



# APRIL MEETING: EXTRA-SOLAR PLANETS!

Hamilton Amateur Astronomers held its monthly meeting at the Spectator Auditorium on Frid Street in Hamilton, starting at 7:30 pm Friday April 13th. The auditorium was filled and extra chairs were brought out for the overflow!

Our Chairman Glenn Muller was MC for the evening, starting with announcements: the Bay Area Science & Engineering Fair; the successful March Eclipse event at the Parks Canada Discovery Centre; the very successful March Messier Marathon - with a reminder to get your pledge money to HAA Treasurer Cindy Bingham; recent observing meetings at Binbrook and use of parking areas for set-up in the park.

HAA Publicity Director Jackie Fulton took the podium to thank Tim Philp and Rob Cockcroft for providing the educational entertainment at HAA Member Night at the McCallion Planetarium March 23rd, and she presented them with gifts as a token of the club's thanks.

Mike Spicer presented The Sky for April in powerpoint with time for a few questions afterwards. The HAA observing project for 2007 is "Double Stars for Fun and

Continued on page 2

## Extra-solar Planets

### Introduction

- Our Solar System
- Detection methods
- The troubling facts about extrasolar planets.
- Some interesting special cases
- Life on other planets?

### From The Editor's Desk

At this time of the year, the days get longer and, sadly for astronomers, the nights get shorter. As if in compensation, the spring and summer bring warm nights and little risk of hypothermia to night-time observers. It is time to dust off those telescopes and get out stargazing.

In the meantime, enjoy this issue of the Event Horizon while you are waiting for the sun to set.

Tim Philp, Editor

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### Imaging Clinic!

#### Where:

**Spectator Building**

**When: June 2nd. 7:30 PM**

**Speaker: Tim Harpur**

**Join us as Tim Harpur conducts an imaging seminar. Learn how Tim gets those GREAT pictures!**

## April Meeting (Continued)

Profit", copies of which are available for interested members.

At half-time Glenn and his helper selected winners for the evening's many door prizes. Thanks to Brad Cantelmo for contributing so many excellent items from his visit to Greenwich Observatory (the original "Zero-zero-zero"). Glenn went through the sign-in sheet to identify everyone in attendance, including at least a dozen visitors and just-joined members. Welcome!

Next, Charles Baetsen took the stage to tell a little about HAA

founding member Grant Dixon, to whom we wished a Fond Farewell. Grant is moving to Nova Scotia (better buy an umbrella) and may be leaving all his astro gear behind (just kidding).

The main presentation of the evening was "Extra-solar Planets" by Rob Cockcroft of the Department of Physics and Astronomy at McMaster University. He brought us up to date on the various methods used to detect planetary bodies around other stars, the mass and distance of the 200+ EXP's so

far detected, plans to survey the sky for planets with atmospheres, and the possibility of life elsewhere. Rob fielded many, many questions afterwards - a sure sign of interest. Thanks, Rob.

After the presentations, half an hour of discussion and examination of all the items on display on the "For Free" table and on the "Not Free" table at the back. Then on to East Side Mario's where about 35 members and friends feted Grant Dixon in a farewell party!



## Tech Tips—Dark Adaptation by Tim Philp

***"ARRRRRRRRR Mate. That's a might good lookin' eye patch ya got thar. Did ye lose the eye in a sea battle?"***

***"Why no Cap'n, I am an astronomer!"***

While an eye patch may be the latest in piratical wear on the high seas, it can also be a useful addition to your observing kit.

Perhaps the biggest problem that we have is keeping our night vision. This is made difficult by the need to see to set up our equipment and the careless use of unshielded flashlights.

The newest threat to our night vision, of course, comes from our colleagues who like to image with their computer monitors that appear to shine with the brightness of a type 1a supernova.

Besides being a rather roguish fashion statement, an eye patch can help preserve your night vision, at least in the eye you use at the telescope, during setup and the inevitable breaks that you take from your night of observing.

This trick works because of the biology of the eye and how it adapts to changes in light levels.

Most people think that the eye accommodates to light and dark by dilation or contraction of the pupils of the eye. While this is certainly true, it is only a minor part of what goes on in your eye as the light levels grow dim.

More important are the chemical changes that occur in the eye that make it more sensitive to light. While your pupils may adapt to a light level change in a matter of a few seconds, the chemical changes can take as long as 20—30 minutes to allow the eye to achieve maximum sensitivity.

Sadly for astronomers, while it can take that long for the eye to adapt to low light, this adaptation can be ruined in a mere fraction of a second requiring another long period of dark adaptation.

Unlike our pupil response which happens in both eyes simultaneously, the chemical adaptation in the eye is independent. That is each eye adapts to the light levels

independently according to the amount of light that the individual eye receives.

This means that you can cover one eye and expose the other eye to light and the covered eye will remain sensitive to low light levels!

So, while you are taking a break from the telescope or if there are careless people with flashlights in your area, you can put on an eye patch to keep at least one eye sensitive to "faint fuzzies" while your uncovered eye allows you to find your way around without tripping on your telescope.

When you are sure that there are no damaging light sources, you simply uncover your eye and use that eye at the scope. Just to be safe, you can cover up when you need to do something else.

It takes so long for your eyes to become dark adapted and you can lose that sensitivity in a second, it only makes sense to take steps to preserve your night vision. While an eye patch may not look cool, it can help you see those elusive objects just at the limit of your vision.



## Chair's Report by Glenn Muller

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Even if you missed last month's International Astronomy Day activities, at the Parks Canada Discovery Centre (PCDC), you likely know that the HAA has another successful event to its credit.

With bright, though spot-free, sunshine during the day, and a nice evening sky above the glow of the parking lot lights (okay, so there was the odd small glitch), the visitors came out in droves. HAA members were there to greet them with a myriad of telescopes, handouts, theatre presentations, and a very desirable gift-basket that was ultimately won by Lin Appleton.

While this sort of thing is nothing new for the Club, it was an interesting experience for Darla Campbell and her PCDC staff who seemed to appreciate the diversion as much as the influx of business. In fact, they attended the presentations, checked out the solar flares, and

asked some insightful questions as to the make-up of the Universe and how to find "stuff". They promoted the event through the PCDC website and enthusiastically incorporated the day's activities when welcoming visitors to the Centre.

Personally, I found it particularly gratifying when they canvassed the crowd for a third showing of the presentation, "Into The Mystic". By my count, 120 people saw that show which suggests that 150-200 members and guests were on hand for either the afternoon or evening activities. Some came out for both! One aspect I always enjoy is how such gatherings break down inhibitions and bring a community closer together. People who may not exchange a glance with you on the bus seem to feel comfortable in conversation around a telescope. It appears that after years of well-run, well-publicized, events the HAA has

become a known and trusted source for education and family entertainment in the Greater Hamilton Area – and that's a good thing.

It's certainly no secret that the members have fun and this seems to be infectious as we always have an influx of guests to monthly meetings following such events. Occasionally, someone will even join on the spot - welcome to the Club, Gary!

If nothing else, a few hours of casual astronomy is an excellent diversion from the stresses inherent to this "new millennium". The wonders of our vast Universe always manage to overwhelm the cares and concerns of life on Earth, at least for a little while, and by facilitating these mini-vacations I like to think we are having a small but positive impact on those around us. And that, by itself, is something to smile about

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## News for HAA Subscribers to Sky & Telescope Magazine

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**Sky & Telescope has announced that subscribers through their discount Club Plan may now renew directly via phone (1-866-644-1377) or mail;**

**SKY Publishing,  
Attn: Jane O'Brien,  
90 Sherman Street,  
Cambridge, MA 02140-3264 USA**

**HAA members qualify for a discounted subscription price for Sky & Telescope magazine: \$39.95 (U.S. funds) annually. If you'd like to subscribe at this low price, see me at a meeting or contact me for details.**

**Ann Tekatch**  
**[Tekatch@mainnewson.com](mailto:Tekatch@mainnewson.com)**  
**905-575-5433**



## Buying Astronomy Equipment by Mike Spicer

The weather is warming up and many members are getting their equipment ready for summer observing. Some are purchasing additional (or replacement) equipment or accessories to make the summer observing experience more fruitful. I talked with members who have purchased something new or used from one of the retailers in the region. I am talking about "astronomy retailers" and not department stores, Canadian Tire or Lenscrafters, of course.

It's too bad that the astronomy stores can't let you try out the equipment before you buy it. About half of all astronomy telescopes and accessories purchased from astro-retailers turn out to be much less useful than the buyer expected... and most items can't be returned. That's why belonging to an active astronomy club like the H.A.A. is so important. Chances are a member has the equipment you want to buy. A member can let you try it out or see how it works (or if it works) before you buy. Members with experience may have suggestions for other, cheaper ways to achieve your observing goals. Why, it's quite possible that another member may be prepared to sell you the item you want, in almost-new condition, for much less than a retailer will charge.

The H.A.A. lists local retailers selling astronomy equipment under **LINKS** on its web site: [www.amateurastronomy.org](http://www.amateurastronomy.org) as a convenience, not trying to steer you to any particular store. You can select from that list for purchasing equipment. But keep a few things in mind as you shop. Retailers are in business to make a profit. The prices of telescope equipment and accessories seem, well, "astronomical" but you can save money:

**Shop around:** Retailers have a small niche market. You should regularly drop in to the retail stores so they get to know you as a "regular customer" whether you buy or not. Check on the price at various stores and don't be afraid to say "X is selling this scope for \$800; will you sell it for that?" Be prepared: your seller will certainly go on-line to check the price at X's store.

**Check it out first:** I gave advice in the March 2007 Event Horizon for checking out binoculars in the store before buying a pair. You should be just as careful in checking out other astronomical equip-

ment. They lower prices on equipment from time to time, to move older "new" stock that their suppliers no longer manufacture. The price of Meade series 4000 eyepieces tumbled by 70% when the series 5000 eyepieces (not nearly as good as the 4000's) came out two years ago. Tele-Vue had a manufacturer's 25% discount on eyepieces two years ago when the Chinese knock-offs cut into the company's sales. Last year Speers-Waler eyepieces were on sale 30% off... just before the company's newer designed - not better - eyepieces came on the market.



ment before you buy - especially used equipment! A careful check may show that even new equipment has parts missing or broken in the store, after all, it had to be shipped to the retailer. Ask a lot of questions, even if the manufacturer is well-known for excellence: Tele-Vue, Vixen or Celestron. Beware of puffery - ridiculously overly-positive descriptions of the equipment or its capability. Puffery stops immediately if you ask the retailer "please put that in writing as a warranty before I buy".

**Old stock:** Retailers have to stay

**New items soon to arrive:** Wait until it arrives. Never put down money in advance on a new and untried item promised from a manufacturer. The lone exception: it's ok to put money down on a telescope from Astro-Physics and to invite me over when it arrives 3 years later.

**Holiday-time:** There are bargains available just before Christmas each year. Keep your eyes open for ads from the astro-retailers in Toronto especially. A 12" dob was available for \$799 last Christmas. Then again, the after-Christmas



sale of in-stock items no one bought can also be attractive. I have found that February is a good time to haggle with retailers if you have money to spend while everyone else is trying to pay their credit-card bills. Don't be "talked into" things: The law in Ontario protects people who are talked into buying things by door-to-door salesmen: you can rescind the contract in writing if you come to your senses promptly. There's no simple protection if you are talked into something at an astronomy store - whether new or used - that you later realize is not what you wanted. Buyers do have some 17th century protections from merry old England incorporated into Ontario law and these provisions are well known to retailers:

**Fit for Purpose:** Retailers sometimes advertise a policy that goods once purchased cannot be returned. They may point to a sign that says this. If the item you bought isn't fit for the purpose you bought it, you can return the item for a refund pursuant to s. 15(1) of the Sale of Goods Act, provided your purpose for the equipment was made known to the seller. For example, you want a 1.25" neutral-density filter for dimming the bright Moon in your new telescope and rely on the retailer's skill and expertise in getting one because you've never seen a neutral density filter. The retailer sells you a 2" Oxygen 3 filter for \$229 saying that was what you needed. He'll have to refund your money if you demand it.

**Quiet Enjoyment:** The Meade Corporation may not be aware of this, but in Ontario there is an implied warranty that the telescope is sold for the "quiet enjoyment" of the buyer. I've checked and found nothing at Meade that excludes this implied warranty. Buyers of

those frightful Meade LX series go-to scopes that can wake the dead when slewing, can keep this implied warranty in mind. It's s.13(a) of the Sale of Goods Act.

**Pick-up or Delivery?** Most buyers make a decision in-store, pay and take the item home with them (with a receipt). Some use the internet to buy things and make arrangement for the item to be delivered to them by the seller, at an additional cost. Some buy via friendly telephone conversation. Always follow up with an email or fax to the seller that specifies what you are buying, the item's cost, how it is to be delivered, address to deliver to, the cost of delivery and how long the seller may take to deliver ("time is of the essence"). It often happens that the item delivered is not what you ordered, or nothing is delivered on time.

If the item you receive is not what you ordered, contact the seller and say so. You don't have to pay for the goods and you don't have to return them at your expense (contrary to what Meade says). If you have already paid in advance, then ask for return of your payment and the seller may make arrangement to return the goods after payment has been received, at the seller's expense. See the Sale of Goods Act, s. 26.

If the item you paid for is not received within the time specified in the contract (or within a reasonable time if you didn't specify a time for delivery) you can rescind the contract and demand the return of your payment: Sale of Goods Act, s. 28.

Ordering items not In-stock: The best rule of thumb is "buy if it's

there, don't bother to order it". Why? Canadian stores have to order most of their items from US suppliers. They are considered small potatoes and do not get quick shipping. Many times I have heard complaints that buyers have waited over 6 months for an item to arrive. It's not the retailer's fault, but the retailers often mislead buyers into thinking an item will be delivered "soon". If you order, don't pay anything up front and specify in writing to the retailer, how long you will wait, making "time of the essence" to the contract. If the item does not arrive on time, notify the retailer by email that the reasonable time has passed and you no longer want the item. Ordering from the US? Some Canadians like ordering from the much-larger US companies, such as Anacortes or Orion. They always seem to have things in stock, and sometimes they offer bargains passed on from manufacturers due to high-volume sales. Be aware that shipping the item can be expensive. Depending on the retailer, you may be assessed GST on the item at the point of sale or have to pay GST and a hefty "we-filled-out-the-customs-certificate" fee when the item is delivered. There are ways to avoid unreasonable charges, but that's an article for another month!



## HAA Science Fair Prize by Steve Germann

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Our science fair prizewinner (a judge's-eye view)

Armed with an advance list of all the project titles and abstracts, i was able to review the abstracts and narrow my attention to the contenders, before going to the fair.

"The Cathys" (Cathy Collins or Cathy Hamilton) were the 2 women in charge of the special awards judges, and they were helpful, organized, and capable in their job. There was a long lineup of cars trying to enter the university from Stirling Ave.

It is a wonder i arrived on time before the line built up even more. I guess usually most cars have a permit and bypass the entrance gates. The continental breakfast allowed all the judges to settle down, hang up coats, and wait for those judges mired in the traffic jam to arrive.

A detailed floor plan in the programme allowed me to scout out the booths i would be visiting well in advance, and munch down a few danish and a croissant.

Compared to special awards judges, merit judges have a much more difficult job, based on detailed analysis and scoring of a wide range of projects, and tabulation of

marks. However, they only have to consider a short list of assigned projects. In my case, there were 2 projects that sounded like excellent candidates, and 5 others that might have had oblique applicability to astronomy depending on the actual write-up of the project.

One of the 2 top contenders was not present (hockey tournament?)... (To modify a digital camera to make it sensitive to IR, and say something about IR and it's uses.) I was hopeful that some of the others might have considered various astronomical slants in their analysis... The other projects considered the blue colour of the sky (and things in the sky), seeing colours through fog, (hoping to consider looking up, too) some projects about the spectrum of laser light vs other light, (some aspects of using spectra to determine composition) and one about reflection angles (and mirror shapes).

A promising sounding project on fresnel lenses (and making images with them). Also one about the blind spot in the human eye (and an aspect of the use of averted vision for seeing dim objects). Although they each addressed their chosen topics, alas, they did it in a way that did not consider the aspects i hoped to see mentioned. Cosmic rays are a form of energy and information from the

cosmos that comes to earth.

In Philip and Salvatore's project, they built a cloud chamber and counted the incidence of cosmic rays. Sort of a one pixel telescope camera. It had not occurred to me what to do if a pair of students worked on the winning project. I suppose it would not be fair to restrict the field to one-person projects, so i awarded on the basis of merit of the project. Unfortunately this makes sharing the prize a bit more difficult, although many aspects are free... and perhaps we will have to address this with the winners. I would like to donate an additional HAA pin to the team, since this is not easily shared.

Philip Gabardo and Salvatore Macaluso, from St Augustine's in Dundas, had read up on various aspects of relativity, energy, atomic theory and the sources of cosmic rays. One interesting thing in the write-up was an image of the moon... Apparently the moon can cast a cosmic ray shadow. There's an excellent illustration of the effect, from a cosmic ray observatory.

It was my pleasure to designate them this year's winner of the HAA prize. The HAA is listed in the science fair programme. I think next year it should be updated to name Jim A Winger in the prize title.

### HAA Marketplace

**Homemade 12v dew heater straps for 80mm refractors - \$12.00ea.**

**Currently I have a 5 watt and a 7 watt version available. Both have a 4' lead w/phono plug to connect to 12v power source.**

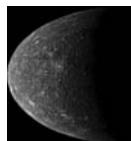
**Tim Harpur**

**(905) 870-3862**

**[www.ArtisticDigitalScenery.com](http://www.ArtisticDigitalScenery.com)**



## The Sky this Month—by Mike Spicer



**Mercury** was in conjunction with the Sun May 3rd and has entered the evening sky. Speedy Mercury will be visible at magnitude -1 with a 6" diameter disk, low in the W after mid-May, reaching greatest E elongation on June 2nd.



**Venus** is high in the West all evening, brilliant at magnitude -4. On May 17th Venus will be 0.5° N of **Eta Geminorum**; on May 18th Venus will appear as a "double star" only 2' S of 6th magnitude **HIP 32964**; on May 19th at 11 pm Venus will occult 8th magnitude **TYC 1898-769-1**; on May 29th Venus will be 60" N of 8th magnitude **HIP 37517**; on June 6-7 Venus will buzz the northern part of open cluster **M44 "the Beehive"**. You can compare the phase and brightness of Venus to the 3 day old crescent **Moon** on 19 May when the two are less than 1° apart in **Gemini**. The disk of Venus is increasing in diameter while the lit portion is diminishing as it approaches Earth: May 15: 19" diameter, 57% lit; May 31: 21" and 54%; June 10: 24" and 49%; July 12: 38" and 26%; August 9: 56" and 3% lit.



**Mars** at magnitude +1 with a disk only 5" in diameter, passes through **Aquarius**, **Pisces** and **Cetus** in May, lamentably very close to the Sun in the morning sky.

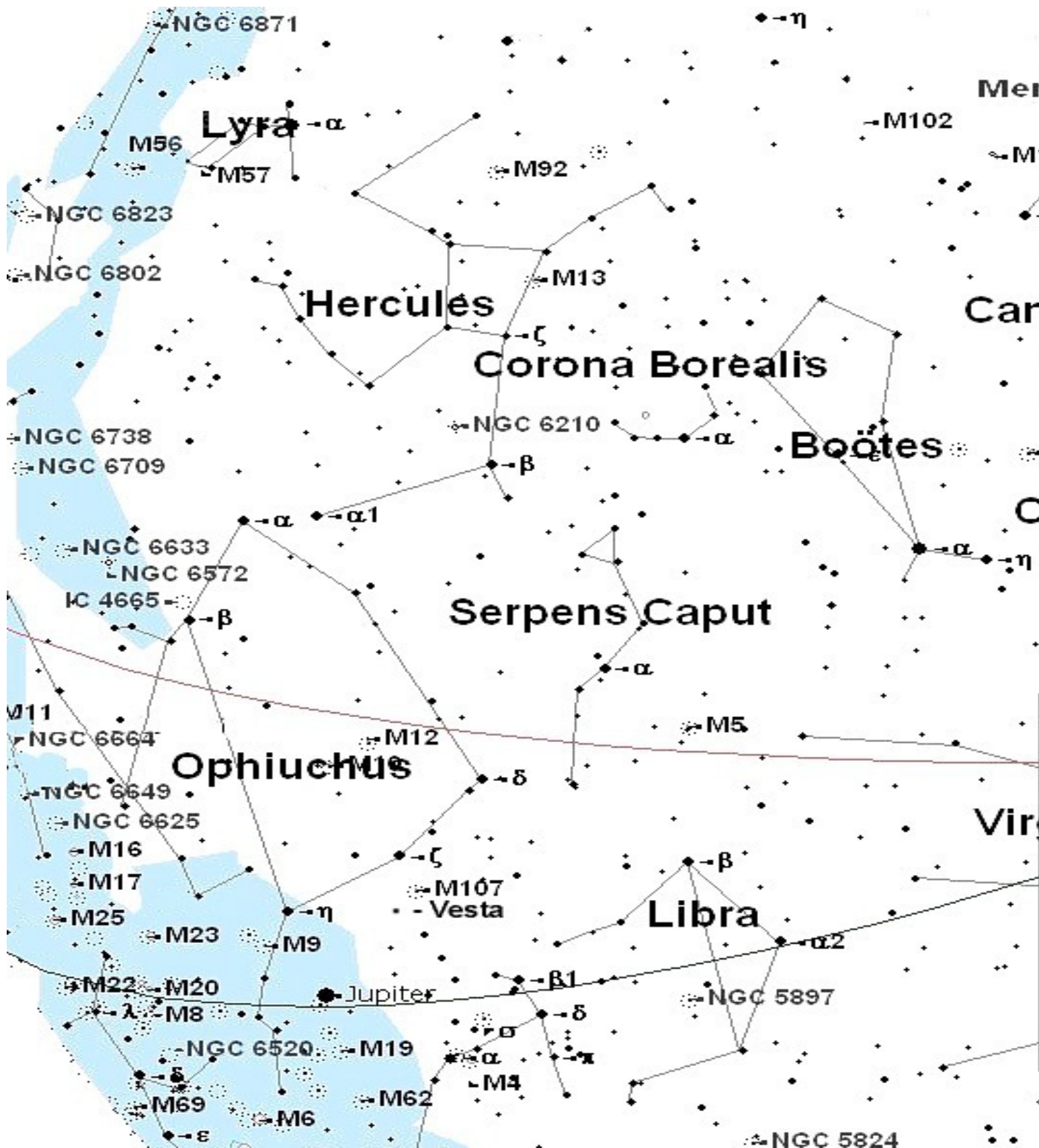


**Jupiter** in **Ophiuchus**, sadly at -22° declination and never far from the horizon, is the non-twinkling magnitude -2.5 star low in the SE before midnight. May 13-16 Jupiter is 0.5° N of globular cluster **NGC6235**; May 15-16 Jupiter passes 120" N of 7th magnitude star **HIP83629**; May 21-24 Jupiter will be 10' S of the planetary nebula **IC4634**; June 5-7 Jupiter passes 20' N of 9th magnitude globular cluster **NGC6235**. On June 5 at 6:15 am Jupiter will occult 8th magnitude star **HIP 82734**, a red giant 10,870 light years away and 8,700x the luminosity of our Sun. If it replaced the Sun, it would swallow up Mercury and Venus!

Transits of the Great Red Spot:		Transits of the Jovian Moons:
<ul style="list-style-type: none"> <li>May 14: 03:00</li> <li>May 15: 01:00 , 22:50</li> <li>May 16: 04:45</li> <li>May 17: 00:40</li> <li>May 19: 02:30 , 22:00</li> <li>May 21: 03:50, 23:50</li> <li>May 23: 05:20</li> <li>May 24: 01:30</li> <li>May 26: 03:00, 22:45</li> </ul>	<ul style="list-style-type: none"> <li>May 28: 04:40</li> <li>May 29: 0130</li> <li>May 30: 06:00</li> <li>May 31: 02:00, 21:50</li> <li>June 2: 03:50</li> <li>June 4: 05:00</li> <li>June 5: 01:18, 21:00</li> <li>June 6: 07:00</li> <li>June 7: 02:40</li> </ul>	<ul style="list-style-type: none"> <li>May 19: Io 00:05</li> <li>May 24: Io at 07:00</li> <li>May 26: Io at 01:30</li> <li>May 28: Europa at 22:30</li> <li>June 1: Ganymede at 23:40</li> <li>June 2: Io at 03:45</li> <li>June 3: Io at 21:58</li> <li>June 5: Europa at 01:15</li> </ul>



# The Sky th





This star chart of the constellation Leo includes the following details:

- Constellations:** Ursa Major, Leo Minor, Cancer, Leo, Sextans, Crater, Corvus, and Hydra.
- Stars:**
  - Ursa Major:**  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\epsilon$ ,  $\eta$ ,  $\delta$ ,  $\zeta$ ,  $\theta$ ,  $\iota$ ,  $\kappa$ ,  $\lambda$ ,  $\mu$ ,  $\nu$ ,  $\xi$ ,  $\o$ ,  $\pi$ ,  $\rho$ ,  $\sigma$ ,  $\tau$ ,  $\upsilon$ ,  $\phi$ ,  $\chi$ ,  $\psi$ ,  $\omega$ .
  - Leo:**  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\epsilon$ ,  $\zeta$ ,  $\eta$ ,  $\theta$ ,  $\iota$ ,  $\kappa$ ,  $\lambda$ ,  $\mu$ ,  $\nu$ ,  $\xi$ ,  $\o$ ,  $\pi$ ,  $\rho$ ,  $\sigma$ ,  $\tau$ ,  $\upsilon$ ,  $\phi$ ,  $\chi$ ,  $\psi$ ,  $\omega$ .
  - Leo Minor:**  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\epsilon$ ,  $\zeta$ ,  $\eta$ ,  $\theta$ ,  $\iota$ ,  $\kappa$ ,  $\lambda$ ,  $\mu$ ,  $\nu$ ,  $\xi$ ,  $\o$ ,  $\pi$ ,  $\rho$ ,  $\sigma$ ,  $\tau$ ,  $\upsilon$ ,  $\phi$ ,  $\chi$ ,  $\psi$ ,  $\omega$ .
  - Crater:**  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\epsilon$ ,  $\zeta$ ,  $\eta$ ,  $\theta$ ,  $\iota$ ,  $\kappa$ ,  $\lambda$ ,  $\mu$ ,  $\nu$ ,  $\xi$ ,  $\o$ ,  $\pi$ ,  $\rho$ ,  $\sigma$ ,  $\tau$ ,  $\upsilon$ ,  $\phi$ ,  $\chi$ ,  $\psi$ ,  $\omega$ .
  - Corvus:**  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\epsilon$ ,  $\zeta$ ,  $\eta$ ,  $\theta$ ,  $\iota$ ,  $\kappa$ ,  $\lambda$ ,  $\mu$ ,  $\nu$ ,  $\xi$ ,  $\o$ ,  $\pi$ ,  $\rho$ ,  $\sigma$ ,  $\tau$ ,  $\upsilon$ ,  $\phi$ ,  $\chi$ ,  $\psi$ ,  $\omega$ .
  - Hydra:**  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\epsilon$ ,  $\zeta$ ,  $\eta$ ,  $\theta$ ,  $\iota$ ,  $\kappa$ ,  $\lambda$ ,  $\mu$ ,  $\nu$ ,  $\xi$ ,  $\o$ ,  $\pi$ ,  $\rho$ ,  $\sigma$ ,  $\tau$ ,  $\upsilon$ ,  $\phi$ ,  $\chi$ ,  $\psi$ ,  $\omega$ .
- Deep Sky Objects:** M3, M40, M51, M63, M106, M53, M85, M88, M99, M60, M49, M61, M104, M68, M83, NGC 4725, NGC 2903, NGC 3521, NGC 4697, NGC 2571, NGC 2658.
- Other Features:** Ecliptic, Equator, Saturn, Venus, and various other celestial bodies.

## The Sky this Month (Continued)



**Saturn:** in **Leo** is magnitude +0.4 with a disk 18" wide and rings tilted at 15° with the southern side showing. Mid-May Saturn reaches quadrature with the Sun's light shining from one side, making the shadow of the planet on the rings very noticeable with an almost 3-d effect (for a better 3-d effect, observe with a binoviewer). Saturn is drawing closer to the **Sun** and sets earlier every night as summer nears.

Many moons of Saturn are visible in amateur telescopes. Binoculars will show Saturn's has a ring system and the moon **Titan** (aptly named). A small telescope will show **Dione**, **Tethys** and **Rhea**. A 6" scope will show **Enceladus** and **Iapetus**.

The formations of Saturn's moons can give endless entertainment: on May 13th, **Rhea**, **Mimas**, **Enceladus**, **Tethys** and **Dione** will be lined up to the E of Saturn with **Titan** all alone on the W side of the planet; on May 16 and again on May 31, **Enceladus** and **Mimas** will transit the disk of Saturn simultaneously, starting at 9:30 pm, their tiny shadows invisible on the planet. (they're there; you just won't see 'em). On May 20th, May 24th and again May 29th the 10th magnitude moons **Dione**, **Tethys** and **Rhea** are in a line S of the planet; On May 26th watch **Dione** and **Tethys**, race N of Saturn, almost touching, while a very large telescope will also show **Enceladus** and **Mimas**, also almost touching, race around the planet's S side in the opposite direction! On May 30th the little moons **Dione**, **Tethys** and **Rhea** will form a small triangle to the E of Saturn's rings.



**Uranus** at magnitude 5.9 in Aquarius with a greenish disk 3.5" in diameter, is still too close to the **Sun** to show itself until early morning hours over the E horizon. May 12th the crescent Moon will be 1.3° N of Uranus, making it easier to find but harder to see (you can't win, can you?).



**Neptune:** in **Capricornus** is also in the Eastern sky before sunrise but its blue 2.2" disk is hard to find. Observers say it looks like a 7.9 magnitude star even in moderate telescopes.



### Comets Meteors and Minor Planets

**VESTA**, recently promoted to "minor planet" by the IAU, will be at opposition on May 30th and throughout May and June will be at least 6th magnitude in southern **Ophiuchus**, not far from Jupiter. May 28-30 **Vesta** will pass 1° S of the bright globular cluster **M107** - a great imaging opportunity for those wanting to show that asteroids DO move.

**METEOR SHOWERS:** "shower" may be overly ambitious for the **Eta Aquarids** after their "peak" on May 5th... you might still see the odd **Aquarid** later in May, they are rather slow moving but can be very bright.

**COMETS:** Last month's Comet **Encke** was a bust for us due to bad weather. It is now a difficult target for southern hemisphere observers. **C/2007E2** called Comet **Lovejoy** is visible in the constellation **Draco** presently at magnitude 8.4 with a small coma about 6' in diameter. It is fading fast so look for it as soon as possible; it's almost overhead before dawn, the best time to image it.



## The Moon This Month by Mike Spicer

**MOON:** there are two full moons in May (aren't we lucky!)

- **Full Moon** May 02 May 31
  - **Last Quarter** May 10 Jun 08
  - **New Moon** May 16 Jun 14
  - **First Quarter** May 23 Jun 22
- 
- May 12th the Moon will be  $1.3^{\circ}$  N of **Uranus**
  - May 19th the Moon will pass  $0.5^{\circ}$  N of **Venus**
  - May 21st the Moon will cruise through **M44**
  - May 22nd the Moon will be less than  $1^{\circ}$  N of **Saturn**

## Member of the Month—Jacob Steckner—by Alex and Ann Tekatch

If you have been to any recent meetings, you will have seen our new, young member: Jacob Steckner. Jacob has been sharing the job of drawing door prize tickets with Alexandra for the past few months. He is very lucky when it comes to HAA door prizes. He's already won at least twice!

Jacob is the son of Tom Steckner, a long time HAA member. Jacob is 8 years old and very interested in stamp collecting. We first met him at a stamp show in Burlington about 3 months ago where he and Alex were

poring over a pile of stamps at the show's Youth Booth. Since that

time, Jacob has been coming to HAA meetings with his dad so he

can learn more about astronomy and compare his growing stamp collection to Alex's. For someone so young, Jacob has an amazing collection of stamps! He isn't shy and will be happy to show it to you.

Jacob's enthusiasm is as infectious as his smile. We hope he continues to accompany his dad to many more meetings. That is, if he isn't too busy catching supper...





## Astronomy Day @ the Discovery Centre by Mike Spicer

Hamilton Amateur Astronomers celebrated Astronomy Day 2007 with public viewing from 1 - 11 pm on April 21st at the Parks Canada Discovery Centre along the bayfront in Hamilton.

A warm and brilliant Saturday afternoon brought hundreds by the Discovery Centre where 18 telescopes of all sorts from small refractors to a 14" SCT were manned by our very active members. A large number of telescopes offered views of the sun, some from Baader-type solar filters and a few dedicated Hydrogen-alpha filter telescopes. Visitors reported as many as five distinct solar prominences visible along the edge of the sun.

Inside, members manned the HAA welcome tables where Club information - brochures and issues of Event Horizon - were on display. Thanks to Jackie Fulton there was a gorgeously wrapped basket as a draw prize and over 100 members and visitors filled out ballots for the draw: winner Lin Appleton, congratulations!

Glenn Muller had worked long hours on the a/v presentation "Into the Mystic" and he presented this in the beautiful Discovery Centre 65 seat theatre at 1:30 and 7:30 pm. The evening show was so overfilled that Glenn graciously re-presented at 8:45 at the request of Discovery Centre staff, thanks Glenn!

Meanwhile, outside the public was lining up even before dusk, looking at the lovely crescent Moon, the planets Venus and Saturn (count those moons! We saw Rhea, Dione and Tethys clustered close to the rings; Titan farther off on one side and Iapetus on the other). A slight breeze cooled our observers after an almost hot afternoon. Once it was dark, telescopes ventured to



various stars and deep sky objects. No one seemed daunted by a little haze that dampened observing clarity in the early evening. People were still observing at 11 pm as things wound down, the darkness permitting views of several globular clusters!

It was gratifying to see that over half of our club's members came out to make this Astronomy Day an

unqualified success. Telescopes were spread all over the Discovery Centre's spacious grounds. Club members showed many celestial treasures, gave advice on telescopes and encouraged visitors to get involved with our Astronomy activities. Thanks to our wonderful partners at the Parks Canada Discovery Centre. April 21, 2007 was a proud day for Hamilton Amateur Astronomers.





## Asteroid Occultation by Mike Spicer

471 Papagena occults TYC 1965-00020-1 2007 May 24 3h 56m to 4h 1m UT

**Star (2000):**

Mv = 11.0 Mp = 11.3  
RA = 9 34 9.534  
Dec = 28 56 47.38

Max Duration = 5.5 secs

Mag Drop = 1.7

Sun : Dist = 74 deg

Moon: Dist = 23 deg

illum = 53%

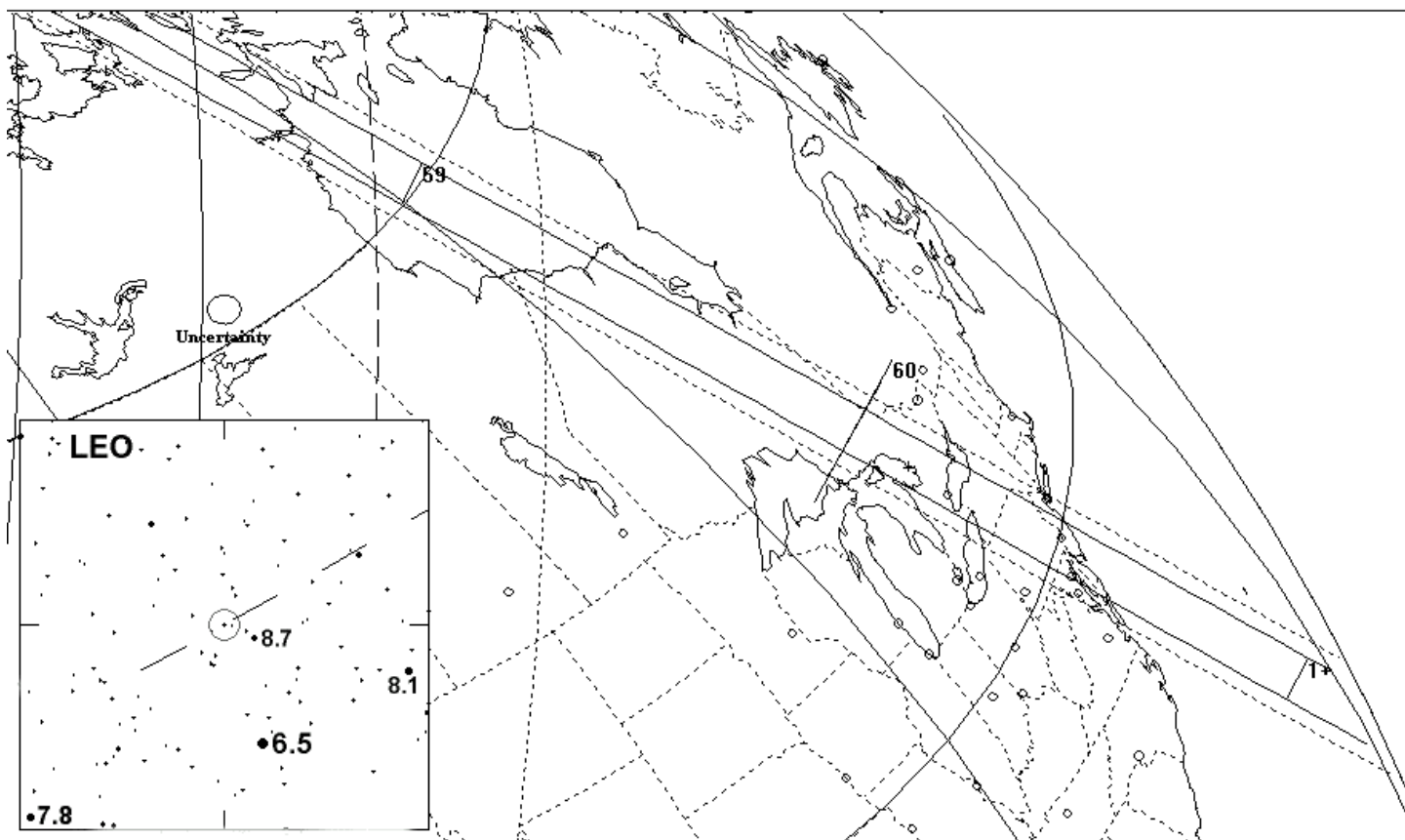
**Asteroid:**

Mag = 12.4

Dia = 134km, 0.058"

Parallax = 2.772"

Hourly dRA = 2.550s



One of the events in the sky that most amateurs have never seen is the passage of an asteroid in front of a star. They are transient events that require planning and good observational skills. This month is a chance to add an occultation to your observing log.

Wednesday 23 May at 11:59:59 pm (early enough for people to observe) the rather large Asteroid **Papagena** (discovery # 471... it is 134 km in diameter) a carboniferous asteroid (therefore dark) will occult a 10th mag. star located above the sickle of **Leo** (about 10° N of Saturn) at RA 9h 34.2m, Dec +28° 56.8'

The occultation will see our star fade to 1/4 its brightness (but still visible in 80mm scopes) for a second or two.

Here's the chart showing the occultation path (wide because the asteroid is large), with an inset chart of the 2.5° surrounding the star, circled at the centre.

# Event Horizon— Ten Years ago

## Baffling Newtonians

by Rich Combs

I'd like to start by asking two rhetorical questions: First, how many of you would spend your hard earned cash on a refractor that didn't have any baffles or glare stops? Even the cheapest "department store specials" have at least one or two; and high quality refractors are invariably advertised as being fully baffled.

So, the second question is: how many of you own a fully baffled Newtonian? Maybe we are missing something here.

It is generally accepted that refractors are superior to reflectors in regards to contrast and definition. Certainly the central obstruction is a significant factor here. However, we believe that baffles or glare stops are also an important factor in improving contrast and installing them in a Newtonian requires relatively little cost or effort.

When asked why Newtonians don't get baffles, the usual answers are:

\* Newtonians are inexpensive scopes - baffles would not be cost effective.

\* People build large Newtonians like professional observatory scopes - with an open framework because they consider it state-of-the-art.

\* Baffles are too much trouble.

\* I don't know.

So, here is an easy step-by-step procedure to improve the contrast of your Newtonian, and specifically, how to properly size and locate the baffles. First some general guidelines for contrast enhancement:

\* Prevent off-axis light from reaching the primary mirror. This is the most important, but not the only, function of the baffles.

\* Extend the telescope tube far enough beyond the focuser to prevent extreme off-axis light (street lights for instance) from reaching the image plane or eyepiece directly.

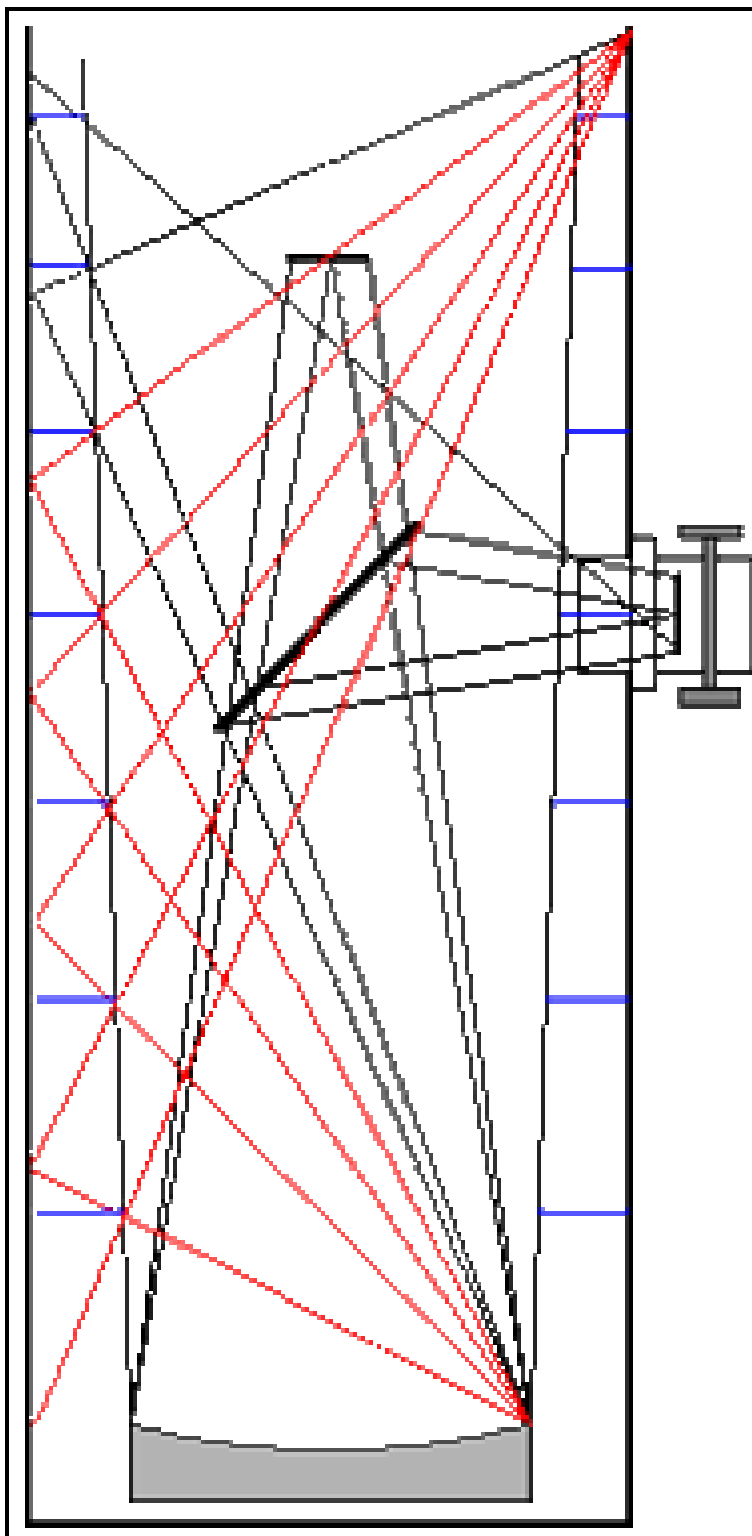
\* Prevent the secondary mirror from receiving any scattered light.

\* Install black velvet on the first 3 or 4 baffles; those that the secondary sees most directly.

\* Install black velvet on the tube wall directly opposite the focuser.

\* Blacken everything, including the edge of the secondary mirror.

\* Use the smallest possible secondary support and the smallest reasonable secondary.





## Clouds From Top to Bottom by Patrick L. Barry

During the summer and fall of 2006, U.S. Coast Guard planes flew over the North Pacific in search of illegal, unlicensed, and unregulated fishing boats. It was a tricky operation—in part because low clouds often block the pilots' view of anything floating on the ocean surface below.

To assist in these efforts, they got a little help from the stars.

Actually, it was a satellite—CloudSat, an experimental NASA mission to study Earth's clouds in an entirely new way. While ordinary weather satellites see only the tops of clouds, CloudSat's radar penetrates clouds from top to bottom, measuring their vertical structure and extent. By tapping into CloudSat data processed at the Naval Research Laboratory (NRL) in Monterey, CA, Coast Guard

pilots were better able to contend with low-lying clouds that might have otherwise hindered their search for illegal fishing activity. In the past, Coast Guard pilots would fly out over the ocean not knowing what visibility to expect. Now they can find out quickly. Data from research satellites usually takes days to weeks to process into a usable form, but NASA makes CloudSat's data publicly available on its QuickLook website and to users such as NRL in only a matter

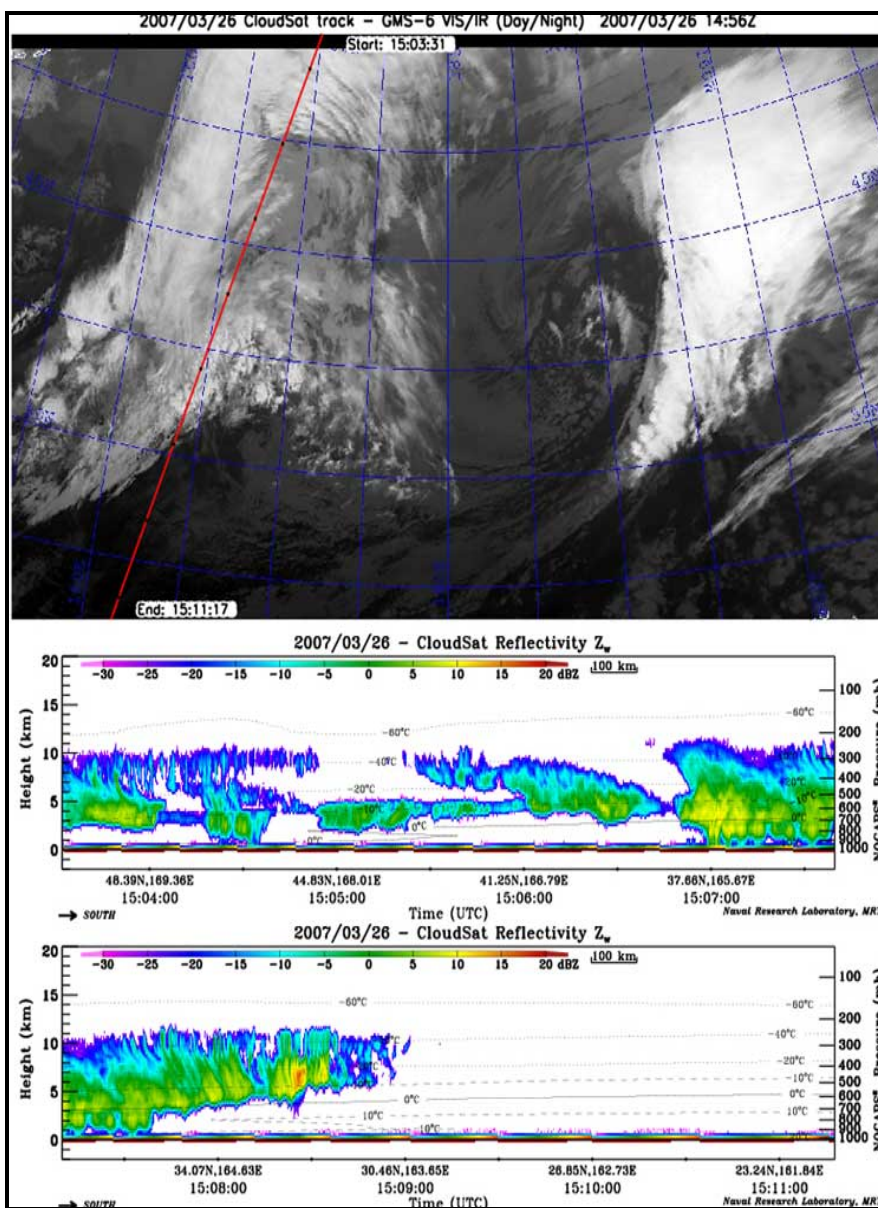
of hours—making the data useful for practical applications.

"Before CloudSat, there was no way to measure cloud base from space worldwide," says Deborah Vane, project manager for CloudSat at NASA's Jet Propulsion Laboratory.

CloudSat's primary purpose is to better understand the critical role that clouds play in Earth's climate. But knowledge about the structure of clouds is useful not only for scientific research, but also

to operational users such as Coast Guard patrol aircraft and Navy and commercial ships at sea.

"Especially when it's dark, there's limited information about storms at sea," says Vane. "With CloudSat, we can sort out towering thunderclouds from blankets of calmer clouds. And we have the ability to distinguish between light rain and rain that is falling from severe storms." CloudSat's radar is much more sensitive to cloud structure than are radar systems operating at airports, and from its vantage point in space, Cloudsat builds up a view of almost the entire planet, not just one local area. "That gives you weather information that you don't have in any other way."



There is an archive of all data collected since the start of the mission in May 2006 on the CloudSat QuickLook website at [cloudsat.atmos.colostate.edu](http://cloudsat.atmos.colostate.edu). And to introduce kids to the fun of observing the clouds, go to [spaceplace.nasa.gov/en/kids/cloudsat\\_puz.shtml](http://spaceplace.nasa.gov/en/kids/cloudsat_puz.shtml).

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



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**We're on the Web!**

[www.amateurastronomy.org](http://www.amateurastronomy.org)

## Special Notice

As you may have noticed from our latest financial report, we need to curb our club's expenses. One of our largest expenditures is the club newsletter, Event Horizon. The cost to print and mail the newsletter is almost \$1500 annually! At a recent council meeting, it was recommended that the newsletter no longer be mailed to members. Anyone with Internet access can download the latest newsletter (and any previous ones) from the club's website: [www.amateurastronomy.org](http://www.amateurastronomy.org). 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 mailings 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.*

### 2007 HAA Council

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Publicity	Jackie Fulton
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Councillor	Greg Emery
Councillor	Harvey Garden
Councillor	Heather Neproszel
Councillor	Ann Tekatch
Councillor	Cathy Tekatch

**Next Meeting of the HAA  
is June 8th, 2007  
7:30 PM @  
The Hamilton Spectator**

Meeting space for the Hamilton Amateur  
Astronomy Club provided by

**Teamsters Local 879**

and

**The Hamilton 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](mailto: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

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