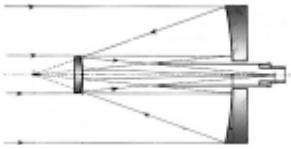
PETERBOROUGH ASTRONOMICAL ASSOCIATION

THE REFLECTOR

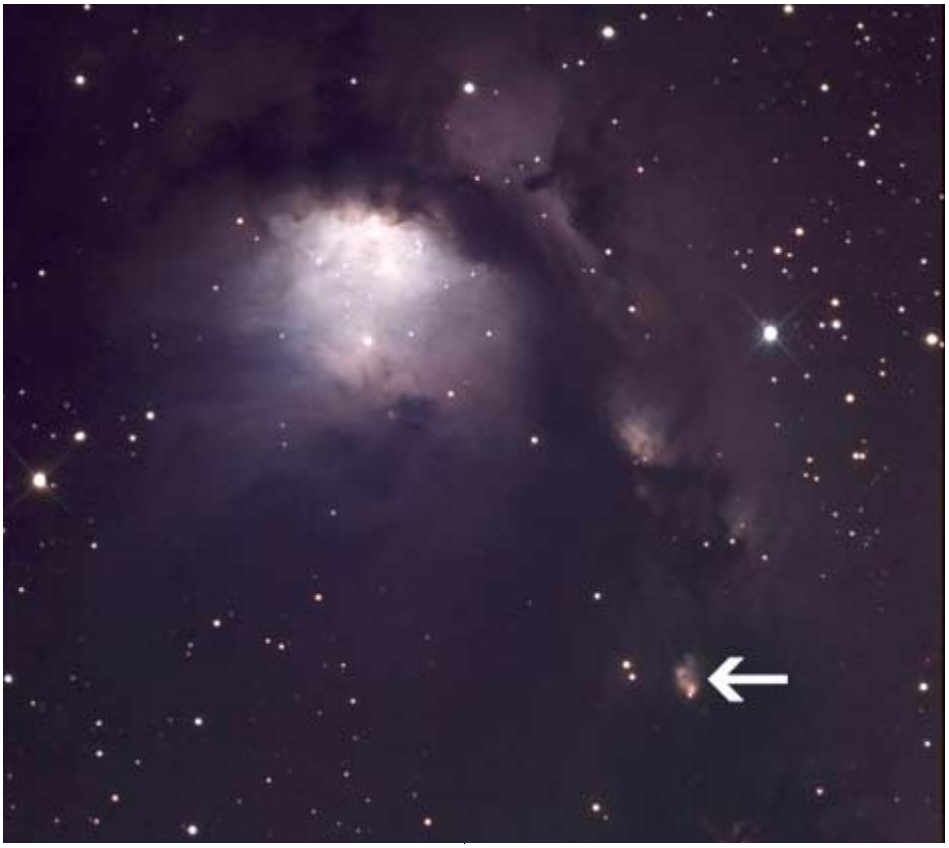


Volume 3, Issue 3 March 2004

Editorial

March promises to be a fabulous observing month. Last month, Jay McNeil, an amateur in the US, discovered a "new" nebula! This nebula, dubbed "McNeil's" nebula for its discoverer, is located in Orion's M78 (see photo). This little blob turned on quite recently and is visible in 10" or larger scopes. This nebula was discovered using a 3" scope with a CCD camera .It might be worth taking a shot at this nebula before Orion disappears behind the sun. Apparently this part of M78 has flared up before in 1966, implying that it is powered by a variable star. Very probably, this object was generated by a very young "stellar" object during its process of formation, which is presently undergoing an eruption. If this is the case, it could just as easily fade away again for another 30 years or so. It has been classified as a cometary-type reflection nebula. There is an urgent need to follow the progress of the current outburst with further imaging. Any images that you do take could be of scientific value.

Venus and Mercury will be at greatest elongation on March 29th. Venus is already high in the western sky and hangs around well after twilight is over. Comet LINEAR (C/2002T7) is also visible after sunset as well. It is currently a binocular object, but it should brighten substantially before summer. Unfortunately, it will be brightest when it is in the southern hemisphere. But never fear – comet C/2001Q4 (NEAT) will grace the northern skies near the end of April. It will be brightest around May 5th (around magnitude 1). Near the end of May, both comets should be visible in the western sky, although LINEAR (C/2002T7) will be low on the horizon.



McNeil's Nebula, located in M78. This new nebula flared up in the past few months and is powered by a new star just turning on.

On March 2nd, NASA announced that the Mars rover *Opportunity* had discovered evidence that some portions of Mars have been drenched in water billions of years ago. Liquid water could have persisted on Mars' Meridiani Planum long enough to allow for primitive life to begin. "Evidence the rover found in a rock outcrop led scientists to the conclusion. Clues from the rocks' composition, such as the presence of sulfates, and the rocks'

Inside This Issue

No this isn't a Martian footprint. It is the mark of the rock abrasion tool on Spirit. The tool cut these three circular spots on this rock so it could examine its interior.

physical appearance, such as niches where crystals grew, helped make the case for a watery history." *Opportunity* will continue to study the area for other signs of water (and perhaps life).

Spirit on the other hand, has recovered from its "software failure". Believe it or not, NASA engineers did the same thing many home computer users do when their computers start acting up - they formatted it! Engineers formatted the "flash memory" on *Spirit* and all is now fine.

For the first time in history, on Feb 5, *Spirit* dusted a section of a rock for further examination. Ever since, both rovers have been using their rock abrasion tools to expose rock interiors for further inspection. There should be some interesting things to see yet.

Clear Skies

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Meeting Notes

PAA Meeting Feb 6th

Despite the foul weather, we had an excellent turn out. Thanks, all you brave souls who made the trek. What's a little freezing fog, eh?

Colin Cross got the meeting off and rolling with a presentation of the Messier and NGC objects visible in Taurus, Auriga and Gemini. While most of us are familiar with the major Messier objects shared by the trio of constellations, the number of NGC objects was surprising. There's more to see than you'd think. Jaan Teng brought along an overhead projector that was a big help with Colin's presentation. Thanks Jaan and Colin for your time and effort.

Rob Fisher then tabled the subject of promoting the club locally and asked for any ideas we might share. A number of good suggestions came from around the table. We'll discuss them further in the PAA Executive meeting on Feb. 20th at 6:00 p.m.

Colin Cross, seen here, giving his talk on the fall constellations at the Nov 28th meeting. Each month, Colin highlights a different part of the sky. There is something here for beginners and advanced observers alike.

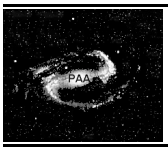
Charles Baetsen brought along his latest incarnation of the PAA membership folder. It now reflects the club's current position with membership dues and our winter/spring speaker/observing schedule. Dave Duffus and Rob Fisher discussed the possibility of getting them run off or properly printed. Excellent idea guys. Charles also brought in some software to help Dave Duffus out as webmaster for the PAA sight. Thanks Charles. Go get 'em Dave!

The May 15th Haliburton Forest Observatory Tour was confirmed by a show of hands that included about 15 members. Ian Craig has nailed down some accommodation information, which has already been sent out by email. Thank you Ian.

John Crossen was the feature speaker for the night and talked of his recent experiences in Peterborough, Lakefield, and Bobcaygeon with grade six and nine students. The key point of his talk centered on the fact that this generation of students will be the ones who will walk on Mars and colonize the Moon. Exciting times lie ahead and astronomy will be a key to understanding them. And yet so many know so little.

In addition to talking to the classes, the students are also invited for a night's observing session. So far this cloudy winter only the Lakefield observing session has panned out. But we'll keep trying.

The PAA astronomy book library now has well over 100 titles in it and the popular video library has sprouted over 50 titles from the likes of Carl Sagan, Stephen Hawking, Timothy Ferris and the folks at Starry Night Pro. Check them out - literally.



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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PAA Board Meeting February 20th

Friday, February 20th saw your Executive Council launch a number of projects for 2004. While the projects vary in their immediate benefits to the club, all are designed to build public awareness of the PAA. Here's what we were up to in between pizza slices.

Astronomy Day is coming April 24th. This event provides us with an excellent opportunity to do a little public education along with club promotion. Charles Baetsen had already contacted Sky & Telescope Magazine and they have provided us with a couple hundred copies of a booklet call "Getting Started in Astronomy." Along with that, S&T also gave us with a book filled with project ideas for the day. Charles and Rob Fisher are mulling the contents over and should have some plans for our next meeting.

The PAA brochure was finalized. Charles Baetsen had rewritten our brochure to be more in keeping with the club's current situation. He also freshened it up with a few new photographs. Essentially it now contains our new dues structure, a mention of our ever-growing astronomy library, and the complete roster of speakers up through the end of May. Also included are our all-important observing nights – if it ever clears @#%&@!

Also discussed was the printing of the brochure – neat, but very inexpensive. Dave Duffus and Rob had a couple of suggestions on that matter, along with some ideas on their distribution.

A PAA classroom support brochure was also finalized. One of our objectives is to share our knowledge of astronomy with the community. A good way to do this is to have club members make astronomy presentations to local schools when requested. The brochure is designed simply to alert teachers to our availability and expertise. And, while primarily aimed at schoolteachers, we are also targeting scouts, seniors and other civic groups. John Crossen wrote the brochure and is making the final "tweaks" to the copy.

We have a bank account – at last! Our thanks go out to Rene Bowe for taking the bull by the horns and wrestling this matter to the ground. It seems that the 9/11 affair has changed our world in more ways than you'd think. So you can't just walk in and open a "club" bank account with out jumping through a few hoops. Rene set us up with "a friendly banker" who told us what to bring so that we could open an account. Rick Stankiewicz, Diane Paterson, and John Crossen presented the club's credentials and did the signing. Hey gang, we're legit!

The Haliburton Forest Observatory tour has a new leader. He's Don MacDonald. Don will be taking down names of those who are going, Providing some background material the tour and on accommodations, and making contact with Thomas Kovac, our Haliburton host. The tour is on Saturday, May 15th. Talk to Don if you're up for the trip. It should be a good one.

The PAA web site is under revision. Dave Duffus is heading up this project. In many ways it's the same as our brochure revisions. We've changed, and so must our promotional materials – including the web site. A number of suggestions were tabled at the meeting. These included freeing up more space by relegating our historical newsletters to a separate site, switching the site to a different provider, and making the whole site more appealing to visitors and useful to club members. This isn't going to happen overnight, but it will happen.

And that's what we've been up to. If any of you have suggestions, please let us know. It's your club and we work for you. We even paid for our own pizza.

PAA Meeting February 20th

The general meeting opened up after the board meeting at 8:00 pm. This was a free for all meeting and the members mixed and mingled among themselves. This was to be an observing night. However, the weather was not too kind. Maybe next time.

This Winter's Supporting Cast Of Stars

No doubt about it, Orion has the leading role in winter's cast of constellations. But to put in an Oscar-winning performance, the lead must have a strong supporting cast. And to that end, Auriga, Taurus, and Gemini perform their roles brilliantly. And by early February all three constellations share winter's celestial stage with the great hunter, Orion.

Auriga, the charioteer, is almost directly overhead. To the right of Auriga and nearly as high up is Taurus, the bull. And below them both, Gemini – the twins – have just made their grand entrance. The stage is now set for some of the year's best observing, naked eye, binocular, or telescope. So bundle up, and get ready to take in some sparkling performances.

Auriga—The Herdsman, as depicted in the 19th century's *Urania's Mirror*.

Auriga leads the troop on stage in late fall with the bright star Capella flashing blue, red and white through the low-altitude turbulence near the eastern horizon. But now the charioteer is in full flight, and almost half way across the sky. He is one of the earliest constellations known to be named, though his exact origins remain a mystery.

This group of stars has also long been associated with goatherders. In fact, Capella comes from early Latin and means "little she goat." At magnitude 0.1, Capella is the sixth-brightest star in the Northern Hemisphere's sky. It is 42 light years distant and is a giant star, many times the size of our sun. Capella also has a 10th magnitude companion that is only visible in a large telescope.

In addition to bright Capella, the constellation Auriga is home to three star clusters that are visible in binoculars, and quite spectacular in a telescope. The three form almost a perfect line from the centre of the constellation down. To the top is M38 and below it is M36. At the bottom is M37. All three are open clusters visible in the same field of view with a pair of 7X50 wide-field binoculars. Each explodes into a satisfying burst of stars when viewed through a telescope.

To the right of Auriga lies Taurus, the bull. Taurus holds a number of treasures for binocular observers. Right at the "V" of the bull's horns is the Hyades, a very large open cluster and a spectacular sight in binoculars. Near the Hyades the bright star Aldebaran. It is "the eye of the bull" and in Arabic means "the follower" in that Aldebaran always follows the Pleiades across the sky. The Pleiades are also known as Messier object M45. Sometimes called "the seven sisters" this naked-eye open cluster forms a spectacular mini-dipper shape in binoculars. The Pleiades is a relatively young cluster of stars, having formed just 40 million years after the dinosaurs went extinct. They lie at a distance of 370 light years and appear to the naked eye as a misty patch about the size of your little finger nail at arm's length.

American Indians recorded a "guest star" in Chaco Canyon, New Mexico in 1054 AD. This is believed to represent the Supernova in

Two more open clusters also reside in Taurus. They are NGC 1746 and NGC 1647. Both are good binocular targets. NGC 1746 is just north of The Crab Nebula while NGC 1647 is a bit north and east of Aldebaran.

Taurus is also home to the first Messier object ever catalogued – M1. You'll need a telescope to find this one, and it's none too bright, even in a large scope.

M1 is the gaseous remnants of a star that went supernova in the year 1054.* Ancient Chinese, Indian and Native American cultures all recorded this supernova – so bright that it could be seen during the daytime for a month. Today, the remnants twist across space in the shape of an imaginary crab. And at its centre, the original star remains. It has now collapsed into a white dwarf, about 10km across, but with a mass even greater than that of our sun. It is spinning many times per second and with each spin, it sends out a pulse of radio waves. Hence, it is called a pulsar.

Gemini, also called "the twins", is well above the eastern horizon by 6:00 p.m. in February. The twins, in this case are Castor and Pollux. According to classical mythology, they are the sons of Leda, born after her seduction by Zeus in the form of a swan.

Romulus and Remus shown suckling the she goat on this woodcut. As legend has it, the brothers Romulus and Remus were the founders of Rome in 753 BC.

In ancient Rome Castor and Pollux were often confused with Romulus and Remus, the city's founders. In fact the two are portrayed on some Roman coins, each with half an eggshell.

Castor appears to the eye as a single bright star. Through a backyard telescope it reveals a companion. Yet it is a system of six gravitationally related stars that are about 46 light years from Earth. Pollux is the brightest star in Gemini, just 36 light years from Earth.

Near the feet of Castor you can spot the large open star cluster M35. Under a very dark sky it is visible to the naked eye. But it's an easy target in a pair of binoculars. Put a telescope on M35 and it fills the eyepiece with sparkling gems. But the performance is far from over.

Next to M35 is yet another open cluster, NGC 2158 and near that are NGC's 2157 and 2129. NGC2392, near δ (Delta) Geminorum, offers up an 8th-magnitude planetary nebula for your enjoyment. And if that's not enough, feast your eyes on IC 444, a diffuse nebulosity just north

of μ (mu) Geminorum.

Of course, this year Gemini can add one extra appearance to its list of credits. And that is Saturn – the bright star-like object midway down the constellation. Not only is Saturn swinging close to planet Earth this year, its ring is tilted to the maximum for our visual pleasure. A telescope at just 30x will reveal the planet and its ring.

So, next time these curtains we call clouds decide to part, take yourself, your binoculars, or your telescope out for a glitzy night with the stars of winter.

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The Sky This Month

MERCURY:

Mercury will be at its best for the evening sky late in March. Look for as twilight begins in the north west.

VENUS:

Venus is visible in the evening sky after sunset. It is getting higher and higher in the evening sky.

Did you Know *that Venus appears in the same part of the sky every 8 years!*

Recall that Earth takes 365.25 days to orbit the sun, and Venus takes 224.7 days:

*224.7*13 = 2921.1 days*
*365.25*8 = 2922 days.*

MARS:

Located will be located in Pisces and is visible in the evening sky. It is much fainter and smaller than it was last summer.

JUPITER:

Jupiter will be in Leo and appears above the horizon the evening. Jupiter will be at opposition on March 3rd.

SATURN:

Saturn is visible this month after sunset, located in Gemini. It is the closest it gets for another 30 years.

URANUS & NEPTUNE:

Uranus and Neptune are not easily visible at this time.

PLUTO:

Pluto is visible in the early morning hours.

METEOR SHOWERS:

There are no major showers this month, however there are several minor showers visible from the northern hemisphere. For more information on these, see *http://comets.amsmeteors.org/meteors/calendar.html*.

Astrophotography With And Without A Telescope

When PAA guest speaker Gord Rife takes to the sky to photograph celestial targets he also takes along his 8-telescope and a web cam. The web cam is the latest imaging device in his arsenal of tools. Of course,

Gord Rife sure makes it look easy with this webcam image of Jupiter. That is because it is easy!

Another Gord Rife masterpiece! A webcam can make all the difference in imaging the planets.

it's also backed up with a couple of post-imaging software programs that help bring out the best in his work. Here are a couple of examples of what Gord has achieved recently.

Not all astrophotography has to be at night. Club member, Rick Stankiewicz captured this stunning sunset with his digital camera.

But not everybody likes to haul a bundle of gear into the backyard to a photo session. PAA member Rick Stankiewicz captured this beautiful photo of the setting sun's glow bouncing off an interesting cloud formation with nothing more than his digital camera.

Congratulations and our thanks to both Rick and Gord for sharing some beautiful images with us.

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Astronomy in Philately

Have you seen comet C/2002 T7 yet? Don't delay, as it is sinking in to the western horizon along with the constellation of Pegasus, shortly after sunset each night. It is in the area to the lower left of the gamma star (Algenib), which is the dimmest corner star in The Square of Pegasus. A telescope is best to try and get a look at it. I tried binoculars a month ago and it was a very faint fuzzy spot. It is rated as having a brightness of at least a magnitude 7. It is to be getting brighter as it heads for the horizon. It is to reach it's closest to the sun (perihelion) on May 19th. Unfortunately, by then the comet will be in the southern hemisphere.

Comets are very special objects in our solar system. Their sudden and sometimes brief (weeks or months) appearance in the night sky has always stuck people with wonder. In addition, they sometimes make an impressive display. Though generally not very bright, they can produce a long tail that appears to span a large part of the sky, especially when viewed from a very dark sky that lacks light pollution. The study of these strange objects are of interest to astronomers and geophysicists.

When a cometary body approaches the Sun, its surface materials evaporate due to heating from solar winds, this forms a special kind of temporary atmosphere. It is this process which results in the "fuzzy" appearance on all comets in a telescope. In the course of this process the cometary body also releases a lot of small dust-sized grains. Since cometary bodies are small, their gravitation is unable to withhold the released gas and dust: gas and dust escape and form long tails, which always point away from the sun.

This month's stamp is from Belgium. It was issued on May 28, 1966 to mark the 10th anniversary of the comet Arend-Roland. It was part of the set of stamps depicting Belgium's national scientific heritage. Belgian astronomers Sylvain Arend and Georges Roland at the Royal Observatory in Uccle, Belgium discovered comet Arend-Roland on November 8, 1956. It originally was rated at a brightness of 10th magnitude. It attained magnitude +1 during the spring of 1957, perihelioning (closest approach to the sun) on April 8, 1957.

This Belgium stamp was issued on May 28, 1966 to mark the 10th anniversary of the comet Arend-Roland. Arend-Roland was discovered by Belgian astronomers Sylvain Arend and Georges Roland.

The stamp has a nice dark background to show off the stars in a night sky. There is a bright yellow rendition of comet Arend-Roland streaking across the sky. A telescope from the Royal Observatory of Belgium dominates the foreground. The date of the comet's discovery is shown on the lower right corner. The sample of the stamp shown here is on an envelope that was sent from Brussels to New York.

With any luck, we may get a chance to see a comet with these specifications in the near future. However, there is one thing that you can count on when it comes to comets…and that is that they cannot be counted on. They can be a boom or a bust, you just have to wait and see.

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I Keep Repeating Grade Six

But that's only because it's so much fun. Mind you, I'll talk astronomy to anyone, but kids are a special delight. The enthusiasm level is always high. Everybody wants to know if you've "been to" outer space. And the kids often know quite a bit about the topic. Thank you Discovery Channel.

Of course, everyone wants to know about the big bang and black holes. I usually beg off by telling the kids that those two topics would take a lifetime each just to study so that I could explain them properly. In addition to being the truth, that also skirts some of the potentially sticky religious issues.

Astronomy generates some very large numbers, and the kids love 'em. One light year equals ten trillion kilometres.

Oooohhh!

It would take our fastest rocket almost 1.5 million years to fly from one side of the Orion Nebula to the other. Oh wow!

How hot is it on the Sun? Well, about 6 thousand degrees on the photosphere. Wow! But it jumps to 15 million degrees at the Sun's core. Oooh! Wow!

Teacher Lindsey Wesselink and her group of grade six students were a receptive and enthusiastic audience. Perhaps they'll soon make a trip to the BHO to see Jupiter and Saturn.

In addition to wowing the kids with numbers I like to get across concepts like how stars recycle themselves and planetary systems are born. It's surprising, but some of the kids are already hip to old stars blowing up and making the material for new ones. Who would have guessed that the lyrics from a Joanie Mitchel song would still ring so true. We are indeed stardust.

I also like to impress upon the kids that theirs will be the first generation ever to walk on another planet – probably Mars. And that their children might even be the first generation to be born on a lunar colony. So would that make them Earthlings or should they be called Lunies? It's also good to let them know that many of the careers they might consider on Earth will also be needed on other planets and moons. Like geology, medicine, geography, mineralogy, maybe even archeology!

The key is to open minds and doors to new possibilities. Everyone knows about astronauts. But even life on a space station calls for other skills. And as we move further into space, the potential to transfer traditional Earth-bound jobs into space grows even greater. Anyone for exobiology? It's already a career for some scientists on Earth.

Young minds and astronomy are an exciting match. About the only thing more fun is telling them about it. So maybe I'll repeat grade six again – in a couple of weeks.

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Astro-Gadget Review: Moonstick and Lunawheel

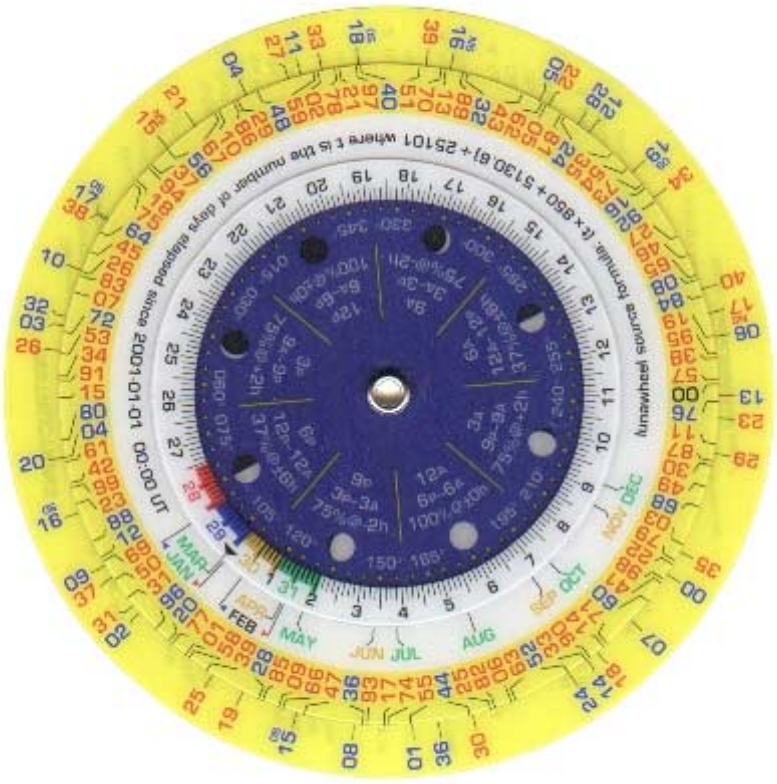
I have always had an interest in scientific gadgets. Everything from old computers to mechanical devices like slide rules or sextants. A few years ago, *Sky and Telescope* featured a gadget called the "*Moonstick*" in their "New Product Showcase" column.

The *Moonstick* is a unique type of slide rule that can calculate the phases of the moon for any given date between 8000 BC and 8000 AD. It needs no batteries and can be operated anywhere. It even compensates for the Julian calendar (pre 1582) so you can determine the moon phase on such historical dates as the Ides of March in 44 BC (the date Caesar was stabbed), or on October 12, 1492 (the date when Columbus landed in the New World).

Its design is quite unlike any other slide rule I have ever seen. Instead of two sliding "sticks" and a cursor, the *Moonstick* consists of six sliding sticks that have three sides each! When correctly lined up, they will give the phase of the moon for the date in question. It is not the simplest thing to use, but with some practice you can become proficient at it. Fortunately the creator (Sean Barton) provides plenty of examples of how to use it. I can't imagine how many times Sean Barton must have pulled the hair out of his head designing this very clever device before he got it to work. I am sure he must have resembled that famous image of Kepler assembling his "geometrical" universe on Carl Sagan's TV series *Cosmos*!

I give the *Moonstick* a rating of 5 out of 5 astro-geeks for originality and general coolness. If you are either colour-blind or have poor dexterity this may not be the toy for you. It requires matching coloured arrows to coloured numbers on the six sliders, simultaneously. For ease of use, I would give it only 2 out of 5 astro-geeks. But who cares – the thing looks cool!

The *Moonstick* consists of six specially designed rulers (with triangular profiles). Unlike a conventional slide rule, its rulers are bundled together in a hexagonal profile and held together by two rigid hexagonal straps.



The *Lunawheel* is the *Moonstick's* smaller cousin. This circular slide-rule can be used to find the phase of the moon on any date from 1 AD—4000 AD

Sean Barton must still have some hair left on his head, because in this year's March issue of *Sky & Telescope*, another lunar calculator appeared in the "New Product Showcase" column. This time it was a circular slide rule similar to those pilots used to calculate their wind speed etc. Dubbed the *Lunawheel*, this is the more compact cousin of the *Moonstick*. Its useful date range is from 1AD to 4000 AD. So much for the Ides of March, 44 BC! Oh-well, what it lacks in range, it makes up in ease of use. All you need to do is line up the century with the year (i. e., 20 & 04 to make 2004) and then pick the month. It even gives you the approximate times of moonrise and moonset. This handy little device will definitely make it into my observing bag. This device gets a rating of 5 astro-geeks for ease of use and portability, and 4.5 out of 5 astro-geeks for originality and general coolness.

A few weeks ago, I went to Sean Barton's website (www.moonstick.com) to order my own *Lunawheel*, along with the *Calendarwheel* (another circular slide rule that acts like a perpetual calendar). The prices were reasonable and he accepted Paypal so I didn't have to go through the hassle of sending a money-order south of the border. My order arrived here in less than a week. That definitely deserved a 5 out of 5 astro-geek rating.

Overall ratings are as follows:

Moonstick ☺☺☺●●
($25.00 US incl. S&H)
Lunawheel ☺☺☺☺☺
($15.00 US incl. S&H)
Calendarwheel ☺☺☺☺●
($15.00 US incl. S&H)

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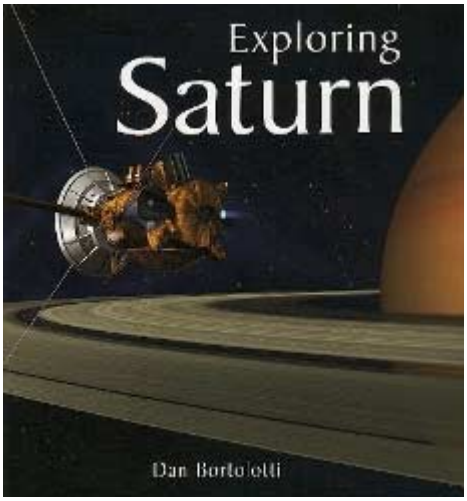
First Came Mars Mania - Now it's Saturn's Turn to Shine!

With the media's attention focused on Mars, it's easy to forget about this year's other great space adventure – the Cassini Mission to Saturn. No, we won't be landing any rovers there. It is, after all one of the gas giants. But the Cassini spacecraft will be making a detailed study of the rings to deduce their true composition and hopefully, their origin.

Cassini's goals will also include studying Saturn's moons – Iapetus, Dione and Enceladus. While no lander could plunk down on gaseous Saturn, the mission's Huygens probe will touch down on the surface of Saturn's moon Titan, to gather data on its atmosphere. It is thought that Titan's atmosphere resembles that of Earth about 3.5 billion years ago, so the possibility of some form of life existing or being able to exist on Titan is a possibility.



Dan Bortolotti is a writer and editor whose work has appeared in many magazines, including *Equinox*, *Canadian Geographic* and *OWL*. He is also the author of *Panda Rescue* and *Tiger Rescue*. Mr. Bortolotti's presentation to the PAA will be based on the one given at The Huronia Star Party in 2003.

There's a great deal more to the Cassini Mission, and it's all explained in detail in a new Canadian book, *Exploring Saturn*. Written in laymen's terms, the book is easily understood and fascinating reading. Author Dan Bortolotti has seen to that via his imaginative, yet simple writing style. He assumes nothing of the reader other than an interest in the planet. So you won't find any techno-jargon or five-dollar words.

Yet the book takes you from ancient court astrologers to a detailed description of today's mission goals and the equipment that will help achieve them. Along the way you'll also read about Galileo's original discovery of the planet, Christiaan Huygen's discovery of the rings and Cassini's sighting of what we now call "the Cassini Division" in the rings.

More than just a good read, *Exploring Saturn* also features numerous beautiful illustrations and photographs courtesy of NASA and JPL among many others. Combined with Bortolotti's easily accessible writing style and impressive background knowledge of the subject, *Exploring Saturn* becomes a welcome addition to the PAA library.

Also welcome will be the author himself, who will do a presentation on Saturn and the Cassini mission to us on April 30th. Rumor has it that he'll also be bringing a few spare copies of his book along, so you can buy your own autographed edition at the end of his talk.

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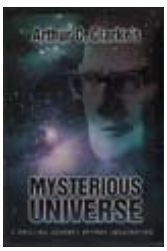
The PAA Library-More for Your Viewing Pleasure

This month we add three new video selections to our shelves. Thus far, the videos are a big hit with club members, so we'll try to dig up more of them in the future. Meanwhile, here's what's new:

Lowell Observatory the First Hundred Years provides a profile of Perceval Lowell that highlights his passion for astronomy rather than his misadventures with the canals on Mars. Born into a Boston family of great wealth, he could have done nothing but cruise through life. Instead, he took it upon himself to push forward the frontiers of astronomy. He was a brilliant mathematician, a skilled observer and entirely self taught when it came to astronomy. The latter, combined with his "privileged" upbringing, created a number of harsh distracters who in generous moments might call him a "well-meaning crank." Nonetheless, the observatory he founded became famous for a number of important discoveries.

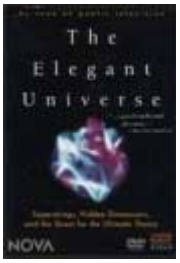
While working at Lowell Observatory, Vesto Slipher discovered the red shift in galaxies, upon which Edwin Hubble based his historic work. Work that eventually became the basis for the Big Bang Theory. Clyde Tombaugh took up the search for Planet X and using Lowell's calculations, discovered Pluto in 1930. Robert Burnham, author of *Burnham's Celestial Handbook* was yet another famous Lowell employee. And today, the observatory continues making new discoveries as a facility of the U.S. Navy

In addition to chronicling North American astronomical history, the video provides some unintended nostalgia. Included among the presenters are Carl Sagan, Gene Shoemaker, and Clyde Tombaugh, all sadly gone today.



Arthur C. Clarke's Mysterious Universe is more for *X-File* fans. Still, inquiring minds want to know about a lot of unusual things. This video touches upon alien abductions, haunted houses, disappearing buildings, near-death experiences, and – very scary – the world of zombies. As a matter of fact, Haitian law recognizes the creation of zombies as a crime and has actually sentenced people to jail for practicing this notorious voodoo rite.

If you like your science on the wild side, you'll love *Arthur C. Clarke's Mysterious Universe.*



The Elegant Universe is hosted by one of the String Theory's staunchest proponents, Brian Greene. Greene does an amazing job of simplifying this complex theory to the point that a layman can actually understand it in a broad conceptual form.

In essence, String Theory is the search for a single, unifying theory of everything. It was the dream Albert Einstein worked so hard on in his final years, but still could not solve.

Via some terrific graphics, a host of world famous physicists, and his own personable delivery, Brian Greene succeeds in getting the message across. But remember String Theory by its very nature can't be proven with experiments we have devised. So is it science or a philosophy? Whatever your final pronouncement, it's interesting and thought-provoking stuff.

John Crossen
JohnCstargazer@aol.com

Classifieds

For Sale:

Jason 7x50 binoculars with long eye relief for those who wear glasses - $75.00
4 Meters **black felt**. Excellent for lining optical tubes - $10.00

Contact: John Crossen
Phone: 705-657-7718
E-mail: johncstargazer@aol.com

ARTICLES

Submissions for *The Reflector* must be received by the date listed below. E-mail or "sneaker-net" (i.e., floppy disk) submissions are preferred (Microsoft Word, ASCII and most graphics 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 this address:

Charles Baetsen
4094 Squair Rd
Orono, ON
L0B 1M0

or via e-mail at:
va3ngc@rac.ca

NEXT ISSUE'S DEADLINE IS

Mar 29th, 2004

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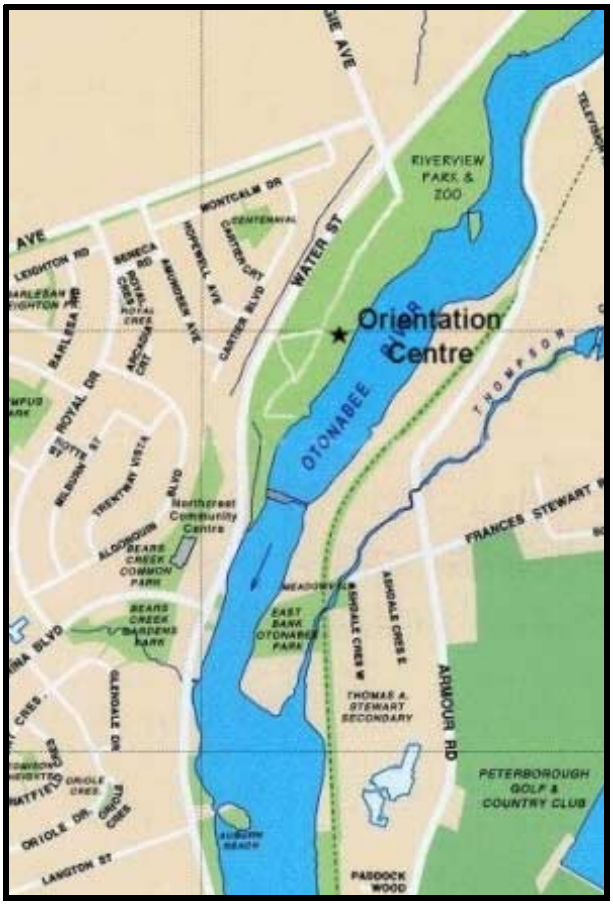
MEETINGS

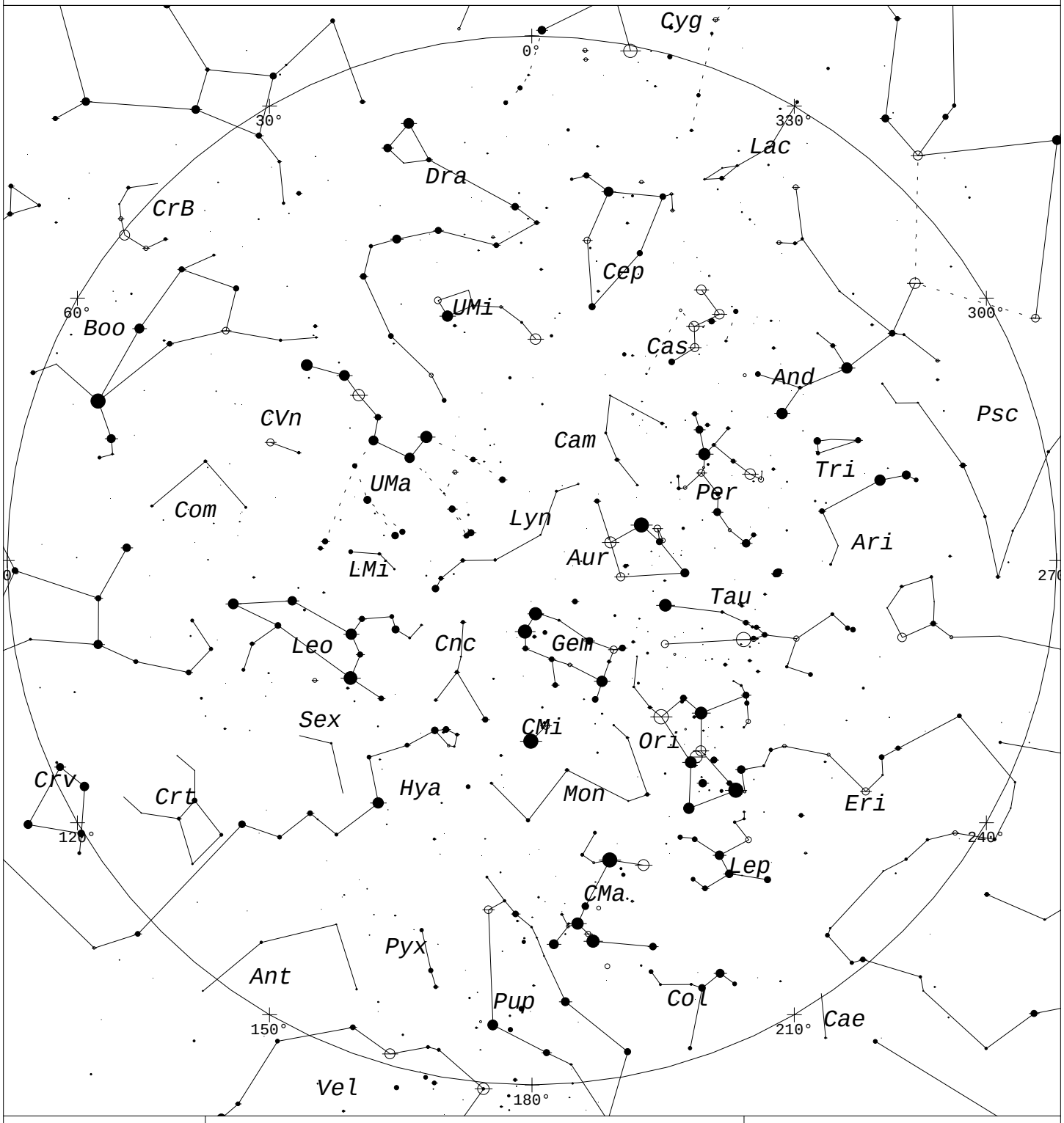
The Peterborough Astronomical Association meets every second Friday at the Peterborough **Zoo Orientation Centre** (Next to the PUC Water Treatment Plant) at **8:00 pm**.



CALENDAR OF EVENTS

March 5, 2004	**General Meeting** — "What's New Under The Stars" – with Jim Kendrick
March 6, 2004	**Full Moon (○)**
March 13, 2004	**Last Quarter (☾)**
March 19, 2004	**General Meeting** — Observing in the parking lot (weather permitting)
March 20, 2004	**New Moon (●)**
March 28, 2004	**First Quarter (☽)**
April 2, 2004	**General Meeting** — "Digital Imaging" with Brian Colville
April 16, 2004	**General Meeting** — Observing at Don McDonald's Observatory

March Skies



STARS

- <1
- 1.5
- 2
- 2.5
- 3
- 3.5
- 4
- 4.5
- >5

SYMBOLS

- Multiple star
- Variable star
- Comet
- Galaxy
- Bright nebula
- Dark nebula
- Globular cluster
- Open cluster
- Planetary nebula
- Quasar
- Radio source
- X-ray source
- Other object

Local Time: 21:00:00 1-Mar-2002
Location: 43° 39' 0" N 75° 0' 0" W

UTC: 02:00:00 2-Mar-2002
RA: 7h38m46s Dec: +43° 38' Field: 182.0°

Sidereal Time: 07:38:46
Julian Day: 2452335.5833