

**The Royal Astronomical Society
of Canada — Winnipeg Centre**

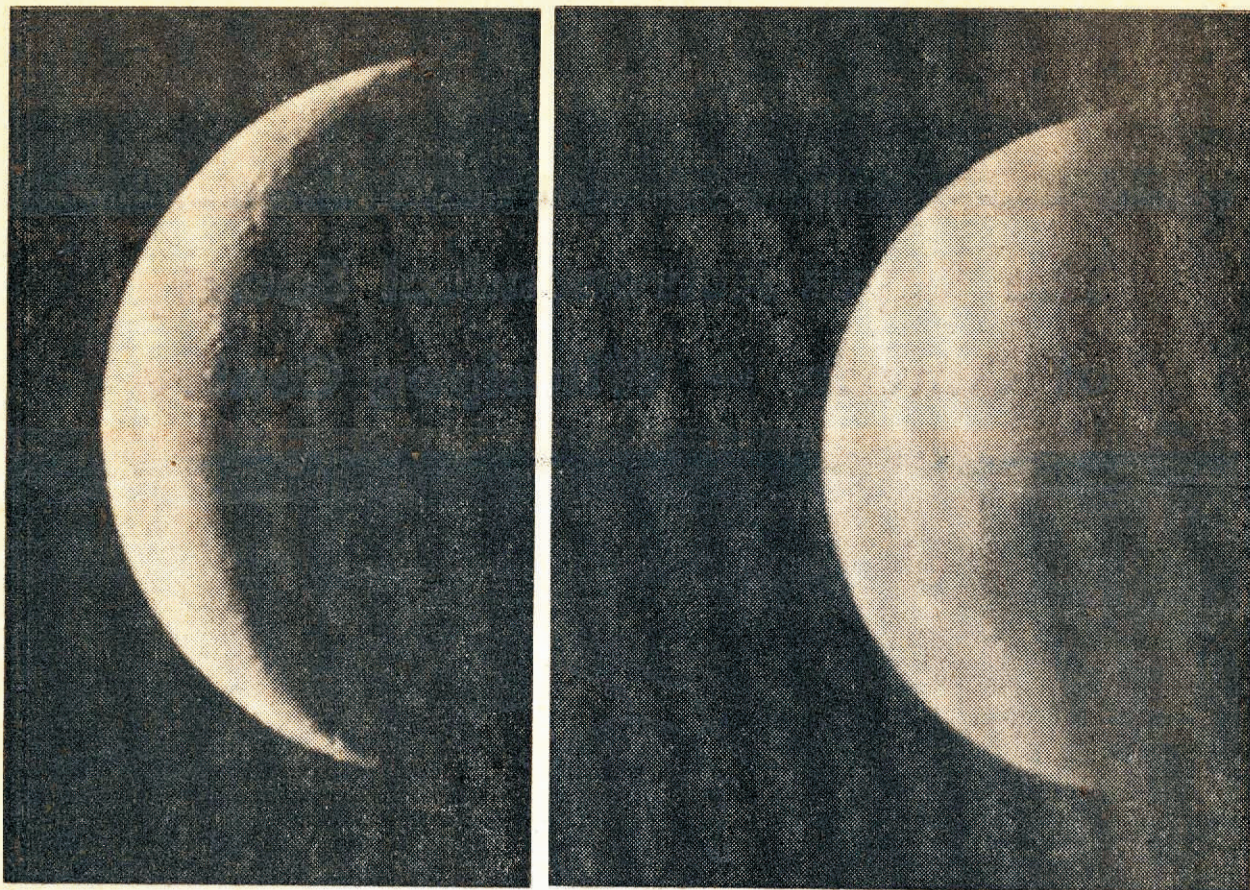


*Invites
You*

- TO JOIN US IN WATCHING AND PHOTOGRAPHING THE GREAT SPECTACLE OF THE ECLIPSE OF THE SUN JULY 20, 1963.
- TO JOIN US IN OUR SOCIETY'S ACTIVITIES FOR PLEASURE, EDUCATION AND FELLOWSHIP.



RED RIVER EXHIBITION — WINNIPEG — 1963



Two photographs of the moon, the left photo showing the second day of the new moon coming up to first quarter, and the right showing the moon in partial eclipse by the earth. Note the two-day old moon has a sharply defined curved shadow, whereas the eclipsed moon has a diffused nearly straight shadow. (Photos by Dr. J. N. R. Scatliff.) Eclipse of the Moon shown here occurred March 12, 1960.

Total Eclipse Of Sun, July 20

One of the most thrilling celestial sights is to be witnessed this year in Canada. This is the total eclipse of the sun, which can only be seen on rare occasions. This may be the last occasion for many a Manitoban to see this sight during the present century, without travelling thousands of miles. For this reason, Canadians are converging for their summer vacation on either Manitoba or Quebec to witness this spectacle which is to take place on July 20, 1963, shortly after 3 p.m. CST.

The shadow cast by the new moon will pass over Alaska, the Yukon, the Northwest Territories, the northern tip of Saskatchewan, northern Manitoba, northern Ontario, through populated Quebec, into the State of Maine, and out into the Atlantic Ocean.

Bookings are already heavy on the special train, leaving Winnipeg on the evening of Thursday, July 18, to take passengers from North America and Europe by CNR to an observation site located in the centre of the path of totality, where the sun's disc will be completely covered, rendering it possible for all to see the breath-

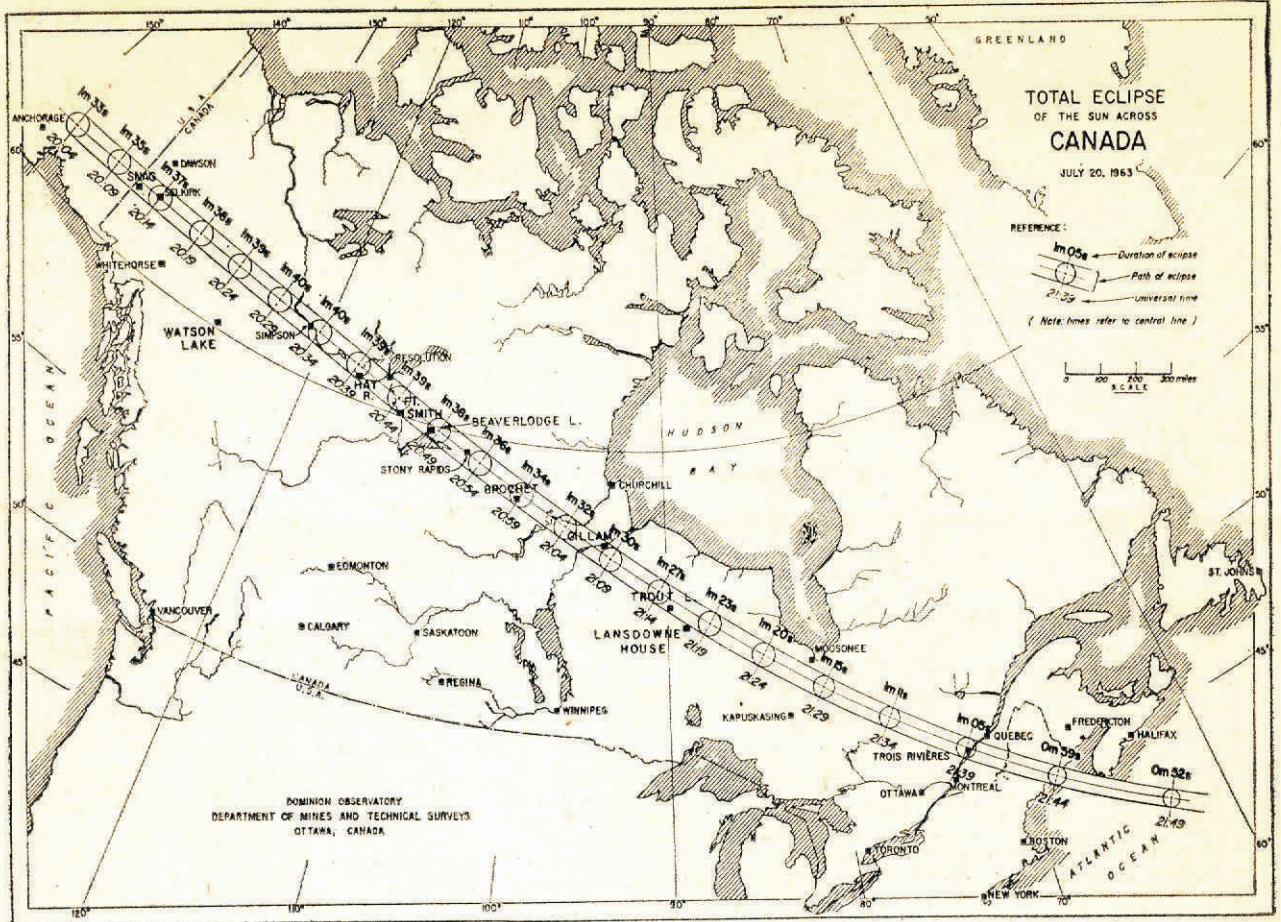
takingly beautiful corona of the sun's atmosphere and the red spikes of fire, called prominences, which shoot some 70,000 miles high above the sun's surface, exploding and arching across its surface.

In the hope that the relatively drier prairie climate will afford us better chances of seeing this eclipse, Manitoba has been chosen as an important observation site. The only ground transportation available for reaching this site is by rail, to a point some 500 miles northeast of Winnipeg.

The approach of the Moon's shadow as it rushes across the landscape to surround our party in complete darkness on a July afternoon will be an experience never to be forgotten. With our sun's light subdued to the brilliance of a full moon, both stars and planets will be seen in the sky overhead. The extraordinary lighting will give rise to all types of phenomena on the ground. Birds will begin to turn in for the night. After some ninety seconds, the whole process will reverse itself, and the dark shadow will sweep by overhead and be seen to disappear as quickly as it came.

STARRY SKIES — See Page 5
An exclusive feature in the Winnipeg
Free Press appears every month.

COVER
by Peter M. Abel



An Astro-Camera? It Sounds Easy . . .

Norman Wilde took a \$50 surplus aerial camera lens and "just put the rest together" to make a wide-angle astro-camera.

The 17-year-old Grade 12 honor student at Kelvin High School made it all sound rather easy.

But the judges were sufficiently impressed to award him first prize in the physical science division of the Manitoba Science Fair in Winnipeg. He won a set of encyclopedia and a trip to Toronto where he placed second in his division of the Canada-wide Science Fair. The Royal Astronomical Society presented him with an expensive astronomy book for his efforts.

Now Norman is hoping to join a special tour to northern Manitoba planned by the society to view the total eclipse of the sun July 20. He plans to take along his camera.

His interests aren't limited to astronomy, however. Last year he managed to find time to take a high school course in electronics. And he is president of the high school chess club.

He has maintained an honor standing through school and was awarded the general proficiency prize for standing first in his graduating class. He has also won a \$250 prize in a special physics exam sponsored by the Canadian Association of Physicists.

Next fall Norman plans to enter the honors physics and mathematics course at the University of Manitoba. Although he hasn't yet determined what field he will enter, he is considering research work and teaching at the university level.

The fact that his interests lean toward the physical sciences isn't surprising. His father, Norman W. Wilde, is co-ordinator of science for Winnipeg secondary schools and his sister Faye has just graduated from the University of Manitoba in honor mathematics.

Norman's physics teacher, George E. Pickard, who helped him in his project and sponsored him in the Manitoba Science Fair, says:

"Norman serves as a model student. Not a sissy, but a student who wants to learn rather than fool around."

Northern Tour Will Observe Total Eclipse

Canadian National All-Expense Tour to Northern Manitoba for Total Eclipse of the Sun.

Itinerary

Leave Winnipeg 5:30 p.m. CST Thursday, July 18th.

Arrive Wivenhoe 11:23 p.m. CST Friday, July 19th

Full day for observation

(or fishing in a nearby northern lake)

Leave Wivenhoe 1:38 a.m. CST Sunday, July 21st

Arrive Winnipeg 8:20 a.m. CST Monday, July 22nd

Sample package costs from Winnipeg to Wivenhoe and return

Lower berth (one person) \$119.00

Roomette (one person) 127.00

Double bedroom (two persons) each 118.00

Drawing room (two persons) each 131.00

Cost includes: rail fare, berth and meals, Winnipeg to Wivenhoe and return, also sleeping accommodation and all meals during stopover at Wivenhoe.

There will be brief stopovers in The Pas and Thompson. The train will be virtually a hotel on wheels, and will include an entertainment car, air conditioning, compressed air, power, and lots of enthusiastic fellow passengers. Accommodation is going quickly. For information or reservations contact the Canadian National Passenger Agent nearest you, or in Winnipeg, Manitoba.

If you are interested in astronomy (or think you might enjoy it), fill out and mail this coupon:—

To: Mr. T. D. Cairns,

Secretary-Treasurer, Winnipeg Centre, R.A.S.C.,
924 Waterford Avenue, Fort Garry,
Winnipeg 19, Man. (Telephone: GL 3-3470)

I would like to learn more about the Royal Astronomical Society of Canada, Winnipeg Centre.

I would like to become a member.

I would like to receive notices of regular monthly meetings.

Name

Address

P.O. and Province

Be Careful — The Eclipse Could Seriously Damage The Eyes

Looking at the unshielded face of the sun with the naked eye or through any optical device, such as the viewfinder of a camera, can seriously damage the eye. Adequate protection means looking at the sun through a material which will not only reduce visible energy of the sun for comfort, but which equally and sufficiently reduces the invisible ultraviolet and infra-red radiation which can cause instant damage, including blindness, without a person's being aware of it.

Medical authorities suggest that a neutral density filter of metallic silver of at least 6.0 density will provide adequate protection when placed in front of the eyes before facing the sun.

Such a filter can be made with two thicknesses of black and white film — not color film — which has been completely exposed to daylight and fully developed to maximum density. It can be prepared by subjecting the film to daylight and full development, according to the manufacturer's directions.

Such metallic filters should always be used when viewing the sun. However, such filters will not be satisfactory for use over a camera lens when making a photographic exposure since the grain pattern will diffuse the image and make it unsharp.

A filter such as a Kodak Wratten Neutral Density Filter should be used over the camera lens. The density of

the filter should be 4.0 or 5.0. **DO NOT VIEW THE SUN THROUGH THIS FILTER.** If you use a movie camera, set it firmly on a tripod and shoot short bursts of six or eight frames. Press and release smoothly and do not punch the button. This should be repeated, without moving the camera, about every two or three minutes.

The only accurate way to determine exact or correct exposure during the partial phases is to take a test roll of photos on a sunny day several days before the eclipse. The sun's brightness remains about the same until the moon obscures some 90 percent of the sun. Be sure to use the same filters in tests as you will use for the eclipse.

Children's Eyes Are Damaged

VANCOUVER (CP)—An eye specialist here said at least 24 Greater Vancouver children suffered eye damage by watching a partial eclipse of the sun last month.

Dr. Derek Simpson, president of the ophthalmological section of the B.C. Medical Association, said infra-red rays from the sun in some cases caused burn scars on the eye retina. He said damage was only temporary inflammation in some cases, but in others permanent injury with reduced vision resulted.

There was a report some of the injured youngsters suffered the burns after making 10-cent bets to see who could stare at the phenomenon the longest.

Kodachrome II (8mm) or (16mm) Daylight Type Movie Film	Lens Opening F/16 With N.D. Filter 4.0	1/100 64 Frames
Verichrome Pan. Roll Film — 4.0 Filter	Lens Opening F/32	1/200
Ektachrome Type S; — 4.0 Filter	Lens Opening F/22	1/200
Kodachrome X 35mm — 4.0 N.D. Filter	Lens Opening F/22	1/200
F.P. 3 Roll 35mm Black & White — 4.0 N.D. Filter	Lens Opening F/32	1/200



A photo-montage of the midnight sun, taken in northern Canada.



This chart shows, for Winnipeg and 23 other cities in North America, how the sun's visible surface will appear at the time of maximum partial eclipse on July 20. In each case, the crescent is oriented as if the local horizon were parallel to the bottom of the chart.

Starry Skies For Month of July

With the coming of July, the evening skies take on their typical summer appearance. The constellation of Scorpius, the scorpion, shines in the south, with the star Antares, distinctly red in color, as the most prominent member.

But the most unusual astronomical event of the month is a total eclipse of the sun, on July 20. It will be visible along a path about 60 miles wide, which crosses Alaska, Canada and Maine. The rest of the United States and Canada will see a partial eclipse, with the dark disc of the moon covering only part of the sun's visible surface.

The accompanying maps show the appearance of the evening skies, about 11 p.m. CDT July 1, and about an hour earlier in the middle of the month.

The brightest star visible is Vega, in Lyra, the lyre, which is high in the east. Below it is the figure of Cygnus, the swan, in which another bright star, Deneb, stands. Both these stars are shown on the map of the northern sky. And to the right of Cygnus (shown on the southern map) is Altair, in Aquila, the eagle.

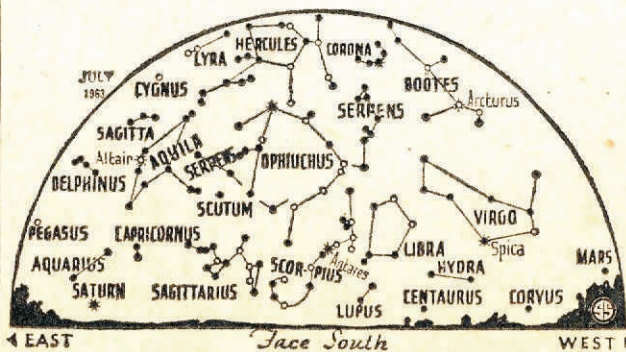
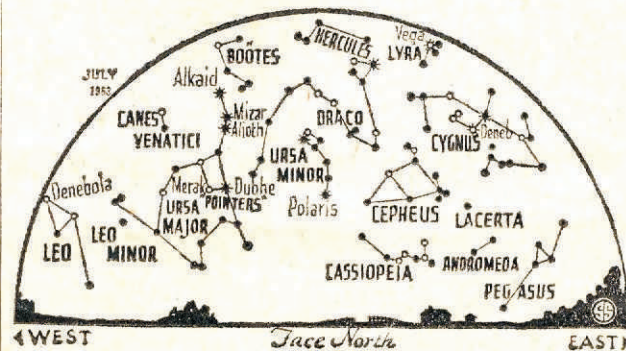
The great dipper, most familiar of all stellar figures, and part of Ursa Major, the

great bear, hangs in the northwest. At the bottom are Dubhe and Merak, the pointers, which indicate the direction of Polaris, the pole star, over to the right. And the handle of the dipper extends upward

with the stars Alioth, Mizar and Alkaid in a sweeping curve. If you follow this curve over into the southern sky, it brings you to two more bright stars: Arcturus, in Bootes, the herdsman; and Spica, in Vir-

go, the Virgin. The latter group is low in the southwest.

Two planets are visible in the evening this month, though neither is very prominent. Mars is visible low in the west in the early evening. It is now quite far away and his, combined with its low altitude, makes it quite faint. Low in the east, in Capricornus, the sea-goat, is Saturn. Later in the night — around midnight — Jupiter rises in the east in the constellation of Pisces and outshines any other star or planet. Just before sunrise you will see Venus low in the east. It is even brighter than Jupiter but will be harder to see because of the light of dawn and its low altitude.



SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

CELESTIAL TIME TABLE July, 1963

July	CDT	Event
1	1 a.m.	Moon farthest, distance 251,500 miles
4		Earth farthest from sun (for year), distance 94,450,000 miles
6	4:56 p.m.	Full moon
9	2 p.m.	Moon passes Saturn
13	2 p.m.	Moon passes Jupiter
5	p.m.	Mercury behind sun
8:58	p.m.	Moon in last quarter
16	1 p.m.	Moon nearest, distance 228,600 miles
20	3:43 p.m.	New moon, total eclipse of sun
25	5 p.m.	Moon passes Mars
28	8:13 a.m.	Moon in first quarter
7	p.m.	Moon farthest, distance 251,200 miles

(Copyright, 1963)

Group Plans Trip To View Eclipse

Manitoba astronomers are impatiently waiting for their "chance of a lifetime" next month.

For the first time in 50 years, they will be able to see a total eclipse of the sun as it crosses the northern portions of this province.

Dr. J. N. R. Scatliff, Manitoba representative of the Royal Astronomical Society, said recently a group of about 80 amateur astronomers will go north from Winnipeg to view the eclipse July 20.

Besides the Winnipeg delegation, Dr. Scatliff added, there will also be astronomers here from the United States, Denmark and the federal government research branch.

"An eclipse is really a major event," Dr. Scatliff said. "It only happens once every 50 or 60 years, with the last one here having taken place around the 1910-14 period."

Canada is regarded as the best country in the world to get a look at the forthcoming eclipse — but most citizens won't be directly in its path. Starting at dawn in Japan, the shadow of the eclipse will travel to Alaska and then sweep across northern Canada on its way to Maine and the Atlantic Ocean.

The best places in Manitoba to watch the eclipse will be the hamlets of Split Lake and Kettle Rapids, about 500

miles north of Winnipeg. In Greater Winnipeg itself, citizens will get only a partial look at the crossing of the sun and the moon.

The big moment for the eclipse is at 3:04 p.m. July 20. At that time, the sun will be obscured by the moon and total darkness will prevail for a minute and 32 seconds.

Dr. Scatliff himself will be at the northern Manitoba site. He'll be wearing a pair of special glasses because he says sun and moon watching is potentially dangerous.

"There are usually one or two casualties every time an eclipse take place," he said. "If you watch it with a naked eye, you can become blinded by the rays."

This Is What You'll See From Winnipeg

Although the full thrill and beauty of the total eclipse can only be seen and experienced from an observation point which lies in the path totality, persons watching outside this path will see a partial eclipse. The path of totality is only about 62 miles wide, but the path of partiality is some four thousand miles wide.

Because Winnipeg is only about 450 miles from the centre, over 84% of the sun's disc will be obscured at the climax of the eclipse.

Astronomical Society: Its Aims, Objectives

The Royal Astronomical Society of Canada is a group of ordinary private individuals including most of the professional astronomers with a mutual interest in the study of the heavens, and is dedicated to:

- the stimulation of interest in astronomy.
- the distribution of astronomical information.
- the gathering of observation data.

The benefits to be gained by membership in the society are:

- the gain in knowledge of the universe about us.
 - the pleasant company of others with the same hobby.
- The Winnipeg centre was

organized in 1909, and has been active ever since. There are presently over sixty members with a good number of junior members. Here are some of the group and individual activities which have been keeping us busy during the past year:

- regular monthly meetings with featured speakers, demonstrations, displays and films.
- regular monthly executive meetings usually ending with tea, coffee and goodies.
- observation groups and committees for watching satellites, aurora, meteor showers, and general star gazing.
- telescope making groups.
- individual programs of photography.
- more advanced individual research in timing astronomical events, measuring light intensities, astronomical sketching, double and variable star observation, and the collection of meteorites and astronomical equipment.

Visitors and guests are always welcome at all of our meetings and observation nights. Unless there is a clouded sky, there is always a good turn-out for observation nights. Several telescopes will be set up and members of the society will be on hand to point out interesting objects in the sky, from planets and comets and the ever-lovely moon, to star clusters, nebulae, distant galaxies, and double and variable stars.

Astronomy A Hobby For More Every Year

JOIN THE ASTRONOMICAL SOCIETY

Every year, more and more Canadians are taking up astronomy as a hobby, and as we advance with the times, more amateur astronomers are needed to co-operate with our professional scientists on official observing programs set up by the Royal Astronomical Society of Canada.

Annual subscriptions to the Society are five dollars for adults and three dollars for students. New members joining as of July 1 this year may do so at half price, for the current year.

The annual subscription includes the official journal which is published every two months and a copy of the Observers Handbook. Our Winnipeg group is composed of some sixty people with a large junior section. Why not join . . . NOW! . . . or when we see you on the Canadian National "Eclipse Special" which leaves Winnipeg (CNR) on Thursday July 18 at 5:30 p.m. CST. Further details on this excursion may be obtained from the CNR authorities or from our Society's representative in the booth. The train returns at 8:30 a.m. CST, July 22.

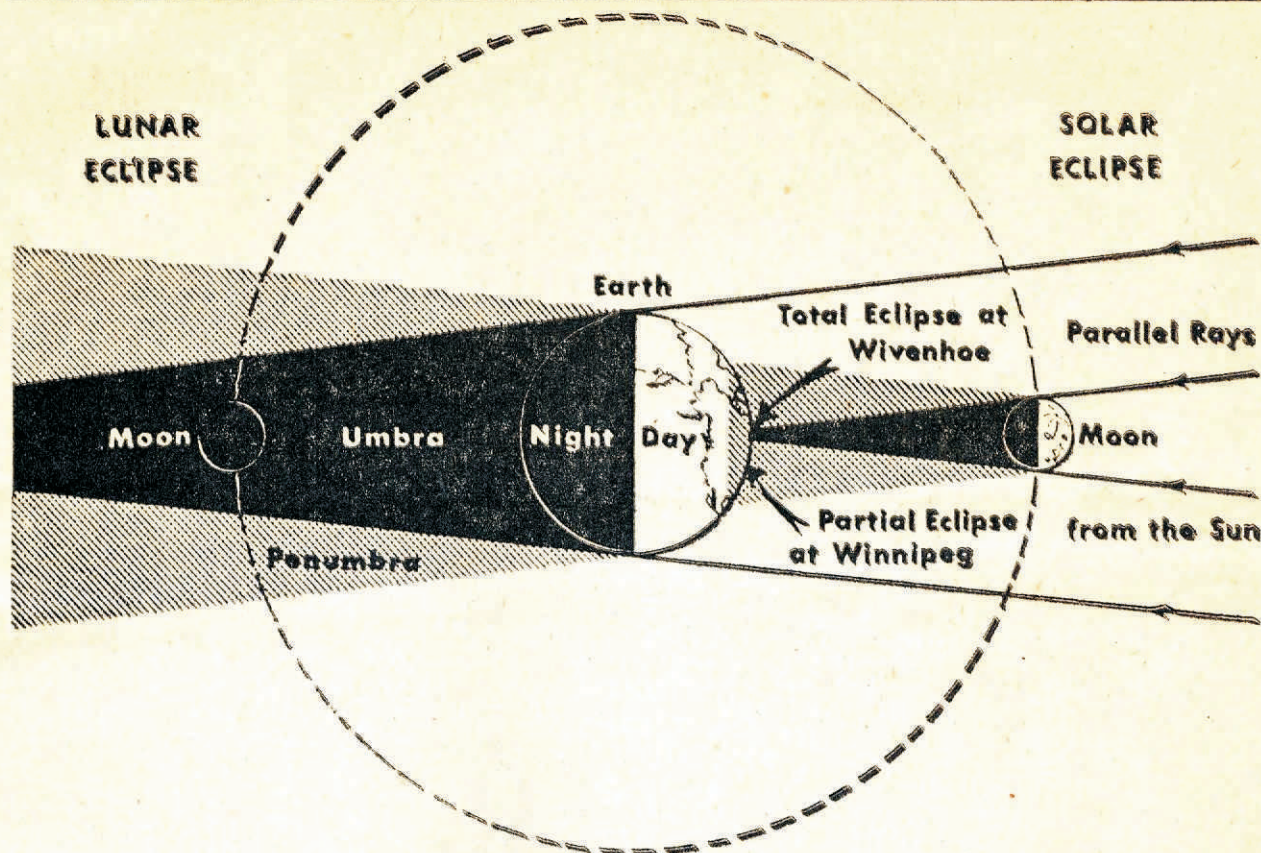
The Royal Astronomical Society Of Canada

WINNIPEG CENTRE

Officers for the 1963 season:

	Telephone
Honorary President — His Worship, Stephen Juba, Mayor of Winnipeg	
President B. F. Shinn	CE 3-4384
Past-President W. W. Wright	837-5231
Vice-President I J. W. Stewart	GL 2-8639
Vice-President II R. W. Stanger	ED 4-6639
Recorder J. Mohler	ED 9-1037
Councillors P. M. Abel	837-3124
Miss J. Anderson	GL 2-3317
J. Newton	GL 3-6826
B. M. Rotoff	HU 9-3271
F. W. T. Stimson	HU 9-9354
G. A. Welbanks	LE 3-5140
Secretary-Treasurer T. D. Cairns	GL 3-3470

924 Waterford Avenue,
Winnipeg 19, Manitoba
Provincial Representative — Prof. R. J. Lockhart
Eclipse Committee Chairman — Dr. J. N. R. Scatliff



Eclipse Provides Much To Be Seen

A total eclipse, such as will be observed from Wivenhoe on the Hudson Bay Railway, provides much to be seen.

As the moon advances on the solar disk, the sharply defined and ragged edge of the moon's disk contrasts strongly with the soft and uniform outline of the sun's limb.

As the total phase approaches, the phenomenon known as **shadow bands** may sometimes be seen. These consist of seemingly vague and rapidly-moving wave-like alternations of light and shade flitting over any white surface illuminated by the sun's rays immediately before the total phase.

They are probably due to a flickering of the light from the thin crescent, produced by the undulations of the air.

A few seconds before the commencement of the total phase the red light of the **chromosphere** becomes visible, and will be seen most distinctly as continuations of the solar crescent at its two ends.

Owing to the inequalities of the lunar surface, the diminution of the solar crescent does not go on with perfect uniformity, but, just before the last moment, what remains of it is generally broken up into separate portions of light,

which, magnified and diffused by the irradiation of the telescope, present the phenomenon long-celebrated under the name of "**Baily's Beads**." These were so-called because minutely and vividly described by Francis Baily in 1836, when he compared them to a string of bright beads.

With the disappearance of the last bead occurs the **onrush**, the total shadow sweeps across the landscape at the rate of 2,400 m.p.h.

The **red prominences** may now generally be seen here and there around the whole disk of the moon. While the effulgence of soft light called the **corona** surrounds it on all sides, with its rifts and wings fading away from the sun. This is the sun's atmosphere radiating its own atomic energy, and grows in size and brightness between 11-year sun-spot cycles, such as at the present moment, and diminishes during peak sun-spot activity.

During totality, some of the **planets** and first and second magnitude **stars** will become visible, and with luck, any **comets** present should be visible. This most beautiful phase of the total eclipse will last about 90 seconds, and then the whole process reverses.

Summer Observation Night Schedule

Prepared by Mr. Basil Rotoff

Date	Location	Observations
Friday May 31	S. end of Hosmer Blvd. Tuxedo	Moon in first quarter, just past its conjunction with Uranus and Mars. Mars is 1° North of Regulus.
Friday June 14	Ditto	Moon is in last quarter. Mars is visible but the dark night should make nebulae in Sagittarius visible. Hercules cluster. Ring nebula.
Thursday June 27	Ditto	Moon in first quarter. Mars and Saturn visible, but Jupiter rather late. We will observe the moon and southern skies.
Friday July 12	Fields N. of Assiniboia Downs	Moon in last quarter, rises at 11:30. Good for northern skies and circumpolar regions. (Owl nebula (?) Dumbell, etc.) Mars, Saturn and Jupiter visible, (rises at midnight).
Saturday July 20	City Park. Enter at University Blvd., turn left towards Buffalo encl.	Solar Eclipse about 3:00 p.m. CST. Experiment with projection of the Solar Disc through your telescope before this date, and we will have a few set up projecting the eclipse.
Monday August 12	Farm of Mr. A. Graham, Gunton, Man.	Gunton is 22 miles North on Highway No. 7. Perseid Meteor Shower at maximum. Moon is in last quarter. Saturn and Jupiter visible. This being a good dark night we will avail ourselves of a kind invitation to use Mr. Graham's location.
Thursday August 29	Canoe Club	Moon approaching the full. Saturn and Jupiter visible.
Friday Sept. 13	Assiniboia	Between last quarter and new moon. Emergence of Jupiter's Satellite II at 20:59 CDT.

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