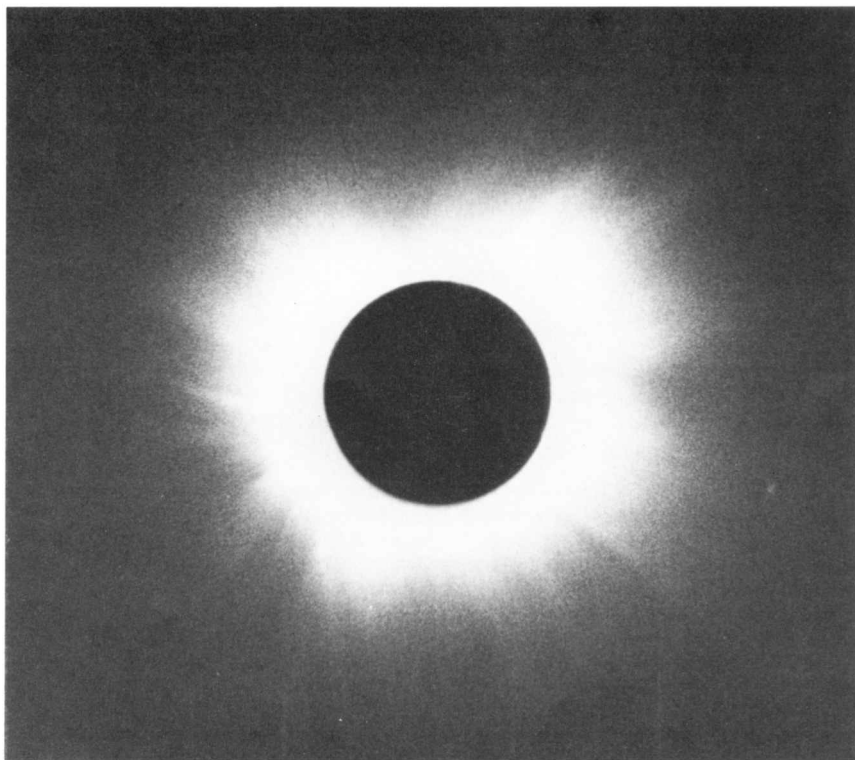


# NATIONAL NEWSLETTER

June, 1979

Supplement to the JOURNAL OF THE ROYAL ASTRONOMICAL SOCIETY  
OF CANADA

Vol. 73, No. 3



ECLIPSE DE SOLEIL

26 Fevrier, 1979

Photograph by Damien LeMay, Editor of the *National Newsletter* of the R.A.S.C. for Centres français. Telephoto e.f.l. 300mm extended to 600 mm, 2 seconds, Ektachrome 200.  
Location for the photo was approximately twenty miles northeast of Winnipeg, Manitoba.

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VOR 2H0

Deadline is six weeks prior to month of issue

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### Earned Acknowledgment

Miss Rosemary Freeman, our hard-working Executive Secretary has passed us a note received from Norman Sperling, Assistant Editor of *Sky and Telescope*, which reads in part;

“The Winnipeg Centre (of the Royal Astronomical Society of Canada) really ought to be praised highly for their splendid work in keeping all the eclipsers happy, especially for the banquet.”

This tribute was truly earned. Phyllis Belfield expressed to your editor that there were times leading up to the event when she wished that Alexander Graham Bell had been less successful in his inventing. It is only representative of the tremendous amount of work that went into the preparations for the event. That things went off so smoothly, (at least to those of us on the outside of the operation) is only attributable to the thoroughness of their thinking.

We have not received, at the time of going to press, any official report from Winnipeg Centre, but from recollection there were some 300 persons at the banquet, and everyone we spoke to was in very good spirits. Slides taken by some members were shown, they having promoted one of the local photo processors into a truly fast-finishing job so that photos taken near 11:00 a.m. were picked up by 5:00 p.m. Whether this speed accounted for it or not we don't know, but slides taken by Jack Newton, (who by the way is now living in Victoria, B.C.) had the misfortune to encounter some kind of a grain of abrasive and have a scratch across the solar image throughout the sequence.

Not the least part of the evening was the intriguing and appropriate talk by our National President, Dr. John R. Percy, about other suns that get eclipsed; Short Period Eclipsing Variables. Dr. Percy feels that many possessors of smaller telescopes can contribute much by programs of observing these fascinating objects and keeping good records of the observations. This program would no doubt complement his program on Rotating Variable Stars; (*J. Roy. Astron. Soc. Can.*, Vol 72, No.3, 1978). While you are looking that one up, you may be equally

or more intrigued, depending on your particular interest, in Dr. Percy's note on "A Laboratory Experiment on Resolving Power" in the February 1978 issue; (*J. Roy. Astron. Soc. of Can.*, Vol 72, No. 1, 1978).

John's introductory remarks; how he sat in the south-facing window of his hotel, in the warm, watching the eclipse, and observing shadowbands chase each other across the snowcovered roof of the swimming pool below, while a TV brought him a running commentary beside his chair, received some derogatory though envious hissing from a still-chilled audience.

## Eclipse From Above

by Dr. Roy L. Bishop  
Halifax Centre

The whole thing originated when an officer at Canadian Forces Base Greenwood (about 50 km from here) realized that a routine Argus training flight to Comox on Vancouver Island would be returning eastward within a day or so of the eclipse, and that perhaps the flight schedule could be altered to take in the eclipse. (The Argus is a 4-engine, anti-submarine, long-range patrol plane.) Through their contacts at Acadia University, I was asked if I was interested in flying along the path of totality. I pondered this proposal for several tenths of a second and decided that, yes indeed, I was interested!

In the early hours of February 23, Sherman Williams (another science teacher and member of the Halifax Center) and I attended a pre-flight briefing and together with 25 service personnel boarded Argus 711 in a hangar at Greenwood. Air Canada it wasn't. Instead of pastel colors, smiling stewardesses and music, there were racks of electronics, flight suits and sono-buoys. Within the hour we were propelled into the dark, pre-dawn sky by 15,000 horsepower of flaming, thundering, radial engines. As we emerged above the clouds, Venus and the waning crescent Moon made a pretty pair to the east behind us. The Moon was particularly symbolic in view of the nature of our trip.

During the next 12 hours we were treated to a spectacular view of Canada from the Atlantic to the Pacific. We flew low, at 8000 feet (the Argus is not pressurized), and went well north of the commercial routes. After the Bay of Fundy and New Brunswick, we crossed the broken ice of the St. Lawrence near the Saguenay River and headed north-westward across the Laurentians and the forests of central Quebec. James Bay was frozen solid while part of northern Ontario was lost in a blizzard. We passed from Flin Flon to Cold Lake and then south-westward across Alberta. Oxygen masks were donned as we climbed to clear the Rockies. Sherman and I spent this portion of the flight in the nose bubble and watched a panorama of snow covered peaks pass beneath our feet. After the cloud-shrouded Coast Mountains and the Strait of Georgia, we landed at Comox.

The return flight began at 0237 PST on Monday, February 26. As we left the winking lighthouses along the Pacific shore, Vancouver passed beneath us as a glowing, misty spider web of streets. Again came the oxygen masks while an aurora to the north was joined by the pinkish-blue glow of exhaust flames as we climbed to clear the peaks in the darkness below. Eventually Edmonton glided by our port side while an hour later over Saskatchewan came the dawn. Here the sky was generally overcast; however, at our midnight pre-flight briefing we had been told that northern Ontario was expected to be clear. This was where we were headed. A pressurized plane could have taken us above the clouds, but the view would have been through a small plastic window. Although the lumbering Argus had to search for clear sky, it offered a 3 foot square, unobstructed open hatch from which to view the eclipse.

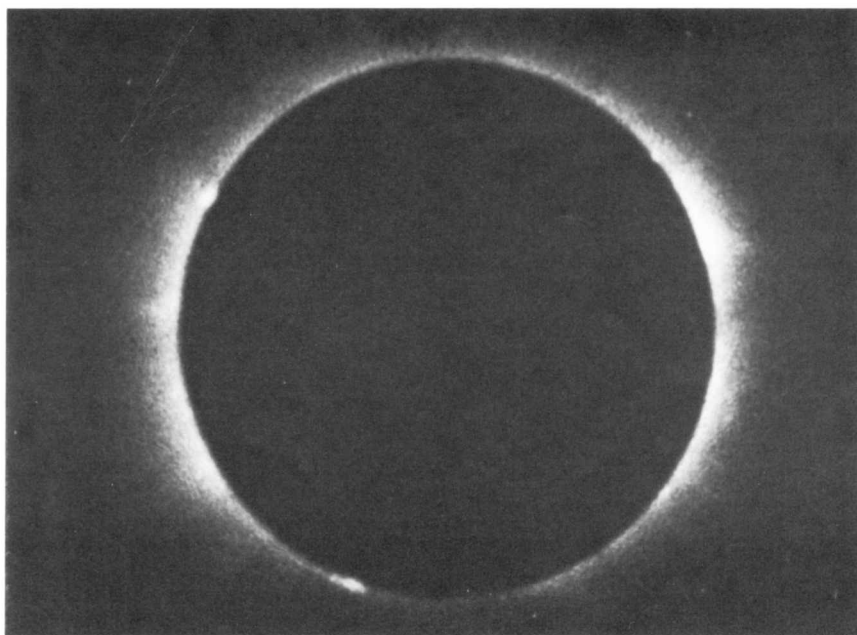
Further east over the northern end of Lake Winnipeg, the cloud gave way to a high haze as the Moon began to drift in front of the Sun. Gradually the haze thinned until about 20 minutes before totality when we flew out into a transparent, inky-blue sky. Before opening the observation hatch, Sherman and I along with two airmen put on parachute harnesses which were then securely anchored to the plane. The prospect of dangling beneath the Argus in the ghostly glow of the corona seemed rather exotic, but there was little time to dwell on such thoughts.

The cold slipstream whipped into the plane as the hatch was swung up against the roof. As shadows sharpened in the fading, brownish light, the captain kindly acceded to my request to alter course  $20^\circ$  to the north to place the Sun broadside to the plane. I watched the onset of totality through a diffraction grating attached to the front of a telephoto lens on a camera. During the last few seconds the continuous spectrum of the photosphere, crossed with Fraunhofer absorption crescents, collapsed while the absorption lines reversed to chromospheric emission lines. A large prominence near the south limb of the Sun, seemingly unaffected by the grating, dangled below the hydrogen alpha line. In the transparent air the silhouetted Moon was absolutely black, while the pure white glow of a rayed corona lit the frozen muskeg 7000 feet below. We were  $54.9^\circ$  N,  $89.6^\circ$  W, over the Severn River basin, some 100 miles from the shore of Hudson Bay. The seconds flew by in a blur of lenses and filters. Although our speed gave us an extra quarter minute of totality, a spectacular diamond ring came all too soon.

Pictures of the lonely land below, pinhole mirror images of the final partial phases, and some long overdue sleep occupied the next few hours as we flew southeastward into a severe mid-winter storm. There was considerable doubt as to whether we could land at any airport in the Maritimes; however, we pushed onward into the night sky. Eventually, after over 12 hours in the air our wheels lowered onto the icy, wind-swept runway at Greenwood. Here our luck ran out. While taxiing, the great plane slid and brought up in a snow bank! But no damage was done, and after a half hour struggle we were pulled out and into a hangar.

The experience plus the photographic record of the trip will be useful for many years to come to both Sherman and myself in our roles as science teachers. Particular thanks are due to the personnel of VP 404 Squadron at C.F.B. Greenwood for making it possible.

Maktomkus Observatory



THE FEBRUARY 26, 1979 ECLIPSE FROM LUNDAR, MANITOBA  
*Photographed by David H. Levy.* Olympus OM-1 camera on a C90 telescope. The prominence near one o'clock is a complete hoop in the original colour photo, and the one near seven o'clock was sufficiently red to be observable as such by an observer officially red-green blind.

## The February 26, 1979 Eclipse

by David H. Levy

I have seen total eclipses before, but the experience of the eclipse of the sun of February 26, 1979 had a magic that I do not remember from the other occasions. The photographs I took generally were good, but they do not accurately record the sense of what I actually saw that morning as the shadow of the moon plunged us into the strangest darkness we had ever known.

The entire trip to Winnipeg had a special magic to it, and some of that magic was not so favourable! We got off the plane late Saturday evening. The pilot had explained that the outlook for Monday's eclipse was for "high clouds with low chance for ground-based observations." That was great. If the clouds were too high, we wouldn't be able to use the plane either. As if to emphasize the point, a light snow began falling the minute we got off the plane.

All day that cloudy Sunday the forecasts were the same. "Mainly cloudy; cloudy with snow;" and later, "chance of breaks in the clouds in extreme SW Manitoba." This last forecast added enough tension to our group's night-before-the-eclipse meeting that one member almost threatened to end the life of the tour organizer! What to do? Take a chance on that break in the clouds, or fly above the clouds and try for a few seconds of totality through a small aircraft window? Our tour organizer, Jim Gall, finally broke the tension, and the meeting, by reminding us that we were expected at a showing at the Winnipeg Planetarium in fifteen minutes. We left thoroughly depressed.

The planetarium show was excellent. For an engrossing hour we were treated to interesting special effects that explained eclipses. Apparently the stars thought the show was good too, for when we left the planetarium we looked up and saw, to our amazement, clearing up there!

Our second planning meeting was somewhat more orderly than the first, but our only decision was to meet for, alas, a third time on Monday morning at 6am. Sleep anyone? We had the television permanently tuned to the weather forecast. It was recording a mysterious high, developing over Winnipeg and spreading through the night over the Prairie provinces. When I was awakened early Monday morning my friend said, "It's five-thirty, and look out the window. I think it's clear!" We couldn't believe it.

We drove to our site at Lundar, Manitoba, somewhat north of Winnipeg and almost on the centre line. Some light cirrus was all that threatened our observations, but when first contact came we had a good view of the sun and we didn't lose it until the end of the day.

The increasing darkness of the penumbra hits you gradually. You start thinking that a light cloud must be covering the sun, but no, through the glass you can see half a sun quite clearly. By the time 80% of the sun was covered, however, the darkness was increasing rapidly and our shadows, though dim, were razor sharp. The breeze stopped, it got much, much colder, and it appeared that the planet was getting ready in a resigned way for the end of the universe. It would be understating my feeling to suggest that I was thrilled to be a fourth body in a cosmic lineup of earth, moon, sun, and observer. Never before have I felt that I was an actual part of an event, but the emotions that were beginning to surge inside would not deny it. And still the sky got darker; there would be no escaping what was about to happen. Towards the south I could see the black umbra rushing at us, and before I had a chance to look again at the sun, it had gone.

In its place was a jeweled crown.

The corona was bright and almost circular, and there were several prominences. One was gigantic, and another (according to my photos) developed a small curl during the two-and-a-half-minutes we could see it. I finished the photography within 90 seconds as planned, but I was not really conscious of my work. After the business I still had about a minute just to look up. I was transfixed by the spectacle. It wasn't just the sun, either. The sky was very dark. The earth was still as a painting. An hour before noon, nearby street lights were on. And enveloping the whole scene was that unearthly hush.

I looked again through my telescope. The limb of the sun was beginning to brighten just a bit. I looked up as the brightening increased until suddenly a flash of light darted out from behind the moon. First it appeared to point north, then south, but before I could collect my thoughts to photograph it, the light had spread itself out to announce that totality had ended.

Watching the moon depart was not really an anticlimax. We realized that we had been a party to a cosmic coincidence that is probably peculiar to the earth-moon system. Phobos would give a Martian solar eclipse, but the annulus of the sun would be enormous. Ganymede might provide a Jovian solar eclipse, with such a long totality that even the corona would be obliterated. But on earth that Monday, the sun, moon, and weather, were just perfect. I was transfixed again as the last speck of moon left the distant sun. Though there surely was no scar of the sun on my retina, the burn deep inside me was strong and permanent.

Leslie C. Peltier Observatory

## Eclipse de Soleil du 26 fevrier 1979

de Damien Lemay

A ma connaissance, plus de vingt (20) amateurs du Québec se sont rendus dans les environs de Winnipeg à l'occasion de cet événement mémorable. Comme beaucoup d'autres, ils ont d'abord été épouvantés par les prévisions météorologiques de la veille, mais finalement, ils ont tous joui d'un ciel passablement clair qui leur a permis de fixer dans leur mémoire et sur pellicule un souvenir inoubliable. \*

Selon la correspondance que j'ai reçue à date, un groupe principal de dix-huit (18) personnes provenant de Drummondville, Ste-Hyacinthe, Montréal, Tracy, etc ... , s'est déplacé de plusieurs centaines de kilomètres vers le sud-ouest (Melita, plus précisément) dans l'espoir d'obtenir une température plus favorable. Cet effort supplémentaire s'est avéré inutile, puisque finalement, il a fait aussi beau dans les environs de Winnipeg. Néanmoins, ils en sont revenus heureux, puisqu'ils ont pu observer l'éclipse avec divers instruments et réussir des photos inédites.

Certains ont filmé l'événement, d'autres l'ont observé tout simplement au télescope et/ou à la jumelle, et un autre a enregistré sur magnétophone les commentaires qui fusaient de toutes parts.

Entre autres, Michel Rebetez de Tracy a obtenu plusieurs diapositives impressionnantes des protubérances avec son newtonien de 6 po. F/10. C'est un instrument plutôt massif qu'il avait pris la peine d'envoyer d'avance par le CN; il était impensable de l'emporter sur l'avion. Chaque photo montre une portion du limbe du soleil avec ses protubérances, sept (7) photos ayant été nécessaires pour couvrir complètement l'anneau de feu autour du disque noir de la lune.

Personnellement, j'ai observé depuis la demeure d'un ami (Larry Skibo) à quelque vingt (20) milles au nord-est de Winnipeg. Le soir avant l'éclipse, ayant constaté l'éclaircissement du ciel, j'ai fait l'assemblage de mes instruments et je constatais avec satisfaction que tout fonctionnait normalement.

Le lendemain matin, nous étions debout avant le lever du jour, afin de pouvoir faire l'orientation de la monture équatoriale de nos télescopes sur le pôle Nord, en se guidant sur l'étoile polaire. Les pattes de nos trépieds étaient solidement fixés au sol avec de la neige mouillée qui se transforma en glace dans quelques minutes.

Le premier contact de la lune avec le soleil était à l'heure prévue (09h36), pas de surprise ni d'excitation spéciale à ce moment. Mais, à mesure que la lune prenait pied en face du soleil, la tension montait pour atteindre son maximum environ 7 ou 8 minutes avant le début de la totalité. Après cela, les événements se précipitèrent.

Soudain, c'était la totalité. Le mot "magnifique" est impuissant à décrire la vue que nous avions. Après avoir enlevé d'un geste les filtres recouvrant nos instruments, nous pouvions observer directement, pour la première fois, les protubérances du soleil entourant le disque noir de la lune.

Les quelques 135 secondes de totalité étaient partagées entre l'observation visuelle et la prise de photos. La noirceur était comparable à une nuit de pleine lune, ce qui était suffisant pour faire les ajustements de nos caméras sans la lumière à main que nous avions à la portée, au cas où. Lors d'une éclipse antérieure à Cap-Chat en 1972, étant donné que c'était nuageux

au moment de la totalité, la noirceur avait alors été beaucoup plus prononcée. A cause de cela, probablement, je m'attendais à ce qu'il fasse noir davantage lors de cette dernière expérience.

Puis, aussi instantanément qu'il avait disparu, le soleil réapparaissait de l'autre côté de la lune, nous laissant hélas l'impression que la durée avait été beaucoup plus courte que les 2¼ minutes prévues. Nous remettons aussitôt nos filtres solaires en place puis nous laissâmes aller notre imagination qui essayait de trouver les mots pour exprimer ce que nous ressentions. Ces quelques moments resteront sûrement pour nous parmi les plus occupés et les plus joyeux de l'année 1979.

#### *Experiences et resultats*

Personnellement, j'avais trois expériences au programme:

1. Film ciné avec une image prise à toutes les quatre (4) secondes pendant la phase partielle et vitesse normale pendant la totalité.
2. Diapositives de la phase partielle et surtout de la totalité.
3. Tentative pour photographier le spectre de la chromosphère (flash spectrum).

Dans le premier cas, l'équatoriale motorisée de mon vieux tasco entraînait la ciné-caméra à laquelle j'avais adjoint une petite lunette afin d'obtenir un diamètre appréciable du soleil. Un filtre de "mylar" était utilisé pendant la phase partielle et les images étaient déclenchées automatiquement par un moteur muni d'une came. Le résultat est acceptable, mais aurait pu être mieux. L'exposition des images est bien, de même que le guidage pendant les quelque 2:30 hres entre le début et la fin de la phase partielle. Le problème est avec la mise au foyer qui, à cause de mon bricolage, était difficile à faire. Probablement qu'il était au point lorsque j'ai quitté Rimouski mais les chocs, pendant le voyage, ont pu le déranger. Néanmoins, le résultat valait le trouble et je demeure avec un montage qui pourra servir à d'autres fins.

Deuxièmement, un télé-objectif de 300 mm. était porté à 600 mm. en lui adjoignant un doubleur. Ceci fournit une image du soleil d'un peu plus de 5 mm. de diamètres sur la pellicule. Ceci faisait un instrument facile à transporter tout en permettant une résolution raisonnable des protubérances et de la couronne. Visuellement, cette dernière m'est apparue plus étendue que je m'attendais. Le résultat de ma plus longue exposition qui est de trois (3) secondes correspond de très près au souvenir que je conserve en mémoire. J'ai pu prendre une quinzaine de diapositives (Ektachrome-200) pendant la totalité, dont les expositions varient entre 1/500 sec. et 3 sec. Les courtes expositions montrent clairement les protubérances qui étaient alors nombreuses et étendues, entre autres, celle à la position 7 heure. A mesure qu'augmente le temps d'exposition, on peut voir apparaître la couronne de plus en plus, avec 3 sec., presque tout le champ de vision de la diapositive est rempli.

Dans le dernier cas, un réseau de diffraction de 13400 lignes/po (Edmund No 40272) devait fournir un spectre dont l'échelle remplissait adéquatement la pellicule 35 mm., lorsque placée en avant d'un télé-objectif de 200 mm. Je me doutais que j'aurais peu de temps pour cette expérience qui, de plus, exige un peu de chance parce qu'il y a seulement quelque 4 ou 5 sec. au 2ième et 3ième contact pendant lesquelles il est possible de photographier ce spectre. Pour plus d'informations à ce sujet, voir le NNL de la SRAC février 1972. Les deux photos que j'ai obtenues avec cette expérience ne furent pas prises tout à fait au bon moment, de sorte que j'ai seulement le spectre continu de la photosphère.

Quant à Larry, avec son newtonien de 6 pouces F/6, il a pris 18 diapositives (au foyer principal) pendant la totalité, plus, bien entendu, la phase partielle. Je ne les ai pas encore vues, mais, d'après la description qu'il m'en a faite, elles devraient être très bonnes. Son équatoriale n'est pas motorisée encore de sorte qu'il devait effectuer l'avance en ascension droite manuellement. Afin de prendre le plus grand nombre de photos possible bien centrées dans le champ de vision, sa sœur Lorraine s'occupait de faire l'avance du film et changer le temps d'exposition, cependant qu'il effectuait lui-même le déclenchement de l'obturateur. Avec une deuxième camera qu'il avait à la main, il a aussi pris des scènes du paysage pendant la totalité.

Nous nous échangerons des copies de nos photos, qu'il me fera plaisir de vous présenter au prochain congrès de la SRAC.

*La phase partielle au Québec*

Le ciel était couvert presque partout en province ce jour là, à enjuger par les commentaires qui me sont parvenus à date (79-04-06).

A Rimouski, des étudiants du Cegep ont tenté quelques expositions à travers un épais brouillard. Les images sont floues, permettant de distinguer vaguement le croissant du soleil. Visuellement, aucune personne ne semble avoir remarqué une diminution de luminosité ambiante et si non connu à l'avance, le phénomène aurait passé inaperçu. Ceci s'explique par le fait que, à mesure que le soleil disparaît derrière la lune, la pupille de l'œil se dilate pour laisser pénétrer plus de lumière, compensant ainsi pour la diminution de l'éclairage ambiant. La majeure partie habitée du Québec expérimentait une phase partielle entre approximativement 65–70%. Il restait donc un fort pourcentage de l'éclairage solaire, cette fraction étant de beaucoup supérieur à l'éclairage au niveau du sol au moment d'une orage, par exemple.

Au Collège de Ste-Anne de la Pocatière, une expérience plus sérieuse était effectuée malgré les nuages. Des mesures étaient prises simultanément de l'éclairage et de la température. Lorsque présenté sous forme de graphique, on constate un parallélisme impressionnant entre ces deux courbes.

A l'Observatoire du Collège de Lévis, l'éclairage était enregistré là aussi, et comparé à une courbe théorique, cette dernière étant fonction de la surface visible du soleil pendant l'éclipse. Je n'ai malheureusement pas encore en main les dites courbes.

## The Total Solar Eclipse

by David A. Roger  
Vancouver Centre

Our location was a dock in front of the village of Hecla, Manitoba. The dock extended out into the frozen wastes of Lake Winnipeg. The surface of the dock was concrete, or so it seemed, and some parts of it had been blown free of snow, so the footing was reasonably easy and setting up a camera tripod was no problem. The panorama included the snow-drifted lake to the northeast, east, and southeast; an old deserted barn or warehouse in the south beside a jog in the dock; an inner harbour to the immediate west where three commercial fishing boats were beached among the snowdrifts; and the scattered old houses and the Icelandic church, lying along the road that skirted the lakeshore from west to north.

We arrived on the dock shortly after 9 a.m. and immediately began setting up our equipment. Everyone in our party had cameras and there were two or three small telescopes.

First contact came at 9:40 a.m. approximately, the event being proclaimed by Bill Peters who was peering at the sun through a filtered Celestron 90. During the next forty minutes we noticed very little atmospheric change as the moon's disc proceeded across the face of the sun. No one could have been aware that an eclipse was in progress had they not been advised of it in advance. We watched the occultations of some sunspots, checked out a variety of solar filtering devices, and towards the end of the period monitored a slight drop in temperature. Since the thermometer registered well below freezing at the outset, the additional chill was pervasive. A brisk wind began to blow but the sky remained essentially clear except for some high cirrus.

A pair of jackrabbits, white with winter coats and obviously aware that a state of advancing night was upon them, leapt out from the trees by the beach to the south of us and headed out across the drifted lake. A crow flew overhead, cawing in medium voice, but otherwise there was no sign of animal life whatsoever.

By the time 10:30 a.m. arrived, though, the quality of the light had definitely changed. Snow crystals on a nearby derelict tree glistened as if there were a hundred tiny Christmas lights on the branches. Our shadows were sharp but faded to a grey-blue colour. I remember remarking that the level of light was slightly greater than that experienced on a full-moon-lit winter night when snow is on the ground.

Suddenly, the western sky went dark and our excitement rose. At the same time, a brightly



coloured halo appeared to circle the sun. Still the sun was too bright to look at without the aid of filters and still an uninformed passer-by would not be aware of the eclipse.

Bill Peters was watching the progress of the moon through the telescope.

"The crescent is shrinking!" he shouted, and we looked up to see the beginning of the diamond ring effect. The diamond ring reminded me of one of the bulbs we have passed through the dome of the Planetarium when we have wanted to depict a bright star or planet in the sky. At first the light from this effect extended out beyond the tight, bright solar halo. Then, as it dimmed and shrank, it passed the halo and fell in towards the edge of the sun's disc. Later, in recollecting the many thoughts and feelings I had during the eclipse, I remembered feeling as if I were an explorer on another planet in another solar system. A strange star was shining down upon this pale white landscape. I remember, too, being aware of how large the solar image was, for now it was totality and the long-awaited event had arrived.

The total eclipse lasted 170 seconds where we were, and we were right on the centre of the Centre Line. During this period we gazed at the sun, voiced our various reactions, ignored questions, and directed one another's attention to various features around the sun or caused by it. The sky was not particularly dark and the only planet I saw was Venus. A few spotted Mercury close by the eastern side of the sun. Whether any stars appeared I cannot say; I didn't look for any. During the eclipse the eastern horizon was banded by a dusty haze surmounted by a reddish glow from north to south. The corona extended out for at least one solar diameter in all directions. Its structure was similar to that of the cirrus and the entire scene had some of the colours I have seen during noctiluscent cloud displays back in Saskatchewan some years ago ... the same pale blue-white.

The prominences were spectacular! As I gazed through the binoculars I saw them in the 7 o'clock position, 10 o'clock, and 2 o'clock. They stood out like the bristles on an artist's brush, a searing crimson that reminded someone of strontium when it's fired in a Bunsen burner.

I had a quick glance at the sun through the Celetron 90 telescope, bumped it out of position for a moment, fogged my glasses in excitement, backed away for another naked-eye glimpse ... and then it was over.

As the diamond ring returned Bill shouted that we could still look for a moment, then he advised that it was time to put back the visors and filters to view the re-emerging sun. But few of us did, for as far as we were concerned, the eclipse was over. We began to discuss our views and impressions, exchanging reactions, commenting, and pacing to return the blood to frozen veins and faces.

It was my first total eclipse and I can't remember a more impressive site from which to experience one. The landscape was subdued, we were alone, we had had no particular problems getting to the site, and we had nothing to distract us, as if that were possible. The moon moved on and so did we!

## **Totality 1979 – Looking Back**

**from Saskatoon Centre Newsletter**

The last eclipse of the century, as far as Canada is concerned, has come and gone, and is now a statistic in the history books. It still, however, remains a very live occurrence with those of this Centre that actively participated. For nearly all, it was their first total eclipse where any personal participation was required, and despite our old friend, Murphy, some very surprising results were obtained.

About 25 members took an active part in the Eclipse Safari to the small town of Carnduff, located in the south-east corner of the province, and right on the eclipse center-line. The group arrived in stages by their own cars, and registered at the local hotel – probably the biggest group that hotel has had in ages, especially on a Sunday afternoon. Once all had checked in, it was decided to go and look at the chosen site, about four miles or so due west of town on the local grid road. On arrival at the farm, the farmer was contacted, and indicated an area just

south of the grid road as the location selected. Unfortunately, a fly got in the ointment – this area belonged not to the farmer contacted, but to his brother who was not too greatly enthusiastic about a mob of people coming uninvited on to his land. We, unfortunately, were unaware of this situation, but it was all rectified when the owner of the land accepted a remuneration for the use of his land. His brother then brought in a snow blower and snowplow attached to his tractor and proceeded to clear a large patch of the snowed-in area for our use. Having settled these problems, and reviewed what would be required, our group retired back to Carnduff for an evening meal at the local motel cafe.

Once it got dark, and we had our supper, we all went back to the field site to set up our telescope tripods and get them correctly oriented to true north. The sky was very uncooperative, but at last Polaris was sighted and the piers lined up. The heavy power cord, in three sections, was run in to the site, then disconnected and rolled up out of the way for the night, and we went back as a group to the hotel to formulate our last-minute strategy for the next day.

When we woke up in the morning, it looked like all our planning was for no good purpose – everything was heavily covered in ground fog. However, the Saskatoon Centre does not give up easily. We decided to go and have breakfast first, and then look at the situation again. While we were at breakfast, the chartered bus from the University rolled in with 47 passengers, plus Gordon's camera box which he had left behind. Also, the fog was rapidly clearing, and things looked more promising. All members were out to the site by 8:00 a.m. CST, and work began getting ready for the big event. Telescopes were set up, filters installed, power cables run in and equipment connected up, and then the fun began. The six-inch telescope carrying the cinecamera still had the mirror in the astrophotography position, i.e., 2 inches forward. This had to be shifted back, and a rough collimation effected. The battery blanket fitted around the camera to keep it from erratic operation in the cold had to be made operational. Emmerson had some trouble locating the Sun with his 4½-inch reflector which was using a Barlow to bring the image out to the camera. A second camera was taped to this telescope with masking tape, and actually worked quite well. Then Sask Media, who were doing a film of the exercise to make up a TV film for distribution to the schools, arrived, and had to be accommodated with space and power. The photometer experiment was set up and tested out; the WWV time receiver and tape recorder was checked out as well as the alarm system to be used to alert everyone just before the end of totality. At last it appeared that everything was going to work, and we still had ten minutes left before the start of the eclipse. Also, Sol decided to cooperate, and the ground mist cleared away giving us an ideal view.

A hush came over the group as we waited for first contact. Then low-keyed remarks became apparent. Finally, first contact was called at 15:30:42 UT, and the eclipse was under way. Through the filter-equipped telescopes, the movement of the Moon seemed quite rapid, and comments like "It's fun to watch those sunspots disappear" became quite commonplace. As each of us took a photo, it was called out and picked up on the mike on tape coincident with the WWV time signal. All major pictures were timed this way so that the individual taking the picture could go back afterward to the tape and read off the times when he took any specific picture.

When people started to complain of the cold, a thermometer was removed from one of the cars and installed in the shade. The first reading taken at 16:33:04 UT showed a temperature of  $-4^{\circ}\text{C}$ . This later went down to  $-12^{\circ}\text{C}$  at the end of totality, then recovered to  $-6^{\circ}\text{C}$  as the equipment was being packed up – quite a temperature change that we had not expected. Second contact, totality, occurred at 16:39:36 UT, and was a fantastic sight. Huge red prominences were noted and photographed. Also, at the start of totality, a timer was started, to ring off ten seconds before the end of totality to warn everyone. This was aided and abetted by a countdown to the time the siren alarm would go off, and we think it paid off – no one had any eye damage. Third contact was at 16:42:13 UT, followed by a spectacular diamond ring effect, and we were on our way to final contact which occurred at 17:55:07 UT. This was followed by individual interviews to the Sask Media personnel explaining each experiment, and then we were able to pack up our equipment and head back to the motel cafe for a bite to eat before we left for Saskatoon and home.

What can one say about a total eclipse that hasn't been said many times before? It is truly a



## L40

### *Equipment*

The Photometer—courtesy of the University of Saskatchewan, proved extremely sensitive; sensitive enough to register the persons walking through its field of view seventy feet away! It, and the Hewlett-Packard digital multimeter (also courtesy University of Saskatchewan), used to monitor the output to the recorder, were truly beautiful instruments (as was the recorder).

The Recorder—courtesy of S.E.D. Systems, was operated by Mr. Brad Grigor, who did an excellent job under somewhat less than ideal conditions. This system had a response time fast enough to trace a 60Hz variation in light level of an incandescent lamp!

The Radio Receiver—courtesy of Mr. G. N. Patterson, was a vintage model Hallicrafters; very rugged and reliable. It provided crisp, fade-free WWV time signals for the recorder's second channel using an end-fed long wire antenna, courtesy of Mr. Greg Towstego.

The equipment, along with its operator, were housed in a Maxi Van, a large passenger van rented for this purpose. Since the engine could not be run because of exhaust steam affecting the photographic experiments, heating was accomplished by two-6000 BTU catalytic heaters.

### *Data*

The mode chosen was “north light” in optical wavelengths, the trace calibrated in footlamberts. The field of view was eight degrees wide, circular, and centered slightly above the horizon with an azimuth of 180 degrees with respect to the sun at the time of first contact. The photometer head was in the shadow of the van to prevent interference from direct sunlight.

“North light” is the light which enters a window on the shaded side of a building and consists entirely of diffused light reflected off of the ground, various objects, clouds, atmospheric particles, etc. It is, for the most part, the light we see by. It is the only light in which the eye can accurately determine color.

Direct solar photometry will have been carried out by a multiplicity of professional people working at a wide range of wavelengths with highly sophisticated equipment. Presumably few, if any, have done it in north light, and at a wavelength response curve similar to the average human eye. Also, should the sky have been cloudy, the effect on this mode of operation would have been marginal.

The data is contained on about 46 feet of strip chart. The time scale is 1 mm/sec except for the ten minutes which included totality; here, 5 mm/sec was chosen to improve time scale resolution. Presently, Mr. Grigor is writing a computer program to process the data in a more easily understood format.

This, along with some photographs (to show orientation, etc.), excerpts from equipment manuals and the raw data will be published in a report, probably consisting of some 70 pages.

This data has been very carefully gathered. Every effort has been made to account for every detail. Because of this, the report should be of scientific value.

A special card of thanks to S.E.D. Systems, University of Saskatchewan, and especially Gordon Patterson for the use of equipment vital to this operation. Also to Brad Grigor for his skill and knowledge in handling the chart recorder and computer. And those who helped with the set up. Mike Wesolowski, Greg Towstego, Stan Valnicek, Lee Warner and others who helped or at least tried to keep excited people out of the photometer's field of view.

## **Flash Spectrum Experiment**

**Mike Wesolowski**

The flash spectrum of the sun can only be photographed for a few instants before and after totality, when only a very thin sliver of the sun is visible. When the light from this sliver is passed through a prism (or, in this case, a diffraction grating), the result will be a continuum spectrum, crossed by a number of crescent-shaped lines. These are emission lines, proof of the gaseous nature of the sun.

The equipment for this project consisted of a 35mm camera (Olympus 35 RC) with a 42mm lens, Kodak Ektachrome 400 color slide film, and a transmission grating of an unknown number of lines per mm, which was placed in front of the camera lens.

Of the seven pictures that were taken, only one of them was not over-exposed. On this picture is a very intense line in the red, which is due to hydrogen. There are a few other lines visible but they are faint and hard to see. A future project will be to obtain a good print of the spectrum, and identify the visible lines.

## Still More on Gregorian Telescopes

by Professor J. E. Kennedy

University of Saskatchewan, Saskatoon, Saskatchewan

As well as the information on these instruments from James Barker, (*National Newsletter*, February 1979), a letter has been received from Norm Sperling, Assistant Editor of *Sky and Telescope*, Cambridge, Mass. In June 1975, Mr. Sperling attended the General Assembly of the R.A.S.C. in Halifax, and from there proceeded to visit the restored fortress of Louisburg. At this historic site, he obtained, with considerable difficulty, a 35 mm transparency of a Gregorian telescope housed in the exhibits, which he enclosed with his letter.

The Curator at Louisburg, J. D. How, and the Park Superintendent, John Fortier, very kindly supplied a photographic print of this instrument shown in the above reproduction. From their correspondence, it appears that Randall C. Brooks of the Department of Astronomy, Saint Mary's University, Halifax, plans to do some research at the fortress in the spring of 1979. This should provide them with a more thorough cataloguing of this telescope.

The dimensions of the telescope are 28" overall length, 17" in height, with a tube diameter of 5 inches. It was purchased in France in 1972 for exhibit in the display in the restored Engineer's House. While the telescope may well be of French manufacture, no conclusion on this point is possible until the evidence is carefully examined.



With the discovery of this Gregorian telescope, the answer to the question posed earlier "Are There Only Three of These in Canada?" must be "no". During the past year, two other letters on these instruments have reached me. A retired Life Member of the R.A.S.C. reported that he had borrowed and used a Gregorian telescope while living in Montreal during the 1930's. A resident of Amherstview, Ontario, states that he had recently acquired an instrument of this design. Further details of these additional finds will be issued when photographs and related information become available.

These responses must be encouraging to the Editor and staff of the *National Newsletter*, providing them with substantial evidence that this publication is read extensively by the recipients of the *Journal*.

## **International Union of Amateur Astronomers**

### **FOURTH GENERAL ASSEMBLY**

**August, 1978, in Dublin, Ireland**

by **GEORGE BALL**

**Victoria Centre**

Over eighty amateur astronomers from twenty countries arrived on August 13, 1978, at University Hall, Dublin, Ireland, to attend the week-long General Assembly of the International Union of Amateur Astronomers. This is the fourth G.A.; one is held once every three years. The last one was held at McMaster University, Hamilton, Ontario.

The 1978 assembly was hosted by the Irish Astronomical Society, and on Monday morning Mr. A. Sims, Chairman of the Dublin Centre, introduced the Lord Mayor Mr. P. Belton, who welcomed us and extended good wishes on behalf of the people of Dublin and declared the assembly open.

Dr. Vincio Barocas, acting President of the I.U.A.A. thanked the Lord Mayor and then introduced Professor Patrick A. Wayman, director of the Dunsink Observatory and President of the Irish Astronomical Society, who added his good wishes for a successful assembly. Dr. Barocas thanked the speaker, and introduced in turn Father Keelihan, Dr. O. Oburka (a past president of the I.U.A.A.) and Dr. L. Baldinelli from Italy. Dr. Barocas then asked the guests and delegates to stand and observe a minute's silence in memory of the late Ken Chilton, who was president at the time of his death.

Dr. Barocas asked the author of this report to read a letter of good wishes for a successful assembly from Dr. John R. Percy, National President of the Royal Astronomical Society of Canada.

Dr. Barocas read a report from Secretary Peter Ashenhurst of Hamilton, Ontario, who was unable to attend the present assembly. Secretary Mr. C. Kilbride read letters of good wishes from Calgary and London, Ontario, and inviting members to attend the R.A.S.C. General Assembly in London, Ontario, in May 1979.

After lunch the meeting opened with Peter Linde, from Sweden, reading the Secretary's Report. He also described what his job entailed and the work he had done. Dr. K. Ziolkowski from Poland reported on the activities in eastern Europe. He stated that in his own country there were about three thousand active amateur astronomers. The rest of the afternoon was taken up with a discussion of the Newsletter. The speakers taking part were: Dr. Kennedy J. O'Brien, Newfoundland; Mr. Norman Sperling, Boston, Mass.; Mr. Hedley Robinson, Devon, England; and Dr. L. Baldinelli, Bologna, Italy.

Dr. Barocas opened the Tuesday sessions, and introduced Dr. Blaauw, President of the International Astronomical Union, who gave us a short address of welcome. He was presently in Dublin to attend a meeting concerning the General Assembly being held in Montreal in 1979.

The detailed printed Treasurer's Report was handed out, and Mr. Deasy answered all questions pertaining to it.

Dr. O'Oburka, Czechoslovakia, then took the chair and introduced the first papers:

*Meteors.* Shigeru Morikubo and Yasuo Yabu, Japan.  
*Brightness of the Eclipsed Moon.* Masahiro Yamaguchi, Japan.  
*Astronomy as taught in Japanese Schools.* Kazutaka Kato, Japan.

After lunch we were taken on a very interesting coach tour of County Wicklow, and had tea at a country hotel.

After a few days of inclement weather August 16 arrived with a clearer sky. We were met at the University Hall by coaches to transport us to Dublin's Connolly station for a trip to Armagh Observatory and Planetarium. After a very pleasant two-hour journey with lunch provided on the train, we arrived at Portadown, where coaches were waiting to take us the seven miles to the observatory and planetarium, on a beautiful sunny afternoon. The Director of Armagh Observatory, Dr. Mart de Groot, and the Director of the planetarium, Mr. T. P. Murtagh and their staffs had certainly spared no effort in their preparations to welcome us and make sure we saw everything, along with an explanation of the operation and history of each piece of equipment. They even excluded all other visitors for the half day we were there. While one group was examining the displays in the planetarium and equipment in the labs and domes, another group was attending a planetarium show. Later in the afternoon we were treated to tea with more sandwiches, cakes, tea and coffee than could be consumed. Before boarding the coaches for the return to the railway station we assembled for a group photograph. The coaches, train, and meals were all donated by Armagh Planetarium and Observatory, which was very much appreciated.

Dr. Barocas, who had been elected president for the next three years, opened the August 17 session by reading the names of the executive and council members and chairmen of the various commissions.

The meeting was then turned over to Dr. Patrick Moore who introduced the following papers:

*The Space Program in Poland.* Dr. K. Ziolkowski.  
*Observations of Cosmic Clouds in Orion.* Baron Renaud de Terwangne, Belgium.  
*Astronomy in Uruguay.* Jorge Balseiro Savio  
*Astronomy in Yugoslavia.* Dag Orsic and Vladimir Bermanec.  
*A Detailed Report of Radio Observations Using a Six-foot Diameter Parabolic Antenna in South Africa.* Mr. Alan Kelly.

After lunch Dr. Barocas announced that chairmen of several commissions would give their reports:

*Translunar Phenomena and Lunar Occultations.* Dr. Patrick Moore.  
*Solar Observations in the I.U.A.A.* Peter Gill, England.  
*Planetary Observations.* J. Hedley Robinson, England.

Dr. Barocas announced that the council had decided to establish a comet commission and a chairman would be appointed later.

We then met in several workshop sessions; variable stars, solar, planets, and historical. Dr. Barocas then chaired the meeting for questions and suggestions on the various commissions.

Dr. L. Baldinelli was chairman for the last paper session on August 18, and introduced the following:

*Variable Stars.* Eamonn Ansro, Dublin  
*About thirty slides of Cities and Areas Around the World Taken in Infra-red Light by the Landsat Satellite.* Norman Sperling, U.S.A.  
*Ancient Indian Astronomy.* (The oldest instrument described was built in 1750 B.C.) Mr. Adur, India.  
*Slides and commentary on Observatories in Czechoslovakia.* Dr. O. Oburka.  
*Astronomy in Contemporary Paintings.* Mr. E. Robson, U.S.A.

The Edmund Scientific Co. had given Norman Sperling three of their latest eyepieces to present to the assembly as a door prize. As the assembly was not set up with the numbered tickets this was not feasible, so Norman presented them to Mr. Adur of India, to be used by his observing group. Mr. Adur had previously stated that eyepieces were practically impossible to obtain in India. Judging by the applause this was heartily approved by everyone.

On Friday afternoon a guest lecturer, Professor P. Mohr, gave a very interesting talk entitled: *Mars and Earth – Comparison of Surface Features.*

Dr. Barocas opened the meeting on August 19 for a discussion on several items of business. Commission chairmen spoke on proposals for their various groups. Dr. Kennedy O'Brien reported on a proposed catalogue by the Variable Star Commission of the I.U.A.A. which should be ready next year. Dr. Oburka spoke of the hopes of the Historical Commission.

Dr. Barocas presented his summation of the four assemblies of the I.U.A.A. He thanked the membership for showing confidence in him by electing him President, and hoped he would see us all again in three years, at a location not yet decided.

Early Saturday evening we were taken by coach twelve miles west of Dublin to Oelbridge, County Kildare, where Castletown House was to be the location of our closing banquet. This prestige Georgian house, of one hundred rooms, was built in 1722. We were taken on a tour of the house and then to the original kitchen which has since been refurbished as a dining room. We were served dinner in the Eighteenth Century style, complete with wandering minstrels, who came by to serenade us. At the conclusion of our meal we were treated to a haunting melody played on a shepherd's flute by one of our own members from Romania, Mr. Istrate Mihail. A very enjoyable evening and one long to be remembered.

Before boarding our coach for the return to Dublin, Mr. T. P. Murtagh, Director of Armagh Planetarium, and Miss Sheelagh Grew, Secretary of the Observatory, presented each delegate with a copy of the group photograph that had been taken when we visited them on Wednesday.

On Sunday we said farewell to our old friends, and newly-made ones, and each went our own way.

Thus ended a very successful and memorable week in Ireland as guests of the hospitable Irish Astronomical Society.

## Scorpius or Scorpio?

Anthony A. Barrett  
Vancouver Centre

One of the minor inconveniences that confront the astronomer is the long-established tradition of calling the constellations by their Latin names. Not only must 88 Latin terms be memorised, but also, in order to identify the brightest stars in a constellation the astronomer, whether amateur or professional, must be able to convert the Latin terms into the genitive (possessive) case, and know, for example, that  $\alpha$  in Ursa Major must be rendered as  $\alpha$  Ursae Majoris. The name of one of these constellations presents a special problem. There are two Latin words for "Scorpion," *scorpius* and *scorpio*, and both forms are used to designate the constellation. This naturally results in a variation in the designation not only of the constellation but also of the stars contained in it: hence  $\alpha$  in Scorpius is  $\alpha$  Scorpil,  $\alpha$  in Scorpio is  $\alpha$  Scorpionis. On purely linguistic grounds the case for using Scorpio is slightly stronger, since *scorpio* tends to be a word regularly used by the Romans in their prose writings, while *scorpius* is generally considered poetic; from the practical point of view it does not, of course, matter which is used, provided one is consistent.

Curious to see what form is sanctioned by the RASC, I looked at the *Observer's Handbook*, which must be considered our official guide in these matters. In *The Constellations* the form Scorpius is given, as it is in the charts of *The Night Sky*. However, opposite the first chart there appears in the list of *Radio Sources* the source Scorpio X- 1, which has, in fact, appeared in this form for the last ten years or so. A casual glance at the literature indicates that other organizations, in the U.S.A. and Britain, are equally inconsistent, but this should not prevent us from a commitment to one or other of the variants. It would be a trivial reform, but, on the other hand, it would cost nothing!