

MARCH MEETING: A MATTER OF GRAVITY!

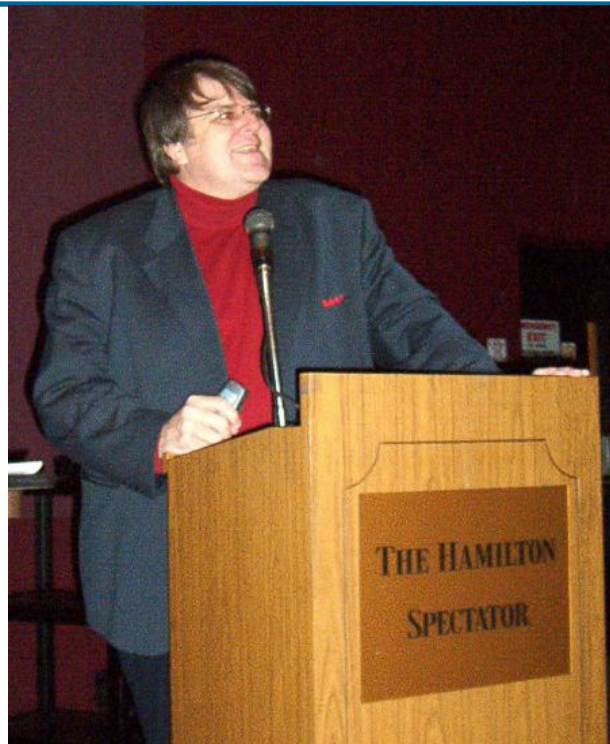
Hamilton Amateur Astronomers met at the Spectator Auditorium to pick up their copies of this month's EVENT HORIZON, to check in on swap tables and displays at the back and to hear presentations by:

Chairman Glenn Muller, reviewing our club activities of the past month, including the very well-attended Total Lunar Eclipse event, first public night at the Discovery Centre. Glenn also outlined the upcoming Messier Marathon (best on March 17th) and the Members Night at the McCallion Planetarium, Friday 23 March.

Ann Tekatch, announcing the passing of H.A.A.'s founding member and honorary Chair, Jim Winger. Ann recalled her long association with Jim, his life-long service to the astronomy community and his quietly effective manner. Then she led us in a moment of silence.

Mike Jefferson, described the radio telescope equipment the club has received, its connection to the worldwide astronomy community, and the results he hopes to

Continued on page 2



Tim Philp Spoke on Gravity

From The Editor's Desk

Well, winter is finally on its way out and April showers are here. It is a time for the 'fair-weather astronomers' to start dusting off those telescopes and star charts for the upcoming observing season.

Even better, how about writing an article for the Event Horizon? Let us know what have you have been up to.

Tim Philp, Editor

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INTERNATIONAL ASTRONOMY DAY

Saturday April 21, 2007 1pm to 4pm & 7pm to 10pm The Parks Canada Discovery Center 47 Discovery Drive, Harbour West in Hamilton. **RAIN OR SHINE, FREE AND OPEN TO THE PUBLIC** Solar viewing during the afternoon, observing at night. (weather permitting) Theater Presentation (afternoon and evening)

January Meeting (Continued)

achieve with its increased resolution.

Mike Spicer, with the Sky This Month, gave an intro for beginners, described March's visible planets, gave the position and brightness expectations for Comet Encke and a few LP variable stars. Then Mike introduced us to Charles Messier's life and took us through the first half of the Messier Marathon, object by object. He advised which instrument should be used on each object, where and when. His 18 minute presen-

tation (see our TOOLS web page) showed it's easy to do half the Marathon by 11 pm.

After the Skywatch presentation, the youth among us drew stubs for over half a dozen door prizes of hot gel packs and several beautiful wall posters. It pays to arrive before 7:30 at the H.A.A. monthly meetings!

Tim Philp, our main speaker of the night, presented on "Gravity". Using several animations, Tim covered the historical development of the concept and meas-

urement of "universal gravitation", examined its nature, its qualities, application both on Earth and in space and its relativistic shortcomings... all in just under an hour.

After the presentations ended at 9 pm, members stayed around for a while, talking together, looking at displays, taking the "It's Free!" items and checking the sky (some had telescopes for observing in the parking lot). Unfortunately it was cloudy, so we drove to East Side Mario's for a few hours of fun talk and feasting... Because...

HAA IS A GREAT ASTRONOMY CLUB !

LOFAR II

An Update by Mike Jefferson

The 'knockdown' workstation furniture is built and the workstation is being configured at present. The supporting furniture is a unit purchased at Staples and built in PQ, Canada. It went together over a period of a few days with some hand tools, no hitches and with reasonable effort. Once the workstation is configured and on board, the entire unit will be pushed into place in the computer room and attached to the internet and the receiving equipment. Beyond this will be the 'winding' of the radio 'objective', connecting it, the receiving equipment and the workstation, programming the workstation, testing the whole and fine tuning it. I have a lot to learn and do. Realistically, it should be up and running by the end of April or the middle of May. I will keep you apprised of how we are doing.

Need a great set of eyepieces?

Mike Spicer has Celestron Plossl eyepiece kits available for sale. Contact him at

DeBeneEsse2001@aol.com





Chair's Report by Glenn Muller

I came across an interesting tidbit I thought I'd share because it illustrates how, no matter who you are or where you are, if your astronomical pursuits involve setting up and using equipment, we are all one for the common experience.

For instance, when a neighbour's porch light comes on you might have fantasized for just an instant about picking up your telescope and taking it to the Moon. Well, there is a fellow named John Young who has done that and here is his story.

In 1972, John Young was the Commander of Apollo 16, the fifth mission to successfully land on the Moon, and he was assigned to operate the

Far Ultraviolet Camera/Spectrograph. This instrument utilized a 3" telescope to gather images and spectra at wavelengths between 500 and 1600 Angstroms; wavelengths which do not penetrate Earth's atmosphere and which come, primarily, from hot stars of spectral classes O, B, and A, with surface temperatures of 10,000° to 50,000° K.

Designed by astrophysicist George Carruthers, the unit had a 20° field of view (FOV), could detect stars down to magnitude 11, and record

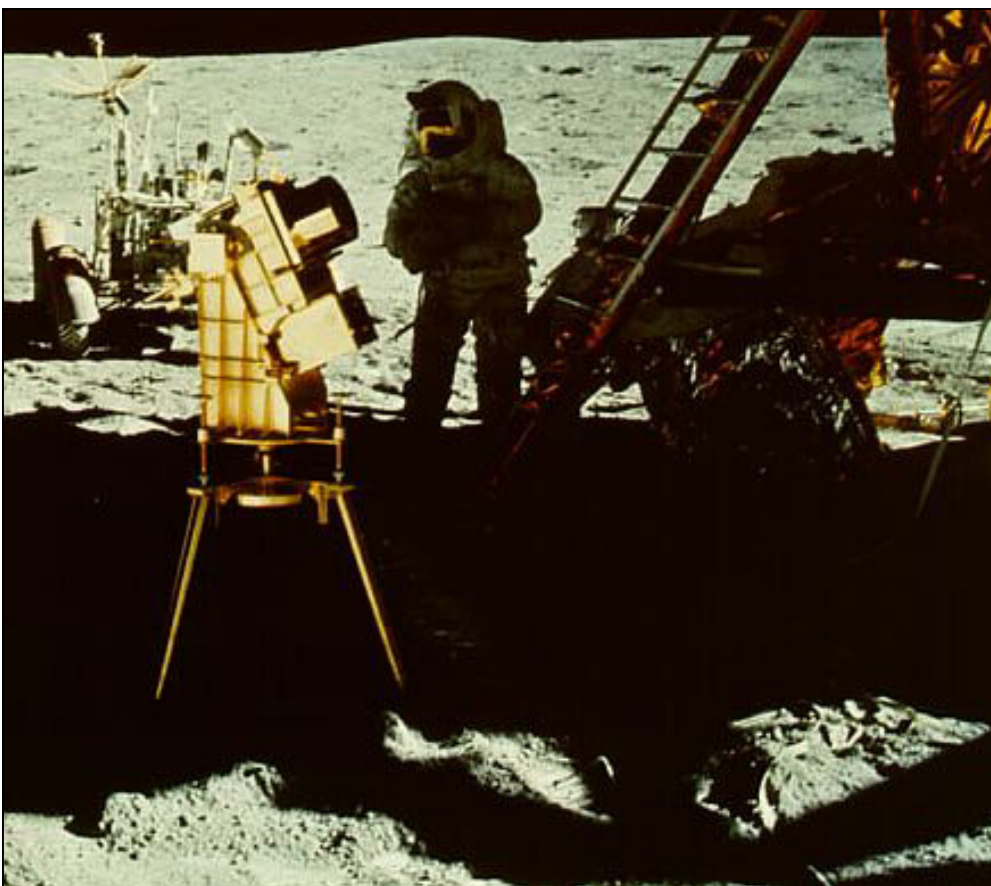
images onto a film canister. Intended to image star clusters, the Large Magellenic Cloud, nebulae, and Earth's upper atmosphere, it would be the first telescope used to make observations from another planetary body. Before it did so,

ing the unit closer to the LEM but this reduced the FOV and cancelled out two of his planned targets.

The battery used to run the unit needed to be in sunlight which meant a length of cable was required. Cables are the bane of as-

tronomers everywhere and Young tripped on his more than once.

Where we have to be careful not to breathe on our lenses to avoid fogging, the astronauts had to tread carefully so as not to raise dust clouds. Dressed in the lunar version of Canadian winter wear there was also the unique problem that "out-gassing" could contaminate the shots, so Young had to move stealthily back and forth



however; Commander John Young would have to "pay his observer's dues".

Gold-plated for thermal control, the imager would sit on a tripod in the shadow of the lunar excursion module (LEM). However, the landing was delayed and we all know what it's like to arrive late for a star party and get a less than ideal spot. In Young's case, he wound up on a slope and had to sink two of the tripod's legs into the "soil" to be level. The slope also meant less shadow. Young countered by mov-

between frames – not easily done in Moon boots!

In the end, though, his persistence and perseverance paid off and 178 useful exposures were brought back for study. While NASA praised the results, I think we'll tip our hat to Commander John Young for doing a remarkable job on the ultimate field trip. Something to ponder next time you consider observing on the Moon.

Clear skies!



Curious Collimation Challenges by Hal Muller

Collimation is the process of adjusting the components of a telescope so that incoming rays of light are parallel to the optical axis. Little did I know the role that collimation would play in the past three years.

On 26 August of 2003, I decided to buy a refractor after viewing Mars. As a result of surfing the Internet for a week or so I decided on a 6" achromatic, which typically displays chromatic aberration when viewing very bright objects. I intended to upgrade the telescope at one-third the price of apochromatic performance by obtaining an Aries Chromacorr, which theoretically was supposed to eliminate false colour.

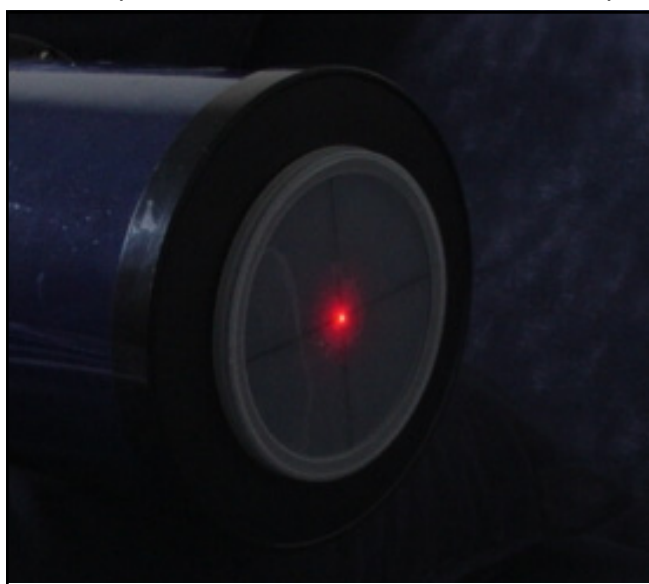
I purchased a new Sky-Watcher 6" achromatic collimatable refractor in September and an Orion collimation tool often referred to as a Cheshire "eyepiece". It is an eyepiece without any glass that has three openings. The Cheshire is inserted into the drawtube of the refractor via a 1 1/4" eyepiece adapter. While viewing through the peephole, light preferably from the sun, or from a strong flashlight enters at 90 degrees to the

Cheshire. The light is reflected 90 degrees by the built-in mirror toward the opposite end of the telescope that in turn reflects off the objective cell back to the peephole. Cross hairs at the bottom of the Cheshire are essential for collimating a reflector, but not for a refractor. However, they do serve a valuable purpose in refractors.

A typical achromatic refractor when collimated should show two reflected circles of differing sizes and colours when observing through the Cheshire peephole. Collimation is achieved when the two circles are concentric and cen-

tred as indicated by the crosshairs. Mine wasn't. Using a Phillips screwdriver and an Allen wrench, I managed to "push-pull" the objective lens so that the two circles were concentric. However, they were not centred no matter how I tried. It did not occur to me that the focuser housing was not parallel to the light path of the telescope.

In December of 2003 I acquired an Intes diffraction grating to determine via a start-test whether my refractor was "neutral", "over-" or "under-"corrected with respect to spherical aberration as this would



determine which model of Chromacorr - N, U, or O - would be needed and the amount to be corrected. As recommended by the designer of the Chromacorr I also acquired an Intes 96% dielectric diagonal. The US distributor of the Chromacorr field-tested two of six on hand that were suitable and I purchased a S150 model that showed the least colour. On my return to Canada, knowing that the Chromacorr was extremely sensitive to the direction and length of the light path through its special optical glass, I calibrated the Chromacorr by experimenting with sev-

eral 48mm empty rings provided by the distributor. To ensure that the Chromacorr was collimated regardless of the orientation of the diagonal that housed it, I applied several layers of electrical tape at the tail end to ensure a snug fit within the drawtube. At last my refractor was ready for observing the moon and planets. Although the Chromacorr significantly reduced false colour it did not completely eliminate it, despite my efforts.

A year later, I purchased a William Optics rotateable focuser to eliminate repositioning the diagonal when switching between observing targets. I persuaded the salesperson to laser-collimate the focuser on the premises, but the best he could do was circularize the offset traced out when the focuser was rotated. Unfortunately, the William Optics focuser showed no improvement and when it was rotated, the finder scope was no longer aligned. Later I found out that the mounting rail or dovetail plate and tube rings that secure the telescope to an equatorial mount need to

be collimated to maintain finder scope alignment by eliminating cone error. Cone error results from the optical axis of the telescope not being parallel to the right ascension axis of such mounts. Cone error of itself is not relevant to the optical performance of a telescope whether it be a refractor or reflector. However, only a cone error-free computerized equatorial GoTo mount that is precisely leveled and polar aligned can accurately track objects after completion of a one-star alignment.

In September of 2005 I bought an Antares collimatable diagonal in

the hope of using it to compensate for the misaligned focuser housing. Using a fine pen, protractor, and ruler I drew two thin crosshair lines intersecting at 90 degrees onto a semi-opaque 4" plastic container cover to replace the Sky-Watcher's dust cover's 4" removable cap. I used a Howie Glatter dual mode laser collimator in 1 1/4" mode. By loosening and tightening the screws located on the exterior of the mirror side I managed to center the laser beam onto the crosshairs. I was encouraged by a slight further reduction in false colour on my next lunar observing session.

In early October, I became aware of a collimatable focuser by MoonLite specifically designed to overcome focuser misalignment problems of

Synta refractors made in China whose retail names include Sky-Watcher, Celestron, and Orion. I took possession and field-tested it as is on the evening of October 28 in Niagara Falls NY, by observing Mars. Not being able to collimate the MoonLite focuser on the fly, I collimated the Antares to the focuser instead. No change in false colour.

I proceeded to collimate the MoonLite focuser.

I inserted my dual Glatter laser in 2" mode directly into the focuser whose push pull setscrews were iteratively adjusted until the laser shone on the intersection indicating successful collimation. The laser, dust cover, and cap were

alternately rotated 90 degrees four times each (sixty-four separate observations in total) to verify concentricity. I repeated this procedure in 1 1/4" mode using a TeleVue adaptor. No offset from centre measured in mm, nor deflection from centre measured in degrees was observed in either mode. However, when I used an Orion LaserMate laser it traced an ellipse whose offset varied from 0mm and no deflection to 2mm with 225 degrees of deflection at its extreme! At this point I decided to use only

positioned 180 degrees opposite the thumbscrew for observational consistency. Why?

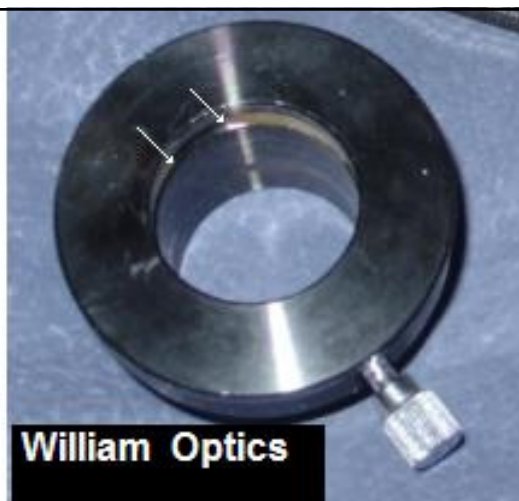
I had noticed that this gap shifted in location after compression, compared to its location beforehand. This shift also occurred in the compression ring in the focuser that housed either a 2" eyepiece or diagonal. I had also observed that the location with respect to the thumbscrew and the size of the compression ring gap had a noticeable effect on increasing deflection amount.

The next task was to rotate the diagonals then record offsets and deflections occurring at 0 and 180 degrees.

The last task was to rotate the adaptors when mated with the error-free TeleVue diagonal. Observations were recorded at 0 and 180 degrees rotation after applying simultaneous rotations of both the



TeleVue



William Optics

the Howie Glatter laser.

Many nights of unfavourable weather during the winter of 2005-2006 provided an opportunity to precisely collimate the Sky-Watcher, Chromacorr, Antares, and MoonLite indoors. While doing so, I decided to quantitatively compare my collection of accessories with the collimated Sky-Watcher horizontally positioned:

William Optics #2 came with the rotateable focuser. MoonLite adaptor came with the collimateable focuser. TeleVue #2 came with a 2X TeleVue PowerMate.

Whenever a compression ring was used (focuser, diagonal, and adaptor) the gap was symmetrically

diagonal and adaptor.

MoonLite adaptor was not rotateable because its thumbscrew location prevented insertion into diagonal.

After weeks of collimating followed by comparisons, the TeleVue diagonal and 1 1/4" adaptor (#1) were used at the first available observing opportunity of the moon. A trace of false colour remained attributed to a known difference in the distance the light path traveled to the eyepiece through the ultra-sensitive Chromacorr-diagonal mating. This disappointment changed to exhilaration when it was completely eliminated upon using the collimated Antares diagonal.



The Future of Amateur Astronomy by Mike Jefferson

This project brings to mind some thoughts about the general direction of astronomy and amateur astronomy in particular. Where are we going re: the foreseeable future? If we look back over the past fifteen, or so, years, some rather interesting trends are beginning to emerge. One of these is the shift away from backyard telescopes and the movement of the production of these from traditional places of manufacture to mainland China. Without getting into arguments about optical quality (optics from China are getting better), we have seen the recent closure of Tasco, the near bankruptcy of Celestron, the rumours of troubles at Meade, the takeover of Questar by NEMCO and the closure of the dedicated amateur-professional and professional divisions at Carl Zeiss. There are probably others that I know not of.

First, let's look at the optical offerings from mainland China. Although this production does not quite match the general quality of traditional manufacturers, it is getting better. It had its origins in some pretty 'colourful' equipment, but much of that is a thing of the recent past. It is, however, much cheaper and this is the strongest argument it has going for it today. It is represented on our shores through partnerships and takeovers or buyouts of companies like Celestron. Two of its major tradenames are Synta and Orion. These offshore manufacturers produce good equipment and they are doing it in economies at about 3rd world scale. Their 'bird in the hand' is that they are doing it VERY affordably. Why would the average potential telescope buyer pay dearly for a 4" domestic or European refractor when he can get a 6" optic from mainland China for about 1/3 of the cost?

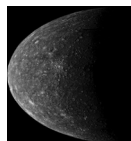
Coupled with the movement of telescope production to the Orient, we

see an apparent lack of enthusiasm for do-it-yourself astronomy among young people. Not only do they not join astronomy clubs, they do not submit astronomy research or investigation to science fairs. Modern science fairs see a pathetic offering of astronomical entries. Most young people are not interested in staying out at night with a backyard telescope, observing and logging data. It is cold, hard work during most of the year in the northern hemisphere. Consequently, the vast majority of them move on to other fields of investigation. The telescope that was a Christmas gift ends up in the closet and is eventually 'moved' at the spring garage sale. More and more it becomes apparent that youngsters with any astrophysical interests in late high school and university are coming to them from a computer-based and/or a more serious research-oriented 'agenda'. In many cases these interests are very narrow and may only be marginally related to general knowledge astronomy. Many of these students could not navigate the night sky with any competence and have never even used a telescope. Even Carl Sagan had no interest in telescopic observation whatsoever, other than the images that were produced. Much of what today's potential professional astronomers want can be found on the internet. The other interesting thing that emerges is the actual closeness of seemingly totally unrelated fields. Astrophysics graduates join the ranks of computer programmers or get good positions with statistics companies doing research on insurance, etc. This can happen because the skills in highly technical fields are, more often than not, very closely related. However, the plain truth is that most kids today have very little interest in amateur astronomy as such. So, telescope sales are down!

Poor telescope sales have resulted in company closures and distress. Tasco is now a memory. Celestron was saved only by the invention and the sales of the Sky Scout handheld 'planetarium'. People who do not want to get involved with the techniques of using a telescope buy a much cheaper device which lets them point to night sky objects and learn about them. It is also upgradable. The giant, Meade, has had sales troubles and the venerable Questar was saved only by industrial and professional sales and its takeover by the National Engineering and Manufacturing Company. The three divisions of Ernst Leitz (Leica) have had their own problems. The cost of producing top-quality equipment is the worst. It has withdrawn all sales outlets in Canada. Canadian requests for equipment must be processed through the U.S. by Canadian retailers with connections and the waiting period is a long one. Leica never did make dedicated astronomical equipment but much of what it sells is highly suitable for that activity. Instead, it makes recommendations on its website as to which of its items would be most suitable to an amateur astronomer's needs. Carl Zeiss is in a similar situation after 161 years of highly successful existence. Until 13 years ago it had an amateur-professional division for small astronomical telescopes. Until 4 years ago it had a professional division for large telescopes. Both of those dedicated astronomical divisions are now dismantled. They were not competitive in a free-market economy. Formerly, Zeiss was a foundation. Today, it is a stockholding company and has to be competitive. Astronomical telescope production does not lend itself very well to competition. The market is small and unpredictable and Asia can build them
(Continued on Page 12)



The Sky this Month—by Mike Spicer



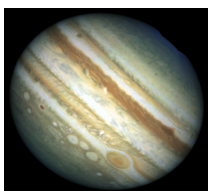
Mercury The speedy planet is low in the pre-dawn East and moving toward conjunction with the Sun on May 2nd, after which it moves into the evening sky. On May 10th Mercury is just 2.5° S of M45, the **Pleiades**.



Venus The jewel of the evening sky is moving further E away from the **Sun** with each passing day. Venus is unmistakable at magnitude -4; on May 9th it will be just 2° N of **M35**. In a telescope the disk of Venus is gradually becoming less gibbous as its diameter increases.



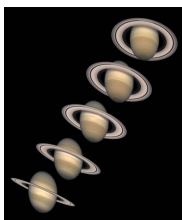
Mars Rather inconspicuous at magnitude +1 and with a disk 5" in diameter, Mars is still low in the morning sky, moving through the constellation **Aquarius**. On April 28-29 Mars will be less than 1° from **Uranus** (making **Uranus** easier to find).



Jupiter Still very low on the Ecliptic in **Ophiuchus**, Jupiter will move less than 3° in the sky in the next month. The planet has become brighter at magnitude -2.3 and its disk is much larger now 41" across and continuing to grow as it nears opposition in June. Jupiter rises before midnight now, but stays low in the sky. The equatorial zone has been very turbulent and dark for the past few months, making the planet appear to have one giant equatorial belt in very small telescopes or under low magnification.

May 14-16 the planet will seem to have another moon, as it comes close to 7th magnitude star **HIP83629**. On May 16th the planet will be only $1/2^\circ$ N of globular cluster **NGC6287**.

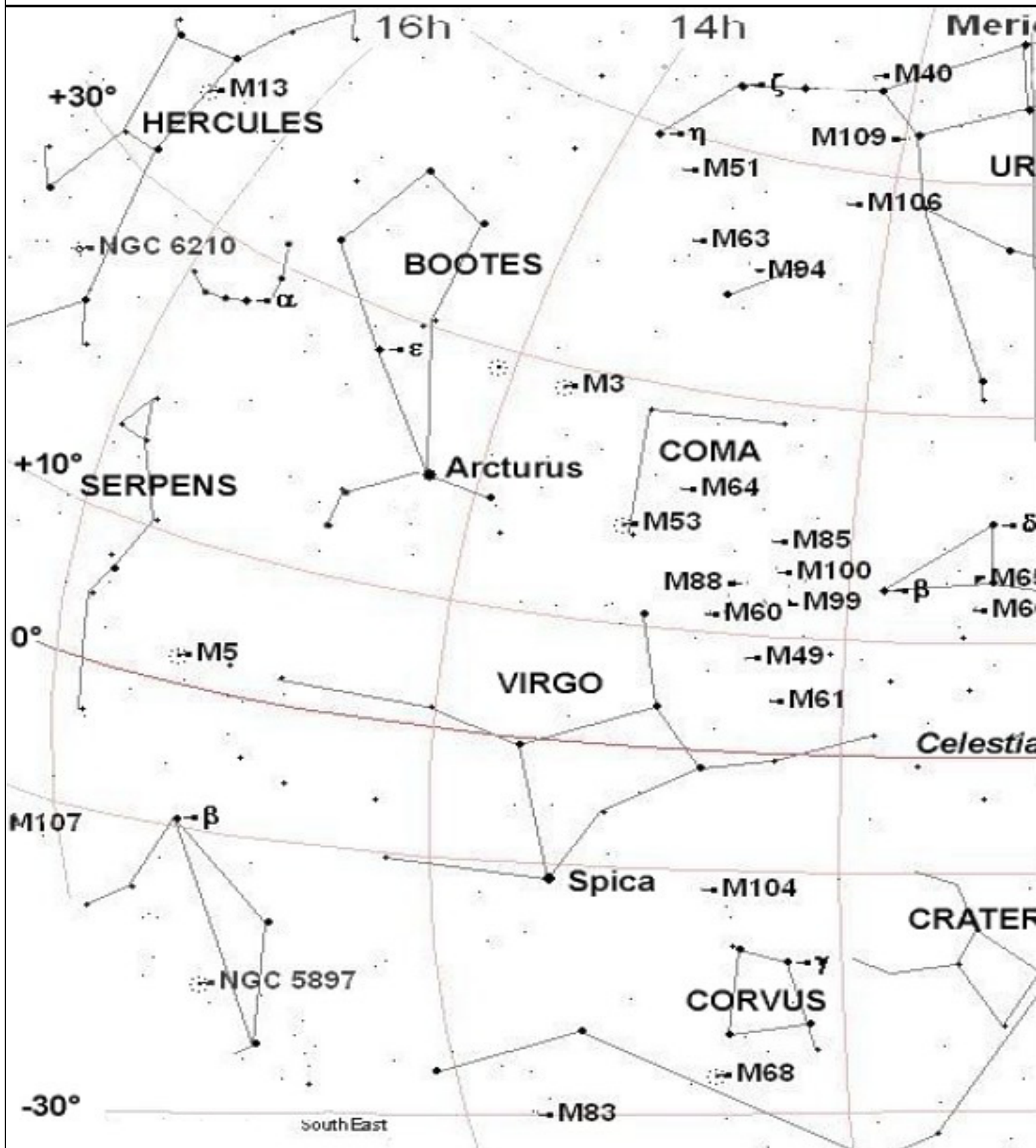
Transits of the **Great Red Spot** and of the **Jovian Moons** are always interesting events to watch for. The GRS transits early in the morning on April 18, 23, 25, 30th and on May 2, 4, 7, 9 and 14th. **Io** is the moon nearest the planet; its transits and eclipses are frequent. **Europa** is well-placed for: Eclipse April 18 at 1:40 a.m.; Transit April 19th at 3:20 (this will be a double transit with **Ganymede**!); Transit April 27th (again with Ganymede's shadow) and a Transit on May 4th at 5 a.m.



Saturn: in **Leo**, still prominent in the evening southern sky at magnitude +0.4, the planet is brighter than nearby **Regulus** and appears noticeably yellow. The disk of the planet is 18" in diameter and the rings are still open enough to show the Cassini Division in small telescopes. Saturn is very bright and stands magnification well if the air is steady - try to identify the separate ring systems and spot the shadow of the planet on the E side of the rings.

Observers like trying to spot as many moons of Saturn as possible. Any telescope will show the rings and the bright moon **Titan**. **Tethys**, Rhea and **Dione** are visible in 3" telescopes as tiny specks of light just outside the rings. **Enceladus** and **Mimas** are fainter and harder to see. During the first week of May eccentric moon **Iapetus** will be close to Saturn if you're wanting to get a family group photo. On May 4th it passes $7''$ S of the planet.

The Sky th



This Month



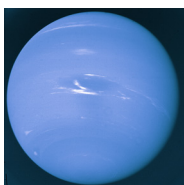
The Sky this Month (Continued)



Uranus a 6th magnitude blue-green "star" just W of 4th magnitude **Phi Aquarii**, Uranus doesn't rise until shortly before the Sun. The Moon will be less than $1/2^\circ$ N of Uranus on April 14th, and Mars will be just S of **Uranus** on April 28th.

Observers with very large telescopes (or with smaller telescopes and imaging equipment) would do well to try to spot the 5 moons of Uranus. The moons orbit in a plane facing us, so they move in overlapping orbits, like the moons of Jupiter, except the moons of Uranus move N-S rather than E-W because the planet's axis is tilted.

On 18 April a rare triple eclipse of Uranian moons will see **Miranda** emerge from behind the planet's 3" disk at 7 a.m., followed by **Umbriel** at 7:45 a.m. and Ariel at 8:06 a.m. That morning, 12th magnitude star GSC5249-124 will appear to pass between the planet and more distant moons **Titania** and **Oberon** - well worth watching! On 19 April at 6:20 a.m., **Titania** will come within a hair of occulting **Umbriel**. On April 29th Miranda and **Titania** will be only 2" apart; On May 4th **Umbriel** and **Oberon** will be less than 1" apart (try to split them with your scope).



Neptune: is a faint blue "star" of magnitude 7.8 in Capricornus. Its 2.2" diameter disk is visible in small telescopes. If you are up just before dawn on April 15th, the 11th magnitude asteroid **Urania** is only 2' S of the planet. Neptune has two moons visible in larger telescopes: 13th magnitude **Triton** has an almost circular orbit 12" away from Neptune, while 18th magnitude Nereid (which I have never seen) orbits with extreme eccentricity.

On May 8th the 14th magnitude star GSC5799-573 will be occulted by Neptune. The event starts at 3:30 a.m. with the planet 7° above the horizon and ends at 5:20 a.m. with Neptune 24° above the horizon. Well worth watching!



Comets!

Comet **Encke** Last month I mentioned Comet **Encke**, discovered by **Messier's** colleague **Pierre Méchain** over 200 years ago. The comet was then in the western sky just after sunset, quite faint at magnitude 11. It has become much brighter over the last month but is still difficult to see in binoculars.

On 15 April the comet is between 5th magnitude stars **Chi** and **Rho Arietis** (appropriate for Eastertime); on 18 April it will be very close to 6th magnitude HIP13786 and if you have a go-to scope (or good setting circles), RA 2h 57m Dec $+16^\circ 18'$. On April 26 the comet, now starting to descend towards the horizon, will be $1/2^\circ$ E of 4th magnitude **Mu Ceti**. We are hoping that the comet will reach 4th magnitude... but you never know, last fall Comet **SWAN** suddenly brightened overnight by 3 magnitudes, and that was without the US throwing a copper plate at it.



The Moon This Month by Mike Spicer

Last Quarter 10 April

New Moon: 18 April

First Quarter: 24 April

Full Moon: 2 May

Lunar Events: 15 April before sunrise, a very slim crescent Moon will be 1.2° N of **Uranus**

19 April after sunset, a very slim crescent Moon will be between **Venus** and the **Pleiades** - a great opportunity for a group photo.

23 April the Moon will occult 3rd magnitude **Kappa Geminorum**

24 April: the First Quarter Moon will spoil your chance to observe nearby **Saturn**

May 10th the Moon will be 2.5° S of Neptune, which won't help finding Neptune at all.

May 10th at 4:46 a.m. the Moon will occult mag. 2.8 **Gamma Capricorni** (easy to find)



Member of the Month—Alex Tekatch—by Glenn Muller

Now my choice for member of the month may still be working on her first Solar Cycle, however; Alex Tekatch is technically the only regular attendee who has been a member of the Hamilton Amateur Astronomers for their entire life.

The daughter of HAA founding members, Ann & Bill Tekatch, Alex may not remember much about her first meetings, but as I have watched this young lady grow it is evident she is absorbing information.

The fact that whole sections of the meeting are sometimes complex phase her not at all – she just pulls out her coloured pencils and passes the time making sketches, often with an astronomical theme. I have been the lucky recipient of Alex Tekatch originals in the form of a birthday card, drawn on the spot with more talent than I ever displayed at her age, and a planetary reference sheet which I keep handy in my observing bag in case I forget the order of the Solar System – which reminds me, Alex, should we erase Pluto or add a

couple more?

One of the highlights of our monthly meetings is the door prize draw. Although I refer to her as the Vanna White of the HAA, Alex handles the job of picking winners with aplomb. In a clear voice she calls out the numbers and manages to keep me from getting the stubs mixed up.

Another comment visitors frequently make is how willing we are to share our knowledge and equipment. We each have our areas of expertise and Alex's is relating to the youngsters whether it be making cocoa craters with elastic bands or sharing views of the Moon and brighter planets with her own Edmunds Astroscan.

There are plenty of adults who



would be overwhelmed by an astronomy club meeting, and not many eight-year-olds are willing to put up with a room full of grown-ups, but if Ann or Bill can make a meeting Alex usually comes along, wearing something pink, and always displaying a smile.

Naturally, we hope that astronomy will be a life-long interest to her and with her parents as role models, not to mention their excellent home observatory, all the elements are there. While I certainly wouldn't wish for a quick passage of

time, I am certainly looking forward to seeing Alex Tekatch become Chair of the HAA, and all her other successes.

But don't be growing up too fast, my dear. You're a shining star just the way you are!

more cheaply. However, Zeiss is not 'out' of astronomy. It still builds world-class planetariums and configures glass elements for accessories that it designed (and built) and which Baader Planetarium still manufactures. Its website links to "astronomie.de" and the NASA "Astronomical Picture of the Day" which connect much of the European amateur community. It recommends certain of its general binocular sport-optics for astronomical use. It makes adapters to connect its spotter telescope eyepieces to 1.25" and 2" drawtubes and to connect 1.25" eyepieces to its spotter telescopes. It builds diffraction gratings, lenses, sophisticated detectors and cameras for space missions and optical benches, and constructs secondary lenses, mirrors and relay systems for some of the world's largest ground-based telescopes. Much of this production is carried on in departments which have a more competitive component to them other than pure astronomical production. Nevertheless, straight astronomical telescope fabrication is gone.

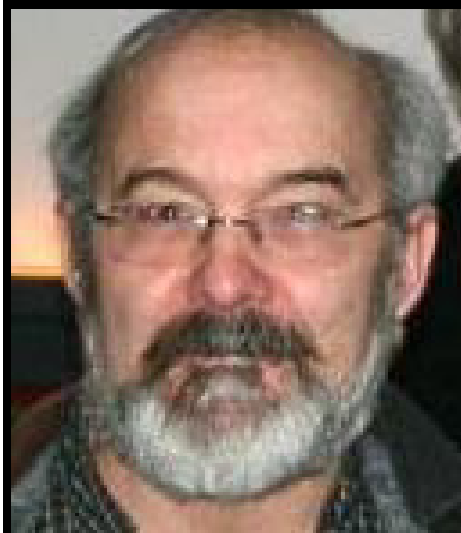
What does the future hold for the amateur community with respect to the foregoing? i) More people will probably buy telescopes and equipment based on their ability to do other aspects of nature-watching than just astronomy. The plethora of small widefield refractors, today, attests to this trend. Binocular sales are based more on nature and bird observations than on astronomical applications. However, their uses in all three areas are equally valid. ii) Many astronomical projects done by students are based almost exclusively on work and results obtainable from the internet. iii) In fact, many home computers are being used to analyze SETI and comet data with the hope that new discoveries and 'contacts' will be forth-

coming from such efforts. iv) There is so much astronomical information on the internet that high level research projects can, in many cases, and all or in part, be completed from just this resource alone. v) Many future amateur observational situations will be partly or fully automated and controlled by a sky conditions sensor. The observatory will open and close itself, record and log observations automatically. The owner/operator will be privileged to observe from a computer screen or video monitor from a warm-room situation or even sleep while the data acquisition is in progress.

vi) Radio astronomy, like LOFAR II, will be another venue for the amateur community. There are turn-key systems and even plans for systems that will allow any dedicated, amateur researcher to do low resolution 'observations' on the sun's effects on the earth's atmosphere, environment and the nearby solar system. The LOFAR II Stanford University Sudden Ionospheric Disturbance system is such a turn-key setup. All of this work can be done indoors and many of the results can be transmitted and confirmed with other researchers and satellites on the internet. vii) Optical backyard telescopes will still sell for general observational work, variable star monitoring, photometry, planetary studies, occultations, binaries, astrophotographic applications and public star parties.

In the final analysis, it may be that amateur astronomy is just opening up to a wider range of interests and applications. In just the same way, professional astronomy has moved from strictly ground-based telescopes to super space satellite ventures and probes into all areas of the electromagnetic spectrum. Let us hope that the future continues to look bright.

Farewell to Grant Dixon!



The HAA is losing founding member Grant Dixon.

Newer members of the club may not know Grant Dixon, but he is a long-serving member of the HAA who is about to leave our club. Grant is moving to the East coast and will make his new home in the Maritimes.

Grant served on the HAA council in many positions and is well-known as a humorous speaker. Grant gave scores of planetarium presentations and helped share his knowledge of the skies with a generation of club members.

The HAA wishes Grant the best in his new part of the country. Let's hope he can find clear skies someplace out there.

HAA Marketplace

Celestron Nexstar 80mm achromat

This makes a great 80mm finder or guidescope
The dewcap has a built-in Baader solar filter !



Aperture 80mm / 3.2"
F/5 - focal length 400mm
Smooth 1.25" focuser
\$125, mounting rings \$40

Stellervue AT1010 Nighthawk

The "King of the short-tubes" has superb optics in a very heavy-duty OTA with a sliding long dew shield, screw-on dew cap and outstanding 2" focuser with a 1.25" adapter. 80mm USA constructed and tested



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Need a great deal on astronomy books?

Members can check the list of publications by US publisher Willmann-Bell at www.willbell.com If you wish to order something, you can save on shipping costs by ordering as a group, all at once. Check the list, the estimated cost after US\$ conversion, shipping and GST is about 1.5 x the US\$ price on the item. (ie: US\$29.95 will likely cost C\$44.90 delivered) Mike Spicer is thinking of placing a group order, please print the order page, check off the items you want, and give the order to Mike not later than the next HAA meeting on May 11th.

Celestron 35mm Ultima



Just \$99

Barlow with 1.25" clamp adapter



- No longer made
- great eye relief
- wide field of view
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- yours for \$99

Event Horizon— Ten Years ago

Carl Wetzlar's Wedding Night

by Clive Gibbons

Every amateur astronomer remembers their "first night" with a new telescope; that exciting, euphoric evening when observer and instrument meld together for the first time to explore the heavens as one. It all starts with great expectations of what the night will bring, but the inevitable fumbling around with unfamiliar parts in the dark and the anxiety over achieving proper polar alignment (especially if friends are present), can ruin the whole experience. It's been 22 years since that first magical evening with my long-lost Wetzlar 4.5" reflector, but time has not dulled the vivid memories; back when times were more innocent, bell-bottoms were "cool", the night sky was darker and I thought Carl Wetzlar was German... (Harp music plays as the scene fades to a bygone time)

A cold winter evening awaited me and my freshly assembled, shiny white telescope. Up until that fateful night, I had never used an instrument of such immense aperture and certainly never with a genuine equatorial mount. Outside, the temperature was hovering around 0 degrees F. (this was years before metric) and I was appropriately dressed for a space walk. Virtually every piece of clothing I owned now wrapped, protected and encased every square inch of skin several times over, leaving only my right eyeball exposed to the chill of deep space. It was time to "Go For It!". I could no longer resist the call of the clear night sky, quite apart from the fact that my boots were starting to fill with sweat and my-

self and the scope were an impassible roadblock in the front hallway. A bystander, watching me carry the telescope out of the house, would no doubt have compared my egress to Neil Armstrong trying to shift a canoe through the front hatch of the Lunar Lander. T! he noise was deafening as control cables, finder-scope, focuser, telescope tube and tripod legs all managed to smash into the screen door on the way out, followed by parental bellowing about a sudden cold draft in the living room.

With a final BANG!, the door was shut and we were alone under the starry firmament. Alone, that is, with a foot of snow on the ground and the neighbor's porch light only 30 feet away. The remedy was a long march across "Siberia" to find a dark, sheltered spot to view from. After about 50 yards of pitiful slog-ging, my telescope and self came to rest in the darkest region of our townhouse complex. The vault of heaven would have been spectacular, if it hadn't been obscured by the steam billowing from my overheated and overdressed body parts. At first, I was puzzled by the strange silence of the evening; no barking dogs or traffic noises, not even the crunch of snow underfoot. Perhaps it was muffled by all the toques and scarves...

Polar alignment was cursory at best. There was no way of leveling the tripod in the snow and I could have been sighting on Gamma Draconis instead of Polaris, but who needed polar alignment to look at the Moon? Soon, I was trying to spot the fat crescent through the 5X24mm finderscope. Several

problems became immediately obvious. One, my extensive winter apparel made it impossible to squeeze my head in behind the finder eyepiece and two, the finder-scope had suffered a serious misalignment upon exiting the house. What I didn't know then, was that on Carl Wetzlar telescopes, the term "finderscope" was a euphemism for "carry handle". Out of desperation, I tried sighting along the telescope tube to find the Moon. This exercise consisted of crouching in a snowbank and looking up the tube by craning my neck, so that both carotid arteries were nearly pinched off. Then, up to the eyepiece I'd spring, just in time to see a ghost image of the Moon zoom out of vie! w. A fter 5 minutes of fruitless sweeping, it was back to crouching and near unconsciousness, to repeat the folly. Half an hour later, I was defeated. With cramped muscles, wrapped in 50 pounds of soggy clothes, I slumped into the snow. I couldn't even find the Moon...

It's been a long time since that first, unsatisfying evening with my 4-1/2 inch. As time went by, I gained valuable experience with a range of different telescopes, but things really started to improve when I discovered friends who shared my affection for the night sky. It's taught me that no matter how big or small your instrument is, it's more fun to use it with a buddy. And nowadays, if I'm having trouble finding a deepsky object or getting frustrated trying to focus the camera for a astrophoto, I just think back to the night I couldn't even find the Moon and think, "Hey, things aren't *that* bad!!"



The Early Bird Gets the Worm by Dr. Tony Phillips

We all know that birds eat worms. Every day, millions of birds eat millions of worms. It's going on all around you! But how often have you awakened in the morning, stalked out in the dewy grass, and actually seen a bird having breakfast? Even though we know it happens all the time, a bird gulping a worm is a rare sight. Just like a black hole gulping a star...

Every day in the Universe, millions of stars fall into millions of black holes.

And that's bad news for the stars. Black holes exert terrible tides, and stars that come too close are literally ripped apart as they fall into the gullet of the monster. A long burp of X-rays and ultraviolet radiation signals the meal for all to see.

Yet astronomers rarely

catch a black hole in the act. "It's like the problem of the bird and the worm," says astronomer Christopher Martin of Caltech. "You have to be in the right place at the right time, looking in the right direction and paying attention."

A great place to look is deep in the cores of galaxies. Most galaxies have massive black holes sitting in their pin-

wheel centers, with dense swarms of stars all around. An occasional meal is inevitable.

A group of astronomers led by Suvi Gezari of Caltech recently surveyed more than 10,000 galactic cores—and they caught one! In a distant, unnamed elliptical galaxy, a star fell into a central black hole and "burped" a blast of ultraviolet radiation.

"We detected the blast using the Gal-

The meal began about two years ago. After the initial blast, radiation diminished as the black hole slowly consumed the star. GALEX has monitored the process throughout. Additional data from the Chandra X-ray Observatory, the Canada-France-Hawaii Telescope and the Keck Telescope in Hawaii helped Gezari's team chronicle the event in multiple wavelengths

Studying the process in its entirety "helps us understand how black holes

feed and grow in their host galaxies," notes Martin.

One down, millions to go.

"Now that we know we can observe these events with ultraviolet light," says Gezari, "we've got a new tool for finding more."

For more on this and other findings of GALEX, see



In this artist's concept, a giant black hole is caught devouring a star that ventured too close.

axy Evolution Explorer (GALEX), an ultraviolet space telescope," explains Gezari. Her team reported the observation in the December 2006 issue of *The Astrophysical Journal Letters*. "Other telescopes have seen black holes devouring stars before," she adds, "but this is the first time we have been able to watch the process from beginning to end."

www.galex.caltech.edu. For help explaining black holes to kids, visit The Space Place at spaceplace.nasa.gov.

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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. 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.

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**Next Meeting of the HAA
is May 11th, 2007**

7:30 PM @

The Hamilton Spectator

Meeting space for the Hamilton Amateur
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Article Submissions

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

editor@amateurastronomy.org

The submission deadline is two weeks before each general meeting.

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