



Winnicentrics

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

Meteorites 101 Meteorite Classification

by *Ralph A. Croning*

I have been considering writing a beginner's book on Meteorite Hunting and Collecting for quite some time but never did get down to it, for some reason or the other. Gail's recent request for articles to The Winnicentrics got me thinking about doing a series of articles in the Winni, which would give me enough base material and eventually serve as a launchpad for my book.

For starters, I would like to introduce the reader to an absolute basic overview of the classification of meteorites. This will lay the foundation to better understand the subsequent articles which will be much more detailed in their content.

Before I begin I would like to explain the difference between meteoroids, meteors and meteorites. Many people seem to use these terms interchangeably when in fact they are different. Following are their simplest definitions:

Meteoroid:

A meteoroid is a body ranging in size from a small particle weighing a fraction of a gram to one several hundred tons in weight that is in orbit around the sun.

Meteor:

A meteor is the light, ionization and sometimes sound phenomenon that is produced when a meteoroid enters and reacts with Earth's atmosphere.

Meteorite:

A meteorite is a meteoroid that survived entry through Earth's atmosphere and makes it to the ground. Meteorites are what this series is all about.

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MEETINGS

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

Friday July 11

7:00-7:30 Beginner's session: Peter Toth
7:30-7:40 Welcome and announcements: Ron Berard
7:40-7:50 News
7:50-8:00 Special Announcement regarding Website
8:00-8:10 Constellation of the Month – Coma Berenices: Gail Wise
8:10-8:30 What's New: Jennifer West
8:30-9:00 Break

9:00-9:50 **Guest Speaker: Alaina Edwards: Determining the Brightness of a Suspected Variable Star**

Alaina is the winner of this year's Manitoba Schools Science Symposium. She will be presenting her impressive research project on comparative photometry of a variable star using a remote observatory in Australia

9:50 Adjourn and go to Boston Pizza.

Friday August 8

7:00-7:30 Beginner's session: Gerry Smerchanski
7:30-7:40 Welcome and announcements: Ron Berard
7:40-7:50 News
7:50-8:00 Constellation of the Month – Aquila the Eagle: 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 speaker: Theresa Wiegert van Vliet: Observing Galaxies on Top of a Volcano**

Hawaii is reputed to be warm, but as you travel up to the peak of Mauna Kea, there's plenty of snow, especially in January. The summit is a popular location for telescopes, and one of them is the partly Canada-owned James Clark Maxwell sub-mm telescope (JCMT), which with its 15 m diameter, currently is the biggest sub-mm telescope in the world. I will tell a little bit about the telescope, the process of observing and dealing with the height (4100 m above sea level) at the same time, as well as show some of the data that was taken of the beautiful spiral galaxy NGC 925.

PUBLIC OBSERVING EVENTS

'Tis the season for camping and fun! And the opportunity to share the night sky away from the lights of the city.

Birds Hill Park Public Observing Event

We have been asked to provide an observing event for campers at BHP on August 3, the Sunday of the August long weekend. They are holding two campsites for any members wanting to make a weekend of it or stay overnight. We can use at least 5 volunteers with scopes so if you are able to help contact Ron Berard at rcberard@gmail.com

Spruce Woods Public Observing Event

When Sat, Aug 23, 9pm – Sun, Aug 24, 12am

Where Spruce Woods Provincial Park

Description Winnipeg Centre Volunteers will be hosting a public observing event at Spruce Woods Provincial Park. If you can help contact Kris Keller at keller1@mts.net

The people at **Caddy Lake in the Whiteshell** would like us to go out there on August 16 to host a public observing night. We need someone to organize it (it's easy) so if you would like to do so, contact Gail Wise at wgail@mts.net for details. There will be free camping for the night for volunteers.

Saskatchewan Summer Star Party 2008

Cypress Hills Interprovincial Park

August 28 to 31, 2008

Presented by the Saskatoon and Regina Centres of the Royal Astronomical Society of Canada

This very fun event is quickly approaching!

For information go to

<http://homepage.usask.ca/~ges125/rasc/sssp2008.html>

Registration forms will also be at the July and August meetings.

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Winnicentrics is published six times each year by the Winnipeg Centre, RASC. *Winnicentrics* is produced by and for the members of the Winnipeg Centre, and any opinions expressed are those of the author. If you have comments, questions or concerns about *Winnicentrics*, you can contact any of the councilors or write to RASC, Winnipeg Centre, Box 2694 Winnipeg MB R3C 4B3

President's Corner

The Penultimate Article!

*Ron Berard, President,
RASC Winnipeg Centre*

It occurred to me as I sat down to write this article, that this is the second last such endeavor for me, so I really would like to make this one special. The “penultimate article” from my corner! (The corner that Gail finally traps me in to get this article written before the *Winni* deadline that is! ;-)

Actually, I'm only half joking! If it weren't for Gail, a good deal more than an article or two would go undone. So I'd like to preface my last article by giving credit where it's due! Without our VP extraordinaire, I don't think I could have gotten through this past year and a half. I jokingly refer to her as “my right arm”, but it's very true that I count on her support and assistance a good deal, which is why I made such a fuss when she broke my... er... , I mean *her* right arm this winter! The same acknowledgement is also due to the rest of our council members, and far too many club members to list in this article. Thankfully, few others were injured in the execution of their duties! ;-)

With this kind of support, we've accomplished a good deal together. These are the events and activities I've tried to highlight in all my articles. But this, the penultimate article has the penultimate announcement! Here goes:

**“We've got bylaws ready for the membership to vote on!
Yahoo!!!!!!!!!!!!!!! ”**

Yes, we've finally gotten the draft approved at a council level and we will have the membership vote to ratify them at our first “*official*” AGM this fall. Now, some of you might be wondering “what's the big deal about bylaws that such fanfare is used in announcing them”? I can understand this question. It's actually difficult to describe the challenges of getting the rather dull and lackluster task of drafting bylaws done. However, one of our senior members aptly put some perspective on this challenge following the first announcement I made that council was undertaking to complete this task. To paraphrase from memory, it was mentioned that this task was initiated in 1972!

Now, in hindsight, I can understand *why* it hadn't been completed by now. It's not so much the task itself, but the daunting importance of the content that makes it so challenging. The wording of this document describes to the outside world and to its members precisely who we are, what we do, why we do it, and how. Not only is this description important to document, it's legally required.

Despite this rather sobering consideration, the most challenging part of getting the task done is finding people with the right combination of skills, the willingness *and* the time available to see this through to the end. For this I am grateful to a good foundation of dedicated members in this club. To quote Jay Anderson, when you want something done, go to the busiest people! And this is exactly what had to be done.

Specifically, I'd like to thank Stan Runge for making the urgency of this task clear to council before passing his duties as National Representative on to Jennifer West in 2006. I'd like to thank Jennifer for her invaluable contribution to this task. It was Jennifer who laid the foundation for the current draft of the bylaws and the working draft of the soon to be completed Policies and Procedures Manual. Jay Anderson has been at the core of the task for the entire period. We've relied heavily on Jay's editorial skills and his tremendous sense of perspective of the club, both historically, and from a national perspective. And of course, Scott Young provided the final push and penmanship it took to finalize a draft that would define our club as it functions currently, yet remain congruent with the current National RASC affiliations.

Really, when you look at it, my job has simply been to be the guy willing to pester these intensely busy people and try and find times when the right combination of people had the right amount of time available at the right moments; a bit of a juggling act at times, but not so glamorous an accomplishment ;-). And so it goes for many of the accomplishments of this organization. It's all about what each member contributes to the community as a whole that makes us what we are. This community effort is perhaps more essential than bylaws, but bylaws are a necessity to give our community legitimacy. Anyway, that's how I see it from my corner!

PS: The "ultimate article" will follow in the next Winni. I have no idea what I'll be writing, but I know I won't be making the "ultimate announcement". That'll likely be done by my successor at the AGM when we hopefully will see the bylaws announced as ratified! The final wording of the document is being refined for distribution to each and every member well in advance of their opportunity to vote. Stay tuned!



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	81
Ray Andrejowich	110
Berni Plett	45

Herschel 400's:

Stan Runge	200
Sean Ceaser	145
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
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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.



Welcome to our new members!

Nick Honcharik, Winnipeg
William Motriuk, Winnipeg
Sheila Wiwchar, Winnipeg

Meteorites 101 *continued from page 1*

Where do they come from?

We all know of the Main Asteroid Belt that lies between the orbits of Mars and Jupiter. Most meteorites originate from here. Asteroids sometimes experience collisions with one another and shatter into smaller bodies known as meteoroids. As a result of these collisions, some meteoroids are pushed out of their “parent body” orbits and slowly spiral in toward the Sun. Some of these will eventually make it directly toward Earth and end up as meteorites.

Other meteorites that do not come from the asteroid belt include rocks from Mars and our Moon. There are some that are suspected to come from Venus and Mercury but that is just speculation at this time. Comets too are suspected to be a source of meteorites. By and large however, we can thank the Asteroid Belt, Mars and the Moon for what we find here on Earth.

The Main Classes:

Meteorites are classified into three main Classes; Iron, Stony and Stony-Iron (previously known as Siderites, Aerolites and Siderolites). These are further subdivided into groups and sub-groups based on their petrologic and chemical compositions and will be covered in detail later in the series.

Iron meteorites:

Iron meteorites are mainly alloys of iron and nickel with their iron content being about 80-95% and the rest nickel. There are three main groups of iron meteorites; Hexahedrites, Octahedrites and Ataxites and are so named for their crystalline structure or lack thereof. These are then divided into sub-groups based on their chemical compositions.

They are thought to originate in the core of differentiated asteroids (having a core, mantle and crust very much like Earth's) that have experienced catastrophic collisions. The molten ejected metal from the core cools and crystallizes over millions of years. It is these crystals that show up in sliced and etched irons as a crosshatch structure called the Widmanstätten pattern which is named after its discoverer. Irons make up about 5.7% of all known meteorites.

Stony meteorites:

Stony meteorites or stonies are exactly that.....stones. They are thought to originate from the mantles and crusts of asteroids or from other differentiated bodies such as our moon and Mars. There are 2 main groups of stony meteorites; Chondrites and Achondrites. Chondrites have chondrules which are tiny spheres of minerals that range in diameter from sub-millimeter to about one centimeter in rare specimens. The average diameter of chondrules is about 2mm to 3mm. Achondrites have no chondrules because they underwent heating and melting due to impacts in space. Chondrites and achondrites are further divided into sub-groups based on their petrologic and chemical compositions. Stones make up 92.8% of all known meteorites.

Stony-Iron Meteorites:

Stony-Iron meteorites are arguably among the most beautiful of all meteorites known. They are thought to originate from the boundary of the core and mantle of differentiated asteroids and contain beautiful mineral crystals or stony components in an iron-nickel matrix of a roughly 50-50 split of metal to stone. There are two main groups of stony-iron meteorites; Pallasites and Mesosiderites. Pallasites contain large olivine crystals set in a metal matrix. The Esquel Pallasite is the most beautiful of all and contains gem quality peridot (olivine crystals). Mesosiderites are made up of metal and heavily brecciated (shattered rock) silicates. These are further divided into sub-groups based on their petrologic and chemical compositions. Stony-Iron meteorites make up 1.5% of all known meteorites.

This about covers the basics of meteorite classification. In the next series of articles I will cover each classification in detail and then go on to providing tips on how to hunt for meteorites. This will include equipment, hot spots, field testing, links to testing labs and classifying facilities etc.

The final articles in the series will include how to get into buying, collecting, displaying and cleaning/care of meteorites. If enough interest is generated I can include chapters on cutting, etching and long-term preservation of meteorites. Links will be included to reputable dealers who are members of the IMCA (International Meteorite Collectors Association – www.IMCA.cc)

I will strive to provide information that is both accurate and current. As with any other branch of science, there are some differing opinions and schools of thought in Meteoritics. If there are any questions or comments on this article or any in the future, please feel free to contact me through email: rcroning@mts.net.



Mr. Bud . . . in "Scope Dope"

by Murray Toews



Spruce Woods Star Party 2008



Photo by Mike Stephens

Come and share the fun of observing with a friendly group of amateur astronomers of all levels of experience at the

4th Annual Spruce Woods Star Party September 5 - 7, 2008

Hosted by the RASC Winnipeg Centre, this event is held in beautiful Spruce Woods Provincial Park, located 160 km West of Winnipeg.

This year's schedule includes a keynote presentation, a swap table, a "smorg" dinner at the Buckhorn Ranch, a delicious Sunday pancake breakfast at the site, and the much-acclaimed Binocular Sky Tour.

Also on the schedule are two not-to-be-missed workshops: A seminar on setting up a robotic telescope on the cheap and a session on building a trapezoidal binocular mount

For more information go to <http://winnipeg.rasc.ca/sprucewoods> or contact us by emailing: spruce.woods.star.party@gmail.com

For RASC members, if the registration form and payment are received prior to August 9 the cost is \$35.00, August 9 or later \$40.00. For non-members please add \$5.00. Registration includes a breakfast and the smorg banquet. For family members the cost is \$15 each for meals. (There is no cost for children aged 6 and under.)



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.