

NATIONAL NEWSLETTER

October, 1985

Supplement to the JOURNAL OF THE ROYAL ASTRONOMICAL SOCIETY
OF CANADA

Vol. 79, No. 5



The Society's National President, Dr. Roy Bishop, presents Cam Fahrner of the Calgary Centre with the Service Award at the Edmonton General Assembly.

Photo by Bernt R. Chou

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October, 1985

Editor: IAN MCGREGOR

Editorial Staff: HARLAN CREIGHTON, PETER JEDICKE, BETTY ROBINSON,
B. FRANKLYN SHINN, STEVEN SPINNEY

Assistant Editors: HARLAN CREIGHTON, P. JEDICKE

Press Liaison: AL WEIR

Redacteur pour les Centres français

DAMIEN LEMAY
6230 Ravine Way
Orleans, Ontario K1C 2V4

Please submit all materials and communications to:

IAN G. MCGREGOR
McLaughlin Planetarium
100 Queen's Park
Toronto, Ontario M5S 2C6

Deadline for February issue is December 15.

Editorial

by Ian G. McGregor

You will notice some changes in the above masthead. At our Society's General Assembly in Edmonton in the early summer I was appointed as your new editor. In this capacity I look forward to communicating with you over my term as editor.

I am pleased to introduce two new staff members to you. Both Betty Robinson and Steven Spinney are Toronto Centre members and they will be assisting me in the time-consuming production before typesetting and add the extra "eyes" to the important proofreading before printing. Both are active observers. Betty is the current editor of the Toronto Centre newsletter *'Scope* while Steven is the Centre Treasurer and a valuable participant in all Centre observing activities.

One of the major problems which faces the *Newsletter* is the lead time for each issue. For example, by the time you receive this issue, the deadline for the December issue will have already come and gone and the issue will be ready for submission to the University of Toronto Press for typesetting. This makes it very difficult to make each issue "newsy" if we are dependent on articles and news which have already appeared in Centre newsletters. I therefore wish to urge Centres and members who are planning special events or are writing articles of a timely nature of general interest to consider submitting material directly to the *Newsletter* as well as to their own Centre newsletter.

We are always on the lookout for interesting photographs to go on the cover or accompany articles. Unfortunately, despite requests for photographs, we have only had a handful submitted to us in the past two years. Here is an opportunity for you to get yourself into "print" that requires a minimum of writing.

There are about half a dozen major conferences or camping/observing weekends organised by Canadian amateurs on an annual basis and reports on three of these are included this month.

I hope that you will enjoy this issue.

Comet Halley for Canadians

by Michael S.F. Watson
Toronto Centre

In this month's *Journal* appears an article on observing conditions for Comet Halley as seen from southerly or low northerly latitudes. Many observers, however, will be looking at the comet from less expensive (although colder) Canadian latitudes and will wish to know just where in the sky the comet will be located at the best observing times.

In the autumn of 1985, Halley is conveniently located in northern declinations and far in angular distance from the sun. Because it is so far from both the earth and the sun, however, optical aid will be required to see it. Not until sometime in the second half of December will Halley likely attain naked eye brightness. By that time it will be less than two months from perihelion and located in the western sky after sunset. For a period of several weeks in December 1985 and January 1986 the comet should be moderately bright and reasonably well located for observation.

Table 1 gives the altitude and azimuth of Comet Halley (a) at the end of civil twilight (i.e. sun 6° below the horizon) and (b) at the end of astronomical twilight (i.e. sun 18° below the horizon), for observers located at latitudes 44°N and 50°N for every four days between 20 December 1985 and 25 January 1986. After that date the comet will be too close to the sun for observation.

After perihelion on 10 February 1986 Halley moves into the eastern morning sky. Unfortunately, and as we all know by now, the comet descends quickly into southerly declinations, making observations difficult for northern hemisphere astronomers. Table 2 shows the same data as Table 1, but this time for the period from 1 March until 6 April 1986, and calculated for the beginning of astronomical and civil twilight, respectively.

The tables show clearly that the pre-perihelion apparition will be much more favourable than the post-perihelion appearance for Canadian observers. For example, one month *before* perihelion an observer at latitude 44°N (for example, Toronto) will see the comet $21^\circ.5$ high at the end of astronomical twilight in the evening sky; one month *after* perihelion, Halley will be only $3^\circ.3$ high at the beginning of astronomical twilight in the morning sky. Observers at the latitude of Edmonton (50°N) will never see the comet's head above the horizon before the start of astronomical twilight after perihelion.

It is well known that a comet's tail always points away from the sun. Before perihelion, the tail will be inclined sharply to the western evening horizon because the comet will be to the north of the sun in declination. After perihelion, the tail will make a very shallow angle (i.e. be close to horizontal) with the south-eastern morning horizon. The less favourable post-perihelion tail-horizon angle will be somewhat compensated for by the fact that the comet will be closer to the earth and the tail likely longer and brighter than before perihelion.

A factor which always affects the visibility of a comet is the presence or absence of the moon in the sky. A substantially illuminated moon located close to the comet will brighten the sky considerably and make observations of the comet difficult. The effect is important where it is sought to observe the comet in a completely dark sky, and less so when the comet is observed during twilight, when the sky is brighter anyway. The last column in each table shows the presence or absence of moon interference at the end or beginning of astronomical twilight. A "—" indicates that the moon will not be in the sky at the time. The letter "M" appears where the moon will be in the sky, but located more than 90° from the comet. An asterisk "*" appears beside dates when the moon is above the horizon and within 90° of the comet.

Before perihelion, Comet Halley will appear in a moonless sky during the period from 29 December until 11 January inclusive. New Moon is on 10 January. After 11 January, the waxing crescent moon will move closer to the comet, passing it on 13 January. From 12 January until the comet disappears in the solar glare around 26 January, the moon will be waxing, and always in the evening sky with the comet. The period between 29 December and 11 January inclusive is therefore the most favourable for moonless observation of the comet.

After perihelion, Table 2 shows that the middle of March is the best time to see the comet in a

TABLE 1

ALTITUDE AND AZIMUTH OF HALLEY'S COMET, END OF CIVIL AND ASTRONOMICAL TWILIGHT,
LATITUDES 44°N AND 50°N, 20 DECEMBER 1985 – 24 JANUARY 1986

Date	44°N				50°N				Moon
	Civil		Astronomical		Civil		Astronomical		
	Alt.	Az.	Alt.	Az.	Alt.	Az.	Alt.	Az.	
Dec.									
20	47.4	176.8	44.8	204.6	41.2	172.4	39.9	199.0	*
24	45.4	191.0	40.5	214.2	39.9	182.6	36.2	209.0	*
28	42.7	200.8	35.9	222.4	37.9	193.3	32.4	217.0	M
Jan.									
1	39.4	209.8	31.1	229.5	35.3	202.6	28.2	224.6	—
5	35.6	217.9	26.4	235.4	32.4	210.4	24.0	231.1	—
9	31.6	224.7	21.5	240.9	29.0	218.0	19.5	237.3	—
13	27.3	230.9	16.5	245.8	25.4	224.6	15.1	242.7	*
17	22.8	236.5	11.5	250.6	21.3	231.2	10.5	248.0	*
21	17.9	241.8	6.2	255.0	17.1	237.0	5.7	253.1	M
25	12.8	246.8	0.1	259.2	12.5	242.6	0.6	258.3	M

TABLE 2

ALTITUDE AND AZIMUTH OF HALLEY'S COMET, BEGINNING OF ASTRONOMICAL AND CIVIL TWILIGHT,
LATITUDES 44°N AND 50°N, 1 MARCH – 6 APRIL 1986

Date	44°N				50°N				Moon
	Astronomical		Civil		Astronomical		Civil		
	Alt.	Az.	Alt.	Az.	Alt.	Az.	Alt.	Az.	
Mar.									
1	0.4	113.2	11.0	126.5	—	—	7.7	126.8	*
5	2.1	117.3	12.1	129.7	—	—	8.4	130.8	*
9	3.3	121.3	12.8	133.9	—	—	8.7	134.8	—
13	4.3	125.3	13.4	138.6	—	—	8.6	139.0	—
17	5.1	130.5	13.4	143.7	—	—	8.2	143.7	—
21	5.7	136.2	13.0	149.6	—	—	7.4	149.2	—
25	5.6	143.0	11.9	156.5	—	—	5.9	155.7	M
29	5.0	151.6	5.7	165.5	—	—	3.5	164.0	*
Apr.									
2	3.5	163.0	5.7	176.4	—	—	-0.4	172.2	*
6	0.5	177.5	-0.4	190.3	—	—	—	—	*

moonless sky. New Moon is on 10 March and from 7 March (when the waxing crescent rises in strong morning twilight) until about 24 March, the moon will be out of the sky when the comet is at its highest at the beginning of morning twilight. As well, on 9 mornings between 16 and 24 March, the comet's altitude is within one degree of maximum, although it will still be extremely low in the sky. This will clearly be the best post-perihelion opportunity for Canadian observers to see the comet.

In summary, observations of Comet Halley from Canada after perihelion will be a real achievement and much better views can be expected in the two or three weeks following Christmas 1985. In each case, low horizons and the absence of light pollution will greatly assist observations and photographs.

Now Where Is That Comet?: A Correction

In the June 1985 *National Newsletter* (Vol. 79, No. 3), we printed an article describing the construction of a simple model of the orbit of Comet Halley. The author, Frank Shinn, has drawn our attention to an error in his model description.

Figure 1, on page L41 correctly shows the calibration of the Earth Orbit Plane with the degree marks beginning at zero on September 21. However, the March 21 date referred to in the text two paragraphs below is incorrect, as the Vernal Equinox is the position of the Sun on that date, not the position of the Earth which is opposite to that point.

Outburst of RS Ophiuchi

by Warren Morrison
Kingston Centre

Editor's Note: Canadian amateur and Kingston Centre member, Warren Morrison, discovered an outburst of recurrent nova RS Ophiuchi last January 26. It was the fifth recorded outburst since 1898 of this object, previous events having also occurred in 1933, 1958, and October 1967. The star's normal brightness is about magnitude 11 and at irregular intervals it suddenly brightens by five or six magnitudes before fading over a period of about 100 days to its normal magnitude. It is one of a small class of seven known objects of which only two (T Coronae Borealis is the other) reach naked eye visibility. The recurrent outbursts are thought to be due to interaction between two very close stars.

I have been monitoring the field of this star since 1974, and for ten years have found it to be slowly varying between magnitude 10 and 12 approximately. In January the field emerged from the solar glare into the morning sky, and on January 5, I inspected the field, not finding RS Ophiuchi, although a 9.8 magnitude neighbour star was seen in the twilight. There followed a long period of cloudy weather. Hence, I was not able to examine this region again until shortly after 6 a.m. on January 26. I was very surprised to see RS Ophiuchi shining brightly at magnitude 6.8. I assumed with all the cloudy weather that I had missed the maximum of light by several days and that it was now declining in brightness. However, to be on the safe side. I phoned Janet Mattei of the American Association of Variable Star Observers later that morning. This was the first she had heard of the outburst.

The next morning was cloudy, but before dawn on January 28, I easily observed the star at magnitude 5.2 with binoculars. It steadily faded thereafter, being 7.0 on February 3, 8.8 on March 3, and 10.3 on April 9. It was still slowly fading in late June, being at magnitude 12.2 on June 25. Had RS Ophiuchi been in the evening sky at the time of the outburst, many observers probably would have reported it. However, rising shortly before the sun on a winter morning, the star was relatively neglected by amateurs.

Another recurrent nova is T Pyxidis. Although at declination -32 degrees, the field can be viewed from southern Ontario from October to May. Since it was at maximum in 1890, 1902, 1920, 1944, and 1966-67, it may again be due for an outburst. Perhaps somebody from Canada who inspects this region regularly will be the first to detect its next outburst. Its coordinates are: right ascension 9 hours 02.6 minutes, declination -32 degrees 11 minutes (Epoch 1950.0). T. Pyxidis may reach magnitude 7 at maximum.

Reprinted from *Regulus*.

The August Perseids

by Ian G. McGregor

For amateurs throughout the northern hemisphere, planning to observe the annual August Perseid meteor shower is a yearly ritual. While not necessarily the best meteor shower (the December Geminid shower has been putting on stronger displays in recent years), it does occur at a favourable time of the year when the chance for clear skies and mild temperatures encourages extended periods of outdoor observing.

According to the *Observer's Handbook* the peak of activity for the Perseids would occur at about 2 a.m. local time on the morning of August 12. While the radiant (the point in the sky from which the meteors appear to come) had risen before midnight the best observing would take place between midnight and the beginning of morning twilight. Unfortunately August 12 was a Monday and not a good day for many potential observers who were not on holidays or could not report late to work on Monday. A call for interested observers at a July Toronto Centre meeting had drawn about two dozen individuals but for various reasons the observing expedition ended up consisting of a small number of observers.

Our observing site was the Long Sault Conservation area, about 100 km to the east of Toronto but a site where the lights of Toronto still dominate the western sky. Susan Challenger, Barbara Sinclair, Steven Spinney and myself went out in one car and were joined at the site by Bev and Noel Lewis-Watts. It was a cold, windy evening when we arrived at Long Sault around midnight. Ground sheets, sleeping bags, blankets, and chairs were set up while the occasional meteor crossing the sky evoked shouts and arm pointing before we could lie back and watch the evening's events unfold.

The emphasis of our expedition was on naked eye observation and the appearance of the rich starfields of the summer Milky Way rising high overhead through Cassiopeia, Cygnus, and down to the "Teapot" (Sagittarius) in the south was a splendid sight. Jupiter was a fine "bright star" and the noticeable geometric figures of the Great Square of Pegasus, the wishbone of Perseus, and the Summer Triangle formed excellent starting points for an evening of starwatching. But these soon lost their fascination as we observed more intricate detail in the sky above us. The Andromeda Galaxy, the Triangulum Galaxy, the Double Cluster in Perseus and the Hercules star cluster were all pointed out for those unfamiliar with these "old friends".

The official observations of the Perseids were made for two one-hour periods between 12:20 and 2:20 a.m. In the first hour, 66 Perseids plus 14 non-Perseid meteors were observed while the rate increased in the second hour as the radiant rose higher in the sky with 70 Perseids and 20 non-Perseids observed. Several bright fireballs and meteors leaving trails were observed with probably the favourite being a Perseid meteor which crossed the northern sky towards the Big Dipper at 2 a.m. and exploded like fireworks in all directions.

By 2:30 a.m. the wind chill had gotten to the best of us. The Pleiades star cluster had long ago risen in the east followed by orange Aldebaran and the waning crescent Moon. Our Perseid observing was over for another year but I will not forget the last celestial sighting of the morning as on my way home the planet Venus rose in the east not far from the Moon. The next morning these two bright objects would form a beautiful pair in the sky before sunrise but I expected to be fast asleep at that time!

Giacobinids 1985

by Peter Brown and Mark Zalcik
Edmonton Centre

October of 1985 had the potential of being a good month for meteor watchers with the chance of a better-than-average Orionid shower due to the closeness of its parent body, Comet Halley. But another shower, the Giacobinids, or October Draconids as they are sometimes called, also had the potential to present an eye-opening display this year.

Such would have been the case if the grandeur of past displays in 1933 and 1946 returned. The former produced, for a brief time, meteors at a rate of 350 per minute or 20 000 per hour. And the

second storm, though some three times weaker than the previous one, still dropped enough to make a difficult time of meteor counting for the post-war enthusiast.

Four decades after they put on their last spectacular exhibition, the Giacobinids are but a sparse collection of meteoroids, typically producing only about 5 meteors per hour on their peak night of October 8–9. The shower is thus presently classified as a minor one. Yet, if the correct conditions had occurred this year, new life may have been breathed into this fading relationship between planet and dust.

The Giacobinid generator, Comet Giacobini-Zinner, was at perihelion on September 5, just thirty-three days before the October Draconid meteors. It has an orbital period of 6.5 years, but close approaches to the comet's orbit occur once every thirteen years. In 1972, at Giacobini-Zinner's last favourable return, there was supposedly a good chance of a major meteor shower. Even though the Earth plowed through the swarm fifty-eight days after the comet passed, we brushed only 100 thousand km from its orbit. When compared with a separation of 1 million km in 1946, when the second storm occurred, it was apparent that there would be a great likelihood of another major event. However, activity was heightened little, if at all. Perhaps the orbit of the meteoroid stream, which is at the mercy of the planet Jupiter, may have shifted to bring about the disappointing result.

For the 1985 apparition, the Earth passed about 4.5 million km from the orbit of Giacobini-Zinner. It was believed that no meteor shower was likely although a major shower could not be completely discounted. A thorough watch for these meteors on October 8/9 may have proved fruitful for some observers.

The Giacobinids radiate from the head of the constellation of Draco the Dragon at right ascension 17^h06^m declination +54 degrees. The radiant is well-placed in the evening hours but becomes less favourable after midnight as it descends in the northwestern sky. The 1985 display favoured evening watchers, as a waning crescent moon rose about midnight. The meteors' velocity of 23 km per second makes the Giacobinids one of the slowest showers known. From studies done in 1946 by Dr. Peter Millman, it is also understood that the meteoroids associated with this shower are very fragile and tend to fragment at higher than usual altitudes above the Earth's surface. The shower has a duration of only about three hours in its concentrated region, so peak rates occur in a very narrow window.

The short-lasting period of peak activity makes it difficult for any one locale to experience the full force of the Giacobinids, if and when it appears. Yet a few brief checks of the night sky on the second Tuesday of October of this year may have resulted in an observer witnessing a unique and unforgettable experience.

Note: The authors would be pleased to receive reports of observations from this year's event, or correspondence regarding any other meteor showers. Write to Peter Brown, 181 Sifton Avenue, Fort McMurray, Alberta T9H 4V7, or Mark Zalcik, 80 Salisbury Avenue, St. Albert, Alberta T8N 0N6.

More Adventures in Good Observing

by Ian Stuart
Hamilton Centre

After listening to a talk by Bert Rhebergen at a Centre meeting and reading his and Bob Speck's articles in an issue of *Orbit*, I decided that it was high time for me to view Venus in the daytime.

It was last March 9 when Bert and I trekked to the Centre Observatory in an attempt to view a daytime Venus. The planet at this time was only six days from being at its maximum brilliancy of -4.1 . Bert had his 11-cm Tasco reflector up in about three minutes (he mumbled something about being able to set it up faster in darkness) and after making some rough calculations, he pointed the telescope to where he thought Venus should be. He looked through the main optics first (!), and there it was. He looked at it for about a minute, and then it was my turn. There, hung in the eyepiece, was a delicate, yellowish-white crescent surrounded by an unsettling field of azure blue. As I continued to look at it, I thought I saw some shading at the north-east limb. Then I observed what has won me the "Percival

Lowell” award from Clive Gibbons this year. I thought I could see ashen light on Venus. Bert was by no means sure, but he thought he saw it too. Later in the afternoon, we could no longer see what we thought we had seen. Apparently it is impossible to see ashen light in the daytime because it is lost to the brightness of the sky surrounding it in the field of view. It just proves that the human mind loves to complete a circle and will make what you want to see.

The highlight of that afternoon’s observing for me was when, after several minutes of straining my eyes and sighting along the telescope tube, I finally saw Venus with my naked eye in daylight. It was clear and unmistakable, but I had great difficulty focusing my eyes on it. More often than not, it appeared as two pinpoints of light. After initially spotting it, I deliberately let my eyes leave it then tried to pick it up again. The second time was much easier, but if you left it for more than a minute you had great difficulty spotting it again.

About a week later, on a clear night at the Observatory, the recollection of a night when Grant Dixon was using its 13-cm Marsh refractor came to my mind. Grant was defending the 13-cm as an instrument that would work fairly well on deep sky objects. After hearing a few snickers and many not so subtle clearing of throats, our then Observing Director got the bit between his teeth, went up into the dome, and knocked off some thirty Messier objects. Taking a page out of Grant’s book, I decided that I would give the 13-cm a go on some deep-sky objects in the constellation of Leo.

I started with Leo’s premier galaxies, M-65 and M-66. They looked quite nice through the instrument but these were the brightest objects of a deep-sky nature in the constellation. I decided to try and see successively dimmer objects, and so, I turned the telescope to M-95 and M-96. These objects were definitely visible although their shape was less defined than the first two objects. Next stop was a galaxy near the head of Leo that somehow was missed by Messier. It is known as NGC 2903 and is an Sb/Sc galaxy. Through the 13-cm, the bar-like middle was very pronounced. This object is very bright and through a medium-sized reflector is quite a nice sight. The final objects I tried to view were M-98 and M-99 in Coma Berenices which are in the area of the sky often referred to as the “Realm of the Nebulae”. It was here that I met my observer’s Waterloo as far as the Marsh telescope is concerned. These two galaxies are magnitude 10 and 11 respectively which, if memory serves, is very close to the theoretical limit for the instrument. At any rate, after straining my eyes for 45 minutes and seeing nothing, I gave up on these two. In fairness, the objects were fairly low, just clearing the treeline, and they may have been lost to light glow from Burlington, Waterloo and other communities.

My final spring adventure in observing occurred in April when Brian Carr graciously allowed me the use of his 41-cm f/4.5 Dobsonian-mounted reflector. Like all the handiwork Brian does, the reflector and mount are well-constructed and easy to use. The night was marginal, there was quite a lot of haze, but we figured it was worth having some fun with it anyway. With the exception of M-98 and M-99, I began by covering the same territory as I had done with the Marsh refractor. Naturally, all of the objects appeared brighter and more detail was evident, particularly in M-65, M-66, and NGC 2903. A 41-cm brings out a lot of the finer spiral nature of many galaxies. One of the best spirals to view is our old familiar friend, M-51, the Whirlpool Galaxy in Canes Venatici. In Brian’s telescope, the spiral arms begin to show themselves clearly. If the night had been clearer, it might have been possible to trace the connecting arm down to the companion galaxy. The next object we looked at was M-13 – the best globular star cluster in the northern sky. It was only about 35–40 degrees above the eastern horizon when we looked at it, and yet, it was the best view of M-13 I have seen since 1982 when I observed it through another 41-cm in Syracuse.

The final object we looked at on that marginal night was M-57, the Ring Nebula in Lyra. I chose this object for sheer devilment and to see just what the 41-cm could do. Lyra was only about 30 degrees above the horizon and the fainter set of stars between which M-57 lies were very difficult to see. When I finally found them through the finder, I moved the telescope to the target area, and there it was. It looked about as good as when I see it, using my 20-cm, as it is culminating. I am looking forward to seeing M-57 on a more favourable night when it is higher in the sky.

Well, this brings to an end this account of my adventures in good observing experienced last spring. Just a quick word of thanks to Bert for helping me to see Venus in the daytime for the first time, and to Brian Carr for letting me be in the driver’s seat of his 41-cm telescope. The sights seen through that telescope have whetted my appetite for the sights to be seen through the Centre’s new 44-cm telescope.

Reprinted from *Orbit*.

Starfest '85

by Dale Armstrong
London Centre

Editor's Note: This annual camping weekend held at the River Place, Mount Forest Ontario and organised by the North York Astronomical Association (N.Y.A.A.) has become a "must" event for many Central Ontario amateurs. This year's event took place over the August 9–11 weekend. In this report, Dale Armstrong describes the activities of the participating London Centre members.

Many members attended Starfest this year. It had been preagreed that all London members would set up at one location. Paul Brown, Eric Clinton and Jeff Bax were the first to set up and they staked out a good campsite. Eric had a 20-cm Newtonian, Jeff brought his new 10-cm Unitron refractor while Mark Sinkins brought our usual paraphernalia. This year we remembered to bring along a hammer (actually, three hammers!) to pound in our tent pegs. Soon after, Steve Sharpe and Grace Crawford showed up. Steve had his venerable 20-cm Newtonian and a pair of new Carl Zeiss 7 × 50 binoculars. Grace had her telescope, a 15-cm f/5 in a very simple, yet solid, fork mount. Don Tremblay arrived at the same time as Grace and Steve with his Tasco Schmidt-Newtonian telescope.

It was already dark when Mike Flegel, Peter Jedicke, Alister Ling and a friend arrived to set up at the site. Alister Ling, a member of the Montreal Centre who specialises in deep-sky observing, has seen over six hundred deep-sky objects using his homebuilt 25-cm f/4 and 32-cm f/5.6 reflectors.

At first the sky had not looked too good for observing but as it got darker the skies cleared and it turned out to be a very dry night which was, unfortunately, marred by some haze. We spent the night looking through each other's telescopes and talking astronomy. Steve's 7 × 50's provided incredible views of the sky. For example, the North America Nebula was extremely bright and easy to see. Later, we looked at Comet Giacobini-Zinner, several double stars and the blinking planetary nebula in Cygnus – NGC 6826.

Bright meteors usually elicit a shout from everyone who sees them, but invariably there is nothing to see. One exception was a bright Perseid which left a lingering trail for almost everyone to see and lasted 25 seconds before fading out. Another interesting event which occurred later in the evening was when the shadow of Jupiter's moon Io partially occulted the giant planet's third moon Ganymede. Around 4:45 a.m. I walked over to the 56-cm trailer-mounted Newtonian of Steve Dodson of Science North where Andreas Gada, organiser of *Starfest*, and Steve were trying to find Comet Halley which was at about magnitude 14. Unfortunately, the comet's low altitude coupled with moonlight and the approaching twilight made what would have been an early comet recovery impossible.

Saturday was a rough day for me owing to the fact that I had gone to bed at 5:15 a.m. and woke up at 8 a.m. I was not alone in this feeling as several other London members can easily attest. The formal talks began at 10 a.m. in the recreation hall and featured Dave Dobrzelewski who spoke about observing double stars and Barry Sherman who described the best ways to photograph Comet Halley. These were followed by short informal talks given by several amateurs including myself. After lunch we returned to the hall to listen to a very interesting talk, "Discovering the Ogre", by N.Y.A.A. member Bill Katz. Bill discussed his group's discovery of a possible optical gamma-ray emitter and brought us up-to-date on this object (see *Sky and Telescope*, July 1985). Following Bill's talk, Kai Millyard spoke about his experiences in Chile working as a night assistant for the Department of Astronomy of the University of Toronto.

By dinner time the sky had become completely overcast and we began to get periods of light rain. Convinced that if we stayed overnight we would end up sleeping in a tent while it rained all night, Mark Sinkins and I packed up everything and put it all in the car before the twilight talk at 7 p.m. Everyone else from London followed suit. The twilight talk presented by Dr. Tom Bolton of the University of Toronto was titled "The Origin of Comets". Unfortunately because of only three hours of sleep the night before I was unable to concentrate on the talk. Next year I am going to go to bed around 3 a.m.

Incredibly, and irritatingly enough, the sky cleared up as we drove back to London. Although we missed having a really dark sky for Perseid meteor observing Mark and I consoled ourselves with the fact that we would at least get enough sleep Saturday night to enable us to stay awake Sunday night for the shower's peak.

East Coast Observing Weekend

by David Chapman
Halifax Centre

This year's Camping Observing Weekend (COW) was held at Kedjimakujik National Park in south-central Nova Scotia on the August 9–11 weekend. Friday night we had a spot in the group campground site in the Park but on Saturday the Parks Canada staff arranged for us to use a special site in the Park normally reserved for staff. This area was actually superior to the original site for observing, since the horizon was better.

On Friday we had twenty-three participants including members, families, and guests, and representatives from the Halifax/Dartmouth area, Bridgewater, Digby, and the Valley. We spent the evening setting up camp, re-acquainting ourselves with each other, and "talking telescopes". The weather was uncooperative, being partly cloudy, but we did catch a few glimpses of Jupiter, the Milky Way, and a few deep-sky objects.

The next day we lost a couple of guests, but were pleased to welcome one of our more distant members from St. John, New Brunswick and his wife, who took the ferry over to join us. The day was spent hiking, swimming, canoeing, eating, or just being lazy (that's me).

That evening we had agreed to do a public stargazing session for the Park. We transported our telescopes to the beach at Jim Charles Point and set up at 2100 hours. In total there were nine telescopes including three small refractors, a C-90, a Meade 15-cm f/8 Newtonian reflector, a couple of C-8's, a home-made 20-cm f/5 Newtonian reflector, and a home-assembled Dobsonian-type 25-cm f/5 reflector. This impressive array of optical gear was used to view Jupiter and Saturn, some of the brighter deep-sky objects, and some double stars. We handed out star charts (courtesy of St. Mary's University Department of Astronomy), pointed out some of the major constellations and stars, explained the nature of the Milky Way, pointed out the planets, and talked about the Perseid meteor shower (one day before maximum). After the initial oral presentation the group of over one hundred people split up and visited the various telescopes resulting in a jumble of questions, answers, and delighted exclamations at the views offered. Many thanks to all of the members of the Centre who pitched in and helped out that night.

After the public session, we returned to our camp at about 2300 hours. We did a little observing in a spectacular dark sky before some clouds moved in. Some die-hards stayed up, yakking and hoping for improvement. Gradually the sky did clear although some haze remained. We saw a lot of Perseid meteors, looked at Jupiter's clouds and Red Spot, saw some incredible views of the Ring Nebula, the Great Cluster in Hercules, and the Dumbbell Nebula, and split the "double-double" of Epsilon Lyrae. We also found the periodic comet Giacobini-Zinner in Perseus (magnitude 9.5 but clearly visible with a fan-shaped tail). The Moon, past Last Quarter phase, rose about 0130 hours, but this did not dampen our enthusiasm (or at least, the three of us still up).

I had a personally frustrating experience trying to find the last unobserved Messier object on my list, M75, a small globular cluster in Sagittarius. It was setting in the southwest in a hazy and Moon-polluted sky, and I just could not find it. Next time, I guess.

All in all, the general reaction was that we had a fine weekend, and everyone is looking forward to the next occasion. We were even talking about having more than one per year. Of course, we have our regular monthly observing sessions, and I expect a good turnout next time, based on the interest during the COW.

Reprinted from *Nova Notes*

Avis

Chères amis amateur d'astronomie:

Vous constaterez que mon ancienne adresse de Rimouski n'est plus Valide parce que j'ai déménagé temporairement à Ottawa pour une période d'environ trois (3) ans. Mon nouvel emploi m'a forcé à ralentir mes activités astronomiques, mais ce n'est que temporaire. Ici le nombre de ciel clair est de

beaucoup supérieur à Rimouski et la pollution lumineuse est un problème moins grave que ce à quoi je m'attendais. J'ai élu domicile dans Orleans une banlieue à quelque 12 km à l'est du centre-ville. De là je peux distinguer assez bien la Voie Lactée. Je ne peux y faire de la belle photo comme à mon observatoire de Rimouski, mais quantité d'autres projets sont possibles. En tant qu'éditeur associé pour les membres francophones de la SRAC, je vous invite à me faire parvenir vos articles et rapport d'observation pour publication dans le NNL.

Au revoir

Damien Lemay
6230 Ravine Way
Orleans, Ontario K1E 2V4
Tel: res (613) 837-4381
travail (613) 560-3469

Across the R.A.S.C.

MONTREAL: Centre President Stew Marshall was in a traffic accident in the early summer and was on the mend during the summer. Monthly Wednesday night sessions are being held for active observers to encourage "hands-on" observation of the sky. Some discussions have been held with the French-speaking ESPACE club about combining efforts to build a large telescope. The Montreal Centre's Cedar Crest site and an unused 51-cm mirror are presently available.

NIAGARA: Several members were planning to visit the Strasenburgh Planetarium in Rochester in July. Steven Sharpe, an extremely active variable star observer whose monthly reports appear in *Whirlpool* and *Astronomy London*, is apparently getting the Centre's Observers Group chairman Marvin Scott interested in variable star observing. The Centre organised four mall displays and public star nights during the summer. In the June *Whirlpool* newsletter, Bob Winder reports on the completion of a 66-cm primary mirror and his plans to figure the 51-cm flat mirror over the next few months.

VANCOUVER: The Centre's new 10 minute promotional film *Stargazer* was shown at the Edmonton General Assembly and was very well received by all who saw it. A Summer Solstice Star Bash was held at Art Holme's place on June 22. A total of sixteen observing group and regular star parties were organised in the June-August period. Greg Soderling reports he has had contact with the Seattle Astronomical Society, a very active group interested in joint activities with Canadian amateurs.

TORONTO: The June Film Night featured three episodes from the Centre's monthly cable television program *Astronomy Toronto*. Michael Watson has recently acquired a 20-cm Schmidt camera and has been getting some breathtaking photographs of starfields. Very successful public star parties were held at Harbourfront in July and August. Many members are starting to make use of a new observing site to the northeast of Toronto which has superior skies to the increasingly bright Schomberg Observatory skies north of Toronto. A good contingent of members attended the Starfest '85 on the August 9-11 weekend. The Annual Banquet on Saturday, October 26 featured Fred Espenak of the Goddard Space Flight Centre as its guest speaker. At a rough count about 20 members will be in the southern hemisphere next April to observe Comet Halley. The Centre's newsletter *'Scope* is now being produced on a Macintosh computer with excellent results.

HAMILTON: Rob Allen reports the May meeting of the Niagara Frontier Council of Amateur Astronomical Associations (N.F.C.A.A.A.) in Buffalo was a great success. Consisting of astronomy clubs from southern Ontario and upper New York state, the N.F.C.A.A.A. meetings consist of a business meeting, reports from member clubs, paper sessions, and a luncheon or banquet. The Centre had an active summer of events including a planned corn roast, picnic, and star parties.

CALGARY: A public lecture on Comet Halley was held on October 9 featuring Stephen J. Edberg of the Jet Propulsion Laboratory and International Halley Watch as guest speaker. The Centre's three-week expedition to Australia next April to view the Comet still has spaces left. Contact Gail Milne of Anza Travel, Calgary at (403) 270-3701 for details. Members of the Centre were involved in several interpretative programs at provincial campgrounds during the summer. Father Lucien Kemble using a 28-cm telescope reports spotting Comet Halley at 4:15 a.m. MDT on August 6. Using a magnification of 166× he estimated the "faint glow" had a brightness of 14.5. This may be the first Alberta (or even Canadian) observation of the comet by an observer in Canada.

WINDSOR: The June meeting featured President Joady Ulrich giving what must have been a very interesting talk on our interpretation of the universe through music. Themes included creation, dawn, northern lights, stars, and space travel. Randy Groundwater was very active last spring doing astronomical nights with grade 5-8 students as part of an outdoor education program at Point Pelee Provincial Park. Four public awareness evenings on Comet Halley have been organised. The first two were in September and October, a third will be on November 21, and a fourth in early March.

Across the R.A.S.C. is a regular feature of the *Newsletter*. We need your contributions and reports of Centre activities if this feature is to be of interest and relevance to our readers. Deadline for February issue is December 1.

Due\$ Due

All members are reminded that their 1986 fees were due as of October 1, 1985. The society's 1986 membership year runs from October 1, 1985 to September 30, 1986 while the national publications, the *Journal*, the *Observer's Handbook*, and the *National Newsletter* are distributed for the calendar year. If you have not renewed by January 15, your name will no longer be on the Society's mailing list.

Annual fees are \$20.00 for regular members and \$12.50 for members under the age of 18 years as of October 1, 1985. Proof of age is required to be eligible for the reduced rate. Please note that about half of the Society's 20 Centres add their own surcharges to these national rates. Please consult your Centre Treasurer to whom your fees should be sent. Unattached members should send their fees directly to the National Office.

Centre Treasurers are reminded that your lists of 1986 members should be mailed to the National Office by December 31, otherwise your members may miss the February *Journal* mailing.

Renew now! Thousands of others will be!

Report of the June 1985 National Council Meetings

by Leo Enright
National Recorder

The National Council of the Society held two meetings on the occasion of the General Assembly in Edmonton, Alberta. Both were held on the campus of the University of Alberta. At both meetings the National President, Dr. Roy Bishop presided, and fourteen of the twenty Centres of the Society were represented.

Meeting of Friday, June 28

The principal agenda items of the first meeting included reports from all the officers and standing committees of the Society.

Peter Broughton, the National Secretary, informed Council that Dr. Stephen Hawking had accepted his nomination as Honorary Member of the Society and Mr. Arthur Covington had accepted Council's

invitation to become the Honorary President of the Society. It was also reported that continued efforts to obtain an Ontario government grant had been unsuccessful and the matter might be pursued further with the Ministry of Culture and Recreation. An offer by the Victoria Centre to have its Brydon refractor go on display at the National Office was withdrawn. A query about the role of the Gold Medal in the Society resulted in a four-member committee being set up to review its role. Ralph Chou, appointed National Treasurer in the spring, presented the 1986 Budget which, after the inclusion of an item to allow for a Speaker's Exchange Program, was approved.

The *Observer's Handbook* Editor, Roy Bishop, reported on the progress of the 1986 edition. A five percent increase in the price of the 1986 edition was approved by Council. Astronomy Day Coordinator, Leo Enright, reported on the success of this year's event and announced that next year the Day would be Saturday, April 19. *Journal* Editor, Alan Batten, brought forth a motion, approved by Council, that future appointments to editorships of the Society's publications be for a five-year period with renewals possible for terms agreeable to the editors and Council. Awards Committee Chairman, Franklin Loehde announced that the Service Award would be presented to Mr. Cam Fahrner (Calgary Centre) and the Simon Newcomb Award to Mr. Don Trambino, an unattached member. *National Newsletter* Editor, Ralph Chou, notified Council that with the Annual Meeting he would be resigning as Editor because of his new duties as Treasurer. Michael Watson, chairman of the Constitution Committee, presented a set of model Centre By-Laws which will be discussed at the September National Council meeting.

The President took note of the fact that Dr. Peter Millman, who had just completed his four-year term as Honorary President of the Society, had been a member of the Society for sixty years. A vote of appreciation was extended to Dr. Millman for his many years of service.

Meeting of Sunday, June 30

The second Council meeting immediately follows the Annual Meeting of the Society. At this time Council appoints its committees for 1985–1986. The following committees, with their chairmen, were formed: Awards (Franklin Loehde), Budget (Ralph Chou), Editing (Alan Batten), Finance (Ralph Chou), Historical (Peter Millman), Property (Kim Rowe), Constitution (Michael Watson), and Computer Utilization (Franklin Loehde). In addition, Leo Enright and Michael Watson were added to the Executive Committee as Members-at-Large. Both the new National Librarian, Brian Beattie, the new *National Newsletter* Editor, Ian McGregor, and the new Property Committee Chairman, Kim Rowe, were allowed to select additional members of their own committees.

The report of the ad hoc Committee on Computer Utilization was presented by Franklin Loehde at this time. The committee has been examining several possibilities for a word processor system for the National Office and the setting up of a communication service between and among the National Office and the Centres of the Society.

The next National Council meeting was scheduled for September 28, 1985 at the National Office in Toronto.

Note: Complete details of all business discussed at both meetings may be found in the Minutes of the Meetings which have been distributed to all Centre Presidents and National Council Representatives. The Minutes of the 1985 Annual Meeting of the Society are in the October 1985 issue of the *Journal*.

Abstracts of Papers Presented at the 1985 Edmonton General Assembly

Erwin Finlay-Freundlich, 1885–1964 by A.H. Batten, Dominion Astrophysical Observatory, Victoria, British Columbia

Freundlich achieved distinction primarily in his efforts to test the general theory of relativity, particularly by measurements of the deflection of starlight passing by the Sun. His hope to measure this at an eclipse in August 1914 was frustrated by the outbreak of the First World War.

Media Coverage of the Solar Eclipse Expedition of 1860 to Northern Canada by J.E. Kennedy, University of Saskatchewan, Saskatoon, Saskatchewan

Extensive press coverage was given to this expedition led by Nova Scotian born astronomer Simon Newcomb in the *Nor'Wester*, a newspaper published at Upper Fort Garry between 1859 and 1869. A review of the surprisingly accurate journalism was presented.

To the Moon, Alice! by C.A. Rutkowski, Winnipeg Centre, Winnipeg, Manitoba

Though often overlooked in favour of more exotic astronomical objects, the Moon has played an important role in the development of world culture. The past and present folklore surrounding the Moon is fascinating to explore and examine in detail.

Determination of Sunspot Latitudes by H. van Asperen, Kingston Centre, Kingston, Ontario

Sunspots can be observed by projecting an image of the Sun onto a screen. By consideration of the direction and axis of solar rotation, the latitude of sunspots can be calculated.

A New Cosmological Model of the Universe by R.S. Iyengar, Mount Allison University, Sackville, New Brunswick

The universe is described in a new model in which the universe is temporarily infinite, spacially bounded, and pulsating. Space, time, matter, and anti-matter were considered.

Comet Occultations by P. Broughton, Oakwood Collegiate Institute, Toronto, Ontario

Occultations of stars by comets have the potential to yield information on the size of cometary nuclei and the composition of the coma. An occultation by P/Halley on December 2, 1985 is of current interest for observers.

Daytime Observations of Venus at Inferior Conjunction by Fr. L.J. Kemble, Calgary Centre, Cochrane, Alberta

The April 1985 inferior conjunction of Venus exhibited one of the widest apparent separations of Venus above the Sun. Observations of the planet made on the days immediately before and after conjunction were described as well as other near-Sun observations of other planets.

The Daytime Fireball of March 2, 1985 by K. Finstad, R. Folinsbee, D. Hube and D. Smith, University of Alberta, Edmonton, Alberta

Residents of northern Alberta and the Northwest Territories were witness to a rare daylight fireball in March 1985. Several dozen first-hand reports allowed a relatively accurate location for the final burst(s) to be determined and a potential fall area identified.

A Textbook Case by N. Sperling, Oakland, California

Astronomy textbooks sometimes deviate from good science and overemphasize knowledge acquired just before they were written. Writers, illustrators, and publishers have committed major errors. A recent textbook was examined as a case in point.

Free Fall, A Central but often misunderstood Concept in Astronomy by R.L. Bishop, Acadia University, Wolfville, Nova Scotia

A majority of university science students and virtually all of the lay public do not appreciate Newton's realization that astronomical bodies are in free fall. Using common misconceptions found in freshman physics and astronomy courses, a plea was made to educators and science writers to use the physics of the year 1687.

Astronomy Education in Saskatoon Schools by R. Waldron, Lester B. Pearson School, Saskatoon, Saskatchewan

The Saskatoon Public School system has undertaken several innovative programs including the use of two portable planetariums, sponsorship of a solar eclipse expedition in 1979, field trips to a university observatory, purchase of telescopes, and curriculum plans for Halley's Comet return.

Stargazer by D. Dodge, Vancouver, British Columbia

A project was undertaken to produce a 10-minute audiovisual show for the 1985 Astronomy Day. The successful and inspirational show *Stargazer* was shown.

The Organization of Satellite Centres by D. Parker, Bridgewater, Nova Scotia

The membership of the Halifax Centre is distributed in clumps throughout the province. This encourages the formation of satellite Centres which can be supported by the main administrative Centre but organize their own meetings, star parties, and fundraising activities. The Lunenburg Astronomy Club was used as an example.

Astronomy Day Activities by M. Grey, National Museum of Science and Technology, Ottawa, Ontario

In cooperation with the Ottawa Centre, a successful 1985 Astronomy Day program was held. One activity featured a competition for grade 4 to 8 students from eighteen participating local schools titled "Invent an Alien" which could be used by other groups at future Astronomy Days to encourage greater public participation and media attention.

The Origin of the Constellations: A Cosmic Puzzle by I. McGregor, McLaughlin Planetarium, Toronto, Ontario

Both amateur and professional astronomers make frequent use of the names of the constellations. Were they invented by bored shepherders over thousands of years or is it possible to detect signs of purpose in their structure suggesting their invention at a particular time and place?

The Heavens in Colour by M. Watson, Toronto Centre, Toronto, Ontario

A series of astrophotos taken in the past year illustrate ten lessons in astrophotography, including the beneficial effects of stopping down large aperture lenses, the use of colour correcting filters, the properties of high-speed films, and the exceptional resolution and fine colour rendition achieved with a Schmidt camera.

A Comet Search Program by D.H. Levy, Kingston Centre, Tucson Branch, Tucson, Arizona

A description of the discovery of Comet Levy-Rudenko in 1984 was highlighted by personal thoughts on observing and studying the sky. Rather than "telling the sky to show an object as at a typical star party", the author "looks at the sky and lets it make an offering". The discovery of the comet was the "ultimate personal contact between an observer and the objects he studies".

A Special Night of Observing

by Randy Attwood
Toronto Centre

The evening of Saturday, August 3 will long be remembered by myself, Betty Robinson, Ian McGregor and Bob May as a special night of observing. It started at 9:17 pm when, as the last bit of twilight disappeared, Betty, Ian and myself watched the space shuttle orbiter Challenger pass directly overhead. It was visible for about three minutes and was as bright as or even brighter than Venus at its maximum. We followed it with a C8 at 160 power, but were unable to see any detail – the object was just too bright.

As the sky darkened, we observed a wealth of detail on the planet Saturn. Cassini's division was obvious with the same telescope at 160x and two distinct dark cloud bands were visible stretching across the planet. Several satellites of Saturn were visible, with Titan the most obvious.

Once the skies darkened we observed the planet Uranus, which will be in the news next January when Voyager 2 passes by. We observed several double stars as well as clear views of M13 in Hercules and M57 in Lyra. This was a little surprising since our observing site was in Mississauga, just a few kilometers south of Pearson International Airport.

Jupiter, just eight hours from opposition, became well placed to observe. All four Galilean moons were visible. By looking in the *Observer's Handbook*, I noticed that Io had just appeared from behind

the planet but, unfortunately, no eclipses or transits would take place that night. Unfortunate because the seeing was excellent for a while. Several dark cloud bands were resolved into two or three more bands of varying shades. When Bob arrived, we continued to observe Jupiter as a strange disruption in one cloud band began to appear on the limb. Since Jupiter rotates approximately once in 10 hours, it was not long before the entire strange cloud pattern was visible. We realized that we were seeing something on the planet which is very rare these days – we were seeing the Great Red Spot. However, over the past 10 years or so, it has degraded into the Mediocre Pale Patch. Meanwhile, two of the Galilean satellites were approaching to the point that we saw the two images merge into one and then split again – a great test for the telescope for these quickly changing “double-stars.”

To close off a beautiful evening, the waxing gibbous moon rose over the houses and sunset could be seen across Mare Crisium.

The Unusual Auroral Outburst of August 12–13, 1985

by **Leo Enright**
Kingston Centre

I would like briefly to share my observation of the unusual auroral activity of the night of August 12–13, 1985 and am wondering if other observers in various parts of the country have recorded reports of similar observations on that night. One other member of the Kingston Centre, Mark Sorensen, made a very similar observation from a site thirty kilometers from Sharbot Lake.

In general, during the several months previous to this auroral outburst I observed only very limited auroral activity. Occasionally there were nights when a faint glow was seen low in the north, with generally almost no pulsation or other activity observed. On the night previous to the one with which I am concerned, namely August 11–12, I saw absolutely no aurora at all, during a night spent observing the Perseid meteor shower.

The night of August 12–13 was very unusual because of the activity in the north and up to the zenith where there was the swirling of coronal activity, but most especially because of the band from east to west. The northern activity covered over 100 degrees of azimuth centred on the north point, was generally active with double arcs, flaming, and spikes up to 50 degrees in altitude and sometimes to the zenith, and lasted from when I began observing shortly after 10:30 E.D.T. (02:30 UT) until midnight – 12:00 E.D.T. (04:00 UT) – with quite subdued activity thereafter, in fact, generally only a bright glow until 2:00 a.m. (06:00 UT) when clouds made it impossible to continue observing. The band was only the second of its kind that I recall seeing; it stretched from horizon to horizon, east to west, crossing the Milky Way at almost right angles, at first in the constellation Sagitta, and later moving southward a little and crossing in Aquila just south of Altair. The band was 4 to 5 degrees wide and was more intense in its western half; for a while it had very intense bars, like steps, within it in the area where it crossed the Milky Way. The whole sky took on the appearance of a giant letter “X” with the Milky Way forming one bar and this band-aurora forming the other. This band did not last as long as the activity in the north. It was seen only from the time I began observing about 10:30 E.D.T. (02:30 UT) until about 11:15 (03:15 UT), that is, for less than an hour. The entire aurora – both the northern aurora and the band across the sky – was not a very colourful one, with no reds seen and only slight hints of green; yellowish-white was the predominant colour.

The previous and, I think, the only other occasion when I have seen an east-to-west band aurora was on the night of August 29–30, 1978 from 04:40 to 05:10 UT, about seven years ago. On that occasion I also described the colour as mainly white with a few hints of yellow and perhaps some yellow-greenish tints. On that occasion the aurora appeared to rise in the east and cross the Milky Way and was not as defined in the west as in the east.

It is interesting to note that it was a time of very low sunspot activity with very few sunspots seen during the weeks before and after this auroral outburst. In fact, on several of the days both before and immediately after this strange aurora not a single sunspot was visible. Of course, there may well have been a solar flare of which I am unaware, at the time of writing this report.

I would be interested in hearing of other reports of this unusual one-night auroral outburst. My address is: Box 196, Sharbot Lake, Ontario.