# REGULUS

MARCH-APRIL 1994

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





**REGULUS** is published six times per year. Views and opinions expressed herein do not necessarily represent the official position of The Royal Astronomical Society of Canada or its officers and members unless so indicated.

**SUBSCRIPTIONS**: Members of the Centre receive **Regulus** as a benefit of membership. Non-members may subscribe for $10 per year.

**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. Contributions should be sent to the Editor as follows:

**Bill Broderick**
**R.R. 1**
**Shannonville, Ontario K0K 3A0**

**DEADLINE FOR THE RECEIPT OF MATERIAL IS THE 15th OF THE MONTH PRIOR TO PUBLICATION.**




OUR KINGSTON PHONE NO.: (000) 549-1461

## MEETINGS AND EVENTS HORIZON

**Regular Meetings** of the Kingston Centre, RASC, are held on the **second Friday** of each month (unless noted otherwise) at **8 p.m.**, in **Room B-201**, **Mackintosh-Corry Hall, Queen's University. Non-members are welcome.** Executive Council Meetings are at 7 p.m.

| | |
|---|---|
| **Fri., Mar. 11** | **REGULAR MEETING. Speaker, John Gauvreau, "Naked-Eye Atmospheric Phenomena."** |
| **Sat., Mar. 26** | **GA COMMITTEE MEETING, at 797 Candover Cres., Kingston, 2 p.m.** |
| **Fri., April 8** | **REGULAR MEETING. ASTRONOMY WORKSHOP. Everyone is invited to participate in this event. A variety of groups and subjects to suit every interest will be available.** |
| **Sat., April 16** | **ASTRONOMY DAY — MALL DISPLAY AT KINGSTON CENTRE MALL, 9:30 a.m. to 6 p.m.<br>PUBLIC STAR PARTY — MACDONALD PARK, 8 to 10 p.m.** |
| **Tues., May 10** | **ANNULAR ECLIPSE** |
| **Fri., May 13** | **REGULAR MEETING. Speaker, Rob Dick, "Astronomy and Videography."** |

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**KINGSTON CENTRE, RASC**

**SECRETARY'S YEAR-END REPORT**

**1992 – 1993**

As the leaves change colour and fall to the ground, and the winter constellations appear over the horizon, it means that another year has come and gone at the Kingston Centre, RASC.

The Kingston Centre can take great pride in its people and its organization. We have had a great year. With Messier Certificates being awarded to DAN ROMBAUGH and BILL BRODERICK completing his requirements to achieve this award, to having Canadian recognition, possibly international, for its wonderful contributions to the 1993 General Assembly. The Kingston Centre took two First Place awards, one for the Best Centre Display and the other for Best Cartoon Poster. Honourable Mentions to LEO ENRIGHT for his Astrophotography Presentation and congratulations to BILL BRODERECK for being able to serve on the National RASC Light Pollution Committee and also for his Honourable Mention for the Light Pollution Display.

Along with our 12 regular and executive meetings, and a few Public Star Parties that went rather well, the Kingston Centre was treated to several interesting talks by well-known Astronomers. The highlight of the year so far, was the talk given by JACK NEWTON on CCD Imaging. This was in conjunction with the London and Winder Centre's. TERRY DICKINSON gave us an awe-inspiring talk and slide show on his trip to Las Campanas, Chile. We were brought up to date on the SNO (Sudbury Neutrino Observatory) project by Dr. HAMISH LESLIE, who has promised to come back at a later date and continue his presentation on the Observatory.

DR. RICHARD HENRIKSEN intrigued us with the depths of Cosmology, and DAVID LEVY whisked us on a voyage around Jupiter on the most dramatic comet of this lifetime.

Our Annual Members' Night included five members giving talks from Solar Imaging, Mars Observer, Variable Stars and slides on the General ASsembly making us wish we had all gone. Well, maybe next year!

The Kingston Centre's Dr. A. Vibert Douglas Award was presented to our President CHRISTINE KULYK for bringing to the Centre such interesting speakers and enthusiastic ideas. Good going, Christine!

The Kingston Centre's most prized possession this year by far, is the handmade Bookcase which holds the Centre's Library. With much hard work by our Librarian DAVID STOKES and with auctions and donations, this was made possible. I would like to thank once again our main contributer to this project, ARTHUR COVINGTON. His generous donation has made this dream a reality.

With each passing day there is something new and exciting waiting to be discovered, explored and marvelled. So let us just bundle up in warmth, bring out our scopes and binoculars and take our eye to the eyepiece and gaze endlessly into the nighttime sky.

KIM HAY

Secretary
Kingston Centre, RASC

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**CONGRATULATIONS**

DAVID STOKES and BILL BRODERICK were presented at our February 11 meeting with framed certificates recognizing their services and contributions to astronomy and to the Society over the years. Warmest congratulations to both.

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## CELEBRATE INTERNATIONAL ASTRONOMY DAY!

By Christine Kulyk

INTERNATIONAL ASTRONOMY DAY 1994 will be Saturday, April 16. The week of April 11 to 17 is designated as International Astronomy Week. We invite everyone to join us in celebrating OUR DAY (and week)! The Kingston Centre has planned the following activities for Saturday, April 16:

MALL DISPLAY - Kingston Centre Mall, 9:30 a.m. to 6 p.m. All members can assist by bringing telescopes or display items, or just by being on hand.

PUBLIC OBSERVING SESSION - Macdonald Park (near Murney Tower), 8 to 10 p.m. Again the assistance of as many members with telescopes as possible will be appreciated. Rain date is Sunday, April 17.

In keeping with the theme of this year's celebration, "Astronomy for Children," we'd like to take this opportunity to make special mention of those of our members who have given so generously of their time and enthusiasm by conducting many stargazing sessions, talks, and slide shows for groups of school kids, Girl Guides, Scouts, church groups, and so on. Bravo to BILL BRODERICK, DIETER BRUECKNER, LEO ENRIGHT, STAN HANNA, JUDITH IRWIN, IAN LEVSTEIN, STEVE MANDERS, DENISE SABATINI and PEGGY TORNEY! (If your name should have been on this list and isn't, we apologize, and we invite you to please tell us about your activities in promoting astronomy––we like to know what all the members are doing! If you would like to begin promoting astronomy to people of all ages, please call me (Christine Kulyk) at 549-1461 so that I can add your name to our speakers' list.)

## ASTRONOMY WEEK AT THE LIBRARY

The Kingston Public Library has very enthusiastically gotten into the spirit of Astronomy Day/Week for 1994. Following up on a Kingston Centre suggestion, the Library plans to mount special astronomy book displays at all, three Kingston branches––the downtown main branch, Calvin Park, and Kingscourt––during Astronomy Week. We invite you to stop by and check out the books! In addition, the Library will also be hosting a public talk by TERENCE DICKINSON during Astronomy Week. Date: Thursday, April 14. Time: 7:30 p.m. Location: the Wilson Room, Kingston Public Library, Main Branch (130 Johnson Street). Topic: "A Voyage Through the Universe." Admission is free. For further information, call (613) 549-8888.

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## ECLIPSE-CHASERS' TOUR

The Alberta Science Centre, the Calgary Centre of the RASC, and Let's Talk Travel Ltd., have organized a package of special, escorted tours to view the 1994 total solar eclipse on November 3. In addition to viewing the eclipse, the tour packages include visits to the city of Arequipa, in Peru, as well as the observatories at La Serena in Chile (featured by TERRY DICKINSON in the Southern Sky talk he presented to the Kingston Centre in May 1993)--including Cerro Tololo, the European Southern Observatory, and the University of Toronto Southern Observatory. Optional excursions to Cusco and Machu Picchu are also offered on the tours. Tour departure will be October 26 or October 28, depending on chosen package, and departure from Toronto or Montreal is available. For further details, please see our Secretary, RUTH HICKS, who has a copy of the tour price schedule and itinerary, or contact Let's Talk Travel Ltd. directly at 1-800-661-1335.

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## SURPRISE––ASTEROID DICKINSON!

Terence Dickinson was involved in a taping of the CBC Radio program "Quirks & Quarks" on Wednesday, February 16, when he received the surprise of his life. A phone call was put through from Brian Marsden at the Minor Planet Centre of the Harvard-Smithsonian Centre in Cambridge, Massachusetts, informing him that an asteroid has been named after him.

The announcement became general knowledge a few days later, when the program was aired on Saturday, February 19.

Asteroids are the only astronomical objects that can be named after living people. To date only 30 Canadians including Terry have been so honoured. World-wide, the number, which includes mostly professional astronomers, is a little over 3000.

Minor Planet 5272 Dickinson was discovered in 1981 by Edward Bowell at the Lowell Observatory, Flagstaff, Arizona. Its orbit was confirmed only in 1992. It was Bowell who put forward Terry's name for the asteroid, and the recommendation was accepted unanimously by the seven-member minor planet naming committee of the IAU. The citation notes that he is "Canada's foremost popularizer of astronomy."

Terence Dickinson, it should be noted, is the only person in Canada who earns a full-time living writing and talking about astronomy. He has authored 10 astronomy books, including NightWatch and From The Big Bang to Planet X. He also writes two newspaper astronomy columns "Nightsky" and "The Universe." As well, his articles on astronomy have appeared in magazines and publications around the world. He lectures and teaches a course on astronomy, and, of course, appears on television and radio programs.

Terry's asteroid is a small object as asteroids go, only about 4 kilometres in diameter (or about as big as a good-sized mountain). It's currently some 10.2 A.U. from the sun, beyond Mars in the asteroid belt. It will reach opposition this summer, on July 28, at which time it will be a 16th magnitude speck on the northwest boder of Sagittarius. The asteroid won't be visible in his telescopes, but Terry hopes to be able to capture it photographically with a one-hour or so exposure.

We're all as pleased as Terry must be with this signal recognition of his contribution to the advancement and promotion of astronomy. Terence Dickinson has done so much to bring the stars down to earth for so many. It is very fitting that there is now a piece of "star stuff" in space with his name on it.

BILL BRODERICK
Editor

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## PARTIAL LUNAR ECLIPSE – MAY 24 AND 25

Besides the long-awaited annular solar eclipse on May 10 (see special flyer enclosed with this issue of REGULUS), a partial lunar eclipse also takes place this month, on the evening of May 24 and 25. Beginning at 9:18 p.m. EDT, the Moon will begin to slip into the northern portion of Earth's penumbral shadow. First umbral contact takes place at 10:38. Mid-eclipse is at 11:30. Last umbral contact is at 12:23 a.m. on May 25. The Moon finally leaves Earth's penumbra at 1:43. See the Observer's Handbook for further information on this eclipse.

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## EDITOR'S REPORT

One of the things that makes the job of REGULUS Editor so great are the many contributors who always come through for me one way or another. No newsletter can survive for long without somebody besides the editor writing articles and submitting items of interest. So to everyone who has helped in this way over the last year, I say a very heart-felt thankyou. It's your contributions that make REGULUS what it is. I feel very privileged to be your editor.

Most of you remember, I'm sure, the newsletter survey we conducted a few months back. Fifteen survey sheets were completed and returned. As you might expect, there weren't any surprises. In a nutshell, here are the results:

1. Two-thirds of respondents find REGULUS quite interesting.
2. Practically everyone reads everything.
3. Every-other-month is fine with almost everybody.
4. Practically everyone says to distribute it at the meeting, mailing only to those who are unable to attend (which we are in fact doing).
5. About two-thirds had written something for the newsletter.
6. The same number would do so again.
7. Suggestions for improvement––more of the following:

| | |
|---|---|
| Observing tips – 9 * | Letters to the editor – 6 * |
| Committee Reports – 5 | Meeting Notes – 5 |
| Astronomy in news – 5 | Club History – 3 |
| Humour – 5 | Star Charts – 8 * |
| Club News – 7 | Art/graphics – 6 * |
| Classified ads – 5 | Member Profiles – 7 * |
| Questions & Answers column – 7 * | Other: Theoretical works – 1 |

I've starred (*) the items that seem to be the most popular and over the next while I'll be looking to see how I can act on them. I may be asking some of you to take on certain tasks, like providing observing tips, and star charts, and maybe even graphics and art. Someone can probably handle a Question & Answer column without "outside input" as questions can always be "made up" if necessary, but if anyone wants to see letters to the editor, some of you Gentle Readers are going to have to write them.

8. A "mission statement" for REGULUS? One suggestion received was to use the RASC's: "Devoted to the advancement of astronomy and allied sciences" or maybe "Quo Ducit Urania." Another was: "Per Ardua ad Astra" (By Effort to the Stars).

9. Other ways to improve REGULUS: A Meteor Calendar
   Star Tip of the Month
   Reduced type size––so we can get more on the pages

All are good suggestions. Keep your eye on future issues to see what we're able to do with them.

And thank-you to all who returned your survey forms. It's great having your input.

BILL BRODERICK

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**OOPS! A CORRECTION**: In the January-February issue of REGULUS, we reported that a long-membership certificate had been awarded to VALENTINA KROTKOV. Our report should have stated VALIA KROTKOV. We regret the error and hope that this correction resolves any confusion.

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## ASTRONOMY CLUB DISCOUNT PLAN

The Kingston Centre, RASC is involved with SKY & TELESCOPE to offer its members a discount to their magazine. The price is $29.95 U.S. This is $7.00 off the regular price.

The procedure is as follows: If any member wishes to join in the plan, please give your name, address, and whether you are a renewal or new to the magazine, to the Treasurer. The Kingston Centre will send in the order along with a U.S. Money Order. Once this is done, the Treasurer will collect the money from the individuals. The price asked will include the magazine subscription and the price of the U.S. money order. Everyone pays the same. The magazine subscription is for one year only!!! Renewals can then be made the next year.

If this is a renewal, you will receive in the mall a renewal slip from SKY & TELESCOPE. Bring this to the Treasurer also, as it has all the information needed.

In addition, all members with Book and Product orders will receive an additional 10% discount. Call the toll-free number (this does work from Canada), 1-800-253-0245, place your order, mention the Club Discount Plan and give the club name. Verification will be made by Sky Corp. Publishing.

It's that easy.

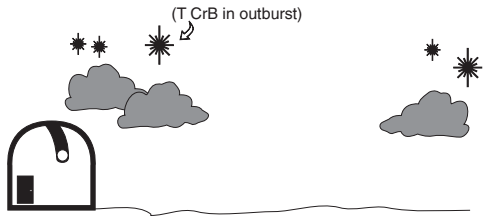
Thank you.

KIM HAY
Treasurer
Kingston Centre, RASC

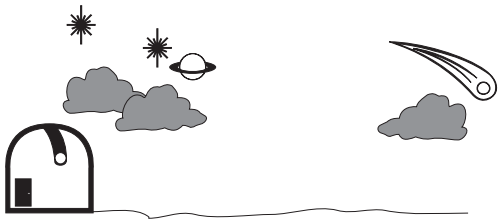
## The Meteorological Astronomer

*By Walter MacDonald*

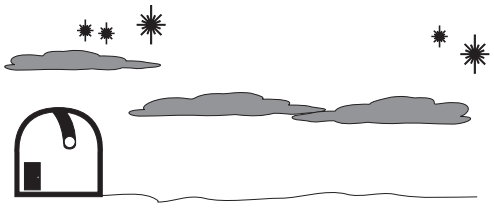
The following is presented as a guide to meteorological cloud classifications for the observational astronomer. Hopefully this will clear up any confusion there may be on this subject.




**VARIABLE CLOUDS (Cumulus Variabilis):** Opaque collections of water vapour which obscure the variable stars you're trying to observe.



**SCATTERED CLOUDS (Cumulus Scatteri):** Similar to Cumulus Variabilis except that these clouds obscure every type of object that you're trying to observe.



**OCCASIONAL CLOUDS (Occasostratus):** Only present when you go outside and try to observe, absent the rest of the night.

## ASTEROID FINDER CHARTS FOR 1994

The Saskatoon Centre has prepared Asteroid Finder Charts for 1994, which are being made available to RASC members for the nominal charge of $5.00 postage paid. The charts are 8x10 format and Cerlox bound for easy reading and easy use at the telescope. They can be ordered direct from: **Gordon Sarty, 000 XXXXXXXXXX, XXXXXXXXXXX. XXX XXX.** Do not send money with order, pay only when you receive the charts. (The charts will be printed up as orders are received and they cannot afford any returns.) All proceeds go to the Saskatoon Centre.

# RASC
# PROMOTIONS

*Hello Fellow RASC Members!!*

*I would like to take this time to tell you that there are still several items in the RASC Promotion department that are still available for sale.*

*These items can be purchased from your Centre's treasurer, or promotions department or can be ordered directly from the RASC Promotional Co-ordinator, Kim Hay.*

*Items still in stock:*

| | |
|---|---|
| *RASC stickers (blue with white overlay)* | *$1.25 each* |
| | *add $1.00 shipping per order* |
| *Turtleneck sweaters* | *$20.00 each* |
| *(black or blue with yellow crest)* | *$4.00 shipping* |
| *Golf shirts* | *$20.00 each* |
| *(white(sm, med) lt blue(med) )* | *$4.00 shipping* |
| *Toques (Black with Yellow writing)* | *$15.00 each* |
| | *$2.00 shipping* |

*All taxes included in prices. If at anytime you have questions or future ideas for the RASC Promotions please contoct me with the address below.*

*Address: Mrs. Kim Hay*
*XXXXXXXXXXXXX*
*Ontario, XXX XXX*
*phone (000)000-0000*

*Please make Canadian cheques and Money Orders payable to :*
*Royal Astronomical Society of Canada (RASC)*

(Membership List: not shown in public version of newsletter.)

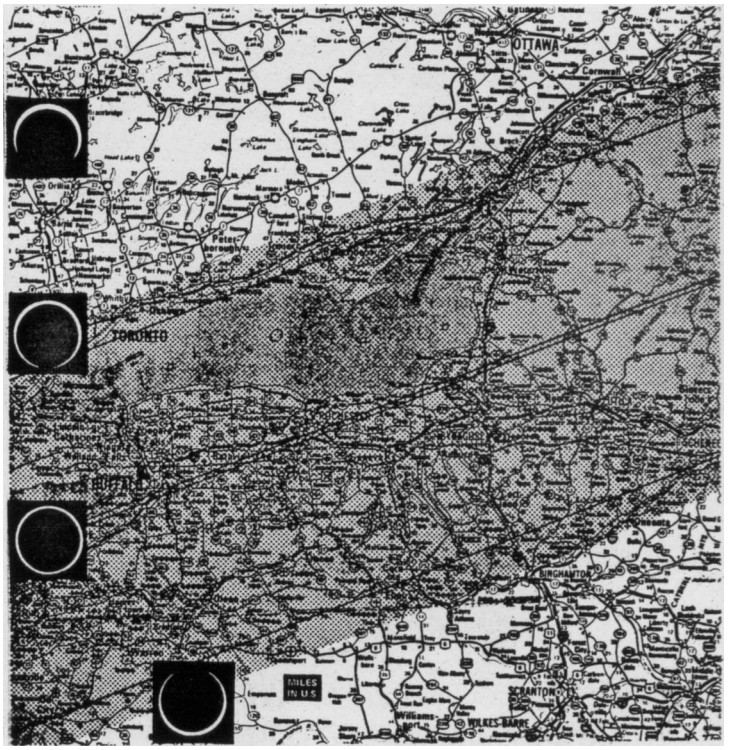
## MAY's ANNULAR SOLAR ECLIPSE

By Bill Broderick

On May 10, 1994, the Sun and Moon will once again align to produce the rare and beautiful spectacle of a solar eclipse. This event will not be a "total eclipse" with the Sun completely blocked out by the Moon, however, but rather what astronomers call an "annular eclipse."

Eclipses occur when the Moon passes directly between the Sun and Earth. Because the distance of the Moon from Earth varies somewhat, its angular size can be slightly larger or smaller than the Sun's. On this occasion, our satellite will be very close to its maximum distance from Earth and so will appear somewhat smaller than the Sun. Observers on or close to the centre line of the Moon's shadow-path will be able to see a "ring of light" in the sky as the Sun peeks out all around the edge of the Moon at mid-eclipse, hence the term "annular."

Observers along the north shore of Lake Ontario will be just inside the eclipse path; they will see the eclipse as a somewhat lop-sided or top-heavy ring. Away from the eclipse path, the event will be seen only as a crescent. The best views, weather permitting, will be from points close to the centre line, some 100 kilometres to the south.




**Some Mid-Eclipse Local Times in Ontario**
**TORONTO: 1:24 KINGSTON: 1:30 BROCKVILLE: 1:33**

The map shows the eclipse path for observers in eastern Ontario and Northern New York. As can be seen, Buffalo and Rochester are on or very close to the centre line of the eclipse. Toronto, Oshawa, Cobourg, Belleville, and Kingston, are just inside the northern edge. From these locations the eclipse will still appear annular.

For observers in the Kingston area, the eclipse will start around 11:48 a.m. EDT. Maximum eclipse will occur around 1:30, and it will be all over by 3:14 p.m. For points west and east of Kingston, subtract or add a minute or so.

## HOW TO OBSERVE

WARNING: DO NOT ATTEMPT TO OBSERVE THE SUN OR ANY PART OF THE ECLIPSE WITH UNPROTECTED EYES. ESPECIALLY DO NOT ATTEMPT TO OBSERVE BY LOOKING DIRECTLY AT THE SUN THROUGH BINOCULARS OR TELESCOPE––UNLESS, EQUIPPED WITH A SPECIAL SOLAR FILTER MADE FOR THE PURPOSE. NOTE THAT SMALL SCREW-IN TYPE EYEPIECE FILTERS SOLD WITH SOME DEPARTMENT-STORE TELESCOPES ARE NOT SAFE AND SHOULD NOT BE USED––THE INTENSE HEAT BUILT-UP CAN CAUSE THESE FILTERS TO CRACK AND BREAK EXPOSING THE EYE TO THE FOCUSED RAYS OF THE SUN. INSTANT AND PERMANENT DAMAGE TO SIGHT CAN RESULT. AS WELL, DO NOT TRY TO LOOK AT THE ECLIPSE THROUGH ANY KIND OF COLOURED GLASS OR PLASTIC OR EXPOSED PHOTOGRAPHIC FILM; THESE MATERIALS MAY TRANSMIT HARMFUL INFRARED RADIATION WHICH CAN DAMAGE THE RETINA OF THE EYE

Having said the above, it should be noted that the Sun's light during an eclipse is NOT more dangerous than at other times. It's just that people do not ordinarily have a reason to try and look at the Sun and so usually don't. During an eclipse, curiosity and scientific interest give us all a reason for trying to see what we can see. Fortunately, there are a number of perfectly SAFE ways of observing a solar eclipse. These can be used at any time to observe the Sun–– not just during an eclipse. The following are recommended:

(Over)

## PINHOLE PROJECTION

In the centre of a small piece of cardboard or bristol board, such as a 3x5 or 4x6 file card, make a small hole with the point of a pen or pencil. Holding the card in the hand, let the Sun shine through the hole, onto a light-coloured surface (such as another card) maybe half a metre or so away. Experiment with different size holes and different distances until you find a combination that shows the Sun's image well enough for comfortable observing.

A variation of this technique is to utilize a long box of some kind, such as flowers come in. Make a suitable hole in one end of the box for the sunlight to shine through and a "viewing port" in the side of the box near the bottom. The inside of the box can be painted black or lined with black or dark-coloured paper, leaving the inside bottom panel white, so as to provide a dark space for viewing the Sun's image.

Another variation of the pinhole projection technique is to note the "spots" of sunlight under trees, created by sunlight shining through the small openings between the leaves. Many of these spots will be pinhole images of the Sun. The clarity of these images can be improved by putting a large piece of white or light-coloured cardboard, or maybe a sheet, under the tree.

The techniques described above are suitable for observers of all ages––including children (under adult supervision).

## WELDER'S GLASS––SHADE #14

Shade #14 (no other shade) welder's glass filters can be safely used for direct observation of the Sun. These glass filters transmit a bright green image which is pleasing and comfortable to the eye, and they are perfectly safe. They can be purchased very inexpensively (under $2.00) from welding supply firms. To use, simply hold the filter in your fingers and look through it at the Sun. This method of observation is also suitable for persons of all ages including children (under adult supervision).

## BINOCULARS AND TELESCOPES

As aforestated, binoculars and telescopes are not to be used for looking directly at the Sun. Instant and irreparable damage to sight can occur. However, such instruments can be used to observe the Sun safely. The following are recommended for knowledgeable adults and teens:

Support the binoculars or telescope either by holding in the hand, or preferably, by mounting on a tripod or other support. In the case of binoculars, remove the lens cover and eye-cap from just one side of the binoculars. Allow the sunlight to shine through the binocular or telescope, projecting an image of the Sun onto a light-coloured surface, as in the instructions for pinhole projection. Adjust the focus and distance for best image.

If desired, you can make, or buy filters for your binoculars or telescope which fit over the objective (front) lens, thus providing a safe way to observe the Sun directly through your instrument. Filters can be made from #14 welder's glass and taped securely over the objective, filtering the light before it enters your instrument. However, the magnified image of the Sun will be degraded somewhat by passing through the glass. Special mylar and optical glass filters can be purchased from astronomical telescope dealers, but the cost can be rather expensive.

## ASTRONOMICAL TELESCOPES

If you have an astronomical telescope, you may already have a suitable filter which fits over the sky-end of your instrument. On no account should you rely on any filter which screws into an eyepiece or mounts on the rear of the telescope. Apart from the foregoing caveat, follow the instructions for solar observing that came with your instrument or refer to the section above on Binoculars and Telescopes.

## OTHER

In addition to the foregoing suggestions, observers may wish to make drawings or photographs of the various stages of the eclipse. If a camera is used, care must be taken not to allow sunlight to shine directly into the camera. Images from pinhole or telescope/binocular projection can be photographed. You can also observe and photograph the general darkening produced by the eclipse. You may also want to note whether or not birds and animals are affected in any way.

**THE ROYAL ASTRONOMICAL SOCIETY OF CANADA**
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**P.O. Box 1793**
**Kingston, ON K7L 5J6**