Regulus

The Newsletter of the Kingston Centre of the Royal Astronomical Society of Canada - May 2003

The 61 cm Venor Dobsonian-Mount telescope.

2003 - The Year of The Observatory*

**Our primary goal this year is to find a location to build an observatory for the Centre in general and the Venor telescope in specific.*

Next Regular Meeting Special Date

Wednesday May 7th at 7:30pm
(Regular Friday meeting cancelled)
Stirling Hall Theatre D (normal room)

Guest Speaker:
David Levy
(Honourary President RASC-KC)

"Shakespeare's King Lear and the Eclipses of 1605: A Cosmic Unit of Science and Art "

Kingston Centre
of the Royal Astronomical Society of Canada
Box 1793, Kingston Ontario K7L 5J6
http://www.rasc.ca/kingston
infoline: 613-377-6029
email: rascexec@cliff.path.queensu. ca

Contents of this Issue

available at
http://130.15.144.99/rasc/secure/regulus/reg200305.pdf include:

Contents of the **April 2003** online only issue available at
http://130.15.144.99/rasc/secure/regulus/reg200304.pdf
include:

The President's Voice

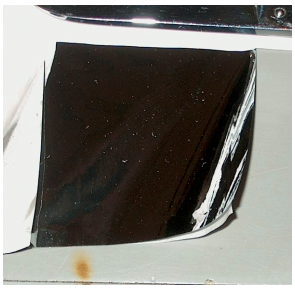
by Hank Bartlett

For those of you who read the online April version of Regulus, "What is going on?!" As I sit here typing this on the morning of April 16 the temperature has dropped 3c to 2.8c in the past hour and snow, ice pellets, freezing rain and rain are in the forecast as we come upon the Easter weekend. I am certainly glad I was only commenting in April about the weather not forecasting it.

Our April meeting was a very active and social one with over 55 members (welcoming 7 new members) and guests attending. We have been extending the break whenever possible and are providing refreshments for sale as a convenience to members. Judging by the comments I have received this is allowing members more time to socialize rather than heading out into the hallways to the vending machines. For any of you that have not been to a meeting lately I urge you to drop in and become better acquainted with your fellow astronomers, there is much to share and learn for the betterment of all.

At the April meeting we also sold Baader film for solar filters. The Centre purchased a .5 x 1 metre sheet and Vice President Doug Angle did

the cutting, sheets outline designs for filters were handed out as well. Solar filters can be built at a fraction of the cost of retail, for my 10" it will cost me approximately $40 rather than $100 - $200 depending on the type and mount. Not quite all the film was purchased (at 4 cents / sq.cm.), if you are interested contact the Exec. email list to reserve or order a piece. We do not intend to mail out any of this film, it is on a pick up at a meeting basis only and we may order more if there is enough demand. This is a member service with a marginal profit to ensure all costs are covered.


Baader film in bulk

Observing reports were up this month as was of course the opportunity to observe in comfort. It is interesting to listen to the variety and skill level of the objects observed by our members. A great many observing tips can be learned during these reports. Do join us at our monthly meetings and take full advantage of your membership in the Kingston Centre and remember our equipment loan program if you do not have a telescope or would like to try out another size aperture. However, the Kingston Centre will not be responsible for any cases of aperture fever that occur as a result of borrowing a larger scope, **you** explain it to your spouse!

REMEMBER THE MAY MEETING IS BEING HELD WEDNESDAY MAY 7 (not on the second Friday) and our guest speaker is our Honorary President world-renowned comet discover and astronomy author David Levy. Do not miss this event, David's talk is titled "Shakespeare's King Lear and the eclipses of 1605: a Cosmic Union Of Science and Art. For any new members who have never heard David speak you are in for a treat, David speaks at a level all can follow and his love for astronomy is both captivating and motivating. Just one week after this do not miss your opportunity to observe a lunar eclipse for yourself on May 15, consult SkyNews or your Observer's Handbook for exact time.

May 10th is ASTRONOMY DAY even if you cannot volunteer some time to talk to the public or help with solar or evening observing, just drop by and see the displays we will have set up at the Frontenac Mall. If you have never had an opportunity to give our 610 mm. Venor Telescope a good look-over in the daylight it is scheduled to be on display. See information elsewhere in Regulus for details.

I look forward to hearing the observing reports of those of you who can make it to our monthly meetings. If you cannot make it in person you can always send interesting reports or observations to the newsletter editor for publication in Regulus.

Share the view,
Hank

Internet Sites of Daily Interest:

http://antwrp.gsfc.nasa.gov/apod/
Astronomy Picture of the Day (good to visit every day!)

http://science.nasa.gov/ppod/
Space Station Picture of the Day

http://www.space.com/
Space.com - good news site and owners of the Starry Night planetarium program

http://www.universetoday.com/
Canadian Space News site, not often updated

http://www.heavens-above.com/
Satellite prediction site, good for ISS and Iridium flares

http://www.astrobio.net/
Astrobiology network, a lot of SETI information and interviews

http://starryskies.com/
Good news source

Internet Site of Special Interest:
http://www.friendsofnasatv.org/
Lobbying to get NASA TV on Canadian TV

http://www.spaceimaging.com/default.htm
Commercial space-based Earth imagery

http://www.ccrs.nrcan.gc.ca/ccrs/data/calendar/calend_e.html
Calendar with space images of Canada

Ramblings from Regulus

by Kevin Kell

Just a short note to say that the **next paper issue of Regulus (normally out around July 1st) will be delayed a couple of weeks** due to my travelling to the General Assembly in Vancouver. If you have anything to submit to that issue, please get it in by Friday July 4th. Hint hint, hopefully we will be able to have reports from the General Assembly in that issue!

In other projects, the Centre will be getting **four easels** of varying height for use at public events and possibly meetings. A project article was in last month's issue of Regulus.

The **first of the telescope operators/users manuals** have been completed. One copy will travel with the Douglas telescope and the other will be held by the Equipment Loan Chair. The Venor manual has been written up in draft and we are just waiting for a chance to take a pile of pictures of assembly and disassembly. Rumour has it that the Astroscan and the Orbitor manuals are also being written as we speak.

My own run for **completing the Messier List** got off to a good start with the first green grass that came up earlier in the month, but then came more snow and cold and of course, cloud. I have less than a dozen objects left and one good warm clear night should finish them off. **Congratulations to Norm Welbanks and Mark Kaye**, the most recent Kingston Centre members to hand in their paperwork for the RASC Observing Certificate.

Astronomy Day is coming up shortly and we are trying a new membership recruitment technique: we are waiving our $5 surcharge for any new members signing up at Astronomy Day. In the past we handed out hundreds of brochures and membership application forms but rarely saw more than one or two new members as a result.

2" 32mm Erfle 6 element eyepiece

Two Inch Eyepiece set for Venor

Up to now, we have been using eyepieces owned by various Centre members. Some time ago the Exec decided that the Venor should have it's own set of eyepieces and they were on display at the April meeting.

2" 18mm University Optics eyepiece

2" 12.5 mm University optics eyepiece

Some other accessories include a nebula filter with a barlow adapter still on order.

New brochures have been printed up for the upcoming Public events of Astronomy Day and the Sky is the Limit Festival. Membership forms are available in the Centre Brochure and the RL brochure. What's RL you ask?

The Light Pollution Abatement Group has changed their name to Responsible Lighting.

It was felt that Light Pollution Abatement was to hardnosed and negatively influenced the public when they first heard the name. Responsible Lighting ties in with the slogan:

Light Pollution is the Problem
Responsible Lighting is the Solution

With more of an emphasis on energy savings and personal responsibility for the environment, we hope to get a better reaction from the public.

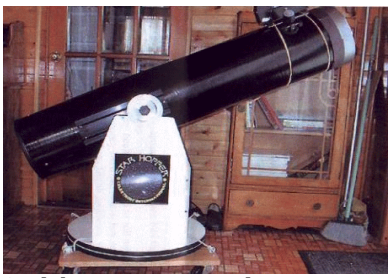
Full Cutoff Street Lighting fixture - lower wattage, more efficient light, less glare

Submissions from Members

A LETTER FROM BILL
by Bill Stapley

To Kevin and fellow members: When I joined the RASC, a few years ago now, I knew that when I was affiliated with the Kingston club that I would not likely be able to attend any meeting because of health problems, but I still want to keep the membership going because the reading material is helpful and interesting. Who knows, there might be a more helpful development in modern medicine that will help my problem which is severe arthritic joints. Therefore, I hope you wouldn't mind if I wrote this letter because believe it or not I don't have the internet yet, and also, I wasn't sure who to send this letter to. Since I had your name and an address from the Regulus letter, I decided to pick on you.

I wanted to introduce myself to you and my fellow members and tell you how I do my observing, what I use and to ask you and the other members some questions. I always had an interest in astronomy since I was young, especially after my uncle gave me a text book on astronomy. The telescope I had for many years was a 4.5" Tasco reflector, which was not the best tool to use other than to look at the moon, some planets and really bright deep sky objects. Then one night a few years ago while watching TV and our local cable message items, I noticed a message about the Belleville astronomy club. I phoned the number and was invited to join them for a night of observing. After looking through a 12" dob and finding out how there is so much more to see, I knew I had to some better equipment and get back into the hobby that I had ignored for so long because of my cheap scope.


8" dobsonian mount telescope

After I had to retire because of my health, I also had to sell my 20' bowrider boat, that I had set up for fishing, so I used the money from the boat to buy some decent equipment and was sure I could handle them even with my health problems, with some home made innovations. I knew I would be doing all of my observing from my backyard and I wanted to move it outside and inside without any difficulties. My first purchase was a Celestron 8" dob with a telrad finder. What a difference from the 4.5", finding and seeing star clusters, galaxies and nebulas through the 8" dob was really great. Looking at Saturn through the 8" at 180x was quite a thrill, with the rings being so open, the divisions, cloud belts and some of its moons really stood out.


5" Astrophysics refractor

With the 8" I was finally able to see the red spot on Jupiter. If I wasn't also interested in taking astrophotos, the 8" dob would be all that I needed. After reading Terence Dickinson's books, Nightwatch and the Backyard Astronomer's Guide, I decided to purchase a 5" Astro Physics Refractor, which Terry claims is one of the best makes for viewing and taking photos with and because I also wanted to do astrophotography, as mentioned, I decided to go with the Losmandy G-11 mount, something really solid for photos, and accurate tracking.

Finding I would have to wait up to over a year to receive my 5" scope, and I didn't want to waste what health time I had left, every year I lose a little more movement in my joints, so I temporarily purchased an 8" SCT and mounted this on the G-11 mount. When my 5" Astro arrived, I sold the 8" SCT and then purchased an 80 mm refractor to mount on top of the 5" Astro to use as a guide scope and my wife and I often observe the moon together. Since they are aligned with each other, one of us uses the 80mm and the other uses the 5".

My wife like to find patterns on the moon, her favourite is a teddy bear face she found. Anyway, when all this gear is assembled, the weight was over 50 lbs, and with my health problems, I made a platform with wheels on it. I have seen these items in magazines, but I wanted a real sturdy platform, which I made out of 3/4" plywood reinforced with metal strips and used heavy duty wheels. When everything is

assembled, I just wheel it out my wheelchair accessible door and set it up on blocks on my cement pad, which I had put in so my scope would be nice and sturdy for taking photos. When I want a night of quick setup and no photos, I use the 8" dob, which I also put on a wheel system, which works great, because all I have to do is wheel it out to the cement pad, sit on a stool and when I want to look at a different part of the sky, I just turn on the stool and pull the dob along with me. I'm also lucky to have a wif who helps me a lot with my gear. I enclosed photos of my mobile systems and maybe these could hep someone else who health isn't the best, but would like to get into the hobby at their homes.

After learning the night sky from my site with the 8" dob, I tried my first photography shot with the 8" SCT and an old OM-1 35 mm camera. For really bright objects such as the Orion nebula and star clusters, they turned out fairly well, but for galaxies there was too much light pollution around my site, so I decided to jump into the world of CCD cameras. I was really glad I did. A 60 minute exposure of the whirlpool galaxy didn't show much on 35 mm film compared to a composite of four one minute shots with the Starlight Express MX-7C, quite a difference. I have taken over 60 objects of the Messier list so far and some NGC objects. Unfortunately from my site I will not be able to shoot all Messier objects because some of the low ones in Scorpius, Sagittarius, etc., are blocked out by trees and houses, the same things that help to darken my observing site. I guess you can't have everything.

As I mentioned before I don't have the internet yet, so I was hoping this is where I could ask you and other members if they could help me find the answers to a few questions. I would like to find a photo of the large fireball that travelled along the US and then into Canada in the mid 1960's. I saw a photo of it in the Life magazine that used to be published back at that time, but being younger and not knowing better, I never saved it.

I wanted this photo because a friend of mine and I saw this fireball last 10 to 20 seconds of life, as it split up and then burned out. We were coming back from a fishing outing at the back of my fathers farm. It sure was a thrilling site to see! I also could se some advice with CCD picture taking. I have the MX-7C CCD camera as mentioned earlier with a pixel size of 8.6 um by 8.3 um and in the manual it says one can connect a 300 mm lens to it for some wide angle shots of M31 and such, so I was wondering if I used a n f3.3 CCD focal reducer on my 5" Astro (which has a focal length of 780mm at f6) and according to my math it would give me a focal length of 257 mm and a really fast lens. I didn't want to waste a lot of money on something that would not work.

More importantly, I was concerned about the image being able to come into focus. The focuser on the 5" scope has a travel distance of 4". The setup I use for deep sky imaging consist of a 2" extension and then I rack out 2" on the focuser, so I could lose 4" of travel distance if that is what I needed to do. I also get some square stars now with my setup. The MX-7C has a chip array of 752x582 and pixel size of 8.6 by 8.3 um, has an average pixel size of 8,5 um, divided by focal length of my 5" scope, which is 780mm, times 206 = 2.24 arc seconds per pixel, so I was wondering if it would help if I increased my focal length and used a 1.5x barlow on my scope? It would give me a focal length of 1170 mm so 8.5/1170 time 206 = 1.49 arc seconds per pixel, but it would increased my f6 to f9, slowing exposure time. I was told that an extension tube might help. If a 1.5x barlow would help, can you tell me where to purchase one?

Anyone with some answers or advice, I would really appreciate hearing from them and if anyone was ever in the Stirling area, which is about 20 minutes north of Belleville. Please feel welcome to drop in for a visit, as I always like to talk and learn more about the hobby. That's why

I was always hoping I could attend a meeting to meet everybody and maybe even hear Terence Dickinson speak when he was a guest speaker and maybe even meet him. I would also like to know if the Stirling Hall Theatre D is wheelchair accessible? And if the person who helps me with the wheelchair could attend the meeting. Sometimes I feel like I would like to try and attend a meeting.

I'm sorry this letter is so long, but there are many things to ask and talk about, and I have a hard time stopping. Anyway, thanks for reading this and maybe you could pass this letter on to the people who could help me, or if anyone wanted to read it.
Thanks!

Thanks for the letter Bill! I always appreciate hearing from members and no, your note was not too long!

With regard to the fireball in the mid 1960's, I managed to get our resident meteor resource, Kim Hay investigating. She needs a little bit smaller timeline than the mid 1960's as apparently there were quite a few fireballs that fit your description .

Kudos on your Starlight Express CCD camera... one of our infamous members probably sold it to you, ex-President-for-life Walter MacDonald. A few members have built their own cookbook CCD cameras and a few others have gone out and bought SBIG CCD cameras, so hopefully one of them will get back to you.

You live in the Stirling area, which sounds like it is right next door to Thomasburg and the site of the 2001 and 2002 Fall'N'Stars Star Party that we host with the Belleville Astronomy Club.

Of note, the Club held a vote in April about whether or not it wanted to form it's own RASC centre. As we go to press we have not heard which the way the vote went.

Stirling D itself is not very wheelchair accessible. The southern entrance runs immediately to stairs to both the inside and outside of Stirling Hall. The northern entrance also runs to stairs.

Observing Group Meetings

These are regular meets at the home of members who volunteer their locations and homes to us on or near a new moon. Contact Kevin Fetter if you are interested in hosting a session in 2003.

May: TBA
June: TBA
July: TBA
August: Cancelled due to Starfest
September: Fall'N'Stars 2003

The Messier Certificate Holders
Leo Enright (1982), Gus Johnson (1983), Jim Scotti (1983), Mark Sorensen (1986), Stan Hanna (1990), Steve Manders (1990), Bill Broderick (1993), Dan Rombaugh (1993), Ray Berg (1996), Ken Kingdon (1998), David Pianosi (1998), Doug Angle (1999), Vic Smida (2002), Mark Kaye (2003), Norm Welbanks (2003)

Public Observing Sessions

These are the public observing sessions, normally held at Murney Tower Park on the Kingston waterfront on King & Barrie Sts. On the first Tuesday after a new moon. **Check the Events Calendar.** Contact Tom Dean for more information.

Web Site

Kevin Fetter is our webmaster for 2003. Please contact him if you have any questions or comments about the content and design of the site.

Equipment Loan Program

Members in good standing are able to sign out Centre equipment, including:

☆ 25cm (10") f5.5 Douglas Dobsonian Advanced Users
☆20cm (8") f7 FitzGerald Dobsonian Intermediate Users
☆20cm (8") f4.5 Barney Dobsonian Intermediate Users
☆11cm (4.5") f4.3 Bushnell Voyager Starter Users
☆11cm (4.5") f7.9 Orbitor 3500 Equatorial Starter Users
☆ 5 barndoor tracking platforms 1999 February - Starter

Users
☆ Collimating Tool 2001 August - All Users
☆ Binocular Set #1 B&L7x50 1999 April - Starter Users
☆ Binocular Set #2 B&L10x50 1999 April- Starter Users
☆ Binocular Set #3 Bushnell 7x50 1999 April - Starter Users
☆ Binoculars Set #4 Stem 7x50 1995 - Starter Users
☆ 19mm Televue Panoptic Eyepiece 2000 March - Intermediate Users
☆ Filter Set - ND13, 4 colour, O3 nebula
- all 1.25" 2000 September - Intermediate Users
☆Kodak Ektagraphic 35mm slide projector 2000 November

RASC Kingston Centre Meetings

The Kingston Centre RASC meets once a month on the **2nd Friday of each month at 7:30 pm (19:30) in Stirling Hall** Theatre D on Queen's University Campus **unless noted otherwise.** We have adopted a policy of moving any meeting that is held on a holiday weekend.

2003 Officers and Executive Council
PO Box 1793, Kingston, On K7L 5J6
Infoline & answering machine: 613-377-6029
Email: <rascexec@cliff.path.queensu. ca>
We also have an email chat list "rascchat". Send your email address to Kevin Kell to be added to the RASCCHAT list.

President: Hank Bartlett
Vice President: Doug Angle
Secretary: Brian Hunter
Treasurer: John Hurley
Librarian: David Maguire
Editor: Kevin Kell
National Council Rep: Peggy Hurley

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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 will be edited for brevity or clarity.
March Print Run=200

The Newsletter of the Kingston Centre of the Royal Astronomical Society of Canada
Newsletter Submission Info: The deadline is usually the 3rd Friday before regular meetings in odd numbered months. The preferred method is E-MAIL, then disk, lastly paper.
E-mail: <***kell@cliff.path.queensu.ca***>
Fax: 1-613-533-2907 (with cover page to Kevin Kell) Post: 76 Colebrook Road RR#1, Yarker Ontario K0K 3N0 Canada
ascii or most major word processors (Corel WP8 for windows preferred) via E-mail or cdrom or 3.5" PC floppy disk

Resources Available to Members:
(See bottom of page 10 for passwords)

- **RASC-Kingston Centre Handbook** at:
http://U99.N144.queensu.ca/rasc/secure/kingston manual20030424.pdf

-**RASC National manual** at
http://www.rasc.ca/private/rascmanual2002jan.pdf

- **RASC-Kingston Centre Loan Program** at:
http://members.kingston.net/rasc/loan.htm

News from the Internet

MISSION: Mars Exploration Rovers (MER-1/MER-2)
LAUNCH VEHICLES: Delta II/Delta II Heavy
LAUNCH PADS: 17-A/17-B
LAUNCH DATES: June 6/June 25
LAUNCH TIMES: 2:12:44 p.m. / 12:38:16 a.m. EDT

The beginning of the launch period for the first of NASA's two Mars Exploration Rover missions will be rescheduled until no earlier than June 6 to allow time to address a potential problem raised during pre-launch tests of the spacecraft over the weekend.

GALEX SPACECRAFT TO BE LAUNCHED ABOARD PEGASUS XL APRIL 28

The launch of NASA's Galaxy Evolution Explorer (GALEX) spacecraft aboard an Orbital Sciences Corporation (OSC) air-launched Pegasus vehicle is scheduled for deployment over the Atlantic Ocean from OSC's L-1011 carrier aircraft on Monday, April 28 at 8 a.m. EDT. This time is contained within a launch window that opens at 7:50 a.m. and closes at 9:50 a.m. EDT.

The launch begins with the drop of the Pegasus rocket from the L-1011 over the Atlantic Ocean at an altitude of 39,000 feet at a location approximately 100 nautical miles offshore east-northeast of Cape Canaveral. The launch is expected to be visible from the coast. Spacecraft separation from the Pegasus occurs 11 minutes

later. At that time the satellite will be in a circular orbit of 431 statute miles (690 km) at a 29-degree inclination.

GALEX will observe a million galaxies across 10 billion years of cosmic history to help astronomers determine when the stars and galaxies we see today had their origins. During the course of its two-year investigation, GALEX will conduct the first ultraviolet surveys of the entire extragalactic sky, including the first wide-area spectroscopic surveys. This vast data archive will form a lasting legacy. Rich in objects from galaxies to quasars to white dwarf stars, it will serve as a resource for the entire astronomical community.

http://www.ifa.hawaii.edu/~sheppard/satellites/jup2003.html

This page describes the discovery of 20 new satellites of Jupiter, bringing the total of known Jupiter satellites to 60.

The majority of the new satellites were first seen in early February 2003 by Scott S. Sheppard and David C. Jewitt from the Institute for Astronomy, University of Hawaii along with Jan Kleyna of Cambridge University. The satellites were detected using the world's two largest digital cameras at the Subaru (8.3 meter diameter) and Canada-France-Hawaii (3.6 meter diameter) telescopes atop Mauna Kea in Hawaii. Both telescopes and their imaging cameras represent the latest technology has to offer. Recoveries were performed at the University of Hawaii 2.2 meter with help from Yanga Fernandez and Henry Hsieh also from the University of Hawaii. Brian Marsden of the Harvard-Smithsonian Center for Astrophysics performed the orbit fitting for the new satellites.

The first 7 satellites were formally announced by the International Astronomical Union on Circular No. 8087 on March 4, 2003 while the eighth was announced on Circular No. 8088 on March 6, the 9th through 12th on Circular No. 8089 on March 7, and S/2003 J13 through J20 were announced in early April. The satellites J1 to J19 appear to have distant retrograde orbits (ie. their orbital rotation is opposite to Jupiter's rotation) like the majority of the known irregular satellites of Jupiter. The satellite S/2003 J20 appears to be a prograde satellite dynamically distinct from any other known Jupiter satellite. However these orbits are still preliminary and may change as new observations are obtained.

The World's Biggest Digital Imager Ready to Explore the Universe on the Canada-France-Hawaii Telescope

The Canada-France-Hawaii Telescope (CFHT) is one of the oldest facilities on the summit of Mauna-Kea. Once considered a large telescope with its 3.6-meter mirror, CFHT looks small in this time of 8 to 10 meter telescopes. However, a new instrument, MegaPrime, comes into operation this month after 6 years of development and a few months of engineering on the sky, placing CFHT once more on the forefront of optical astronomy in spite of its relatively small mirror size. The first astronomical images from MegaPrime are being released today to the general public.

The result of a fruitful collaboration between CFHT and institutes in France and Canada, MegaPrime is a completely new structure installed on top of the telescope, equipped with specially designed optics and a unique made-in-France digital camera of 340 megapixels called MegaCam.

With a field of view of 1 degree by 1 degree, the size of four Full Moons, MegaPrime will allow the astronomers from France, Canada and Hawaii to observe the Earth's neighborhood or remote galaxies using digital images of an unprecedented resolution for such a field of view. It will be possible to look for small objects moving around planets, or the outskirts of the solar system; astronomers will be able to watch the explosions of dying stars in remote galaxies, study the ripples of space due to unseen matter, or witness new and mysterious phenomena yet to be discovered.

Scientific observations have already begun, including the CFHT Legacy Survey, a program of 500 nights spread over 5 years, to be shared by all Canadian and French astronomers.

Opening a new era in astronomical wide-field imaging, MegaPrime will benefit the worldwide astronomical community, as the data will be subsequently released in the CFHT archives.

RASC Kingston Cosmic & Event Calendar 2003

Created by Kim Hay

Date	Event
May 01, Thursday	New Moon at 08:15 edt. Farthest Lunar Apogee of 2003 04:00 edt.
May 05, Monday	n-Aquarid Meteor Peak 17:00 edt. International Astronomy Week (through May 11)
May 06, Tuesday	Public Observing- Dusk at Murney Tower, King Street. Sunset at 20:16 edt. (weather permitting) contact Tom Dean at 389-2408
May 07, Wednesday ***note change of date***	Regular Centre Meeting 19:30 Stirling Hall Theatre D. Guest speaker: Dr. David Levy- "Shakespeare's King Lear and the Eclipses of 1605: A Cosmic Unit of Science and Art "
May 10, Saturday	Astronomy Day Display at Frontenac Mall all day To help out Contact: Don Cooke (Astronomy Day Chair) kavu@kingston.net
May 15, Thursday	Total Lunar Eclipse –most of the umbral phase visible in all of N. America Full Moon at 23:36 edt.
May 22, Thursday	3rd Quarter Moon at 20:31 edt.
May 31, Saturday	New Moon at 00:20 edt. Annular Solar Eclipse, partial phase visible in parts of N. Canada and Alaska
June3, Tuesday	Mercury at greatest elongation W. (24˚)- not easily seen- **CHALLENGE OBJECT** Public Observing , Murney Tower at dusk (about 20:44) Weather permitting
June 7, Saturday	1st Quarter Moon at 16:28 edt.
June 9, Monday	Pluto at opposition.
June 13, Friday	Regular Centre Meeting 19:30 pm Stirling Hall Theatre D. Guest speaker: Dr. Rajiv Gupta- President of the RASC **Topic:** Astro-Imaging Techniques
June 14, Saturday	Full Moon at 07:16 edt.
June 19, Thursday	Mars. 2.5˚ N of Moon 03:00 edt.
June 21, Saturday	3rd Quarter Moon at 10:45 edt Mercury 0.4˚S of Venus best seen in S of North America 05:00 edt Summer Solstice 15:10 edt.
June 27-29	Annual General Meeting of the RASC- GA 2003 Host: Vancouver Centre. Visit http://www.rasc.ca/ga2003 For more information
June 29, Sunday	New Moon at 14:39 edt.
July 1, Tuesday	Canada Day
July 4, Friday	Earth at Aphelion (152,100 Mm) at 02:00 edt
July 5, Saturday	Sky is the Limit Festival- City Park 9:00 am till 4:30 pm Come out and help, or come to have some fun-Just come out !!
July 6, Sunday	1st Quarter Moon at 22:32
July 8, Tuesday	Public Observing , Murney Tower at dusk (about 8:51 pm) Weather permitting
July 11, Friday	Regular Centre Meeting 19:30 pm Stirling Hall Theatre D. Guest Speaker: Dr. Richard E Jones - **Topic:** Amerigo Vespucci's Meaurements of Longitude
July 13, Sunday	Full Moon at 15:21 edt.

Remember to have a Safe and Happy Summer and Good Observing!!

Edt: Eastern Daylight Time
All Astronomical Information from the Observer's 2003 Calendar, Observers Handbook 2003
Available from your local center or http://www.rasc.ca/estore

2003 PUBLICATIONS ORDER FORM

Item	**Price per unit (Shipping and taxes included) Regular (Member)**	**Quantity**	**$ Total**
*Expanding Their Universe 2nd Edition - The Teacher's Companion for Secondary School Astronomy 161 pg 2002 **NEW!**	$30 ($24)		
*Worlds to Discover 1st Edition - Astronomy for Elementary School 154 pg 2000	$15 ($12)		
*Slide Set #1 companion for Expanding Their Universe 40 slides	$75 ($60)		
*Slide Set #2 companion for Expanding Their Universe 40 slides	$75 ($60)		
*Slide Set #3 companion for Worlds to Discover 20 slides	$35 ($28)		
*Students Guide to Careers in Space, 2nd edition 33 pg 1998	$5 ($4)		
*Secondary School **Combo 1:** ETU book, Slide Set #1 OR #2 (Circle choice), Careers in Space	$100 ($80)		
* Secondary School **Combo 2:** ETU book, Slide Sets #1 AND #2 (Circle Choice), Careers in Space	$160 ($125)		
*Elementary School **Combo** : WTD book, Slide Set #3, Careers in Space	$50 ($40)		
Beginner's Observing Guide by Leo Enright	$15		
Order Total			

* Consider a membership in the RASC-KC. A new benefit (2001 March 01) includes a 20% discount on Centre produced material. * 20% discount now extended to members of RASC (other centres included)