



# Regulus



The Newsletter of the Kingston Centre of the Royal Astronomical Society of Canada –December 2005

## Coming up...

### RASC Regular Meetings

Queen's University  
Stirling Hall Theatre D

Friday December 9 7:30  
Speaker: Paul Mortfield

Friday January 13  
Speaker: Walter MacDonald  
"A Dome on a Home"  
*Meetings are cosponsored by  
Queen's Physics and include  
astronomy lectures open to the  
public.*

### KAON Public Observing

Queen's Observatory  
Ellis Hall  
**Saturday, Dec 10 7:30 - 9:30**  
**Saturday Jan 14 7:30 - 9:30**

### AstroYak

Friday, December 16 7:00 pm

at the home of Kevin Kell and  
Kim Hay, [edited].

### Members Observing

Nov 23 – Dec 4 7:00 Lemoine Pt  
Dec 26 - Jan 2 Equuleus  
Observatory



## Norm Welbanks

### 2005 A. Vibert Douglas Award Honouree

The A.Vibert Douglas award is named after the founder of the Kingston Centre. The award is for service, including longstanding dedication, contributions to the Centre or the Society, or for an astronomical achievement. This award is intended to be presented and recognize the contribution and or achievement by a member of the Centre. This award is the highest award from the Kingston Centre.

For more on the 2005 Douglas Award, see page 3

Kingston Centre of the Royal Astronomical Society of Canada

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## President's Tid Bits

### Kim Hay

It is that time of year again, the hustle bustle, the jingle jangle of the snow bells, yes, its the holiday season again. I would like to wish everyone on behalf of the Board of Directors and Executive Committee, a Happy Holiday Season .....and a Wonderful, Clear and Dark New Year!

Our Centre passed the motion to except our Incorporation, we have a new Executive for the upcoming 2006 year and already we have been busy working to push forward to go onto the next step to our dream, and bring our By-laws in line with the National By-laws, and proceed with our Federal Charitable Status.

But while this important work is going on, we also need to focus on what our Centre would like to do in the next year or two or ten, a strategic plan if we get technical. We would like some input from our members on this, so please drop me a line at [kim \(at\) starlightcascade \(dot\) ca](mailto:kim(at)starlightcascade(dot)ca) or come and talk to any one of the current and new Executive members on this important topic. Here is what we want to know from you!

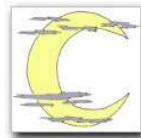
- What kind of speakers would you like to hear at our meetings?
- Use of the loaner equipment, and what kind of other equipment would you like the
- centre to purchase for member use?
- Newsletter, keep one month paper, and one month electronic, or have all electronic with
- paper available if requested?
- Library, what would you like to see for loan books or more dvds?
- Happy with the meeting space? How can we make it better?
- Volunteers-would you like to be one, have training, help out now and then?
- Outreach, do we do enough, to much, or should we do more?
- Should we become affiliated with other Astronomy groups, and Academic groups?
- More member nights observing?

- Website updates, make it simpler, easier, or more information on the main page?

Answering some or all of these questions, will help us, steer the RASC - Kingston Centre into the direction you the member wish to see the club go, and want to belong too.

It has been an exciting year, and 2006 seems just as exciting, I hope you will come out to our meetings, and enjoy a night of astronomy.

Till next year..... clear skies and keep looking up!



## December Regular Meeting

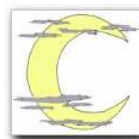
### Guest Speaker

Paul Mortfield "The Sun and Spaceweather"

Paul is a space scientist involved in science education and outreach and recently returned to Canada from California. While there he was involved with projects for NASA's Sun-Earth Connection and with Stanford University's Solar Observatories Group involved with the SOHO spacecraft.

He is also a regular television commentator on astronomy, having appeared on CBS, the Discovery Channel, and as the host of NASA-TV's educational broadcasts for Sun-Earth Day and solar astronomy. For fun, Paul uses his backyard scopes for research and astrophotography.

Paul will talk about our nearest star using many of the amazing images captured by various NASA solar spacecraft missions. He'll also introduce us to the field of space weather and its impact on space exploration and every day life.



## RASC Kingston email chat list

We maintain an email list for RASC - Kingston Centre members to use to chat about astronomy. Currently we have about 30 list members out of 125 Centre members.

We encourage everyone to sign up as it allows you to ask questions and get answers from fellow amateur astronomers. We find that it motivates on observationally :)

How to sign up to the Kingston Centre email chat list: RASCCHAT

Fire up a web browser and go to "http://crux.stmarys.ca/mm21/listinfo/kingstonrasc " and fill out the form. The moderator will approve you , and you will be on the list.

There currently is a 100 k limit on file attachments (eg to send files (pictures) to the list) and the list is archived. Once on the list, and you want to post a message to kingstonrasc (at) lists (dot) rasc (dot) ca Welcome aboard, and we look forward to hearing from you.



## The 2005 A. Vibert Douglas Award

The A. Vibert Douglas award is named after the founder of the Kingston Centre. The award is for service, including longstanding dedication, contributions to the Centre or the Society, or for an astronomical achievement. This award is intended to be presented and recognize the contribution and or achievement by a member of the Centre. This award is the highest award from the Kingston Centre.

He makes sure that the members are entertained every month, and gets us our speakers, though that is part of the job, he never gets to enjoy them because he is either on the road or getting ready to hit it. In his spare time, and from what his wife says isn't much, he scours the websites for the Kingston Centre for ultimate deal so we can all enjoy the new filters, eyepieces or focusers.

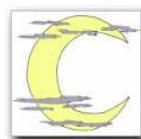
We see him now and then as he pops out for air now and then, and he shows us his new scopes.....when he observes with them , but not as much as he likes, but he makes the dark sky trips to Nirvana, or to his own observatory. He makes it to the star party social gatherings to see what is new on the field, and try to wangle a deal there.

Our winner tonight, has been a member since January 1996. We hardly ever see him, but he is there, he is the phantom, the avid astronomer and observer, the bleary eyed helper on the KAON decks. Who jumps to help no matter what you doing? The man with the green laser!

He is a kind, courteous, friendly and a true friend, volunteer above the call of duty and above all follows the Astro Rant.....this years winner of the A..V. Douglas Award is Norm Welbanks.



*Dr. Bryce Bennett, guest speaker at the awards banquet, discusses orbital mechanics with member Leo Enright*



## A Report On What I Am Finding In My Area Of The Sky Search Program

Leo Enright

Over twenty years ago I was involved in setting up a Kingston Centre Sky Search Program very similar to the one now taking place within our Centre. Actually, back in 1983, when our Centre did its previous such search program, it was the second time for such an undertaking. The 1983 venture was very similar to the one that we had attempted under David Levy's direction just a few years before that. As David well remembers, the impetus from his program of 1979 and 1980 came from the Nova Search Program instituted by Jim Low in the Montreal Centre. In turn that program has been influenced by its ultimate predecessor, the AAVSO Nova Search Program of the

1960s and 1970s. These predecessors, some of which were more concentrated on celestial regions close to the Milky Way, may have been more specifically directed toward the discovery of a nova, which is more likely to take place in such regions of the sky. Rather than having such a specific aim, our programs have been, and are, directed toward gaining a thorough acquaintance with the specified region of the sky, with no expectation of making any original discovery.

At the time of the 1983 Search Program, I did a study, that appeared in *Regulus*, of the number of stars and of other objects in the area that I had selected for the first stage of that program. My chosen area at that time, like the areas available for the present program, was one of 1 hour Right Ascension by 10 degrees Declination. At that time, actually, my area was a bit smaller than my present area because of the fact that my 1983 area was in a more northern area of the sky

and the present one is in the equatorial region. (The exact location chosen at that time was as follows: R.A.: 12 - 13h.; Dec.: 40 - 50 degrees. It contained a part of the constellation Canes Venatici and a tiny bit of the constellation Ursa Major. Like most of the areas available at the present time, it was not in the Milky Way, and very unlikely to have a nova discovery within the areas offered.) I decided then to use the 10 star atlases that I owned at that time, and do a study to compare what I would find in my chosen area under these headings: Limiting Magnitude of the Atlas, Number of Stars, Messier Objects, Variable Stars Marked, NGC Objects Marked, Radio Sources Marked.. In the footnotes, I also indicated the number of the marked stars that were marked as double stars. The study was very revealing. The number of stars ranged all the way from 1 star marked on my Edmund Mag 5 Atlas to 482 stars marked on my AAVSO Variable Star Atlas. Quite a range! The number of

### Area 11 of Our Sky Search Program

Atlas	Limiting Mag. of the atlas	# of stars	# of double stars	# of variable stars	# of NGC objects	# of Quasars
Edmund Mag 6.	6.2	14	0 (N/A)	0	0	0 (N/A)
Norton's Star Atlas (16 <sup>th</sup> ed.)	6.35	16	0	0	0	0 (N/A)
BAA Star Charts	6.5	12	2	0	0	0 (N/A)
Bright Star Atlas 2000.0	6.5	15	2	1	0	0 (N/A)
Skalnate Pleso	7.75	48	3	0	1	0 (N/A)
SkyAtlas 2000.0	8.0	77	10	1	1	0
Uranometria 2000.0	9.5	639	37	2	57	4
Millennium Star Atlas.	11.0	1803	25	18	50 (+ *)	1

#### Notes:

1. The number in the Double Stars column means "the stars from the Stars column" which are marked as being double stars.
2. The number of stars in the Variable Stars column means "the stars from the Stars column" which are marked as being variable stars.
3. (+ \*) In the Millennium Star Atlas, there are 50 galaxies which are NGC galaxies. In addition, there are 2 galaxies from the Index Catalogue: IC 34 and IC 49. There are also 2 galaxies from the Uppsala General Catalogue of Galaxies: UGC 275 and UGC 283. Therefore, the total number of galaxies, marked and labeled in the area is 54. In addition there are 4 galaxy clusters, from the Abell Catalogue, containing numerous galaxies each; they are A 76, A102, A 116, and A 2700.
4. The four quasars marked and labeled in Uranometria 2000.0 are 0002+051, 0004+024, 0043+039, and 0044+030. The one quasar marked and labeled on the Millennium Star Atlas is 0043+039.

NGC objects shown in the area ranged from 1 on the Edmund Mag 5 Atlas to 20 on the Tirion SkyAtlas 2000.0 (Yes, that atlas, in its Field Edition, was indeed available back in 1983!) and to 21 on the AAVSO Variable Star Atlas, where those galaxies were marked, but not named. There were 2 Messier objects in the area. Some of the beginners' atlases had one of them marked; other atlases had both of them marked. Two of the atlases had 3 variable stars marked; two of them had 2 marked; four of them had 1 marked; and two of them did not have any marked as such.

For my present study, I am using only 8 of my atlases, including the Millennium Star Atlas, which was a long way in the future when I did my last such study in 1983. Once again, my recent findings have been very interesting. This is what I have found for the area that I selected, Area 11, which is at R.A.: 0 - 1h.; Dec.: 0 - +10 deg.

From experience I knew that my 18X50 IS binoculars were an excellent match for stellar objects shown in Uranometria 2000.0. (Mine was the Uranometria 2000.0 - First Edition.) Under good sky conditions, those instruments can easily show stars of magnitude 9.5, the limiting magnitude of the atlas, and usually a good number beyond that magnitude. Similarly, my 20X100 binoculars are a great match for the 1800 + stars in my area, as shown in the Millennium Star Atlas. On nights of good transparency, those instruments can go beyond that magnitude; even on nights of mediocre transparency they can show all the stars in my area (except for the special case of van Maanen's Star, which is described later).

In spite of the inclement weather during much of October, I had a number of good chances, during the period of "the dark of the moon" in late September, and on some nights in October and November, to explore this area of the sky with both sets of binoculars. I became very familiar with most of the star patterns for much of Area 11 down to magnitude 9.5, using the 18X50 binoculars. For about half of the area, I have been able to do the same thing using the 20X100 binoculars, establishing a familiarity with star patterns down to magnitude 11.0, but doing it thoroughly to that magnitude and for the entire area is still a work in progress. The patterns for the 1800 + stars (to mag. 11.0) are obviously more difficult to establish than those for the 600 + stars (to mag. 9.5), even when one is fitting the former patterns over the

latter.

I have been more than satisfied that my chosen area is a very interesting one, even though it contains no bright stars and no Messier objects. It is more like a typical area of the vast night sky – yes, one that contains no bright stars and no bright objects detected by Charles Messier. There are, however, in such areas, many "off the beaten path" objects awaiting discovery by modern explorers. My area has only one star that is bright enough to have been given a Bayer designation in 1603. That star is Delta Piscium at magnitude 4.43. It is fairly easy to detect naked-eye from a dark site. Besides this star, there are 12 other stars that were bright enough to have been given designations by John Flamsteed almost 300 years ago, and they bear such Flamsteed Designations as 35 Piscium, 51 Piscium and 62 Piscium. Those stars are typical of the dozen; they range from about magnitude 5 to 6.6. The three examples just given are of magnitudes 5.79, 5.67, and 5.93 respectively, as listed in Sky Catalogue 2000.0. They are detectable naked-eye only under superb skies, their difficulty of detection being sometimes more because of their closeness to each other than because of their actual faintness.

My chosen area is not rich in variable stars, as is seen from the chart above. The two brightest are UU Piscium and WW Piscium, but the ones that are indicated on the Millennium Star Atlas charts, 18 in number, give a chance for exploring the variability ranges of at least a dozen other variable stars, besides those two brightest ones. Burnham's Celestial Handbook is a good source of information about such stars. Information on some of them is also be available from the AAVSO website.

With several dozen double stars, as indicated on the chart above, there is plenty of scope (pun partly intended!!) for trying to separate close doubles with my large binoculars, if they are ones with a wide separation, and possibly using my largest telescope for the most challenging "close doubles".

In addition, on both Uranometria 2000.0 and the Millennium Star Atlas, there is one very special star marked and labelled, one that normally, because of its magnitude, would not appear on either one of these atlases. It is the star known as "van Maanen's Star". It appears on the RASC Observer's Handbook List of the Nearest Stars (page 250-251 of the 2005 edition

and also page 250-251 of the 2006 edition). It is at position number 46 on that list of stars nearest to our sun, a list that includes at least 10 double or multiple stars, and so it might be closer than we would expect from its position on that list. Its distance is given as 14.37 light years. It has a very special fascination for another reason. It is a white dwarf star, one of the very few such objects that can be easily seen in an amateur telescope, or even in very large amateur binoculars under dark, rural skies. Its large proper motion gave rise to its discovery. It was discovered by van Maanen in 1917 from the comparison of photographs of its area taken in 1914 and 1917. It was among the first of the "white dwarf- degenerate stars" discovered, though a good number of them is now known. It is also among the smallest stars known; its calculated size shows it to be about the same size as planet Earth. With a mass of about that of the sun, it must have a specific gravity of about 1,000,000. Its surface gravity must be greater than 50,000 times that of our planet, and its atmospheric pressure about 2,000 times that of our planet. Cosmologists consider it to be among the very oldest of stars, one that may eventually become a "black dwarf" after eons of cooling down. Finding the location of this object and learning more about it were two of the more pleasant aspects of exploring this area of the sky. While I have examined its area very carefully, as explained elsewhere, I have yet to be absolutely certain of seeing this star in my large binoculars, and therefore, recording it in my log, because its magnitude, 12.3, puts it very near the absolute limit of those binoculars, even under very superbly pristine skies. I hope to use a larger instrument to confirm absolutely the sighting of this very fascinating object.

Overall, I am very happy that I have chosen an area which presents a very suitable challenge, especially considering the atlases and the equipment that I am using to learn more about it.

I strongly urge other participants in this program to join in making similar reports about what they are learning from their areas of the sky, and about how they are proceeding to accomplish that objective.



## RASC-KC 2006 Board of Directors

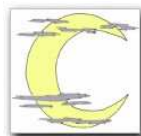
Elections were held at the November meeting. Here are the executive and committee chairs for 2006:

### RASC-KC Executive for 2006

President	Kim Hay
Vice President	Arlyne Gillespie
Secretary	Steve Hart
Editor	Doug Angle
Librarian	David Maguire
National Council Representative	John Hurley
	(Year 2 of 2 year term)
Treasurer	Kevin Kell

### RASC-KC Committee Chairs for 2006

Astronomy Day	Hank Bartlett
ATM	***
Awards	President elect + 1 member of Executive + 1 other member
Banquet (Social)	Diane Torney
CCD	***
Education	Brian Stengele
Fall 'N' Stars	The Chair will be a RASC Belleville member this year.
KAON (Public Observing)	Kevin Kell
Little Cataraqui Conservation Area	Hank Bartlett
Loan Equipment	Kevin Kell
Observing	Ken Kingdon
Publicity	Steve Hart
Relay for Life	Hank Bartlett
Responsible Lighting	***
Sky is the Limit	Hank Bartlett
Webmaster	Kim Hay



## 2005 Financial summary

Kevin Kell

The 2004-2005 financial year was another year in the black. We have finished off our 2 year Trillium Foundation Grant, become incorporated, and are in the process of applying for federal charitable status. Within the near future I believe we will be able to establish an observatory site and enhance our observing and public education ability to a new level. The following report will appear in the RASC Annual

Report 2005, out in the spring of 2006.

### Annual Centre Treasurer Report

2005 November 11

2004 October 01 - 2005 September 30

Membership Fees Regular	2400
Membership Fees Youth	0
Membership Fees Surcharge	575
Membership Fees Associate	15
Membership Fees Life	180
Donations	269
Fundraising/Grants	9465
Educational Activities	2245
Interest	582
Sales of OH	90
Sales of Calendars	1090
Sales of BOGs	40
Sales of Other	16
Subscription S&T & Astronomy	209
Sales of Promo	71
Star Parties	1830
Annual Dinner	1085

**Total Income 20162**

Library	137
Publications Newsletter	874
Publications OH	0
Publications BOG	444
Publications Calendar	1088
Publications Other	32
Events Meetings	0
Events Star Parties	1607
Events Annual Dinner	1387
Events AstroDay	63
RASC promo items	151
Equipment & Supplies	
Office Admin	272
Advertising	434
General Expenses & Audit	351
Educational Activities	10857
Insurance	0
Awards and Donations	660
Observatory Equipment/maintenance	1439

**Total Expenses 19796**

**Surplus or Deficit on Operations 366**

Assets year start	18423
Surplus or Deficit on Operations	366
Assets year end	18789



## Members Observing Sessions Ken Kingdon

### November Members Deep-Sky

#### Observing at Lemoine Point Conservation Area

The C.R.C.A has given permission to observe all of this period. Deep-sky highlights, learn star-hopping, plus Mars continues. Don't miss this fine opportunity.

**Floating Period:** the first clear night beginning Wednesday, Nov. 23 through to Sunday Dec. 4th. Those on the Observing List will be informed.

**Meet:** 7 pm in the South Parking Lot of Lemoine Point C.A.

**Directions:** proceed south on Bayridge Drive to its very end at Front Road. Turn west (right) onto Front Road, and proceed past the Airport almost 1 km.

At the very end of Front Road, slow to turn right into the Conservation Area, and proceed 400m to the South Parking Lot.

### December Members Observing at Equuleus Observatory

Equuleus Observatory is the best-equipped in Eastern Canada., plus it includes a warm-up room! Mike Wirths has both 18-inch and 30-inch StarMaster goto scopes that track. We enjoyed an excellent night there last April. The views are outstanding. We have a selection of objects that will leave you gasping!

**Floating Period:** the first clear night beginning Monday, Dec. 26 right through to Monday, Jan. 2nd. (excl. New Year's Eve)

**Contact:** advise Ken Kingdon in order to be informed upon the first clear day when we will go.

**Meet:** between 7-8pm at his observatory (have an early supper, and plan to begin your drive about 6PM).

**Directions:** from Kingston: drive north on Division Street (a.k.a.CR#10, or The Perth Road). Continue thru Westport on CR#10, go up the hill past Foley Mountain C.A., drive 15 minutes to Stanleyville Road (only exit road with a street-light). [edited for privacy]  
Directions from Perth: drive south on CR#10. Turn left (south) onto Narrows Lock Road. [edited for privacy]

### January 2006 Members Deep-Sky Observing at Lemoine Point Conservation Area

Once again, we have permission to observe all of this period.

**Floating Period:** the first clear night beginning

Saturday, Jan. 21 through to Tuesday, Jan. 31. Those on the Observing List will be informed.  
Meet at 7 pm in the South Parking Lot of Lemoine Point C.A.

## Members Observing Report

Ken Kingdon

A private members observing session, highlighting Mars, was held on Saturday, October 29th. For the first time ever, the C.R.C.A. granted written permission to observe after dusk at Lemoine Point. Though just a 6-minute drive from downtown, Lemoine has remarkably good dark skies beside Lake Ontario. The location of this site may be prime for our future endeavours.



The night had many attributes to lure us all out. The Moon was not a factor, so deep-sky observing was also included. The sky was the clearest, by far, in many weeks. The weather was fine with no dew/frost. Mars was at its closest approach (we won't see that again until 2018) and Mars eventually was very high - giving fine, steady views. With all these kudos, plus RASC notices 2 months in advance for this session, plus a Mars talk, plus being on a Saturday night... you may guess that our crowd was exceptionally large. Besides me, there were 3 other regular members, as well as 3 new members (one from NOVA).

When we began at 7PM, the dark Martian features known as Tyrrenum and Cimmarium were facing us, and sharp-eyed Susan spotted the very narrow orange gap (called Hesperia) between them. By 10PM, Syrtis Major took centre-stage; I could see that it was not quite as dark as early October, a revelation that a dust storm was raging on the other side of Mars. A light haze of dust now appears to encompass the entire planet; while detail is still quite visible, it is muted cf. three weeks ago. Also, the huge (1,700 km) Hellas Crater Impact Basin was still observable.

Our local seeing improved and breezes ceased by 11PM and then the so-called "toothbrush" was in view (a.k.a. the Sinus Meridiani and Sinus Sabaeus). After this late time, everyone departed for home. I decided to remain another 4 hours to experiment with nebula filters on deep-sky objects, and to give Mars more time

to rotate toward "the canals", the actual location of the major dust storm that is currently raging. To see the dust storm better, I switched filters from W23A orange to W12 yellow, and the bright yellow storm became obvious about 2AM. Also, the tiny South Polar Cap could be viewed (it has now melted to its smallest size in the Martian summer). I also used a W80A blue filter to detect clouds along the North limb - which were much less than 3 weeks ago. BTW, after midnight, the seeing became exceptionally steady, and the views of Mars were superb, particularly with a W23A dark-orange filter. Because Lemoine Point is beside Lake Ontario, its superb seeing contrasts with reports from astronomers far inland that seeing was crappy that night.

During this members session, some of my memories included:

1. a very sharp view of Mars with Vic's 85mm TeleVue refractor at about 150x.
2. lots of fast meteors, and many were VERY bright! Orionid Showers mostly.
3. my wife Simone briefly joined us to see Mars, and said that, of all the things I have shown her over the years, Mars was by far the most beautiful object because of its amazing colours.
4. Kemble's Cascade and its Open Star Cluster NGC 1502 is always a treat. I then star-hopped to the nearby Planetary Nebula NGC 1501. Vic and I saw it with difficulty in my 12.5-inch reflector at 50x, but after midnight, I changed to 120x and added an Ultra High Contrast nebula filter, and then it really "jumped right out". Wished I had showed this effect to Vic earlier.
5. I observed the new inbound comet C/2005 E2 McNaught for my first time at 8PM low in SW - it was impossible at low power, but increasing magnification to 200x at the target location showed it to be very faint... for extremists only! It really needed the 24-inch Venor scope. This comet will brighten 2 magnitudes by January. Stayed tuned.
6. Venus hung low in the SW until 8:30PM EDT.
7. A UHC nebula filter greatly enhanced M42... looked like an awesome summer thunder storm approaching! And the E & F stars in the Trapezium were observable (they can only be seen if seeing is very good, so they can be used as a test).
8. NGC 253 in Sculptor was nice and large, but its mottled dust lane was not much evident due to sky transparency.

9. A chap named Greg Sagon arrived at 1AM and stayed for +1h... without good winter wear! I officially re-named him "Carl Sagon". He was utterly overwhelmed by the 400x view of Mars.

10. M31, M32 and M110 were shown and explained to our newbies, as was M22, M30, M57.

11. The intense blue colour of a planetary nebula called Saturn Nebula (NGC 7009) was gorgeous. It is easy to find with low power, but much nicer at 250x and 400x to see the ansea that give it the appearance of "Saturn's rings".

Going forward, some improvements for the 2006 private members sessions will be unveiled at our next RASC-KC monthly meeting. Hope to see you then.

## RASC Observers Calendar 2006 are now available.

Our new inventory has arrived and I will be bringing some of it to the regular meeting Friday December 09 and at the KAON session

Saturday December 10. Think about Christmas presents!



All SRP's also would have tax and shipping added if ordered through [www.store.rasc.ca](http://www.store.rasc.ca) or by mail order. Get them from us and no extra taxes, no shipping! (unless you want it shipped of course :) and save a bundle, and help the RASC-KC earn a little as well.

2006 RASC calendars

SRP \$17, our pricing \$15 for one, \$29 for two, \$42 for three.

2006 RASC Observer's Handbooks (you get one with membership, this is a 2nd one for the observatory or bathroom :)

SRP \$25, our pricing \$24

Beginner's Observing Guide by Leo Enright

SRP \$20, our pricing \$20

RASC planispheres for 40-50 degrees north  
SRP \$9 (+\$5 shipping) Our pricing \$15

RASC stainless steel mugs  
SRP \$16, our pricing: \$15

Skyways (in french) by Mary Lou Whitehorne  
SRP \$20, our pricing \$20

Skyways (in english) (out of stock) by Mary Lou Whitehorne

lapel pins - RASC national new logo  
SRP \$5.50, our pricing \$5

lapel pins - RASC-KC GA logo  
\$5 for one, quantity discount rates

Expanding Their Universe by Laura Gagne  
SRP \$30, our pricing \$20, members \$16

Worlds to Discover by Laura Gagne  
SRP \$15, our pricing \$15, members \$12

Slide set #1 - ETU - 40 slides  
SRP \$75, our pricing \$30, members \$24

Slide Set #2 - ETU - 40 slides  
SRP \$75, our pricing \$30, members \$24


Slide Set #3 - WTD - 20 slides  
SRP \$35, our pricing \$15, members \$12




## Kingston Cosmic & Events Calendar November & December 2005

By Kim Hay

For more detailed information, please refer to the **RASC 2005 Calendar** and the **RASC 2005 Observers Handbook**. Available from Kevin Kell or from National Office, <http://www.rasc.ca>

Date	Events
Nov 23- Dec 4	Floating Period for Members Observing at Lemoine Point- 1 <sup>st</sup> clear night
Dec 1 Thursday	New Moon 10:01
Dec 8 Thursday	First Quarter Moon 4:36
Dec 9 Friday	Regular Meeting Stirling Hall Theatre D 7:30 p.m. Guest Speaker –Paul Mortfield from Toronto
Dec 10 Saturday	KAON Observing Session- Ellis Hall Queen's Observatory 7:30-9:30 p.m. for more information visit <a href="http://members.kingston.net/rasc/pubobs.htm">http://members.kingston.net/ rasc/pubobs.htm</a>
Dec 12 Monday	Mars 1.0° S of Moon 1 am
Dec 13 Tuesday	Geminid Meteor Peak 11 pm
Dec 15 Thursday	Full Moon 11:15
Dec 16 Friday	Astro Yak at the home of Kevin Kell & Kim Hay visit <a href="http://members.kingston.net/rasc/indexsec.htm">http://members.kingston.net/ rasc/indexsec.htm</a> for directions
Dec 21 Wednesday	Winter Solstice 1:35 pm
Dec 22 Thursday	Ursid Meteor Peak 8 am
Dec 25 Sunday	Happy Holiday Season from the RASC-Kingston Centre to Everyone! 

Dec 25 Sunday	Moon occults Spica best in NW of North America 8:00 am
Dec 26- Jan 2	Floating Period for Members Observing at Mike Wirths- Equuleus Observatory near Perth-1 <sup>st</sup> clear night
Dec 30 Friday	New Moon 22:12
Dec 31 Saturday Jan 1 , 2006	Out with the old, and in with the new, may 2006 be a year full of dark clear skies and lots of observing! 
Jan 6 Friday	Moon First Quarter 13:56
Jan 13 Friday	Regular Meeting Stirling Hall Theatre D 7:30 p.m. Guest Speaker –Walter MacDonald Topic "A Dome on a Home: The Story of Winchester Observatory"
Jan 14 Saturday	KAON Observing Session- Ellis Hall Queen's Observatory 7:30-9:30 p.m. for more information visit <a href="http://members.kingston.net/rasc/pubobs.htm">http://members.kingston.net/ rasc/pubobs.htm</a>
Jan 14 Saturday	Full Moon 4:48
Jan 22 Sunday	Moon Last Quarter 10:14
Jan 29 Sunday	New Moon 9:15

WebSite Passwords for Member-only areas:  
[edited for privacy]