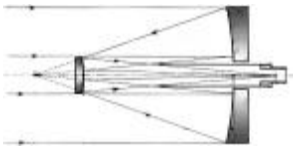
PETERBOROUGH ASTRONOMICAL ASSOCIATION

THE REFLECTOR



Volume 2, Issue 10 October 2003

Editorial

Last month Dave Duffus announced that he would be stepping down as President of the PAA this fall. After being in that position for many years, this came as a surprise to most of us. He assured us that he would be still around to help out here and there. His announcement inevitably lead to the question "what do we do next". As you may recall, last spring, we had a membership survey. Based on that, a majority of members favored some sort of fee structure and obtaining non-profit status. Those at the meeting indicated this would be a good time to pursue these avenues.

As a result, we decided to form a steering committee to create a constitution and bylaws. The steering committee consists of Dave Duffus, Rick Stankiewicz, Rob Fisher, John Crossen & myself. It will try to come up with a draft constitution and bylaws. These will then presented to the membership and voted on.

If you are thinking of helping out or being part of a future board, this is the time to consider it. Although we have yet to determine the type of board members we will need, I suspect that the following positions will be available: President, Vice President, Secretary, Treasurer, & Editor. Some other positions like Observing Director, Membership Director & Promotional Director are also possible. If you think you might want to do one of these jobs, you may get an opportunity very soon.

The trip to the David Dunlap Observatory was a great success. Several members showed up to listen to Ian Shelton speak on the Subaru Telescope in Hawaii. It was a fantastic talk. Afterwards we were invited to look inside the observatory to see the big scope. Unfortunately it was cloudy at the time so we couldn't look through it.

Please note that the next meeting (Oct 17) will be held at Don MacDonald's observatory near Hastings. His address is 1521 4th Line Asphodel. See attached map.

Clear Skies

Charles Baetsen
va3ngc@rac.ca

Here a group of daycare students from Bobcaygeon enjoy an afternoon at the Buckhorn Observatory under our star – the Sun!

Mars Mania Keeps Buckhorn Observatory Hopping

2003 got off to a slow start with a lot of nights clouded out. But by mid-summer the rush to see Mars was having a very positive effect on the observatory. If fact, we were inundated with calls to the point that we had to add a couple of nights and eventually

Inside This Issue

turn people away. The "mania" has now put us ahead of last year in both attendance and donations for the library.

In addition to our regular observing nights, the observatory began doing private group viewings. Plus we added two off-site shows at one of the local resorts. The response was great. It's just a guess-timation, but I'd think this year's attendance will top the 600 mark. That'll put us at about 1500 for the three years the observatory has been doing public viewing nights. And Mars isn't gone yet. There will be excellent viewing opportunities during the balance of September as well as into October. So don't put that telescope away.

John Crossen
JohnCstargazer@aol.com

Ecology of the Night (Sept. 22-24, 2003)

This was an international symposium that looked at "darkness" as an imperative. Over fifty people from around the world gathered for three days at the Leslie M. Frost Natural Resources Centre near Dorset, to share thoughts, research, theories, ideas and solutions on an issue that affects us all, "light pollution". The loss of our night sky through light pollution is a global issue, but of course no one knows that more than amateur astronomers like us.

I was fortunate to have been able to attend this symposium through my work with the Ontario Ministry of Natural Resources (MNR). It was an amazing experience and I was honoured to be part of this event. The cross section of participants was impressive. There were representatives from across Canada and the U.S.A., as well as the Czech Republic. Some of the names you may recognize, like Terence Dickinson (SkyNews editor), David Crawford (IDA pres.), Monte Hummel (WWF pres.) and Robert Dick (RASC member), to name a few. There were doctors, professors, researchers, astronomers, clerics, Aboriginal peoples, editors, conservation advocates/activists, lighting industry reps and government officials from all levels (municipal, provincial and federal).

The presentations and discussions were as varied as they were interesting. They included aspects of the natural/ biological world, the human health and physiological world, the cultural/ spiritual/historical world and the regulatory framework. As the proceedings become available in printed form, I will be sure to share them with anyone who is interested in reading them.

This was more than an academic gathering. It was a call to action for all walks of life. There is a lot of research and studies already completed that show the extent of the affects of light pollution on every facet of our life. Areas were also identified for further and continued research.

There is so much we can all do to help prevent/reduce light pollution. We have to start by cleaning up our own act at a personal level. Have a look around your own home or sphere of influence and make sure that we are not guilty of light trespass, excessive lighting, etc. Then we need to start educating those we meet about the issue and how we all have a responsibility to "bring back the night". We owe it to the environment, ourselves, our families, and society in general. No one will change what they do not know or understand. We need to make everyone aware of the issues around light pollution, the solutions to deal with it, as well as the benefits of conserving the night.
Education and awareness will go along way in making the necessary changes to the night sky.

This is not the first article on light pollution to find it's way into our newsletter (nor will it be the last). You will recall that our first issue (Vol.1, No.1 – Nov.2001) had an article entitled, "Losing Our Stars?" I suggest that we as a group take up the challenge of changing the night skies in the Peterborough area, by leading change through both example and education. Lets make it a priority and discuss it further at one of our bi-weekly meetings?

If you would like to learn more about these issues and how to help do your part to reduce light pollution, visit the International Dark-Sky Assoc. (IDA), at *www.darksky.org* and the Royal Astronomical Society Of Canada (RASC) Light Pollution Abatement Program (LPAP) at *www.rasc.ca/light/ home.html*

Turn off a light and switch on a star!

Rick Stankiewicz
stankiewiczr@nexicom.net

Closer to home, the Durham Region Astronomical Association has an extremely active Light Pollution Abatement Committee. Their web page is http://www.drastronomy.com/ lpac/. This website offers advice on how to write your local government to get light pollution on their agendas. They have been successful in convincing their local municipalities and the 407 EA to address this issue. There is no reason why the same tactics cannot work here to preserve the "rural nature" of our area.

- Ed.

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.

Website
www.geocities.com/paa_ca

Email
paa_ca@yahoo.com

Club Mailing Address
c/o Dave Duffus
7 Riverview Hts.
Peterborough, ON, Canada K9J1A9

The Sky This Month

MERCURY:

Mercury will be visible in the morning sky in the first half of this month.

VENUS:

Venus is not easily visible this month.

MARS:

Located in Aquarius, Mars is still quite amazing to behold, even after opposition.

JUPITER:

Jupiter will be in Leo and appears above the horizon just before twilight.

SATURN:

Saturn is visible this month in the early morning hours, located in Gemini.

URANUS & NEPTUNE:

Uranus and Neptune are visible over the summer months, being in Capricorn. Finder charts are available in *Sky & Telescope* or the *RASC Observer's Handbook*.

PLUTO:

Pluto is located in Ophiuchus. You will need to a finder chart like those published in *Sky & Telescope* or the *RASC Observer's Handbook* to find Pluto.

METEOR SHOWERS:

Orionids: Peak on October 22.

There are several minor meteor showers this summer. For details on these see *http://comets.amsmeteors.org/meteors/calendar.html.*

Adventures in Webcam Astrophotography

This past summer's close encounter with Mars provided many opportunities to photograph the red planet. Originally I had not planned on photographing Mars, but when enough people at work seen to expect that I should have some pictures, I began to wonder if I should give it a try.

After doing a bit of research, I decided to purchase a Quickcam 4000. Of the various web cams available, it was the only one that was still in production and rated very highly. Several other cameras rated higher, but they were now difficult to get a hold of. Fortunately, Future Shop had dropped the price from $150 to $120.

In order to use it, you have to take the internals out and adapt it such that it could be mounted in the eyepiece holder. A quick and dirty way to do this is to mount it in a film canister. Within a few minutes, I was ready to take my first image.

Mars on Sept 6, 2003 imaged with the Logitech Quickcam 4000

The first thing I tried to image was the sun, as it was up at the time. Frankly I was disappointed with the result. Because of the high magnification and the turbulence, it was hard to get a good image of anything on it. Later that evening I was able to see what it really could do when I tried to image Mars.

Once I found the object and focused it, I was soon filling my hard drive with AVI files. After capturing lots of images, it was time to do some image processing. I was totally amazed with the results. With no more than a half-hour's work, I had images of Mars that were better than what people were able to take 20 years

My setup. I placed the circuit board of the webcam in the end of a film canister so it would fit in my eyepiece holder.

Saturn also provides a great target for a webcam.

ago, with expensive equipment and fantastic seeing. I still have a long way to get to today's standards, but I am impressed nevertheless.

Web cams are, in many cases, no different than CCD cameras (many use a CCD chip), except that they are much more affordable. For planetary photography they can't be beat. However, the one thing, in which $1000 CCD cameras can still surpass a web cam, is in long exposure photography of deep sky objects. But even that is gap is narrowing. Web Cams are primarily designed to capture AVI files at about 15 or 30 fps. The longest exposure that an off the shelf web cam can make per frame is about 1/5 sec. Some cameras (including the Quickcam 4000) can be modified (by wiring up an additional

The Webcam in a more permanent housing to protect the internals

circuit) to provide much longer exposures. If you do this, you will also need to provide some cooling since the thermal noise in the system becomes very noticeable with long exposures. This can easily be accomplished by attaching a Peltier cooler (~$30) with a CPU fan and heat sink to the back of the board.

I wish that this type of technology were around in 1994, when Shoemaker-Levy 9 crashed into Jupiter. Can you imaging the photos that amateurs could have got then!

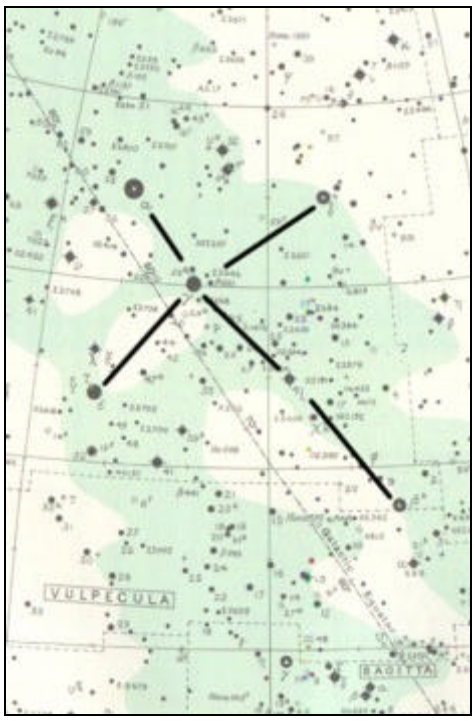
Clear Skies
Charles Baetsen
va3ngc@rac.ca

The Swan Glides Gracefully Across The Summer Milky Way

Cygnus, the Swan, is a large constellation and is also known as the Northern Cross. Cygnus' brightest star, Deneb, is one third of a starry trio called the Summer Triangle. The other two members being Altair in the constellation Aquila (the Eagle) and Vega in Lyra. The Summer Triangle is almost directly overhead near midnight during the months of July and August.

Cygnus was one of the earliest constellations to be recognized and classical mythology provides several explanations for its existence. One of the more popular is that it is the god Zeus, in the swan disguise that he used to seduce Leda, the wife of Tyndareus, the king of Sparta. The offspring from this clandestine affair were Castor and Pollux (in the constellation Gemini) and Helen of Troy. Whether the lovely Leda had triplets or she and Zeus fooled around more than once is unclear. At any rate, the King must have wondered about the three new members of the royal romper room.

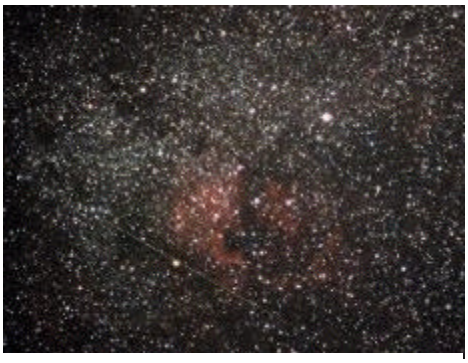
Deep sky buffs have a number of reasons to focus on Cygnus. It's best known for the double star Alberio. To the naked eye Alberio appears as a magnitude 3.1 star. But in a telescope, golden Alberio reveals a blue-white companion star of 5th magnitude. The two, side by side, are one of the most beautiful double star systems available to amateur astronomers.



Cygnus, embedded in the Milky Way is rich in many deep sky objects.

Cygnus is also home to two Messier objects. One is a 7th magnitude group of stars known as M29. It is an open cluster of about 20 stars and lies 3,000 ly from Earth. The other is M39, which is 10 degrees northeast of Deneb. This open cluster of 25 stars is about 800 ly from Earth.

The Swan also shelters three famous nebulae beneath its wings. Actually the Veil Nebula is comprised of two parts, both of which are the result of a supernova explosion about 30,000 years ago. The other two nebulae are photographic items, though they can be viewed with the eye under very dark skies using a large aperture telescope at very low power. Most famous is the North American Nebula (NGC 7000), known for its resemblance to that portion of our continent. It lies just a few degrees



Visible to the naked eye under only the darkest skies is the North American Nebula flanked by the Pelican. Binoculars with a nebulae filter bring them both into sight.

east of Deneb. Adjacent to the North American Nebula is the Pelican Nebula (IC 5067), which bears a striking resemblance to the somewhat comical looking bird.

Thanks to the obscuring clouds of the Milky Way, Cygnus reveals just one galaxy. It is NGC 6946, a 10th magnitude spiral galaxy on the border between Cygnus and Cepheus.

To spot Cygnus, look for Deneb (α Cyg) the swan's tail, and Alberio (β Cyg) the bill. The wings run at right angles to a line drawn between the aforementioned stars.

Once you've got the swan in your sights, try locating the other two stars that make up the Summer Triangle. As summer passes into fall, the trio will move towards the west and will be visible into late December. Altair will be the first to slip below the western horizon, followed by Vega and Deneb. And that – bad pun intended – will be Cygnus' swan song.

John Crossen
JohnCstargazer@aol.com

Twinkle, Twinkle Little Star…

Now there are 70 sextillion to choose from! This summer, Australian astronomers have estimated the total number of stars in the known universe at 70,000 million, million, million or 7 followed by 22 zeros. This is 10 times as many stars as grains of sand on all the world's beaches and deserts (Who counted those?)!

They accomplished this calculatory feat by looking at a strip of sky using two of earth's most powerful telescopes (New South Wales and Canary Islands). Within the strip were 10,000 galaxies and when the calculations were done on those stars, they multiplied this by the number of strips needed to cover the entire sky. Even though they admit there are likely millions of more stars, the 70 sextillion figure is what they think is within range of modern telescopes.

So, do you think there is a chance of intelligent life out there? You figure it out.

Rick Stankiewicz
PAA member
stankiewiczr@nexicom.net

A Spectacular End To A Spectacular Mission

With its onboard fuel supply nearly depleted, NASA scientists chose to crash the Galileo Spacecraft into Jupiter rather than risk the possibility of it impacting Jupiter's watery moon Europa. Such an impact could result in the craft contaminating Europa with Earth microbes. This would compromise any future study of Europa's environment. One which is thought to be the most likely in our solar system to contain alien life forms. Thus, at 2:27 p.m. EDT on Sunday, September 21st, the unmanned spacecraft, was plunged into Jupiter's turbulent atmosphere where it was torn apart.

The Galileo mission was considered to be one of the most successful ever launched by NASA. Over its 14 years, Galileo returned 14,000 images to Earth. Some of the most memorable being its images of Jupiter's moon Io. Galileo imaged some of the moon's 150 volcanoes – actually flying through the plume of one. Galileo's images of Jupiter's moon Europa led scientists to conclude that the moon was covered by a thick shell of ice, beneath which was a large ocean that possibly could contain life forms. Plus Galileo returned images of a tiny moon orbiting a passing asteroid. In addition to a multitude of stunning images, the spacecraft also took numerous scientific measurements, further extending our knowledge of Jupiter and its moons.

The 3,000-pound spacecraft hit the upper atmosphere of Jupiter at over 160,000 km per hour. True to its gallant form, Galileo continued to send data back to Earth before it finally succumbed to the intense atmospheric pressure of the huge planet.

Galileo being deployed in 1989 from the Space Shuttle Atlantis.

In fact, the last data took 52 minutes to cross the vast void of space and reach Earth scientists. That's nearly an hour after the craft had been destroyed.

The spacecraft was named after Galileo Galilei, the Italian astronomer who is credited with discovering Jupiter's four moons.

John Crossen
JohnCstargazer@aol.com

Astronomy in Philately

October is "Stamp Collecting Month" in Canada and this year the theme is right down our alley…. Canadian Astronauts! This will be the first time that our Canadian astronauts have been depicted on postage stamps.

The eight stamps, issued to recognize more than four decades of Canadian achievements in space exploration, feature images of all eight astronauts who have been part of space missions: Marc Garneau (1984, 1996, 2000), Roberta Bondar (1992), Steve MacLean (1992), Chris Hadfield (1995, 2001), Robert Thirsk (1996), Bjarni Tryggvason (1997), Dave Williams (1998) and Julie Payette (1999). Each will be depicted on their stamp.

October has been recognized as Stamp Collecting Month in countries around the world for over 20 years. Postal administrations, including Canada Post, use the month to further educate philatelists and entice new collectors into what is often described as the world's most popular hobby. Canada Post has issued some of its most popular stamps for past Stamp Collecting Months, including issues that featured kites, Canadian folklore and mountains, to name a few.

The stamps will be available at post offices across the country on October 1, 2003. The unique circular self-adhesive stamp measures 40 mm in diameter, and will be sold in sheets of eight and should

The new Canadian Astronauts Stamp series depicting images of (living) astronauts! In the past, except for the monarch, you had to be dead to be on a stamp.

be available in First Day Cover too. The stamps are designed using six-colour lithography with gold and silver foil.

You can also see the story put out on the Canadian Space Agency website about the stamp unveiling (September 26th), see *http://www.space.gc.ca/asc/eng/default.asp*

Your Astronomical Philatelist
Rick Stankiewicz
stankiewiczr@nexicom.net

Enjoy The Best Of Both Seasons This Fall.

Fall may have officially arrived on September 23rd, but you don't have to say "goodbye" to summer's best, most Messier-laden constellations quite yet. In fact you can observe the Summer Triangle constellations of Aquila, Cygnus, and Lyra right up to December. And the same goes for all the Messier objects they contain. With the Sun setting earlier with each succeeding day, you can also focus on Sagittarius with all its treasures. In fact, you can observe the "tea pot" right up until mid-October if you have a good horizon to the west. Yet another constellation with staying power is Hercules. It and its two globular clusters M13 and M92 will still be viable targets until mid-November.

The Andromeda Galaxy (M31/M32/M110)

But there's more to see. You can also enjoy a sneak preview of traditional fall and winter constellations, plus their Messier objects. It all depends on how long you stay up.

Right now the constellation Andromeda and the Andromeda Galaxy are well up by 10:00 in the evening. The galaxy is a marvelous binocular target. Just below it is the constellation Triangulum with the Pinwheel Galaxy, also known as M33. It's very dim, but can be seen with binoculars or a telescope at low power. The Double Cluster in Perseus has been up for some time now and also makes a good binocular subject.

Early darkness means summer favourites like the Lagoon and Trifid Nebulae may still be observed in the early evening.

Pegasus shares a star with Andromeda and is also home to one of my favourite globular clusters – M15. At about 200 power it's quite a sight.

Just before midnight you'll notice a fuzzy patch rising in the northeast. That's the Pleiades, also known as the Seven Sisters. The bright star Capella is also rising by midnight. It's the brightest star in the constellation Auriga.

The Double Cluster is best viewed with a wide field, low powered eyepiece.

Insomniacs will find that all the winter constellations are up by 3:00 a.m. and that includes one of winters finest – Orion. As an added reward for you tenacity, you will enjoy a view of Saturn as it drifts through Gemini. Hang in until 5: a.m. and you'll get a look at Jupiter as well.

Come to think of it, fall can be a great time for observing. It gets dark earlier. So you can enjoy a couple of hours under the stars without turning into a pumpkin at midnight. The earlier sunset lets you hang on to the summer constellations for an extra month or two. And the night of October 26 the clock drops back an hour, so it's getting dark the next day before the 6:00 news is over. Winters icy blast is still a couple months away. So your fingers don't freeze while you're setting up. And best of all, there are no bugs. Yup, fall may just be the best season of the year for backyard astronomers.

John Crossen
JohnCstargazer@aol.com

Gord Rife shoots Saturn – 449 times

You PAA members who remember the great talk and the excellent slides presented by Gord Rife last year shouldn't be surprised by his superb shot of Saturn. After all, that's just what you get when you blend a load of talent in with a bundle of determination and the ability to stay awake at 5:00 am.

To take create the shot Gord used a Phillips Vesta Pro Camera along with his 8" reflector on a Losmandy G11 mount. The photo was taken in 320x240 mode (binned). The end result is a composite of 309 images selected from a total of 449 1/25-second exposures of the ringed planet. To do the processing Gord used Registax 2.1 and Photoshop. Gord says it was all very simple – after you spend 100 hours trying to figure out how to do it.

Now that the old emulsion and film guy has gone electronic, get ready for a new era in astrophotography to begin. After all, this shot of Saturn was only his first try.

John Crossen
JohnCstargazer@aol.com

Classifieds

For Sale:

Tektites:

Have your very own Tektite at a very reasonable price! Tektites are glassy pieces of rock that are formed when meteorites or asteroids impact earth. Earthen material is fused together and ejected into space to fall back as, "Tektites". This may be the closest to a space object that you can own? These specimens come from China. For sale, are four nice sized and shaped specimens of the unusual varieties that Tektites are found in. Each one is unique. They are available for $6.00 each. Each specimen comes with a sheet that tells the story of Tektites.

Contact Rick Stankiewicz
Phone (705) 295-6158
E-mail: stankiewiczr@nexicom.net,

Only while supplies last!

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

Nov 10th, 2003

⌘

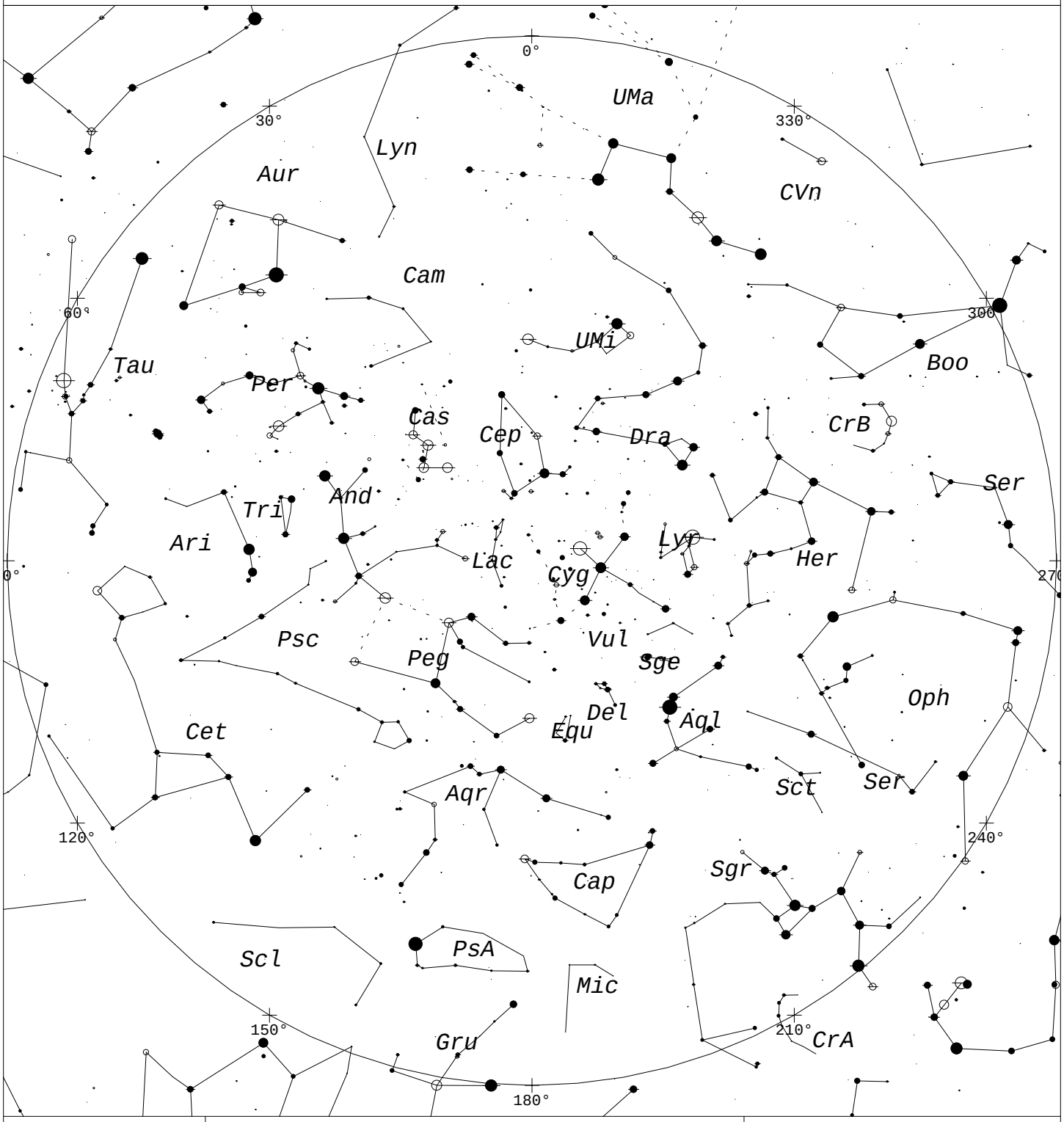
MEETINGS

The Peterborough Astronomical Association meets every second Friday at the Peterborough **Zoo Orientation Centre** (Next to the PUC Water Treatment Plant) at **7:30 pm**.

CALENDAR OF EVENTS

October 2, 2003	**First Quarter (☽)**
October 3, 2003	**General Meeting** — Observing at Jaan Teng's
October 10, 2003	**Full Moon (☽)**
October 17, 2003	**General Meeting** — Observing at Don McDonald's Observatory in Hastings.
October 18, 2003	**Last Quarter (☾)**
October 25, 2003	**New Moon (●)**
October 31, 2003	**General Meeting** — Tentative vote on the new PAA Constitution and By-laws.
November 14, 2003	**General Meeting** — Len Benschop—Webcam Astrophotography

October Skies



STARS

<1	3.5
1.5	4
2	4.5
2.5	>5
3	

SYMBOLS

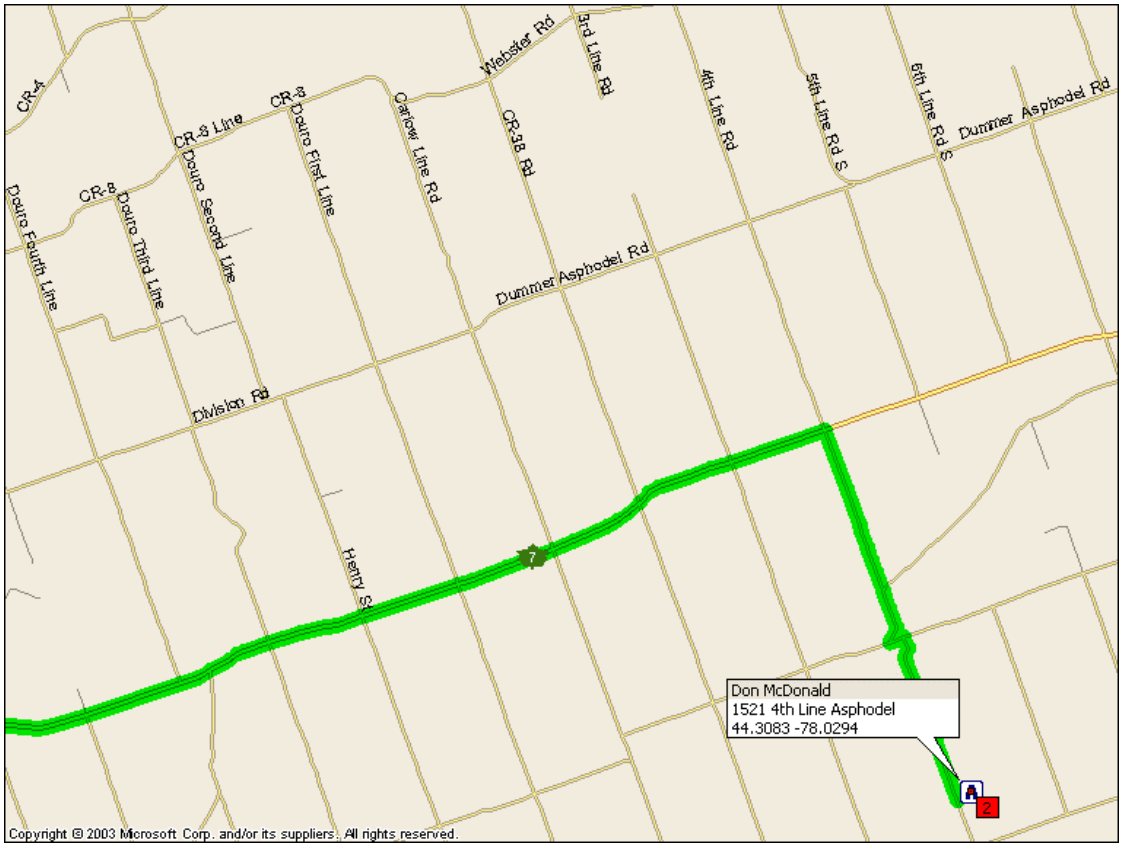
Multiple star	Dark nebula	Radio source
Variable star	Globular cluster	X-ray source
Comet	Open cluster	Other object
Galaxy	Planetary nebula	
Bright nebula	Quasar	

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

UTC: 02:00:00 2-Oct-2002
RA: 21h42m29s Dec: +43° 38' Field: 182.0°

Sidereal Time: 21:42:29
Julian Day: 2452549.5833

Directions to Don McDonald's Observatory



Summary: 28.0 kilometers (24 minutes)

Km	Instruction	For
0	Leave from Peterborough	
0.5	Take Hwy-7 (TCH) EAST	21.6 km
22.1	Turn RIGHT (South) onto 4th Line Ashpodel	3.1 km
25.2	Turn LEFT (East) at Center Line	0.2 km
25.4	Turn RIGHT (South) onto 4th Line Ashpodel	2.4 km
28.0	**Arrive Don McDonald**	

- Look for PAA Signs and Balloons.
- Don and Carol McDonald 705-696-2977

RA 78° 01' 46"
Dec 44° 18' 30"

NOTE: Bridge on Cty Rd 2 is closed at 3rd line