Regulus

The Newsletter of the Kingston Centre of the Royal Astronomical Society of Canada - February 2004

The 61 cm Venor Dobsonian-Mount telescope.

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of the Royal Astronomical Society of Canada
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Next Meeting(s)

Friday March 12th at 7:30pm
at Queen's University, Stirling Hall (Physics)
Theatre D
Guest Speaker:
Ken Kingdon – The Texas Star Party

Friday April 2nd at 7:30pm
at Queen's University, Stirling Hall (Physics)
Theatre D

RASC Kingston Email Lists:
rasckcchat - about 20 members chat about astronomy (no attachments)

Contents of this Issue

Contents of the December 2003 issue are available at :
http://130.15.144.99/rasc/secure/regulus/reg200312.pdf

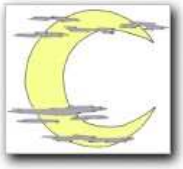
President's Voice

Peggy Hurley

Welcome to a new year at the Kingston Centre of the Royal Astronomical Society of Canada. First, I would like to thank several people for their work for the Centre over the past years. Hank Bartlett did a fine job as President last year, bringing much levity to the meetings. He now has a new telescope and I believe he is intending to spend a fair bit of time with it. Laura Gagne is working on her PhD and commuting from Toronto. We wish her all the best and, are you sure I won't fit in your suitcase?:-) Kim Hay is also stepping down from many of her positions that she has held for many years. Kevin Kell is also stepping down from his long held position as Newsletter editor. We wish Kim and Kevin the best during their hiatus and hope that they have their batteries re-charged soon. You are all very hard acts to

follow.
Hence the lateness of this edition of the Newsletter. It is going to take two or three people to do the job that Kevin had been doing, virtually on his own, for years. We seem to be having communications problems with our new editor and we hope to have these worked out by the next newsletter. So please accept our apology.
In other news, we have purchased all of the equipment from the Trillium Foundation Grant (more of that in another article), Incorporation is on its way, Public Observing has moved to Queen's University's Observatory, Astronomy Day is approaching, marking the beginning of another season of public education, Fall 'n Stars, Starfest and the GA are all in the works. It looks like another fun- filled year. As always, volunteer assistance is always welcome at these events. Come on out and participate. It's fun!
At the meetings this year, we will try to have more workshops on how to do specific things (like choose the right eyepiece for your telescope), as well as 'the sky this month' and speakers. If you would like to present something that you do, or there is something that you would like to know how to do, please let us know. There are several months that are not yet booked for this year. We will also ask speakers to write a brief summary of their lecture for inclusion in the newsletter. If you haven't been to a meeting in a while, we begin at 7:30 PM in Stirling Hall, Theatre D, and we end close to 10:00 PM. Still lot's of observing time after. Parking is available both on the street (Queen's Crescent) and across the road in the lot.
It's been an auspicious start to the new year.
Clear Skies!

Peggy Hurley, President 2004

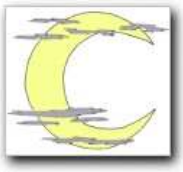


New Telescope needs a Name

The Kingston Centre recently became the proud owner of a 200 mm Meade LX200 GPS telescope. This was part of a Grant received from the Trillium Foundation in order for us to better present the night sky to the public.
Early last year, the RASCKC executive was approached by Queen's University, Physics, to sponsor a request for a Trillium Grant. This request would by two- fold: it would request funds for equipment for the RASCKC, and it would request funds to pay an Observatory co-Ordinator for Queen's. The long and the short of it is, we did, and the grant was granted.
This is a two year program. Queen's has hired the Observatory co- Ordinator, , and we have purchased our equipment. There are other aspects to this grant. We are to help with public education, both at Queen's Observatory's Open House nights (the second Saturday of the month), and also at Astronomy Day, Sky's the Limit and other occasions for at least two years. We are also to receive training on Queen's new telescope which will be made available to our members's use (when not needed by students), this includes the night of the second Friday of the month (another reason to attend meetings).
The other equipment we have purchased includes eyepieces and a CCD camera (thank-you, Walter). This is to be used with the new 'scope but some will be made available for member's use. The CCD camera is to help us build a library of images to fill the time when the skies are not clear. The telescope will also be made available to members when it is not needed for public education. (for the first two years, however, it will live at Queen's, mostly).
So that leaves us with a telescope with no name. Our other telescopes have been named for the donor of the mirror (Fitzgerald and Venor), prominent members of the group (Douglas), or

things we are reminded of when we see it (Barney). If you have a suggestion for a name, we'd love to hear it. Perhaps we can make this into a contest.

Submissions from Members

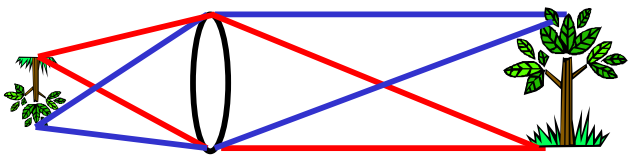


Telescope and Eyepiece Optics

Doug Angle

For many years, I've used the same telescope and a couple of favourite eyepieces for my observing. I've got used the field of view and magnification, so never thought about it too much. More recently, I've used the 24" more, and I've had to learn about the typical views in it instead. It got me thinking about how different eyepieces and telescopes go together, and what I might expect from each combination. I've also found that many people aren't that familiar with optics and how they go to each other. In January, I gave a talk on the subject at the regular meeting, and this article is a summary of what I covered there.

A telescope, whether it uses mirrors, lenses, or a combination, collects the light rays from an object, and focus them to create an image. If that's all that happened, you would not be able to see anything. First we need to stop the light rays. We can do this by putting a screen at the focus, and then the image will appear on the screen. We can also put film or a CCD there, and create a permanent record of the image.



An objective with a longer focal length will create an image farther away from the lens, and proportionately larger. The size of an image is given by the equation:

Image size = Focal length x Tan(object size)
I use the approximation:
Image size = Focal length x object size / 60
For example,
I want to take a picture of the moon with a regular (50mm) lens. What will it look like?

Image size = F x (object size)/60
= 50 mm x (0.55 deg) / 60
= ~0.4 mm
(Actual value = 0.436 mm)
So the moon will be only 0.4 mm wide on 35 mm film, or about 1/100 of the frame. That's pretty tiny in the finished picture

If I use my 600mm refractor, I get an image size of 5mm, which is small, but better. With the 24" venor (focal length 2810)
Image size = 2810 mm x (0.55 deg) / 60
= ~26 mm
But regular film is 24 mm x 35 mm, so the moon won't all fit.

I can apply the same logic with eyepieces. If you look in the back end of the eyepiece, you will see the field lens, surrounded by a metal ring called the field stop. When you look through the eyepiece, the black ring you see around the image is that field stop.
The size that the ring appears is called the apparent field, and is a characteristic of the eyepiece.
Magnification comes when the eyepiece takes the part of the image that fits within the field stop, and expands it to fill the apparent field.
Magnification = Apparent field of view / Actual field of view
It is also equal to the ratio of focal length.
Magnification = Focal length of the telescope / Focal length of the eyepiece

This then gives us the actual field of view of any eyepiece:telesope combination:
For example, I have a Meade 40 mm SWA. It's apparent field is 65 degrees and I use it in my 600 mm refractor

Magnification = Focal length of the telescope /

Focal length of the eyepiece
=600 mm / 40 mm
= 15x

Magnification = Apparent field of view / Actual field of view
15x = 65 degrees / Actual field of view.
Field of View = 4.3 degrees

You can also find the field of view by measuring the time it takes a star near 0 declination to cross the field. Either way, you should find the actual field of view of all your eyepiece: telescope combinations. It will make finding and identifying objects much easier. Another handy item is an overlay for your star charts showing the eyepiece fields. Just take a sheet of clear plastic, and draw rings equivalent to the actual field of view.

There are a number of other considerations when shopping for or selecting an eyepiece, such as exit pupil, eye relief and aberrations. Look for more on those in future issues.

Observing Group Meetings

These are meetings at the home of members who volunteer their locations and homes to us on a new moon. We are currently in a bit of a hiatus for the winter months. Contact Kevin Fetter if you are interested in hosting a session in 2004.

For details about the observing certificates, see http://www.rasc.ca/observing/home.html

The Messier Certificate Holders (16)
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), Kevin Kell (2003)

The Finest NGC Certificate Holders (5)
Walter MacDonald (1995), Cathy Hall (1997), Leo Enright (1999) Jan Wisniewski (2001), Ken Kingdon (2002)

Messier Hunters
Hank Bartlett (55), Fred Barrett (50), Tom Dean (36), Laura Gagne (76), Kim Hay (19), Peggy Hurley (55), David Maguire (7)

Finest NGC Hunters
Doug Angle (59), Kevin Kell (5)

Exploring the Universe Hunters
Kim Hay (0), Kevin Kell (0)

Public Observing Sessions

Public observing sessions are coordinated between RASC-KC and the Queen's Observatory. Sessions are held the 2nd Saturday each month. The Ellis Hall Observatory will be open to the public, and we will use the observing deck just

beside the observatory. The next sessions are:
March 13
April 10
April 24 for astronomy day

All sessions are from 7:30-9:30

Treasurers report

John Hurley

All amounts rounded off to the nearest dollar.

REVENUE	
Membership Fees (Reg)	2635.00
- Fees (Basic surcharge)	744.00
- Fees (Special surcharge)	49.00
Life Members Grants	141.00
Donations	309.00
Fundraising	520.00
Educational Activities	60.00
Interest and Dividends	1.00
Sale of Handbooks	358.00
Sale of Calendars	695.00
Sale of Beginner's Observing Guides	0.00
Advertising	0.00
General Assembly (Including Travel Grants)	0.00
Miscellaneous:	3009.00
TOTAL REVENUE	**8521.00**

EXPENDITURES	
Library	70.00
Meetings	28.00
Newsletter	1303.00
Annual Dinner (Net)	1163.00
General Assembly (Including Travel Grants)	0.00
Equipment and Supplies	1175.00
Office Administration	261.00
General Expenses & Audit	445.00
Educational Activities	588.00
Insurance	0.00
Awards and Donations	119.00
Observatory	984.00
Miscellaneous	1298.00
TOTAL EXPENDITURES	**7434.00**
SURPLUS ON OPERATIONS	**1087.00**
OPENNING BALANCE	**15,050.00**
YEAR END BALANCE	**16,137.00**

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, OIII nebula - all 1.25" 2000 September - Intermediate Users

- Kodak Ektagraphic 35mm slide projector 2000 November
- Contact Tom Dean at thomas.dean@ece.queensu.ca or 389-2408

The Kingston Centre of the RASC

The Kingston Centre was founded in 1961.

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Infoline & answering machine: 613-377-6029
Email: <rascexec@cliff.path.queensu.ca>
Web: http://members.kingston.net/rasc

We also have an email chat list "rascchat". Send your email address to Kevin Kell to be added to the RASCCHAT list.

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Regulus is published 6 times per year on paper and 12 times per year in adobe acrobat format files. Both are available on our web site. Views and opinions expressed herein do not necessarily reflect the official position of the Royal Astronomical Society of Canada or its officers and members.
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Contributions are more than welcome. Submitted material will be edited for brevity or clarity.
February Print Run=150

The Newsletter of the Kingston Centre of the Royal Astronomical Society of Canada
Newsletter Submission Info: The deadline is usually the 3rd Friday of each month. The preferred method of submission is E-MAIL file attachmentr.
E-mail: bkh***.chem..queensu.ca***>
Post: Doug Angle, RR#1, Sydenham Ontario K0H 2T0 Canada

Resources Available to Members:
(See bottom of page 8 for passwords to "member-only" RASC web sites)

- **RASC-Kingston Centre Handbook** at: http://130.15.144.99/rasc/secure/kingstonmanual.pdf

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

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

Members Only Website Password Change Effective 2004 January 01

Check the bottom of page 8 for the new password for the RASC-KC Members only website

Incorporation
John Hurley

The Kingston Center is starting the process of incorporating. Incorporation simply means that we become an entity recognized by the law. As such we can enter contracts, and own assets, particularly land. For example, not being incorporated has been one of the barriers that has delayed our observatory plans.
A second benefit is that it gives us liability protection. At present, if there were a lawsuit against the center, it would be against the members of the center, and we would all be individually liable. After incorporation, only the corporation is liable, and the members are protected. The national organization and many other centers are already incorporated.

The steps to become a corporation are defined by Ontario law. First, we draft a document called the letters patent, that describes what the organization does, and how it is governed. We then determine the (first) directors of the corporation, and register with the government. Finally, members can join the corporation. In effect what we do is create a new Kingston Center, then members join the new center, and drop their membership from the old center. This may seem a little strange, but is required to create the corporation.

For the most part, this process should be transparent to members. There will be some minor changes required in how we operate. For example, the center would be run by "Directors" not "Executive" as it is now, and we would need to send an annual report to the government. Our financial statements would need to be audited. We will work to ensure that the actual transfer of membership is done as unobtrusively as possible.

Strangely enough, even though this would be a substantial change in the legal status of the center, this does not require approval of the membership. Since a new corporation is being created, the current membership has no status in the new entity until it has been created, and members have joined. However, incorporation was presented at the January meeting, and a show of hands supported the change. The work to make it happen is now underway. If you have any questions or concerns, contact a member of the executive.

2003 RASC-KC PUBLICATIONS ORDER FORM

Item	**Price per unit (Shipping and taxes included) Regular (Member)**	**Quantity**	**$ SubTotal**
*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)~~ $50		
*Slide Set #2 companion for Expanding Their Universe 40 slides	~~$75 ($60)~~ $50		
*Slide Set #3 companion for Worlds to Discover 20 slides	~~$35 ($28)~~ $25		
*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)		
		Total	

Payment must accompany all orders. Cheques should be made out to: RASC Kingston Centre.
Sorry, we cannot accept credit cards and cash should not be sent through the post.
Mail your order in to: RASC Kingston Centre, Box 1793 Kingston Ontario K7L 5J6 Canada

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

****SALE effective 2003 June 01 until 2003 December 31**
☺ Slide Sets #1 and #2 NOW ONLY $50 each (no additional discounts applicable)
☺ Slide Set #3 NOW ONLY $25 (no additional discounts applicable)

Other Products available from RASC National Office
http://www.rasc.ca/promo and http://www.rasc.ca/publications.htm

Effective 2004 January 11th WebSite Passwords for Member-only Secure areas:
RASC-Kingston:
RASC-National: