly Green Giant elbaite from the Dunton gem mine, Newry; the Roebbling apatite from Mt. Apatite, Maine; emerald from the Rist mine, and kunzite from the Pala Chief mine, Pala and many others. Other special exhibits were provided by 32 other museums – including the University of Wollongong, NSW. Some of my favorites were a 3 centimetre diameter, perfectly euhedral tapiolite from the Alto do Giz pegmatite, Rio Grande Norte province, Brazil; a lightly etched, deep green pocket beryl from Luumaki, Finland and a giant, metre long amethyst group from the Anahi mine, Bolivia.

Three new discoveries were exhibited at the show. In December 2003, James Hill opened a new pocket at his emerald mine (next to the former Rist mine pits and 1 mile north of town) in Hiddenite, North Carolina. The largest matrix specimen recovered from the pocket was a terminated emerald crystal more than 15 m long weighing 1869 carats on a matrix of calcite-ankerite. This specimen was purchased by the Houston Natural History Museum for a rumored greater than \$USA 1 million dollars. Without a doubt it is the finest North American emerald specimen and is at least one of the finest emerald specimens in the world.



Left: Emerald from the James Hill mine (adjacent to the former Rist mine), Hiddenite, North Carolina. Pocket discovered December 2003

Below: Emerald from the Adams Farm, Hiddenite, North Carolina. Smithsonian specimen.



The second discovery was the opening of a large metre-sized gem pocket of coloured tourmalines from the Mt. Mica mine, Paris Hill, Maine in December 2005 by Gary and Mary Freeman. Numerous green, pink and multicoloured gem pocket tourmalines more than 15 centimetres long and up to 6 centimetres wide were recovered. The best were on display with many of the good terminated crystals for sale by the dealers

Graeber and Himes in the USA\$ 5,000 to \$ 100,000 price range. The gemmy greens were particularly attractive. These are the first new Mt. Mica elbaite offered for sale in more than a decade.



Left: Largest matrix aquamarine from Mount Antero, Colorado found by Steve Broancato, July 2004. The crystal is 15 cm tall. Below: 6 cm aquamarine on smoky quartz.



Right: Green terminated, multicoloured elbaite from the Mount Mica Pegmatite, Paris Hill, Maine. Discovered by Gary and Mary Freeman in November-December 2004. Crystal is 20 cm tall.

In July 2004, Steve Brancato and field partner opened a smoky quartz-aquamarine pocket on Mount Antero. Their prospecting work on the mountain was financially and technically supported by Bryan Lees of the Collector's Edge. The best three crystals from this discovery after reconstruction by Bryan Lees were displayed. The largest specimen was a 15 by 1 centimetre terminated, mostly gemmy medium blue (not sea blue-green) aquamarine "sprouting" from a smoky quartz-microcline-albite-muscovite matrix.

The other two matrix specimens were of smaller (6-8 centimetres long) but similar aquamarines also sprouting from miarolitic cavity matrices. There will be a brief article on this discovery in the May/June Rocks&Minerals issue.

The numerous motel-hotel-tent shows are spread out across the city. The quantity of minerals, fossils and gems to view is beyond the strength of anyone to actually visit them all, even with the two weeks of show-time. From Western Australia, David Vaughan was selling his material (orbicular granite from Boogardie Station, banded ironstone, and stromatolites from the Pilbara) including his new variscite discovery, with colour every bit as bright as the classic Utah blue-green nodules. Several other Australian dealers were selling Australian gold nuggets, Yinnietharra dravite, Mt. Isa schorl, New South Wales cassiterite, Northern Territory "crawfish" and Tasmanian crocoite. Brazilian pegmatite minerals and amethyst, Madagascar rose quartz and celestite, African malachites, Indian zeolites and Pakistan-Afghanistan pegmatite minerals were still abundant. Prices ranged from low to outrageous. Excellent miniatures specimens for less than \$50 can still be found - \$15 for 6 cm Indian stilbitis on matrix, \$10 Chinese quartzs, \$25 Brazilian amethysts, \$40 Swiss adularia on matrix, or \$25 schorls from Brazil and Namibia. Pretty minerals are easy to find, but minerals to fit a special collection are more difficult. Searching out unique minerals takes endurance since everyone is trying to find the special items. But Tucson is still a mineral collector's candy shop. It is also the place to catch up on mineral news and mineral people.

Mineral Identification Workshop.

A series of articles to assist us in one of our objectives ,education.

Crystal Systems

Most minerals develop orderly geometrical atomic structures that are specific to the particular mineral crystal. The atomic structure controls the symmetry and overall shape of the crystals. In crystallography, crystals are divided into seven such symmetry systems. The difference between them is determined by crystal axes and angles. On the opposite page are diagrams of the seven crystal systems and some typical crystal forms

Cubic System (Isometric and Regular)

All three axes have the same length and intersect at right angles. Typical crystal shapes are the cube and octahedron (8 faces), rhombic dodecahedron (12 square faces), pentagon dodecahedron(12 pentagonal faces), icosi-tetrahedron (24 faces), and hexoctahedron 1,48 faces!

Tetragonal System All three axes intersect at right angles: two are of the same length and are in the same plane while the third (main axis) is either shorter or longer Typical crystal shapes are four-sided prisms and pyramids, trapezohedrons and eight-sided pyramids as well as double pyramids.

Hexagonal System Three of four axes are in the same plane, are of equal length and intersect at an angle of 120° respectively 60° The fourth axis of differing length is at right angles to the others Typical crystal shapes are hexagonal prisms and dipyramids as well as dihexagonal dipyramids and double pyramids,

Trigonal System (Rhombohedral) Axes and angles are similar to the preceding system and often the two systems are combined as the hexagonal. The difference is one of symmetry In the hexagonal system, the cross section of the prism base is six-sided: in the trigonal system, it

is three-sided. The hexagonal shape is formed when the corners of the triangles are beveled. Typical crystal shapes are three-sided prisms and pyramids, rhombohedra, and scalenohedra

Rhombic System (Orthorhombic)

Three axes of unequal length are at right angles. Typical crystal shapes are basal pinacoids, rhombic prisms and pyramids as well as rhombic double pyramids.

Monoclinic System Two of the three axes—all unequal in length—are at right angles to each other: the third is inclined. Typical crystal forms are basal pinacoids and prisms with inclined end faces,

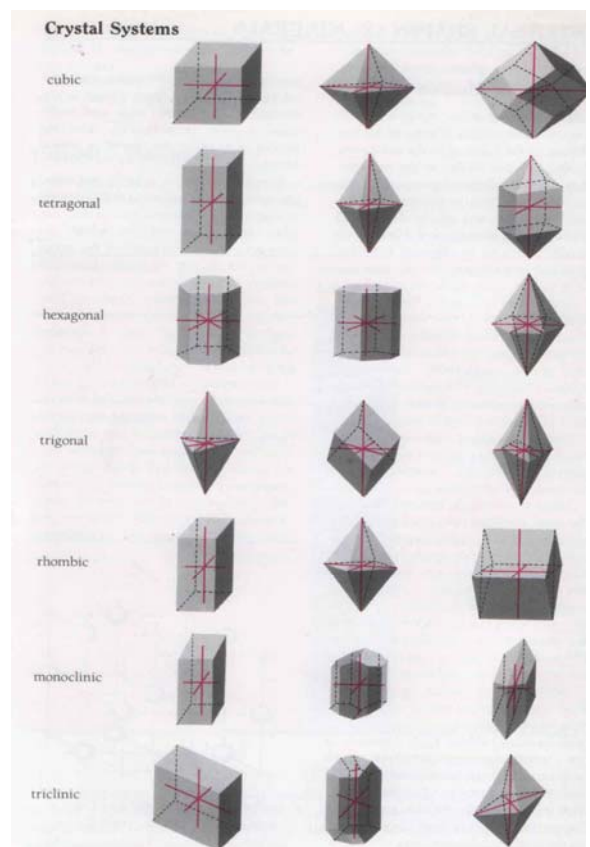
Triclinic System All three axes are of different length and inclined towards each other. Typical crystal forms are paired faces,

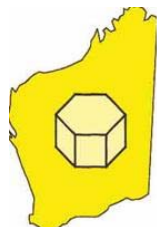
The Law of Constant Angles

Each crystal may seem to be different, even when they belong to the same group,

Most crystals are not regularly shaped: Some are large, some small: some narrow: some wide: some straight, some angled As the crystal grows naturally some crystal faces develop better and are more pronounced.

The form of each crystal in the group appears to be irregular with the size and relationship of faces seeming to be different. However, the angles between the faces always remain constant among minerals belonging to the same group. Whenever identifying an unknown mineral on the basis of crystal shape, try to imagine the ideal form while inspecting the real crystal shape. Some minerals occur in combinations of crystal forms such as octahedron and cube.





Mineralogical Society of Western Australia (inc.)

proudly hosting the
28th Annual Joint Mineralogical Societies Seminar 2005
 Saturday 11th & Sunday 12th June

“All that glitters is not gold”

To be held at the clubrooms of the W.A.Lapidary and Rockhunting Club.

31 Gladstone Street Rivervale

Thank you for your expression of interest in attending the above seminar

Please complete this registration form and forward with

payment by 17th April 2005 - would be greatly appreciated

to:- The Treasurer C/- John Reeve 13 Buchan Place Hillarys W A 6025

Delegate

Name: _____

Address: _____

Contact: Mobile: _____ Home or Business Contact number: _____

Details	Payment Record
SEMINAR 11 June & 12 June	
\$60 per person includes continuous tea, coffee, milo, water Morning and afternoon tea with fruit juice	
Please indicate number of places required @ \$60 each	
LUNCH on Seminar days 11 June & 12 June	
\$10 per person per day Day 1: Quiche – salad - fruit Day 2 Lasagne - salad – fruit	
Please advise if you would like lunch but have special dietary requirements	
Please indicate number of lunches required @ \$10 each	
DINNER Saturday 11th June	
“The Café” Hyatt Regency Hotel - Perth 6 pm to 11 pm	
99 Adelaide Terrace Perth 9225 1234 Good parking around hotel or paid parking in car park underneath hotel	
Smorgasbord buffet dinner	
Reserved function Joint Mineralogical Societies	
Please indicate number of places required @ \$42 meal only	
NOTE: All delegates, partners and friends are welcome to attend dinner	
Total of cheque	

Mineral Exchange & Swap Meet Sunday 12th June 8.30 am to 10 am

To assist in making your stay in Western Australia more enjoyable

Interstate visitors to Perth –Please could you complete the following by ticking appropriate square –

I am coming to Perth by plane	I am driving to Perth	Other:- Eg travelling by train
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Whilst in Perth:-

Staying with friends	Booking accommodation; motel, hotel	Booked accommodation caravan park
Will have own transport	Would need transport to Seminar	

See separate page for Field Trip



Mineralogical Society of Western Australia (inc.)

proudly hosting the
28th Annual Joint Mineralogical Societies Seminar 2005

Field Trip - Monday 13th June to Thursday 16th June

“All that glitters is not gold”

Visiting Coolgardie and Kalgoorlie

Personal safety whilst on field trip:-
 Remember to wear sturdy boots or shoes; hat regular and hard; plus safety glasses
 and bring containers of drinking water

Please complete and forward to:-

The Treasurer C/- John Reeve 13 Buchan Place Hillarys W A 6025

FIELD TRIP REGISTRATION FORM 13th - 16th June 2005	Please tick
Access to all sites by two wheel drive vehicle – location map supplied	
Accommodation will be at Coolgardie & Kalgoorlie We will be staying in Coolgardie for 2 nights on Monday 13 th & Tuesday 14 th June and staying in Kalgoorlie for 1 night Wednesday 15 th June If you prefer it is possible to stay the 3 nights in Coolgardie	
Yes, I will be going on the field trip Name: _____ Address: _____ Contact Mobile: _____ Home/Business: _____	
I/we will be travelling independently	
~~~~~	~~~~~
I/we require transport for the field trip?  Name: _____ Address: _____ Contact Mobile: _____ Home/Business _____	
Mini bus transport is available for the field trip at a cost of \$250 per person for the four days - <b>Non-refundable deposit of \$50</b> <b>required by 17th April 2005</b> – Balance payable by Monday 6 th June 2005 Please indicate number of seats required on bus:-	Deposit of \$ enclosed
10 people per bus 14 seater bus – 4 seats allocated for luggage -	
Personal additional expenses whilst travelling – own expense	
Accommodation and meals extra and at own expense	

Do you require accommodation details for Coolgardie and/or Kalgoorlie? <b>YES / NO</b>
Do you require any other information?

**SOME MINERAL ADDITIONS TO DR.  
SIMPSON'S "MINERALS OF WESTERN  
AUSTRALIA"**

**John Reeve, March 2005**

Two objectives of the Society are:

- (i) to disseminate knowledge of minerals, their occurrence and associations, and
- (ii) to establish and maintain a register of mineral species and their occurrences in Western Australia.

Dr. Simpson's three volume work has been the main stay of collectors since its publication, however time has moved forward half a century, and with that march of time, new mineral species, new minerals to the State and new mineral locations have been discovered in Western Australia. Registers of such information are held in professional institutions and can be accessed through the appropriate means. To aid collectors generally, the Society has commenced its own Register to record mineralogical information stored in professional papers, collections and collector's heads. The information that follows is the start of the Register and is presented in this preliminary format as an example of the possible future direction of the Register. There is no intention to repeat the references in "Minerals of Western Australia".

***Aphthitalite* (K,Na)₃Na(SO₄)₂**

Toppin Hill, near Rason Lake

A soluble sulphate found in association with ammonium aphthitalite, phosphammite, weddellite and naturally occurring urea (Report of the Government Chemical Laboratories 1972).

Murra-el-elvyn Cave, Cocklebiddy, Nullarbor Plain  
Aphthitalite, with bi phosphammite, syngenite, monetite, hannayite, whitlockite, arcanite, brushite, mirabilite and guanine, form crystalline crusts on the walls and floor of a chamber in the cave. The minerals are derived from the interaction of bat excreta with limestone (Bridge, 1973)

***Arcanite* K₂SO₄**

Murra-el-elvyn Cave, Cocklebiddy, Nullarbor Plain  
Arcanite, with biphosphammite, syngenite, monetite, hannayite, whitlockite, aphthitalite, brushite, mirabilite and guanine, form crystalline crusts on the walls and floor of a chamber in the cave. The minerals are derived from the interaction of bat excreta with limestone (Bridge, 1973).

***Archerite* (K,NH₄)PO₄**

Petrogale Cave, east of Madura [**Type locality**]

Archerite was found in the form of small tetragonal crystals up to 2mm in length, and as crusts, colourless to buff in colour. The Petrogale Cave is entered through a small sinkhole in the limestone of the Nullarbor Plain and the main guano deposits are to be found at the far end of the cavern. The mineral, which is water soluble, was found on the upper portions of phosphammite stalactites, associated with apthitalite, halite, syngenite, stercorite, oxammite, weddellite, whitlockite, guanine, newberyite and calcite. Archerite is named for Dr. Michael Archer who first drew attention to the cave and its deposits (Bridge, 1977).

***Ardealite* Ca₂(SO₄)(HPO₄)₄H₂O**

Weelawadji Cave, Eneabba

Found with brushite and gypsum (Report of the Government Chemical Laboratories 1972).

***Bayldonite* PbCu₃(AsO₄)₂(OH)₂·H₂O**

Bali Lo Copper Mine, Ashburton Downs Station

Found with chenevixite, clinoclase, metazeunerite, comwallite, brochantite, pseudomalachite and malachite (Bridge and Pryce, 1978).

***Birnessite* Na₄Mn₁₄O₂₇·9H₂O**

Jingemia Cave, Watheroo

An associated mineral with sampleite, atacamite, weddellite, taranakite, todorokite and malachite (Bridge et al, 1978)

***Brushite* CaHP0₄·2H₂O**

Weelawadji Cave, Eneabba

Found with ardealite and gypsum (Report of the Government Chemical Laboratories 1972). Murra-el-elvyn Cave, Cocklebiddy, Nullarbor Plain  
Brushite with phosphammite, syngenite, aphthitalite, monetite, hannayite, whitlockite, arcanite, mirabilite and guanine form crystalline crusts on the walls and floor of a chamber in the cave. The minerals are derived from the interaction of bat excreta with limestone (Bridge, 1973).

***Frohbergite* Au₃(Ag,Pb)As₂Te₃**

North Kalgurii Mine, Kalgoorlie  
Frohbergite was identified in a suite of ore minerals from the lower levels (220 to 650 metres) of the now defunct North Kalgurii Mine, Kalgoorlie. In addition to frohbergite, the ore specimen consisted predominantly of pyrite, coloradoite, calaverite, petzite and gold with minor amounts of hessite, altaite, tetrahedrite, chalcopyrite and arsenopyrite (Grice and Bevan, 1989).

***Mattagamite* CoTe₂**

Unspecified mine in an area south of the Golden Mile, Kalgoorlie/Boulder

Golding (1978) reported mattagamite in one sample associated with frohbergite, calaverite, montbrayite, gold and pyrrhotite.

**Mendozavilite**  $\text{Na}(\text{Ca},\text{Mg})_2\text{Fe}^{3+}_6(\text{PO}_4)_2(\text{P}^5+\text{Mo}^{6+}_{11}\text{O}_{39})\text{OH},\text{Cl}_{10}\cdot 33\text{H}_2\text{O}$

A site near Twertup Creek, Fitzgerald River District (exact location unknown)

The mineral forms bright yellow crusts, microcrystalline cavity in-fills and pseudomorphs after molybdenite in quartz. This is the fourth recorded World occurrence of the mineral.

(Birch, W.D. et al, 2002)

**Montbrayite**  $(\text{Au},\text{Sb})_2\text{Te}_3$

Various former gold mines along the Golden Mile, Kalgoorlie/Boulder

In the Golden Mile lodes at Kalgoorlie, montbrayite has been found with gold, petzite, altaite, coloradoite, sylvanite and melonite. Shackleton and Spry (2003) noted that montbrayite is a rare gold telluride that appears to require the presence of impurities (antimony, bismuth, silver and lead) to stabilize its structure. Shackleton and Spry argue that the formula of  $(\text{Au},\text{Sb})_2\text{Te}_3$  for montbrayite may be inappropriate, and that the formula is more likely to be

$(\text{Au},\text{Ag},\text{Sb},\text{Bi})_2(\text{Te},\text{Sb},\text{Bi})_3$ .

**Perite**  $\text{PbBiO}_2\text{Cl}$

Glen Florrie Station

Found in samples collected at the end of the Glen Florrie Homestead airstrip. The fine grained, straw yellow mineral occurs in masses up to 1.5 x 0.5 cm associated with galena,cerussite,plattnerite, kaolinite, muscovite and tourmaline. The locality is a quartz vein intruding metasomatised metasediments probably of the Lower Proterozoic Wyloo Group (Bridge,1976).

**Stutzite**  $\text{Ag}_{.5x}\text{Te}_3$

Unnamed mine(s) on the Golden Mile, Kalgoorlie/Boulder

Stutzite is considered a rare telluride found in contact with krennerite, sylvanite, tellurantimony and pyrite (Shackleton and Spry, 2003).

**Tellurantimony**  $\text{Sb}_2\text{Te}_3$

Oroya Mine, B Eastern main lode and No. 4 Western main Lode, Kalgoorlie/Boulder

This rare tellurium mineral was observed in samples from these mine areas containing petzite, altaite and gold (Travis, 1966 and Shackleton et al, 2003). Tellurantimony was found in association with calaverite, coloradoite, stutzite and native tellurium.

**Tivanite**  $\text{V}^{3+}\text{TiO}_3(\text{OH})$

Lake View Mine, Kalgoorlie [Type Locality]

Tivanite was described by Grey and Nickel (1981) from one grain in rock from the Lake View Mine. The grain is black in colour and has a sub-metallic lustre. The specimen containing tivanite was in the "Green Leader" Kalgoorlie rock type consisting mainly of quartz, sericitic muscovite, carbonates and pyrite carrying a high gold content. The associated minerals with tivanite are quartz, vanadium-bearing muscovite and nolanite. Tivanite is named for its constituent elements - titanium and vanadium.

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**John Reeve, March 2005**



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## Membership Details:

Joining Fee \$5.00

Adult Member \$20.00

Newsletter only \$15.00

Email Newsletter- No charge to Min Soc members. Email to newsletter editor at [jandsman@bigpond.net.au](mailto:jandsman@bigpond.net.au)

An application form for membership can be obtained by writing to: -

The Secretary, J. Reeve

Mineralogical Society of Western Australia (Inc)

13 Buchan Place, Hillarys, W.A. 6025

Ordinary meetings of the Society are held on the **FIRST** Wednesday in February, April, June, August, October and December in the **W.A. Lapidary and Rock Hunting Club rooms 31 Gladstone Street Rivervale**, commencing at 7.30pm. The January meeting will involve social activities at a time and place to be notified.

## Visitors are most welcome

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Newsletter of the Mineralogical Society of Western Australia  
13 Buchan Place, Hillarys, 6025  
Western Australia, Australia

## OUR SOCIETY'S MISSION

To encourage mineralogical study by amateur and professional alike and, in so doing, discover, document and preserve the earth's and in particular Western Australia's natural history.

## OBJECTIVES

Whilst focusing on the minerals of Western Australia, the overall objectives of the Society shall be:

- (a) To advance the science of mineralogy.
- (b) To disseminate knowledge of minerals, their occurrence and associations.
- (c) To establish and maintain a register of mineral species and their occurrences in Western Australia.
- (d) To increase knowledge of related fields of earth science.
- (e) To keep members abreast of developments in mineralogy.
- (f) To encourage an appreciation of the aesthetic value of minerals.
- (g) To promote the proper care and preservation of mineral specimens.
- (h) To promote the conservation of the geologically unique and of the environment in general.
- (i) To provide a means of contact between professionals and amateurs in the various fields of the earth sciences.
- (j) To foster a sense of cooperation and understanding between individuals, institutions and resource companies in the field of mineralogy.
- (k) To provide a forum for debate and discussion on matters relating to mineralogy.

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