PETERBOROUGH ASTRONOMICAL ASSOCIATION

THE REFLECTOR

Volume 7, Issue 1 ISSN 1712-4425 January 2008

Reflector Editor Shawna Miles steps down as Phillip Chee steps up

Shawna Miles deserved more than a pat on the back for her outstanding work on the Reflector. PAA President, Rick Stankiewicz presented her with a commemorative plaque in thanks for her superior efforts – and results.

Perhaps the most significant change the PAA's annual general meeting saw was the changing of the guard as Editor of the club's monthly magazine. Shawna Miles had stepped into the large boots previously occupied by Charles Baetsen. Charles set some very high standards for the Reflector. In fact, Astro-guru Terry Dickinson singled it out for the superior quality of its articles and the overall sophistication of its format.

Shawna took over as Editor at the age of eighteen and proceeded to continue the high quality of the publication while introducing a few new twists of her own. Now Shawna is shifting her focus to earning money for continuing her education. She's going for a degree in physics at Trent University. It's yet another lofty challenge which we're all sure she'll be more than up to. But it also calls for plenty of bucks to match the hard work ahead.

With that in mind, Shawna chose to step down to free up more of her spare time for work and her other passion, scuba diving. While physics is her first calling, it appears that there's still room for a marine biologist to fit inside her future plans.

The PAA wasn't an Editor-Free-Zone for long. New member Phillip Chee stepped up to bat and is now the fourth Editor of the Reflector in its 36-year history. So, as we bid farewell to Shawna and extend our thanks for a job very well done, we also thank Philip Chee for volunteering to take over the responsibility.

As we sat around the table that evening, it occurred to us that seated in that one room were all four of the Reflector's Editors, past and present. Seated directly across from Shawna was Dean Shewring, the magazine's first editor from the mid-seventies. Also at the table was Charles Baetsen. And seated on the opposite side of the table were Shawna and our new Editor, Phillip Chee. It was a photo opportunity which I rather stupidly missed. However, if ever we have the opportunity again, the old Kodak will be merrily clicking away —I promise.

Our thanks go to all the Editors for their past contribution to the club. The Reflector is an important element in the glue that binds us together. I'm sure you'll all join me in giving Phillip the support (like articles and pictures) he needs to continue the tradition of club news and quality presentation that began nearly four decades ago.

Thank you, Phillip. Best wishes for your future success.

President's Message

Happy New Year and may your skies be star filled in 2008!

The PAA is off to a fresh start for 2008, with some new executive members voted in at the Annual General Meeting (Dec.7/07). I would like to welcome aboard Phil Chee (Editor), Pat Smallman (Secretary) and Val Mathias (Librarian). Your stepping up to the plate has made our club stronger as a result. I wish you all the best in your efforts to make the PAA the quality organization it strives to be. I would also like to take this opportunity to thank those that are leaving their previous posts on our executive, in particular, Susan Coady (Memberships), Joanne Stockton (Librarian) and Shawna Miles (Editor). Your service to this club is greatly appreciated. Your work in the past will make it easier for those in the future. Lastly, I want to thank all those members that are sticking around on the executive (Robert, Rene, Mark, Harold and John). Your continuity and continued support are something we all appreciate and the PAA (especially me personally) is grateful.

As we start a new year I wish to remind all our members that this is your club and it is what you make it. Anything you do will make this club stronger and better as a result. Write an article for The Reflector, sell tickets on our telescope raffle, help out on Astronomy Day, give us your ideas and support in anyway you can. There are lots of things that you can do. Get involved, be involved, and stay involved!

Rick Stankiewicz, President

Editorial

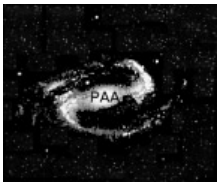
Welcome to a new year and another volume of *The Reflector*, the newsletter of the **Peterborough Astronomical Association**. I would like to take a moment to say I am looking forward to putting together each month's issue and seeing what the membership has to offer whether it's a book review, photographs, how-to articles or general stories of an astronomical nature.

My interest in astronomy began at an early age. When I was about 9-years-old I became fascinated with all things astronomical. I devoured every book on the subject at the public library. I received a 3" aperture refractor for my tenth birthday and tried learning how to use it. Living in the suburbs of Toronto the only objects I could find reliably were the planets.

The limitations of that telescope eventually caused me to lose interest in pursuing astronomy as a career and I ended up studying biology in university. But that didn't mean I stopped being interested in astronomy as a hobby, but it would be a quarter century before I gazed again the stars in a meaningful way.

So now I come back to amateur astronomy by way of photography. By chance I stumbled upon a photo of an Iridium satellite flare and that was the catalyst that caused me to undertake a serious attempt at astrophotography. And so by the summer I had joined the PAA and here I am now, editor of the newsletter. So, I hope you enjoy this issue and remember to look up.

Phillip Chee



Peterborough Astronomical Association

The Reflector is a publication of the Peterborough Astronomical Association (PAA). Founded in 1970, the PAA is your local group for astronomy in Peterborough and the Kawarthas.

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Happy New Constellations

There are four major constellations associated with winter. There are others, but the big four are Orion, Auriga, Taurus and Gemini. We covered mighty Orion in the last column for 2007. So we'll really bend our necks and move almost overhead to Auriga (oh-Rye-gah). This large, football-shaped constellation is anchored to the celestial sphere by the bright star Capella.

Auriga leads two lives in mythology. On one hand it is said to represent a charioteer. And indeed its Roman roots claim that either Vulcan or his son Erechtheus, both of whom were lame, invented the chariot as a means of transportation. But there's another side to the story.

Auriga is also portrayed with two or three goats in his arms. The star Capella is said to represent Amalthea, the she goat who nursed baby Zeus, the Greek god. It was during one of his play sessions that little Zeus broke one of Amalthea's horns. Later Zeus gave the horn the ability to dispense food and drink. Hence the cornucopia was born.

So take your pick of mythologies and identities. Either is correct, though I believe the Greeks named the gods first.

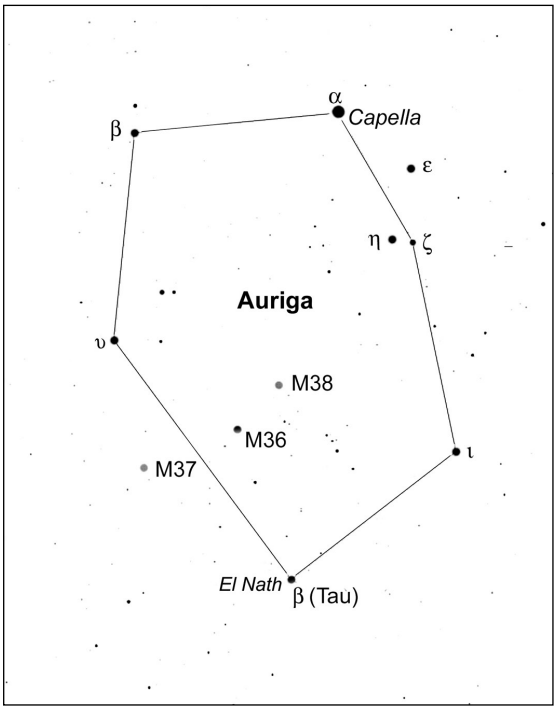
Auriga is home to three open star clusters, listed as Messier Objects M36, M37, and M38. All three are visible as small misty patches in a pair of 7x50 handheld binoculars. They also form a nearly straight line. From top to bottom you'll see M38, M36, and finally M37.

Like all star clusters, each of these three would have been born in a large cloud of dust and gas called a nebula. Over millions of years the stars coalesce from the bits of dust and material in the nebula courtesy of gravity. Eventually they become large and hot enough at their cores to begin the process of nuclear fusion and a star is born. Our Sun was born in the same manner. As the stars begin to radiate they also blow away the remaining gas and dust from which they formed. It's sort of like babies kicking off their blankets. Eventually the clusters will drift apart, but that too will take millions, if not billions of years.

If you'd like to know more about what's going on overhead, I recommend Terence Dickinson's NightWatch as an ideal guide to the constellations. Also high on my list of exceptional beginner books is H.A. Rey's The Stars, a New Way to See Them. Happenstance Books in Lakefield, Chapters and Coles in Peterborough or the Canal Book Store in Bobcaygeon will have copies or can order one for you.

Next month we'll tour Taurus the bull and meet up with Castor and Pollux, the twins in the constellation Gemini. Until then, keep your outdoor lights shielded and aimed down. You'll be doing your part to help preserve our dark Kawartha night skies.

John (johnstargazer@xplornet.com) belongs to the Canadian Science Writers' Association and owns BHO
(www.buckhornobservatory.com)



Star Clusters in Auriga

The star clusters in Auriga lay at a distance of 4,100 to 4,200 light years. That means the light that reaches your eyes left those clusters a little over 4,000 years ago. Put in a more Earthly time frame, the pyramids would have just been completed and Christ's birth was 2,000 years in the future.

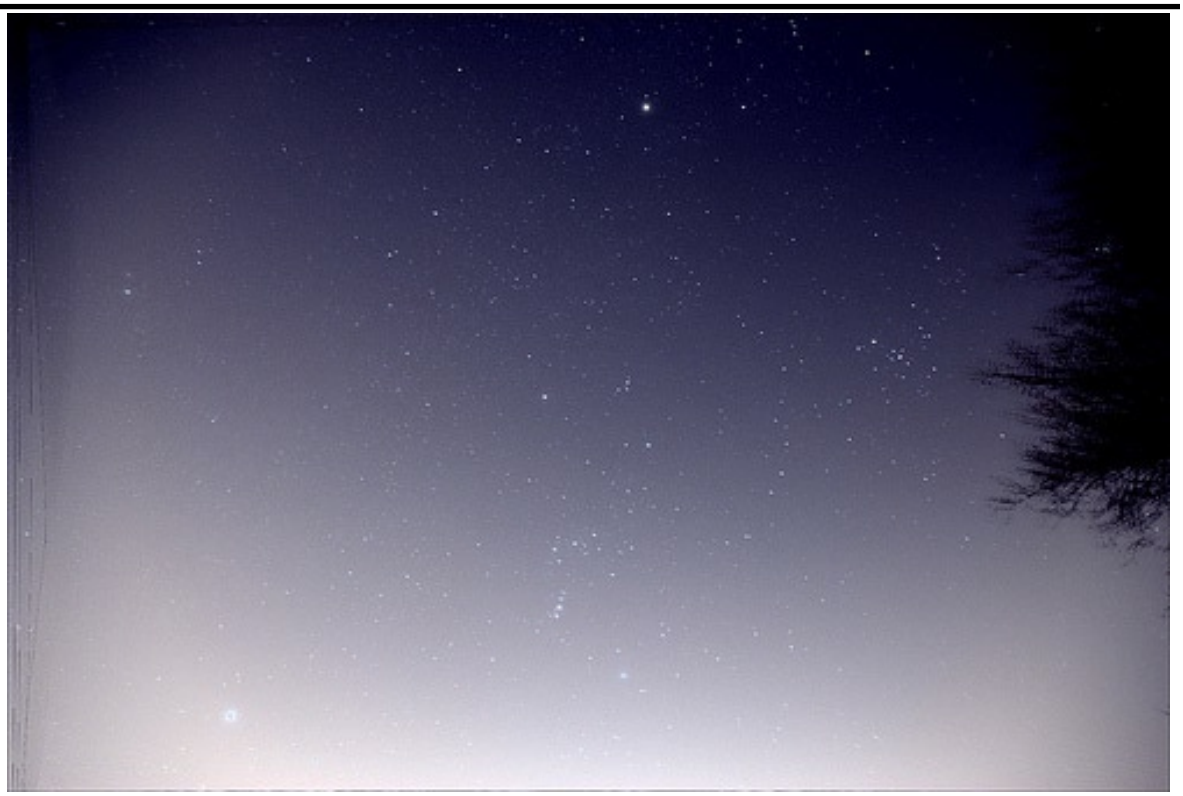


Photo: Phillip Chee

With the air saturated at 100% humidity, light pollution is exacerbated in a suburban Peterborough sky.

Turning the Lights Out: Fighting Climate Change and Light Pollution With One Flick

In the last few months there has been a number of stories in the media about light pollution. In part this may be the result of the outreach that the International Dark Sky Association has done in the last few years. CBC's website posted a story about the IDAS awarding a dark sky designation to an area around Sherbrooke, Quebec is one example.

The other factor may be the resurgence of environmental concerns in the public, particularly with respect to climate change. One such expression is the Earth Hour and Lights Out America movements. Each organization is promoting March 29, 2008 as the night to turn off your lights and appliances between 8 and 9 p.m. The rationale is to demonstrate the energy impact that even one hour of light uses.

On the final day of the UN Climate Change Conference in Bali, Indonesia on December 14, 2007, the World Wildlife Fund announced their sponsorship of the 2008 Earth Hour event. Earth Hour was an idea created by the citizens of Sydney, Australia. In March 31, 2007 over 2.2 million people (60,000 households) and 2,100 businesses turned off non-essential lighting for one hour. This year, Earth Hour has grown international with 13 cities officially participating, including Toronto, Canada.

For astronomers concerned with the effects of light pollution, such initiatives provide a concrete way to connect light pollution abatement strategies with the general public. In this regard the IDAS has officially voiced its support of Lights Out America.

Some related links:

http://www.thestar.com/sciencetech/Environment/article/285432

http://www.thestar.com/sciencetech/Environment/article/285584

http://www.cbc.ca/world/story/2007/03/31/australia-lights.html

http://www.cbc.ca/news/background/space/light-pollution.html

The Sky this Month

Mercury is visible during evening twilight and grows brighter toward greatest elongation east (19°) on the 22nd.

Venus continues to be a morning star and on the 1st rises about 75 minutes before astronomical twilight. It rises to about 11° at astronomical twilight.

Mars continues its retrograde (westward) motion in Taurus and stops on the 30th after which it resumes its direct (eastward) motion. It transits on the 15th at about 10 p.m.

Jupiter remains in Sagittarius the whole year and starts the month off in the sun's glare. On the 15th it is about 9° high at sunrise. By the 31st it rises in darkness and is visible near Venus.

Saturn is in Leo throughout the year. It rises mid-evening in the east-northeast. Its rings are tipped away from us.

Uranus is in Aquarius and still visible in the southwest after nightfall.

Neptune is too difficult if not impossible to see very low in the twilight.

Raising Heaven

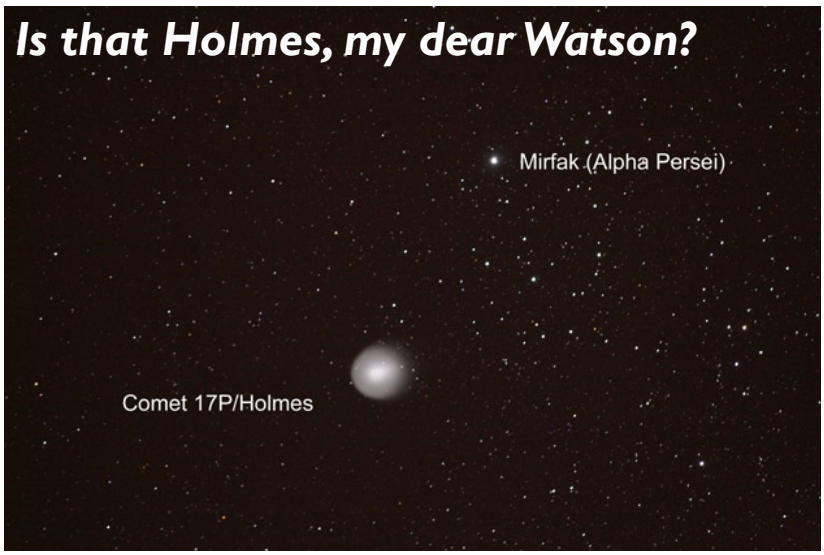
This was the name of an article that appeared in the National Geographic Magazine (NGM) in the November 2007 issue (Vol. 212 No. 5). The article is written by Timothy Ferris, a renowned astronomical author. It is not a long article (14 pages with all the images), but not only are the Hubble images superb (some you've likely seen, but other likely not) and the writing is excellent. This is something that you come to expect from a writer like Ferris. If you are not familiar with his previous works like Galaxies, The Whole Shebang or Seeing in the Dark, to name but a few, then get your hands on this NGM article to get a flavour of his style on the subject of astronomy. I think you will like what you see, I sure did.

In the article, Ferris briefly covers the history of the Hubble space telescope and the range of discoveries that have been made about our universe and how we are being lead toward future discoveries. He helps put things into perspective too.

"The next time someone wonders aloud what use it is to spend billions on space telescopes when we have "problems here at home," the answer may be that they help us understand just what and where home is…"

In any case, if you can find a copy of this article it is worth a read and I don't think you will be disappointed. I think this might be Ferris's first article for the NGM, but I don't think it will be his last. Stay tuned for more stories of the astronomical kind.

Review by Rick Stankiewicz, PAA



Comet Holmes that is, technically Comet 17P/Holmes to be exact. I am sure you have all heard about this celestial treat in our night skies over the last month or so, but have you been watching it after it burst on to the scene October 23rd? Though it never developed a typical cometary tail of any kind, it has exploded in size to the point that it became the largest object in our solar system on November 9th, 2007, when its coma (the glow around the core or nucleus) was over 1.4 million km. (0.9 million mi) across. This is larger that the diameter of the Sun! All this from a solid nucleus of dirty ice only 3.6 km (2.2 mi) across.

The first image shown here was taken on November 11th, 2007, when Comet Holmes appeared as a magnitude 2.5 fuzzball heading for Mirfak (Alpha Persei), the brightest star in the constellation of Perseus. The second image was taken on November 17th, when the comet had moved even closer to Mirfak. By this point, Holmes was starting to dim considerably, but it still maintained it's imposing size. By the time you read this article Holmes may have fizzled, but predicting comets can be tricky at best, so who knows what to expect?

Here are a few interesting facts about Comet Holmes. An amateur British astronomer (Edwin Holmes) first discovered it in 1892. This comet was discovered only because it went through an eruption similar to what we saw now (though not as large), which allowed Mr. Holmes to see it, because normally this comet is only a 17th magnitude object that requires a very large telescope to even detect it. It is known that Comet Holmes is a "periodic" comet, which means that its elliptical orbit brings it around the Sun on a regular cycle, every 6 years in this case. For example, it has been moving away from the Sun ever since May 4th this of 2007. However, from about 1906 to 1964 astronomers had lost track of Comet Holmes. Not until this visit has Comet Holmes put on such a display. In fact, no comet has ever grown to such a size. It went from obscurity to infamy over night, when it grew in brightness by over half a million times in less than 24 hours. What caused such an event to occur? No one knows for sure, but likely there have been cracks or fissures open up in its core, which has released an unusual amount of material to be vapourized into the coma surrounding it. It is expected that this comet will continue to orbit the Sun for another few thousand years.

I hope you caught the show because it was yet another piece of astronomical history in the making. I am not sure you can say, "Elementary, my dear Watson", as this Holmes has been anything but.

Rick Stankiewicz, President, PAA

Adventures in Time and Space

Have you ever wondered if the constellation Crux has ever been visible from this latitude in the distant past? Is it possible to ever see the Magellanic Clouds from Southern Canada? The answers may surprise you.

With the help of **Starry Night Pro** (or any other planetarium software) we can all take a trip not only in space, but also time!

If one sets their chronometer back to 14000 BC, the sky is a very different place indeed! During that epoch, the Small Magellanic cloud would be visible in the spring-summer about 5 degrees above the horizon. The large Magellanic cloud however, would never have been visible from this latitude (of course this does not account for the clouds movement with respect to the Milky Way over millions of years). This is because it lies too close to the south ecliptic pole. You would have to travel as far south as Cairo, Egypt to see it peak over the horizon.

What other wonders would have been visible to the pre-historic observer of that time. In 12000 BC, Sagittarius and Scorpius would occupy the positions in the night sky currently occupied by Gemini and Taurus. This means that the Milky Way below it would also be visible. Crux and Centaurus would be easily seen from our latitude. Omega Centauri would be a whopping 23 degrees above the horizon (similar to what the Lagoon nebula is now). Centaurus-A would even be higher in the night sky.

This all sounds great, but what would we lose? The most obvious absentee constellation would be Orion. At its best, just Betelgeuse and Bellatrix would be visible from here. The belt and the sword would remain below the horizon throughout the year. Also absent would be Canis Major and the dog-star Sirius. In fact most of the winter constellations below the ecliptic would be impossible to see 14000 years ago.

The north sky would also be different. Ursa Major and Ursa Minor would still be visible, and they would both circle the pole (i.e., Vega), but at a much larger distance than they do today. Ursa Major would rise and set as would the current north star Polaris. If one imagines replacing Cygnus and Lyra with Ursa Major and Ursa Minor, you would get an idea of how they would have behaved 14000 years ago.

Pre-historic Man living in the mid-latitudes would certainly have had an interesting sky to observe. You too can see this—if you wait another 14000 years!

Clear Skies,

Charles W. Baetsen
va3ngc@rac.ca

2008 PAA Meeting Schedule

Unless noted, all PAA meetings are held at the Orientation Centre of the River View Zoo on Water Street in Peterborough. Meetings begin at 8:00 pm and generally last two hours. Guests are always welcome. Parking is free. Washrooms are available. The main meeting room is wheelchair accessible. Any changes will be posted as quickly as possible.

January 4	**Getting Started in Astronomy** with J. Crossen, C. Cross, and M. Coady
February 1	**Astro Imaging with a Digital SLR Camera** – Gord Rife – Organizer HSP
March 7	**Astro Imaging with the Meade DSI Pro** – Gord "Hubble on Earth" Simpson
April 4	**Orbital Oddballs** – John Crossen of Buckhorn Observatory
May 2	**Personal Observatory Dome – POD** – Wayne Parker POD developer
June 6	**The Green Flash** – John Hicks of New Forest Observatory
July 4	No Meeting – Summer Recess
August 1	No Meeting – Summer Recess
September 5	**Here's what's new** – Jim Kendrick of Kendrick Astro Instruments
October 3	Topic to be confirmed – Professor Paul Delaney of York University
November 7	To be announced
December 5	PAA Christmas Cookie Crunch & Annual General Meeting

Do Astronomical Research From Home?

Yes, you can and you don't have to have a university degree to do it either. There is an amazing research project on the Internet called "Galaxy Zoo.org" that is asking any interested astronomer (that's you) with a bit of time and a lot of interest, to log-on to their website (http://www.galaxyzoo.org/) and after reading about the project, you do a little test to see if you are "on track" and off you go helping to identify some of the million galaxy images that are needed for others (with university degrees) to do research with. All the images are coming from the Sloan Digital Sky Survey (http://www.sdss.org/).

The premise is quite simple. It turns out that the human eye (and brain) is smarter than a computer when it comes to differentiating galaxy types and direction they are rotating. Then you throw in the odd merging galaxy or two and you have a real challenge for the trained observer and all this from the comfort of your own home in front of your own computer. It is a fascinating concept and an even more amazing adventure if you decide to jump on board and give it a try. I did and I do not regret it one bit. I have logged close to a thousand identifications myself and there are those that have done tens of thousands to date. This is all since it was launched early last year (2007). It is easy, fun, educational and I just love the adventure, as you never know what the next image will be that they send for you to identify. You are seeing images that I don't think anyone else has ever seen before. Most are pretty obscure, but others are breath taking. You work at your own pace and you can do as many or as few as you want. There is no obligation, but know that whatever you do, will be going to a cause for the greater good of astronomical research. Just believe that no one can do it better than you.

They are already starting to use the data that has been amassed to date to do research papers. They are working on a way to give credit to those that are helping with this data collection too. Or, if you want to do your bit for science (without donating your organs) consider registering at Galaxy Zoo.org and give it a try. That's a great New Years resolution for 2008.

Rick Stankiewicz, President, PAA

There's also another comet that has brightened to naked eye visibility. Comet 8P/Tuttle has returned to the inner solar system after an absence of 13 years. It made its closet approach to Earth on January 1 and 2 at a distance of about 24 million miles. This week it brightened to ~ magnitude 6. The comet is quickly heading southward in the sky. I took this photo on the evening of December 29, 2007.

Photo: Phillip Chee

2008 PAA Observing Schedule

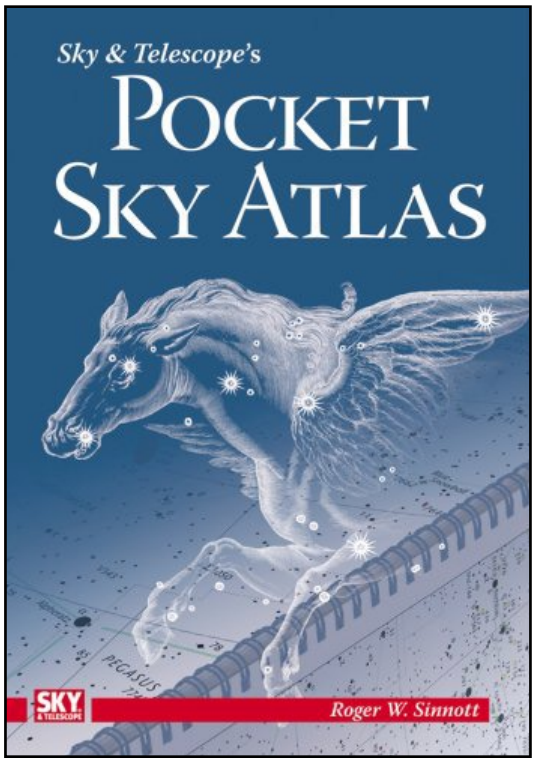
Observing nights are very weather dependent. We suggest you call the venue at which the session is scheduled to confirm weather conditions for the night. If the Friday night session is clouded out, the following Saturday night is the backup. If that, too is cloudy we wait until the following month. The PAA website contains maps to all of the observing sites.

Jan 11	PAA Observing Session & Newbie Night Sky Tour – Buckhorn Observatory
Jan 16	PAA Observing Session & Newbie Night Sky Tour – Buckhorn Observatory
Feb 15	PAA Observing Session & Newbie Night Sky Tour – Baetsen Observatory
Feb 21	Total Lunar Eclipse – Armour Hill in Peterborough
Mar 7	PAA Observing Session & Newbie Night Sky Tour – Buckhorn Observatory
Apr 11&12	Camp Over Weekend Observing – Buckhorn Observatory
Apr 25	PAA Observing Session & Newbie Night Sky Tour – McDonald Observatory
June 6&7	Camp Over Weekend Observing – Buckhorn Observatory
June 27	PAA Observing Session & Newbie Night – Cedar Knoll Observatory
July 4&5	Camp Over Weekend Observing – Buckhorn Observatory
July 25	PAA Observing Session & Newbie Night Sky Tour – Cedar Knoll Observatory
Aug 1&2	Camp Over Weekend Observing – Buckhorn Observatory
Aug 11/12	Perseid Meteor Shower – Armour Hill in Peterborough
Aug 29	PAA Observing Session & Newbie Night Sky Tour - McDonald Observatory
Sept 26/27	Fall 'n Stars Star Party with RASC Bellville Chapter
Oct 3&4	SausageFest Camp Over Weekend Observing – Buckhorn Observatory
Oct 24	PAA Observing Session & Newbie Night Sky Tour – Cedar Knoll Observatory
Nov 28	PAA Observing Session & Newbie Night Sky Tour – Buckhorn Observatory
Dec 19	PAA Observing Session & Newbie Night Sky Tour – Buckhorn Observatory

2008 PAA Observing Nights

Buckhorn Observatory • 705-657-2544
McDonald Observatory • 705-696-2977
Baetsen Observatory • 905-983-8143
Cedar Knoll Observatory • 705-799-6977

Book Review



S&T's Pocket Sky Atlas

Author: Roger W. Sinnott
Publisher: Sky Publishing – Cambridge, MA
Price: $19.95 US, $29.95 Can
ISBN: 1-931559-31-7

Over the past several decades, there have been many different star atlases. Wil Tirion's Sky Atlas 2000.0, Uranometria 2000.0, and the Millennium Star Atlas being some of the most useful for the serious observer. All of these however, have one major drawback – they are not exactly portable. The Pocket Sky Atlas attempts to make a portable (pocket) edition with the same level of detail as Sky Atlas 2000.0. To this end, this atlas meets this criterion admirably.

The atlas is divided up into eight gores (or lunes), approximately 45-degrees wide. Within each gore, there are ten charts, whose numbers increase from north to south. This logical arrangement makes it easy to quickly find certain sections of the sky as chart numbers ending in 1 (1,11,21 etc,) cover the north circumpolar region, whereas chart numbers ending in 4, 5, 6 or 7 are located on the celestial equator. Not only is there a generous overlap between charts, but individual star charts have their centres shifted to keep important star patterns (e.g., Pegasus or Gemini) whole.

The high level of detail (i.e., stars to mag. 7.6) is a work of art in its own right. Not only is there sufficient detail for the serious amateur, but Sky Publishing managed to present it in such a way that the charts are not cluttered. The atlas covers galaxies to 11.5; globulars brighter than 10.5, planetary nebulae to mag 12 and open clusters brighter than magnitude 8. This covers all the Messier objects, and even the Hershel 400 list.

I would highly recommend picking up a copy of this pocket atlas the next time you are in Toronto, or better yet, when you are in the US. I was fortunate enough to pick this one up at the much more civilized price of $19.95 while visiting Michigan this past December. If you have a lot of book shopping to do, it might be worth a drive to the nearest boarder crossing, at least until Chapters and the like drop their prices to reflect the current state of our dollar.

Clear Skies,

Charles W. Baetsen
va3ngc@rac.ca

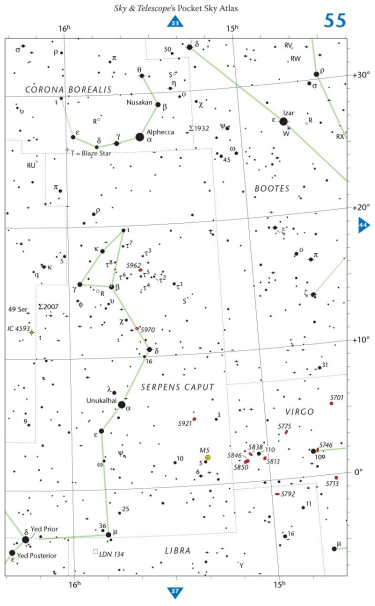


PHOTO GALLERY

I am introducing a page for showcasing astrophotos taken by members of the Peterborough Astronomical Association in each month's newsletter. If you have an interesting photo please share it with us. You may include camera and exposure details and how the photo was taken.

To start I would like to share three recent photos that were featured in ***SkyNews.ca*** and ***SpaceWeather.com***

Top
Iridium flare with Comet Holmes. SkyNews Photo of the Week December 2, 2007.

Middle
A Geminid meteor after midnight on December 14, 2007. Published in the Geminid Meteor Gallery on December 14.

Bottom
A 22° lunar halo taken at the moment of the winter solstice. SkyNews Photo of the Week December 30, 2007.

ARTICLES

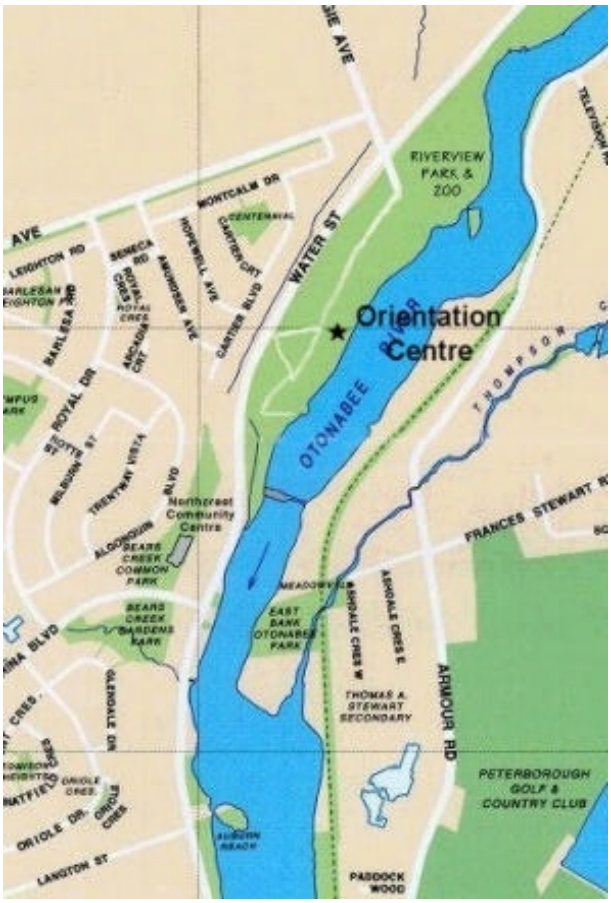
Submissions for *The Reflector* must be received by the date listed below. E-mail submissions are preferred (Microsoft Word, OpenDoc, ASCII and most common graphic formats are acceptable). Typed or hand-written submissions are acceptable provided they are legible (and not too long.) Copyrighted materials will not be published without written permission from the copyright holder. Submissions may be edited for grammar, brevity, or clarity. Submissions will be published at the editor's sole discretion. Depending on the volume of submissions, some articles may be published at a later date. Please submit any articles, thoughts, or ideas to:

Phillip Chee
445 Park Street North
Peterborough, ON K9H 4R1
phillip.chee@gmail.com

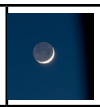
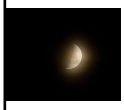
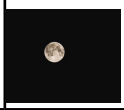
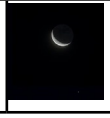
Next submission deadline:
Friday, January 18, 2008

MEETINGS

The Peterborough Astronomical Association meets every first Friday of most months at the **Peterborough Zoo Orientation Centre** (Next to the PUC Water Treatment Plant) at 8:00 p.m.



MOON PHASES

New Moon		January 8, 2008	6h37 EST
First Quarter		January 15, 2008	14h46 EST
Full Moon		January 22, 2008	8h35 EST
Last Quarter		January 30, 2008	0h03 EST