Volume 15, Issue 3

March 2008





Event Horizon

Selenology!

Finding speakers for the monthly meetings of the HAA is sometimes a difficult task, but one that Chairman Mike Spicer does well. During a recent club expedition to the David Dunlap Observatory, Mike met Nicole DeBond who gave an informative presentation about the telescope to the large crowd gathered to visit the telescope.

From The Editor's Desk

Those of you who got out to see the eclipse know just what a great show the moon put on for about half of the globe.



Braving bitter cold temperatures, club members got to watch one of the heaven's most spectacular sights. Of course some members opted for warmer climates like our chairman who got to observe from the warmer temperatures of Florida.

I have to confess that I too left for warmer climates, but my only reason was to see stars that I could not see from our Northern country. At least, that is what I am telling everyone. What? You don't believe me?

(Continued on page 2)

Inside this issue:

Chair Report	3
Equatorial Platforms for Dobsonians	4
Tech Tips—Double Your Barlows	7
The Sky this Month	9—11
Buying Used Equipment Online	16—17
Member of the Month	15
Event Horizon Archives	16

NOTICE

Tim Philp, Editor

There are still some 2008 Calendars available for sale at the March meeting. If you cannot attend, you can get your copy from Chairman Mike Spicer. Hurry before they are all gone!

Picture of the Month Photo Credit: Bob Christmas





2008 Starts off with a BANG!

By Tim Philp (Continued from Front Page)

Mike asked Nicole if she would come to the club to give a talk. And we were very fortunate that she accepted his invitation.

The moon is something that most amateur astronomers, in search of 'faint fuzzies', curse on a monthly basis. After all, we have few enough cloudless nights to observe without having them ruined by a bright half-degree light in the sky.

Of course, wise astronomers have learned that when the moon is in the sky, it is probably best to look at the moon!

That is where Nicole DeBond comes in. In her talk she took us on a brief tour of the moon. The tour was not a simple list of places and names, but she discussed



February's guest speaker Nicole DeBond took members on a tour of lunar geology.

lunar geology, or selenology as it is more properly called, from the viewpoint of looking at the major structures on the moon.

Her talk focused on the differences between the visible structures of

our nearest satellite and what that told us about the ages of the material that forms these structures.

Interestingly, different colours and shapes provide clues to the origin and age of lunar features. For instance, the lighter coloured highlands are much older than the darker maria.

As well, if you look carefully, you can see signs of double meteor impacts on the moon and even sometimes determine which craters are older than others.

Astronomy is a hobby that encompasses more than just mere observation. It is important that we understand what our observations are telling us about the processes that created the objects that we are seeing.



Treasurer's Report— By Don Pullen

Cash opening Balance (1 Feb 2008)	\$ 2522.21
Expenses	\$ 71.75
Revenue	\$ 765.50
Closing Balance (29 Feb 2008)	\$ 3215.96

Notes:

Major expenses included: Newsletter printing (Feb) (\$70.63).

Major revenue sources included: Memberships (\$240), Calendar sales (\$220), EH Advertising (\$100), 50/50 (Jan & Feb \$68), Coffee Fund (\$52), Donation (\$45.50), RASC 2008 Observer Handbook (\$40).



The weather is becoming more favourable for observing as we leave winter behind. What a winter it has been! Wasn't it cloudy almost every night with a snowfall every two or three days? Posts on the HAA Reports blog can attest to how cold it was on the few clear evenings our members got together to scan the skies. Some of us had the opportunity to observe and image Mars and Saturn near opposition. The Total Lunar Eclipse of 20 February brought out many of our members and visitors to the Binbrook Alternate Site. where we were blessed with clear skies.

March should be warmer, although the nights will be hours shorter than in winter an astronomical trade-off of sorts. Let's gear up for our annual Messier Marathon in March and early April, an event that raises money to support our club's work. Messier Marathon sheets are available at our monthly meeting [and Tim has included one in this issue of the EH]. You are encouraged to try the Marathon, especially near New Moon when the dimmer objects are more easily visible. Many Messier obiects are visible with binoculars. It's ok to skip the dim objects and to concentrate on the brighter ones. You can try

the "dusk to dawn" marathon any night you choose in March or April. In fact, it's a good idea to have a practice run one night in early March, then try to better your score on a later night. You don't have to stay up all night and most members just observe for 4 or 5 hours, even with coffee and warming tents.

Our March 7th meeting at the Spectator will have Greg Emery pointing out what's in the sky this month; Bob Christmas has a presentation on unusually spectacular the Comet Ho-ho-Holmes from last November and Mike Spicer will guide us to objects in the Messier Marathon as a preparation for outside ob-March 15th is our servina. Public Observing night on the grounds of the Parks Canada Discovery Centre starting at 8 pm. Members are asked to come out and to bring telescopes - we'd like to show the public the crescent Moon. Saturn, Mars and a few deep sky objects for a couple of hours. The HAA takes very seriously its responsibility to do hands-on public observing and public education.

If you have joined our club recently, we'd like to get to know you better. Don't be shy about approaching any of our members at meetings or joining us at the observing sites. We post where and when we

are going out, on our web site in the "Observing" blog, check it often. If you have come out to meetings but have not joined our club, we need your support! A single membership is only \$25 and a family can join for \$30... we use the money to keep our activities going - our web site, our pubeducation and astrolic advertising brochures, our monthly meetings and of course, our newsletter the Event Horizon. You don't have to own a telescope; in fact, new members can take advantage of our club's free "telescope loaner" program to use an electronic-controlled 5" Newtonian reflector telescope. It's a wonderful, active, friendly club and we want you to be part of it.

We're asking for members' input into planning our HAA 15th anniversary dinner later this year. Some think a sitdown dinner is appropriate, others prefer a BBQ style affair and still others want a buffet at a restaurant. Ann Tekatch has drafted an email to members asking for your suggestions... we know HAA is a very social club; how would you like to celebrate our longlived growth and success? Please send an e-mail with your opinion to our club secretary whose e-mail is on the back page of this newsletter...



Probably everyone has seen a telescope on a German Equatorial Mount... It's got a big counterweight and has a shaft that points at the North Celestial Pole (NCP). subtle variation in refraction of the atmosphere as you look through it in different directions. The long and the short of it is that it's better to combine several shorter exposures than to rely on perfect telescope

rigid and able to be suspended in multiple directions without warping. That means a heavier OTA. Add to that the counterweight requirements, and the tripod or pier holding the GEM must be very robust and vibration resistant as

Everything has to be balanced reasonably well, and that just about doubles the weight of the system. It connects to the Optical Tube Assembly (OTA) around its midpoint, where it balances.

The GEM is ideal for a strophotography because it can accurately compensate for the rotation of the earth. It usually has a very smooth wormgear drive to rotate it in the 'Right Ascension' direction, so that the image in the telescope does not deviate as the earth turns.

In addition, there's available frills like 'Periodic Error Correction' (PEC) which can cause the motor system to subtly vary in speed to compensate for the teeth of the gears, further improving the accuracy of the tracking. One of the figures of merit for a GEM is the diameter of the worm gear. A 7 inch worm gear is considered big. A 13 inch worm gear is used on some of the fanciest and most expensive mounts.

All this results in pinpoint precision on the stars (provided, of course, that the axis is pointed directly at the NCP), and great astrophotos (depending on the skills of the astronomer).

Many factors remain to confound astrophotographers. One is the



well. For a Newtonian telescope with a long OTA, it's almost impractical to use a GEM. At least for portable scopes. The Great White Scope (GWS) is a Newtonian, and all things being equal, the best aperture for the buck comes in Newtonian configurations.

Once a scope gets big, such as a 16 inch primary mirror, there's other factors in play. In order to make the mirror resist distortion

tracking for one very long exposure, even if your camera could otherwise handle the integration time (which most cameras cannot do). So in reality, you don't need to be able to track an object continuously for more than an hour at a time.

Very effective for astrophotography is the use of a guide scope, and a computer that sends tiny correction commands to the telescope drive unit to compensate for slowly varying effects such as refraction and misalignment on the NCP. Most astrophotographers in our club benefit from a guidescope when they make their spectacular calendar-class images. A program called 'PHd Autogiuding' does a fine job for them.

Since the GEM has to rotate the entire OTA in order to track the stars, it's essential that the OTA be when oriented relative to gravity, it has to be reasonably thick. Then it's heavy, so the OTA has to be strong to hold it. It all adds up to a very heavy setup with a lot of steel doing the job of keeping things where they need to be.

In contrast, folded optics such as Mak and SCT configurations allow a 'long' scope to be short enough that it may be rigid. Imagine a scope the size and weight of the GWS (about 90 pounds for the OTA) suspended on a GEM. The counterweight would have to be another 90 pounds, but more than that, the truss mechanism would have to be significantly stronger just to hold the heavy parts of the scope in place. A 1000 pound design with a 16 inch Newtonian on a GEM would probably not be considered economical use of materials.

Enter the equatorial platform (EQP). Rather than supporting a scope at the



midpoint and pivoting it on an axis that can rotate it right-around... how about holding the scope differently.

Imagine a pier sunk into the ground,

grees north latitude. That's also about the latitude of Toronto. An equatorial platform made for use in Toronto will work in Binbrook as well.



but pointing directly at the NCP. Anything rotating on this axis once per day would have the steady view of the stars that a GEM provides.

Now imagine a pair of circular tracks centered about that axis, where the bottom of the circles rests near ground level. Keep just the bottom 15 degrees of the track, and erase the rest. A flat platform that can move on this curved track can, for a time, compensate for the earths rotation and provide a place where all manner of astronomical equipment could be placed and used.

Binbrook is at 43 de-

In fact, it's usable for about 100 miles north and south of our latitude. After that, it gets at an angle that wants to dump the scope off. My Equatorial



Platform would not be usable at the winter star party.

Some of the issues that make

GEMs expensive are naturally dealt with by the design of the EQP. For instance, the worm gear size, large for smooth motion in a GEM, is replaced by a circular arc, with diameter perhaps 5 feet, and a continuously rolling wheel instead of a worm gear.

This results in an incredibly smooth rotation without any measurable periodic errors to correct. A dobsonian mounted telescope placed on an EQP can be pointed anywhere in the sky, and will remain on target as the platform slowly rocks under it.

All good things come to an end, it's been said. In the case of the EQP, eventually the platform is tipped at a pretty steep angle to horizontal. No worries, just manually reset the platform (lift the edge to take a bit of the

weight off of it and slide it along its track back to the other end of its travel) and re-point the DOB at the same target or a new one, and you

have another 90 minutes of tracking. That's plenty of time for an astro photo session or 2, and there's no heavy tripod or counterweights required.

Although a boon to dobsonian astrophotography, the most useful feature of the equatorial platform is you can look away from the scope to check charts, and when you come back, the object will still be visible in the eyepiece, regardless of magnification. The persistence of pointing also makes the scope easier to **Equatorial Platforms for Dobsonians**



use at public events where more than one person will be queued up for viewing. For non-astrophoto events, the alignment of the platform can be quite casual (eyeball the north star and place the EQP on the ground), and the results are still amazing.

By Steve Germann

Equatorial platforms come in several flavours. There's wood vs metal, and single vs double axis models. The double axis model features an additional motor that can slightly raise the back-end of the platform, to provide a pseudo declination axis control. This control is most effective when the scope is pointed to an object due south of the observer, and diminishes to nothing for objects due east or due west. The travel in the secondary direction is very small, but it's enough to allow an autoquider the range of motion needed to track the stars and compensate for flex in the telescope, for instance. However, careful analysis shows some field rotation (when off meridian) may occur with use of this feature, so the proper alignment to the NCP is necessary in longer exposures.

Some EQPs are designed to substitute a new base for the dobsonian mount, which results in a weight reduction for the whole system. Such a platform needs to be sized to fit the telescope intended for it.

My EQP is made of welded aluminum, and was sized for an 11 inch dob, but i just removed the teflon pads and put the wooden base of the GWS onto it, and the whole thing rides along just fine. After a mishap where the base slid off the EQP once, i re-positioned the large rubber feet on the GWS base so they index on indentations in the top of the equatorial platform, and the result is a secure fit that has never been a problem since then.

My EQP has a guidance port and 2 axis motors, so i am ready to go do astrophotography as soon as my scope gets a bit shorter. In the meantime, a small keyfob sized remote control allows tiny adjustments of the scope pointing without having to nudge the GWS on its mount.

There are some excellent web references to EQP construction, and since all our club members are from the local area, this is a great opportunity to make a number of identical EQPs with similar measurements. The electronics, motors and bearings needed are available on the web, and with several bought at once, we could get a deal on them.

Here's a simple one-axis design, that should cut the mustard for all of our members, for visual observing. For as-

trophotography, it's probably best to wait for another report from me on how well the dual axis guiding actually works in practice.

This link is my favourite...

http://home.wanadoo.nl/ jhm.vangastel/Astronomy/Poncet/ e_index.htm or you can use;

http://tinyurl.com/2u7by8 to get there.

The best results are obtained by matching the scope's center of gravity to the design of the platform. Once this is done, the rest is a piece of cake. A program referenced at the link computes all the needed dimensions for the basic design described on the web page. In terms of adding a guidance port, that will be another project, so for now the design is for visual observing.

I love my EQP. It's a fine add on for the GWS.



One of the most useful things to have in your eyepiece case is a Barlow Lens. Named after the English

optician Peter Barlow (1776—1862), the Barlow lens is a negative power lens that is used to increase the effective focal length of your telescope. This is done to allow you to use the same eyepiece to obtain two different magnifications.

You can get Barlow lenses in several different powers that will increase the magnifications that you can

obtain by 1.5X, 2X, 3X, and 5X with the 2X being one of the most popular.

What most people do not realize is that while the focal length of the Barlow is fixed, the amount of magnifica-

> tion that you can get is variable depending upon a host of variables. The main way to vary the magnification that you can get from a Barlow is to change the position that the lens occupies in the optical pathway. Moving the lens higher or lower in the evepiece holder can sometimes change the magnification

by 2X. It also makes a difference where the Barlow is placed relative to the diagonal mirror in your setup.

For instance, a 3X Barlow used just before the eyepiece will give you about three times the magnification. If you put the Barlow BEFORE the diagonal, you may get as much as 4.5X or even 5X the magnification that you would get if used in the conventional position.

While a Barlow can, with careful eyepiece selection, effectively double your eyepiece collection, changing the position that you put the Barlow could triple or quadruple your eyepiece collection. Not a bad bang for the buck considering what quality eyepieces cost.

Of course, you should always buy quality equipment. Using a cheap Barlow lens on your APO telescope will not give you the best performance or, indeed, allow your equipment to perform to its capabilities.





Peter Barlow (1776-1862)



"To date (January 27/2008) the LOFAR II radio telescope project has sent in excess of 800,000 observations to the Stanford University Solar Centre and will accomplish 1,000,000 observations every two months, hereafter. It is the biggest data collector and the only continuously-running telescope in this area. Up to this point, all observations have had to be emailed attachments to Stanford, on a daily basis. However, very recently I received a kind offer to fully automate the data collection and transfer to Stanford by one of our membership – Chris Kubiak.

In case you do not know to whom I am referring, Chris is one of the 'Three Casey Van Broekhoven Musketeers' who sit at the very back, right-hand table in the Spectator Auditorium at general meetings. He has been a member of HAA from its very beginnings.

Along with the data transmission problems, I had been running into other technical glitches with the equipment. I mentioned this to Chris at the January meeting and he handed me his contact information. Several days later was on my doorstep to get the problems fixed. Three and a half hours after this, we had a much more ergonomic telescope which can not only send directly to Stanford but also to my workstation for archival purposes. In addition to this, he worked a few other little touches of magic! There is also future work slated to make things even better!

For this, and on behalf of The Hamilton Amateur Astronomers, he has my sincere thanks.





The month of March is often a busy one. St. Patrick's Day, the Ides, the Equinox, NCAA Tournament and the Messier Marathon. I will leave it to others to describe the Messier Marathon in detail. The point form version is – two hour window with no Messier Objects, Sun in Window, Sun does not interfere.

The centerfold for March is set for the 15th at 9:00 pm. The constellation Cancer, the crab, is on Meridian (the line drawn from North Celestial Pole to South Celestial Pole through the observers Zenith). Sirius is blazing away in the Southwest as the winter Milky Way settles towards the western horizon. The constellations in the west are roughly 90 degrees from the Milky Way or plane of the galaxy (the North Galactic or Celestial Pole is located in Coma Berenices). We are looking away from the dust, stars and gas of our Galaxy. We can now gaze out beyond our galaxy to see numerous other galaxies.

The region between Leo and Virgo is overflowing with galaxies. If we extend this region to Ursa Major in the north, down to the bottom of the chart we have roughly 16 galaxies, and those are just the brighter ones- all of which should be visible in 7x50 binoculars under moderately dark skies.

When viewing galaxies there are many things to consider. Galaxies come in four main flavours: spirals; ellipticals; lenticulars and irregulars. Spiral galaxies have arms which can be wound tightly or loosely around the galactic nucleus. Look for the arms, how tightly they are wound around the center and how many arms are visible. This, of course is only possible when the galaxy is visible in a face on or near face on presentation. That is when we are viewing the galaxy from that galaxy's north or south pole. In March M51 is a perfect example of a spiral galaxy in a face on presentation. Other spiral galaxies are seen edge on or near edge on. In this view when can look for the bulge of the nucleus in the middle as well as any prominent dust lanes running along the galaxy. The edge on view is like looking at our own Summer or Winter Milky Way from the outside, as opposed to our normal inside view. The galaxy M104, the Sombrero Galaxy, in the constellation Virgo is a beautiful example of an edge on spiral with a prominent dust lane.

Galaxies are sometimes hard to see. Take the time to look at the image, use averted vision. Your eye will adapt to the image. With patience details can be coaxed out of even an apparently dim, unimpressive image.

If imagining the patterns and details of the galaxies seem to be too much for you, venture no farther than Leo. Saturn is currently east of Regulus, the bottom star of the sickle of Leo. Saturn's ring system has gaps, the planet will cast a shadow on the rings. The planet seems to be more three dimensional than other planets, maybe because of the rings. Every time I look at Saturn, I am never disappointed - there is always something wonderful to see, discover or rediscover.

Page 9



his Month





Historically the planets have been known to be something other than the fixed firmament or stars. Seeing as how the planets move relative to the background stars, they have been looked upon as harbingers of good or evil. It wasn't until Galileo that a planet was actually seen as a non-star-like object.

Science fiction has provided intrigue as to the conditions and potential for life on the other planets in our solar system. This has been taken to yet another level as there are now more than 270 known planets in other solar systems.

The planets offer a wonderful chance for the amateur astronomer. Viewing a planet through binoculars or telescope for the first time can provide a sense of thrill or accomplishment. I can still tell you specific details of the first time I viewed Saturn with my first telescope.

As of today there are 8 accepted planets in our solar system. Two of these, Mercury and Venus have orbits between Earth and the Sun.

Travelling from Earth's orbit outward we have Mars, Jupiter, Uranus and Neptune. The first four planets (Mercury, Venus, Earth and Mars) are all rock and mineral based. The remaining four planets are called the Gas Giants. These planets have large diameters and are comprised of light gases. Table 1 (Below) lists some data of the planets.

When looking for Mercury, some considerations are: Mercury is small and it is never very far from the Sun. Mercury is never situated up high in a dark sky. Venus is also relatively close to the Sun. The light coloured sky is not a problem for Venus. Next to the Sun and Moon, Venus is the most dazzling (ie. Brightest) object in the sky.

If you have never seen Venus, you are probably mistaken. The extremely bright star evident in the morning before sunrise or early evening shortly after sunset is Venus. The brightness of Venus is due to the high reflectivity of the clouds in the upper Venutian atmosphere. This same atmosphere prevents the viewing of surface detail on Venus. Due to the orientation of the Sun, Venus and Earth phases of Venus are visible at various times.

Mars is the last of the terrestrial or rock based planets. Mars has distinct surface features readily available, from vast plains to mountains and polar ice caps. The ice caps are solid water with some carbon dioxide.

As we view the remaining four planets, the Gas Giants, we will begin to see some things not apparent so far on the tour of the planets. Moons. Mars has two small potato shaped moons.

As we look to the Gas Giants we see large moons, granted at this distance away they appear star-like, but still they are large. Jupiter, the largest object in the Solar System next to the Sun is a bright object that has coloured bands apparent. Four large moons, first seen by Galileo, are easily seen in binoculars or small telescopes.

The atmosphere of Jupiter is what we are actually looking at, the convection currents of gases rising from the planet and then cooling and falling back down is what gives rise to the colouring.

Saturn has exquisite rings. In binoculars or small telescopes the rings appear to be continuous. Larger telescopes show the ring structure to be segmented, there are gaps in the rings. Under the proper conditions the body of the planet will cast a shadow on the rings.

To me, Saturn appears extremely three dimensional when you view it. Whether because of the rings and shadows, or an overactive imagination Saturn jumps out of the eyepiece. Neptune and Uranus are pale blue and green, respectively. The planet disks are relatively small, but still quite nice to see – if you can find them!

Planet	Distance From Sun (AU)	Diameter (km)	Apparent Size (Seconds of Arc)	Density (water = 1)
Mercury	0.39	4900	5 to 13	5.4
Venus	0.723	7500	10 to 64	5.2
Earth	1	7900		5.5
Mars	1.52	4200	4 to 25	3.8
Jupiter	5.204	142000	31 to 47	1.3
Saturn	9.54	120000	15 to 20	0.6
Uranus	19.2	51000	3.5	1.2
Neptune	30.1	48000	2.5	1.5

MATEUR * STRONOMERS 2008 MESSIER MARATHON

The Messier Catalogue is a list of 110 deep sky objects (galaxies, nebulae, star clusters, etc.) that are visible in backyard telescopes. Each year, during early spring, it is possible for an observer to see all 110 objects in a single night. This is a challenge that few have mastered! The person you are sponsoring has accepted the challenge to find as many Messier objects as they can in a single night sometime between March 1, 2008 and April 30, 2008. On the back of this sheet, they will note the objects they found, the date they attempted the marathon, and the equipment (telescope, binoculars, naked eye) they used.

The Hamilton Amateur Astronomers is a registered charitable organization. The money raised by this marathon will enable us to continue our work in public awareness and astronomy education. Donations of \$10 and more will receive a tax receipt. Thanks for your support!

Name	Address	Phone No.	Pledge Per Object	Donation	Paid?
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
Cheques should be made payable to: HAMILTON AMATEUR ASTRONOMERS P.O. Box 65578, Dundas, ON L9H 6Y6					



2008 MESSIER MARATHON

Participant's Name:

Location of Marathon

Date of Marathon:

Equipment Used:

Listed in order of appearance from West to East. Objects visible in binoculars are marked * and those visible to the naked eye are marked **

OB JECT	Seen?	OB JECT	Seen?	OBJECT	Seen?	OBJECT	Seen?
M77		M95		M87		M62*	
M74		M96		M89		Butterfly *6M Cluster	
M33*		M105		M90		M7*	
Andromeda **31M Gal×y		M65		M88		Wild Duck *11M Cluster	
M32	-	M66		M91		M26	
M110		M81*		M58		Eagle Nebula *16M	
M52*		M82*		M59		Swan Nebula *17M	
M103*		Owl Nebula 97M		M60		M18*	
Little Dumbbell 76M		M108		M49*		M24*	
M34*		M109		M61		M25*	
Pleiades **45M		M40*		ombrero 104M Gala×y		M23*	
M79*		M106		M5*		M21	
Orion Nebula **42M	s	M94*		lercules **13M Cluster		Trifid Nebula 20M	
M43		M63*		M92*		Lagoon Nebula *8M	
M78*		Whirlpool 51M Gala×y		Ring Nebula 57M		M28*	
Crab Nebula 1M		Pinwheel 101M Gala×y		M56		M22*	
M35*		M102		M29*		M69	
M37*		M53*		M39*		M70	
M36*		Black Eye *64M Gala×y)umbbell *27M Nebula		M54	
M38*		M3*		M71		M55*	
M41*		M68		M107		M75	
M93*		M83*		M12*		M15*	
M47*		M98		M10*		M2*	
M46*		M99		M14*		M72	
M50*		M100		M9		M73	
M48*		M85		M4*		M30*	
M44* Beehi∨e Cluster		M84		M80*		M67*	
M86		M19*					



Member of the Month— Ray Bagerow by Mike Jefferson

Ray Badgerow has been a member of the Hamilton Amateur Astronomers from almost as far back as a few years after its beginnings – about 1998. He is our die-hard eclipse chaser, but more on that topic later.

Ray lives on Kirk Road in Binbrook,

ON and grew up in a family of four, which includes one brother. Sadly, he lost his dad last fall, but Ray and his mother still occupy the home. Within the last few years he discovered other members of his extended family and now has more siblings than he ever dreamt possible!

He has been interested in astronomy almost as long as he can remember. He got his first telescope (a 60 mm. Tasco refractor) from his mother and dad at the age of 9 years. Try as he might, he could not find Comet Kohoutek in it or in binoculars either, using a National Geographic finder chart. He continued to observe on his own for many years from his backyard, dark-sky site on Kirk Road.

One day a family friend 'got wind' of Ray's interest. This

man introduced him to Robert Speck of the Hamilton Centre, Royal Astronomical Society of Canada and Ray joined it in 1978 as a young teen. In those days, the centre met in the Senior Sciences Building of McMaster University, when parking was much more loosely controlled.

Ray remained a member of the Hamilton Centre until 2005. During the years from 1993 to 1998, he rendered the centre good service as executive recorder, secretary and librarian. In fact, he had already reorganized the observatory library during the summer of 1992.

However, his interest in the RASC and the Hamilton Centre waned steadily over the next 7 years following 1998, Having already been with the HAA since 1998, he put all of his astronomical energies into this one club and served as a councillor for several years.

Outside of astronomical interests, Ray's schooling background included Bellmoore Elementary



School, Orchard Park Secondary School and 5 years of chemical engineering technology at Mohawk College, from which he graduated in 1984. Since that time he has held positions in many fields of employment, including contract work with Kelly Services, positions with other agencies and heavy crane duties in the bar mill at Stelco, Hilton Works. Not too many people in the HAA know of this, but Ray is our 'closet' Trekkie and sci-fi aficionado. This is an area that has also captivated him since childhood. Presently, he is a member of "USS Hudson Bay", a multi-media sci-fi fan club for the various Star Trek series and other science fiction agendas. He even knows Robert J. Sawyer and was at his 'fandom' party on February 09/08 at Sawyer's penthouse in Mississauga, ON. The 2,500 square -foot domicile was packed with fans and 'hangers-on'! Ray was right in his element!

His astronomical interests include comet observing, which is a fairly big draw for him. However, chasing solar aclinese around

chasing solar eclipses around the world is Ray's real forte. In May of 1994 he saw the annular eclipse from his backyard and that inspired him to chase others all over the planet. A short summary of his travels is as follows:

- Turkey August, 1999
- Zambia June, 2001

• Puerto Vallarta – June 2002

• Iceland – May, 2003

• Luxor, Egypt – June 2004 Unfortunately, the eclipse of March, 2006, in Turkey, was a washout for him, as he became ill before the trip took place and had to follow it as a webcast. His next plan is to go to northern China for the August eclipse of this year.

He has made several presentations to the Hamilton Amateur

Astronomers based on his eclipse adventures.

When it comes to astronomical statistics, Ray has no peers. His mind works in this department like a steel trap. Mention any area of astronomy and Ray can usually quote some statistic about it off the top of his head. This amazing capability showed up last year during the running of the "First Great Astronomical Trivia Pursuit". Ray's team won handily. The rest of us were 'green with envy'. If you want to win the next one, make sure you get on Ray's team. It's a sure-fire victory! And so, I take great pleasure presenting to you, March, 2008's Member of the Month, Raymond Badgerow.



Looking for an alternative to paying full price for your astro-gear? Then you may want to consider buying used from a website dedicated to selling astronomy related equipment such as Canada-Wide Astro Buy & Sell (www.astrobuysell.com).

tube rings. I've also bought a number of items from people through this site. Retailers occasionally post ads for sales or items they want to clear out at good prices so keep an eye out for these too.

find that someone is willing to sell you theirs for a good price. And if not, then you could either wait for better offers or buy from a store.

However, there are some risks to buying used items from an online





experience of trying to buy anything over Internet the was through this site and it didn't go so well. I was trying to buy my first "real" scope, a Sky-Watcher 130mm reflector and mount for what appeared to be a good price. Unfortunately paid the monev and

(There are links to all these dealers which can be handy in itself.) You can post ads to sell, trade, find or give-away items (yep, occasionally someone has things for free).

The ads on Canada-Wide are just like the newspaper ones. There isn't any bidding as you would find on EBay. They will contain a description of the item for sale, some contact details (usually email address, but sometimes a phone number too) and a price. The price is often negotiable. They typically provide a picture of the item being sold so you can see the condition of it.

So far, I haven't sold anything, but I've posted ads to locate some parts I needed and traded a small tripod mount for a pair of 60mm My method of using this site has changed over the years as I learned and my needs changed. I initially started by looking on occasion when hunting for my first scope, but often missed good deals because I didn't check regularly enough. I have enough basic equipment now so I no longer have an urgent need for anything. These days I can patiently look for that particularly sweet deal and item that will make my viewing experience more pleasurable. This is how I acquired my coveted Pentax eyepieces among other things.

For those who are looking for something specific and can't find it currently listed, you can set up a free account and post your own Want Ad. You might be surprised to

didn't get the equipment. Because I was aware of the risks (but not how to avoid them until afterwards), the loss didn't faze me and I persevered with many successes since then.

It is extremely unlikely that you will have a problem buying or selling equipment from people on this site. However, it's always best to be wary. Here are some other quidelines I've put together that will hopefully help you avoid the (so far) one mistake I made. There is some relevance to the order of this list, but it isn't cast in stone.

1. Be willing to walk away from a deal if it doesn't seem right. It will come up again from someone more



reputable. The old adage "if it sounds too good to be true, then it probably is" is wise advice to heed.

2. Be sure that you can afford to lose the money you might be spending. If it's a \$40 eyepiece, most people can handle that type of loss. But \$4500 for an Astrophysics scope is a different category for most people. It's rare that you will have a problem, but like having insurance, you should always be prepared for the worse.

3. If you are buying from someone you don't know, ask other club members if they have dealt with them before. Several of the club members often use this site and know many of the other regulars. They probably can give you a reference. There's also a link in the ads to other postings by the seller. An active person is generally safer to deal with.

4. MOST IMPORTANT: Get a phone number for the person and call them at least twice so you have some assurance they really exist and are accessible. Emails are not a reliable or sure way to ensure the person exists or is reachable. Be particularly wary of free email accounts like HotMail, Yahoo and Gmail. Most are legitimate, but it's easy for a scammer to get one of these accounts too.

5. Get into an exchange with the seller or buyer. If they are reputable, they will be willing to answer any questions you have, including followup. If they brush you off with a curt and incomplete answer, then don't deal with them.

6. Ask a lot of questions about the condition of the equipment and get assurances they stand behind what they claim. Make sure they aren't exaggerating about the condition or worse, misleading you. It doesn't always have to be in Mint condition, Excellent or Good condition can be perfectly acceptable and you'll save

lots of money. Ask if they will take it back if it isn't as good as they claim. You'll be responsible for return shipping costs, but at least you'll get most of your money back.

7. Try to buy locally so you can go and see the equipment (and also save some shipping costs in return). Local is a relative term. I've traveled as far as Sarnia and Barrie to check out equipment before buying. I've also bought equipment from further afield, sight-unseen, strictly based on the photos, the person's reputation and the dialog I've had with them.



8. As far as payment is concerned, the best is cash if you can pick up the equipment yourself. The next best, but slowest approach seems to be using a cheque. You usually have to wait until they clear before the seller will ship the equipment but you can place a Stop-Order on the cheque if the deal goes sour. Other alternatives include PayPal (most will ask for some money to cover the transaction cost - about 3%), money order and another I generally like is Interac Email Transfer which most major banks support with online banking.

9. Make sure there is insurance on any shipment.

10. Ship by a means that will give you a tracking number. This gives you some assurance that the product really has been shipped and you can follow its progress.

11. Shipping method. This depends on what you are buying. Smaller items such as eyepieces or diagonals can be shipped using a courier such as UPS, FedEx or Canada Post's ExpressPost or PriorityPost, regular mail can't be tracked. It just needs to be packed up well. The original box may not be sufficient to handle mail handling so check with the seller if they will pack it extra carefully. If it's a big item like a scope and mount with counter-weights, etc, then you may have to consider a shipping/trucking company. These companies are used to larger packages and are usually handled with more care. That's how most of your astronomy retailers get their big scope shipments. So if it's good enough for them, then it's good enough for your carefully aligned optics. But it can be a little pricev for this extra care and weight. Don't forget to check the item before the delivery person leaves in case there was shipping damage.

12. Ask for pictures. These may not always be available, but usually they are. Be wary if someone is just posting a stock photo from the manufacturer's website. It could simply mean they don't have a digital camera, or it could mean they don't actually have the equipment to sell. For more expensive items, ask for additional photos so you know they do actually have it. Also examine the pictures carefully. Make sure it is the same item in each image and not taken from a couple of different websites as part of a scam. Also reflections of lighting may reveal scratches, discolourations or dents that reveals more about the condition of the item you are considering.

13. Also watch out for the overseas ad's and particularly replies if you're selling something. There are a number of regular scams going on. If you keep your buying and selling within Canada, then generally you're unlikely to have any problems.

Hopefully these tips will help you to avoid any bad deals and allow you to safely enjoy buying some great astronomy equipment that you will enjoy even more because you saved a lot of money.



Leo the Lion, one of the most dramatic constellations in the sky does not have much lore surrounding it. Leo has often been considered the Nemean lion that Hercules destroyed. Also coinage was stamped

depicting the lion in many cultures, because of his mightiness and association with royalty. This month I'll concentrate on the brightest star in Leo, Regulus, hovering a mere half degree from the ecliptic. Because of this position we will often see the moon and planets come close to Regulus and occasionally occult the star. I'll also take a look at the famous Leonid Meteor Shower

which every 33 years heralds a spectacular show. Look for it in 1999. (Editor's note... you missed it. T.P.)

"Regulus", "The Little King", "The Lion's Heart", "the Kingly One", "The Star of the King", "Regia" or "The Royal One". By any other name, is almost always associated with royalty. Tycho called the star Basiliscus evidently from the Roman title Basilica Stella. The modern name Regulus given by Copernicus, seems to have no certain connection with the famous Roman general Regulus, whose heroism so inspired the Romans during the first of the three great struggles with Carthage.

Giving approximate millenniums (1 millennium = 1000 yrs): Between 4000 to 2000 BC Regulus (Summer Solstice in Leo) was regarded by the ancient Persians as one of the four "Royal Stars" of Heaven, the other three being Aldebaran (Vernal Equinox in Taurus), Antares (Autumnal Equinox in Scorpius), and Fomalhaut (Winter Solstice in Aquarius). Due to precession, they have since past into history and lost their



positions. The following Cardinal Points from 2000 BC to 0, became Aries the VE, Capricorn the SS, Libra the AE, and Cancer the WS. This is the zodiac still in use today by Astrologers. It is two thousand years out of date. The current Cardinal Points from 0 to 2000 AD are Pisces the VE, Gemini the SS, Virgo the AE, and Sagittarius the WS. From 2000 (approx. 27??) to 4000 AD the Cardinal Points will become Aquarius. the VE, Taurus the SS, Leo the AE and Ophiuchus the WS. The cardinal points are north, south, east and west and do not move on the ecliptic. Through precession, the 26,000 yr. cycle, it is the stars on the ecliptic path which change. (Thanks Bob for helping me with the upcoming Cardinal Points)

Babylonian tablets record observations of Regulus dating from about 2100 BC and it was through a study of such records, and those of Spica that the Greek astronomer Hipparchus detected the Precession of the Equinoxes, about the year 130 BC. The longitude of Regulus had changed by some 28 1/4 degrees, or nearly 2 hours of right ascension, since the first observations had been

> inscribed on the clay tablets of Babylonia, slightly over 2000 years before.

"Gamma Leonis" or "Algeiba" marks the radiant point (actually 20 to the northwest) of the famous Leonid Meteor Showers which currently reach their maximum on November 17 each year, and stage more or less spectacular displays at intervals of 33 years. This is the swarm

that produced the fabulous meteor shower of November 13, 1833, and the almost equally fine ones of 1799, 1866 and 1966. The Leonids are disintegration products of the Tempel-Tuttle Comet (1866 I) which has a relatively short period of 33.176 years. and whose orbit very nearly intersects that of the Earth. Although some meteors appear each year in November as the Earth crosses their path, the finest displays occur only at third of a century intervals, just after the parent comet has passed. The next great star-shower from the Leonid swarm is expected before dawn on the morning of November 17 or 18, 1999. Also start looking a year or two ahead and after as there may still be good showers to watch.

"It was as if a globe had been filled with moon-light and hung before them in a net woven of the glint of frosty stars..."



The Space Place—Invisible Spiral Arms

At one time or another. we've all stared at beautiful images of spiral galaxies, daydreaming about the billions of stars and worlds countless they contain. What mysteries—and even life formslurk must within those vast disks?

Now consider this: many of the galaxies you've seen are actually much larger than they appear. NASA's Galaxy Evolution Explorer, a space telescope that "sees" invisible, ultraviolet light, has revealed that roughly 20 percent of nearby galaxies have spiral arms that extend far beyond the galaxies' apparent edges. Some of these galaxies are more than three times larger than they appear in



In this image of galaxy NGC 1512, red represents its visible light appearance, the glow coming from older stars, while the bluish-white ring and the long, blue spiral arms show the galaxy as the Galaxy Evolution Explorer sees it in ultraviolet, tracing primarily younger stars. (Credit: NASA/JPL-Caltech/DSS/GALEX).

formation is active." Morrissey says.

The discovery of these extended arms provides fresh clues for scientists about how some galaxies form and evolve, a hot question right now in astronomy. For example, a burst of star formation so far from the galaxies' denser centers may have started because of the gravity of neighboring galaxies that passed too close. But in many cases, the neighboring galaxies have not themselves sprouted extended arms, an observation that remains to be explained. The Galaxy Evolution Explorer reveals one mystery after another!

images taken by ordinary visiblelight telescopes.

"Astronomers have been observing some of these galaxies for many, many years, and all that time, there was a whole side to these galaxies that they simply couldn't see," says Patrick Morrissey, an astronomer at Caltech in Pasadena, California, who collaborates at JPL.

The extended arms of these galaxies are too dim in visible light for most telescopes to detect, but they emit a greater amount of UV light. Also, the cosmic background is much darker at UV wavelengths than it is for visible light. "Because the sky is essentially black in the UV, far-UV enables you to see these very faint arms around the outsides of galaxies," Morrissey explains.

These "invisible arms" are made of mostly young stars shining brightly at UV wavelengths. Why UV? Because the stars are so hot. Young stars burn their nuclear fuel with impetuous speed, making them hotter and bluer than older, cooler stars such as the sun. (Think of a candle: blue flames are hotter than red ones.) Ultraviolet is a sort of "ultra-blue" that reveals the youngest, hottest stars of all.

"That's the basic idea behind the Galaxy Evolution Explorer in the first place. By observing the UV glow of young stars, we can see where star "How much else is out there that we don't know about?" Morrissey asks. "It makes you wonder."

Spread the wonder by seeing for yourself some of these UV images at www.galex.caltech.edu. Also, Chris Martin, principle scientist for Galaxy Evolution Explorer ----or rather his cartoon alter-ego-gives kids a great introduction to ultraviolet astronomy at spaceplace.nasa.gov/en/kids/live#martin.

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



Hamilton Amateur Astronomers

PO Box 65578				
Dundas, Ontario				
L9H 6Y6				

General Inquiries secretary@amateurastronomy.org Membership membership@amateurastronomy.org Meeting Inquiries chair@amateurastronomy.org Public Events publicity@amateurastronomy.org Observing Inquiries observing@amateurastronomy.org Newsletter editor@amateurastronomy.org

We're on the W	eb!
----------------	-----

www.amateurastronomy.org

Special Notice

Anyone with Internet access can download the latest newsletter (and any previous ones) from the club's website:

<u>www.amateurastronomy.org</u>. Having the newsletter available online also allows us to publish it in full colour.

If you do not have Internet access, you will still be able to pick up a paper copy at each meeting. Copies of the newsletter will also be available to any newcomers at our meetings. If you do not have Internet access, and cannot attend the meetings, please call Ann Tekatch at 905-575-5433 and she will place you on the special mailing list.

The Event Horizon is a publication of the Hamilton Amateur Astronomers (HAA) The HAA is an amateur astronomy club, for people of all ages and experience levels, dedicated to the promotion and enjoyment of astronomy. The cost of the subscription is included in the \$25 individual or \$30 family membership fee for the year. Event Horizon is published a minimum of 10 times a year.

2008 HAA Council

Chair	Mike Spicer
Secretary	Darrell Maude
Treasurer	Don Pullen
Membership Director	Jim Wamsley
Observing Director	Greg Emery
Event Horizon Editor	Tim Philp
Webmaster	Bob Christmas
Publicity	VACANT
Councillor	Harvey Garden
Councillor	Tim Harpur
Councillor	Gary Krevenky
Councillor	Ann Tekatch
Councillor	Steve Germann

Next Regular Meeting

April 11th, 2008

7:30 PM @ The Spectator

Article Submissions

The HAA welcomes your astronomy related writings for the Event Horizon newsletter. Please send your articles, big or small, to:

editor@amateurastronomy.org

The submission deadline is two weeks before each general meeting.

Domain name and web hosting for the Hamilton Amateur Astronomy club supplied by

Axess Communications

Corporate and Residential DSL and Web Hosting

Www.axess.com