

Editorial

This past month marked several new discoveries in astronomy. The Cassini probe is still orbiting the Saturn system and has returned some incredible photos of the ringed planet's moon Hyperion. As you can see from the photo, it is the strangest looking object yet photographed.

The discoveries don't end in the region of Saturn. Last month it was UB 313, a trans-Neptunian object twice the size of Pluto was discovered. Also it appears that Pluto has three moons in total. The candidate moons have been provisionally named S/2005 P1 and S/2005 P2 and are approximately two to three times as distant from Pluto as Charon.

Next month Shawna Miles will be taking over the editorship. I would like to thank her for taking on this important post in our club. I am sure you will all support her efforts by continuing to produce such high quality articles as you have had in the past. Without you, the newsletter (and the club) would not be as great as it is.

Thanks go out to all of you who have contributed to the newsletter over the past few years. In particular I would like to thank John Crossen, Rick Stankiewicz, Rob Fisher, and Mark Coady who have become 'regular' contributors. Without their help, the newsletter would not have the great articles and readership such as it is.

Clear Skies

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Sponge Bob, Round Pants! Not really. Hyperion, one of Saturn's moons, is only 266 kilometers across. It has an irregular shape, and spins in a chaotic rotation. Much of its interior is empty space, hence it looks like a sponge.

Meeting Notes

September 16, 2005:

Friday night's meeting went well despite the need to cancel our Armour Hill observing session thanks to the

rain. Here's a summary of what took place:

Joanne and Bob Stockton took over responsibilities as our new librarians. They also took on about 185 books and 60+ videos. Puff, puff, pant, pant. Many thanks from us all.

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The Sept 30th meeting was held at Brett Hardy's Observatory. Here you can see Brett with his 7" TBM along with PAA members Rob Fisher and Jim Webster.

Mark Coady made a DVD of his weekend at the Huronia Starparty and brought it along for us to enjoy. In about 20 minutes we were shown everything from an acre of telescopes - including a 20" Dob - to guest speakers, and a guitar trio who performed very well. We also saw some great aurora photographs as the group of about 150 starpartiers were treated to auroral displays on Friday and Saturday nights. Thanks Mark and Susan.

Before showing the DVD Alien Planet, we welcomed Ian Thompson as our newest member and passed the pot for the 50/50 draw which Joanne Stockton won. Welcome aboard Ian and congratulations Joanne.

The meeting concluded about 11:00 as the DVD rambled on a bit longer than I had planned. I'll try to do better (read shorter) next rainy night.

September 30, 2003

September 30th's meeting took place at Brett Hardy's observatory. Brett is one of those methodical people who takes the time to put together all the right stuff in the right way. And it shows in his

observatory.

The sparkling white dome is home to a beautiful Astro-Physics computerized GoTo mount. On it rides a 7-inch TBM refractor with superb optics. And on the TBM a Tele Vue refractor hitches a ride along with a MalinCam. Together they provide real time video of objects in the eyepiece. It's all wired to Brett's computer and the Starry Night software which displays the segment of the sky you're looking at - in vision-preserving red light, of course.

You might think the video element is redundant, but when five or six people are also observing with you, it's good to have something for them to look at while waiting for their turn at the eyepiece. And I must admit, watching M13 on TV is an interesting experience. Come to think of it, this would be great in my observatory on crowded nights! I'm sure Deb wouldn't mind if I moved the 52" Toshiba out to the observatory and... No. Bad idea John. Bad. Bad.

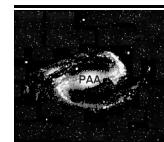
The night passed quickly as the big AP

mount quietly "whirred" from one Messier target to another. And it did so with remarkable speed and amazing accuracy, centering each successive target nicely in the eyepiece. Plus, you needn't miss a moment of the action because there was also a monitor in the warm-up/coffee hut just across from the observatory. It was sort of like having your own Discovery Channel without the TwinRicks Commercials. If observing were always this comfortable, even wives would like astronomy.

Our thanks go to Brett for graciously sharing his wonderful world with us. A lot of thought and planning went into his observatory as well as an appreciation for esthetics. The results were most rewarding for all. In fact Brett might just invite us back if we're real nice and say please.

Our next meeting will be on October 14 when veteran astrophotographer Gord Rife will be our guest speaker. Gord is a member of the South Simcoe Amateur Astronomers and one of the prime movers behind the Huronia Star Party. Gord has recently switched from film to a digital LSR and will show some of his recent work as well as sharing some tips on the brave new world of digital astro imaging.

I sincerely hope you can make it to this



**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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An eager group of PAA members turned up for Gord Rife's talk on digital SLR astro-photography. A single 3-minute shot taken with a digital SLR is as good as anything film could accomplish in 15 minutes or longer. The new digital technology is certainly cheaper than a CCD camera, and renders both them and film obsolete!

meeting, as Gord's work is always impressive and his talks are both lively and informative. Until then, keep the lights down and the stars up big and bright.

October 14, 2005:

Tonight's PAA meeting was well attended with 26 PAA members on hand plus four guests from the South Simcoe and York Simcoe astronomy clubs joining us. Our guests were Peter Lanscaill, Brian Colville of Maple Ridge Observatory, Scott Gilbert, and Gord Rife, SSAA Treasurer and our guest speaker for the night. Also present was Carlo from the Peterborough Camera Club.

Club President, John Crossen, opened the meeting by welcoming our guests and passing the coffee can for the 50/50 draw. He also put a stack of old astrophoto film up for auction with the proceeds going to the PAA. While the coffee can was making the rounds, Rick Stankiewicz passed around a photograph that he took at Brett Hardy's Cedar Knoll Observatory during our last observing session.

Announcements for the night included the fact that our next meeting will be at Buckhorn Observatory for an observing

session – weather permitting. If it's cloudy, we'll be back at the zoo doing the DVD thing.

Crossen also announced that he is putting together the 2006 event calendar and is open to suggestions for the upcoming year. Tentative suggestions include a return visit to Haliburton Forest Observatory, a joint observing session with the Kingston and Bellville RASC chapters, the addition of Jaan Teng's and Brett Hardy's sites to our usual roster of dark sky locations, and the announcement of May 6th as International Astronomy Day.

With that we settled back to enjoy Gord Rife's talk on Digital Astrophotography. Gord took a different approach to the subject by demonstrating that digital doesn't require a big digit in the hip pocket to get involved in the hobby. His first examples were simple "point 'n shoot camera on tripod shots" of aurora and planetary/lunar conjunctions. Next up were Moon and Sun shots that can be taken afocally – that is just holding the same point 'n shoot camera up to the eyepiece and very carefully clicking the shutter. He then showed the excellent work that can be accomplished with a modified web camera and some

freeware on an everyday laptop computer.

He then showed us the comparison process he went through in choosing the Canon D20 vs the Nikon equivalent. The Canon won hands down because of its instant adaptability to astrophotography. There's even a Canon Astrophotography website. So, if they love us, we love them.

The capabilities of the camera are phenomenal. For starters, you don't have to take a stack of notes and wait two weeks to see what worked. Instant replay shows what's good and what's not. Plus the camera automatically records all your shot data.

Then there's the quality of the images.

A single 3-minute shot was as good as anything film could accomplish in 15 minutes or longer - even with stacked images. With a little manipulation, the image could be enhanced to exceed the saturation and sensitivity of film many times over. And, of course all the time Gord was talking we were jealously ogling his photographs of M31, M13, The Swan, The Lagoon, The Trifid, M57 and M27.

Our thanks to Gord Rife for an excellent presentation and for taking the time to

answer questions during and after his presentation.

At 9:30 the meeting wound down with groups forming up for a little chit-chat. Gord Rife pulled the winning stub for the 50/50 draw. The winner was John Crossen. To eliminate any speculation that the draw was fixed, Crossen volunteered his winnings to the club's bank account.

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Fire in the sky! It's Aurora Season.

Call them the Northern Lights or the Aurora Borealis; they are beautiful and somewhat mysterious. These bold streaks of red, green and white dancing lights that often paint our autumn night sky begin life at the very centre of our solar system as something far less enchanting. Unlikely though it may seem, they are the end result of massive explosions on the Sun. So how does something that happens 149 million kilometers from Earth come to provide us with such an entertaining light show?

For starters, aurora can happen at any time of year. But they do seem to occur more frequently during the spring and autumn months. They are also linked directly to the 11-year sunspot cycle that is supposed to be at a minimum right now. "Supposed to be" is the operative phrase, because old Sol just isn't playing by the rules. This year we are having as many sunspots at what is called "solar minimum" as we normally would at solar max. Nobody knows why, but the resulting light shows are much appreciated.

It all begins when a large sunspot erupts. These highly magnetic dark spots on our sun are very unstable. They are also big, often large enough to swallow Earth five or six times over. When a large sunspot is pointing in Earth's direction and erupts, it sends a storm of charged particles our way. These cosmic mini-missiles ride on what is called the solar wind. The solar wind constantly radiates from the Sun and reaches into our solar system far beyond the realm of the planets.

In less than a day and a half, those charged particles reach Earth. Thankfully our magnetosphere (the

electro-magnetic field that surrounds Earth) redirects them around us and channels them down at our North and South Magnetic Poles. At this point the charged particles begin to interact with our atmosphere. Depending on their altitude and the gasses they interact with, we see red, green or white shimmering lights.

Of course, there is a down side to aurora. If you're a ham radio enthusiast, you already know how aurora can play havoc with radio signals traveling through our atmosphere. One such cosmic blizzard knocked out Hydro Quebec causing millions of dollars worth of damage. And another knocked out satellites orbiting Earth so that all the electronic pagers in North America were out of service. Doctors, surgeon and their patients were the most important groups affected, but many businesses were also brought to a standstill.

Unfortunately, our society is becoming more and more dependant on sophisticated electronic devices. Precisely the kind of equipment that is highly susceptible to electronic interference by solar storms. All of which brings us to a brand new career opportunity.

It's called space weather, and businesses such as those involving satellite communications, NASA, JPL, The European Space Agency and more are counting on predictions of solar activity to position their satellites and plan their space missions so that valuable equipment and human lives are not at risk.

If there is a solar storm headed our way, satellites can be parked in a manner that will minimize any possible damage and some systems can be shut down so that they will not receive excess radiation.

Just after one of the Apollo missions successfully completed its Moon exploration and returned to Earth, there was a gigantic solar flare and storm of cosmic particles. Had the astronauts been on the moon at that time, they would have absorbed enough radiation to kill them. The same holds true for astronauts



On September 8th a brilliant aurora took place during the Huronia Star Party. Here one of the 150 amateur astronomers who attended the annual event, looks through his telescope while the aurora dance in red, green and white overhead. Photo by SSAA member Gord Rife

in the International Space Station. They must know when to seek shelter from a solar bombardment. Ditto any extended missions to Mars and beyond.

Those of us stuck on planet Earth will have to put up with bad cell phone signals and some radio interference. In return we receive a beautiful light show to offset the headaches. The aurora of early September was seen as far south as Arizona, so it was quite a spectacular show.

Until we meet again in the backyard, keep the lights down and the stars up big and bright.

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New IMAX: Magnificent Desolation – Walking on the Moon



At the end of September this year, I was visiting Ottawa and decided to go over to Gatineau (Hull), Quebec, to the Canadian Museum of Civilization to check out the IMAX theatre. To my surprise there was a new show called “Magnificent Desolation-Walking on the Moon”. It had just opened and I was unsure of how long it was going to run. If you are in the Ottawa area in the next while, I was recommend stopping in to see this show.

It is produced and narrated by Tom Hanks (of “Apollo 13” fame) and with the assistance of NASA (who allowed previously unreleased footage to be used), you can just image the experience of “being on the Moon” that an IMAX screen will give you. There are lots of computer generated images and even voices of astronauts who have walked on the lunar surface. It is an excellent glimpse into what they saw, heard, felt, thought and did while there. If you are into lunar exploration or any other space related exploration, then you will love

this large screen experience.

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Mars is Racing Towards Us at 24.6 km/s!

No, this isn't a rehash of “When Worlds Collide.” It's the close approach of Mars. This year from the last two weeks in October through the first couple weeks of November, the red planet will be passing very near to us – 69.4 million kilometers at closest approach on October 29th.

Close approaches with Mars happen about once every 2.5 years. The very closest Mars approach in written history was two years ago when the “God of War” was just 55.8 million kilometers away. Unfortunately Mars only rose about 30 degrees above the horizon during that opposition (the astronomical term for a close approach).

So, while Mars was the closest it has ever been to Earth in over 60 thousand years, it was so low on the horizon that observers in Ontario could only make it out as a big blurry blob.

All that changes this year. Mars will rise to over 60 degrees altitude in the Ontario sky, so we'll be able to make out lots of detail, even in small telescopes. What we lose in closeness compared to the Mars opposition of two years ago, we more than make up for in sharp visual contact. And that's what all the excitement is about in the amateur astronomical community.

Why aren't all Mars oppositions the same? Let's start with the definition of a Mars opposition. An opposition happens when the sun (at the centre of our solar system), Earth and Mars are all in a straight line with each other. That puts Mars directly across from Earth and us in the middle. But Mar's orbit is much more elliptical (oblong)



The mysteries of Mars have intrigued us since ancient times. Perhaps that's why so many science fiction stories and movies have featured the red planet or critters that inhabit it.

than our own. So some years it is further away, even though all three celestial bodies are lined up.

To further complicate matters, Mar's orbit is inclined an additional 1.9 degrees from our own. So during some oppositions the planet is further up in our sky than at other times. Further up means astronomers are looking through less of the Earth's blurring atmosphere. And the result is a sharper, better defined image of Mars in Earth-bound telescopes.

Here's a chart showing the Mars Oppositions for the next generation. Notice how the size of Mars diminishes with each successive opposition until April of 2014. Then it begins to draw nearer with each opposition. That's the effect Mars' more elliptical orbit. By the way, an arc second is the width Mars will appear to be to the naked eye. One arc second is equal to 1/3600 of one degree. One arc minute is equal to 1/60th of a degree. As a point of visual reference, the full Moon is about 1/2 a degree in diameter. So the naked eye view of Mars, even at its closest in 2003, was very small.

By the way, if you're a Mars fan in his or her mid 40's, we recommend retiring to Arizona. That's because you'll be far enough south to get a good view of Mars during the close opposition of 2018. As

usual, those of us in Ontario will only be able to watch the blurry blob skim our southern horizon at about 30 degrees again.

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Martian Life

There was life on Mars – I was sure of that. This was at the dawn of the space age, before any spacecraft had been sent to Mars. The best images of the red planet were available from the Mount Palomar 200-inch telescope, showing blurry icecaps and dark patches which changed with the Martian seasons. There seemed to be areas of vegetation responding to varying temperatures. Of course, we didn't know what those temperatures were or what the atmosphere was like. It was assumed the polar caps were made of ice, which melted temporarily into liquid form. Lichen should be able to grow there and maybe some animals too. This was the best guess around 1960.

I was fortunate to have a teacher with a passion for astronomy. His name was Ray Thompson (still an active variable star observer) and he owned his own telescope, through which I had my first glimpse of Mars. It was an indistinct ball, but there were dark areas there, which just had to be plants. This excited me so much that I asked my parents for a telescope as a Christmas present. I found what I considered to be the ideal model at our corner store, where their specialty was stationary and books. Undaunted, I thought the small tripod would sit nicely on a card table in the backyard.

The eyepiece was built in and I have no idea what the brand name or specifications were, but I was ready to start stargazing. Mars was my first target and, indeed, I was able to find it quickly. The focusing knobs were crude, although I was able to see the tiny white speck of a polar cap and a dark spot. That was it – life on Mars!

We've come a long way in our knowledge of Mars since then and I plan to do some more articles on the subject



FIG. 1-2 The planet Mars, photographed in orange light in August, 1938. (Mount Wilson and Palomar Observatories.)

for the newsletter. Meanwhile, be sure to take a look at Mars through any telescope during the close planetary encounter in October/November. Who knows? You may be looking at a world that still harbours hidden life.

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New Planet Discovered, but It Isn't In Our Solar System

Now that we've unofficially pushed our solar system's planet count up to 10 with the addition of Xena and her sister moon Gabrella (currently just nicknames), it's time to add to our extra-solar planetary count. So welcome to HD 189733b, extra-solar planet number 160 that is orbiting a K-type star in the constellation Vulpecula.

Discovered by an international team of astronomers led by Francois Bouchy, the new planet hasn't earned any cute monikers yet, but there are two things about the new-found planet that are far more important.

For backyard astronomers, the star that HD 189733b is orbiting can be seen in a small telescope. Even hand-held binoculars will reveal the 7.7

magnitude star the Jupiter-size planet is swinging around. At low power the star can be seen in the same field of view as the famous Dumbell Nebula, so it's easy for backyard astronomers to locate.

Also known as Messier Object M27, the Dumbell Nebula is the remnants of a star that exploded many thousands of years ago. HD 189733b is just 0.15 degrees (half the width of the full moon) to the east of it. Thus any up-to-date tour of deep sky objects will now include M27, and HD 189733b.

I had a look at the star October 8th in a 6-inch refractor I was "test driving." I have to admit, that looking at a star and knowing that there is a planet orbiting it is a bit of a thrill. What would it be like on the planet? Is there anyone up there on HD 189733b looking back at me? Probably not, but...

The second important thing about this planet is the fact that it is revolving around its star on the same orbital plane as we are orbiting the Sun. And that means astronomers can measure the planet's atmospheric content via spectroscopy. HD 189733b is just one of 9 extra-solar planets that we can do this with.

Thus far we know that it is 1.26 times the diameter of Jupiter. Its density is about that of Saturn, so it would float in water. Its mass is 365 times that of planet Earth. But as big as HD 189733 b is, it orbits very closely to its host star. With an orbital period of just 2.2 days, close is almost an understatement. After all we think Mercury is close to our sun, and it takes about 77 days to complete its trip around old Sol. And our own Jupiter stretches its orbital period out to 12 Earth-years.

Being so up close and personal with its star also makes HD 189733b a formidable hot spot - perhaps several thousand degrees. Thus, it seems logical to assume that no life form we are familiar with could live in such a hostile environment.

Every time HD 189733b passes in front of its star, it causes a 3% drop in the star's luminosity. Thus, every 2.2 days the star varies slightly in magnitude. Plus, HD 189733b is relatively close to

us. Its distance from Earth is just 60 light years. So that makes it a neighbour of sorts.

Next time you're out with your telescope or binoculars have a look at the star HD 189733b is orbiting and wonder just how many more planets are out there. In just one decade we've gone from a single extra-solar planet orbiting the star 51 Pegasus to 160. And our technology is just taking off. How many more planets are out there? And more importantly to us, how many are like Earth?

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The Sky This Month

MERCURY

Mercury is not easily visible this month.

VENUS

Venus is visible after sunset. It will remain an evening object for the rest of the year.

MARS

The red planet will be an evening object this month. It can be found in Aries. Mars will be at opposition in early November.

JUPITER

Jupiter is in the glare of the sun and is not visible at this time.

SATURN

Saturn rises in the early morning and can be seen just before dawn.

URANUS

Uranus is located in Aquarius and will be visible throughout most of the night.

NEPTUNE

Neptune is located near ι -Cap and will be visible throughout the night. A finder chart like that published in S&T or the

RASC Observer's Handbook is required to locate this faint bluish planet.

PLUTO

Pluto is located in Serpens Cauda near the star ξ -Ser. You will need a finder chart like those published in Sky & Telescope to find it.

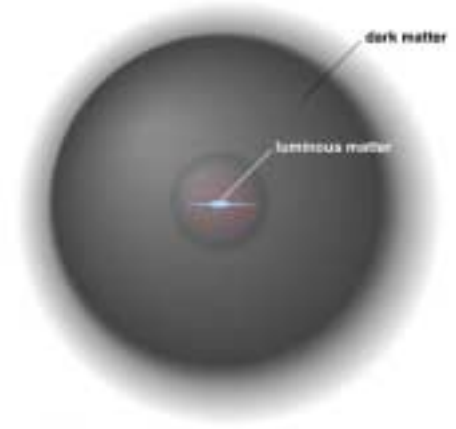
METEOR SHOWERS:

There are no major meteor showers this month, however there are also several minor meteor showers. For details, see <http://comets.amsmeteors.org/meteors/calendar.html>.

Dark Matter pt II - MACHOs & WIMPs

Now that we know dark matter does exist, scientists are trying to find out exactly what it is made of. There are at least two theories for what dark matter is, and many scientists have set out to prove them. Some suggest that dark matter consists of ordinary but hard-to-see failed or dead stars, maybe even huge, cold planetary objects. These hypothesized "compact" masses would be accumulated particularly around the center of each galaxy, forming what is called a "halo" of dark matter. So, if these objects existed, they would be massive, compact, and they should be found in the halo of a galaxy. These hypothesized objects of dark matter have been called "Massive Compact Halo Objects" (MACHOs).

The other popular candidate for dark matter is not in the form of clumpy objects, but are undiscovered particles which were created during the Big Bang. They are said to exist everywhere. They group together in large clouds called halos, which surround each galaxy. Scientists know that if these particles exist, they interact with ordinary matter very weakly. It is predicted that these unknown particles are much more massive than the particles we already know of.



The visible section of a typical galaxy is only the small portion in the center. Dark matter (WIMPs and MACHOs) may exist in the galactic 'halo' that surrounds it.

According to calculations, they would be about 100 times heavier than a hydrogen atom (a proton)! These particles have been called "Weakly Interacting Massive Particles" (WIMPs).

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Evaluating Free Planetarium Software:

Cartes du Ciel

vs

Stellarium Desktop Planetarium

Over the past year I have downloaded two desktop planetarium software packages that you might be interested in. I found *Cartes du Ciel* from a link on the www.skyandtelescope.com website. I demonstrated it at a PAA meeting in the spring. Cedric Sylvester gave me the link for *Stellarium Desktop Planetarium*. Both are quite good and both are real cheap...in fact, they're absolutely free!!!

Cartes du Ciel was developed by Quebec amateur astronomer Patrick Chevalley simply because he doesn't think an amateur astronomer should have to pay for planetarium software. It is available at the following link.

<http://www.stargazing.net/astrogc>

Stellarium Desktop Planetarium is the work of Fabien Chereau, along with some others, and is available in Windows, MacOSX, and Linux versions, from this link:

<http://www.stellarium.org/index.html>

Both of these have their advantages and disadvantages.

Both have options for AZ or Ecliptic grids. Both can show constellation outlines and boundaries. *Stellarium* allows for the extra options of adding drawings of the constellation characters and constellation and star names to be shown, as well. What star names will be shown is user programmable from 1st to 9th magnitude.

Both allow you to set the software for your particular location and both allow you to adjust the date and time so that you can preview the skies for an upcoming observing session. *Cartes du Ciel* has the simplest setup of your location and adjustment of date and time. It remains static, however, not changing until you decide to change the location or date and time. It is a little more difficult to change the location and date and time

set up with *Stellarium Desktop Planetarium* but, once you do, the display tracks in real time so that if you were to spend an hour looking at the display the night sky will scroll exactly as how it should in the real world

Clicking on an object, such as a Messier object, in either software allows for a description of the item you are viewing. *Stellarium Desktop Planetarium* gives more information plus, on planets and the moon, it gives the current distance in astronomical units. This distance indicator changes from second to second reflecting the true distance the object is from the Earth for the date and time displayed.

Cartes du Ciel allows for you to zoom in for a close-up image of either the moon or the planets. *Stellarium Desktop Planetarium* allows for this, as well, along with being able to zoom in on nebulae and star clusters. Zoomed-in images are more realistic looking than with *Cartes du Ciel*. Because *Stellarium Desktop Planetarium* runs in real time, however, one has to keep centering the object unless the center object option is toggled.

The default display for *Cartes du Ciel* is very basic. It operates in a window that can be toggled for night vision as it adds a red tint.

The display for *Stellarium* does not need to be adjusted for night vision as it is a full screen display. It can also be adjusted to allow for a different background from a tree infested site to a simple countryside which will allow you to mimic your own treed in backyard or a farm where your next observing session will be held.

I like both of these software packages, but I tend to lean towards using *Stellarium Desktop Planetarium* more, mainly because the images are a lot more realistic, it tracks in real time so I can see how the sky will change while I am observing, and I can get the view to mimic wherever I am going to be set up, which can come in handy explaining to John Crossen how I can't see the Teapot because of my neighbor's trees.

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Astronomy in Philately

The U.S. Postal Service (USPS) will be releasing a set of stamps with constellations on them for National Stamp Collecting Month (October). The theme for this year's stamps is "constellations". The 37-cent stamps feature Leo, Orion, Lyra and Pegasus.

According to the USPS, the designs are based on original artwork by illustrator McRay Magleby of Provo, Utah. Magleby used star maps by Wil Tirion as reference for the size and placement of the stars depicted in the stamp art. Wil Tirion has been called "this generation's foremost celestial cartographer". As you can see from the pictures of the stamps in this article, the classic overlay of the Greek mythological figures adds to the understanding of how these constellations got their names.



The Teapot obscured by a treed-in Backyard as shown in *Stellarium*. The images are a lot more realistic than in *Cartes du Ciel*, and it tracks in real time so you can see how the sky will change while observing.



This beautiful set of constellations was used to kick off National Stamp Collection Month (October) by the USPS. If you run across any in your mail, be sure to save the envelope. These issues can be difficult to get in used condition.

I will be on the lookout for a set of these stamps to add to my collection, but so far, I have only seen pictures of them. If you run across any in your mail, be sure to save me the envelope. These issues can be difficult to get in used condition.

Your Astronomical Philatelist
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The Dark Side of Mars

From its name, to the disastrous history of missions to explore it, Mars has a dark side for all to see.

To the Norsemen, Mars was a one-handed god of war called Tiu (TEE oo). Given his occupation, it doesn't take much imagination to figure out how old Tiu became one handed. None-the-less, we have named Tuesday in his honour. The Greeks called him Ares (ER eea). But the Romans gave him the moniker

that stuck, Mars.

Not all of Mars' lore is steeped in battles and blood. He also has an association with agriculture. Hence the planting month of March is a derivative of his name. Then again, spring was also the time when the Roman armies set out on their wars of conquest. So perhaps getting one's "marching orders" also has its roots in Mars' name. Even the old adage "all is fair in love and war" has been attributed to Mars' fling with the lovely Venus in Roman mythology. But the dark side of Mars really comes home when you consider the incredible number of failed missions to the red planet.

The Russians started things off on the left foot with Marsnik 1 and Marsnik 2 in 1960. Both suffered launch pad let down. But that didn't stop our Cold War Comrades from continuing. In October and November of 1962 they launched three more Mars missions – Sputnik 22, Mars 1, and Sputnik 24. Sputniks 22 and 24 failed to make their flybys of Mars and contact was lost with Mars 1. At this point the score was Mars 5, Earthlings 0.

Mariner 3 raised Mars' score to 6 as it became lost in space. But perhaps the Yanks learned something from the Russian's mistakes because in 1964 they fared much better with Mariner 4. And in 1969 NASA experienced more success with Mariners 6 and 7. Regrettably Mariner 8 made an expensive lunch out of the launch pad that same year.

Out of 46 attempts to flyby, orbit, or land on Mars precisely 23 missions have ended in failure. The Japanese Nozomi mission has launched successfully, but failed Mars orbital insertion and will not attempt it again for two year. So the jury is still out on that one.

Among the most recent missions to join the Martian graveyard of expensive mistakes was the British "Beagle" lander. Named in honour of Admiral Cook's globe-circling exploratory ship, the unfortunate puppy slammed into the

Martian surface and never sent back a bark to let us know where it was. Prior to that, NASA had a few more head-bangers.

Mars Observer departed this Earth in September of 1992 and arrived near Mars orbit in August of 1993. But NASA lost control of the space vehicle just prior to its insertion into Mars orbit. With control and communications gone, so was the mission. Unfortunately a number of other future missions were dependant upon Mars Orbiter's success. Most important among them was the Russian mission Mars 94, which was to use Mars Observer as a relay station for scientific data.

All of this points out two things to me. Space exploration is a very expensive business. And the risks are very high – too high for manned space flight to Mars in the near future. Let's concentrate on our successes. The two Martian Rovers, Spirit and Opportunity are performing far beyond expectations. Both the Mars Global Surveyor and the British orbiter, Mars Express are doing very well. So before we don our space suits, I think we should let the orbiters and the rovers do a little more snooping around.

We'll get there in time, but before we send astronauts and cosmonauts off to "The Angry Red Planet," let's even the score up. Right now it's Mars 46 and Earthlings 23 – and there's more to lose than money.

John Crossen
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While Mars has handed us our share of failures, both the Spirit and Opportunity rovers have far exceeded their 9-month life expectancy.

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:

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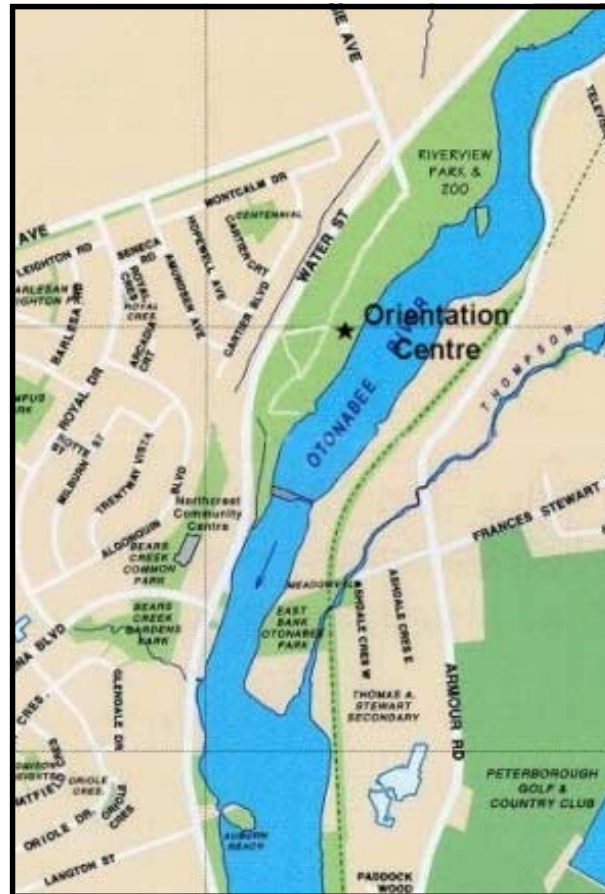
or via e-mail at:
va3ngc@rac.ca

**NEXT ISSUE'S
DEADLINE IS
Nov 7, 2005**



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**.



☐ MOON PHASES ☐

New Moon (●)	October 3, 2005	November 1, 2005
First Quarter (☽)	October 10, 2005	November 8, 2005
Full Moon (☾)	October 17, 2005	November 15, 2005
Last Quarter (☾)	October 24, 2005	November 23, 2005

☐ CALENDAR OF EVENTS ☐

October 14, 2005	General Meeting —Guest Speaker: Gord Rife. Orientation Center at the Riverside Zoo
October 28, 2005	General Meeting —Buckhorn Observatory (weather permitting).
November 11, 2005	General Meeting —Guest Speaker: TBA. Orientation Center at the Riverside Zoo
November 25, 2005	General Meeting —Dark Sky Observing Night – Don McDonald’s Observatory