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ORBIT

Official Publication of the Hamilton Centre
The Royal Astronomical Society of Canada

16" R-C Scope Installed !

The Les Powis Observatory now holds our new 16" Ritchey-Chretien telescope on its USAF jet-black millennium paramount. The scope and mount arrived just two weeks ago on a frosty evening under cloudy skies.

"It's like Christmas!" exclaimed President Les Nagy as he opened the crates to inspect the equipment for damage and found all intact. "Christmas for everyone!" remarked past-President Steve Barnes of Sky Optics, the local retailer who sold our Centre both the telescope and its mount.

At the board meeting 11 November and again at an official open house on 19 November, members had an opportunity to see the black carbon-fibre Cassegrain telescope from Optical Guidance System under the observatory dome, perched on its new pier. The venerable 5" Marsh refractor and its pier have been removed from the observatory but its long service and beauty are not forgotten!

Christmas has come to the Hamilton Centre before the snow, thanks to a generous $75,000 grant from the Ontario Trillium Foundation. The Foundation distributes funds from Ontario Lotteries to support local initiatives to involve the community in various cultural activities. Hamilton Centre made a commitment to put the new equipment and our volunteerism at the disposal of the Hamilton community for observing nights, sidewalk astronomy, biweekly public events, school inservice and curriculum enhancement as well as advertising our public service in the local media. It benefits the whole community!

Efforts to date are just the start, but members are due their honourable mention just the same. Applying for the $75,000 grant was the brainchild of past-Secretary Grant Maguire. He headed the Trillium Committee and with then-Observatory Curator Heather Neproszel, then-Vice-President Mike Spicer and our Treasurer John Williamson, Grant attended meetings, solicited input from members, collected documents and prepared the detailed application that was submitted on 29 April 2003. Six months later we had the grant!

The board's 2004 Acquisition Committee then solicited quotes and decided on what equipment to purchase and from where: thanks to Scott Barrie, Kevin Hobbs, Grant Maguire and Les Nagy for serving.

The telescope has been installed and aligned thanks to Colin Haig and his team of merry elves. Several members have contributed time and money towards the purchase of a new desktop that will drive the paramount and operate the SBIG camera for imaging, now that the new CCD camera has been delivered. The Telescope Use Committee has met several times to make suggestions to the board on how best to use the equipment. Please email your ideas to Colin Haig.

NEWS FROM NATIONAL

Your Centre representative attended his first National Council meeting (NC044) in Toronto on 30 October after receiving hundreds of pages of Committee Reports and emails.

Highlights of the meeting:

1. The RASC is producing an outstanding observing booklet as part of the new Lunar Certificate program. Thanks to the Observing Committee headed by Chris Fleming, the booklet is being beta-tested and should be available in just a few months.

2. National has set up a special committee to oversee its many other committees and the general operations of the RASC with the aim of cost-cutting. "Task Force 21" has about a dozen members, an open-ended time line and no fixed reporting requirement. It's to suggest ways to save money. No budget was set but one estimate of the committee's cost by President Peter Jedicke was in the thousands.

3. Fees went up this fall by over 10% and according to National President Peter Jedicke there is no way to avoid another fee increase next year. National was very pleased that in the 2004 RASC Membership Survey a majority of respondents said they'd be willing to pay even more – about $10 more - for their memberships. You can speak to Peter about this at the general meeting on December 2nd!

4. The Annual Report, least valued publication of the RASC according to the 2004 Survey, will come out in a very slim version, ("the constitutional minimum") with additional information available on the RASC National website, as a cost savings.

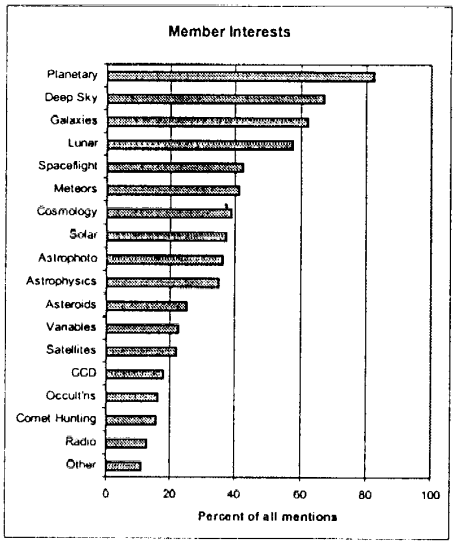
5. A few words about the 2004 National Survey, details of which are available on the RASC National web site (www.RASC.ca):

a) Members strongly rejected the suggestion that the RASC Observer's Handbook should be made optional (ie: members would buy it); support for the Journal and Sky News was weaker.

b) Our Hamilton Centre submitted the lowest percentage of survey responses of all the English-speaking Centres.

c) The typical RASC respondent to the survey is 46-65 years old, has a university degree, considers him/herself to be of intermediate expertise in astronomy and has been an RASC member for about 5 years.

d) The interest of members was noteworthy and I have reproduced the RASC chart below:



M.A.S.P. 2004: Breathtaking!

Every year as the cold winds of mid-October blow the fallen leaves around Ontario, I drive south to the Mid-Atlantic Star Party. Located at Camp Reeves about 30 miles SW of Raleigh, North Carolina, MASP has to be one of the best observing bargains around. For a US$15 registration fee you can pitch your tent, set up your equipment, draw electricity and observe in the sunny south for a week around the New Moon (12-18 Oct this year)!

The site is a flat clearing of grass-covered sandy soil about half a mile long, covered with hundreds of tents and campers set in rows to permit access for cars and trucks. You can park and set up your tent and scope all in one spot. Hundreds of observers from all over the US set up for observing and imaging in the clear skies of this Dark Sky Preserve at 35° 19' 30" N, 79° 33' 20" W. The black night sky is spangled with magnitude 6.5 stars

There are excellent day speakers under the big tent at the SW end of the field, but I must confess I slept most of the days because the observing was so great at night. I took photos and observed with my own telescope, but also walked around to try many others, including a 20" Obsession that gave remarkable views! The food was good, the observers very friendly, the retailers generous (they haggled!) and nights crisp and clear (except for one rainshower). I look forward to attending again. Next year's MASP is 1–8 November 2005.

If you wish more information about the Mid-Atlantic Star Party, contact Mike Spicer or go to the MASP web site:

http://69.6.212.143/index/shtml

From our Centre President

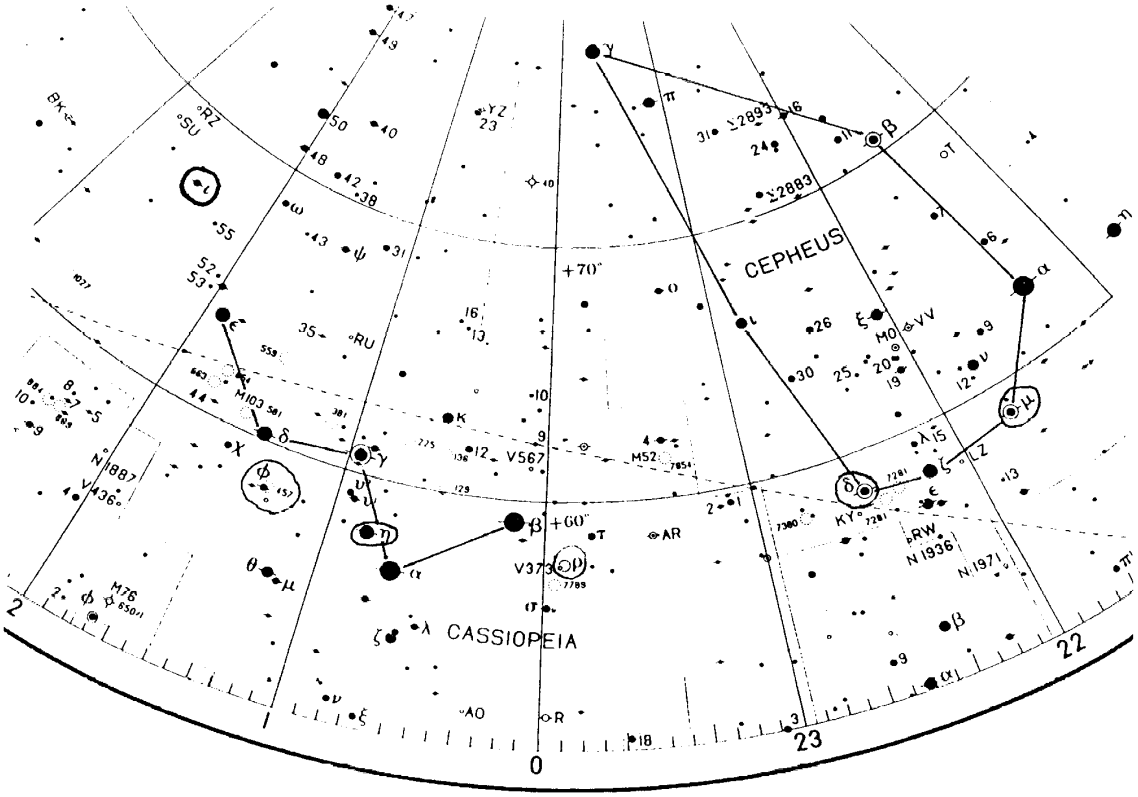
It's hard to stare at a blank screen and try to figure out what important and interesting things I can say as President. We have so much potential for bringing everyone together and enjoying our observatory it's hard to think where to begin. Let's see if I can make some points about what we have and what the members of our fine old club can benefit from

We have a fairly comprehensive library of astronomy books. You really should browse the shelves, I am sure you can find something of interest. Variable stars, star atlases, NGC object catalogues, pretty pictures too. We have a wonderful audio/visual setup now that rivals many home theatres. It has informed and inspired children, has entertained members with movies (astronomy-themed of course), projected star charts on the wall and played soothing music during lone observing sessions. We have a computer for members' use with a printer and internet access. So we all can check weather satellite images, look up the latest comet positions, print out star charts to take to the telescope, etc..

We have binoculars, an 8" Celestron, a 17" light bucket, a 5" refractor, a somewhat portable 10" Dobsonian, and...I don't think I need to remind everyone of the new telescope that has been installed. It is working wonderfully. Star images are as perfect as I have ever seen. You can see colour easily in M42! Once we get the new CCD camera, there all kinds of possibilities for members to do something [Ed: CCD camera has arrived]

So send me an email, or call me on the phone if you want to go up to the observatory and see all these things! After all, sharing your love of astronomy seems to make it more fun.

CENTREFOLD: A WINTER'S TALE



Everyone knows the tale of Perseus, hero who slew Medusa. To look at her hideous snake-haired face directly was to be turned to stone, so crafty Perseus used his bright-burnished shield like a mirror. Looking at her reflection, he decapitated her and put the still-potent head in a bag. Well, here begins a winter's tale.

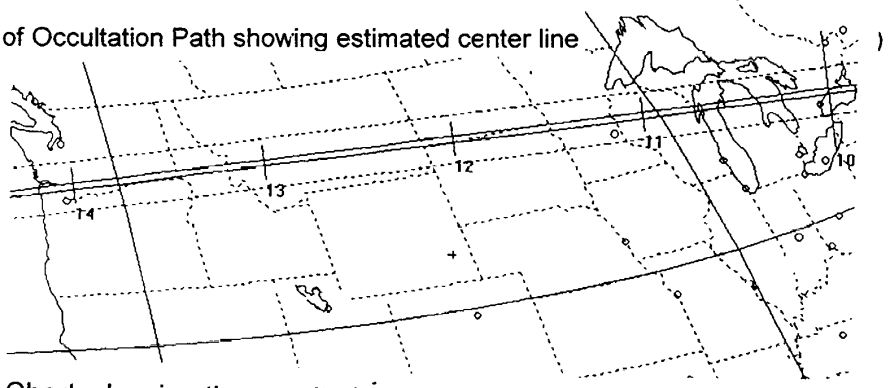
This month's constellations are Cassiopeia and Cepheus, high in the circumpolar skies. Cassiopeia and Cepheus ruled ancient Ethiopia – back then a mighty kingdom. Their daughter was the lovely Andromeda. Like many mothers, Cassiopeia boasted her daughter was beautiful, but she overstepped the line when she spread it about that Andromeda was even more beautiful than Neptune's sea-nymphs. Neptune flooded the coast and sent Cetus, a sea-monster to complete his destructive pay-back. Cepheus, relying on the usual sage advice, had Andromeda chained on the shore as a sacrifice. Before Cetus could harm the princess, fair Perseus happened by on his winged steed Pegasus. In a trice he popped Medusa out of the bag, Cetus sank like a stone below the sea, Andromeda was saved and our Hero got to marry a princess.

Looking up on a clear December evening, you can see Perseus and Andromeda overhead with Pegasus flying high beside her, Cetus sinking low to the south, and Cassiopeia beside Cepheus just above them.

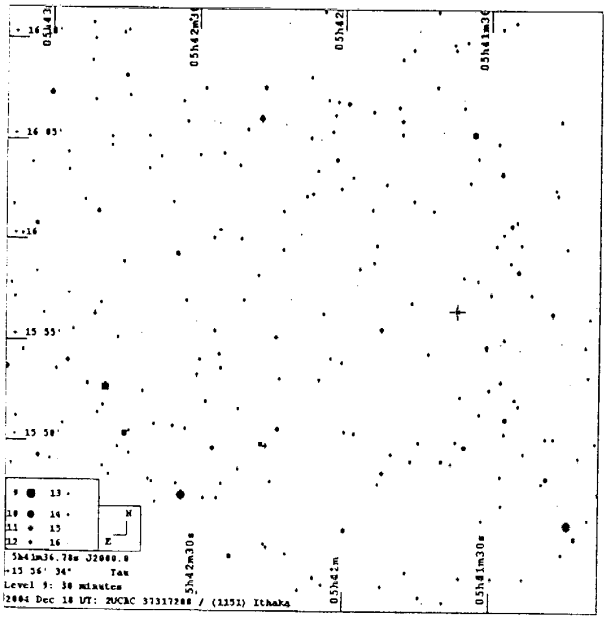
18 December 2004: Asteroid 1151 Ithaka occults 2UCAC 37317208

Occultation begins:	04:10 am
Duration:	2.0 seconds
Asteroid 774 Armor:	magnitude 15.5
Occulted star:	magnitude 11.2
Right Ascension:	05h 41m 37s
Declination:	+15° 56' 34"

Map of Occultation Path showing estimated center line



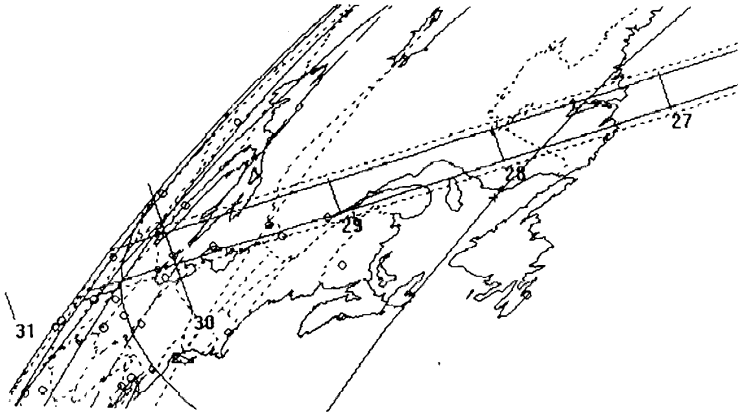
Star Chart showing the occulted star and ½° field of view (N is up)



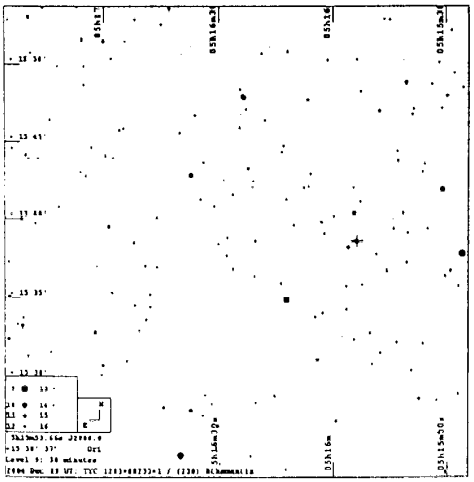
29 December 2004: Asteroid 230 Athamantis occults TYC 1238-00235-1

Occultation begins:	05:30 pm
Duration:	11.7 seconds
Asteroid 774 Armor:	magnitude 10.4
Occulted star:	magnitude 11.1
Right Ascension:	05h 15m 54s
Declination:	+15° 38' 37"

Map of Occultation Path showing estimated center line (dotted line = uncertainty)



Star Chart showing the occulted star and ½° field of view (N is up)



ASTEROID OCCULTATIONS in DECEMBER, 2004

Above and beyond the great lunar occultation of Jupiter on December 7th, there are some spectacular occultations of stars by asteroids this month. Three of these events are observable in the Hamilton area and information concerning them is in this attachment for you.

In past years, the Hamilton Centre actively timed lunar and asteroid occultations. With your help we may resurrect a ***Hamilton Centre Occultation Group***: members Mike Spicer, Roger Hill, Ken Lemke and Steve Barnes have indicated they are interested in this research project. If you are interested in taking part, email the Hamilton Centre RASCals list. Roger Hill is willing to give a workshop on occultation timing in the near future.

What are asteroid occultations? Consider that as asteroids move across the sky, they pass in front of background stars and for a few seconds or minutes (depending on the asteroid's size and distance from us) the light of the more distant star is blocked and "winks out" for Earth locations in a direct line with the star and the asteroid. The asteroid itself may be small and very faint visually, but its presence is detected and measured by the disruption of the visible star's light.

Why is timing an asteroid occultation important? Accurate timing of the occultation will help calculate the diameter of the asteroid; observers in various locations will each measure a different "slice" of the asteroid's diameter and by connecting their timing lines, the shape of the asteroid becomes visible!

What equipment is needed? All the observer needs is an accurate map to identify the occulted star, telescope to observe the occultation, short wave radio to get the exact time via radio signal, and tape recorder to record both the signal and his/her excited "out!" and "back" for the occultation event.

With the Centre's new telescope and fabulous STL-11000M CCD camera it will be possible to image even faint asteroid occultations.

The dates of occultations that pass by Hamilton in December:

14 Dec 11:49 pm EST	Asteroid 0774 Armor
18 Dec 04:10 am EST	Asteroid 1151 Ithaka
29 Dec 07:29 pm EST	Asteroid 0230 Athamantis

On the following pages of this insert, I have included some information for each of these occultations; if you desire detailed information please go to the web site: www.asteroidoccultation.com/

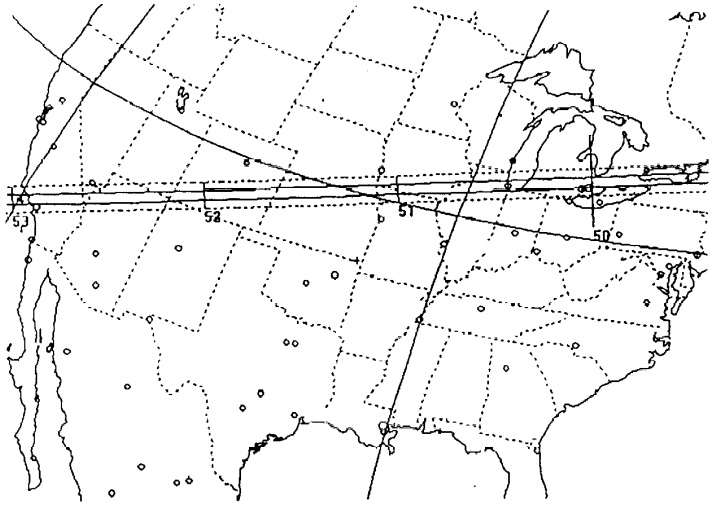
Please let me know if you think future ***Orbits*** should include this kind of advance asteroid occultation data.

Mike Spicer. Editor
RASC Hamilton Centre ***Orbit***

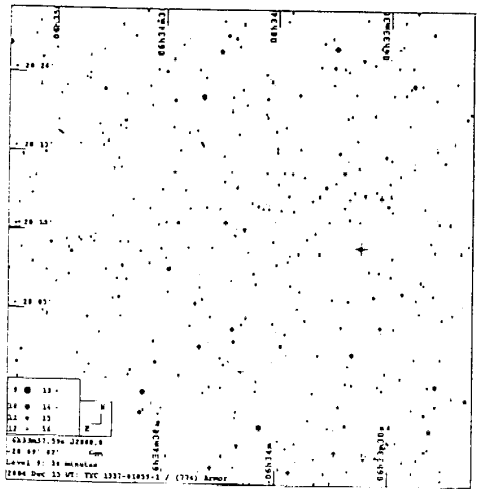
14 December 2004: Asteroid 774 Armor occults TYC 1337-01059

Occultation begins:	11:49 pm
Duration:	3.3 seconds
Asteroid 774 Armor:	magnitude 13.8
Occulted star:	magnitude 10.6
Right Ascension:	06h 33m 37.6s
Declination:	+20° 09' 02"

Map of Occultation Path showing estimated center line (dotted line = uncertainty)



Star Chart showing the occulted star and ½° field of view (N is up)



OBJECTS IN CASSIOPEIA AND CEPHEUS

On the map, adapted from Norton's Star Atlas, you can see the "W" or "M" of Cassiopeia's throne and Cepheus beside it.

Cassiopeia holds M52, M103 and several other open clusters located several thousand light years away bearing NGC numbers: 457, 559, 663 and 664, each visible in binoculars and very pretty in small telescopes. Below Cassiopeia at the edge of the map in Perseus, lies M76 the "Little Dumbell" looking like a peanut-shaped nebula in a telescope; close by is the "Double Cluster" NGC 869 and 884, each visible with the unaided eye although almost ten thousand light years distant.

η Cas is a binary star of 3.5 and 7.4 magnitude, 13 arc-seconds apart and easily split in any telescope. If you are looking at NGC 457, the bright nearby star ϕ Cas is a pretty double star of magnitudes 5 and 7 wide enough to be split with binoculars. ι Cas is harder to locate but worth looking at: a close triple star of magnitudes 4.6, 7 and 8. The gigantic star ρ Cas is worth checking; usually 4th magnitude though 6,000 light years distant, this ultra-massive star may brighten at any time, throwing off its outer atmosphere.

Cepheus is a rather faint constellation containing a few interesting objects. Don't pass it by this winter without looking for:

NGC 6946 is a beautiful face-on galaxy with several wide spiral arms. It is 9th magnitude due to our galaxy's obscuring dust and hard to see in less than a 6" telescope. Supernovae appear often – about every 20 years - in this circumpolar galaxy, making it a prime candidate for a supernova search.

Delta Cephei is one of the most famous variable stars. It regularly pulsates from magnitude 3.6 – 4.3 over 5 days, 8 hours and 48 minutes. This giant white star has given its name to thousands of similar "Cepheid variables", regular as clocks and used to measure the distance to other galaxies. Delta doubles in brightness in about one day, so you can check its progress against nearby stars Epsilon (mag. 4.2) and Zeta (mag. 3.4).

μ Cephei was given the name "Garnet Star" by Herschel because it is one of the reddest naked eye stars. Like most red giant stars it is a variable (mag. 3.9 - 4.5). Some observers say it is almost purple-red; others call it orange-red... what colour do you see using a telescope?

2005 BOARD OF DIRECTORS

Since six were acclaimed in early October, five additional members have been put onto the Hamilton Centre Board of Directors including Steve Barnes and Ken Lemke just three weeks ago:

President	Les Nagy	(905) 388-1011	president (at) hamiltonrasc.ca
Vice-President	Colin Haig	(416) 729-7073	astronomer (at) cogeco.ca
Secretary	Mike Spicer	(905) 388-0602	deBeneEsse2001 (at) AOL.com
Treasurer	John Williamson	(905) 691-6042	john.williamson (at) simpatico.ca
Recorder	Roger Hill	(905) 878-5185	roger.hill (at) simpatico.ca
Public Education	Victor Grimble	(905) 331-5360	alternativelogistics (at) rogers.com
Observing	Ev Rilett	(905) 319-8864	erilett (at) cogeco.ca
Observing Assistant	Ken Lemke	(905) 639-5127	klemke (at) worldchat.com
Maintenance	Gary Colwell	(905) 277-4297	glcolwell (at) rogers.com
Curator & Keys	Mark Kaye	(416) 885-6134	mark.kaye (at) simpatico.ca
Telescope Scheduler	Steve Barnes	(905) 631-9944	sbarnes (at) skyoptics.ca

OBSERVING NOTES

After a spectacular September to mid-October the past month has not provided too many opportunities for observing, but there have been some noteworthy events:

a) The total lunar eclipse the night of October 27-28 was a thing of beauty. President Les, Victor Grimble, Ken Lemke and Mike Spicer set up at the Lakefront Park (Pier 4) for the evening to show mostly cloud formations to passers-by – but there were glimpses of the moon in the early stages, and the total eclipse was revealed in cloudless glory. Several members took photographs of the eclipse, including Kevin Hobbs (see http://home.cogeco.ca/~hobbservatory/Main.html), Mike Spicer and Steve Barnes (see Steve's pictures at www.skyoptics.ca/).

b) The outstanding display of auroral activity November 7-8-9 that was visible across Canada and the US, probably one of the most intense storms ever seen. The US Air Force DMSP satellite recorded the aurora as a bright band sweeping from the Atlantic Ocean to California, covering Eastern Canada (see this amazing photo in the aurora area at www.space.com). Many members took photos of the multicoloured aurorae; Steve Barnes even made a little digital movie.

c) Attention is focused on the new 16" R-C telescope in the Powis Observatory. The board is soliciting ideas for research projects from members. Three suggestions so far: a supernova watch (about 2 hr / week); imaging Jupiter for the Association of Lunar and Planetary Observers (about 2 hr / week) and a survey of cataclysmic variables. Any others?

DECEMBER SKIES

December may be one of the most difficult months for observing, with holiday shopping, seasonal activities, the high percentage of cloudy nights, snow and ice, etc...

But there is a lot to see! Sky News, Astronomy and Sky & Telescope are sources for an overhead view of the December sky, and of course the Observer's Handbook is filled with info. In this issue I mention just a few things that may catch your interest:

Moon: Early December offers a fabulous early-morning lunar occultation of Jupiter on the 7th, as well as an opportunity to see Mare Orientale on or near the 5th, due to the moon's distance from Earth and its resulting libration.

Saturn: The rings are starting to close now but they are still spectacular. Saturn becomes visible in the east before midnight below Castor and Pollux, and by month's end it has moved out of the low-lying haze for excellent observing and imaging. An 80mm refractor will show the rings separated by the dark Cassini Division, the dark equatorial belt and moons Titan, Dione, Tethys and Rhea. An 8" scope will reveal the Crepe Ring, the shadow cast by the rings on the planet and by the planet on the rings. In good seeing a 12" scope will reveal both moons Enceladus and Mimas lying just outside the rings.

Geminid Meteors: slow, bright yellowish meteors radiating from Gemini will manifest starting the 11th, reaching a maximum of 80+ per hour after midnight on the 13th. This shower can be a better show than the August Perseids and this year the Moon is minimal.

Early-Morning Lunar Occultation

Just before 4 am on the morning of Tuesday, ***7 December*** the thin crescent moon will cover Jupiter, swallowing its four Galilean moons one at a time. An hour later, when Jupiter is almost 28° above the Eastern horizon, good images of the event can show Jupiter emerging suddenly on the Moon's dark side. The Observer's Handbook and December's Sky & Telescope have detailed information. Don't miss this event !

If you have a film or digital camera connected directly to the T-threads of a telescope 600 to 1100mm focal length, you can get excellent photographs of this uncommon event. Imagers with an 80mm f/5 telescope can use an electronic eyepiece to record the event as a short movie using a VCR or computer with digital capture card. If you have not imaged before, you can capture Jupiter emerging from the lunar earthshine as your first attempt!

US Planning Extraterrestrial Attacks?

No longer content just to fly around bodies in the solar system, the United States has plans to drop a satellite into the atmosphere of Titan in January and to slam a probe into Comet Tempel 1 on Independence Day 2005.

"Deep Impact" is the mission name for the Delta 1 rocket set to launch 30 December 2004 to "probe beneath" the surface of the comet by smashing a big crater that the mothership will photograph. Apparently the CIA heard a rumour that Osama bin Laden skipped to Tempel 1 aboard the Maxus 6 rocket launched by Sweden on 22 November. (www.space.com/imageoftheday/image_of_the_day_041124.html) Note: "foam" in the rocket.

A Brief Editorial

Thirty-five years ago when I first joined the Hamilton Centre as a young observer, ***Orbit*** was a new publication printed on gestetner by Ken Chilton. Ken and the gestetner have gone to their eternal rewards while ***Orbit*** has persevered. From time to time editing and publishing of ***Orbit*** changes hands: since 2001 we can thank Scott Barrie, Grant Maguire and most recently Colin Haig for putting out our Centre's newsletter.

I was told the Hamilton Centre ***Orbit*** is difficult to produce. The Editor gets no computer software for creating it, so like Grant Maguire I have used Word to come up with my first edition. Members contribute few articles to most ***Orbits***, but then no one is in a position to complain about a dearth of content. Perhaps for Christmas ***Orbit*** will receive Microsoft Publisher and some articles!

I became Editor on a promise made to Ken Lemke at the Annual Meeting in October; he wanted more "astronomy" in the pages. This issue's brevity belies the work done in producing it but 2005 may see more in ***Orbit***. I solicit your comments and your contributions.

There aren't any photos in the ***Orbit*** this month. I just did not have the wherewithal to include them. Many were available and I have provided links to some of them. By next month I hope to have the software and know-how to include photos in the newsletter.

Mike Spicer, Editor

RECENT COMPLAINTS

At the Board meeting 11 November formal written complaints were made against a member for saying at the October board meeting that he could not believe other board members were so "niggardly" as to not second a motion he brought. The board will vote at its December 9th meeting whether or not to proceed to a formal discipline hearing over these and/or other complaints.

ASTRO SALES

We try to keep up with all the new items coming onto the astronomy market, let alone the special sales of items we're familiar with...

The ***ED80 apochromat refractor*** from Orion is a hit, its colour-free 3.1" doublet lens in a stubby 100mm tube with a smooth Crayford focuser for US$429. recently bought two more on sale at Orion [www.telescope.com] for even less! The ED80 and ED100 are bargains for the price, rivaling T-V scopes that cost much more. One member observed lunar craters at 250x in his ED80 on an average night with no image breakdown. The ED80 is now available in Canada as a Skywatcher with a smart blue tube for $599 at the Kitchener store: www.kwtelescope.com.

Meade (www.meade.com/) brings out at Christmas... pricey blue ***series 5000 "plossl" eyepieces*** offer a 60° field of view, looking like Pentax eyepieces. This is your opportunity to buy the excellent series 4000 eyepieces at a real bargain. Your reviewer picked up a new 8.8mm UWA (ultra-wide 84° fov) eyepiece at OPT for US$150!

Tele-Vue's eyepiece sale ends 31 December. Until then you can order any Radian eyepiece for US$199... Nagler Type 6 eyepieces are as little as US$240 each with free shipping from www.Apogeeinc.com - with the Cdn$ at .85US this is a good time to use that credit card.

On the imaging revolution, costly CCD cameras with colour wheels from SBIG and Finger Lakes continue to grow in size and cost. Our Centre recently bought an SBIG STL-11000M for US$10,500...come out to the observatory and see it! Digital SLR cameras are under $2,000 and small-pixel colour CCD with great imaging software are under $200! Celestron's new NexImager at $99+ (www.celestron.com) is much better than Meade's LPI (now free with some new scopes), but Meade has a new CCD Deep Sky Imager for $299 that looks promising.

Many companies are now offering wide-field eyepieces at low prices. Chinese opticians are using ED glass more easily in eyepieces, and the price is dropping. Celestron's X-cel and Apogee's W70 eyepieces have been well-received, especially in telescopes of f/6+.

Meade has upgraded the ETX series of telescopes by adding sensors for leveling, finding north and determining the exact time. This EasyAlign technology also comes on the LX-90 SCT telescope from Meade.

Local astro-stores may have special items in stock or in-store sales for the holidays:

Cam-Tech Photographic, 588 Concession St. Hamilton. Phone (905) 389-8545

Efston Science (www.telescopes.ca) 3350 Dufferin St., Toronto M6A3A4. Phone (416) 787-4581

K-W Telescopes (www.kwtelescope.com) 284 Westvale Drive, Waterloo N2T2G6 (519) 725-2207

Kendrick's (www.kendrick-ai.com) 2920 Dundas St. W., Toronto M6P1Y8. Phone (416) 762-7946;

Khanscope (www.khanscope.com) 3243 Dufferin Street, Toronto M6A2T2. (416) 783-4140

O'Neil Photo (www.oneilphoto.on.ca) 356 William Street, London N6B 3C7. Phone (519) 679-8840

Science Line, Jackson Square Mall, Hamilton. Phone (905) 526-9341

Sky Optics (www.skyoptics.ca) 4031 Fairview St. Suite 216B, Burlington L7L2A4 (905) 631-9944