



REGULUS

JANUARY-FEBRUARY 1993

NEWSLETTER OF THE KINGSTON CENTRE
OF THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

MEETINGS AND EVENTS HORIZON

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OBSERVING: Steve Manders, (000) 000-0000
LIGHT POLLUTION: Bill Broderick, (000) 000-0000
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ADVERTISING: Classified advertisements re items to buy, sell, or trade, are free to members of the Centre. Commercial advertising is \$25 per half page, \$50 for full page. Commercial advertisers must provide clean, camera-ready copy.

CONTRIBUTIONS WELCOME: Articles, notes on observations, humour, poetry, artwork, anything on astronomy or related topics, are invited. Submitted material may be edited for brevity or clarity. Please send all submissions to the **Editor** as follows:

Bill Broderick
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DEADLINE FOR MATERIAL IS THE 15th OF THE MONTH PRIOR TO PUBLICATION.

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Regular Meetings of the Kingston Centre, RASC, are held on the **second Friday** of each month (unless ^{B-201} otherwise noted) at **8 p.m.**, in **Room ~~D-120~~ Macintosh-Corry Hall, Queen's University. Non-members are welcome.** Executive meetings are at 7:30 p.m.

Fri., Jan. 8 **REGULAR MEETING.**
Speaker, Kevin Kell, "The Solar System, Then, Now and Later."

Fri., Feb. 12 **REGULAR MEETING.**
Speaker, Ian Levstein, "Planets and Parchment, Astronomical Hebraica."

Fri., Mar. 12 **REGULAR MEETING.**
Speaker, Denise Sabatini, "The Interrupted Journey."

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PLEASE NOTE: MEETING ROOM HAS BEEN CHANGED FROM D-216 TO ~~D-120~~ UNTIL FURTHER NOTICE.
^{B-201}



NEWS AND NOTES

THANK YOU! Many thanks to Kingston Centre members **Chris Collin, Mark Kaye, Kevin Kell, Martyn McConnell** and **David Stokes** for bringing their telescopes to the **1992 CHARLESTON LAKE STAR PARTY** in August. These members have generously donated to the Kingston Centre the expense-reimbursement money that they received from the Provincial Park management for their participation, a total of \$100. Thanks also to all the other Kingston Centre members who attended, and special thanks to Terence Dickinson for yet another highly successful and enjoyable public star party.

Thanks also to **Chris Collin, David Stokes** and **Bill Broderick** for a great **TOTAL LUNAR ECLIPSE OBSERVING SESSION** on December 9th. These members braved a minus 8° C chill to provide the public observing session, which was fairly well attended--and CLEAR! (For a nice change.) A nice report on the session was contained in **The Whig-Standard** for Thursday, December 10th.

1993 EXECUTIVE MEMBERS ELECTED

At our Annual General Meeting in October, the following members were elected to serve on the Executive Council of the Kingston Centre for 1993:

PRESIDENT:	Christine Kulyk
VICE PRESIDENT:	Leo Enright
SECRETARY-TREASURER:	Kim Hay
LIBRARIAN:	David Stokes
NEWSLETTER:	Bill Broderick
NATIONAL COUNCIL REP:	Walter MacDonald
ALTERNATE REP:	Leo Enright
HONORARY PRESIDENT:	David Levy

The following are the Committee Chairs for 1993:

EDUCATION:	Denise Sabatini
PUBLICITY:	Bill Broderick
LIGHT POLLUTION:	Bill Broderick
OBSERVING:	Steven Manders
ASTRONOMY DAY:	Stan Hanna
	Peggy Torney

The Kingston Centre extends a special **THANK YOU** to the following retiring Executive and Committee members for all the work they have done for the Centre during their terms of office:

Ian Levstein (President & Alternate Nat. Council Rep)
Peter Kirk (Treasurer)
John Eustace (Observing Committee)

At the October meeting, Ian Levstein was presented with the **A. VIBERT DOUGLAS AWARD for 1992** in recognition of his tireless efforts on behalf of the Kingston Centre during the past year. Congratulations, Ian!

THE RONCHI TEST, OR FUN WITH FEATHERS

By Hein van Asperen

SKY & TELESCOPE of June 1992 published a short article by Dudley B. Wicker (page 687). Dudley explained how he generated on his computer a Ronchi grating. For a small price he was willing to send a sample of two by two inches to anybody interested in experimenting with Ronchi gratings. From the article it is evident that a grating is nothing but a large number of parallel lines on a piece of photographic film. I have heard about the Ronchi test but I did not know what was involved. The first step was asking for a piece of film. Having no USA stamps I enclosed with the self-addressed envelope some extra money. It took a long time (insufficient postage for the return trip) before I got my Ronchi grating. Now what?

Luckily, **AMATEUR TELESCOPE MAKING (Book One)** published by **SCIENTIFIC AMERICAN** had an article "The Ronchi Test for Mirrors" (Chapter 8). With this information I could construct a Ronchi Test apparatus. The main components are a light source with a narrow slit and a holder for the grating. The holder was a 35 mm film can with a square hole cut in the bottom. When the slit is in the centre of the curvature of the spherical mirror the image of the slit is formed at the same distance. From high-school physics you will remember that the focus length of the mirror is half the radius of the

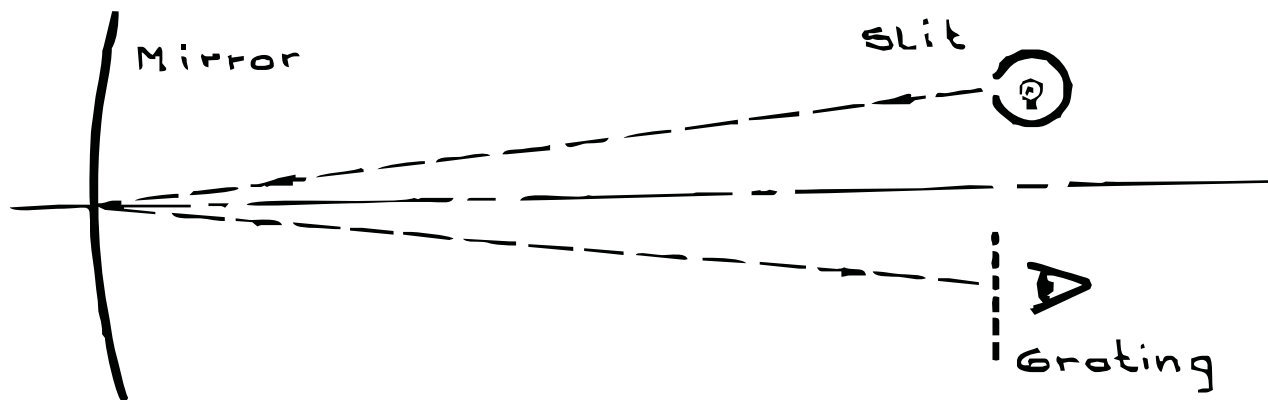


Fig. 1

mirror curvature. When the slit is positioned at the centre of the mirror a sharp image is formed. When the grating is exactly in that position and when the slit image is less than the width of the clear space between the dark lines we see just one line. When we move the grating a small distance forward (Figure 1) or backward the image of the

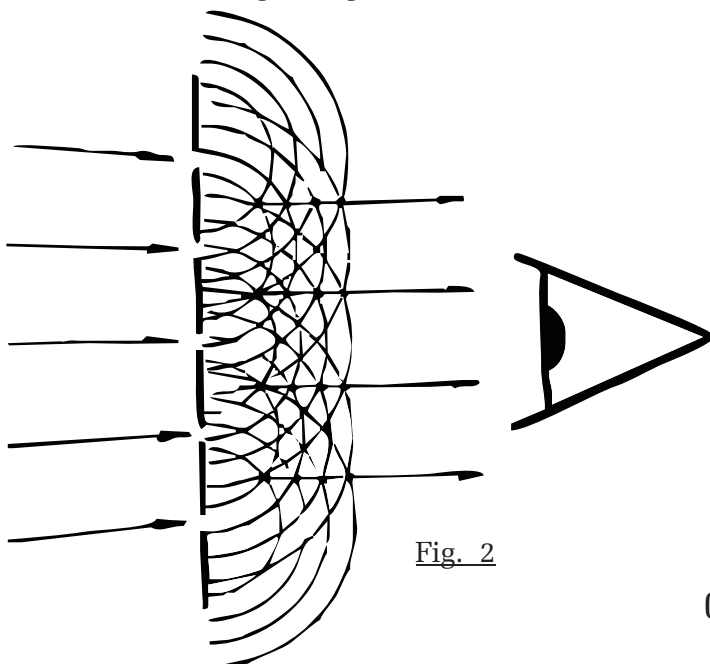


Fig. 2

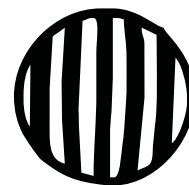
grating is a (unfocussed) band and covers a number of lines on the grating. The lights coming out of adjacent grating openings act as individual light sources and interfere with each other. We see now a number of lighted lines (Figure 2). The distance between the lines depends on the distance the grating is away from the focus point. A small value for the focus to grating distance results in a large distance between the interference lines. An astronomical mirror is not spherical but parabolic. The result is that the curvature radius of the centre of the mirror is slightly smaller. The position of the grating with respect to the centre of the mirror is therefore

different for the centre portion of the mirror as compared with the rim of the mirrors. The result is that the distance between the lines in the interference pattern is different for the centre portion compared with the rim portion. The interference pattern is either barrel-shaped (Figure 3) or the lines curve outward; this depends on whether the grating is inside the focus point or outside.

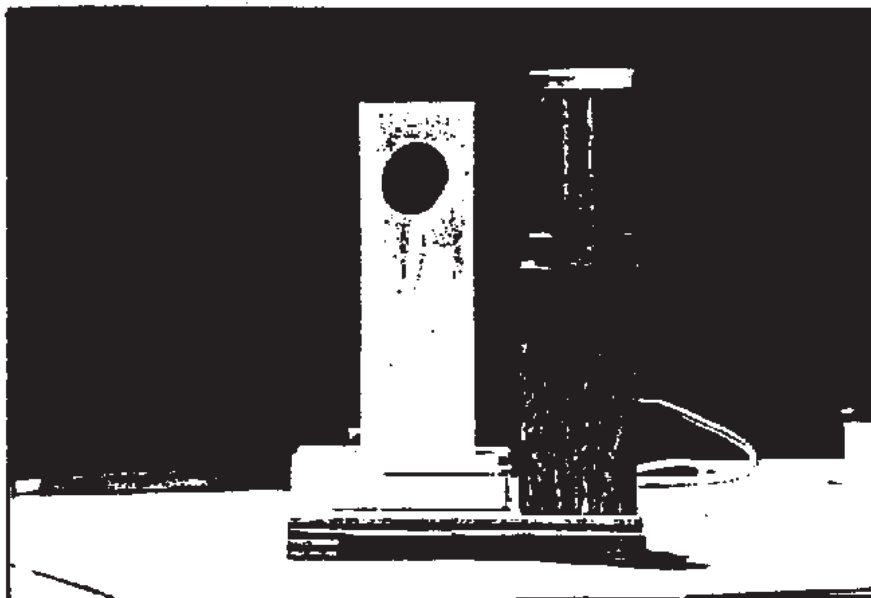
When I tried my home-made mirror with my Ronchi test set, I found that my mirror is indeed parabolic and had only a very small turned down edge. I was proud of my mirror and it reinforces the pleasure I have when observing.

The computer generated grating was not perfect. The dark lines were not all equally wide, neither were the blank openings. The result is an uneven Ronchi pattern. This shows up particularly when the Ronchi pattern is photographed. You will notice from Figure 2 that the interference lines are parallel. For a photograph just set the camera on infinity and position it where your eye was. The article in **AMATEUR TELESCOPE MAKING** mentions that silk bolting (used in flour mills) was used. Everything that has parallel components should work. Now everything? I tried a bird's feather, but this was too dense for the light source that I used. Still, when you look through a feather to a very bright light source you see the interference pattern. For the light source I used a sun ray that came through dense foliage, just a light point. The feather splits the light beam in the colours of the rainbow.

If any Kingston Centre members would like to try the Ronchi test on his/her mirror, give me a call (000-000-0000) and we can make an arrangement to get the equipment to you. The test works with the diagonal mirror in place but the diagonal blocks the centre portion of the pattern. You get better results when you remove the diagonal mirror.



Grating
inside focus.



The Ronchi Test Set. The grating is on the left; the slit and light source at right. (Photo by Hein van Asperen.)

CAVEAT EMPTOR

By Bill Broderick

Buying a telescope, for most amateur astronomers, is an exciting event. One full of joy, promise and anticipation. Unfortunately, some telescope manufacturers seem to be losing sight of why they are in business, apart from the desire to make money. For this reason, anyone contemplating the purchase of a telescope, new or used, is urged to remember the old maxim caveat emptor, "let the buyer beware."

A few months ago I purchased a new Schmidt-Cassegrain telescope of larger aperture through a reputable dealer in the Toronto area. The model is one that has been widely advertised. Both it and the manufacturer's name are well-known. I'm not going to name any names, partly to avoid the inconvenience of a possible lawsuit, and partly because it doesn't matter--regardless of who makes a telescope, in today's market it's possible to buy a lemon.

Here's a list of the problems I encountered:

1. The rich-field adapter did not work properly, giving blurry out-of-focus images;
2. An adapter to convert the right-angle finder scope to straight-through could not be used because of improper machining;
3. A squeak in the declination axis;
4. Incorrect mounting-screws supplied for the counter-weight assembly.

There was also, in my opinion, an unreasonable amount of waiting time for parts of my order to be filled; in the case of the solar filter, over five months.

In some ways, I was lucky. The optical quality of the telescope seems to be pretty good. It's generally a joy to use. In this respect, the instrument fulfills my expectations quite well. It could easily have been otherwise.

My dealer was of great assistance in resolving the various problems to my ultimate satisfaction, for which I can't thank him enough. Not only were the problems finally corrected but the manufacturer was induced to throw in some "compensation for my inconvenience" in the form of a declination motor and a heavier, steadier equatorial wedge. (Since there was considerable telescope vibration with the one originally supplied, I wonder why they didn't supply the better one in the first instance.)

Lest it be thought that my problems were flukes, I want to say that I've been informed by my dealer, and also by other amateurs, that problems with telescope purchases are not at all unusual. Some that I've heard about are:

- | | |
|-----------------------|--------------------------|
| 1. Poor optics | 5. Poor machining |
| 2. Shaky mountings | 6. Undue delivery delays |
| 3. Faulty drives | 7. Poor design |
| 4. Faulty electronics | |

You and I have to pay big bucks for the telescopes and accessories we buy. It seems to me that we should not have to put up with this kind of nonsense. Here are some ways in which we can protect ourselves:

1. Buy from a dealer or seller you know to be reliable and reputable. If you don't know, ask around.
2. Get a guarantee in writing from the dealer or seller that you can return any and all items (or full refund or credit within 30 days if you are not satisfied. This is especially important in the case of used equipment. Make it a condition of purchase if you have to. If he/she won't give you such a guarantee, take your business elsewhere.
3. Don't ever pay in full in advance unless it comes with a money-back guarantee of satisfaction.
4. Don't make a final payment unless and until you are completely satisfied.
5. Cancel any order that's not filled within a reasonable length of time--you define what's reasonable, not the dealer or manufacturer.
6. Don't accept excuses and don't accept junk.

Dealers can help by refusing to handle products that give too many problems, or by warning buyers of products or manufacturers they consider unreliable.

A representative of one of the major telescope manufacturers is supposed to have remarked at a large amateur astronomy gathering a few years ago, that if they made telescopes the way we wanted them to, we couldn't afford to buy them. That's nonsense, of course. The message should go back to these yahoos that if they don't make them the way we want them, we simply won't buy them. No way will we allow ourselves to be stuck with junk.

Quite simply, what we want are optical excellence, rock-steady mountings, components that work properly, and instruments that are--in every way--as good as the advertisements lead us to believe they are. No more, no less.

Every telescope and component put on the market ought to come with an iron-clad guarantee of satisfaction or money refunded. The current manufacturers' warranties that promise to repair or replace items that prove defective are poor protection to a buyer who has to wait months for the resolution of the simplest problem. If you end up being completely disenchanted with your purchase, you're still stuck with it. Think what this can mean for amateur astronomy if too many first-time buyers encounter too many problems with their brand new telescopes.

A money-back guarantee is by no means a radical idea. Some manufacturers and numerous dealers have always offered such a guarantee. With sloppy workmanship and horrendous quality control seemingly becoming the norm, among some companies anyway, such guarantees are absolutely necessary. For the sheer protection of our wonderful hobby, I urge astronomical organizations and societies to mount a strong campaign to demand that manufacturers and dealers provide them. I strongly suggest that this subject be discussed in every Centre of our Society and that resolutions be forwarded for consideration at the G.A. In the meantime, individual buyers should protect themselves as suggested above.

Let's all get active in sending a message to those purveyors of astronomical equipment who think they can palm off second-rate products on the amateur astronomical community, that we are calling the shots, not them. That if they can't or won't give us satisfactory products, they're not going to get our money.

IMPORTANT NOTICE -- MEETING ROOM CHANGE: UNTIL FURTHER NOTICE. MEETINGS OF THE KINGSTON CENTRE ARE BEING HELD IN ROOM ~~D-120~~
B-201

NEW MEMBERS

Kingston Centre is pleased to welcome two new members, and also to welcome back an old member, as follows:

**Sun Sak
Joe Silliker
Vic Smida**

A BRIEF HISTORY OF HAWKING

For those who missed it the first time around, there will be another screening of the film "A BRIEF HISTORY OF TIME" (a documentary about the life and work of Stephen Hawking) at the Princess Court Cinema in Kingston on January 20 (9:00 p.m.) and January 21 (9:15 p.m.).

A REMINDER: Your articles, notes on observations, humour, poetry, artwork, items about telescope making, or observatory building, anything on astronomy or related topics, are invited. Please send all material to the editor, as follows:

**Bill Broderick
XXXXXX
XXXXXXXXXX, Ontario XXXXXXXX**

Material may be edited for clarity or brevity if necessary but every attempt will be made to retain the substance and meaning of the original material. DEADLINE FOR THE RECEIPT OF MATERIAL IS THE 15th OF THE MONTH PRIOR TO PUBLICATION.

Also, if you change your address, please ensure that I am notified directly so that your copy of **REGULUS** can be mailed to you in the event that you are not present at the meeting to pick it up. Your cooperation is appreciated.

R.A.S.C. PROMOTIONAL ITEMS Available at the Kingston Centre

1. RASC TURTLE-NECK SWEATERS – Black with Yellow Crest or Navy Blue
with Yellow Crest (Extra Large Only) \$20.00
2. RASC STICKERS – Round Blue Vinyl with White Emblem (New Seal) \$ 1.25
3. TOUQUES – Navy Blue with Yellow Lettering "RASC/SRAC" \$16.00
4. 1993 CALENDARS – Featuring Astrophotography by Rajiv Gupta (Vancouver
Centre) and John Mirtle (Calgary Centre) \$ 7.00
5. BEGINNER'S OBSERVING GUIDE (With Updated Material for 1993) –
By Leo Enright \$ 5.35
8. 1993 OBSERVER'S HANDBOOK – if purchased without membership \$16.00

All of the above have GST and PST included, and are available. Come and see me after one of our regular meetings or give me a call at (000) 000-0000.

**KIM HAY, Secretary-Treasurer
RASC Kingston Centre**

INTERNATIONAL DARK-SKY ASSOCIATION

3545 N. Stewart, Tucson AZ 85716 USA

LIGHTING AND CRIME

Does outdoor nighttime lighting prevent crime? The answer is nobody knows. There have been studies in the United States and in Europe examining this issue, and they have come to no definite conclusions that can be applied to society as a whole. Some studies suggest that lighting a particular neighborhood or park reduces the local crime rate. These types of studies often suffer from poor controls, poor scientific methodology, and failure to include long term follow-up. Other studies show no significant change in crime rates after the installation of lighting. If it were so easy to reduce crime with lighting, then we should have made considerable headway by now. Our cities have never been brighter, yet the crime rate is higher than ever. The connection between crime reduction and increased lighting is vague at best.

It is safe to say that good lighting in a park, neighborhood, or shopping mall may indeed bring more people out for shopping and recreation. If this is the case, there may be less crime, as more people are present. On the other hand, harsh excessive lighting with glare may give a trashy wasteland appearance to a street or neighborhood causing people to automatically associate it with a high crime rate area. Think about how many places there are in our big cities that are brilliantly overlit and devoid of pedestrians. There are anecdotal reports of increased crime and vandalism after the installation of lights. An article in Building Operator (See * IDA IS #54) discusses how school districts across the country are actually

turning off lights on school grounds to reduce vandalism. This also saves money by reducing energy use. There is no scientific evidence that nighttime blackout of lighting will always reduce vandalism, just as there is no evidence increased nighttime lighting necessarily reduces crime. A poorly conceived lighting program instituted by public hysteria over crime and vandalism can cause more harm than good. It often inflames public passions and magnifies the problem out of proportion to its true size. It offers people a solution that won't be effective, giving the public a false sense of security, and it wastes funds that could be better spent on other social needs, such as more police or a better recreation program for school dropouts.

Is there then a public need for nighttime lighting? Of course there is. Numerous studies demonstrate reduced automobile and pedestrian accidents on properly lit busy roads and arterials. Reasonable lighting levels are necessary for urban living. However, quiet suburban neighborhoods probably do not need any street lights whatsoever or, at the most, lights only at busy corners. Malls and shopping center parking lots need reasonable lighting levels during business hours. After hours, the lighting levels can be greatly reduced or the lights entirely turned off. As in all cases with outdoor nighttime lighting, the lighting must be well thought out and well designed for the tasks at hand, keeping in mind the need for public security and recreation as well as the need to protect the beauty of the nighttime sky.

* NOTE: We will try to include this article in a future edition of REGULUS.