Regulus

The Newsletter of the Kingston Centre of the Royal Astronomical Society of Canada – Oct 2006

Coming up…

RASC Regular Meetings

Queen's University
Stirling Hall Theatre A

Friday Oct 13 *Member's night*
Friday Nov 10 *speaker TBA*

Meetings are co-sponsored by Queen's Physics and include astronomy lectures open to the public.

KAON Public Observing

Queen's Observatory
Ellis Hall
Saturday Oct 14 7:30-9:30 edt
Saturday Nov 11 7:30-9:30 est

AstroYak

Friday Oct 27 19:00 - on
Friday Nov 24 19:00 - on
At the home of Kevin Kell and Kim Hay

Members Observing

Floating period: the first clear night in the dates shown
Oct 14-25 Lemoine Point
Nov 13-24 Lemoine Point

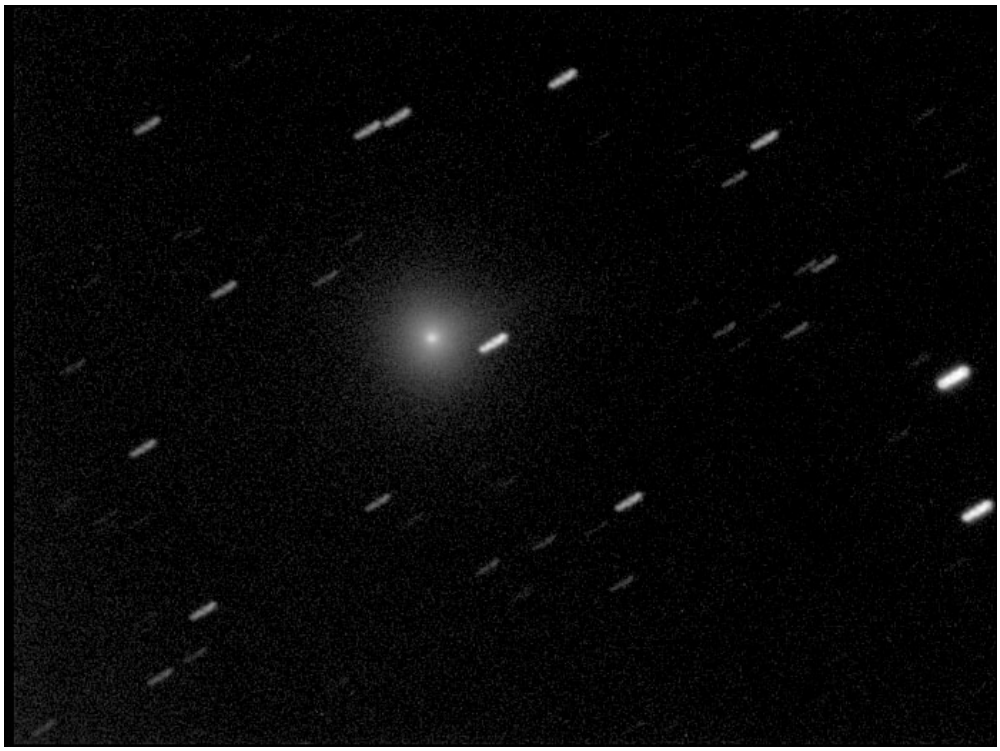

Photo by Andrew Cooper

David Levy has done it again: Comet number 22!

Early in the morning of October 2nd, our Honorary President, David Levy, discovered his 22nd comet. The discovery was visually, with his own telescope, in his own backyard! It will be called C/2006 T1 (Levy). David was using his 0.41m f/5 reflector. A day-by-day ephemeris is now available for Comet Levy (C/2006 T1) at:
http://cfa-www.harvard.edu/iau/Ephemerides/Comets/2006T1_1.html

Congratulations David!

Please Help!

November is election month. We are always in need of volunteers to run the Kingston Centre. Please consider helping by running for one of the executive positions. Send a note to kingston@rasc.ca or speak to one of the executive if you're interested. See page 5 for the current executive and committee chairs.

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Box 1793 Kingston Ontario K7L 5J6
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President's Tid Bits

Kim Hay

By the date on the calendar it has moved past the Fall Equinox and the leaves on the trees have started to change colour, so I guess Fall is really here, and our summer is but a warm memory.

Fall'N'Stars 2006 was a success despite the rain soaked weekend. We had help from the Peterborough Astronomical Association with this years event. It was great to have new people come in and work on the committee. Many thanks go out to Arlyne Gillespie and her crew that pulled the Star Party together. The Saturday Night bonfire and sing along with Dave Cotterell was a bonus. We had our traditional rocket launches at the beginning and at its closure.

Dinner at Fall 'n Stars was a time of camaraderie with new and old friends. New this year was the participation of the Peterborough Astronomical Association. We also had several visitors from Newmarket join us.

The traditional group photo. About 30 people from Kingston and Belleville RASC, Peterborough Astronomical Association, and Newmarket attended this year's Fall 'n Stars

Kevin and myself attended the Summer Saskatchewan Summer Star party this year, and we had a blast. We had six (count them) nights of clear weather for observing. There was a phone audio hook up to Starfest, which was celebrating its 25th year, and unfortunately it was raining in Mt.Forest for the Starfest weekend, we felt bad for the folks in Ontario, so we went and observed for them. On our way home we had a great astronomical trip, visiting Sleaford Observatory (Saskatoon Centre), GlenLea (Winnipeg), the Brent Meteor Crater and the Algonquin Radio Dish in Algonquin Park.

We have many events to look forward too this fall, and many projects in the works. Besides our meetings and public observing sessions on the second Friday and second Saturday respectfully, we have our members observing sessions, which are centred around the new moon, so Ken will keep us informed. Our new Observational Astronomy course for the Novice has started and we have 14 participants.

We have a new telescope being prepared, with the mirror grinding almost being done, thanks to the ATM group. More information on the scope and its design will be coming up.

Our librarian is currently purchasing new books for the library. If you have a book or DVD that you feel the library should have for the members please let David Maguire know.

There has been some talk that Kingston may be inline for a new Science Centre. A roundtable meeting will be held later in October, at which the RASC-Kingston Centre will be represented. We can bring forward any questions and concerns we may have to see how a Science Centre will help everyone.

In November, our Annual Big Bang-Quet will on the 4th (Saturday), and tickets are available from Diane Torney at the meetings or by contacting her via email diane.torney (at) sympatico.caOn this same day, there is a National Council meeting being held in Mississauga so, if you have any concerns of what may be happening on the National level, please contact John Hurley our National Council Representative at jphurley (at) frontenac.net

I would like to bring to your attention that our Election's will be held on November 10. Since we

have passed our new bylaws - the terms of office have changed (look in the Members Only Section under Kingston Bylaws)

All positions are open for anyone to come in and be part of our growing centre. If you feel you have skills that will help our centre continue to grow, and you would like to be a part of its growth, think about coming on the Executive. Terms are now two years.

This year will be a transition year in order to allow the Executive to have an alternating slate for the next years elections, and allow past members to remain on the new Executive giving some continuity.

We also have many committee's (also see the members only section) that if you feel that you may want to work on a committee, or even chair a committee, please come forward and let the current Executive know.

Our Centre needs ***you*** to continue to do the great work that has been going on, so come out and lend a hand .

Until next time, keep looking up!

RASC Kingston Centre Big Bang-Quet

Date: Saturday November 4, 2006

Location: Christ Church Parish Hall
990 Sydenham Rd
Kingston

Time: 5:00 Cocktails
6:00 Prime Rib Dinner
7:30 Speaker
9:00 Awards Ceremony

Speaker for the evening will be Ross Kilpatrick, Emeritus Professor of Classics, Queen's University "Gustav Klimt and the Stars: A Dionysian Iconography for "The Kiss"'

Price: $30 Per Ticket (see Diane Torney)
wine & beer available for purchase

Target for Tonight

Susan Gagnon

Target for tonight is a list of object from various lists in each constellation, presented as an aid to observers.

Canis Major
ETU:Constellation and bright star Sirius.

Messier: M41

FINEST NGC: 2359

Levy List: 296 (NGC 2362), 369 (IC 2177).

Cassiopeia
ETU: constellation and bright star Schedar.

Messier: M103, M52.

Finest NGC: 7635, 7789, 185, 281, 457, 663, IC289,

Levy List: 325 (IC 1795)

Levy List Errata

Leo Enright

I have noticed that I made a typing error in preparing The Levy List of Deep Sky Gems, which some of our observers may be using. In 'The Autumn Sky' section Levy 278 should be listed as NGC 474, not NGC 404.

If this correction is not made, there could possibly be some confusion with Levy 64, which is NGC 404. However, the coordinates (that is, for both of the objects) are correct as listed.

An additional "typo" occurs in the Autumn Sky listing for Levy 62 (NGC 898). The Declination should be 41 degrees, 57 minutes, NOT 44 degrees 57 minutes. Making this correction will allow you more easily to find this galaxy in your star atlas.

I would be interested in hearing from observers who are trying to complete the Levy List (tcorbor@frontenac.net). Please let me know how many of the objects you have observed so far, and if you have yet completed any of the seasonal sections of the list.

Remember, this list is "RASC-friendly", and if you have not begun it yet, now in the autumn is a great time to begin.

Don't have the Levy list? You can download from the Centre's website, http://u99.n144.queensu.ca/rasc/deepsky.htm or by contacting Leo directly. The corrections have been made to these sources.

Member's Observing Nights

Ken Kingdon

These observing sessions are intended for RASC members and their guests, so that we can control the amount of white-light flashlights. The public is welcome to attend the KAON sessions at Queen's University the second Saturday each month.

October
F**loating Period**: first clear night beginning Saturday, Oct. 14 through to Wednesday, Oct. 25
Meet: 7 pm in the South Parking Lot of Lemoine Point C.A., off Front Road.

November
F**loating Period**: first clear night beginning Monday, Nov.13 right through to Friday, Nov.24
Meet: 7pm in the South Parking Lot of Lemoine Point C.A., off Front Road.

RASC's First Visit to Arden

by Doug Angle and Ken Kingdon

On Wednesday, August 30th, five eager members visited Arden for the first-ever RASC observing session at this outstanding site just an hour north of Kingston. An absolutely pristine sky turned out to be the only good evening during the next month. With pristine conditions and Arden's renowned dark-sky quality, we could observe pretty much ANYTHING we desired. The unaided-eye view of the Milky Way itself was absolutely stunning... very wide with many brilliant star-clouds, and many dark dust zones.

Doug was on holidays and sure enough, this rare clear night was wedged between his trips to Casa Loma in Toronto that afternoon and the National Art Gallery in Ottawa the next morning. Not wanting to pass up this observing opportunity, Doug arrived in the darkening twilight with heavy artillery - the Centre's 24-inch Dob. Realizing how exceptional the sky quality was, Doug and Ken remained observing to 5:10am. Here is our report...

Early in the evening, we did some causal observing of bright Messier objects in Sagittarius, and upward through the Milky Way. We enjoy this kind of observing, especially when it involves sharing the view through the 24-inch telescope with other Centre members. Later, Doug had the opportunity to determine what is the faintest object visible in the 24-inch scope by searching for globular clusters in M31, Andromeda Galaxy. A 31mm Nagler gives a field of about 1 degree, and being so bright makes it easy to navigate through the spiral arms and along Andromeda's dust lanes. Originally intending to chase down G1, the brightest globular cluster in M31, but the long star-hopping route placed G1 off the edge of the charts. Instead, there are a few M31 globulars that are located near readily identifiable objects. In the south end of M31 is NGC 206, a distinct star-cloud analogous to our Milky Way's M24 star-cloud. This is where the search commenced. M32 also provided a good marker, and using stars of 8 to 10th, it became a matter of finding asterisms that match obvious star patterns on the chart. Then increasing magnification permits M31's faint globulars to be seen with more detail, but the tradeoff is rapid motion through the field. The brightest target was G76, relatively easy at magnitude 14.5, and well placed in a line of stars. Also well placed but slightly fainter was G156, near M32 and beside a 7th magnitude star. The last and most faint was G87, located just below star cloud NGC206 close to a some very faint stars. Checking the charts and using averted vision, Doug confirmed that he had located G87 at magnitude 15.7. Thus the 24-inch Venor can achieve 16th magnitude (getting

deeper to the 17th magnitude requires 30-inch aperture... like Mike Wirth's StarMaster).

M31 is often considered disappointing, but when viewed with 24-inch aperture in a black sky, it is indeed a true spectacle. Even the outer spiral arms and the dust lanes jumped right out, revealing great detail. Just how good was the sky quality?... well, M33 Triangulum Galaxy was visible with unaided eyes!

Ken bagged 2 Comets (177P Barnard, and 4P Faye). On the RASC Challenge List, Ken easily observed a globular cluster reputed to be so faint that it had required the 200-inch Palomar scope in California to discover it (this globular is now named Palomar 11). Also, Maffei I Galaxy, which was not even discovered until 1968, is claimed to be almost invisible through galactic dust... but it was easily seen with just a 12.5-inch Dob! And the supposedly challenging galaxy IC342 was so EASY that even its face-on spiral arms stood out... just like in the photo of Oct 2006 "Sky News". With Arden's superb skies, who needs those cumbersome CCD cameras? :)

With an O-III Nebula Filter, the 12.5-inch scope gave superb views of Swan Nebula, NGC 6888 Crescent Nebula, M42 Orion Nebula, Veil Nebula plus Pickerings Triangular Wisp. Besides the common planets, we saw Pluto, now called a "dwarf" ...and yes, it appears as such. Uranus and Neptune were observed, and both studied with the 24-inch scope for moonlets (found one... Titania).

Perhaps the night's best view was of NOTHING ...the large Dark Nebula named "Barnard 361" - composed of molecular gas and cold dust that is unfathomly black even against its dazzling star field in Cygnus. Dark nebulae can only be enjoyed from unpolluted skies like those of that Arden. For this reason, you don't hear much about B361, but it is very easy to find close to North American Nebula (Hudson's Bay and Gulf of Mexico were naked-eye), and B361 is located right next to NGC 7026 the "Cheeseburger Nebula"

We were all comfortably dressed for the night. Air temperature by dawn had dropped to +4°C, but right at ground level, some surfaces that radiate faster had FROST on them... and yes, it was AUGUST. With superb transparency, the approach of dawn made the zodiacal light clearly visible. Not stopping until well after first light, we finally ended and packed up to head home at 5:30am, just in time for Doug to leave on his family-trip to Ottawa's National Art Gallery. He later confessed that he was "dragging a little" through the gallery after a remarkable night of observing. Astronomy can be like that - no pain, no gain! But on a night like this... "oh, how sweeeet it is!"

RASC-KC directors

2006 Board of Directors & Elected Officers

President:	Kim Hay
Vice President:	Arlyne Gillespie
Secretary:	Steve Hart
Treasurer:	Kevin Kell
Librarian:	David Maguire
Editor:	Doug Angle
National Council Rep:	John Hurley

2006 Committee Chairs

Publicity :	Steve Hart
Astronomy Day:	Hank Bartlett
Observing :	Ken Kingdon
Responsible Lighting:	Kim Hay
Banquet:	Diane Torney
Webmaster:	Kim Hay
Fall N Star's 2006:	Arlyne Gillespie
Education:	Brian Stengele

The Sky Quality Meter and it's Travels

Kevin Kell & Kim Hay

at the Starlight Cascade Observatory just outside Yarker Ontario

SQM Reading Summary:
Starlight Cascade Observatory Yarker ON
200609 SQM=21.11
Fall'N'Stars Thomasburg ON
200509 SQM=21.13

NYAA Oak Heights, Colborne ON	200507	SQM=20.23
Cypress Hills Park, Saskatchewan	200608	SQM=21.46
Sleaford Observatory Saskatoon Centre	200608	SQM=21.45
Glenlea Observatory, Winnipeg Centre	200608	SQM=20.58

What is it?

The Sky Quality Meter measures the brightness of the night sky in "magnitudes per square arcsecond". At a price of under $150US, it is the first measuring device available to amateur astronomers to give you actual quantitative data about the sky quality.

Data subset #1

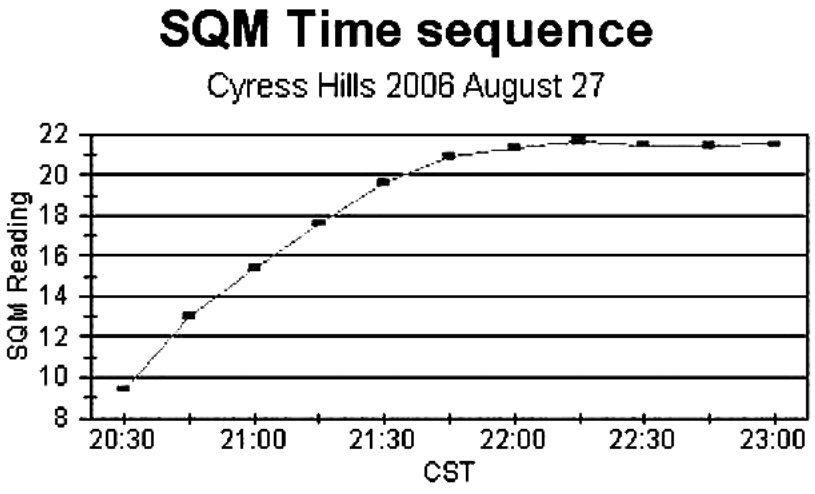
At a summer 2005 NYAA StarBQ Observing Session north of Colborne, we tested our unit aside two others and got readings within 0.06 units of each other. This gave us good confidence in the meters' consistency.

Date	**Time**	**Meter1**	**Meter2**	**Meter3**	**Average**	**Standard Deviation**
20050702	21:50 EDT	14.51	14.58	14.50	14.53	0.04
20050702	21:50 EDT	14.59	14.72	14.58	14.63	0.06
20050702	21:50 EDT	14.64	14.66	14.68	14.66	0.02
20050702	21:50 EDT	14.66	14.73	14.68	14.69	0.03
20050702	21:50 EDT	14.68	14.74	13.74	14.39	0.46
Average		14.62	14.69	14.44		
Standard Deviation		0.06	0.06	0.35		

Data subset #2

At the Summer Saskatchewan Star Party in late August, 2006, we took a series of readings 15 minutes apart from just past sunset as long as I could stay awake :)

	CST	SQM
20060827	20:30	9.39
20060827	20:45	13.05
20060827	21:00	15.39
20060827	21:15	17.61
20060827	21:30	19.60
20060827	21:45	20.93
20060827	22:00	21.37
20060827	22:15	21.66
20060827	22:30	21.50
20060827	22:45	21.44
20060827	23:00	21.51



These data confirm that astronomical twilight (Astronomical twilight is defined to begin in the morning, and to end in the evening when the center of the Sun is geometrically 18 degrees below the horizon.) is a little more

than one hour past sunset and settles down pretty quickly after that.

History:

We were at a meeting of the North York Astronomical Association (NYAA) in the spring of 2005 in Toronto, where Dr. Doug Welch from McMaster University talked about measuring light pollution using a custom built Sky Quality Meter. Being very interested in Responsible Lighting and Light Pollution, we purchased one, had it delivered shortly and started using it.

Usage:

Some of the tips we would like to pass on when using the SQM,: use it after astronomical twilight, point it straight up at the zenith and try to measure on moonless, cloudless nights. We typically take 3 readings in quick succession and average them out. We record the temperature as well, as the unit provides that information.

Logging:

Log entries typically contain 3 readings, the temperature, location, date and time (local), timezone and an indication of moon, clouds, and twilight. We add in detailed location data (latitude and longitude) later on.

Plans:

We plan ongoing research on two main subjects, localized readings in our general area and readings over long term periods of time. The first will give relative values to various sites, of our members, of our observing areas and of any potential permanent facility sites. The second will tell us how much and how fast the light pollution problem is growing.

SQM Summary readings

The data at the top of the page do not necessarily state how "good" any one sight is over another, but more of a random snapshot in time of the readings of that time.

References:

Sky Quality Meter:
http://www.unihedron.com/projects/darksky/
Starlight Cascade page: http://starlightcascade.ca/sqm
Raw Data: http://starlightcascade.ca/sqm/sqmrawdata20060915.pdf

A Dome on a Home: The Story of Winchester Observatory

Walter MacDonald

Part 2 Automating the Winchester Observatory

After a number of all-night sessions following which I would stumble downstairs to bed at 5 am only to have to get up at 8am, I thought there must be an easier way to get full utilization of all the available clear skies. Not only was this mode of observing extremely tiring, it was also extremely repetitive and boring: focus the camera, move the scope, correct any pointing error, take some pictures, repeat ad nauseam! (Don't get me wrong: CCD imaging is great, but the novelty of running the equipment manually wears off sometime after the ten thousandth image or so!) Fortunately I was aware of the existence of some automation software for Astronomy; soon I had downloaded trial versions of a couple of DC3 Dreams software packages, ACP and PinPoint, which were the final two pieces (as it turned out) that I needed to automate the observatory.

ACP is a script engine that orchestrates all of the equipment -- telescope, focuser, camera, and dome -- and allows all-night unattended operation. PinPoint supports ACP by providing plate solutions -- it can actually analyse the pattern of stars in an image and tell where the telescope is really pointing! The practical upshot of this is that ACP is able to correct for any small (but still significant) pointing errors made by the telescope. (Currently the pointing tolerance is set at two arc minutes, so ACP will do one additional slew to correct the pointing if the initial pointing is off by more than this amount.)

Automation was a new dimension that I hadn't considered when I first started in on this observatory project. Sure, I had hoped to run semi-automatically from the control room for an hour or two at a time, but not completely automatically all night long! It just happened that since I already was doing CCD imaging, and had already bought the DigitalDomeWorks controller, I was already most of the way to a robotic observatory! Sometimes the universe does just unfold the way it should...

Much fun was had during 2004, as the automation side of things was progressively refined (even as the CCD imaging continued ahead at full steam!). Here is a list of some of the things that were learned and done:

* One of the realities of Astronomy today is that almost all computer controllable accessories come with serial ports while almost all computers come exclusively with USB ports. As it happens, I spent several months fighting with my old Belkin USB-to-serial adaptors. In the end I finally gave up: their XP drivers just wouldn't work reliably with Windows XP. My serial port dilemma was finally solved when I purchased a QuaTech 4-port PCI serial card. This was a product recommended by Bob Denny (who developed ACP & PinPoint); it installed effortlessly and has run flawlessly ever since. Now the observatory computer could talk to the dome, telescope, and focuser!

* FocusMax is great software for automating focus. Not only is it freeware, it is much faster than MaxIm. FocusMax typically focuses in about 25 seconds on my system. I did a good calibration of the V-curves FocusMax uses and have the slopes on both sides of the curve agreeing to 4 decimal places.

* It is a good idea to stay at least 20 degrees away from the full moon, lest the images saturate and ACP abort the session because it can't figure out where the scope is pointing (to say nothing of not getting a usable image of the target you're trying to shoot!)

* It is possible to image usefully through thin cirrus and to use these images to determine if cataclysmic variables are in outburst or not (more on these interesting stars later).

* The factory version of DigitalDomeWorks (DDW) allows script control of the AC outlets in the observatory. Unfortunately, this software feature doesn't actually work! Fortunately I was able to get a "hacked" version from Steve Chambers in the UK. It's a good thing DDW is open-source! Now I was finally able to have my ACP script turn off the camera and telescope at the end of the session.

* Another quirk of DDW is that it has a 5-minute delay if the attached DDW weather station detects rain! I didn't realize this until it unexpectedly started to rain one night. Fortunately I was up at the time, and pushed the close button right away! Based on this experience I'd say that to be really safe you need to be closing the dome within 30 seconds of detecting rain. The Boltwood Cloud Sensor looks like an even better product for observatory weather monitoring: not only will it tell you if it starts to rain, it will also tell you when the sky clears again!

* Using the Hubble Guide Star Catalog (GSC) for plate solving works better in the Milky Way than in the relatively star-poor areas like Coma or Ursa Major! I found I had to increase the pointing exposure from 30s to 60s to get reliable plate solving everywhere. This problem was solved (if you'll pardon the expression!) when I downloaded the USNO A2 catalogue -- all 6.5 GB of it! Now I get reliable plate solutions all over the sky with 30s exposures.

* MaxIm, ACP, and PinPoint have very powerful scripting capabilities built-in. I wrote a script (using nothing more than notepad!) to automatically calibrate and stack an entire night's images. This has proven to be a great time saver since I take many images of many targets on many nights!

* Automatically adding object altitude and azimuth as well as focuser temperature to the header of each image makes this information quite easy to access when looking at images. (This information was also added to the ACP log file by adding code to the standard AcquireImages script that comes with ACP - see figure 9.)

* Extending your PC speakers into the bedroom is great for having the computer alert you to significant events! Just by adding a single line of code I was able to have ACP play music to wake me up if there are 4 consecutive plate solve failures. This usually occurs if the scope wanders too close to the moon or if the sky clouds over. ACP also has a sound effect it plays if the script fails for some reason (syntax error, etc.). If the error is recoverable, then the run can be re-started and the rest of the night can be used. For example, sometimes it is intermittently cloudy so it may be necessary to re-start the run one or more times. The ability to deal with errors right away leads in many cases to greater utilization of available sky time -- and that's a good thing!

Now finally ACP was running the show all night long. I could go out in the back yard and observe with my C8 and 17.5" light bucket while the observatory worked away at its list of targets. It was so neat to

experience this kind of multi-tasking! I think that this is possibly the first time in history that a computer was actually making life easier!

For the year ended September 1, 2005, Winchester Observatory ran for approximately 1 000 hours on a total of 119 nights taking some 30 000 images. Now that's productivity! Unfortunately the weather has not been as cooperative this year and it looks like the Observatory may only reach 90 nights or so for a similar period. Still, I'll take what I can get and be thankful for it!

Asteroid Occultation

Ken Kingdon

I was shocked Sunday evening to realize that the CSC was predicting that Kingston's sky would be perfect for the Monday 4:43am EDT occulation of a mag 10 star, by the mag 12.7 Asteroid Vibilia. During the evening, I got everything ready just in case... wristwatch calibrated precisely, alarms all set, atomic clock ready, scope mirrors cleaned to perfection, collimation done, charts printed, star-hopping route memorized, eyepieces selected, red flashlites ready, comfortable observing chair, table close at hand for the clock and gear... whew!

At 12:30am Monday, my backyard sky was overcast. But, exactly as forecast, by 1am the sky had cleared beautifully, and I went to bed. Then at 4 am I rolled my 12.5-inch scope-transporter out of "MY OBSERVATORY" (garage) and into my backyard. I star-hopped onto the target star two minutes later. I increased power to 254x and was shocked to actually see the asteroid Vibilia just 17 arcsecs away from the target star, and I watched it slowly moving right toward the target star. I switched to my 9mm Nagler for 169x at 29' FOV, which seemed the best combination of magnification plus FOV to allow adequate time for passage of the star without nudging the scope.

At 04:42:59 I was happily surprised to see the relatively bright star instantly go black and "turn off". After a duration of 2 seconds, the BLACK STAR "turned back on". I had anticipated seeing only a dimming of the star down to the magnitude of the dimmer asteroid that would pass in front of it. But the persistance of human vision caused the iris of my eye to remain somewhat closed from staring at the relatively bright mag 10 star, so for those 2 seconds, I could not see the much dimmer asteroid - I just saw a black void where a mag 10 star had been. DEFINITELY, THAT WAS A COOL EFFECT!

Over the past two years, I've had five previous failed attempts... 3 caused by clouds/murky skies, and 2 caused by being just outside of the actual path. So I do sympathize with those who got clouded out... it was a miracle to find myself in a local clear patch of sky for my sixth attempt.

For Sale

5" Astro Physics refractor on a Losmandy G-11 mount with many accessories for sale. Call Bill Stapley 613-395-3635 for details and a list of items for sale.

The Kingston Centre of the Royal Astronomical Society of Canada

Newsletter Submission Info:
I can take most common formats, although I prefer plain text. Pictures should be sent as image files in attachments separate from the articles. Please avoid the use of capitals, asterisks etc for formatting, as I use the publishing software's formats for this kind of emphasis.

E-mail: angle (at) personainternet.com
Post: Doug Angle,

2006 Publication Deadlines

For the month	**Deadline**
November	October 21
December	November 25
January 2007	December 16

Subscriptions: Members of the Kingston Centre receive Regulus as a benefit of membership. Advertisements are free to members of the Centre. Commercial advertising is $20/quarter, $40/half page, $100/ full page and should be in electronic format. Contributions are more than welcome. Submitted material may be edited for brevity or clarity.

Kingston Cosmic &Events Calendar
October and November 2006

By Kim Hay

For more detailed information, please refer to the **RASC 2006 Calendar** and the **RASC 2006 Observers Handbook**. Available from Kevin Kell or from National Office, http://www.store.rasc.ca/

October	
October 6 Friday	Full Moon 23:13
October 8 Sunday	Draconid Meteor peak 7 pm
October 10 Tuesday	Moon occults the Pleiades 1 am
October 13 Friday	Last Quarter Moon
October 13 Friday	RASC Kingston Centre Meeting, Stirling Hall Theater "A" 7:30-10:00 pm
october 14 Saturday	KAON Observing Session- Ellis Hall Queen's Observatory * 7:30 - 9:30 p.m.* for more information visit http:130.15.144.99/rasc/ pubobs.htm
October 17 Tuesday	Mercury at greaest elongatin E(25 degrees) Crescent Moon 1.8 degrees E of Regulus best seen in NE of N America 3:00 am
October 20 Friday	Zodiacal Light visible in E before morning twilight for the next two weeks.
October 21 Saturday	Orionid Meteor Shower Peak 11:00 am
October 22 Sunday	New Moon 1:14
October 23 Monday	Mars in conjuction with the Sun
October 27 Friday	Venus in superior conjunction
October 27 Friday	Astro Yak in Yarker, 7:00 pm see http://130.15.144.99/rasc/secure/ for directions
October 29 Sunday	First Quarter Moon 16:25 Daylight Savings Time Ends 2:00 am
October 31 Tuesday	- Halloween - great time to enjoy sidewalk Astronomy with the gouls & goblins!

November	
November 4 Saturday	National Council Meeting Missisauga, 10:00-5:00 pm
November 4 Saturday	Annual Big Bang-quet Award Night
November 5 Sunday	Full Moon 7:58
November 8 wednesday	Mercury Transit in W of N.America- happens at sunset
November 10 Friday	Election Night and Meeting Night , Stirling Hall Theatre "A" 7:30-10:00 p.m.
November 11 Saturday	KAON Observing Session- Ellis Hall Queen's Observatory * 7:30- 9:30 p.m.
November 12 Sunday	Last Quarter 12:45
November 12 Sunday	N.Taurid meteor peak 10:00 am
November 13 Monday	Moon near Saturn and Regulus 3:00 am
November 17 Friday	Leonid Meteor peak 4:00 pm
November 18 Saturday	Little Cataraqui Conservation Area- Public Presentation 7:00-9:30 on "How to Use your Telescopes" Gate fee is charged
November 20 Monday	New Moon 17:18
November 21 Tuesday	Jupiter in conjuction with the Sun
November 24 Friday	Astro Yak in Yarker,7:00 pm see http://130.15.144.99/rasc/secure for directions
November 25 Saturday	Mercury at greatest elongation W (20 degrees) best morning view in 2006
November 28 Tuesday	First Quarter 1:29