Event Horizon

Volume 18, Number 2
December 2010

From The Editor

As Greg Emery points out in this month's Through the Looking Glass column, "Can you believe it is already December?". Sheesh, it seems like we just unpacked from Starfest.

The theme for this month's issue of Event Horizon is Christmas gifts. Specifically, astronomy-related gifts (or astro-toys as we affectionately call them). A few of your fellow HAA-ers have listed their choices for most wanted astro-toys while others offer suggestions for those of you who will be stuffing an amateur astronomer's stocking this Christmas. I'm sure everyone will find something of interest here.

Personally, I would be happy to have clear skies for the night of December 20 when we will be treated to a total lunar eclipse. The first one since 2008 and the last in our area until April 2014. I'm keeping my fingers crossed that Santa can work something out with Environment Canada.

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Chair's Report by John Gauvreau

Last month we had the opportunity to meet the elected council of 2010/2011. This month I would like to introduce you to the other half of the council; the appointed councillors at large. These members have volunteered to take on any and all tasks as well as offer the valuable advice and ideas that keep the club going. In no particular order (although coincidentally they appear alphabetically), they are:

Andrew Bruce, like all of this year's councillors at large, already has experience on council. Andrew has been an active observer, has regularly attended public events with his scope for people to look through and has been instrumental in getting much of the legwork done for various club activities, including organizing past trips.

Bob Christmas has filled the role of Webmaster for us for many years. Although it isn't an official position in the bylaws of the club, Bob maintains and updates our website, writing content and keeping the club, and the public, informed as to the club activities. Bob, like many others, has contributed to the Event Horizon and The Sky This Month with his many wonderful images (and wrote and delivered an entire presentation one month!).

Brenda Frederick is a very active participant in the scouting movement and brings lots of insight into how we best help groups of young people get the most out of their experiences with astronomy.

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From the Editor (continued)

If the weather holds for the eclipse, expect to see many fine photos in these pages, on the blog and at next month's meeting. You can send your photos for the Event Horizon to me: editor@amateurastronomy.org. Any format is fine, but try and keep the file size to 5 Mb or less.

I wish each of you a very happy holiday season and a wonderful, clear 2011!!

Ann Tekatch
Editor@amateurastronomy.org

Chair's Report (continued)

Harvey Garden recently had a wonderful article in the Event Horizon describing his one-of-a-kind observatory. His good sense and good humour make the council meetings go so much smoother.

Joe McArdle has become a very active member over the past few years. He has contributed to the newsletter, public events, and organizing many of the club's activities. He always had a helping hand for my Sky This Month presentations, and you have probably seen him at the meetings because he is our go-to guy when it comes to any technical or computer related problems that arise.

Wayne Stansfield is our past Secretary, and did a fine job in that position. I was delighted when Wayne decided to stay on council, as his help is invaluable. He too is one of those members who (beyond his duties as Secretary) have helped in many areas, including public events and helping to maintain the Binbrook Conservation Area, our dark sky observing site.

The club wouldn't be half of what it is without the unyielding work of these people, along with those that I spoke of last month. There is always a welcome mat out for those that want to help, and any member is encouraged to pitch in however they can. I literally volunteered to lick stamps and address envelopes before I joined council, and was welcomed into a friendly group of volunteers. Many of our current members not on council help out at public events, the conservation area and by contributing to the newsletter. By joining in whatever capacity you like, I'm sure you'll find that it's the best way to get the most out of the club.

The hard work of these people has already yielded wonderful results this year. Our annual Telescope Clinic was a big success, as many club members came out with their equipment to demonstrate it to others, offer guidance to those without telescopes, help fix up old or broken scopes and offer instruction to those in need. Many members of the public came out to take advantage of their expertise and those in attendance were rewarded with a demonstration of how to put together a Galileo Telescope, by Steve Germann. The telescope was then given away to an attendee as a (pretty amazing!) door prize. Thanks to all who helped make the night a big success, and a lot of fun.

The telescope clinic is planned at this time of year so that potential telescope buyers can get the most out of their upcoming holiday shopping. One of the best gifts I can think of (okay, a nice 6" apochromatic refractor in a backyard observatory comes to mind, but this is a close second!) is the Hamilton Amateur Astronomer's 2011 Calendar of Celestial Events. This is the fourth year that the club has published its own wall calendar, full of lots of astronomical information and beautiful pictures, all taken by our members. This year they are being offered at the lowest price ever, so why not answer the question that so many relatives ask ("What are you looking at outside so late at night, anyways?") with this timely and attractive gift. You're part of a fine club, so why not be proud and show it off a little?

The cold weather never deters me, and I look forward to a great month to finish this fine year. My very best holiday wishes to you all, who have provided me with so many enjoyable experiences in this club. These good memories and friends are the best gifts one can have, and I wish that, and more for each of you and yours.

See you out there.

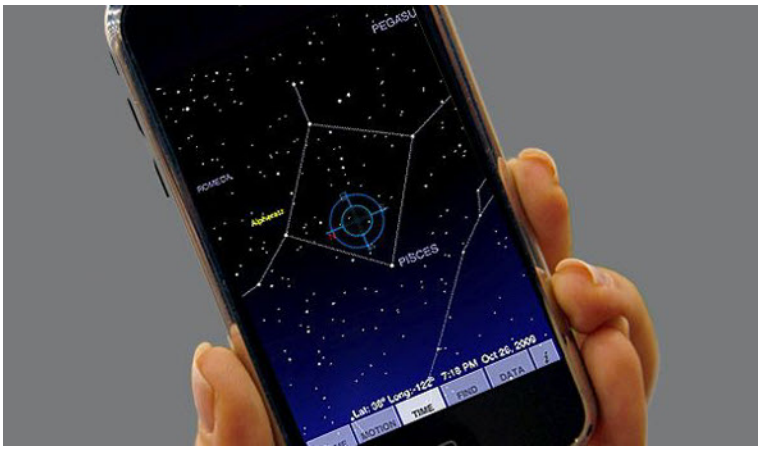
John Gauvreau
chair@amateurastronomy.org

Masthead Photo Credits: The Orion Nebula (M42) by Everett Cairns.
Image info: Taken recently with a Nikon D700, exposure of approximately 80 seconds through a 300mm lens.

App-stronomy by Andrew Bruce

Things might have been different if Galileo or Messier had the latest iPad or iPhone to help map out the night sky. Unfortunately, these devices would not be invented for another several hundred years. Amateur astronomy has come a long way in the last couple of decades, with the introduction of new and more affordable telescopes and astronomy accessories. Being a "Gadget Guru", I always try to keep up to date with the latest MP3 player, GPS or other electronic devices, many of which are now being marketed with the amateur astronomer in mind. I have been noticing more and more HAA members using iPods, iPads and of course the all popular iPhone, while observing. After seeing, first hand, what these devices were capable of, I had to run out and try one out for myself! I decided to pick up an iPod Touch, which, for all intents and purposes, is virtually identical to the iPhone except for the "phone" part. Now before I go on, maybe I should back up a bit. The iPad, iPod Touch and iPhone are all products manufactured by the Apple Corporation.

Apple first introduced a basic MP3 music player (the iPod) in 2001, the success of which blew the competition away. The iPod took off, and has been the top selling digital media player ever since. Like everything else, the iPod evolved and became smaller (in physical size), bigger (memory wise), faster and much more versatile. The iPod Touch, iPhone and iPad all run off Apple Operating systems utilizing mobile computer programs commonly referred to as "Apps", short for "Applications". Apps can easily be purchased either through your computer or directly to your device using a WI-FI connection. There are virtually thousands of Apps for the iPhone/iPad/iPod Touch. Apps to help you decide where to go for dinner, Apps to check the latest Hockey scores in real time, even Apps to help you pass your Medicine or Barristers exams! If there is any subject matter that interests you, there is most likely an App (or several Apps) for it. One of the most appealing (and addictive!) aspect around Apps, is that they are usually very inexpensive (around .99 cents) and many are free! So how do these devices fit into the world of an Amateur Astronomer? Well, as I mentioned before, there is usually an App for any subject matter, and this goes for Astronomy too...to say the least! There are virtually dozens and dozens of astronomy Apps available for download, many of which have proven to be quite useful out at the observing site. Planetarium Apps (rivalling most desktop software), Lunar and Martian Maps, Satellite Tracking Apps, Astrophotography Apps, there's even an app that allows you to control your GOTO telescope wirelessly using planetarium software, turning your $800 GOTO scope into a $5000 computerised scope. The possibilities are endless! I have made a list of some of the more popular and useful Astronomy Apps I have had the pleasure of using, many of which may be reviewed in detail in future editions of the Event Horizon:



<u>My Top 10 Favourite Astronomy iPhone/iPod Touch Apps</u>

1. SkySafari (Planetarium program which can also be used to control your goto scope with optional WIFI pod)
2. Pocket Universe (a great, detailed planetarium app)
3. Clear Sky Clock (always useful for planning an observing session)
4. GoSatWatch (the best by far, for satellite predictions)

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App-stronomy (continued)

5. GoSkyWatch (another great planetarium app, point your device to the sky, and see what your pointing at on the screen)
6. Star Walk (Great planetarium app with cool sound effects)
7. Solar Walk (shows position of the planets, and has a 3D mode, which can be used with red and cyan 3D glasses!)
8. Scope Tools (includes a working bubble level, compass, and telescope calculator)
9. Polar Align (provides a diagram of how the image should look when looking through your polar scope)
10. Moon Globe (very detailed map of our moon)

I am very happy with what the iPod Touch/iPhone/iPad has to offer for the amateur astronomer; it almost makes paper charts and laptops a thing of the past.... ALMOST! I find both the devices and the apps very user friendly and simple to use, plus I can store all my CD's, movies and photos on the device and take them with me wherever I go. These units run anywhere from about $160 (8 gigabyte iPod Touch) up to $750 (64 gigabyte iPad). There are a lot of choices out there depending on how much you want to spend. So if you are tired of dragging all those books, charts and laptops out to the observing sites, you may want to consider adding an iPod Touch, iPhone or iPad to your observing accessories.

2011 HAA Calendars for Sale

Our 2011 edition of the club calendar will be available for sale at the December meeting. See Don Pullen at the back table for your copy or contact him at treasurer@amateurastronomy.org. These make great Christmas gifts for friends and family. This year at a reduced rate of only $15 each. Volume discounts are available to club members. Act fast, the calendars are selling quickly!

Help support your favourite astronomy club.

November Treasurer's Report by Don Pullen

(Unaudited)

Cash opening Balance (1 Nov 2010)	$ 4753.22
Expenses	$ 1552.74
Revenue	$ 1388.00
Closing Balance(30 Nov 2010)	$ 4588.48

Notes:
1. Major revenue sources included: 50/50 ($53), Memberships ($215), Calendars ($1045)

2. Major expenses included: Liability Insurance ($705.24), Calendar printing ($847.50)

Astro-Toys for Good Astro-Girls & -Boys by Matthew Mannering

Here are a couple of astro-toys I like and use.

1. Canadian Tire sells a Coleman Tri-Colour flashlight for about $27 that gives you red, white and soft blue light simply by twisting the head of the flashlight. No messing with filter shields over the lens which can fall off and get lost and you only have to carry one flashlight for the night:

http://www.colemancanada.ca/Catalog/LIGHTING.Flashlights,2000001704.en.products?q=flashlight

2. All metal finder-scopes made from aluminum (not plastic). These have a sturdy mount that allows you to remove the finder and put it back on the scope another day without having to re-aim the finder. You can also change the reticule for different targets and vary the brightness of the projected red dot. It's a very sturdy system. Cost is around $70-$90 depending on the brand.

http://www.lirelanature.com/modules.php?name=ProductList&op=BrowseItem&ItemID=3468

2. OIII filters provide an excellent view of emission nebulas on larger scopes. With the Orion nebula coming up now for the winter, you will be able to see the structure in the nebula much more clearly. It's worth every penny in my opinion. Cost is around $85-100

http://www.optcorp.com/product.aspx?pid=8913

4. If you use a larger scope, make sure you have a neutral density filter for looking at the moon. It will make viewing a lot easier on the eyes and allow you to see more detail. I like to use the variable filter rather than the fixed variety. Cost is around $55.

http://www.optcorp.com/product.aspx?pid=3467&kw=polarizing filter&st=2

Third Place by Doug Black

Ray Oldenburg, in the 2008 book "New Urbanism and Beyond" contributes an essay about something called social capital. He seems to define social capital in a community or neighbourhood as the sum total of confidence in others, interaction with and knowledge of others. It's a very good thing, promotes livability, innovations, and understanding between varied people.

So what would the "social capital" effects of an Astronomy club be?

First Place as mentioned in Oldenburg's essay is your home. That's a very good thing to have, but it may not tend to introduce us to new people and ideas.

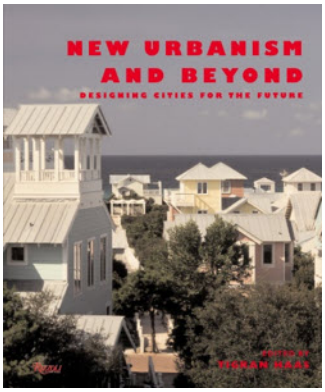
Second Place would be your workplace. A job is very useful thing to have too, and may be interesting, but it often excludes your family, may not connect to the public or wider communities, and may sometimes even discourage outside associations.

Third Place is somewhere else, somewhere relaxed, somewhere you meet people face-to-face, often, and more or less randomly. Maybe with your family, or maybe not. These folks you meet should ideally be people who are not exactly like you; they may be different ages and backgrounds, may have different ideas from yours, but not so wildly different that communication is impossible. Again, for Oldenburg anyway, the meeting must be face-to-face, so the various modes of internet meeting don't qualify all that well so far.

For centuries, good examples of Third Places have been market places and town squares, pubs, churches and various clubs. More recent good examples include fifties soda fountains and general stores, coffee houses, beauty salons, hairdressers and barber shops, jogging and dog walking routes and especially dog parks (because dogs need daily exercise), community centres too, and some newer libraries. And special interest clubs, provided that they meet often.

Astronomy Clubs qualify here of course! We have public observing nights where we may meet almost anyone, late-night post-observing sessions at Tim Horton's, free-ranging cosmology and book discussion groups, pre-meeting and post-meeting chats, club road trips, and star parties too.

So in the HAA we're not just observing and discussing, we're adding to Hamilton's social capital. And even, according to some authors, mitigating bad effects of urban sprawl and promoting involved democracy! Imagine that.



Worth a read sometime: "New Urbanism and Beyond" editor Tigran Haas, Rizzoli (2008), ISBN 13:978-0-8478-3111-1.

Astronomy Book Club by Mario Carr

The next meeting of the astronomy book club will be Saturday December 18 at 7:30 pm. We will be discussing the Jules Verne classic, "From the Earth to the Moon."

If you don't want to buy a copy you can download it free of charge from the Gutenberg Project web site at http://www.gutenberg.org/ebooks/83.

At the last book club meeting, we discussed how to launch a rocket to the moon so that we could win the Google X Prize. We all decided to read "From the Earth to the Moon" so that we could get some better ideas on how to build a spacecraft to enter the contest.

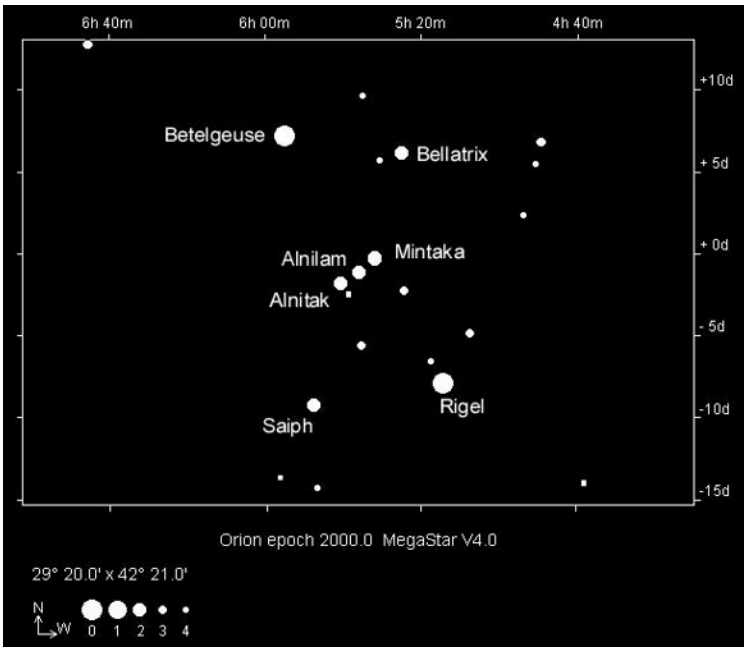
Last meeting went extremely well. Ideas were flowing from all seven participants. Hats off to Stephen German with his exact calculations to determine how many model rocket engines would be required to break the earth's gravity.

If you are interested in attending out next book club meeting please email me at mariocarr@cogeco.ca.

Through The Looking Glass by Greg Emery

Well, by this time, you probably have already been asked, or asked yourself, the question "Can you believe it is already December?" Well, it is December and that can only mean one thing - winter is here! The skies are something beautiful to behold. The best thing, for me, about the winter skies is the constellation Orion.

Orion is such a striking shape in the sky, the linearity of the belt and the "sword", the ruddy orange of Betelgeuse, the blue-white of Rigel; it grasps you. I remember not knowing about astronomy or the constellations, but seeing the belt stars and sensing something special was there. I am not that bright of a guy, so if I knew that those stars were special - then so must others.



Orion in Greek mythology is the Great Hunter. There are different versions of the myth, but the basic story is that Orion was a Great Hunter who was killed by the sting of a scorpion. One version speaks of Orion, the Great Hunter who boasted "that he could kill all the beasts". In response, an angry goddess, Hera (or Juno in Roman mythology), sent a small scorpion to kill the conceited Orion. The Hunter killed the scorpion only after being stung. The gods placed the Hunter in the late autumn, early winter skies and the Scorpion in the skies of late spring and early summer.

Slightly different versions have Orion, son of Poseidon, as the Great Hunter, but in this story, his lover, Artemis, was the goddess of the Moon and the Hunt. Artemis was so enamoured with Orion that she neglected her duties. The other gods became cross with Artemis so her twin brother Apollo tricked her into shooting an arrow at a shadow far out to sea-that shadow was Orion. When the tide washed the body to shore, Artemis realized the duplicity of her brother and placed her beloved Orion in the sky, together with his hunting dogs.

Daniel Seiter's 1685 painting of Diana over Orion's corpse, before he is placed in the heavens
(image from Wikipedia)

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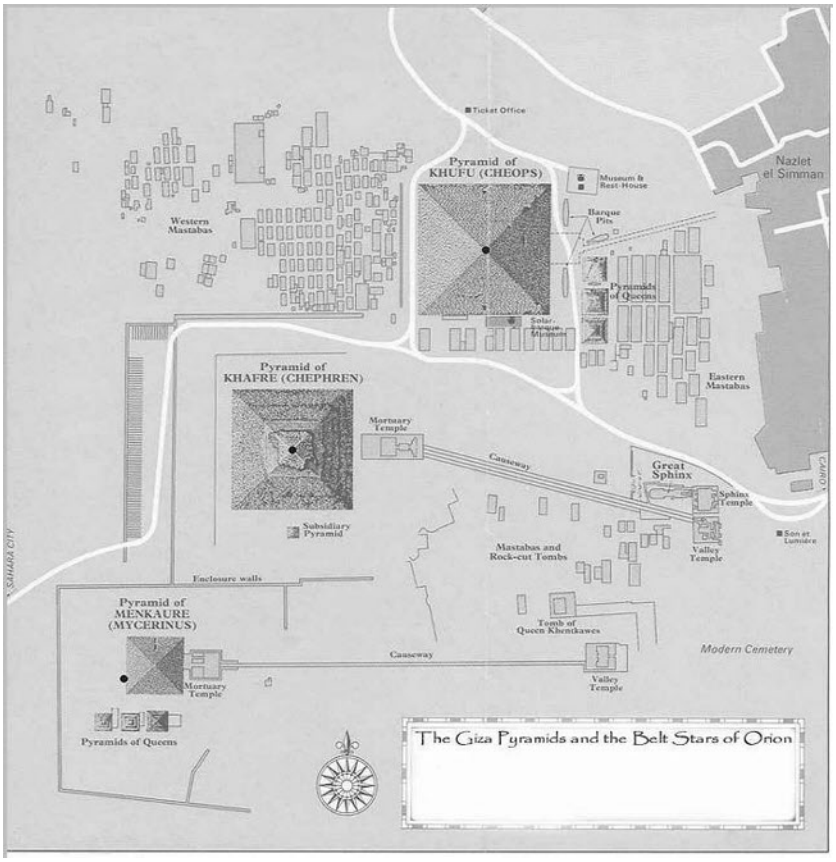
Through The Looking Glass (continued)

The Egyptian myths of the constellation predate the Greek myths as recorded by Homer. The Egyptian god Osiris is represented by the constellation we call Orion. Some people believe that the pyramids were built in accordance to the alignment of the three stars of Osiris (belt stars of Orion) as seen below
(Star map of Orion on previous page and the following image are from http:/egyptphoto.ncf.ca/osiris-orion_2.htm)



As with Orion in the Greco - Roman myths, there are differing stories of Osiris. It appears that Osiris was the son of Geb and Nut (god of Earth and goddess of the Sky) and was both brother and husband to Isis. Osiris was placed, while alive, in a sealed box and left to float/die on the Nile. Isis found the box with the dead Osiris and was able to bring him back to life. This ties in the ancient Egyptian fascination with the afterlife and is why Osiris is revered as the ruler of the dead and the king of the living.

Native Americans have a rich mythology surrounding the constellations and the Milky Way. The Chinooks of the Pacific Northwest have the tale of the Canoe Race. The belt stars are a large canoe, the sword stars make up a second canoe. The canoes race against one another down the river (Milky Way) to reach a salmon. The bright star (Sirius) to the east is the large Salmon jumping from the river. Other tribes made reference to the belt stars as: steps in a snowbank (Inuit); Goose Foot (Omaha); Three Babies (Yakut) and Three Chiefs (Cree).

There are Hindu myths that seem to be eerily similar to the Greco-Roman and Egyptian myths. Perhaps the oral histories of one society became interwoven with another, or perhaps one society had such a good myth that the other society borrowed it (no copyright lawyers back then).

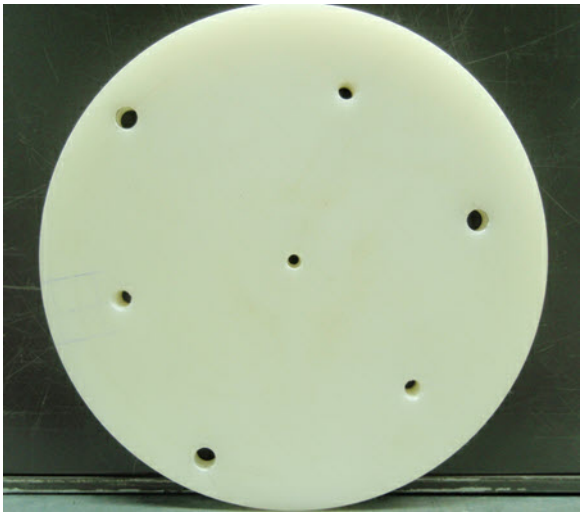
In one tradition Orion is the god Prajapati. Prajapati has a relationship with the dawn, who also happens to be his daughter. The dawn takes the form of a doe and Prajapati assumes the form of a stag to seduce the dawn. The other gods sought retribution for this behaviour and arranged for a god, Rudra, to shoot the stag with an arrow. The star Sirius is the shooter.

If you didn't think much of the modern day Orion before now, then maybe after all this murder, incest and betrayal you will think differently. Regardless of your opinion, Orion is definitely one of the joys of the cold northern nights.

Make Your Own Astro-Gadgets by Harvey Garden

My latest project is getting a telescope by one manufacturer to mate with a tripod by another manufacturer via a homemade adapter.

I wanted my Meade clock-driven 8" SCT to mount on the tripod from my Celestron 8" SE goto telescope so I fashioned an adapter from a 3/4" high density plastic butcher board. A great amount of time was spent on precision layout, measuring, drilling, tapping, countersinking and turning on a lathe to obtain the correct diameter to accommodate the two totally different hole patterns. There is still enough room on the adapter to accommodate two more hole patterns, which will make the adapter a very specialized piece of equipment.



Left: Completed adapter with hole patterns to fit Meade telescope and Celestron tripod (shown below). Photos by the author.

This flashlight (below) was bought from Canadian Tire for about $10 complete with a battery. What I have done is removed the clear plastic lens and traced the diameter of the lens onto a piece of red plexiglass purchased from P & A Plastics, 150 Main St. E at Walnut, Hamilton, www.paplastics.com . (One can purchase small pieces of plastic from them.) I used slow speed and a metal blade on my jigsaw to cut the plastic to shape and finished it with a medium file. The final product gives astronomers a great amount of light to do anything they have to do, long battery life and is waterproof. Enjoy.

November General Meeting Report by Bob Christmas

November's meeting marked the debut of John Gauvreau as the new Chair of Hamilton Amateur Astronomers. He got the meeting at the Hamilton Spectator auditorium under way at 7:30 pm by reminding everybody about the Telescope Clinic, which was held two weeks later, on the 26th of the month. He also mentioned that HAA 2011 Calendars are now available, so, if you haven't got an HAA Calendar already, do think about getting one; they make excellent Christmas gifts!

John then handed off to HAA's new Observing Director and past Chair Steve Germann, who presented his first The-Sky-This-Month talk. He first mentioned that exactly 30 years ago on the night of the meeting, the Voyager 1 probe passed Saturn. Steve also showed an image of the galaxies NGC 1 and NGC 2 taken by HAA member and leading astrophotographer Kerry-Ann Lecky Hepburn, who, perhaps, was inspired by fellow member Kevin Salwach's recent observations of said galaxies. Kerry's images of Comet Hartley 2 (103P), and NGC 281, the PacMan nebula, were also shown on-screen for the audience.

Steve talked about the Constellation Auriga, the Charioteer, in the northern winter Milky Way, and the numerous deep sky objects contained therein, including M36, M37 and M38, the trio of bright open clusters. He moved over to neighbouring Taurus, which has M1, the Crab Nebula, which, being a supernova remnant, led Steve to talk about supernovae, and to give some interesting insight into the processes of this phenomenon of stars much more massive than our Sun blowing themselves up at the end of their lives.

He also mentioned that there is another observable comet in the morning sky in November, Comet Ikeya-Murakami (C/2010 V1), and that, during the upcoming month, the moon will show about 59% of its surface to us on Earth at various times, due to its libration. He also showed an image of Comet Ikeya-Murakami taken by renowned astrophotographer Paul Mortfield.

Steve concluded The Sky for November 2010 by mentioning the upcoming Taurid (Nov. 12), Leonid (Nov. 17) and Geminid (Dec. 14) Meteor Showers.

After a brief intermission, Alex Tekatch did her usual task of picking the door prize and 50-50 winners.

Then, our main speaker of the evening, Dr. Brady Johnson, past president of RASC Kitchener-Waterloo Centre and owner of KW Telescope, took the floor and introduced himself. Then he handed it off to his colleague, Brian Dernesch, who gave a brief talk about the KW Telescope store, and the many products it has to offer, including telescopes, mounts and accessories.

After this "commercial segment", Brady gave his talk about the Principles of Autoguiding, which provided some very interesting insight into the use of autoguiders while doing astrophotography. He pointed out that many old principles of manual guiding (which hardly anyone does anymore) no longer apply when it comes to autoguiding, but I won't get into all the technical details here. Brady talked about the KWIQ autoguiding system, which includes a QHY CCD camera attached to what amounts to a finder scope. I took a look at this unit myself at the front of the auditorium, and I was impressed with its compact size and light weight.

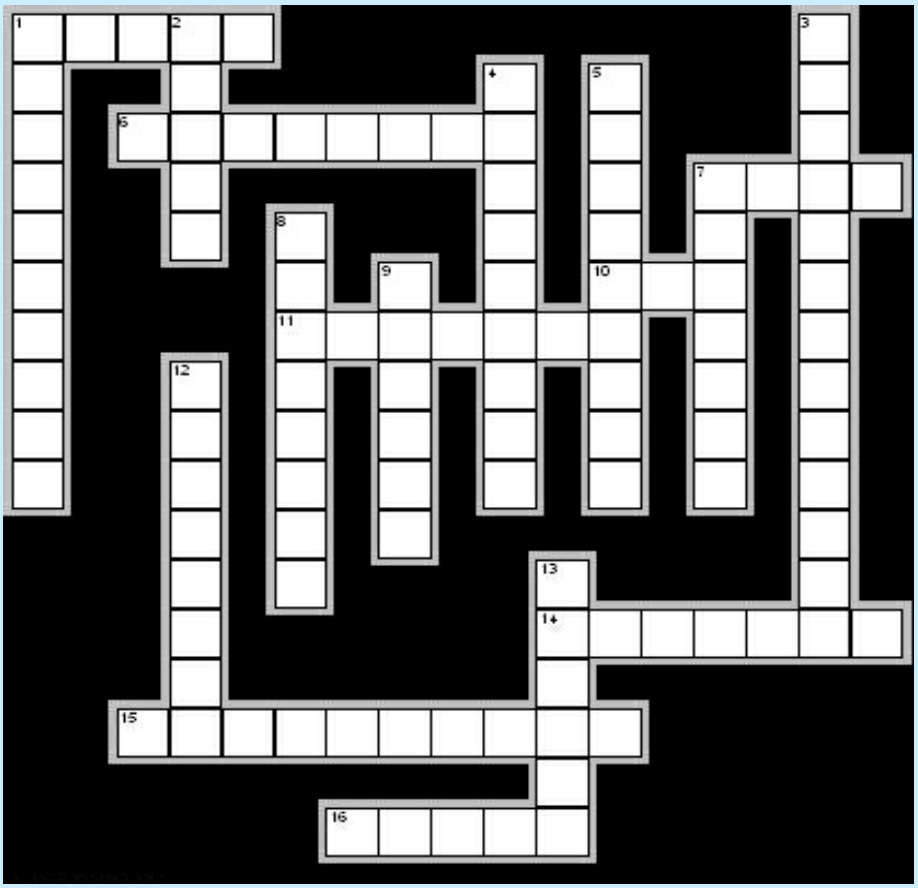
This KWIQ guider was just one of many accessories and gadgets Brady and Brian brought with them to show to the audience, which also included eyepieces, t-rings, filters, finders, reticles, reducers, field flatteners, and two telescopes, including a compact, little solar-dedicated scope with its own built-in solar filter.

After Brady's talk, HAA Treasurer Don Pullen presented Brady and Brian with 2011 HAA Calendars, and then John Gauvreau concluded the meeting.

Afterwards, about a dozen and a half of us headed to Crabby Joe's in Hamilton's west end for some fine food and cheer, where a good meal and post-meeting camaraderie were enjoyed by all, except for the karaoke!

2010 Astronomy Discoveries Crossword by Mario Carr

2010 has been a year of astronomical discoveries. Think you know them all? Then test yourself in the crossword and see how well you do.



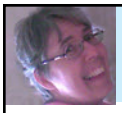
Across

1. In May, one of these vanished from Jupiter.
6. In February, a class of these types of stars was found.
7. In November, NASA's Deep Impact spacecraft encountered this type of cosmic storm, while studying Comet Hartley 2.
10. Earlier this year, the Atacama Cosmology Telescope discovered how many new galaxy clusters.
11. In October, the biggest one of these stars was found 3,000 light-years away in Scorpio.
14. In April, what Large Binocular Telescope revealed impressive views of star forming regions in our galaxy?
15. While searching for signs of life in our galaxy in July, scientists found this complex organic molecule.
16. In March, an amateur astronomer catches one of these breaking up

Down

1. In October, astronomers found these hollow spheres of carbon in the planetary nebula.
2. Earlier this year this brown object, which is a failed star, is only 10 light-years from Earth.
3. On November 19, NASA launched this type of satellite to study life in the universe.
4. In February, it was found that a star was doing this to its planets.
5. On June 3, there was a flash of light on Jupiter that was assumed to be a meteor but it could have been this.
7. In July, the Big Bear Solar Observatory took an extremely impressive close up picture of one of these.
8. In 1851, Leon Foucalt proved that the Earth rotated around its axis. In May, his proof crashed to the floor in a French museum.
9. In November, Tycho Brahe's body was exhumed and CSI investigations pointed to this possible cause of death.
12. Earlier this year astrophysicists were shocked to find that quasars lacked time . . .
13. Gliese 581g, only 20 light-years away is one of these circling a red dwarf

(Answers on p.19)



Total Lunar Eclipse of December 21 by Ann Tekatch

Mother Nature is offering up a Winter Solstice gift to us on the night of Monday, December 20. There will be a total lunar eclipse, beginning at 1:32 a.m. EST, (very early Tuesday, Dec. 21). Officially, the eclipse begins at 12:29 a.m. EST on December 21, but the show doesn't really start until about 1:32 a.m. EST when the moon begins to enter the darkest part of Earth's shadow. The initial penumbral eclipse (from 12:29 a.m. to 1:32 a.m.) is subtle and, to most folks, invisible.

Let's be clear - the eclipse happens MONDAY night (December 20). If you wait until Tuesday night, you will have missed the eclipse by 24 hours. (Not that that's ever happened to me...)

Total lunar eclipse of Feb. 20, 2008. Photo taken by the author with Canon Xti DSLR, 105mm f/6 refractor, ISO400, 0.8seconds.

Compared to solar eclipses, lunar eclipses happen over a much longer time span. This month's eclipse will last from 1:32 a.m. EST to 5:01 a.m. EST. The moon will be totally eclipsed (i.e. in totality) from 2:41 a.m.EST until 3:53 a.m. EST - that's 72 minutes to observe the moon through binoculars & telescopes, take photos, chat with your friends, balance your chequebook, clean your eyepieces...you get the point. Lots of time to really enjoy the event.

If you plan to observe this spectacle, you will need to be prepared. It will be cold. If you plan on observing away from home, take ALL of your cold weather gear, a flask or two of hot chocolate, some snacks and extra batteries for eveything that needs them.

The great thing about eclipses is that they are visible from the city. Of course, you don't get the experience of a completely dark sky when the moon is totally eclipsed, but you will still be able to observe the entire eclipse - even if you just look out the window. I observe most eclipses from our backyard here in the city. This allows me to dash inside for warmth, sustenance and all of the telescope & camera accessories & batteries I forgot. (Not that that's ever happened to me...)

The best views of the lunar eclipse will be through binoculars and low-powered telescopes. To photograph the moon, a tripod is a necessity and you will need to zoom your camera out (if it is a point and shoot type) to its maximum. During totality, you will need the longest exposure your camera offers. If you own a DSLR, you have probably already determined the best ISO rating for astrophotography with your camera. My Canon T1i does best at ISO 400 or 800. It will be mounted on a drive, so I won't need to be concerned about trailing, but sky fog from local light pollution will be a challenge. Try multiple exposures throughout the eclipse (you'll have time) and find the most pleasing combination of exposure, focal length and f/ratio. (Remember to send your best shot to me for January's Event Horizon masthead!)

However you decide to enjoy this month's Winter Solstice gift, I wish you clear skies.

Times for Lunar Eclipse Phases*

Penumbral Eclipse begins	12:29:17 a.m. EST
Partial Eclipse begins	01:32:37 a.m. EST
Total Eclipse begins	02:40:47 a.m. EST
Greatest Eclipse	03:16:57 a.m. EST
Total Eclipse ends	03:53:08 a.m. EST
Partial Eclipse ends	05:01:20 a.m. EST
Penumbral Eclipse ends	06:04:31 a.m. EST

**from p.131, 2010 RASC Observer's Handbook*

Letter to Santa by Mario Carr

Dear Santa:

I've been a very good boy this year, trying my best to promote the Hamilton Amateur Astronomers as much as I can. So I'm asking for just one item from you this year.

All I want for Christmas, Santa, is Dr. Who's Tardis.

It would be very helpful for sneaking up on people and other beings living at the far reaches of the universe. It would also be great for going back in time to see how it all started. I wonder what would happen if I traveled before the Big Bang?

If you're all out of Tardises this year, Santa, I understand. I have a backup plan. Since I'm not a very greedy person, I'll settle for an iPhone with a few good astronomy apps like StarMap, GoSkyWatch Planetarium, Distant Suns, Star Walk and APOD Viewer.

I would also like the Orion 10" f/8 Ritchey-Chretien Astrograph Telescope and the Canon EOS 5D Mark II Digital Camera so I can do some astrophotography.

I also need a warm place to do my night time observing so I was thinking about an all expense trip to the Lowell Observatory in Arizona until next spring.

Can't wait to see them under my tree. I'll leave some milk and cookies for you and the reindeer.

Thanks Santa,

Mario Carr

FOR SALE

8 in. (200 mm) collapsible Sky-Watcher Dobsonian, as new, with accessories, – $400.00

Crayford Focuser 2 in. with 1.25 in. adapter.
8 x 50 right angle Finderscope
Rigel Quikfinder
2 in. Meade QX wide angle 30 mm eyepiece
1.25 in. Super Plossl 25 mm & 10 mm eyepieces.
Antares Laser Collimator.

Focal length is 1200 mm, F/ratio is F/6

The scope does not need to be disassembled between uses. It transports as two compact pieces that can be assembled and ready to use in seconds. It is easy to collimate and holds its collimation throughout the evening. It has tension adjustment control on the altitude bearings.

Contact Keith McColl at 905-648-6830 or dkmccoll@cogeco.ca

The Sky This Month: December 2010 by Steve Germann

The above star chart shows the constellation, Taurus, and was produced by John Gauvreau using the free software program, Stellarium. Thanks, John!

December is usually a bit clearer than November. The crisp cold skies can be surprisingly clear and dark. All bets are off once there's snow on the ground, though, since snow tends to reflect a lot more light pollution back into the sky.

Two years ago we went to Binbrook on a cold night in January, and the sky was so clear we could not see the green laser pointer! Conditions like that keep light pollution to a minimum.

There are some very good reasons to look up in December this year.

Just after our December meeting, the Geminid Meteor Shower will bring a respectable number of very bright meteors. The Geminids are a 'new' meteor shower, having been first observed only 150 years ago. Their parent object is thought to be a Palladian asteroid. (Remember my article about Pallus in October?) Also, there will be no Moon to interfere with your observing, since it's only first quarter. This is a great chance to see meteors from the city. Gemini will be high overhead.

The meteors you see will be moving at about 22 miles a second, and can be anywhere in the sky. At almost 3 per minute under ideal conditions, the Geminids tops the Perseids. Can you trace back 3 meteors to Gemini in a 15 minute time limit? I have done it my first year in the club. No special equipment necessary, but gloves and a hat, warm clothing, and a decent reclining chair will go a long way for meteor watching in style.

We (North Americans, that is) have a lunar eclipse in December. It's about as close to the winter Solstice as you could ask for,falling on the early morning of December 21, 2010. Late night December 20th is when we need to start looking for it.

Continued on p.14

The Sky This Month: December 2010 (continued)

Before and After the eclipse, the Moon will be full. The Full Moon of December is called the "Oak Moon". The Algonquin Tribe called it the "Cold Moon".

For those who wonder where I get all these names, there's a handy chart here.

http://en.wikipedia.org/wiki/Full_moon

On this page I also learned something interesting about Blue Moons. Study up for a quiz at our December HAA Meeting!

We will be able to observe the entire eclipse from anywhere in North America. And, as one of my predecessors used to say, we can be sure it will be clear that night, because there's a Full Moon!

The peak of the eclipse is at 8:17 UT, or about quarter past 3 AM in the early hours of December 21.

The moon will enter Penumbra by 1:00 EST, and leaving it after 5:15 EST.

http://en.wikipedia.org/wiki/December_2010_lunar_eclipse

Well, the connect-the-dots contest might have been a little obscure for last month, but for this month, it's going to be a cake-walk... well make sure the counter top is pretty high, and don't put the cake near the edge, because it's Canis Major! We won't be touring Canis Major for another month or so, but in the meantime, brush up on your constellations. The connections drawn by my computer are so baaaaad, that it might as well be a sheep dog.

Let's find a better connection. And remember something I left out last time...dogs have fleas, so if you need to leave a few stars out of the map, call 'em fleas and carry on!

I have uploaded 2 prints of Canis Major to our blog. You can do the 55 or the 60 sketch, keeping in mind the fleas.

The real constellation to follow this month, though, is Taurus. Taurus features some of the most interesting sights in the sky, and has a wealth of celestial objects to reward you. First you need to know where to find it. Using the Big Dipper, take the last star in the handle, and draw a line through the top pointer star in the bowl. (the one closer to Polaris). Keep going 3 times as far, and you will come to the bright red star, Aldebaran. It's about halfway across the sky, so give yourself a clear access to the Dipper.

Aldebaran is 65.1 light years away, and 150 times more luminous than our Sun. It's used up all the hydrogen in its core, and the sudden increase in heat production due to shrinkage has warmed the layers near the core

Continued on p.16

enough to cause Aldebaran's outer layers to begin the red giant stage. Interestingly, it's very close to exactly 20.0 parsecs away. A "Parsec", about 3.26 light years, is the distance at which the Earth's motion over a period of a year causes 'Parallax' (apparent change in position compared to more distant starry background)of 1 second of arc for two optimal observations 6 months apart. Parsecs are a bit like magnitudes... bigger is not better. 20 parsecs means that its parallax is 1/20 of an arc second.

Another way to find Aldebaran is to wait until you can see the belt stars of Orion. Head northwest following their line,and be prepared to arc a bit more northward. About the same distance as the diagonal of Orion's 2 brightest cornerstars will put you in striking distance of Aldebaran.

Now that you have Aldebaran, you can use it for leverage to find a few other objects. Start with the Pleiades. By far the best and brightest open cluster in the night sky.Use Orion's *other* shoulder, Bellatrix, and head straight to Aldebaran, the red eye of Taurus the Bull. Continue again about 3/4 as much farther and you will run into the Pleiades. AKA The Seven Sisters, really show only 6 members to the astute unaided observer. Children with good vision often call it the 'Little Dipper'.

Perhaps the "Seven Sisters" were named by an early telescopic experimenter? Could it be that one of the stars has lost brightness over the past few thousand years? My guess is their appearance as a Little Dipper caused an association with the Big Dipper, and the 7 stars of the Big Dipper primed the astronomers to call the Pleiades the Seven Sisters, instead of Six.

That's my theory.

The Pleiades are passing through an unrelated dust cloud at about 11 km/s, which means there's a lot of nebulosity in their neighborhood. Can you see it in binoculars? You will need a dark site, very clean optics and averted vision.

On your way from Orion to the Pleiades, you passed the Hyades. This is a large open cluster, almost 5 degrees on the sky. The total magnitude is listed as 0.5, but of course the stars that make it up (there are over a hundred of them) will reward your binoculars. Aldebaran is a foreground star, not actually one of the Hyades by residence. The easy-to-spot V pattern which includes Aldebaran contains a half-dozen members of the Hyades, some closer doubles, and there's plenty more to spot with binoculars.

Taurus has several other open clusters in it. NGC1647, NGC1746, NGC1807 and NGC1817 are all open clusters.

They are all comparable in size to the Full Moon. Consider NGC1746: It's designated as an open cluster, but computer analysis has shown that the real clusters, NGC1750 and NGC1758 overlap, and NGC1746 is more of an asterism.

On the other hand, NGC1807 and NGC1817 are close to each other and provide an interesting contrast. Both are open clusters with about the same total magnitude. Can you compare the many smaller stars of NGC1817 to the smaller number of brighter stars in NGC1807?

As I mentioned last month, the first Messier object, M1, is a resident of Taurus. There are a couple of other interesting objects in Taurus for your enjoyment and education.

Switching gears, Comet 103P Hartley is now magnitude 6.9 and still a binocular object. Did you try to see it with your own eyes? I missed my chance, but my binoculars will have a good go at it, especially on the night of the eclipse.

Minor Planet 16 Psyche is in Taurus this month, and if you wait until about 10 PM, it will be ready for you.You don't need an account to get good finder charts for the brighter minor planets...

http://www.heavens-above.com/MinorPlanet.aspx?desig=16&lat=0&lng=0&loc=Unspecified&alt=0&tz=CET

At magnitude 9.7, you will need big binoculars or a small telescope to "pull it from sky to eye".

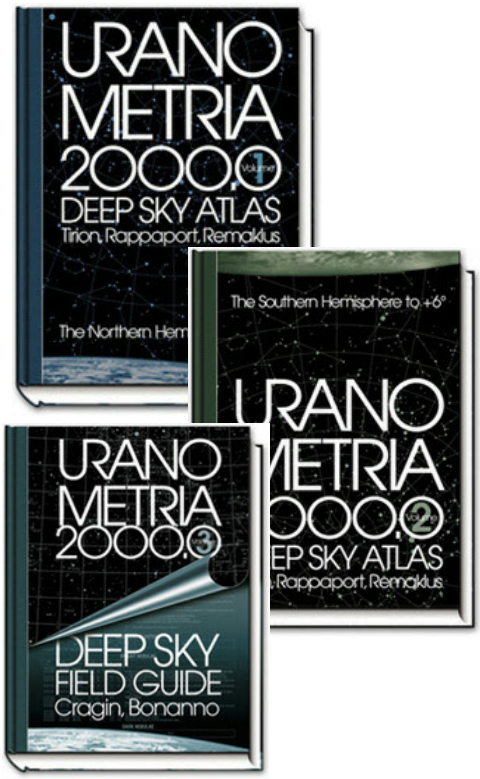
Jupiter's south Equatorial Band is expected to return anytime now. Will you be one of the first to see it? Jupiter is still high in the night sky, and demanding a visit. This is probably the best time to get a good look at it before it starts setting earlier in the evening.

Here's a link to very recent news about the Jupiter's SEB, and a call for Amateurs such as ourselves to keep an eye on it.

http://www.sciencedaily.com/releases/2010/11/101128215754.htm

Star Maps for Christmas by John Gauvreau

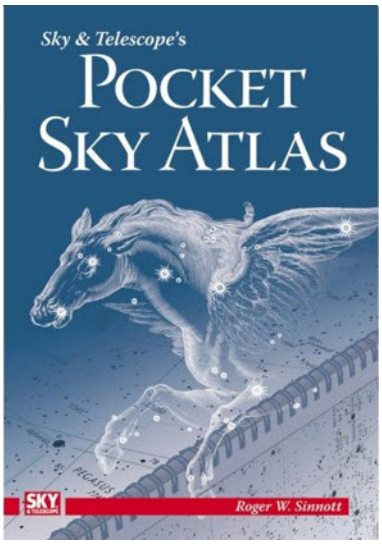
I just can't resist a good map, and maps of the sky are top of the list. I love the many that I have, from the tiny Collins Gem Guide to the Stars (I love that it fits in my pocket), to the massive and detailed three volume set, Uranometria 2000. I have many that fall in between, and some are more useful than others (the laminated SkyAtlas 2000 by Wil Tirion is never bothered by dew) and some are more decorative. The one that gets used the most is the Sky and Telescope Pocket Sky Atlas (recommended in the HAA Beginner's Booklet). However, there is always room on my shelf for another good set of charts, and I recently saw one that another member was putting to good use. The Cambridge Atlas of Double Stars includes not just beautiful maps at a good size, but an excellent compendium of double stars and tips for observing them. This is becoming one of my favourite types of objects to observe and that puts this atlas at the top of my astro wish list.



Left- the most detailed, readily available, sky atlas, Uranometria 2000.0, volumes 1, 2 & 3. Available from Willmann Bell (www.willbell.com)

Right - the excellent and highly portable Pocket Sky Atlas. Only $19.76 at Chapters online.

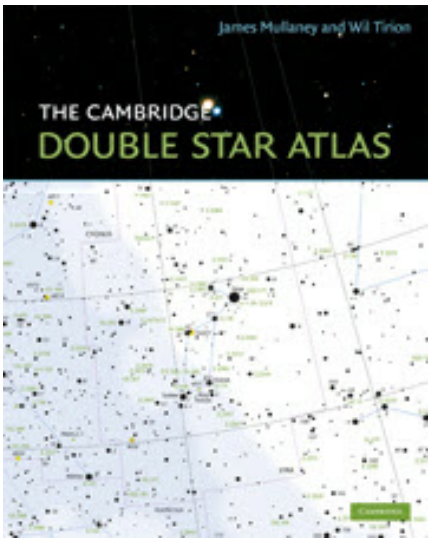
- Editor



Left - Sky Publishing's large, laminated sky atlas. Available from them in various formats online at http://www.shopatsky.com/product/Sky-Atlas-2000-Desk-Laminated/sky-atlases

Right - the Cambridge Double Star Atlas, coveted by our Chair, John Gauvreau. Available for $25.04 at Chapters online.

- Editor



Quality Not Quantity at Christmas by Mike Jefferson

Here are a few thoughts for those of you purchasing new equipment for yourself or a loved one this Christmas. The following is my philosophy re: long-term astronomical equipment:

Always buy quality, and that cannot be stressed enough. Any purchase of this kind is going to be made with 'the long-term' in mind. If you want it for life, it has to last! Always purchase with the idea that you are going to 'will it' to your heirs! In the 'same words' you are buying an 'heirloom'. A little more money spent on quality and simplicity and not on gimmicky features is going to pay huge dividends over the years.

Buy quality over quantity. Pay more for a smaller instrument over 1) size and 2) especially over promises of 'astronomically' high magnifications. High magnification is very often associated with department store-style equipment (usually very tiny refractors and plastic {heaven forbid!} microscopes). Size is something you are going to hate more and more as time passes and as you age – both being factors well beyond your control. For the long-term you are going to want image quality above everything else. Any instrument that fails to deliver a perfect diffraction image on a consistent basis is going to disappoint the observer in the long run.

Ease of use will be the next thing that you will want. The more cumbersome the instrument and the more complex the setup will both result in less and less instrumental use over the years.

In my opinion, large Dobsonians are an area to avoid. Sizes up to 8-10" are usually fairly manageable. Beyond that, one gets into the 'hernia' and 'Marquis de Sade' classes. You will need a large vehicle, loading 'wheelbarrow' or trailer to transport these beasts. At best you will need to do complex setups, fold-downs, optical collimations and climbing stepladders (just to reach the eyepiece!) in the dark. Working in the dark is another matter which cannot be taken lightly (no pun intended!). Large refractors are very cumbersome, too. Consider any 6" f-8 – it will be at least 48" long + large tripod. In the astronomy world, instruments get VERY large VERY quickly!

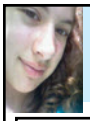
You will want to avoid GPS, 'talking' telescopes, GOTO and as much digitally-controlled equipment as possible (This does not refer to cameras.). Such electronic equipment is NOT for the long-term. When it can fail, it will. If that happens after it is obsolete, you will be stuck with an 'orphan'. Newsletters are full of tales about the electronic keypads that needed replacement by third-party devices, by the necessity of doing new T-point models on a continuous basis, by electronic mounts that fail in our cold climate, about the difficulties of getting some manufacturers to honour their digital warranties and by the requirement to replace obsolete computer connections with the latest digital devices.

So, what do you get? The best binocular you can afford is the first step. If astronomy does not remain a prime consideration, the instrument can be used for a whole host of other activities. If the purchase is at the telescope stage, shop for 1) a high-quality spotter on a good photographic tripod, 2) an electric (not ELECTRONIC) equatorial mount with a 3-4" refractor or 6" reflector, 3) medium-sized Dobsonian or 4) 3-4" Maksutov or 6-8" Schmidt-Cassegrain on an electric, equatorial, fork mount.

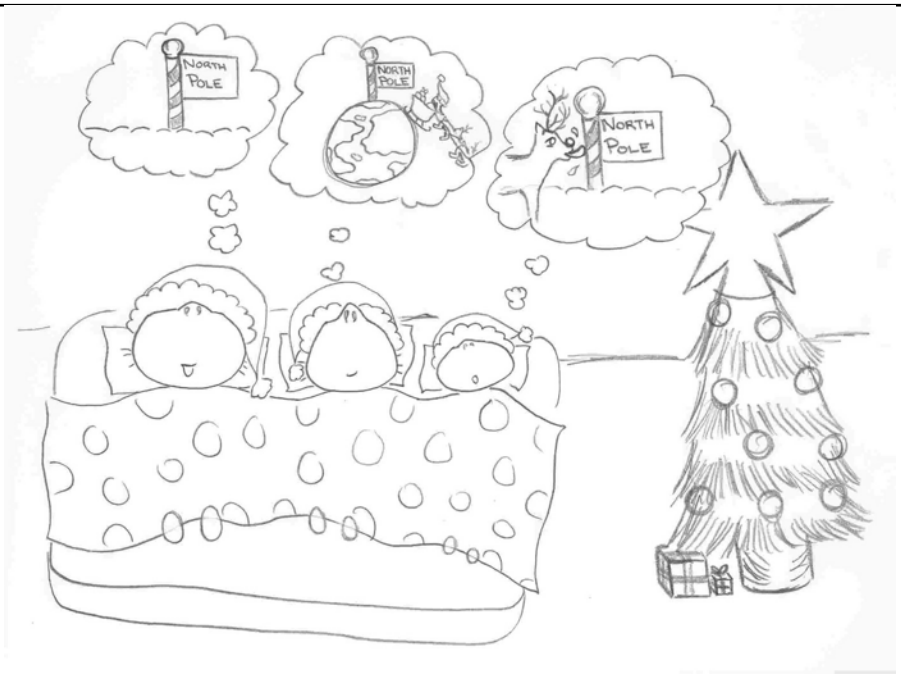
There are brands and there are stores to consider. I don't wish to discuss these here. If you want recommendations, see me at a general meeting or contact me @ 905-648-8919 or h_aa_2010@hotmail.com . (There are 2 underscores in the email address, between the 'h' and the 'a' and between the second 'a' and the '2'.)

2010-2011 Membership Renewal Reminder

Don't forget to renew your membership. Dues remain at $25 for individuals, $30 for families. Contact Matthew Mannering (membership@amateurastronomy.org) or Don Pullen (treasurer@amateurastronomy.org) or see them at the next meeting .

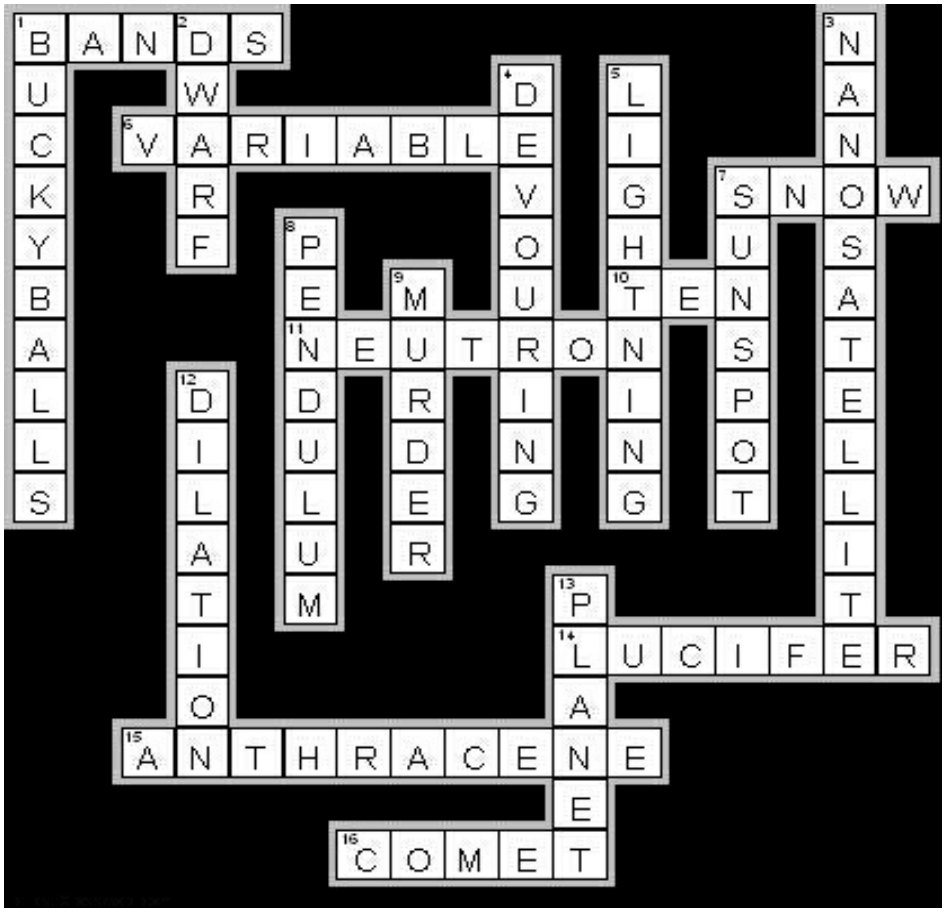


Cartoon Corner by Alexandra Tekatch



Christmas: when astronomers are not the only ones who are 'polar-aligned'.

Answers to Astronomy Crossword on Page 11



UPCOMING EVENTS

Friday, Dec. 10 - Hamilton Amateur Astronomers General Meeting, 7:30 pm at the Hamilton Spectator auditorium.
Sat. Dec. 18 - HAA Astronomy Book Club Meeting, 7:30 pm in Dundas. Contact Mario Carr (mariocarr@cogeco.ca) for directions.
Friday, Jan. 14 - Hamilton Amateur Astronomers General Meeting, 7:30 pm at the Hamilton Spectator auditorium.

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