

Editorial

Welcome back from the holidays! I hope everyone had a good summer despite the fact that it was the cloudiest in 80+ years! With summers like this, I can see why David Levy left Montreal for Arizona.

Even when Mt. Pinatubo went off in 1991-1992, we didn't get such poor observing conditions as we did this past summer. According to the Clear Sky Clock, only about 4% of the time was clear and dark enough for deepsky observing, and most of those were in the early morning hours. According to my logbook, I managed to look at the night sky 2 days in June, and 4 days in August. July was a complete write-off as was May. Any clear skies during those two months were milky at best. Not only was the sky disappointing this year, the forecasters seemed to be having great difficulty with predicting the weather, even 12 hours in advance. Apparently the weather patterns (jet stream etc) were more typical of winter than of summer. Hopefully this fall is far better.

This fall we have an extensive line up of speakers and events so be sure to come on out to our meetings.

Clear Skies,

Charles W. Baetsen
va3ngc@rac.ca

Meeting Notes

July 23, 2004:

Friday night's meeting brought with it a new member, a new telescope, two guests, and our first public outreach program at Emily Provincial Park.



Despite the cloudy conditions for much of this summer, I did manage to get this 15 minute exposure of M8 (the Lagoon) and M20 (the Trifid) on 20-Jun-04. Taken on Kodak Royal 800 ASA at 270 mm-f/8, piggybacked on a LX-10 using the SBIG ST-4 Autoguider.

Please join me in welcoming Bob (he never gave his last name), our newest member thanks to a little promotional work by Al Day. Bob has been interested in astronomy and years ago had his own telescope. But in Bob's own words, "he's back to square one" again.

John Crossen introduced two new videos to our library. Fresh in the "Earth Sciences" box is Jane Goodall's "Wild Chimpanzees", a Science North production that highlights her career in Africa.

New to the Space Video bin is "I Wanna

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The above picture from the July 23rd observing session at Emily Park. It was taken at the end of the session so that as few people as possible would be spared from the Camera's flash.

Be A Astronaut", a 40 minute video that takes kids behind the scenes with former astronauts and NASA workers to explore the requirements for suiting up and blasting off.

Visiting us from China was an exchange student, Ran, who is staying with Boyd Wood. And from the SSAA was Peter Lanscale, one of the sky tour guides for the upcoming Huronia Star Party. Charles Baetsen will also be a guest speaker at HSP.

John Crossen then presented the group with a 6", F8 steel optical tube and the proposition that we convert it into another PAA loaner scope. It comes with a secondary and mirror, so we'll need a primary mirror and cell, a focuser and finder (we already have both) and someone to build a dob base. Estimated cost to finish is around \$200.00.

The night concluded with a visit to Emily Provincial Park where club members set up scopes and entertained a crowd of about 150 people with a brief constellation tour, views of Jupiter, the Moon, Alcor & Mizar, as well as the Ring Nebula and Alberio. We had to do a bit of cloud dodging, but the night was a

huge success that concluded with a round of applause from our audience and the thanks of the Park's staff. We've already been invited back.

I'd like to thank Mike Ricks, Mark Cody, Boyd Wood, Rene Bowe and Pete Lanscale for toting the scopes into the wilds. Your efforts were greatly appreciated.

Sept 3rd:

The September 3rd PAA meeting brought our summer season to a close. Befitting the cloudy weather we have suffered through the past quarter year, the observing portion of the get together on Armour Hill was clouded out - almost. Diehards Rick Stankiewicz, Don McDonald, Dave Duffus, and John's Crossen and John Cameron dragged out their scopes and binoculars to view the handful of stars bright enough to bore through the haze. A few curious people dropped by to see what was up and John Crossen gave a brief sky tour of the available constellation. The hit of the night was the waning gibbous Moon as it rose over the valley below. The Moon's eerie orange glow reminded us of our

morning on Armour Hill watching the sunrise during the Venus transit. Quite pretty.

The formal portion of our meeting brought with it a number of important decisions and discussion on the upcoming fall season. Two new guests, Paul and Brian, joined us as Club President, John Crossen, opened the meeting with a discussion of the fall/winter PAA agenda. The current format of two meetings per month will continue with one meeting being an observing session and the other featuring a guest speaker. Speakers, events and topics tentatively scheduled this fall are:

Sept. 17 Dan Bortolotti – Sedna, the Kuiper belt, and Objects Beyond.

Oct. 1 Observing Session – Buckhorn Observatory.

Oct. 15 Richard Matthews – How I build Satellites.

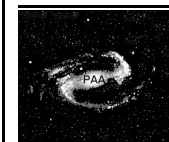
Oct. 27 Total Lunar Eclipse – Armour Hill – Public invited

Oct. 29 Jim Kendricks – New astro products and gear.

Nov. 12 Observing session – location TBA.

Nov. 26 Solar Flares & Geomagnetic Activity – Sir Sanford Fleming – Lindsay campus.

Dec. 10 Observing session – McDonald Observatory – a.k.a. Don's place. Merry Christmas all!



**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

Additionally club members John Crossen, Charles Baetsen and Jim Webster will have “cloudy night presentations” in their pockets featuring: The Summer of '04, “In Search of Clear Skies...”, and “How To Build A Home Observatory”.

PAA Vice President Rick Stankiewicz suggested, considering the number of new members in the club, that we institute wearing name badges at meetings. He also underlined the urgency of getting together our suggestions for the Project Gemini contest. Thus far we've only heard from the usual 5 suspects. There are 29 more of you out there, and we need your ideas, too. Deadline is September 30th. Rocket science is not required, just get off your particle accelerators and think a bit. If you need more info, email Rick at: stankiewiczr@nexicom.net

Another issue tabled was communicating with our non-email members. To that end, John Cameron will be Don McDonald's “E-buddy” and Dave Duffus

will look after Colin Campbell.

That was the night that was. My thanks to John Cameron, Mike & Ellen Ricks, Wendy Pecnik, Colin Cross, Don McDonald, Charles Baetsen, Mark Coady, Rene Bowe, Dave Duffus, John Crossen, Rick Stankiewicz, Jim Webster and our two guests Paul and Brian, for making the meeting a success.

John Crossen
JohnCstargazer@aol.com

PAA Stargaze & BBQ a Success

Despite the clouds and rain, another successful PAA barbecue has just been held. Those of you who missed it will have to try a little harder next year to make it. The skies did clear around 11:00 so the top was rolled back and the 14 inch Celestron swung into action for



Some PAA members pose for a snapshot at the 2004 PAA Stargaze and BBQ.

the few who were still in attendance.

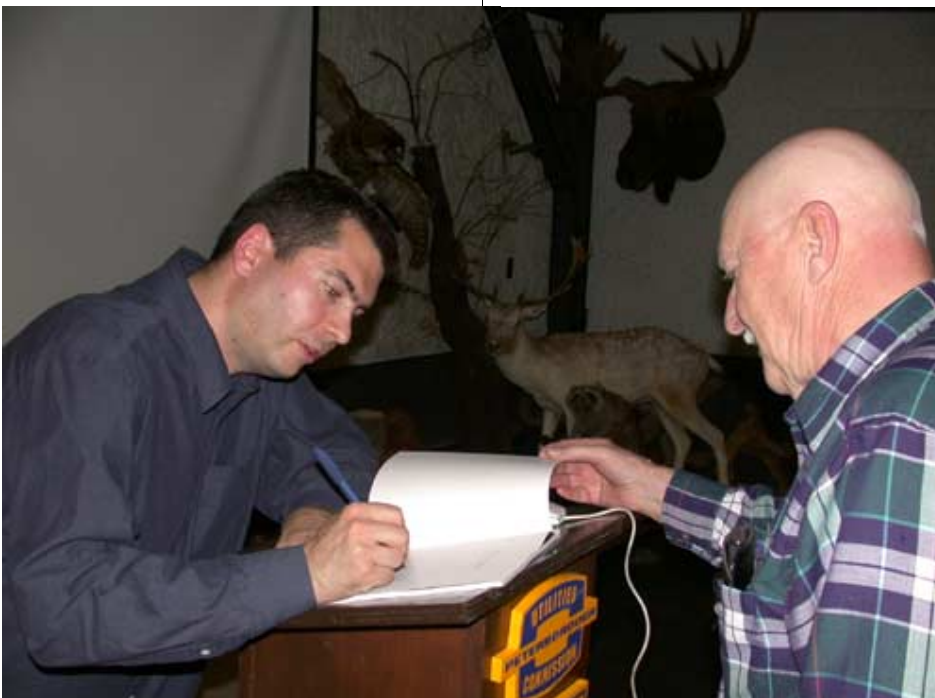
Congrats, back pats galore, and a hearty thank you to John and Deb Crossen for hosting a most enjoyable event. When the group picture is circulated, however, will we look like an astronomy club or a police line-up?

Mark Coady
mark.coady@sympatico.ca

Art and Astronomy Blend in the Pastels of Kelly Dodge

Selwin wildlife artist Kelly Dodge has a well-earned reputation for carefully crafted paintings with near life-like precision and detail. So it was only fitting that when she raised her sights to the stars and began painting constellations, comets, and celestial phenomena in nighttime settings, that she achieve the same perfection. And that, is how I came to enjoy the pleasure of meeting and working with her.

Kelly had already done a few nightscapes and found that the combination of her talent, along with the fact that the subject matter was unique, quickly turned them into best sellers. To help assure that her paintings were accurate representations, Kelly gave me a call. Shortly thereafter,



Dan Bortolotti, author of Exploring Saturn is shown here autographing a copy of his book for PAA member Rene Bowe. Dan gave us a superb presentation last year and will be on tap to give another talk at our next meeting on September 17th. The subject of his talk – and his latest book – will be: Sedna, The Kuiper Belt and Beyond. This presentation will be open to the public.

armed with photographs and my 'Starry Night Pro' computer program, I was delighted to spend an afternoon at the Dodge household going over the constellations, their relative position to each other, and which ones are visible during what seasons.

It didn't take Kelly long to start working her way through the computer program and learning the night sky like a veteran. Just how much she learned became apparent this weekend when my wife, Deb, threw a surprise birthday party for me.

At the end of a long chain of cards and gifts came the grand offering. To my surprise it was one of Kelly's paintings that Deb purchased for me at the recent Wildlife Art Show in Buckhorn. But what made it really special was the fact that Kelly was there to present it to me and had taken the time to inscribe the back with her best wishes for my birthday. For all of which I thank my wife Debbi, and Kelly...and my lucky stars.

John Crossen
JohnCstargazer@aol.com



Comet Hale Bopp (1997) reigns over the night sky with the beautiful Kawarthas below. Created in pastels by local artist, Kelly Dodge, circa 2004.

Russian Garbage

While out for a walk on the evening of June 26, 2004, about 10:50 p.m., just south of Peterborough, I thought I witnessed the re-entry of some "space junk"? I watched as the 3 lighted objects moved from west to east on a parallel track across the sky from a point SW to S, before I lost sight of them on a treed horizon. There were smoke or vapour trails from each of the light sources that trailed off to the west and were several degrees in length. There were no sounds heard. Their travel was about 10 to 13 degrees above the horizon and I watched as they covered about 75 degrees of sky in about a 30 second period. They varied in brightness throughout their travel, but maintained a uniform distance from each other. They were almost in a "stacked" formation. The central object was the brightest by far and was always bright (brighter than Jupiter currently was and both sparks and a flare appeared to shout from it at several times during its viewed travel. The lighted objects about and below this brighter object were dim and almost disappeared at times, but they always maintained a faint trail of vapour? They were first picked up under Virgo and traveled below Libra and Scorpius and I lost sight of them above Sagittarius.

As it turned out, I had witnessed the re-entry of some Russian space junk. The following day on the NASA Space Weather site www.spaceweather.com, they announced:

RUSSIAN FIREBALLS:

Sky watchers in eastern parts of North America saw an impressive display of meteor-like objects around 10:52 p.m. EDT on June 26th. These were fragments of a Russian rocket motor breaking apart in Earth's atmosphere. The pieces were bright, slow-moving, with "incandescent sparking tails," according to some observers."

The following technical data was

Type:	Proton-K Auxiliary Motor
NORAD Name:	SL-12 R/B
NORAD Number:	(AUX MOTOR)
Int'l Designation:	22273
Launched:	1992 088E
Site:	17 DEC 1992 @ 12:45 UTC
Mission:	Baikonur Cosmodrome LC200
	Cosmos 2224

readily available on the Internet There was no way I was going to be able to get a picture of this event, but what an opportunity of a lifetime. I will never forget it. The setting was perfect, walking home with my wife after visiting some neighbours on a late clear summer evening and there is some Russian garbage giving us a little bit of fireworks in our southern Canadian sky. What more could one ask for?

Rick Stankiewicz (Keene)
stankiewiczr@nexicom.net

Great Manitou Star Party

This year the Sudbury group made an arrangement with the natives at Little Current to hold the Great Manitou Star Party on their recreation grounds. It was an excellent choice right on the north shore of Manitoulin Island. We were given full use of their recreation and ceremonial grounds equipped with hot and cold showers, and water taps strategically located so we could conveniently fill up our water jugs.

We were welcomed on Wednesday evening with a demonstration of native costumes and dancing. The Chief announced that since it was not an official pow-wow we would be permitted to take photographs. We could tell that they were very proud of their heritage and they treated us as honoured guests. Their costumes had been made with a great deal of care and attention. It was clear they are looking forward to our



Natives from Little Current welcome astronomers to the Great Manitou Star Party on Manitoulin Island with a demonstration of native dancing.

return next year. On another cloudy evening they permitted us to use their ceremonial fire pit and a gentleman from Laurentian University gave a talk on Indian lore in his inimitable fashion. Whenever it is cloudy at the Great Manitou Star party we can count on him to relate to us the native versions of how the heavens came to be. During another cloudy period the natives hosted a Euchre tournament in their community centre. The Sudbury astronomy group donated a T-shirt for 1st prize and yours truly won it. Only because our native partners got so many lone hands.

There is a beach nearby. It appears to be man made, but it provides a sandy bottom for wading and swimming. They also have a tour boat which took us for a 2 hour ride in the narrows on the north shore, That is a shoreline we wouldn't have otherwise seen.

We haven't said much about Star Gazing. On Friday, hurricane Charlie hit our house in Florida, so personally we lost interest in astronomy even if the sky were to clear up. Your reporter left Saturday morning, and you guessed it; Saturday night was perfect seeing.

Some of our readers will recall Roger

Welcome back from a *&%@ Summer!!!

Despite the cloudiest, most rain-filled summer I have had the non-pleasure of grouching through, there were some bright spots. Literally!

Canada Day dawned bright and clear, and it remained that way through the entire PAA presentation at the Buckhorn Community Centre. Prior to that, our Astronomy Day weather was OK. And the weather for the Venus Transit provided yet another 'perfect day in paradise.' When we gathered at Emily Provincial Park, we also scored again with the skies holding until about 11:30 so that everyone had a good sky tour.

The night of the Perseids was an off-and-on affair, with clear skies finally emerging about 1:30 a.m. and holding until dawn. Unfortunately the following night with Peter McMahon at Armour Hill was less successful. However, the show he put on was quite good. We even had moderately decent weather for the annual PAA stargaze and BBQ. No rain at all, and hazy though useable skies later at night. It was definitely

better weather than last year's monsoon!

Now that we're back from our holidays and gearing up for the fall, we can start looking forward to some exciting new projects. On the guest speaker front, we have confirmation from Dan Bortolotti that he will definitely visit us soon with another talk. Club member Richard Matthews will speak on satellites and his experience designing them. I'll be pulling together a slide show on the PAA tours and activities of last year along with the visit Deb and I took to the Sudbury Astronomy Club and Science North.

Jim Kendrick will drop by with yet another discussion of what's new on the shop shelf, and Ian Wheelband has offered to give us a talk on light pollution. Thomas Kovacs has been experimenting with modifications to his new Meade 14" LX200. Perhaps we can arrange to have him discuss how to 'supercharge' your SCT. Charles Baetsen also has some names in the hat, and we'd welcome any suggestions you might have.

This fall we welcome Rene Bowe as our new Treasurer. His stint as 'Mr. Money' is temporary, until we dig up another volunteer to hold down the post. Is anybody out there man or woman enough to handle the job?

I've been very happy with our efforts thus far in public education, and am hoping we can keep up the same level of community activity – weather permitting, of course. Vice President Rick Stankiewicz has taken over our Gemini project and I'm sure we'll put forth a superb effort under his direction.

One thing I would like to see would be a group within our membership devoted to the subject of light pollution. It's one of those subjects that's ripe and ready, even up here in cottage country more and more people are putting up dockblasters and yardblasters. What the hell did they leave the city for? Rant. Rant. Rant.

Dave Duffus has suggested that we pull together for a trip to Stellafane next year.

It is the grand pappy of star parties and features swap tables that would put a king's banquet to shame. You'll also see some of the most beautifully crafted homemade scopes on the face of the Earth. I'll second the motion.

That's it for now. Welcome back to another year of commitment to making the PAA an active, exciting, and growing astronomy club with solid community roots. We have the talent and the resources to do it. Let's make it so.

John Crossen
JohnCstargazer@aol.com

The Sky This Month

MERCURY

Mercury will be an morning object throughout September. It will be best around September 9th.

VENUS

Venus is a brilliant morning object this month. It will be high in the East for the rest of the year.

MARS

Mars is not visible at this time.

JUPITER

Jupiter is not visible at this time.

SATURN

Saturn rises after midnight and is visible in the constellation Gemini not too far from Venus.

URANUS

Uranus is located in Aquarius and will be visible throughout the month. Finder charts are advisable to locate this 5th magnitude planet.

NEPTUNE

Neptune is located not far from θ -

Capricorni. It will be visible throughout the month. Finder charts are advisable to locate this 7th magnitude planet.

PLUTO

Pluto will be visible throughout the month near η -Ophichui. Finder charts are essential to locate this magnitude 13.9 planet.

METEOR SHOWERS:

There are no major showers this month

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

Setting Sunspots

Solar viewing can be interesting and just when you thought you have seen it all, another opportunity presents itself. On August 18th while working outside, I noticed a cloudbank near the western horizon, as the sun



On August 18th, sunspot group #652 was plainly seen through all the haze even without optical aid (or protection).

was about to set for the day. I went to get my digital camera (just in case) and as the haze and cloud filtered the last light of the day I saw something rather unique. On the surface of the solar disk were a group of sunspots known as #652. They were visible with the naked eye if you knew what you were looking at. I put in a 2X teleconverter to my camera and took some images. The one attached here shows what I am talking about. The sunspots are near the centre of the disk.

It is not very often that all the right conditions come together to get an image like this. You need to have large sunspot activity, a horizon with the right "natural filtering" capabilities (usually it is not safe to view the sun with proper filters) and a camera at the ready. The window of opportunity was only about 10 minutes.

Next time, don't let the sun go down on you without checking it out and maybe seeing your own "setting sunspots". Good luck.

Rick Stankiewicz
stankiewiczr@nexicom.net

Adventures in Astrophotography: Enter the Autoguider

For many years (at least 20) I have been trying to capture the night sky on film. Considering the fact that you can download fantastic images off the net, I am not sure why I do this. Perhaps it is a form of insanity, or just the fact, I'd like to do it myself.

The first picture I ever took of the night sky was with my father's old bellows camera which happened to have a B setting. It was of the moon, which looked like a tiny over-exposed blob on the film.

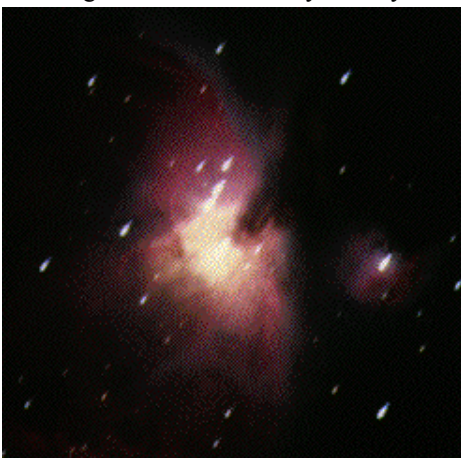
Later on, I got a 35 mm Praktica camera, and attempted to take the usual star trail photos or short exposure (under 30 seconds) to get some of the



Its getting better all the time. Here is my latest stab at the Swan (M17) and the Eagle (M16). Taken with an Olympus OM-1 piggy-backed on a LX-10 using the ST-4 Autoguider through the main scope.

constellations.

Later I graduated to the next step—tracked wide field imaging. While at Starfest one year, a friend of mine (Roger Hill) allowed me to piggy back my 35 mm camera on his C-8. Out of that roll, I got some reasonable shots of M31 and M33. Later on, I built myself a “barn door” tracker and imaged many objects that would have been impossible without tracking. This was very handy for



An early photo of M42 taken through a C-8, manually guided using an off-axis guider. Note the elongated stars.

imaging Comets Hale-Bopp and Hyakutake.

This wasn't enough—I wanted to image deepsky objects like the ring nebula, the Lagoon and so on. Unfortunately to do this, it costs money—lots of it. For many years I wanted a C-8 or similar scope, just so I could take some pretty pictures. Finally in 2002, I purchased a Meade LX-10 (8”) and the necessary accessories to do the job.

This is when I came face-to-face with the horrors of “guiding”. Depending on your patience level “guiding” might drive you mad. I attempted several shots, while guiding and got disappointing results. Almost all of my shots ended up with every star as two. I couldn't figure out what was going on. Was my mount too shaky? Was there something goofy with the camera or optics? Was it something I was doing? No book I could find really had an answer. I was starting to think about giving up on deep-sky astrophotography until I had an opportunity to buy an ST-4 autoguider.

Ok—here was the last straw, if this didn't work, I would give it up until at least I could afford a better scope and mount. Happily, after trying two rolls of film, I can now say that there is hope. The images returned no longer having the “double star” problem that I had found too often before, which meant it was not my telescope. Thanks to technology, I no longer have to worry about this problem. There are some other goofy things in my images, but at least I had gotten something that I can be reasonably happy with.

Charles W. Baetsen
va3ngc@rac.ca

PS—Recently I had found that the latest edition of Terance Dickenson's “Backyard Astronomers Guide”, described this problem, known as the “nose and foot” binaries. It seems I must have nudged the guiding eyepiece, ever so slightly every time I was guiding.

The PAA also Celebrated Saturn and the Stars on Canada Day.

Astronomy buffs had a lot to celebrate on Canada Day. In addition to Canada, here on good old planet Earth, NASA and the European Space Agency's Cassini spacecraft had completed its 7-year journey to Saturn and Saturn's moon Titan. For the next five years the NASA-built Cassini spacecraft orbits the ringed planet and its moons, taking pictures and making scientific measurements. It even flew through Saturn's rings. Plus, the ESA's Huygens (pronounced hoy-gans) probe will launch itself to the surface of Saturn's moon Titan. Its mission will be to study the composition of Titan's atmosphere and soil/water. Titan will be the second moon mankind has touched down on, counting our lunar dance partner 30 years ago.



Mike Ricks and John Cameron enjoy a few moments of peace and quiet prior to the Canada Day Celebration opening. Over 160 people visited the planetarium in the background.

In addition to the big news on Saturn, there was also some space activity a few light microseconds away at the Buckhorn Community Centre. The Peterborough Astronomical Association, Buckhorn Observatory, and Haliburton Forest Observatory teamed up to bring visitors some stargazing fun during the day. To do so, the PAA and BHO had telescopes set up with solar filters so that guests could safely observe our own star – the Sun. The good weather held and our guests saw sunspots that could swallow Earth 3 or more times over on the Sun's 6,000-degree surface.

But Haliburton Forest Observatory was the big star of the show with their portable planetarium. Inside the planetarium's huge inflatable dome a special projector displayed the constellations on the curved ceiling of the dome. PAA member John Crossen took guests on a guided tour of the night sky – all afternoon and into the evening. So, while guests were celebrating Canada, they also learned about the stars overhead.

John Crossen
JohnCstargazer@aol.com

Your Guide to the 10 Brightest Stars: Part 1

Each star is an individual with its own personality. Thousands are visible on any clear night far removed from city lights. Together, with the faint glow of a myriad of others, the tapestry of the celestial sphere is fashioned. Stars come in different colors, sizes, shapes and ages. One trait that makes a star unique is its brightness.

Astronomers measure the brightness of a celestial object according to a system originally devised by Hipparchus in 120 B.C. Hipparchus ranked the brightness of stars in the sky on a scale of 1 to 6 as seen from Earth. The brightest stars he could see were classified as first magnitude and the faintest were sixth magnitude.

Centuries later we still use the magnitude scale of Hipparchus, although it has since been modernized.

The magnitude scale is logarithmic;

one magnitude difference is equal to a brightness difference of about 2.5 times. So a magnitude 1 star is about 100 times brighter than a magnitude 5 star. The brighter planets and stars have negative magnitudes. The sun, being the brightest object in the sky, has a magnitude of -26, followed by the full moon at magnitude -11. Objects with a magnitude of 6 or less can be seen without optical aid under ideal observing conditions away from all local lighting.

The following is a catalog of 10 brightest stars that grace the celestial sphere, an imaginary projection of Earth into space. All the stars are drawn on the inside of this sphere, even though stars of course exist in space at varying distances. As on Earth, the celestial sphere is split into northern and southern halves, called hemispheres.

As seen from our corner of the galaxy, these are lighthouses of the heavens and can be enjoyed even from the heart of metropolitan areas.

Terms and definitions:

Luminosity: The intrinsic brightness of a star -- as it would appear if you orbiting it -- compared to the sun. The sun's luminosity is 1. Sirius has a luminosity of 23 and Betelgeuse 55,000.

Magnitude: A logarithmic brightness scale; the difference between magnitude 1 and magnitude 5 is a hundredfold. The larger the magnitude, the fainter the object. The lower the magnitude, the brighter the object. The brightest stars have negative magnitudes.

Brightness: A measure of a star's magnitude or brightness as seen from Earth. Brightness is dependent on luminosity and distance.

Degrees: The separation between two points of light on the celestial sphere is measured in degrees. A closed fist held at arm's length is about 10 degrees while a finger would be 1 degree or two moon widths.

1—Sirius:

All stars shine, but none of them do it like Sirius, the brightest star in the night sky. Aptly named, Sirius comes from the Greek word Seirius, meaning “searing” or “scorching.” Blazing at a visual magnitude of -1.42, it is twice as bright as any other star in our sky.

Sirius resides in the constellation Canis Major, the Big Dog, and is commonly called the Dog Star. In ancient Greek times the dawn rising of Sirius marked the hottest part of summer. This is the origin of the phrase “dog days of summer.”

Because of Earth’s 26,000-year precession cycle, in which the planet’s axis slowly wobbles due to the gravitational attraction of the sun and moon on Earth’s equatorial bulge, Sirius no longer marks the hottest part of summer, rising later in the year. Precession gradually changes the location of stars on the celestial sphere.

Sirius is best seen at a favorable time during the winter months for northern hemisphere observers. To find the Dog Star, use the constellation of Orion as a guide. Follow the three belt stars — obvious targets even for casual skywatchers — 20 degrees southeast to the brightest star in the sky. Your fist at arm’s length covers about 10 degrees of sky.

Sirius, the red giant star Betelgeuse, and Procyon in Canis Minor form a popular asterism known as the Winter Triangle.

Intrinsically, Sirius is 23 times more luminous and about twice the mass and diameter of the sun. Of course it’s farther away from Earth than the sun. But not too far, cosmically speaking. At a mere 8.5 light-years away, Sirius seems so bright in part because it is the fifth-closest star to the sun.

The brilliance of Sirius illuminates not only our night skies, but also our comprehension of them. While observing it in 1718, Edmund Halley, of Comet Halley fame, discovered that stars move in relation to one another — a principle now

known as proper motion.

In 1844, German astronomer Friedrich Bessel observed that Sirius had a wobble, as if being tugged by a companion. While testing his new 18.5-inch lens in 1862 (the largest refracting telescope in the world at that time), Alvan Clark solved this mystery by discovering that Sirius was not one star but two; the first compact stellar remnant had been discovered, and it would prove to be a pioneer of what would be later referred to as a whole class of white dwarf stars.

The companion, dubbed Sirius B, has the mass of the sun in a package as small as Earth, having collapsed after depleting its hydrogen. A single cubic inch of matter from this companion star would weigh 2.25 tons on Earth. At magnitude 8.5, it is one-400th as luminous as the sun. The brighter and larger companion is now known as Sirius A.

Rick Stankiewicz
stankiewicz@nexicom.net

The Stars Belong to Everyone

Those lyrics are originally from the old song, “The Best Things in Life Are Free.” And despite the years, they are still true. In August, a group from the Peterborough Astronomical Association gathered in Emily Provincial Park to share their telescopes and knowledge of the stars with the park’s campers. For many of the camp’s guests, it was their first look through a real telescope. And the term “beginners luck” more than proved to be true.

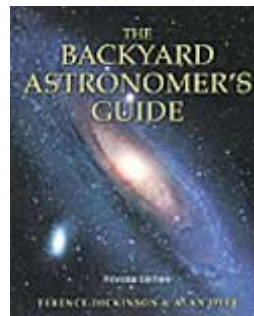
For starters the campers were able to view Jupiter and its four Galilean moons as the giant planet sank into the last glow of dusk. The group also “scoped out” our own Moon with its shadowy craters and vast lava planes. Plus the PAA members were able to show the campers how to find the North Star and pointed out the double stars Alcor and Mizar in the handle of the Big Dipper. We even visited a dead

star before the clouds moved in.

It was a night that proved once again the pleasures of giving and receiving. The PAA gave the campers a delightful celestial show through a variety of different types of telescopes. And on the flip side of the coin, we were amply rewarded with the excited reactions of both the children and grownups as they looked at the night sky through a different and more powerful set of eyes. The stars do indeed belong to everyone.

John Crossen
JohnCstargazer@aol.com

Book Review



The Backyard Astronomer’s Guide, by Terence Dickinson, 2002, Firefly Books, 320 pp. (\$49.95CDN)

I always thought that the original “Backyard Astronomer’s Guide” published in 1991 was an excellent book. I could not believe there was much to improve, but apparently Terry did. After checking out the new revision here is my two cents worth.

The new revision is loaded with tons more colour photos, which really make it a joy to look through. He has also expanded many of the sections of the book to reflect the current state of amateur astronomy. In particular I really like what he did with the section on choosing a scope. He gives tips on what to buy and what to avoid (naming names), reflecting the current state of the market (i.e., the advent of the Chinese scopes and the death of Tasco). For this section alone, I would recommend this book. Of course the rest of the book is excellent as well, but space is limited, so I will stop here.

Charles W. Baetsen
va3ngc@rac.ca

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

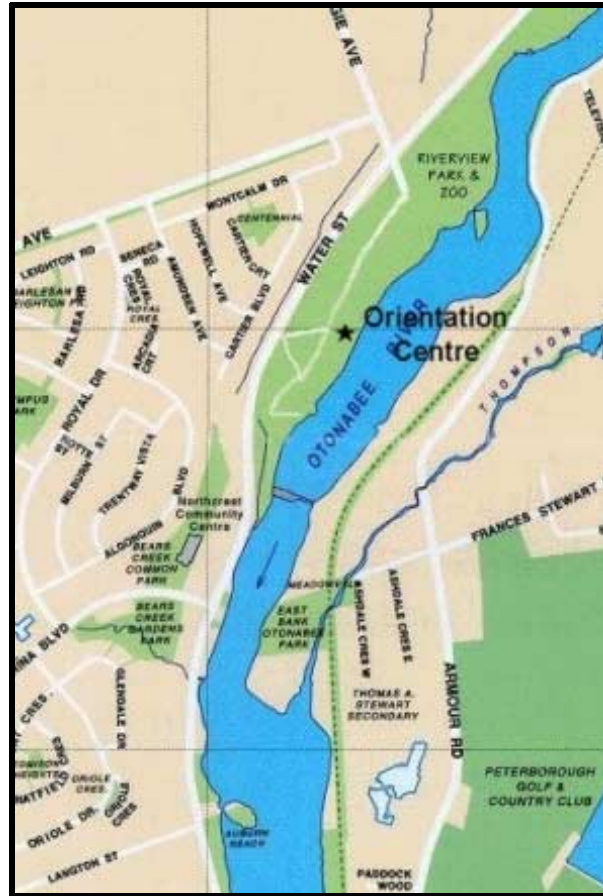
or via e-mail at:
va3ngc@rac.ca

**NEXT ISSUE’S
DEADLINE IS
Oct. 11th, 2004**



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 ☰

- September 3, 2004 **General Meeting** — Planning Meeting and Observing Session afterwards
- September 17, 2004 **General Meeting** — Dan Bortolotti – Sedna, the Kuiper belt, and Objects Beyond.
- October 1, 2004 **General Meeting** — Observing Session – Buckhorn Observatory
- October 15, 2004 **General Meeting** — Richard Matthews – How I build Satellites

☰ MOON PHASES ☰

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|-------------------|--------------|--------------------------------|
| Full Moon (☉) | September 28 | October 27—Total Lunar Eclipse |
| Last Quarter (☾) | September 6 | October 6 |
| New Moon (●) | September 14 | October 13 |
| First Quarter (☽) | September 21 | October 20 |