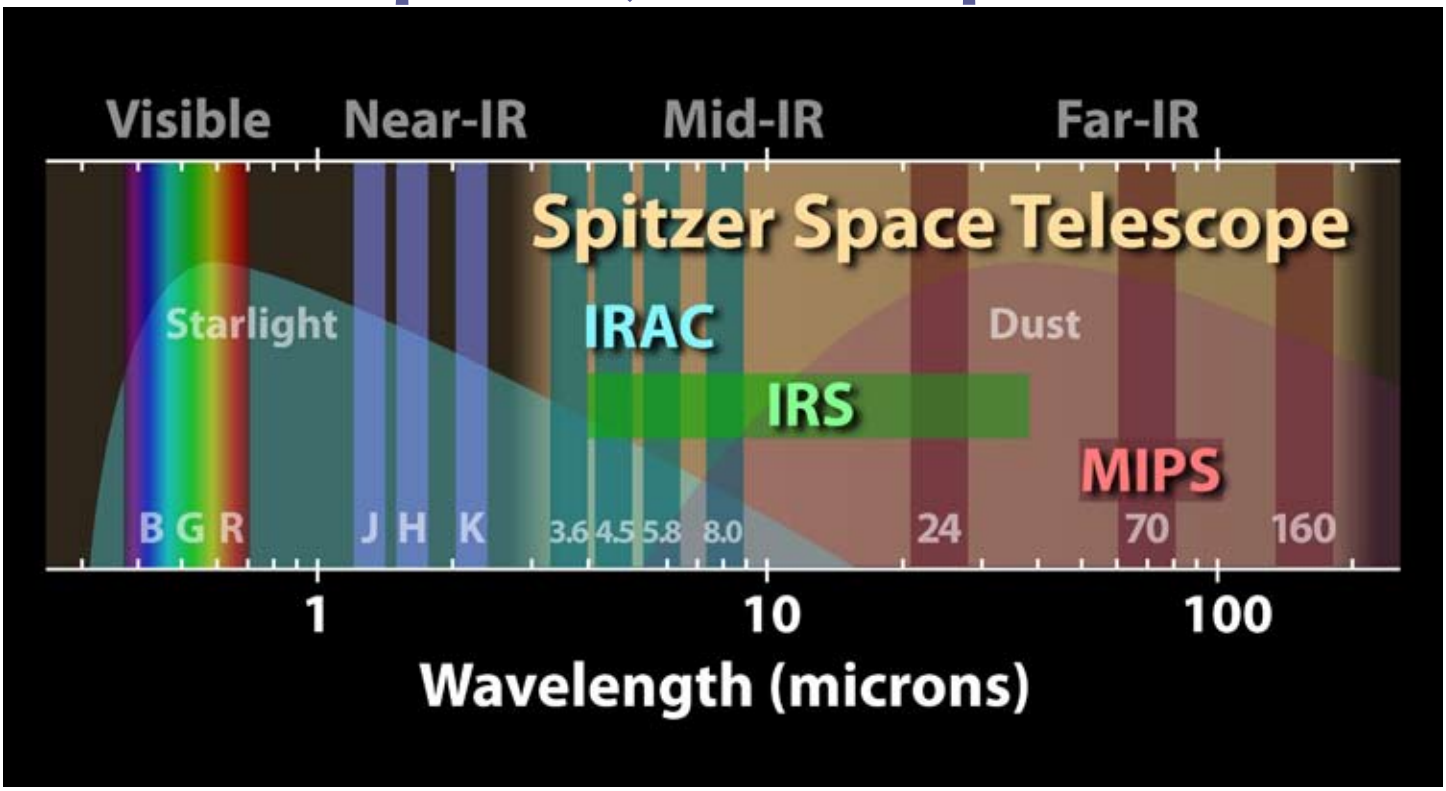
PETERBOROUGH ASTRONOMICAL ASSOCIATION

THE REFLECTOR

Volume 8, Issue 7 ISSN 1712-4425 October 2009

Spitzer, the Sequel



The "warm mission" of the Spitzer Space Telescope will still be able to use two sensors in its Infrared Array Camera (IRAC) to continue its observations of the infrared universe.

The Spitzer Space Telescope is getting a second chance at life. The liquid helium "lifeblood" that flows through the telescope has finally run out, bringing Spitzer's primary mission to an end. But a new phase of this infrared telescope's exploration of the universe is just beginning. Even without liquid helium, which cooled the telescope to about 2 degrees above absolute zero (-271°C), Spitzer will continue to do important research—some of which couldn't easily be done during its primary mission. For example, scientists will use Spitzer's "second life" to explore the rate of expansion of the universe, study variable stars, and search for near-Earth asteroids that could pose a threat to our planet. "We always knew that a 'warm phase' of the mission was a possibility, but it became ever more exciting scientifically as we started to plan for it seriously," says JPL's Michael Werner, Project Scientist for Spitzer. "Spitzer is just going on and on like the Energizer bunny." Launched in August 2003 as the last of NASA's four Great Observatories, Spitzer specializes in observing infrared light, which is invisible to normal, optical telescopes. That gives Spitzer the power to see relatively dark, cool objects such as planet-forming discs or nearby asteroids. These objects are too cold to emit light at visible wavelengths, but they're still warm enough to emit infrared light. In fact, all warm objects "glow" with infrared light—even telescopes. That's why Spitzer had to be cooled

see "Spitzer" on page 16

President's Message

Taking the Bull by the Horns

Wow, and I thought we had a busy summer! This September sure got off to a great start. We had Aboriginal Teachings by local First Nation member, Paul Bourgeois.

An Astroartography Exhibition, which runs until October 8th. I am proud to be part of such efforts and events. The talent that is to be found just locally is truly "out of this world"! If you missed seeing this exhibit, you missed a good one. The opening was awesome.

Members like John Cameron have also taken the "bull by the horns" this year and his connections with local libraries alone has proven to be very worthwhile and our evening at Westwood last month was yet another example of this. Thanks, John!

Our IYA Galileo Scopes finally arrived, but I guess, better late than never? I think they were worth the wait.

We still have some great speakers lined up for this seasons meetings, as we ramp up for our Annual General Meeting (AGM) in December. I will just take this time to plant the seeds on a few issues. For example, if you have any changes you would like to make to our constitution or by-laws, let me know before our November meeting. I need to publish them in time for the AGM. Lastly, if anyone is interested in running for an executive position that is open at the AGM, please let Ken Oakes know in the next few months. Ken will be running our elections and we should all make it as easy for him as possible to do his job.

Let's not fall short of our Galileo Moment target of 2,000 during IYA. We are almost there at last count and we have a few months to go. Let's keep sharing the heavens with those that want the experience.

Rick Stankiewicz, President

Editors note: Ken has decided to relinquish this role and Pat Smallman has stepped up to replace him. Please direct any nominations to Pat.

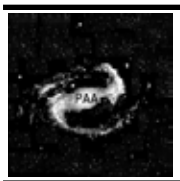
Galilean Nights

According to the IYA, 100 Hours of Astronomy was such a smash hit back in April that they've decided to have one more kick at the can. Ladies and gentlemen, let's give a hand for Galilean Nights from October 22–24. This will probably be the last opportunity for Galileo Moments before the weather turns nasty.

The PAA has decided to run one more public viewing on Armour Hill on Friday, October 23 (with a backup for Saturday night.) Jupiter and the Galilean moons will be the featured attraction. Hopefully we'll see the ISS and perhaps even an Iridium flare.

So spread the word and let's celebrate 400 years of Galilean nights one last time.

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.

www.peterboroughastronomy.com
stankiewiczr@nexicom.net
Club Mailing Address
Rick Stankiewicz, President

Peterborough Astronomical Association
10 Hazel Crescent, RR #8
Peterborough, ON K9J 6X9
705.295.6158

The Sisters Are Up

and there's frost on the pumpkins

The Pleiades. Meet the ladies of the night, the Seven Sisters of the Pleiades. They're a great binocular target during the autumn. Photo by Gord Rife.

For stargazers, that's a sure sign that the seasons have changed. September 21 was the first day of autumn, so bundle up and look up, because there's plenty to see in October.

The usual summer constellations – Scorpius, Sagittarius, Ophiuchus and the Dolphin have all slid over towards the southwestern sky. Directly overhead the giant asterism known as the Summer Triangle is beginning its slow drift towards the west. By November it will be over the hill metaphorically speaking, though you might still catch a peak at the tail feathers of Cygnus. Even the summer Milky Way is running from the southeast towards the southwest. But what counts is what's rising in the east.

Let's start with my girlfriends, the Seven Sisters of the Pleiades. This lovely little misty patch bursts into a glorious cluster of stars in a pair of binoculars. Look towards the northeast about 9:00 pm and they should be peeking over the tree tops near the horizon.

Yet another naked-eye misty patch is the Double Cluster between Cassiopeia (the big "W" shaped constellation) and Perseus beneath it. Look more north than northeast and you should spot it. The Double Cluster is well up in the sky by 9:00. It is just a bit dimmer than the Seven Sisters, but it is still a relatively easy find. And, just like the sisters, it is best viewed in binoculars or the finder of a telescope.

see "Seven Sisters" on page 15

Fall 'N' Stars 2009

This years Fall 'N' Stars was as great as ever, this being my third time attending. The star party was held on September 25 & 26 at the Vanderwater Conservation Area. This event is organized by the Belleville and Kingston branches of the RASC; it's not large, only about 30 people, but this is, in a way, quite nice as you get to meet and know everyone in attendance. The contingent from the PAA is steadily increasing, with 5 members participating this year. It's well worth giving it a try next year.

The Conservation Area is near Thomasburg, just north of Belleville on Highway 37, an easy drive from Peterborough. The park is on the Moira River, and has some nice trails for biking and hiking, plus wonderful picnic sites on the river's edge. The star party is held at a Boy Scout camp, with an approximately 3 acre open field for camping and observing. The field is surrounded by high trees but they do not limit your view too much. Facilities are very basic, no electricity or fancy plumbing, but there is a nice large club house type building where people gather and there is a nice fire to keep you warm.

As is traditional the official start was commemorated with the launch of a rocket at 6 pm on Friday. On that night the viewing was spectacular, not a cloud in site, no wind and decent seeing. The skies were reasonably dark, with the Milky Way easily visible. The temperature rapidly dropped to 0 degrees by about 11 pm, making everything very dewy. The ISS motored across the sky early in the evening, and an iridium flare was seen.

Just after 9:00 pm many of us witnessed the most spectacular meteor we've ever seen, actually lighting up the whole area and giving off a strong green glow in the western sky. I can't find any pictures of it but photographer Ken Sekiguchi managed to capture the meteor's tail (compliments of CTV).

the viewing was spectacular, not a cloud in site, no wind and decent seeing. The skies were reasonably dark, with the Milky Way easily visible.

Saturday morning we woke to a heavy frost, but it soon warmed up and we could dry our equipment, and then sit around and chit chat. After lunch there were various presentations in the club house, including one by our very own illustrious John Crossen. A hearty dinner was provided by a local caterer, and then there were drawings for various prizes, and much socializing.

Unfortunately Saturday night was a total write-off, not a star to be seen (but, then, it was better than last year, when we didn't seeing a single star during the entire event!).

All together, well worth the trip.

See you there in 2010!

John Galle

The Night of the Bolide

Group Photo. Photo by Mark Coady.

For the fourth year in a row I represented the Peterborough Astronomical Association on the organizing committee for the annual Fall n' Stars star party held at Camp Sagonaska, a Boy Scout camp within Colonel Roscoe Vanderwater Conservation Area, near Thomasburg, Ontario — some 20 km north of Belleville. This year the event was held on the weekend of September 25th – 27th.

I arrived just before noon on the Friday and, after greeting the others from the organizing committee, set up my camp then went to work with my normal duties. These normally include cleaning, stocking and maintaining the outhouses with toiletries and illuminating them with red and orange glow sticks (so our night vision is not affected). I also run the annual 50/50 draw which netted $44 for the winner this year.

Conditions on Friday were great with some solar observing being done – yes, there were two sunspots to view plus a number of prominences. Night time observing was spectacular. It was a clear and crisp night. I had to keep my dew heaters running all night as there was much moisture in the air but it did not seem to affect viewing.

Doug Angle had Kingston Centre's 24 inch Dobsonian set up. Despite the fact that you have to climb a step-ladder to view the heavens, there was a constant line-up for viewing. The PAA's own Valerie Mathias was constantly in the line-up, comparing the views she got through this massive scope with her four and a half inch reflector. I also got to view through it and for the first time noted the Veil Nebula with great detail.

A fire was set in the wood stove in the longhouse to have it act as a warming room. While I was sitting in there, looking out a west facing window, a green flash, about the size of a basketball, flew by heading southwest. There was a great roar from the outside and Dave Cotterell of Belleville RASC came in exclaiming "Did you see that bolide?" I was the only one in the room who saw it.

I turned in to my tent and sleeping bag around about midnight – expecting to get up for some early morning viewing as the first quarter moon would have set. I was warm enough in my sleeping bag but got the constant feeling that dew had come through the tent. Only upon arising just after 4:30 AM did I realize that, with my

see "Fall 'N' Stars" on page 12

New planetarium at Science North a stellar experience

Visitors to my observatory frequently bemoan the fact that there is no planetarium nearby. Most talk longingly about Toronto's old McLaughlin Planetarium which closed decades ago. So, with the opening of a new Planetarium at Science North in Sudbury, I figured I had to give it a look. Well OK, the fact that Buckhorn Observatory played a role in the pre-show orientation video was also part of my inspiration. But first let me say a word about Science North. Fantastic!

In one day we swam with sea monsters in the 3-D theatre, rocketed through outer space in the planetarium, were attacked by a giant squid at an oceanographic display and flew the wilds of the northern sky in a bush plane from Canada's past. On a more down-to-Earth level we visited a wing with wild life indigenous to the area. While there my wife, Debbi did lunch with Quilla the Porcupine while I pondered life with an albino snake, a beaver swimming in his pond and a frog or two sitting on a log.

The overall take-away impression is that science is more than just interesting, it's fun. Both Deb and I have the memories to prove it, plus a few knickknacks from the super cool gift shop, too.

In short, if you haven't been to Science North, you owe it to yourself and your family to make the trek. Sudbury is a beautiful little city with a lot more than the nickel mine to see – though that, too, would be fascinating. Oh, and did I men-

see "Science North" on page 13

DEB WITH GIANT SQUID. A giant squid greeted Debbi at the doors of Science North.

Looking backwards through the telescope – part 1

Messier Object #1. M57, now called the Ring Nebula was catalogued by Charles Messier. In Messier's time it was just a fuzzy spot that appeared in the summer sky. Today we know it is the remnants of an exploded star.

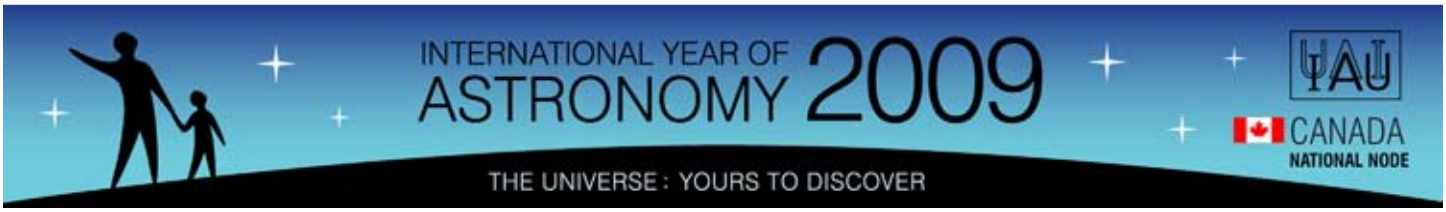
Today's amateur astronomers own telescopes that the early astronomers would have sold their mother's for. Galileo's puny little 2" pea-shooter produced about 20 power and its field of view was so narrow that he could only see the Moon in small sections. The optical system was so poor that when he looked at Saturn he couldn't see the rings. Instead it looked as though the planet had ears on each side of it.

Despite its shortcoming, Galileo's telescope showed him the moons of Jupiter. He managed to map the lunar surface with it. And he saw that the inner planets, Venus and Mercury, went through phases, just like the Moon. He was the first human ever to witness and record all of this. And with that knowledge he changed forever our concept of the Earth centred universe. It's called brain power and it more than made up for the telescope's questionable quality.

Now let's meet another old timer, Mr. Charles Messier, the comet hunter. Over 170 years had transpired since Galileo's telescopes, so Messier's optical equipment was better than what Galileo had. Unlike Galileo, Messier was a comet hunter. During his time, and now, discovering a comet is a learned accomplishment and a source of local fame, perhaps even a very, small fortune.

But despite many improvements, Messier's optical systems still made it difficult to distinguish one misty patch from another. Messier's solution was to catalogue those faint fuzzy objects that reappeared annually. This yearly appearance assured

see "Messier Objects" on page 15



The PAA "Wows" the Westwood Library!

On the Saturday evening of September 19, 2009, the Peterborough Astronomical Association (PAA) took over the library of Westwood, Ontario, Canada. PAA members like John Cameron of Hastings has worked extra hard this year to get IYA events into the local libraries and expose the public to quality presentations and lots of Galileo Moments.

The hamlet of Westwood, located between Peterborough and Hastings, has a population of about 100 souls and there were about 30 out to our PAA event for IYA.

The PAA had eight telescopes and lots of enthusiastic PAA members to guide the wide-eyed public through some of the most wonderful sights in the universe. They were shown the solar systems largest planet (Jupiter and two of it's moon's), the globular cluster of M13 in Hercules and the Ring Nebula in Lyra, the double open cluster in Perseus and the closest galaxy to us at 2.2 million light years (Andromeda).

But at 9:00 p.m. (DST) we got ready for the next transit that night of the International Space Station (ISS) as it raced through the Big Dipper in Ursa Major and faded out below the North Star (Polaris).

Image was taken with a tripod mounted Canon 400D and Sigma 10-20mm lens at 10mm, f/4.0, ISO800 for 30 seconds and red-light added for the foreground exposure detail.

The attached image shows some of the telescopes and people gathered as the ISS had left the bowl of the Big Dipper and in it's last 30 seconds faded into the night sky. To see this magnitude –1.9 object cross the sky and to realize that Canadian astronaut Bob Thirsk was on board was extra special for everyone who witnessed it! We hope to share this image we captured of the Westwood crew watching as the ISS traversed the sky in front of them with Bob Thirsk and let him know how proud we are of him and his accomplishments.

Rick Stankiewicz

TVO and the Perimeter Institute Team Up For Physics Festival

Billed as a physics festival, the Perimeter Institute's **Quantum to Cosmos: Ideas for the Future (Q2C)** will take a global audience from the strange world of subatomic particles to the outer frontiers of the universe. All events will occur on-site in Waterloo, Ontario and online at q2cfestival.com from October 15-25, 2009.

Q2C's extensive program features more than 50 events — including panel discussions, keynote presentations, special screenings, exhibits including the full-scale model of the next Mars Rover (named Curiosity), and recorded sessions with Honorary Festival President Professor Stephen Hawking.

Q2C will transcend traditional festivals by streaming events live and on demand, offering virtual interaction with exhibits, and providing special opportunities for students and teachers.

TV Ontario (TVO) has partnered with the festival to broadcast, record and stream over the Internet **The Agenda with Steve Paikin** live during the week of October 19–23. The themes for the TV broadcast are as follows:

Monday, October 19 » Plan B: Colonize Space?
Stephen Hawking thinks it's a good idea, given the multiple problems facing earth. Can we imagine a human future off earth?

Tuesday, October 20 » Does/Does Not Compute
So you think technology controls your life now? From nanotechnology to quantum computing, what the future has in store.

Wednesday, October 21 » Designer Genetics
The legal, social, and medical implications of trying to engineer humans without defects.

Thursday, October 22 » Robotics
Artificial Intelligence, evolution, and the man/machine interface.

Friday, October 23 » The Importance of Science
Do we still believe that science is the path to progress and a better life?

Tickets for The Agenda, and the lectures and presentations are sold out, but the exhibits, film festival and arts and cultural events are not. You can also read the festival blog at http://www.q2cfestival.com/blog/

PHOTO GALLERY

Early Morning Rewards!

Sometimes it is worth getting up early in the morning. At least 5:00 a.m. is early for me (when I have work at 8:00). I had read that on September 16th a nice crescent Moon and Venus were going to be within 3.3 degrees of separation and with the right skies I knew this could be a nice display. The attached images show the brightest planet in our solar system close to the brightest object in our night sky. The "earthshine" was just two days before a New Moon, so the crescent was thin and the shine was bright. What a lovely sight! These are some of the treats that await you if you venture out before dawn some days.

Of course the clouds started to roll in before dawn, but this conjunction was so bright that they kept shining throw the haze (as shown here). All images were taken with a tripod mounted Canon EOS XTi and Sigma zoom lenses at ISO 200, for about 6 to 8 seconds.

Good things come to those that wait and there are "early morning rewards" for those that do not hesitate!

Rick Stankiewicz

M27

Brian McGaffney sent in this lovely image of M27. He used a very narrowband filter to bring out the amazing colour of this planetary nebula better known as the Dumbell Nebula. This was the first planetary nebula that Charles Messier discovered back in 1764. The nebula is visible in binoculars being magnitude 7.5 and 8 arcminutes across.

Planetary nebula are not actually planets but got their name when 18th century astronomers thought they resembled planets since most of these objects seem to be spherical in shape. They are actually the emission nebulae of an expanding ionized shell of gas and plasma from stars that have passed the red giant phase of their late life. Indeed, at the centre of M27 is a white dwarf star.

continued from page 5

Fall 'N' Stars

constant tossing and turning to stretch out and get comfortable, I had kicked out some tent poles and the whole thing had collapsed on me. The following night I slept on one of the bunks in the longhouse.

Early Saturday morning viewing showed Orion in all its splendour and a rising Venus. Despite the cool temperatures (below 0 Celsius) it was an awesome spectacle – especially considering that I had a fleece jacket on instead of a toque, parka, and mittens if I had been viewing Orion on a January evening.

Mark's Camp.

Val and Peter Mathias.

John Crossen with Kevin Kell and Susan Gagnon.

Shortly after dawn the clouds started to roll in and by the evening there was a constant rain. Despite this there is much to do and see at Fall n' Stars.

In the late morning there is a swap-table set up. I sold a pair of 7X35 binoculars to Susan Gagnon of Kingston. In the early afternoon there were four presentations in the longhouse including one by the PAA's own John Crossen on Buckhorn Observatory. A group photo is taken just before dinner.

Throughout the day there are astrophotos on display where everyone gets a single ballot to vote for your favourite. The ballots are counted after dinner and the prize for the most popular is awarded. This year the winner, Greg Liske of Belleville RASC, won an Acuter Planetary Imager.

The catered Saturday banquet is something that should not be missed. You have your choice or Roast Beef or Turkey (or both) with all the trimmings and desert (with seconds, thirds, fourths available) for the absolute steal of $20.

After the astrophotography award is given out, the door prizes are drawn. Everyone walks away with at least one prize — I got a 65mm spotting scope.

With the rain coming down some people left to go home while a number of us sat around the longhouse talking and laughing about the weekend – my lowly tent seemed to be the main target.

The following morning, after complimentary coffee and juice, the camp is given a once over so that we leave it better than we found it then we lock up and go home. I was on the road around 10:00 AM.

This year the PAA was represented by Rick Stankiewicz, John Crossen, John Galle, and Valerie and Peter Mathias, as well as yours truly. I'll definitely be back next year and I hope more of you will come then, as well.

Mark Coady

continued from page 6

Science North

tion the Neutrino Observatory. One of the few in the world is located in Sudbury.

OK, now let's slip into the new planetarium. It's more compact than you might expect with very comfortable seating. The show is fully digital and quite impressive. Our Tour of the Universe was narrated by none other than Mr. Tom Hanks and sped us from our solar system to the farthest reaches of the known universe. The graphics were very impressive as was the sound system. The net effect was quite stunning and somewhere in all the awe-inspiring fun I think I learned a thing or two.

Later that night I had the pleasure attending a lecture by Paul-Emile Legault on astronomy and astronomers prior to the invention of the telescope. It was a fitting topic in this year when we are celebrating the 400th anniversary of Galileo's first view of Jupiter through a telescope. When Paul-Emile had completed his talk I was ushered onto the stage where I told the club about Buckhorn Observatory's public outreach program and the work that I do in my observatory.

While there I also had the opportunity to renew my friendship with astronomer Steve Dodson (one of the few Canadians with an asteroid named after him) and Alan Ward who runs an astronomical mirror coating laboratory from his home in Sudbury.

Our northern sojourn was a real treat, though it ended far too quickly. But we shall return soon. A fantastic facility like Science North can become very habit forming. And that's a good thing.

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

John Crossen

Astronomy in Numismatics

What is this you say? I thought since I had educated most of you over the years about what the collecting of stamps was (philately), it was time to introduce you to the collecting of coins (numismatics). Why now and what is the connection to astronomy? It turns out that the Royal Canadian Mint with the minting of limited edition coin is celebrating this year's IYA. This coin is a being limited to a mintage of only 10,000 coins worldwide. So it is definitely a case of first come first served. Yes, I have my order in already. If you are at all interested, I suggest you not delay.

This $30 face value Canadian sterling silver coin will sell for $89.95 (plus S/H and taxes)

http://www.mint.ca/store/coin/30-sterling-silver-coin-international-year-of-astronomy-2009-prod650001

This coin is over 92% pure silver and a diameter of 40mm. This "proof" finished (flawless and the best you can get) shows an observatory, and a holographic night sky with a comet, constellations, galaxy and planets. All this in a leatherette presentation case. What a gift of a lifetime for an astronomer on your shopping list.

Don't miss the launch pad, call now to reserve yours today at 1-800-276-7714.

Your Astronomical Numismatist
Rick Stankiewicz

Moon Phases

Full Moon	2:10 AM	October 4
Last Quarter	4:56 AM	October 11
New Moon	1:33 AM	October 18
First Quarter	8:42 PM	October 25

The Sky this Month

Mercury is at greatest elongation west (18°) on the 6th and 0.3° south of Saturn on the 8th. First half of the month is the best morning view for the year.

Venus moving closer to the sun during the month from 25° elongation west on the 1st to 18° on the 31st. Passes 0.6° south of Saturn on the 13th and both planets arrange themselves nicely with the waning crescent Moon on the 16th.

Mars is 6° south of Pollux on the 5th and moves into Cancer on the 12th.

Jupiter in retrograde motion at the start of the month and pauses on the 13th and then resumes direct (eastward) motion. Transits at 7:41 pm local time on the 15th.

Saturn emerges as a morning apparition and has nice conjunctions with Mercury and Venus during the month. By mid-month it rises 30 minutes before astronomical twilight. Rings are now inclined at 2.3°.

Moon is 0.1° north of Pleiades on the 7th. 1.2° south of Mars on the 11th and 3° north of Jupiter on the 27th.

Orionid Meteors peak at 6 am on the 21st.

Zodiacal Light visible before morning twilight from the 15th for the next two weeks.

continued from page 3

Seven Sisters

The bright star-like object in the south is the planet Jupiter. If you know someone with a telescope (a spotting telescope will do) ply them with coffee and cookies and maybe they'll show the planet and its moons to you. It's pretty neat stuff. Here are some other notable sky events for October.

On October 4 we have the full moon. If you have binoculars, train them on dear old Luna and take a look at the crater named, Tycho. It looks a bit like the Moon's belly button and has bright trails streaming up from it. Those trails are ejecta from an ancient meteor impact. They spread about 1,400 km, the distance from Toronto to Calgary.

On October 9, west-coast observers will have the opportunity to watch the lunar satellite LCROSS slam into the south pole of the Moon in an attempt to blast up enough material to see if there is any water-ice there. This would be ice delivered by comets millions of years ago. The sun never shines into craters at the lunar poles so maybe, just maybe, there is some water there. That would be just the thing for starting a lunar colony.

Spectral examination of the blast will tell the tale.

Jumping ahead to the early morning of October 20 we will be treated to the Orionid Meteor Shower. If it's clear and you're up, you can also take in Mars near the constellation Gemini as well as Venus and Saturn in the dawn sky.

For the astronomically challenged I recommend picking up a copy of SkyNews at Chapters in Peterborough. The September/October is now out and has an excellent star chart in it. Until we meet again by the backyard telescope, keep your lights aimed down and the stars up bright.

John Crossen

continued from page 7

Messier Objects

him that the object was not a comet. You could say he was the "not-a-comet man." The idea was that those who were searching for comets could consult Messier's catalogue to see if this fuzzy object was or wasn't a comet. Each of the objects in Messier's catalogue was preceded by an "M." Thus they were known as Messier Objects and they ran from M 1 through to M110.

As time and telescope technology advanced, the backyard astronomer latched onto Mr. Messier's list. Even in the mid 1950's amateur telescopes were of a quality and size that allowed the backyard astro-buff to clearly make out detail on some of the Messier Objects. The brighter ones such as M42/43, M45 and M31 provided spectacular views in scopes with 3" apertures. A 6" scope was considered a giant during those days.

Today the Messier Catalogue is the Holy Grail for amateurs. The Royal Astronomical Society of Canada awards a certificate to everyone who succeeds in locating all 110 manually. Sorry, no computer scopes allowed.

Next time we'll talk about astronomers with no telescopes. These were the ancient Greeks, Egyptians and Arabs who did it all with brain power. For instance, Aristarchus of Samos who used triangulation to show that the Sun was much farther from Earth than the Moon. But that's another story for next month. So until we meet again by the backyard telescope, keep your lights aimed down and the stars up bright.

John Crossen

continued from page 1

Spitzer

with liquid helium to such a low temperature. Otherwise, it would be blinded by its own infrared glow. As the helium expires, Spitzer will warm to about 30 degrees above absolute zero (–243°C). At that temperature, the telescope will begin emitting long-wavelength infrared light, but two of its short-wavelength sensors will still work perfectly. And with more telescope time available for the remaining sensors, mission managers can more easily schedule new research proposals designed for those sensors. For example, scientists have recently realized how to use infrared observations to improve our measurements of the rate of expansion of the universe. And interest in tracking near-Earth objects has grown in recent years—a task for which Spitzer is well suited. "Science has progressed, and people always have new ideas," Werner says. In its second life, Spitzer will help turn those ideas into new discoveries. For kids, The Space Place Web site has a fun typing game using Spitzer and infrared astronomy words. Check it out at spaceplace.nasa.gov/en/kids/spitzer/signs.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

THE UNIVERSE
YOURS TO DISCOVER

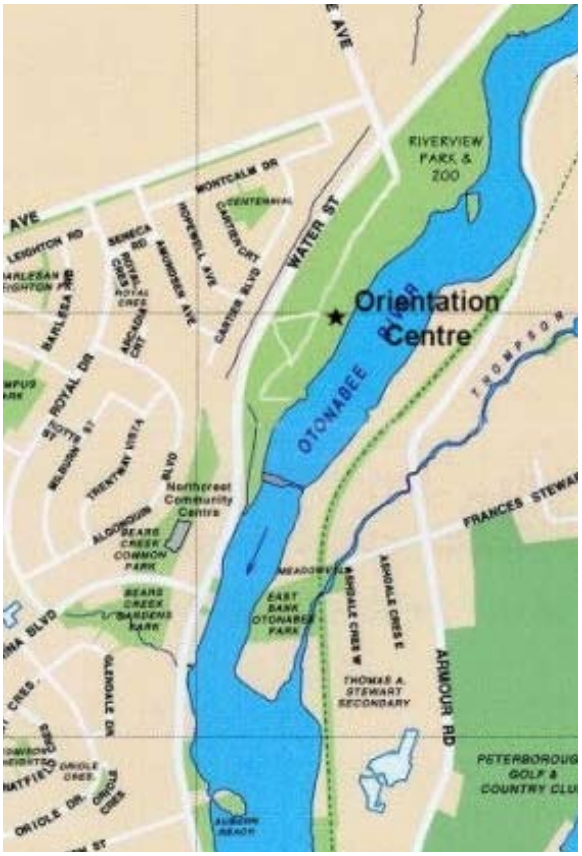
INTERNATIONAL YEAR OF
ASTRONOMY
2009

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:
October 24, 2009



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 8PM. PAA executive business will be conducted starting at 7:30PM. Members and the public are welcome to attend the earlier time.