THE
MINERALOGICAL SOCIETY
OF
NEW SOUTH WALES INC.

C/o School of Natural Science
B.C.R.I. Parramatta Campus University of Western Sydney
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NEWSLETTER

SEPTEMBER 2011

The September Meeting will be held on Friday the 2nd of September at 7.30 p.m. in the LZG14 lecture theatre on the ground floor of Building LZ in the Science campus of the University of Western Sydney on the corner of Victoria Road and James Ruse Drive in North Parramatta.

At the September meeting there will be a talk to be given by Jim Sharpe on : -

'An Occurrence of Campigliaite at Broken Hill'

and a lecture by John Tottenham on : -

'A Prospector's Observations on Victorian Gold'.

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FORTHCOMING MEETINGS

Society Meetings will be held on the first Friday of each month through the rest of this year. Subject to circumstances some changes to the following schedule of program subjects and speakers may have to be made in due course.

October 7th:	Lecture by Professor Ken McQueen on 'Cinnabar (Mercury) Mining in Australia".
November 4th :	Lecture by Adam McKinnon on 'Establishing a New Mine at Mineral Hill'.
December 2nd :	Christmas Social.
February 3rd 2012 :	Lecture by Dieter Mylius and John Chapman on the 'Landforms and Minerals of Iceland'.
March 2nd 2012 :	Lecture, (not finalised), on 'Metallogenic Mapping. Locating the Mineral Deposits of N.S.W.'

April 13th 2012 : (Good Friday is on the 6th of April in 2012. The Society Meeting therefore will be held on the second Friday). The program is not finalised but may include a lecture on 'Diamonds'.

May 4th 2012 : Members Mini-Auction.

June 1st 2012 : (The Queen's Birthday public holiday will be after the second weekend of June). Meeting program to be advised.

July 6th 2012 : Lecture by Arthur Roffey on 'A Lifetime with Minerals'

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FIELD TRIPS

There will be a weekend trip to the Upper Hunter Valley / Scone area with an overnight stay over Saturday and Sunday, 3rd & 4th of September and a one-week trip to the Garrawilla area from Tuesday 4th to Monday the 10th of October.

Upper Hunter Valley Excursion. 3rd & 4th of September 2011

There has been a change in the itinerary. We will now visit the Bunnan calcite locality on Saturday and Ardglen Quarry on Sunday. Saturday night accommodation will be in Scone. Further details will be provided when you register your interest. Please register with John Chapman and provide your mobile phone number (if applicable). John may be contacted on 9808 3481 (Home) or 0435 085050 (Mbl) or by email at *chapman@optusnet.com.au*. To facilitate car pooling please let him know if you want, or can offer, a lift.

Garrawilla Excursion. 4th to 10th of October 2011
(following the long weekend and Gemkhana at Cessnock).

An opportunity to collect zeolites from the Garrawilla volcanics. Possible sites to be visited include Portabella, Garrawilla, Glendowda and Mullaley. This trip will involve field camping. Members can attend for the full period or any days between the 4th and 10th of October. Further details will be provided in due course.

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WISHING ALL THE BEST

The Committee learned only a week or two ago that long-time Society member Harvey Henley had been in hospital for surgery for a brain tumour. He was now back at home but with the prospect of undergoing a course of chemotherapy. The Society Committee wishes him, his wife Joan and his family all the best for the future.

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WELCOME

Welcome to new Society members Michael Lord of Rutherford
and William Kneprath of Castle Hill

THE ANNUAL GENERAL MEETING AUGUST 5th 2011

The 2011 A.G.M. was held in the LZG14 lecture room at U.W.S. North Parramatta as scheduled and attended by some thirty-five members comprising a quorum. The Meeting was opened by the Society Vice-President, John Chapman, who welcomed all the members attending the Meeting and apologized for the absence of the President, Dieter Mylius, who was overseas.

At the commencement of the Meeting there were a number of announcements. Graham Ogle advised that the next meeting to of the **MicroMineral Group** would be held at Jeanette Munsell's house next Saturday on the theme of 'Cloncurry Minerals'. Anyone was welcome to attend subject to them advising himself or J.Munsell of their interest.

Geoff Parsons described a recent visit that he had made to the Natural History Museum in London spending about two hours there. Peter Beckwith reported that at the forthcoming **Carlingford (Cumberland) Gem & Mineral Show** there would be a quantity of new Zambian material on display and for sale. Penny Williamson described a visit she had made to the annual **Mindat conference**, held this year in Poland which was very well organised and interesting. The next one will be held in Morocco in November 2012. Arthur Roffey reminded members that the **2012 Gemboree** would be held in Bundaberg and that it was not too early for anyone intending to be at the event to start making arrangements. In that regard if he were asked this evening he could provide them with registration papers by the next meeting.

The Vice-President mentioned the forthcoming **field trips**, to the Hunter Valley area and Garrawilla and stressed that he needed people to register with him their intention to go on the trips. He had to be given the numbers in advance.

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The Vice-President then commenced with the main business of the Annual General Meeting by reading out the Presidential Report for 2010/2011, prepared by Dieter Mylius.

MINERALOGICAL SOCIETY OF NSW

2010-2011 PRESIDENT'S REPORT

Good evening all. I apologise for not being here in person. My lame excuse is that we're in some distant country on long service leave.

It has been another good year for the Society, and I have had an enjoyable and satisfying term as President. I am sure you have all enjoyed a year of hugely interesting, varied and educational talks, as well as the now traditional May auction evening, and Christmas social and sale night. The first Friday of the month is something to look forward to. It has been good to see the strong membership attendance. It demonstrates the continued interest in what we do and the need for like-minded people to get together and chat about their passion.

As always, the December Christmas social was a great evening with John Chapman and his many helpers providing the usual excellent spread, and many members providing a wonderful selection of quality specimens for sale or exchange on the evening. We were bursting at the seams. Thank you to those members and guests that have donated specimens and given talks over the past year. Also a huge thank you to those people that do those little things that just seem to happen month in, month out, but often go un-noticed.

As well as the Friday meetings the Society had a presence at this year's Bathurst Gemboree, which drew favourable comment, and largely thanks to Jim Sharpe, had another successful sale to raise money for Kids for Cancer. Thank you to all who contributed to these events.

I thank the committee for being so committed to organising and running things smoothly. While most of us have been on the committee for many years, and enjoy it, it is not a closed shop, so if you feel that you would like to contribute to the successful running of the Society, new blood is always welcome. The workload in most cases is not high.

It's the first year for Graham Ogle as treasurer, and he has found time in his busy schedule to introduce online payment of fees for the convenience of members who wish to use that system. We are also looking at streamlining other areas related to membership fees, to make them simpler to administer and run.

We also thank Jim Sharpe, for his continuing guidance with matters financial, and his help, with David Colchester, in organising the talks program.

And where would we be without George Laking? He puts together the newsletter, keeps the minutes of the committee, deals with correspondence, does the mailing – this list goes on. If there's a question, George knows. Thanks George.

Last, but probably most importantly, I'm sure we'd all like to thank the University of Western Sydney and Peter Williams for the ongoing use of these facilities. We are indeed lucky to be able to meet here at no cost to the Society.

The Society website is still up and running, with many talks and newsletters available on line. It is undergoing some development of the photographic pages. As with all websites, it is a challenge to keep it up to date, but we are getting there.

The micro-mineral group continues to meet every other month in various people's homes, and is in the process of forging stronger relationships with other micro groups around Australia and New Zealand.

So again thank you all, and I wish the incoming committee a successful coming year.

Dieter Mylius
August 2011

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The Vice-President announced at this point that when the President had written his annual report he had not known that Peter Williams intended to step down from the Committee. This John Chapman suggested was a momentous occasion since Peter Williams has been a main-stay of the Society organisation for almost two decades. At a time in the very early 1990s the Society was experiencing a bad patch with falling attendance and interest but Peter Williams, assisted by Jim Sharpe and Laurie Lawrence as he insisted, stepped in and guided the Society back to prosperity. One feature among others of Peter William's work for the Society has been for him to have arranged venues for the monthly Meeting at locations such as the Coach House at Westmead and latterly in the U.W.S. north Parramatta campus. Very few other organizations have been provided with this privilege. John Chapman complimented Peter Williams for the very substantial support that he had provided to the Society thus far and hoped that his expert advice and guidance would continue for many more years.

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The Vice-President then asked the Society Treasurer, Graham Ogle, to read out the **Annual Financial Report**. Copies of the Report had been tabled throughout the Meeting room and the Treasurer was pleased to report that the Society was in good financial shape. He explained that the Society functioned with two bank accounts, an operating or cheque account and the bequest term deposit account, the capital of which had been derived from the bequest, (originally of $17,520), provided to the Society in the will of the late Betty Mayne. The bequest capital has been kept in a term deposit account since the Society was presented with a cheque from the executors, the interest gradually accumulating with some of it used for Society activities and special purposes on occasion. Having a substantial sum in reserve provided a considerable financial security to the Society.

The Treasurer went through the Annual Financial Report item by item noting that the Society, or its members who donated specimens to sell for Kids with Cancer had generated $1,376.30 for the charity and the Society had also sponsored the Australian Journal of Mineralogy with a donation of $1,000. Otherwise the income and expenditure were all related to normal operating activities. There were no liabilities at the end of the financial year and the income over expenditure was in the black by $1,931.54. Extraordinary expenses which would be coming up were an account for printing the Society information leaflets and in due course an account for reprinting the George Smith book, *'A Contribution to the Mineralogy of New South Wales'*.

The Treasurer finally complimented Jim Sharpe for his many years of work as Society Treasurer and for having reviewed the accounts before the Report was finalized.

ANNUAL REPORT 2010 – 2011 FINANCIAL STATEMENT

Balance in operating (current) account @ 30th June 2011	$8,036.25
Balance in CBA term deposit account, (Betty Mayne Bequest Account)	$31,966.32
Cash in hand	$46.00
Total Society funds at 30th June 2011	$40,048.57
Total Society funds at 30th June 2010	$38,117.03
Increase in funds since 30th June 2010	$1,931.54

Income		
Membership subscriptions	$2,317.00	
Supper donations and mineral sales	$1,199.15	
Sales of Australian Journals of Mineralogy	$250.00	
Sales of donated specimens for the Kids with Cancer charity	$1,376.30	
Interest on operating account	$28.67	
Interest on term deposit	$1,598.32	
TOTAL		$6,769.44

Expenditure		
Meeting Refreshment expenses	$1,170.44	
Personal Accident Insurance premiums	$114.00	
Subscriptions to mineralogical magazines and associations	$488.76	
Payment to Kids with Cancer charity	$1,376.30	
Contribution to Australian Journal of Mineralogy	$1,000.00	
Public Liability Insurance and fee to Dept of Fair Trading	$358.75	
Other – website, stationery, postage, flowers etc	$329.65	
TOTAL		$4,837.90

Income less Expenditure, $6,769.44 - $4,837.90 = $1,931.54

Liabilities NIL

Assets: - Library, display cabinets, mineral trimmer, microscope, stock of back issues of AJMs : - $2,013.00

The Treasurer dealt with a few questions also advising that the Society might be helping the Australian Museum purchase a spectacular specimen of an azurite 'sun' from the Malbunka mine, N.T., subject to the Museum negotiating with the vendor.

With no more questions being made about the Annual Financial Report Peter Williams moved that it be accepted. The proposal was seconded by Graham Delaforce with all in favour.

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SOCIETY ANNUAL MEMBERSHIP FEES and Personal Accident Insurance

After delivering the Annual Financial Report the Treasurer notified members that the Society Committee had decided after a number of deliberations in the earlier months of this year that the Society annual membership fees should be increased by $5 in each category. Whilst the Committee had recognised that Society operating costs will gradually and inevitably rise eventually necessitating a fee increase, of particular concern had been the problems that had arisen with members paying their membership subscriptions and applying for Personal Accident Insurance at variable times and on occasion very near to or even after the insurance period cut-off date of 31st March. Whilst the Society has never seen any insurance claims the concern has been that in the event of a claim being made the claimant might turn out not to be insured when he or she thought they were.

Accordingly the Committee decided that commencing from the next insurance period, of September 1st 2011 the Society would insure **all** Society members financial at that time and subsequently insure all those renewing their subscriptions at the beginning of each new year up to the cut-off date of March 31st regardless of whether they had previously paid or applied for insurance. Insuring all members of each affiliated association was the original proposal put to the Society by the Gem & Lapidary Council of N.S.W. Inc. when such insurance was arranged with brokers for Q.B.E., the insurance company.

The changed fee structure would be as follows : -

Adult membership, Sydney metropolitan area	$30
Adult membership, country or interstate	$25
Child / youth (under 18 years), or student member	$20
Every extra family member to be insured	$5 per person all categories.

Family membership can only include spouse/partner and children. Membership infers one person to be insured but if a member wishes in addition to insure one or more family members they must pay an extra $5 per person who must be named on the subscription form. All members whose subscriptions are received by the Treasurer or Secretary by 23rd March will be covered by Personal Accident Insurance, unless they are over the age of 80 for whom insurance was not currently available. Members paying subscriptions after 23rd March will not be covered by insurance until the next September 1st.

A questioner asked whether the Treasurer was presenting the changed fee structure as a formal proposal and was advised that the change could and had been made as a Committee decision but could also be taken as formal. Accordingly Graham Ogle proposed that the fee structure changes as described be made, and the motion was seconded by Gary Sutherland with all in favour.

The changed fee structure would be applicable from the time of this announcement.

A final point about the Personal Accident Insurance made by the Treasurer was that a few members may also have already paid or be insured for P.A.I. by virtue of being members of lapidary clubs or other organisations affiliated with the Gem & Lapidary Council of N.S.W. Inc. and therefore would be paying double for their insurance. The Treasurer said that this would be unfortunate but would have to be accepted since for simplicity the Committee was resolved to apply the described system.

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The Vice-President advised that the point in the proceedings had come to conduct the election of Society Office-Bearers and Committee members and declared all the current Committee positions vacant.

Before the election proceeded Robert Falzon moved a vote of thanks to the outgoing Committee members for their work over the previous year. The motion was seconded by Lin Sutherland with all in favour.

At this point also Penny Williamson repeated a question she had raised at the last year's A.G.M. asking if Committee meetings could be held at a time more convenient for non-Sydney-resident members to be able to attend. With Committee meetings always held in Sydney on an evening in the middle of a week this effectively excluded non-Sydney-residents from being able to offer their services on a Committee.

Graham Ogle suggested that it would not be difficult to establish a telephone hook-up with speaker phone to allow a person not physically present to participate in a Committee meeting. With this prospect Penny Williamson indicated that she would be willing to accept nomination to the Committee, given that there was a vacancy. Her nomination was formally proposed by Graham Delaforce and seconded by Robert Falzon.

The Vice-President then asked Lin Sutherland to assume the task of Returning Officer and to take the chair of the Meeting for the election of the 2011/2012 Society Office-Bearers and Committee members.

The Returning Officer noted that only single nominations had been put forward for all the Committee positions including the one just made and asked if there were any more. With no more nominations coming forward Lin Sutherland was therefore able to declare the nominated Committee members elected unopposed and read out their names as follows.

PRESIDENT:	Dieter Mylius
VICE-PRESIDENT:	John Chapman
SECRETARY:	George Laking
TREASURER:	Graham Ogle
COMMITTEE MEMBERS:	David Colchester
	Arthur Roffey
	John Smedley
	Gary Sutherland
	Penny Williamson

With the election of the 2011/2012 Committee completed the Returning Officer handed the chair back to the newly-elected Society Vice-President, John Chapman. In taking the chair the Vice-President asked if there was any further business which members might wish to raise and with none being made he declared the 2011 Society Annual General Meeting concluded.

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With the A.G.M. concluded the evening program moved to the presentation of the lecture and Arthur Roffey was asked to describe the background, history and origin of the annual Betty Mayne Memorial Lectures and to the bequest to the Society of the sum of money from the disposition of her estate.

WHO WAS BETTY MAYNE?

Betty was a nursing matron at one of Sydney's largest hospitals.

On her retirement and looking for an activity to fill her time she enlisted as a volunteer at the Geological and Mining Museum at the Rocks. It was here that I first met Betty and we both became members of FOGAMM,

short for Friends of the Geological and Mining Museum, a society to raise funds for and to further the activities of the museum.

Betty soon became very interested in minerals and was encouraged by several members of MinSoc to also join our society. She then started her mineral collection visiting all shows that were possible as well as any mineral dealer she could find. Under the guidance of several of our members she acquired many fine specimens. As well as local dealers she bought from oversea dealers she contacted using Mineralogical Record adverts.

Betty became Secretary at MinSoc at a very difficult period and served in that position for two years. She was then encouraged by a group of members to nominate for the position of President and was duly elected. With her organising skills that were natural plus those she had acquired during her nursing career she soon had the society back on track and almost single-handed organised one of the annual seminars.

She was still in office when unfortunately she suffered a heart attack and passed away.

The trustees of her estate on clearing her home phoned me as Secretary of the Gem & Lapidary Council NSW as they had found paperwork with my phone number on it. At the meeting to retrieve the paperwork I asked what was to become of her mineral collection and was informed that it was to go to public auction together with her other effects. I implored them not to take this course as there was a great possibility of significant damage. As quite a few of you know the outcome – MinSoc organised and conducted a very successful auction. Under her will the proceeds of the sale were split equally between MinsSoc and FOGAMM.

The money from this bequest is held in trust and is used for projects agreed to by the committee.

THAT WAS BETTY MAYNE

Arthur Roffey
August 2011.

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Peter Williams was asked to introduce the Betty Mayne Memorial lecturer for the evening.

“Paul Carr is the Associate Dean of Science at the University of Wollongong, a senior academic position, and has been in the Department of Geology at the University since 1973. He is internationally recognised in terms of his research work and has lectured to the Society several times before. He is particularly passionate about the fluorescent minerals of Franklin and New Jersey and has lectured on this subject. He has his own collection and on the basis of my having seen specimens from the collection being disposed of occasionally it was apparent that Paul Carr is a connoisseur. He has an extraordinary breadth of knowledge about general geological processes, the things that drive planet Earth and how these things influence the formation of different minerals in different rocks and how the same processes ultimately give rise to ore deposits and concentrations of rare minerals. Paul Carr is well placed to give the Society an overview of such processes and this will be the subject of his lecture this evening.’

‘Minerals – Time Capsules for Earth’s History’

Professor Paul Carr.

The speaker commenced his lecture by posing the question, “Why do we collect minerals?” Usually, he suggested, it was a combination of several factors, the beauty of the specimen, perhaps the locality from where the specimen originated, the rarity and/or the value. As an example he showed an image of a fine reticulated cerussite from Broken Hill with in the same screen an image of a lump of native lead. So appreciation of a mineral may be in the eye of the beholder to a degree, the specimen of lead might be very unattractive but it would be very rare and therefore have some value to the collector.

Minerals however actually tell us some other things and that is what Paul Carr intended to concentrate upon during his lecture. What can minerals tell us? Basically it is history and there are two different facets aspects of this. One is the history of the individual specimen, a subject that John Rankin has recently lectured on, and which may comprise a series of moves from different individual hands, through private collections or dealers to museums. Hence the recommendation that the collector should always try and preserve the old labels.

However due to his background as a geologist the speaker was also very interested in the geological history of minerals because when the mineral formed it will have recorded the conditions of its formation including the time of that event. This feature had led Professor Carr to speak about minerals as 'time capsules for Earth's history'. During his talk he intended to refer to several Australian examples of minerals and localities which he has been working on with the main aim being to try to understand and describe why the minerals form and what is their real significance.

Another question was posed with the speaker by showing three images, of James Dwight Dana and two views of prismatic specimens of glendonite and asked what was the mineral connection between them.

Taking Dana first the speaker provided a brief biography. Dana had originally trained in several disciplines at Yale then was employed as an instructor in mathematics in the U.S. Navy, traveled around the World, particularly in the Mediterranean, returning to Yale in 1834. If one does the math, all of this was by the age of 21! In 1837 he published the first edition of his 'System of Mineralogy', a book which is still in print the eighth edition having come out about ten years ago.

In the 1830s the U.S. Congress realised that the U.S. was lagging behind as a naval power and in it's exploration so the Congress decided to launch an exploring expedition. This was essentially the U.S. equivalent of Charles Darwin's voyage of discovery and became known as the United States South Seas Exploring Expedition for 1838-1842. (Inevitably shortened to being called 'The Ex Ex' by the Americans). The U.S. Navy organised the expedition which comprised six ships and crews with nine scientists including Dana. The Expedition left Norfolk, Virginia, in 1838 and returned in 1842. The important date from the Australian point of view is that in December 1839 the six ships sailed into Sydney Harbour. At this time Dana disembarked and stayed in the Sydney area for two months during which time the ships traveled down to Antarctica conducting mapping and then returned. This is why some of Antarctica is called 'Wilkes Land' after the captain of the Expedition, Charles Wilkes.

Just before Dana arrived in Australia he was preceded by the Rev. William Branwhite Clarke a very dour-appearing image of whom was shown to the meeting. Clarke is often credited as being the father of Australian geology because he trained under Adam Sedgwick in England. In coming to Australia in 1839 he took up his ministerial duties, ministering to his flock on Sundays but the rest of the time was free to pursue his main interest of geology and traveled about the country on horseback looking at the rocks and land forms. Once he heard that Dana was in Sydney he made a point of meeting the American and they established a life-long friendship. Both Dana and Clarke, particularly the latter, were meticulous in keeping diaries and Clarke's diaries are now in the Mitchell Library in Sydney so we now know a lot of what Clarke did and when he did it. One entry in Clarke's diary dated 31st December 1839 was quoted, *"Reached Campbelltown at 7.00 and stopped at Miss Andrew's hotel where I found all things wanting but, mosquitoes, fleas, flies, spiders, cockroaches and ants!"*

Dana and Clarke exchanged many letters over their years of friendship a number of which have been preserved. One from Dana to Clarke in 1851 had the quote *"The Illawarra district is a perfect gem of a place for geology as well as for landscape beauty. It is one of the loveliest spots on the globe"*. Dana produced one of the earliest geological maps of the Illawarra as well as lots of sketches such as of the columnar jointing at Bombo which was later used as the frontispiece for one of his books, *'A Geological Story Briefly Told'*, published in 1856.

After the U.S. Navy Expedition returned to America twenty-four volumes were published and Dana was the author of four of these. Whilst members might think of Dana as a mineralogist he was also a very accomplished natural scientist. The volumes are enormous, each one is over three feet tall. There were nine atlases and two volumes of charts. They are extremely rare since most of them were destroyed by a major fire shortly after being printed so if anyone can find one of these they would be worth a small fortune. The details of the Expedition's voyages of discovery were recorded in all the books. Dana's book on geology contains some interesting reports. He traveled to the Illawarra, to Prospect Hill, and also traveled through the Hunter Valley.

One part of his reports was quoted, *"Various specimens of remarkable prismatic forms of lime were presented to us by Mrs Robert Scott of Glendon"*, a property in the upper Hunter, *"Within, instead of the regular cleavage structure of a proper crystal the texture is crystalline granular"*. So apparently Dana was looking at specimens with a crystal habit but which were composed of grains and were pseudomorphs. Later in the U.S. Expedition Dana was to find exactly the same crystals along the west coast of north America in Oregon.

The story moves on to Dana's son, Edward Salisbury Dana, who was working at Pyramid Lake in Nevada in 1884 on what they called at that stage thinolites, (pseudomorphs of calcium carbonate after another mineral), which from an image shown of a sketch made at the time were clearly the same shape and size as the Glendon material. E.S.Dana went on to make what the speaker felt to have been an incredibly insightful observation, *"The original mineral was one which does not appear thus far to have been observed in it's natural condition"*. The speaker advised that he would be describing later it probably had occurred abundantly at numerous localities. However what E.S. Dana was saying at that time was that the specimens he had found were pseudomorphs but that he could not say what was the precursor mineral.

In 1905 Edgeworth David the famous Australian geologist coined the word 'glendonite' after the property Glendon in the upper Hunter where the material described as *'prismatic or stellate pseudomorphs mainly composed of carbonate, calcium, rarely opal'*, had been first found pointed out to Dana. Since that time numerous people have published articles on 'glendonites' and have put forward all sorts of names for the surmised precursor mineral or minerals and the speaker presented a list of the more established ones. The minerals listed were mostly calcium and sodium carbonates and sulphates with a couple of oxalates but every single one of them has a problem, the chemistry or the crystallography is not correct. If one looks through the literature it would be found that other names have been used for the material, members may have heard of 'opal pineapples' for instance, and as another example, commonly people may refer to 'glendonite pseudomorphs after glauberite'. Today however the material is mostly called glendonite.

The story then jumps to 1963 when at that stage a gentleman named Pauly was working in Ikka Fjord in Greenland mapping the bottom and whilst diving found strange columnar deposits. In taking samples and analyzing them he found that the composition was calcium carbonate hexahydrate. The substance had been known to chemists for more than a century but this was the first time it had been found in nature. Accordingly Pauly was able to name it as a new mineral, ikaite, after the source location. What had happened to form the underwater columns of ikaite was that there was spring water draining from aquifers around the edges of the fjord and then emerging at the bottom. The interaction of the spring water with the very cold fjord water caused the mineral to precipitate out.

Since then ikaite has been found all around the World in all sorts of situations from deep marine to shallow marine, lacustrine, lakes and steams. There are basically two common habits, tufa or massive and sometimes crystals. One feature common to the mineral anywhere is that it always forms in very cold conditions, less than for four degrees Celsius. Often the water is alkaline and often has phosphorus. If a crystal of ikaite, which would advisedly have to be kept in a freezer, is held in the hand for a few minutes it will turn into a wet mush of water and calcite grains. It is unstable above about four degrees Celsius.

The story about the glendonite then moves on to 1979 when researcher M.E.Kaplan finally recognised that ikaite was actually the glendonite precursor. Professor Carr then showed a number of images of specimens of ikaite from different sites around the World including some from the Sydney basin. Specimens have been found in drill cores, some found eroded out of rock platforms, some may be found quite large and stellate or even opalised, a pseudomorph of a pseudomorph, - of opal after calcite after ikaite, a very complex history. One feature common to many of the specimens is that they have cracks, due to the fact that there is a volume change from the hexahydrate to calcite.

Referring back to J.D.Dana's original description of *"remarkable prismatic forms"* it has turned out that the mineral he described has World-wide occurrences in rocks of all ages from Pre-Cambrian to Recent and is very common in the Permian rocks of the Sydney Basin.

The speaker moved on to speak about the Broken Hill area. Many collections contain chiastolite from this part of the World. Chiastolite is simply andalusite which has the characteristic cross appearance in cross-sectioned specimens. It is fairly common and fine specimens have been recovered from Bimbowrie Station and Abercrombie Hill, pretty desolate country. The speaker had been on several collecting trips to the area over 2004-2005 but in examining specimens later realised that a lot of them were not chiastolite. Some contained an amount of andalusite but were mainly white micas, a mixture of muscovite and margarite, the potassium and calcium micas. So what were these specimens telling the researcher? To produce andalusite which is an aluminum silicate the site would need a source of these elements, most obviously clay and then a period of metamorphism. During the formation of andalusite the carbonaceous material in the clay moves into a crystallographic orientation forming the cross. However in the Broken Hill area the andalusite has further broken down to muscovite and margarite and for that to have happened what had to have been done with the chemistry is that the andalusite had to have been hydrated and to have incorporated some more silica, potassium and calcium. What this tells us is that there has been extensive fluid rock interaction and it turns out that in the Olary Block there are a lot of examples of this. We tend to think of rocks as being solid impervious materials but geologically fluids have always been moving through them so the chemistry and then the mineralogy changes.

Going further north to May Downs Station near Mt Isa many collectors will be familiar with the dravite specimens from that location with very stepped jet-black 'grenade-like' tourmaline crystals. The stepped nature comes from the parallel growth of crystals and tourmaline as members would know displays polar asymmetry where one termination is different to the other one. The really intriguing feature of the May Downs tourmalines is that if a broken crystal is examined it is apparent that it is not solid tourmaline at all but has a mixture of talc and quartz. What seems to have happened in this area is that the basalts have been subjected to metamorphism and formed amphibolites which have further broken down into talc, chlorite and quartz. Later still boron-containing fluids, possibly derived from pegmatites, have migrated through the mixture and formed sometimes quite large tourmalines but with remnants of the talc, chlorite and quartz mixture incorporated. So again, this is a fluid-driven system.

At this point Professor Carr noted that many members were interested in micro minerals and so as something of a concession he had decided to also speak on some 'true' micros, - crystals of zircon about one millimeter in size. The specimens shown were actually found at Wollongong University when a few years ago road works were being conducted at the western entrance and some rock was unearthed containing the zircons. The rock was readily recognised as a tuff. This is a fine volcanic ash derived from an explosive event which may have pumped huge amounts of ash tens of kilometers into the atmosphere and which then settles down in sometimes very thick layers. Ash derived from silica-rich or felsic magmas will commonly contain zircon. If the environment at the time of an eruption is conducive to forming coal measures, which would mean the land is swampy, this will readily trap and preserve the ash. From a geological point of view ash layers are very significant because they can cover an enormous area such as the entire Sydney basin and whilst a layer may be only a few centimeters to a metre in thickness it covers the whole area at one instant in time and accordingly is what the geologists call a time plane.

The trick then is to find out the age of the layer and that is where the zircons come in. All zircon contains traces of uranium which is a great element for the geologist because it's decay rate to lead is known precisely and by analyzing the proportions of uranium to lead in even a very small zircon crystal the age of formation of that crystal can be found. Images of the analyzing instrument that can perform this analysis were shown to the meeting and Professor Carr spent some time describing the operation of the instrument and the interpretation of the results obtained. In the case of the Wollongong University zircons, the crystals and therefore the rock were found to be 263.4, plus or minus 1.8 million years old. In answering a question about where was the volcano that had deposited the Wollongong tuff the speaker suggested that it might have been in north-east New England in an area which is offshore today.

At the end of his lecture Professor Carr answered a large number of questions before being warmly thanked on behalf of the members by Peter Williams. The VicePresident then declared the meeting ended.

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FORTHCOMING EVENTS

GEMKHANA 2011

The NSW State Gem, Jewellery & Mineral Show

To be held at Cessnock over Saturday to Monday, the 1st to 3rd of October 2011 in the
Cessnock Indoor Sports Centre, Mount View Road, Cessnock
Saturday and Sunday, 10.00 a.m. to 5.00 p.m., Monday 9.00 a.m. to Noon.

Featuring displays of gemstones stones, jewellery, carving, enameling, minerals & fossils.
Dealers. Tailgaters. Displays. Demonstrations. Field trips.

Inquiries to Doug Endersby on telephone (02) 4990 3837
or e-mail d.endersby@bigpond.com.au
or to Arthur Roffey on telephone (02) 4572 5812

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GEMBOREE 2012

AUSTRALIA'S 48TH NATIONAL GEM AND MINERAL SHOW

Easter 2012 from the 6th to 9th of April 2012.

In the Bundaberg Showground, Burrum Street, Bundaberg, Queensland.
Hosted by the Bundaberg Gem & Mineral Society Inc on behalf of the
Queensland Gem Clubs Association and AFLACA.
Lapidary traders, tailgating stalls, entertainment, refreshments,
working demonstrations, displays, lectures, tours.

Everyone Welcome

Camping available on site. Booking enquiries to P.O.Box 5886 West Bundaberg 4670
or e-mail *bundygemboree@yahoo.com.au*