

Event Horizon

December 2004

Volume 12 Issue 2

December Skies

by Greg Emery

The skies in December offer something for everyone, assuming the extra light pollution from my Christmas lights haven't obliterated the views. If the weather cooperates we have the potential for a big meteor shower this Monday night (December 13) with a somewhat lesser, although still potentially good show on the night of Tuesday, December 14.

The phenomenon of a meteor shower is simply the earth passing through the debris field of a comet, or in one case the debris field is known to be associated with an asteroid. The comet or asteroid circles the sun and leaves a trail of small particles and dust in its wake, just as Pigpen from Charlie Brown Cartoons leaves a trail of dust and dirt. The meteor showers this Monday and Tuesday occur as the earth passes through the debris from asteroid 2300 Paethon. These showers are called the Geminids, as the radiant is located in the constellation Gemini.

The peak activity for the Geminids in 2004 is predicted to occur at 2200 (UTC) on December 13. This corresponds to 1700 Local Time. Unfortunately, the radiant for the meteor shower is still about 90 minutes below the horizon. I will plan to be at Binbrook for 1800, weather cooperating – check the Website, Mike Spicer or I will update the activities page to indicate when and where in the conservation area we will be meeting.

If small particles and grains of cosmic dust plummeting to their fiery end don't thrill you, fear not December is not lost. The jewels of the Solar System are out and about. Saturn, located in Gemini will crest the horizon between 1830 and 1900 and should be in excellent viewing position by 2200. Jupiter will be in excellent viewing position by 0000 to 0200 and is located in the constellation Virgo. Mars is in Libra currently and Scorpius by

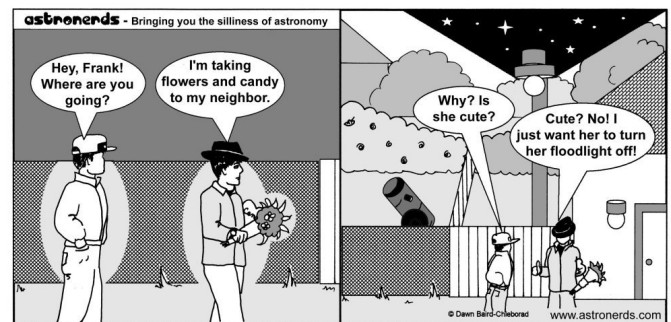
months end. Mars is growing in apparent size and will reach about 4" by the end of the year. Venus is visible early mornings before sunrise and is in conjunction with Mercury on December 29. Venus is also in conjunction with Mars December 5, which is history for us now.

The constellations and deep sky stuff are constantly changing. Andromeda is galloping towards the western horizon with Pegasus, the water constellations are moving westward as is Aries and Triangulum. Coming from the east we have the hunter with his dogs at his heels, Orion and Canis Major and Minor. We also have Lynx the wildcat and Cancer the crab.

A wide variety of open clusters and nebulae are present for your inspection. Open clusters M36-M38 in Auriga. Also M41, M46-48, M50 and M93 sprinkle the sky through Canis Major and Monoceros. The Pleiades and the Praesepe, M45 and M44, are my two favourite open clusters. The Pleiades are in Taurus a short hop from the Hyades. The Praesepe is in the heart of Cancer, just north of the ecliptic.

While you are taking the time to view all these sights and more, I will be bouncing my scope back and forth between Saturn and M42-43, old habits die hard.

by Greg Emery



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Upcoming Events

Event: HAA meeting

Date: Friday January 14, 2005 7:30PM

Location: The Spectator building.

Admission: Free. Everyone is welcome!

Web Watch

Description: C.I.C.L.O.P.S.

Cassini Imaging Central Laboratory for Operations has provided new images of the oddly shaped rings that surround Saturn.

Site: ciclops.lpl.arizona.edu

Subscription Offer for Members

Members of the club are eligible for a discount on Sky & Telescope Magazine subscriptions.

The regular annual rate is \$49.95 (U.S.). HAA members pay only \$39.95 (U.S.).

Contact Ann Tekatch for information on how to sign up; tekatch@sympatico.ca 905-575-5433

Email Reminder notice

We send email reminders before each meeting which describes the location, time and topic of the general meeting.

If you're not on the list, make sure that you receive your reminder by sending a note to: publicity@amateurastronomy.org

Domain Name and Web hosting for the Hamilton Amateur
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Event Horizon is a publication of the Hamilton Amateur Astronomers (HAA).

The HAA is an amateur astronomy club dedicated to the promotion and enjoyment of astronomy for people of all ages and experience levels.

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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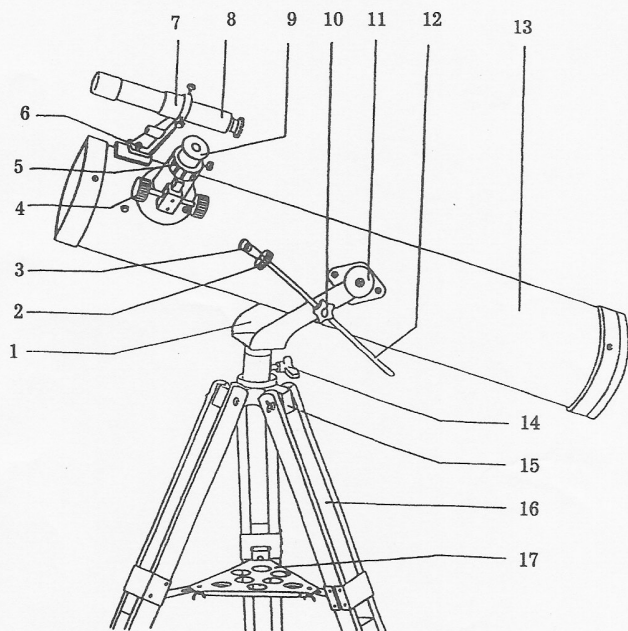
(905) 575-5433

Telescope for sale

I have a new v optics telescope for sale mrrsp price \$349.00 will sell for \$175.00 or best offer. Won at mackids hospital draw.
Don Staples 905 648 0041

76mm x 700mm Reflector Telescope

Owner's Manual System Parts



- | | |
|----------------------------------|--|
| 1. Main mount | 11. Left and right blocks |
| 2. Pitching slim auxiliary knob | 12. Pitching shaft |
| 3. pitching shaft screw | 13. Main tube |
| 4. Rack and pinion focusing knob | 14. Horizontal locking auxiliary screw |
| 5. Eyepiece joint tube | 15. Mount base |
| 6. Thumb nut for sighting scope | 16. Tripod legs |
| 7. Sighting scope bracket | 17. Accessory dish |
| 8. Sighting scope bracket | 18. Moon filter(not in the figure) |
| 9. Eyepiece | 19. Erecting eyepiece(not in the figure) |
| 10. Pitching clamp handle screw | |

mystery to the targeted givers. Maybe on that last bit I'm somewhat guilty, but I tend to rationalize it as a selfless act of public education!

"Good things come in small packages" they'll say, almost apologizing even though the contents of the cologne-sized box probably cost half a week's pay. We're not fazed though; size only matters with aperture, and this new optical trinket has already been cut a foam slot right next to last year's gift. And, after the turkey, or maybe sooner, it will demonstrate a particular talent for bringing words like *hypersensitized*, *parfocal*, and *apochromatic* to virgin ears. Out there, in slippers and snow, you deftly lasso the universe and present it with a virtual bow to your family. They shiver gamely, smile, and say they'll be back in a minute. That minute will probably be on your birthday but, for now, you've shown them something they wouldn't otherwise have seen. At least that's my story, and I'm sticking to it.

There were no presents exchanged at last month's Moon Madness Marathon. However, the members and guests that attended on the two clear nights clearly enjoyed the social and astronomical aspects of the event. One nice surprise was that our gathering spot by the "wheelhouse" has now been paved, a trend that has also been copied at Binbrook Conservation Area - meaning you no longer have to dodge potholes to save recollimating your scope.

One other improvement that we hope to make at Binbrook is the installation of a switch to turn off the glaring light by the washrooms. On my last trip there, I covered it with a red bag which seemed to help so, if the BCA authority decides to nix the switch idea, some sort of cover might do the trick. Perhaps I'll put it on my Christmas list.

Anyway, whatever we get over the holidays, I hope it's a safe and happy one for all and, if we don't meet before, I'll look forward to seeing everybody in the new year.

Clear Skies!

Glenn invites your comments on these topics or any aspect of the club. He can be reached via chair@amateurastronomy.org



Chair's Report

by Glenn Muller

You're probably an astronomer if all your Christmas lights are red, or, if you send the kids early to bed because "Santa's coming!" just to get an hour alone with your scope.

Yes, it's time once again to leave S&T on the coffee table, open to those advertisements of shiny doo-dads so coveted by hopeful recipients yet so often a complete

Contest for One Hour of CFHT and Gemini Imaging Time

Dear Hamilton Amateur Astronomers,

Thank you for participating in our contest for access to Gemini and CFHT imaging time! As you might imagine, we had many exciting proposals submitted by amateur groups in Canada and it was difficult to choose between them. Unfortunately, your group's proposal was not selected this time. We hope that you will consider re-applying if we are able to run the contest again in the future.

The winning proposals can be viewed at the URL: http://www.hia-ihc.nrc-cnrc.gc.ca/cgo/gemini_e.html Your club's engagement in this contest reveals that it is one of the most vibrant, enthusiastic and well-organised amateur astronomy clubs in the country. We were very impressed with all the proposals received.

We wish you all the best for a productive and exciting 2005!

Stephanie Cote, Doug Welch (Canadian Gemini Office)

Dr. Stephanie Cote — Astronome Gemini Canadienne / Canadian Gemini Astronomer

Tel: (250) 363-0026 — Fax: (250) 363-0045 — stephanie.cote@nrc-cnrc.gc.ca

National Research Council Canada — 5071 West Saanich Road, Victoria BC V9E 2E7

Conseil National de Recherches Canada — 5071, chemin West Saanich, Victoria C.B. V9E 2E7

Government of Canada — Gouvernement du Canada

Observing Notes by Mike Spicer and friends

Saturday December 04,02:30am by mike

Fantastic Observing Friday Dec 3rd

Yes, it snowed a little just 24 hours ago, but Friday night the clouds cleared off to reveal a spectacular last quarter Moon below beautiful honey-coloured Saturn with all his moons stretched out nearly in a straight line! It was your chance to see Mimas and Enceladus clustered just beyond the rings with two brighter moons, and on the opposite side of the planet, Iapetus just a few arc-seconds away from bright Titan!

The bright Moon offered such a clear terminator at last quarter, well worth wandering through some of the craters-within-craters along the sunset line! Yes, it was chilly (-4°C seemed a lot colder than I remember from last winter) but the telescopes worked very well, thanks. I hope you got out for a peek! Don't forget that the crescent Moon will cover Jupiter from 4-5 a.m. EST on the 7th!

Tuesday November 23,12:39pm by mike

Observing Notes, 22 November

Saturn and Jupiter rise in the east now to warm us with their majestic beauty, but thermal socks are a good idea, too. Monday 22 November I observed with Patricia Marsh, a founding member of HAA, and converted her from dobsonianism. She now has a clock-driven GEM mount for her beautifully hand-crafted wooden 6" Newtonian telescope. She set up in 5 minutes, polar aligned in another 5, and spent the evening amazed as objects stayed centred in her eyepiece for an hour at a time!

The gibbous Moon showed 7 craterlets in Plato and we lingered for an hour inside the walled plain Gassendi on the shores of Mare Humorum, marvelling at the detail visible around its twin central peaks. Patricia tried various eyepieces with her new 4x barlow and ND 0.9 filter (hear more about filters at the December meeting). After 10 pm Saturn was high enough to see the Cassini division, Titan, Rhea, Dione and Tethys in her reflector as we experimented with planetary filters. A great observing night with an experienced observer, thanks Patricia!

Thursday November 18,10:38pm by glenn

Yet another night of "Madness" as the Moon reached First Quarter. Gail and I arrived at Bayfront and set our 6" reflector under a dewy sky. Only the brightest stars were visible but our target was easily seen through the poor transparency. We were soon joined by Tony Wallace with his aforementioned hand-crafted 10", and by Bob Christmas who was soon taking pictures.

We had a few guests, the most notable being a 6 year old named Daniel. Although his father had brought him to the park for this event, extreme shyness kept Daniel yards from the group. Eventually, though, we penetrated his defenses and after a first look he was all over the scopes and chatting excitedly.

The sky may not cooperate for the remainder of the week but, regardless, our goal of making astronomy accessible through this event has been realized. Thanks to all who came out! Wednesday November 17,05:04am by mike Observing Note 17 November 2004

Moon Madness continued at the Bayfront Park (N end of Bay Street in Hamilton) on Tuesday night. It was downright balmy as well as very clear until moonset and we were led by our intrepid Chairman Glenn, his 6" reflector (perfect for lunar observing) and a laptop com-

puter to show lunar features to the public. They came from as far away as Jarvis to observe with us... and a few RASC members, too. The newly-paved parking lot made for a comfortable dust-free site. We distributed free maps of the lunar features so people could name the seas and craters - a great idea! Cloud cover cut short the meteor watch after moonset (Leonid meteors may peak again on Friday night). Thanks to Margaret and her 8" scope and the fellow with his binoviewer, they are always interesting. Chalk up another success!

Monday November 15, 04:23am by mike

IT'S MOON MADNESS WEEK AT BAYFRONT PARK

You are welcome to join HAA members at the Hamilton Bayfront Park (in the parking lot of Pier 4 near the foot of James Street) November 15 - 20 as we give the public an opportunity to see the waxing moon around first quarter.

We may be clouded out one or more days (so check the sky first), but starting at dusk on the clear nights, HAA members will be there. The brain child of HAA member Hal Mueller, this event gives the public a chance to watch the changing lunar features as our Moon becomes more and more illuminated day by day.

Come out and bring a scope if you have one! Have a look at the early evening Moon with the HAA this Monday to Friday.

Sunday November 14, 10:48am by mike

Observing Notes, 14 Nov 2004

Saturday 13 November was a spectacular success with almost two dozen people and a dozen various instruments set up on the Grassy Knoll at Binbrook Conservation Area starting at 6:30 pm and going far into the early morning hours.

Members were waiting as I opened the gates and we set up a 10" Meade LX-200, a Nexstar 11" and a semi-apo refractor right away. We were joined shortly afterwards by Glenn and Gail with their 6" dob (excellent optics), Tony's 10" home-made dob as demonstrated at Friday's monthly meeting (we saw stars "e" and "f" in the Trapesium with that!), Keith's ETX127 a powerful Mak, and a small host of visitors with binoculars. Later on we were joined by Greg and one of his students, with more newtonian dobs. Quite a variety of instruments!

It was cold enough for winter coats, boots, double sweaters, mittens, warm hats and scarves; Gail had hot-shots! Ray and Mike J. stopped by without winter wear and stayed a while. You know it's cold when the drinking water bottle freezes up, the grass turns white, you

can't feel your toes and you hear a lot of sniffing. Ah, but it was a moonless, cloudless, peerless night with the chattering of friendly voices broken only by the yelping of a family of coyotes, and the Meade scope slewing from one beautiful deep sky object to another.

I cannot list all of the objects we looked at, or all of the names of people who came out for up to 6 hours each, but I don't think anyone went home disappointed. It was not a perfect observing night - the faintest naked eye stars were only mag 5.2 and Hamilton to the north seemed brighter than usual; the seeing was limited to 2.5 arc-seconds (ie: stars scintillated). But you could see M31 overhead, spread over 2° wide with the naked eye.

This is a great time to skygaze - we could still see all the summer constellations falling into the west, and the winter constellations rising in the east with Saturn dominating the view as deep night came on. It was easy to see Titan, Dione, Tethys and Rhea surrounding the planet's honey-coloured rings and band-girdled sphere. I departed after midnight leaving Greg and friends to take the morning shift. I must say how pleased I am to be part of such a pro-observing group that works so well together! Such a refreshing experience! Let's do it again!

ASK ASTRO

What's the deal on these discoveries of Sedna and Quaoar? Is it just Planet X repackaged?

Luke - lunanic@frontiernet.net

Great question, Luke.

Planet X, coined early in the twentieth century by astronomer Percival Lowell, refers to the theoretical existence of an undiscovered planet in our solar system. In Lowell's case, Planet X would turn out to be Pluto but, still, there remains speculation of yet another orbiting body with a large enough mass to disturb the orbits of the nine known planets.

Mathematician Urbain Le Verrier who calculated the location of Neptune in 1846 tried to repeat that feat using the perturbed trajectory of Mercury. Although his claim of an even closer body to the Sun was never verified that didn't stop him from naming it Vulcan. These days, Vulcan is a fictional world in Gene Roddenberry's *Star Trek* and, just in case you're wondering, it supposedly orbits a star in the constellation Eridanus.

A popular conspiracy theory is that Planet X is a mass identical to Earth and shares our orbital path on the opposite side of the Sun. Since cultists never let scientific evidence get in the way of a good story, this doppelganger has evolved into a dead twin called Nibiru.

Now back to reality. In June of 2002, Caltech's Chad Trujillo and Mike Brown discovered Quaoar, which is about the size of Pluto's moon and currently the largest Kuiper Belt asteroid known. Then, in November 2003, Trujillo, Brown, and Yale's David Rabinowitz found Sedna, a cold rocky orb about the same size as Pluto itself but three times farther from the Sun.

It was at this point that the "X" in Planet X conveniently becomes the roman numeral for 10, as in the tenth planet.

But is it really a planet? Or, for that matter, what constitutes a planet?

A couple of clicks on www.dictionary.com gave me these definitions:

planet

A nonluminous celestial body larger than an asteroid or comet, illuminated by light from a star, such as the sun, around which it revolves.

In the solar system there are nine known planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto

A celestial body which revolves about the sun in an orbit of a moderate degree of eccentricity. It is distinguished from a comet by the absence of a coma, and by having a less eccentric orbit

Primary planets are those which revolve about the sun - Secondary planets, or moons, are those which revolve around the primary planets as satellites, and at the same time revolve with them about the sun

Hmmm, larger than an asteroid. Let's look up asteroid.

asteroid

Any of numerous small celestial bodies that revolve around the sun, with orbits lying chiefly between Mars and Jupiter and characteristic diameters between a few and several hundred kilometers. Also called minor planet, planetoid.

Don't you just love it - the answers only prompt more questions like: how many hundred is several hundred, and, when is a minor planet not a planet, and what constitutes a moderate degree of eccentricity? Quaoar is 1250 kilometers wide - does that make it an asteroid or a planet? Sedna may have a moon, but many asteroids also have smaller bodies revolving around them - are they planets? And, are the smaller bodies moons? Our own Moon is bigger than Pluto - should it not be a planet?

With many new celestial objects, of variable makeup and orbital characteristics discovered daily, more specific rules for the correct nomenclature need to be determined, but if you think getting scientists to agree on something like that is a simple task - just try it. As to whether Sedna and Quaoar are "Planet X repackaged", I can only say that with exoplanets popping up all over the galaxy, Planet X may well become the generic description for any undiscovered mass conveniently given specifics necessary to tie a theory together.

Thanks for your question.

Thank you for your contribution

November 9, 2004

Dear Hamilton Amateur Astronomers,

We were deeply touched to receive your very special contribution to the Janet A. Mattei Research Fellowship Program. On behalf of the AAVSO, I thank you very much for this thoughtful contribution.

By bringing a visiting scientist, postdoctoral researcher, student, or amateur astronomer to AAVSO Headquarters to carry out research on the ever-growing AAVSO International Database, The Janet A. Mattei Research Fellowship Program will enable the fulfilment of Janet's fervent wish that research using the AAVSO International Database be done at AAVSO Headquarters.

The 30 years of her life that Janet dedicated to working increasingly on behalf of the AAVSO, its members and observers, and those eager to learn about astronomy and variable stars, and to furthering the field of variable star astronomy was a great gift to all of us. Please be assured that your gift will help us keep Janet's gift giving to the future.

Thank you for honouring Janet through your contribution to the Janet A. Mattei Research Fellowship Program.

Gratefully

Elizabeth O. Waagen Interim Director

Star parties

Looking forward to next year, plan ahead for these star parties:



Stargazing Manitoulin will be held on the Canada Day Long Weekend June 30 - July 4, 2005 and the Manitoulin Star Party will be held during the Perseids Meteor Showers August 11 - 14, 2005. Both of these events will take place in the dark sky sanctuary (we've got the darkest skies in Ontario) at lovely Gordon's Park on beautiful Manitoulin Island. Enjoy 360 degree viewing, extremely dark skies and a 7.5+ magnitude. Coordinates N45-66866 W81-97073, Clear Sky Clock cleardarksky.com/c/GrdnsPkOnkey.html

You may want to write these dates on your 2005 calendar now so that you don't forget.

Stargazing Manitoulin - (Canada Day Long Weekend) June 30 - July 4, 2005

This all inclusive astronomy event includes camping, a wine & cheese welcome reception, guided public observing sessions, swap meet, information sharing session, nature interpretive centre, guided nature hike, horseshoe tournament, mini putt challenge and our social Saturday night pot luck supper. Friendly people, super hosts and great skies - lots of fun!

Manitoulin Star Party - Perseids Meteor Showers August 11 - 14, 2005

This all inclusive astronomy event includes camping, a wine & cheese welcome reception, question & answer forum, guided public observing sessions, an astrophotography slide show presentation, ccd imaging for beginners, swap meet, nature interpretive centre, guided nature hike, horseshoe tournament, mini putt challenge and our social Saturday night pot luck supper. Friendly people, super hosts and great skies - lots of fun!

We are still in the process of confirming all of the itinerary for both of these star parties and further details will be available closer to the actual events. Updated registration and itinerary forms will be available on our website www.gordonspark.com by March 2005 at the latest. We will keep you up to date via email as the plans for the star parties unfold. If you wish to be removed from our email database please accept our apologies for the inconvenience and reply to this email with the words unsubscribe in the subject line.



We hope you can join us at Gordon's Park for Stargazing Manitoulin, June 30 - July 4, 2005 and the Manitoulin Star Party, August 11 - 14, 2005 for lots of fun, stargazing, friendship and relaxation. You deserve to view from the darkest skies in Ontario!

Looking forward to summer,

Rita Gordon, Manager
Gordon's Park
Manitoulin Island
705-859-2470
rita@gordonspark.com
www.gordonspark.com



Galactic Surprise

by Patrick L. Barry and Dr. Tony Phillips

Open an old astronomy textbook. The basic sketch you'll find there of galaxy formation is fairly simple: a vast cloud of diffuse hydrogen and helium gas condenses under gravity, and dense spots in the cloud collapse to form stars. Voila! A galaxy.

But real galaxies are much more complex than that. A galaxy is a swirling "soup" of billions of stars and roaming black holes, scattered clouds of gas and dust, random flashes of star birth and exploding supernovas, and an unseen and mysterious substance called "dark matter." Over time, all these ingredients mix and interact—pulling and compressing and colliding—and somehow that interplay leads to the galaxies we see today. No wonder it's such a hard problem to solve!

Just over one year into its three-year mission, GALEX is already shedding some new light on the problem.

"Some of the discoveries GALEX has made will change our understanding of how galaxies develop and when, where, and why stars form in galaxies," says Peter Friedman, a researcher at Caltech and Project Scientist for GALEX.

This small space telescope, called the Galaxy Evolution Explorer (GALEX for short), makes its discoveries by taking pictures of millions of galaxies scattered over the whole sky. Some of these galaxies are close by (at least by astronomical standards of "close"), while others are as much as 10 billion light-years away. Because light takes time to travel through space, we see these distant galaxies as they appeared billions of years ago. Comparing young galaxies from the distant past with older, modern galaxies will teach scientists about how galaxies change over time.

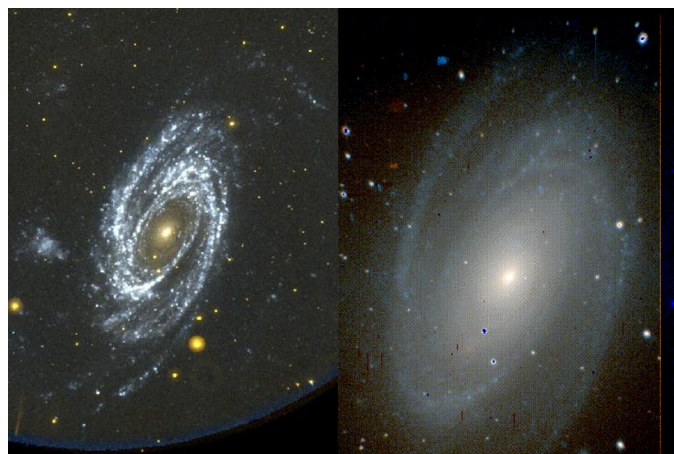
Looking at these pictures, scientists were surprised to find many newborn stars in the outer parts of old, mature galaxies. Scientists had assumed that as a galaxy ages, the clouds of gas needed to form new stars in these outer reaches either got used up or blown away. Finding so many new stars in these regions of old galaxies (such

as Centaurus A, Messier 101, and Messier 81) shows that, apparently, they were wrong.

Friedman says that astronomers don't know yet how to explain these new findings. Rethinking and improving theories to explain unexpected discoveries has always been the way science makes progress—and GALEX is certainly making progress.

One thing is certain: It's time to re-write some old textbooks.

For more information, see www.galex.caltech.edu. Kids can do a galaxy art project and learn more about galaxies and GALEX at <http://spaceplace.nasa.gov/en/kids/galex/art.shtml>.



M81 is 10 million light years away. The image on the left was made from GALEX data and shows UV light from hot, new stars. These star forming regions are not detectable in the visible light image on the right (McGraw-Hill Observatory, Kitt Peak, Arizona, Greg Bothum, Univ. of Oregon.)

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

Council meetings

All club members are welcome to attend the council meetings. Contact info@amateurastronomy.org for details.

**HAMILTON AMATEUR ASTRONOMERS
BALANCE SHEET
AS AT OCTOBER 31, 2004
(Unaudited)**

	Oct 31 2004	Oct 31 2003
ASSETS		
Bank	1616	3124
Investments	0	2442
Inventory	223	212
Prepaid P.O. Box Rental	105	105
Prepaid Banquet Expenses	<u>0</u>	<u>837</u>
Total Current Assets	1944	6720
Fixed Assets - Equipment	<u>3059</u>	<u>1287</u>
TOTAL ASSETS	<u>5003</u>	<u>8007</u>
LIABILITIES		
Accounts Payable	0	0
Deferred Membership Revenue	540	665
Deferred Banquet Revenue	<u>0</u>	<u>1440</u>
TOTAL LIABILITIES	<u>540</u>	<u>2105</u>
EQUITY		
Opening Balance	5902	5552
Current Year	<u>-1439</u>	<u>350</u>
EQUITY CLOSING BALANCE	<u>4463</u>	<u>5902</u>
TOTAL LIABILITIES AND EQUITY	<u>5003</u>	<u>8007</u>

Prepared by Cindy Bingham, Treasurer

**HAMILTON AMATEUR ASTRONOMERS
INCOME STATEMENT
AS AT OCTOBER 31, 2004**

(Unaudited)

	Oct 31 2004	Oct 31 2003
INCOME		
Banquet Revenue	2085	0
Donations	0	43
Membership Fees	1540	1977
Observers Handbook/Calendar Sales	368	585
Investment Income	41	0
Interest Income	0	442
	<hr/>	<hr/>
TOTAL INCOME	4034	3047
	<hr/>	<hr/>
EXPENSES		
Banquet Expenses	2640	0
Bank Charges	0	34
Donation Expense	103	150
Handbooks/Calendar Cost of Sale:	335	465
Insurance	1080	810
Meeting/Observing Expense	194	73
Office Supplies	30	0
Printing Expense	686	522
Post Office Box Rental	105	77
Postage	269	284
Promotion	31	282
	<hr/>	<hr/>
TOTAL EXPENSES	5473	2697
	<hr/>	<hr/>
SURPLUS/DEFICIT	<u>-1439</u>	<u>350</u>

Prepared by Cindy Bingham, Treasurer

Hamilton Amateur Astronomers Membership Renewal November 1, 2004 - October 31, 2005

Name:	
Address:	
City:	
Postal Code:	
Phone:	
E-mail:	

Type of Membership:

Individual (\$25 Cdn/year)	
Family (\$30 Cdn/year)	
Royal (\$50 Cdn/year)*	
Friend (\$100 Cdn/year)*	
Patron (\$250 Cdn/year)*	
Voluntary Donation \$	

* These levels of membership confer the same rights and privileges as a Family membership. We greatly appreciate the additional financial support our members provide by signing up as a Royal, Friend or Patron.

All membership dues are eligible for tax receipts.

Total:	\$
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Please make cheque payable to:

Hamilton Amateur Astronomers
P.O. Box 65578
Dundas, Ontario
L9H 6Y6
CANADA

Membership renewals are due November 1.

January 2005

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																																																														
						1 New Year's Day																																																														
2	3	4	5	6	7	8																																																														
9	10	11	12	13	14 HAA General Meeting at the Spectator building	15																																																														
16	17	18	19	20	21	22																																																														
23	24	25	26	27	28	29																																																														
30	31		<p>For observing info, Rob Roy 692-3245, Greg Emery greg.emery@mohawkcollege.ca, or Mike Spicer at DeBeneEsse2001@aol.com http://amateurastronomy.org/events.php</p>																																																																	
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