

# Canadian-made weather station lands on Mars

By John Crossen

Space exploration buffs around the world gathered to celebrate another success on the night of May 26th. At 7:23 ET that evening, NASA's Phoenix Lander touched down on the surface of Mars. The safe landing marked the successful conclusion of a 640 million km journey that began with the launch of a Delta rocket on August 27, 2007.

It was also a unique landing because the two most recent Martian touch-downs (more like bounce-downs) were accomplished via parachutes and inflated rubber pouches to absorb the impact of landing on Mars. The Phoenix Lander, on the other hand, did precisely as the name Lander implies. Just like in the science fiction movies of the 60's the Lander approached Mars at a speed of around 20,000 km/h. A parachute was deployed and slowed the Lander as it plunged through the thin Martian atmosphere. At a set altitude, the rockets fired to gently lower the Lander to the Red Planet's surface.



**Martian Surface.** An artist's concept of the Phoenix Lander as it touches down on Mars. Courtesy of NASA/JPL-Caltech.

To land in such a manner was one of the most difficult maneuvers achieved during the Lander's 10-month journey to Mars and marks an important step forward in NASA's space maneuvering technology. The whole landing process took just a few minutes, but due to the finesse required to bring the \$20 million project safely down, NASA officials describe it as "seven minutes of terror."

The Lander's Prime mission will be to search for water on the planet's surface. It has landed in a region at about the same latitude (65° N) as northern-most Canada. This is an area where evidence of a large deposit of ice water was detected by the Mars Polar Orbiter Satellite. Should the deposit prove to be large enough, it will be capable of supplying future Mars missions with water. And, of course, the colonization of Mars is just a step beyond that. Well, OK, maybe a big step.

By the time you read this, the Phoenix Lander will be well into its 90-day mission and will have begun digging into the Martian surface via its robotic arm. It will also be taking still photographs of the region. There's an important Canadian presence on this Mars mission in the form of a Canadian-built Martian weather station.

The Canadian Space Agency and a team from York University will head up operation of the weather station. Con-

# Reflecting on Summer

## PRESIDENT'S MESSAGE

With this issue of The Reflector I find myself “reflecting” on the end of one season and the start of another. Our June meeting at the Zoo will have been our last regular monthly meeting until September (5th), but this is not to signal the end of anything other than a couple issues of The Reflector (you have all summer to dream up articles for the fall). There is a whole list of observing sessions at club member’s observatories, camp-outs at the BHO, a big public outreach session (July 19th) and the Perseid Meteor Showers (see our web site for all the details for these events: <http://www.peterboroughastronomy.com/events.htm#Observing>)

I hope to see all or many of you at these special club events over the summer and I look forward to resuming in the fall with the balance of our year’s schedule. Have a safe and fun summer, I know I will.

Keep looking up!

**Rick Stankiewicz**  
*President, PAA*

## EDITORIAL

It’s a great time to be an amateur astronomer in the twenty-first century. Telescopes are more powerful and cost much less than a generation ago. The internet age has transformed research and commerce such that we can find whatever we are looking for in a very short time.

With that in the back of my mind I decided to request a photograph from the remote telescope (<http://www.pbs.org/seeinginthedark/explore-the-sky/internet-telescope.html>) hosted by Timothy Ferris, author of *Seeing in the Dark*. I learned about this remote telescope after watching the DVD of the television show that complements the book, *Seeing in the Dark*. So, on May 25 I registered at the “Seeing in the Dark” internet telescope web site and requested it take a photograph of the Pinwheel Galaxy. I received this email on June 1:

Hi Philip,

Thank you for using the “Seeing in the Dark” internet telescope. The data for your requested image, M101 (the Pinwheel Galaxy), has been collected and processed to produce the image that is attached to this email! M101 is an extremely large “Grand Design” spiral galaxy. Even at a distance of 27 million light years away, it still sprawls its 170,000 light year diameter across a large

patch of sky. This image only shows the central third of its countenance. Many of the bright star forming regions in the spiral arms have their own NGC designations.

I hope you enjoy the picture; and if you are interested in seeing another far-away place you are welcome to access the webpage again to make another request.

Your friendly telescope operator,

Adam Block

Happy seeing!

Phillip Chee, Editor, *The Reflector*



M101, the Pinwheel Galaxy, photographed by the “Seeing in the Dark” internet telescope.

## (No) Star Gazing at Algonquin Provincial Park

**E**arly Spring I go “primitive camping” with some of the kids and kids-in-law. We take advantage of the two week window between ice breakup and the annual invasion of the black flies. This year we choose Clydegale Lake, two fairly short portages from the Rock Lake access point south of Highway 60.

For those of you not familiar with Algonquin it is a huge park, 7,700 square kilometers, in the highlands 200 km directly north of Peterborough. There are something like 2000 “civilized” campsites and about 5000 backcountry sites, mostly located on the over 2000 km of canoe routes. Aside from canoeing there are many other activities including hiking, biking, wild life watching, fishing, hunting, etc. While I don’t have any statistics at hand, Algonquin must be ranked in the top 10 of the largest parks in the world, by various measures.

Star gazing has a lot of potential. There are no population centers within the park, and only a few small towns near the borders. If you want to bring all your astronomy gear you can stay at one of the 10 or so drive-to campgrounds; while star gazing may not be practical right at your campsite due to the tree cover, there is usually a beach or parking lot nearby that has a clear view. Backcountry sites, accessible only by canoe, usually will limit you to binoculars or a fairly small scope (not only because they are light in weight, but due to the ever present possibility of dropping or dunking). Canoes can be rented from a couple of outfitters near the Park. Some of the back country sites are truly fabulous; there are many island sites or ones situated on prominent south facing bluffs.

But there are some minor drawbacks. For the first time in 5 years we had more or less continuous rain, wind, and cold. In 4 days I never saw the sun or a single star. Oh well, better luck next time!!!

If you are interested in a more formal affair, the RASC Toronto branch holds there Algon-

quin Star Party at Mew Lake Campground at the end of September, with viewing on the beach. This year the 11th edition will be held on September 26 to 28.

*See you there!*

*John Galle*

### Interim Report on Ontario’s Biodiversity 2008

**B**y the time you read this, the Ontario Ministry of Natural Resources will have released its “Interim Report on Ontario’s Biodiversity 2008 – Protecting what sustains us”. This 60-page report will be available through our PAA library. The one reason why this document should be of interest to you is that through the efforts of the PAA and others, there is the recognition (in print) of the need to reduce pollution. In particular, on page 33 of the report, section 4.5.1 states “Pollution affects biodiversity at the species, population, and genetic levels while also impairing ecosystem function and resilience.” Then it goes on to use the example of light pollution and how it can affect biodiversity. Then there is an insert, which details the “Lights Out Toronto” campaign of the Toronto-based Fatal Light Awareness Project (FLAP). This project has focused on turning building lights out at night to help save birds and other migrating wildlife species. This is all good news when it comes to the recognition of and awareness of light pollution and how it affects the natural environment and all that life within it. To view a copy of this document on-line see: <http://www.mnr.gov.on.ca/en/Business/Biodiversity/2ColumnSubPage/243483.html>

We have a long way to go in educating and recognizing the light pollution issues we face as a society, but every step in the right direction is a good thing and this is one of those steps. Let’s keep on walking!

*Rick Stankiewicz,  
President, PAA*

# Astronomy Day 2008

This year's sixth annual Astronomy Day (May 10th) was held again with and at the Peterborough Centennial Museum and Archives, on Armour Hill. It was yet another successful event. There were young and old alike and families too. There was something for everyone. From face painting to blow-up planetariums and another great kids program run by Peter McMahon of the Discovery Channel that finished with a "blast," as a rocket was successfully launched and retrieved. The weather cooperated too with one of our best days for this event yet. Unfortunately, the Sun was as blank as could be, as there were no sunspots to observe, but a nice waxing gibbous Moon was visible during the whole afternoon, so many of the public had the rare opportunity to safely see both our closest star and natural satellite at the same time though nice observing equipment.

Our attendance numbers appeared to be down from previous years, but it is anyone's guess as to why that might be, from the weather being too nice, to lots of other competing local activities/events going on the same afternoon. After our supper break, we resumed with a short Apollo video and then it was the annual raffle for a telescope and many other prizes. For the list of winner, see the "Astronomy Day" link on this web site. Thank you to all our members who sold or bought tickets. Our members "sellers draw prize" was won by Pat Smallman. Way to go Pat; see it does pay to do your bit for the club.

After this we watched a few interesting DVD's about our solar system and then it was time to set-up our club and personal telescopes and binoculars to show the public our night skies. The weather proved a little less ideal, with a thin veil of clouds most of the evening, but we were still able to show a nice near first quarter Moon and the planet Saturn, with its always impressive rings. Even the odd cluster of stars were visible too. Once again the numbers seemed to be down some from

previous years, but many of our members did a wonderful job of sharing their equipment and experience with the public who attended.

Thanks to all who attended and participated, both PAA members and public. Our raffle will enable our club to continue to do its public outreach work through both presentations and light pollution awareness efforts now and into the future.

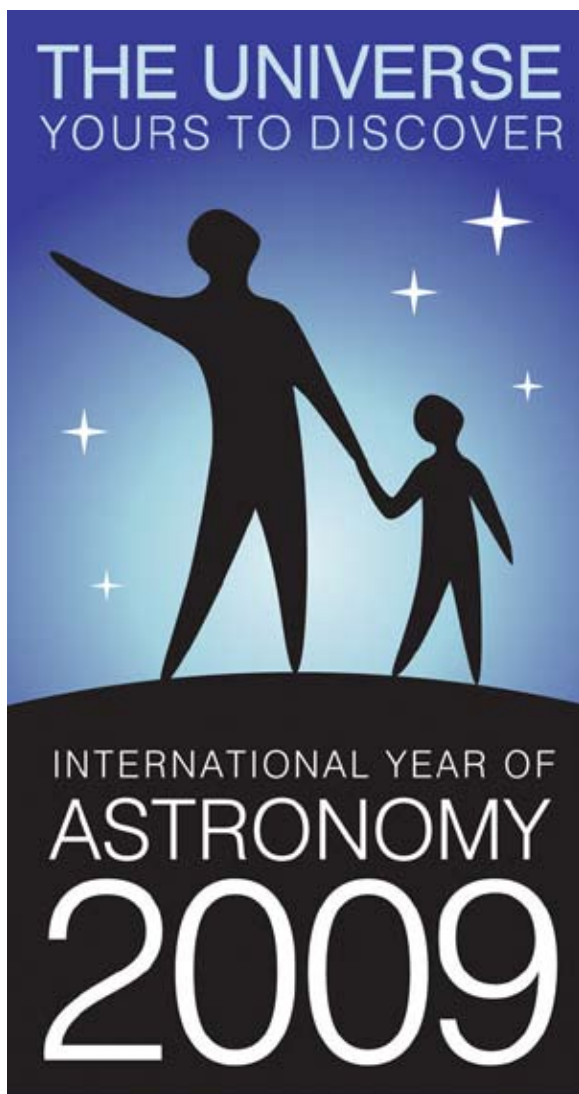
Next year is has already be designated as the "International Year of Astronomy" by the United Nations and the International Astronomical Union, so you can count on even bigger and better efforts and programming to take place for Astronomy Day and throughout the coming year. Stay tuned for future events through regularly checking this web site and the local media.

Keeping looking up!

*Rick Stankiewicz, President, PAA*



Winner of the Grand Prize of the telescope Bernice Finley (left) being presented to her by the PAA member who sold her the winning ticket, Valerie Mathias, PAA Club Librarian (right).



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tributions to the station were also made by the University of Alberta, Dalhousie University, the Canadian Geological Survey and optics maker Optech. The Canadarm maker MacDonald, Dettwiler and Associates Ltd., of Richmond, B.C. were responsible for construction of the Martian Weather Station.

With the safe landing of the Phoenix Lander we now have three functioning robotic explorers on the Martian surface. Originally designed to last three months on Mars, both the Opportunity and Spirit rovers are heading into their 4th year of active duty. The Phoenix Lander makes it a trio, though it doesn't have the capability to rove about. With any luck it, too, will far exceed its intended tour of duty. Until we meet again by the backyard telescope, keep your lights aimed down and the stars up bright.

## The Sky this Month

**Mercury** at inferior conjunction on the 7th and returns to morning twilight in the last 10 days of June. It brightens by July 1 when it reaches greatest elongation west ( $22^\circ$ ).

**Venus** is behind the sun all of June and reaches superior conjunction on the 9th. It will have reached the mid-point between the transitions of June 8, 2004 and June 6, 2012.

**Mars** moves into Leo on the 10th after starting the month in Cancer. At mid-month it will set in the west-northwest around 11 pm. On the 30th Mars will be  $0.7^\circ$  north of Regulus with Saturn only  $5^\circ$  to the east.

**Jupiter** nears its opposition, which occurs on July 9. Mid-month transits occur at 2am.

**Saturn** still near Regulus. It is visible at civil twilight about  $33^\circ$  high.

**Moon** at perigee on the 3rd. Moon  $0.4^\circ$  south of Beehive (M44) on the 7th. Mars  $1.1^\circ$  N of Moon on the 8th and Regulus  $1.4^\circ$  N on the 9th. Antares  $0.2^\circ$  N on the 15th. Solstice on the 20th at 7pm EDT. There will be a nice pairing of the 4-day old Moon and Mars on the 7th.

## Moon Phases

New Moon	2:23 pm	June 3
First Quarter	10:04 am	June 10
Full Moon	12:30 pm	June 18
Last Quarter	7:10 am	June 26



PAA member Dean Shewring got the photobug in him in early May. Herewith a few samples from the observing night at Charles Baetsen's observatory and from Astronomy Day.



# Photo Gallery

Phillip Chee presents two examples of how two of the brightest objects in the sky, the sun and moon, can create identical optical effects in the upper atmosphere. Both the sun and moon's brightness can be refracted by high altitude ice crystals associated with cirrus clouds. May was a particularly plentiful month for these atmospheric optics.



This solar halo was visible for much of the day on May 12. Here in the late afternoon the halo also shows off an upper tangent arc and circumscribed halo.



Then near midnight of May 15 a similar halo appeared around the Moon. It too displayed an upper tangent arc.

## The King of the Kitties is on the prowl

**L**eo is the king in spring's cast of constellations. He's an early riser, poking his shaggy mane into the night sky in March. So by May, this beautiful beast is just ambling off towards the western sky as darkness falls

If you were on a safari, Leo would be easy to track down. He's stretched out sphinx-like high in the southeast as the twilight sky darkens. All told, the Royal Kitty is comprised of eight stars. Regulus is the brightest of the star-dots that connect to outline His Highness. As May begins, Regulus and Saturn are side-by-side in Leo. Also known as the lion's heart, Regulus is at the bottom of a sickle-shaped grouping of four stars that represent Leo's head and shaggy mane. As I write this Saturn is the orangish star-like object to its right.

Looking to your left from Regulus and the sickle shaped arch of stars above Regulus takes you to a large triangular grouping of three bright stars. This stellar trio represents the lion's rear haunches. Now, connect all eight stars that comprise Leo's heart, head and haunches and say hello to the king of the celestial jungle.

But doesn't a lion have a tuft on his tail? Leo certainly does, but the tuft is in the form of a shy little constellation named Coma Berenices. In ancient mythology, this grouping of stars represented the locks of a beautiful Egyptian Queen named Berenices. According to legend, Berenices cut her hair off as a sacrifice so that her King would return safely from a war. Today, many stargazers prefer to think of this starry gathering as the fluffy puff of fur on the tip of Leo's tail. At first glance is just looks like a large dim glowing patch behind Leo. But break out your binoculars and Coma Berenices really jumps out at you.

So what else is up in Leo's corner of the celestial jungle? For starters, the royal snout is just a wing-width away from a sting and a star cluster known as the Beehive. It's in the constellation Cancer the crab and is a nifty

little swarm of stars easily visible from a dark sky spot. Also known as M44, scoop the Beehive up in your binoculars and the wow factor increases by a factor of ten.

Also up is Virgo the Virgin. She also goes by the name of Ceres. But no matter what you call her, she's the promise of a bountiful harvest to come. Beneath Leo are an unlikely twosome, Crater the water goblet and Corvus the crow. Rounding out the cast is Boötes, a large bent kite of a constellation. Boötes is anchored by a bright star called Arcturus. To find it, go to the handle of the big dipper (in the springtime it's upside down in the north) and follow the handle's arc to Arcturus.

If you'd like to know more about the king of kitties and the characters in his celestial court, I suggest a trip to Happenstance Books in Lakefield, Canal Book Store in Bobcaygeon or the big box Chapters in Peterborough. Terence Dickinson's *Night Watch* and H.A. Ray's *The Stars* are two great books for casual stargazing.

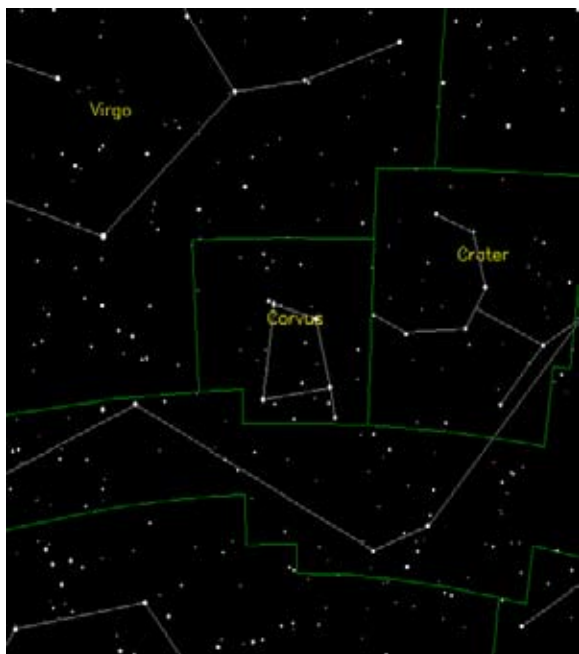
Until we meet again, keep your outdoor lights aimed down and the stars up bright.

**John Crossen** ([johnstargazer@xplornet.com](mailto:johnstargazer@xplornet.com)) belongs to the *Canadian Science Writers' Association* and owns BHO ([www.buckhornobservatory.com](http://www.buckhornobservatory.com))



Leo is the temporary home for Saturn this month. Look to the left of Regulus (on the right in this photo) and that's the ringed thing.

# Hungry crow lies to thirsty god about serpent attack



Meet Corvus and Crater, two of spring's lesser-known constellations. Beneath the two is Hydra, the water serpent.

While most of us are familiar with a few of the 12 constellations that make up the Zodiac, many more star-characters lead quiet, but interesting lives, are far from the Zodiacal spotlight. All told there are 88 constellations distributed between the Northern and Southern Hemispheres. But most of the southern constellations are below our southern horizon, invisible to our eyes. Three less familiar constellations of the Northern Hemisphere are Corvus, Crater, and Hydra. They're visible in the Kawartha spring sky.

Corvus is a crow and Crater is a goblet. Hydra is a water serpent. How did the trio become intertwined? Let's travel back in time and ask the Greek god Apollo.

It seems that one day Apollo was thirsty and entrusted Corvus with the task of flying off to the nearby spring to fetch him a goblet of water. Corvus did so with Crater the goblet held tight in his claws. But as he approached the river, Corvus spied a luscious fig dangling temptingly from a tree. Unfortunately the fig was not quite ripe yet, so Corvus decided to wait, just a little, for the tasty treat to ripen.

Virtuous as the Greek gods may have been, patience wasn't very high up the list and Apollo was greatly angered... not to mention being exceedingly thirsty by now. So when Corvus came up with a yarn about being attacked by Hydra the water serpent, Apollo quickly spotted the tall tale became enraged. So, in godly fashion, he swept up Corvus, Crater and Hydra and cast them into the heavens. That's some pitching arm!

Given clear skies, take a look towards the Southern Horizon on a dark, Moonless spring night and you'll spot a four-cornered grouping of stars that are a bit pinched at the top. That's Corvus. Crater, the goblet, is just in front of him. While the serpent Hydra is beneath both he and the goblet.

As unfamiliar as Corvus may be, he's easier to find than the well-known constellation Virgo. Our lady of the night has one bright star, Spica and the rest of the dots that make up her personage can be tough to spot and connect.

As far as cool things to see near Corvus, there is the galaxy M104. It is also known as the Sombrero Galaxy thanks to its shape. If you have sharp eyes and a very dark sky, you can just see it in a pair of binoculars. And if there's a telescope at your disposal, the galaxy will appear as a grey cigar-shaped smudge. That means we're looking at the galaxy edge-on like a pie plate in space.

Crater is directly beneath the bright star Denebola that is part of the three-starred triangle that makes up the rear haunches of Leo the lion.

Hydra is even more difficult to find as it is low to the horizon and for most of us in the Kawarthas, will be lost in the glowing dome of Peterborough's light pollution.

*John Crossen*

# Cherry Springs State Park

If you want a really unique star gazing experience try Cherry Springs. This Park is located in north central Pennsylvania, hidden in the Alleghenies at the top of a 2500 ft mountain.

The Park has just been certified as a Dark Sky Park by the International Dark Sky Association, at the “Gold” tier status, the highest possible. The honor is well deserved. The location is the darkest spot in the eastern half of the United States, surrounded by the 262,000 acre Susquehannock State Forest. Street lighting in the nearest town, about 20 km away, is shielded. There is a large astronomy field equipped with electrical pedestals and modern washrooms (red lighted). For those that feel the cold there are four observatories available for rent. Future plans include the construction of an outdoor planetarium, and the purchase of telescopes to be available for hire. Using the facility is hassle free — simply drive in, pay \$5 at the self-serve kiosk, pick your own location, and stay as long as you want. If you stay for a few days there are all sorts of local outdoor activities including fishing, hiking, canoeing, etc.



My introduction to the site was the annual Cherry Springs Star Party hosted by the Astronomical Society of Harrisburg, Pa. This year it was held on May 29 to June 1. The gathering attracts up to 500 persons from all over the US, plus a very strong contingent from Canada. Daytime activities include various presentations, raffles, and a vendor area. The keynote speaker this year was Al Nagler of Televue. Thursday night was one of the best I’ve ever seen – not only was it extremely dark but the seeing was outstanding — with my 4” refractor I rarely get a good view with a 6mm eyepiece, but this night was a very notable exception. Unfortunately the next two nights were clouded over (what else is now!).

The other event that is regularly scheduled is the Black Forest Star Party sponsored by the Central Pennsylvania Observers, held this year from September 5 to 7. In addition, every week during the summer there are star gazing programs, held in partnership with the National Public Observatory, that attract audiences up to 300 persons.

As the crow flies, the Park is less than 300 km directly south of Peterborough; by vehicle, however, it is about 550 km. I was able to drive the distance in about 7 hours.

See you there!

*John Galle*



# When I die, send me to NEAF not heaven

**NEAF** is the anachronism for North East Astronomical Forum.

That sounds a bit high zoot for my liking, so let's get back down to Earth. To my mind NEAF is the Super Bowl for astronomy gear fans. For amateur neck benders being at NEAF is like having seats in the gold section of the Stanley Cup's final game.

This Valhalla for us nerds of the night takes place in Suffern, New York. It's just 30 minutes from New York City and not too far from the Canadian border, so plenty of Canucks head south at the end of April to take in the show. NEAF is primarily a manufacturer and dealer preview of all the new astro-gear for the coming year. Everything from telescopes to eyepieces, computerized mounts to backyard observatories, as well as astronomical holiday locations and astro-imaging gear are in the

huge display area. Some come to buy. Some come to look. And everybody comes to ogle.

What's new? How about telescope eyepieces with a 100-degree field of view? Super high-tech telescopes made from carbon fiber that won't expand or contract with temperature changes? Remote control telescopes that link to the Internet to let you operate and take images with them from anywhere in the world? From Canada there was a backyard observatory that you can put up in an afternoon and others that you can fold up and take on holidays. Anybody hanker for a pair of \$15,000 binoculars? OK, they're more like two six-inch telescopes side by side, but Fuji makes them.

This is one show where it's hard for astro-nuts

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Brian Colville of Cambray, Ontario admires one of the smaller telescopes. Photo credit goes to Gord Rife of Schomberg, Ontario.

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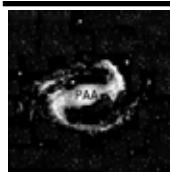
to contain their enthusiasm... or Visa Cards. However, with telescopes and mounts ranging into the multi-thousand-dollar price range, keeping the credit cards cloistered is advised to maintain marital stability.

I mentioned that a few Canucks make the trek each year. From Toronto, Jim Kendrick was there with all his latest dew-removal gear and the remarkable Astro-Track that he is marketing. It lets you image the stars without lugging out a load of complicated astro gear. Jim's gear is known world-wide and marketed in nearly every major country on the globe. He does us proud.

Also on the floor was Wayne Parker from a little village near Georgian Bay. Known to Mom and Dad Frontporch as the bass player for Glass Tiger, Wayne is also a devoted astro-whacky. He is marketing an observatory for backyard neck-benders. It's called the Personal Observatory Dome or POD. We have one of Wayne's Tupper Ware Observatories at BHO and it's great. They, too, are marked on a global basis.

This year a couple of my friends went to astronomy's version of Mecca. Brian Colville from nearby Cambray Ontario and Gord Rife of Schomberg made the pilgrimage. While neither Brian nor Gord returned with bulging bags of astro-goodies, they did require a few beers to replace the body fluids lost by a NEAF-induced condition called AAUDS or Amateur Astronomer's Uncontrolled Drool Syndrome.

*John Crossen*



## 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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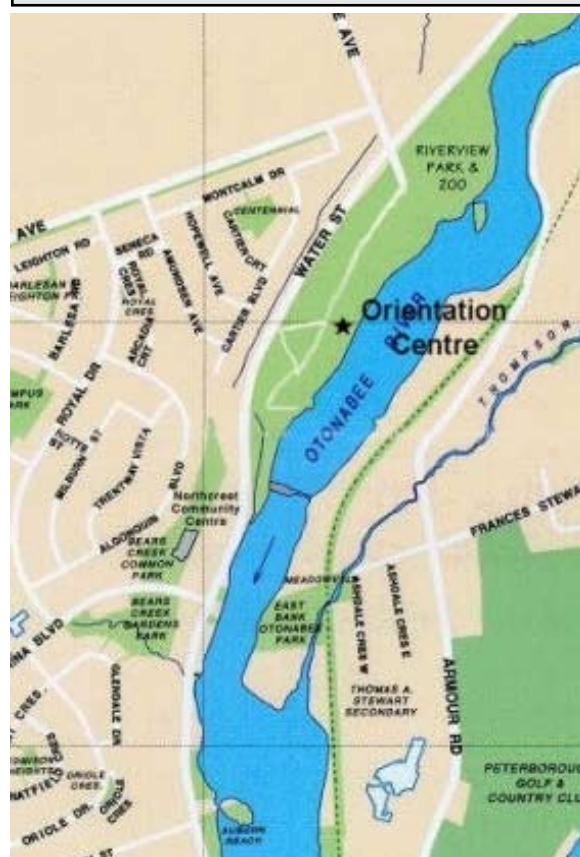
705.295.6158

## 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:

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Peterborough, ON K9H 4R1  
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**Next submission deadline:  
Friday, August 22, 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.