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Winnicentrics

The Journal of the Winnipeg Centre of the Royal Astronomical Society of Canada

Meteorites 101
Iron Meteorites

by Ralph A. Croning

Before the advent of professional meteorite hunting, most meteorite finds were irons. With their dense metallic composition and extraordinary weight, they were easily recognized or at least looked and felt different from most terrestrial rocks. This still holds true.

Additionally, iron meteorites are much more resistant to weathering and are therefore preserved much longer that other types. Irons are also much larger than their stony and stony-iron counterparts and rarely fragment upon entering the atmosphere. They also suffer much less from the effects of ablation which is the loss of material from the surface due to atmospheric heating and melting. In fact the largest meteorites known are irons.

All known iron meteorites have a combined weight of over 500 tons and represent about 89.3% of the mass of all meteorites found. However, they still account for only 5.7% of all witnessed falls.

As outlined in my previous article, iron meteorites fall under 3 main structural classes which are Octahedrites, Hexahedrites and Ataxites. These structural classes are based on the crystalline structure revealed when an iron meteorite is cut, polished and etched with dilute nitric acid. These structures are further subdivided based on how fine or coarse they are.

Continued on page 7

In This Issue:

Meteorites 101---------- page 1
Meetings ---------- page 2
New Members---------- page 3
Members Observing Counts ---- page 4
Awards ---------- page 8
2008 Elections ---------- page 9
Mr Bud ---------- page 9
Visioning ---------- page 10
President's Corner ---------- page 13

MEETINGS

Room 118, St. John's College,
University of Manitoba Fort Garry Campus

Friday September 12

7:00-7:30 Beginner's session: Roger Todd will present on a model of stellar distances he's developed to help novices get a concept of the Sun's stellar neighborhood.
7:30-7:40 Welcome and announcements: Ron Berard
7:40-7:50 News
7:50-8:00 Constellation of the Month – Coma Berenices: Gail Wise
8:00-8:10 What's up: Jay Anderson
8:10-8:30 What's New: Jennifer West
8:30-9:00 Break

9:00-9:50 **Guest Speakers:**
Scott Young: 2009 --- International Year of Astronomy
Jay Anderson: Solar Eclipse Report: Jay Anderson will tell us about his latest solar eclipse chasing adventure.

9:50 Adjourn and go to Boston Pizza.

Friday October 10

7:00-7:30 Beginner's session: Peter Toth
7:30-7:40 Welcome and announcements: Ron Berard
7:40-7:50 News
7:50-8:30 RASC Winnipeg Centre Elections
8:30-9:00 Break

9:00-9:50 **Guest speaker: Ralph Croning: "Meteorite Hunting and Collecting"**

Ralph will take us through a brief overview of the origins and classification of meteorites as well as discuss his personal foray into meteorite collecting on a budget. Topics such as tools used by the hunter, tips and tricks on hunting as well the how to be an informed collector when purchasing meteorites. Then of course, Ralph will show us some of the meterites he and other members have collected over the years.

New Members

Our Club is really growing! Welcome to the following new members

Ralph Sanders, Winnipeg

Milton Schenk, Winnipeg

Jim Sinclair, Winnipeg

Norman MacKay, Stonewall

Tiaan Geldenhuys, Winnipeg

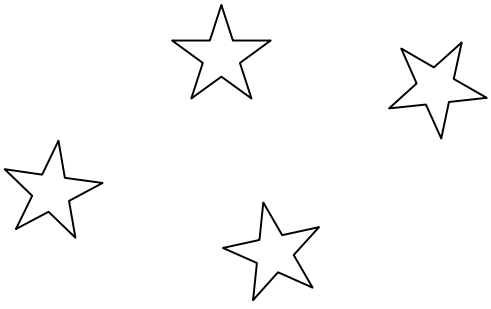
Nadine Parsley, Winnipeg

Brady Monaghan, Winnipeg

Chris Phillips, Winnipeg

Jodi Rueckert, Beausejour

Dave Turner, Winnipeg



The Winnipeg Centre Executive Council

President
Ron Berard 668-6551
rcberard@gmail.com
1st Vice-President
Gail Wise 794-2624
wgail@mts.net
2nd Vice-President
Tim Kennedy 269-0183
tajab@mts.net
Past-President
Lindsay Price 227-4684
flprice@mts.net
Secretary
Jay Anderson 474-1485
jander@cc.umanitoba.ca
Treasurer
Mike Stephens 832-0485
mikestephens@shaw.ca

Councilors

Marlene Wallace 999-7423
mtlwallace@hotmail.com
Nicole Choptain 255-5682
nicolewpg@shaw.ca
Peter Toth 757-9300
peter_toth@pcs.mb.ca
Kevin Black 224-0182
cblack@shaw.ca
Kris Keller 667-5540
keller1@mts.net

Appointed Positions

Librarian
Fred Wood 774-3238
fred_wood@shaw.ca
Observatory Director
Ray Andrejowich 667-6896
saturn3@shaw.ca
Observatory Bookings
Kevin Black 224-0182
cblack@shaw.ca
Webmaster
Ron Berard 668-6551
rcberard@gmail.com
Winnicentrics Editor
Gail Wise 794-2624
wgail@mts.net

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Members' Observing Counts

The following members are working towards their:

Messier Certificates:

Eugene d'Auteuil	41
Murray Rennie	26
Lindsay Price	47
Kris Keller	110

Finest NGC's:

Sean Ceaser	107
Ray Andrejowich	110
Berni Plett	45

Herschel 400's:

Stan Runge	200
Sean Ceaser	172
Mike Stephens	318

Explore the Universe:

Peter Toth	57
Stan Runge	13
Tim Kennedy	58
Judy Starr	22
Ray Starr	21
Eugene d'Auteuil	12
Murray Rennie	6
Sandy Shewchuk	47

Isabel Williamson Lunar

Mike Stephens	149

If you are interested in using the Warm Room please contact Lindsay Price for a key ($10.00 deposit required). If you would like training on the LX200 Lindsay will be running training sessions, but not on Members Observing Nights. You can contact him at 227-4684 or flprice@mts.net or talk to Lindsay at a meeting.

The Winnipeg Centre has several loaner telescopes that can be used by members for a month at a time. If you would like to use one, talk to anyone on Council.

Meteorites 101 *continued from page 1*

Beyond this and the capabilities of the amateur's lab, modern research facilities use sophisticated tools that include X-ray spectroscopes and electron microprobes which enable them to detect minute amounts of trace elements such as germanium, gallium and iridium. Iron meteorites are then further classified into several chemical groups based on the specific concentrations of these trace elements and their correlation to the nickel content of the iron meteorite. Each group is thought to represent a unique parent body. These chemical classifications are:

IAB Group
IC Group
IIAB Group
IIC Group
IID Group
IIE Group
IIF Group
IIG Group
IIIAB Group
IIICD Group
IIIE Group
IIIF Group
IVA Group
IVB Group
Ungrouped Irons

Iron-nickel metal occurs in iron meteorites in the form of two distinct alloys. The most common alloy is kamacite which contains from 4 to 7.5% nickel. The term kamacite is derived from the Greek word meaning "beam" and kamacite crystals appear as large beam like structures in an etched iron. The other alloy called taenite consists of between 27 to 65% nickel. The term taenite is derived from the Greek word for ribbon. Taenite crystals are smaller and appear as thin, very shiny ribbons in an etched iron.

The size of the kamacite and taenite crystals and their distribution helps us classify iron meteorites as Octahedrites, Hexahedrites or Ataxites.

<u>Octahedrites:</u>
When cut and etched, octahedrite iron meteorites display an exquisite cross-hatch pattern of kamacite and taenite lamellae or plates. This pattern was discovered by and named after Alois von Widmanstatten, a mineralogist who like all scientists, liked to play with dangerous chemicals like nitric acid. This crystalline intergrowth of kamacite and taenite plates has a spatial arrangement in the shape of an octahedron. Hence these types of iron meteorites are called octahedrites. Some Neumann lines are visible in the kamacite plates which are explained under hexahedrites.

The above is a photograph of a slice of etched Uruacu IAB coarse octahedrite showing the Widmanstatten Pattern. The bright areas are taenite, the dull areas kamacite and the darkish inclusions are plessite. Photo Credit: Naomi Fjeldsted.

Hexahedrites:

When cut and etched, hexahedrites do not display the Widmanstatten pattern. This is because hexahedrites are composed primarily of nickel-poor kamacite which in its pure form has a hexahedron (cubic) crystal structure. Hexahedrites do however display Neumann Lines when etched, which are shock induced, very fine parallel lines in the kamacite. They were discovered by another mineralogist named Franz Ernst Neumann.

This photograph is of a slice of hexahedrite iron meteorite. Note the very fine Neumann lines that show up after etching. Photo Credit: Wikipedia.com

Ataxites:

This class of iron meteorites display no Widmanstatten pattern or Neumann lines. Ataxites are composed mainly of nickel-rich taenite with a very discrete intergrowth of kamacite spindles bordered by taenite. There are also some very tiny inclusions of plessite which is a granular mixture of taenite and kamacite. Ataxites aptly get their name from the Greek word for “without structure”.

This concludes our look at iron meteorites and their classification. Please feel free to email me with questions or comments at rcroning@mts.net

This 4.79lb Campo del Cielo individual is a classic example of an uncut iron meteorite. This is currently in my collection.

This 6.35lb Campo del Cielo individual has been dubbed “TheTerry Rock” aka “The Bailley Boulder” These two and many other specimens, whole and cut, will be brought to the October 2008 meeting.

The RASC Winnipeg Centre has two annual awards for recognizing contributions to the Centre. Deadline for nominations is September 15, 2008.

The Winnipeg Centre Achievement Award
This award is presented to an individual who has completed a significant astronomical achievement during the year. Examples of qualifying achievement include (but are not limited to) an astronomical discovery such as a comet or supernova; completion of a significant astronomical project; publishing a significant astronomical publication such as a book or thesis; constructing a significant observatory or telescope; or other exceptional accomplishment or service to the Centre or Society. Previous recipients: Jay Anderson.

The Winnipeg Centre Service Award
This award is presented to an individual or team who has rendered a significant body of service to the Winnipeg Centre. Examples may include (but are not limited to) long-standing service on Council; acting in a long-serving appointed position; volunteerism and participation in Centre events; or other service as may be deemed appropriate by the Awards Committee. The award may be for a long term service or for an extremely significant but short-term service. The Centre will award a maximum of one Service Award in a given year, and is not required to award one if no suitable winner exists. Previous recipients: Stan Runge.

Nomination Process
To be eligible for a Centre Award, a nominee must:
1) Be a member in good standing. (An award may be made posthumously to a member who would otherwise have been eligible);
2) Not have received the same Award before.

Any member may submit nominations for a Centre Award based on the Award's criteria. The nomination should include the person's name, the Award for which they are being nominated, and a short (100-word or less) citation explaining why the Award is appropriate. These details must be submitted to the Awards Committee (care of Scott Young, sdy@mts.net) by September 15, 2008. The awards will be presented at the Centre's Annual Meeting in October.

A FALL ELECTION

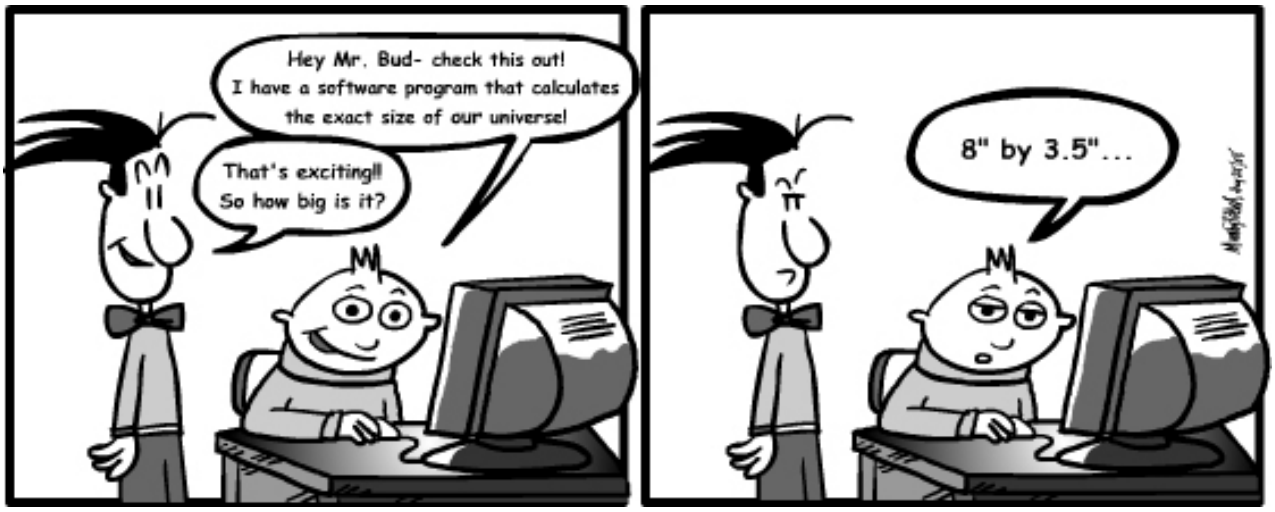
Lindsay Price

Not a federal election forced by Stephane Dionne, it is our Winnipeg Centre's annual elections for council. Under our new by-laws there will no longer be a position of 2nd Vice President, but we are electing a new President, Vice-President and two new councilors. Unlike past years when there was an expected progression from 2VP to VP to President, this year every position is open. So consider it, and talk to your friends. If you think someone might be a good choice, ask if he or she would accept nomination. If so, bring it to the September meeting or let Lindsay Price know either by e-mail, flprice at mts dot net, or by telephone at 831-0150.

Being a councilor is a good way to serve the club without totally overburdening your schedule. A councilor is expected to attend about four council meetings each year, and input ideas, suggestions and opinions on the points under discussion. Depending on choice and skill sets a councilor should expect to once or twice, give a programme talk, write an article for Winni, and / or host a Members' Observing Night. Being a Councilor does involve giving some time and effort, but not an onerous amount. It does provide an opportunity to get to better know some of your astronomy friends, to give some guidance to the direction the club is going, and there is a real sense of satisfaction in giving something back to the hobby that has given us so much pleasure. Think about it.

Mr. Bud . . . does Astronomy

by Murray Toews



ROYAL ASTRONOMICAL SOCIETY OF CANADA WINNIPEG CENTRE NOMINATION FORM

I, _____

being a member in good standing of the Winnipeg Centre of the Royal Astronomical Society of Canada, do hereby nominate

_____
(name of nominee)

for the position of _____

for the 2008/2009 membership year.

I, _____

being a member in good standing of the Winnipeg Centre of the Royal Astronomical Society of Canada, accept the nomination and will allow my name to stand for election at the Annual Meeting of the Winnipeg Centre. I certify that I meet the membership qualifications of the position I am nominated for and understand the duties and responsibilities of the position.

In witness hereof:

_____ _____
Signature of Nominator Date

_____ _____
Signature of Nominee Date

President's Corner

Reflections on Calmer Waters

Ron Berard, President,
RASC Winnipeg Centre

I promised in my last article to make this "the ultimate article". This being the last President's Corner article that I'll be writing, I found it quite a challenge to come up with news to top last month's announcements about our bylaws. Instead, I've decided to make this article a "sayonara" of sorts. That is, I want to bid my farewell from the President's Corner and wish my successor well as the mantle of leadership is passed on.

When I set out to write this series of articles, I intended to try and keep members informed on our Centre's activities as well as important activities of the executive and council. It has always been an important goal of mine to preside over an effective and transparent administration. To that effect, I've tried to include announcements at each of the monthly meetings, post council minutes to the website, make regular announcements on the RASC email list, and, of course, write these bimonthly articles.

At the start of my 2 year term, a few important concerns were brought forward to council from senior members in the form of a list. These concerns spurred me to contact Scott Young to meet in advance of the first council Meeting of November 2006 where together we came up with the idea of a "Visioning Session". In turn, this visioning session helped us to clarify our club's mission statement; produce a list of valued member services currently being provided; develop a wish list of member services we could be providing; review the assets and liabilities that we collectively muster to provide such services; and, ultimately, develop a strategic plan. (Refer to the Strategic Planning document re-published in this issue).

I'm pleased to say that we've managed to achieve the 3 goals identified as the highest priorities; "*1- Establish bylaws and incorporate club; 2- Update and improve website; 3- Establish budget and improve fiscal status (fund raising)*". First, our financial status was given a shot in the arm with some generous member donations and successful fund raising. Next, an interim website was set up with a view to develop a new and improved site. Now we are set to release a website using a modern content management system that will allow for multiple content providers to keep the content fresh and interesting. And finally, the bylaws are ready for ratification at November's Annual General Meeting, the first such official AGM for Winnipeg Centre.

I think it important to state that none of the above accomplishments can be claimed as bragging rights to any one individual member. They are in fact a testament to the collective efforts and rich brain trust that the membership and administration of this club possess. I've certainly learned over the past two years that the most important role of a leader is to recognize and appreciate the contributions and talents of the community's human resources. I again want to thank everyone for all the contributions made over the years. I only hope I didn't leave anyone feeling unappreciated.

I would be remiss to suggest that my term as President wasn't without its challenges. It has certainly taken a good deal of my time to say the least, but this was as expected. Less expected was the challenge of finding a balance between the work hat and the play hat, to use Scott Young's famous hat metaphor. That is, keeping the ever present work demands from imposing on my enjoyment of the hobby of astronomy. At times I think the work hat won out, but only during long cloudy periods without "photon-therapy", as Kevin Black puts it.

Over the many years I've enjoyed this hobby I've found that there is no degree of stress that doesn't, at least for the moment, melt away under the serene vistas of dark starry skies. And it is this aspect of astronomy that has motivated me to work as hard as I have over the years to contribute to this club. I can truthfully claim that astronomy has helped pull me through numerous personal crises, so I feel obliged to give back to the organization that has contributed so much to my enjoyment of the hobby, and further yet, has led me to some very close relationships with the good people that enjoy the night sky as I do.

So using the analogy of troubled waters, when I took on the Presidency the club was navigating some waves. We're now enjoying calmer waters, thanks in large part to the efforts of many members, and, perhaps, in part due to the whims of chance. Regardless, I hope that we can carry on together keeping in mind that we are bound to have storms from time to time. Calmer waters bring with them respite, but to keep moving forward, we must always keep our eye on the prize.

*"Dedicated to the advancement, promotion and **enjoyment** of astronomy and allied sciences."* (Emphasis by author)

Star trails over Lake Brereton: Ron Berard

RASC, Winnipeg Centre Mission Statement and Strategic Planning Document

The following document is a consolidation of the ideas put forward by participants of the "Visioning Session" of the RASC Winnipeg Centre on November 26, 2006. This document will serve as the focal point for work undertaken to build upon and improve the activities of our Club.

Mission Statement: "Dedicated to the advancement, promotion and enjoyment of astronomy and allied sciences."

Current and "Potential" (in italics) Club Activities

- **Member Services:** Activities directed towards providing members with resources and opportunities to facilitate the enjoyment of the various facets of their astronomy hobby. This includes a variety of resources, venues and activities.

    - Observing:
        i. Observatory
        ii. Member meetings
        iii. Star Parties
        iv. Observing Certificates
        v. *Dark sky site(s)*:
        vi. *Remote observatory*:
    - Information dissemination/sharing:
        i. Website
        ii. Newsletter
        iii. RASC email list (local)
        iv. RASCals email list (national)
        v. RASC publications
        vi. eNews (national)
        vii. Library
        viii. Lectures/guest speakers
        ix. *Special interest groups: Astrophotography, cosmology, space exploration etc,*
        x. *Workshops: Telescope building, image processing etc…*
        xi. *Public Lectures*
        xii. *Youth Group*
        xiii. *Family Events*
        xiv. *New Member Packages*

- Access to equipment/resources:
    i. Loaner Scope
    ii. Observatory dome/LX200
    iii. Warm room
    iv. Projector
    v. PA System
    vi. Group purchasing: ie., Baader Solar Filters, etc..
    vii. Time share observatory
    viii. Group trips: (Eclipse, dark sky locations)
- Socializing:
    i. Member meeting coffee breaks
    ii. Boston Pizza
    iii. Annual Barbeque
    iv. Annual Holiday Season Potluck
    v. Spruce Woods Star Party
    vi. *Annual Banquet*

2. **Administration**: All those activities geared towards the maintenance and governance of the club and of its resources and activities.
    - Council meetings:
    - Budgeting/fiscal management:
    - Observatory maintenance:
    - Lease negotiation: (meeting rooms/observatory):
    - Fund raising:
    - Recruitment:
    - Awards:
    - Establishing bylaws and policy and procedures:
    - Membership Surveys:
    - Networking:
        i. RASC National and other centres
        ii. Planetarium
        iii. Schools
        iv. Youth Organizations: Scouts, Girl Guides, Naturalist Society

3. **Outreach**: Activities geared towards promotion of the club and its activities to the general public and other organizations with similar interests.
    - Web Site:
    - Recruiting new members:
    - Astronomy Day:
    - Brochures:
    - Light Pollution Awareness Committee:
    - Public Observing Events:
    - Scholarship
    - *Developing "promo packages"*
    - *Media relations*
    - *Light Pollution Abatement Activities/lobbying:*
    - *Establishing Dark Sky Preserve*

- Co-sponsored events:
    i. Pi Kinewabum
    ii. Fort Whyte
    iii. Oak Hammock

From the discussion of current and potential activities, a number of activities were prioritized as follows:

1. **Establish bylaws and incorporate club**: critical to the viability and legitimacy of the club in terms of its relationship with RASC National, and the Provincial Government: Currently underway with Bylaws Committee developing draft for review by council and National, and ratification by general membership in fall 2006.
2. **Update and improve website**: Key to information dissemination and outreach. *Need to establish work group to be established to investigate resources (ie., alternative hosting options and server side tools*
3. **Establish budget and improve fiscal status (fund raising)**: Deficit budget established for 2006/2007: Fundraising activities hinge on incorporation of clubs; options need to be investigated by working group.
4. **Further consolidation of Visioning/Brainstorming data into database**: Includes membership survey to better establish goals and priorities for club.
5. **Re-organizing loaner scope program**: includes review and consolidation of current inventory and alternative models of exchanging and maintaining scopes and accessories.
6. **Maintaining and improving Glenlea**: includes general maintenance, repairs, flood protection measures, discussions with University on internet link, dike construction, road maintenance, lease arrangements etc… (Needs work group to be established and review of role of observatory director).
7. **Improving Monthly Member Meetings**: includes updating beginners sessions, attracting guest speakers, improving flow, improving technical gliches, *creating meeting coordinator position.*
8. **Recruitment of new members and volunteers:** Ties in with outreach and member service activities.
9. ***Planning Annual Awards/Celebration Banquet****:*
10. ***Developing Public and special interest lecture series****: (needs work group to be established)*
11. ***Developing improved public observing series****: (needs working group).*
12. ***Reviewing feasibility of family/youth programming****: includes investigating and establishing potential partnerships with schools, planetarium, scouts/guides etc…)*