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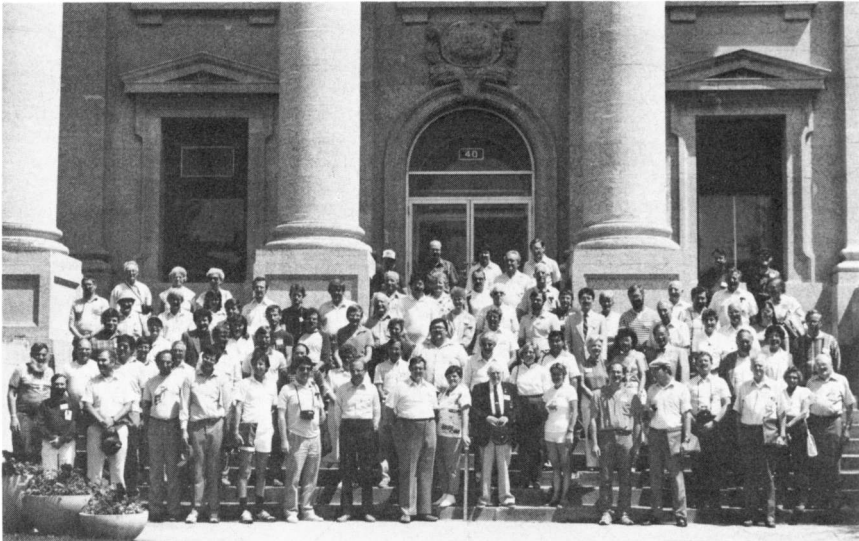
# NATIONAL NEWSLETTER

Royal Astronomical Society of Canada

Supplement to the *Journal*

Vol. 80, No. 4 August 1986

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Group photo of delegates to the 1986 Winnipeg General Assembly. This successful four-day event highlighted the Society's year and helped to celebrate the Winnipeg Centre's 75th anniversary.

## NATIONAL NEWSLETTER

The *National Newsletter* is a publication of the Royal Astronomical Society of Canada and is distributed together with the Society's *Journal*. Inquiries about the Society should be directed to its National Office at 136 Dupont Street, Toronto, Ontario, Canada M5R 1V2.

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Deadline for December issue is August 15.

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### Editorial

by Ian G. McGregor

A summer highlight for the Society was the splendid General Assembly hosted by the Winnipeg Centre. Members from across Canada and from as far away as Japan were present for the four days of business and socializing which makes these events something to look forward to each year. From the viewpoint of this "veteran" of many years of general assemblies hosted by centres across Canada, the Winnipeg G.A. was most satisfactory with good advance planning and work by the Centre much in evidence. One especially enjoyable feature was the generally unrushed schedule of events which allowed time for casual conversation between members of different centres. A full report on the General Assembly will appear in the October *National Newsletter*.

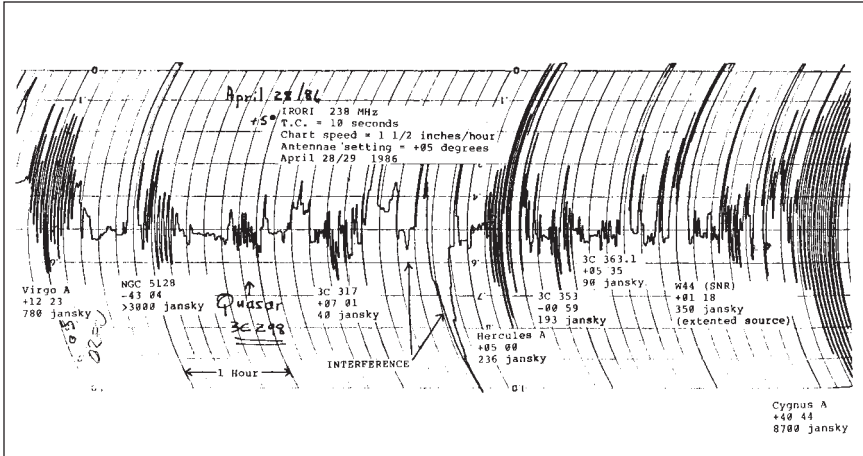
On the first evening I visited the Centre's Glenlea Observatory and was most impressed, especially with their new dome now in place. An added bonus was a beautiful aurora display covering half the sky—a rare experience for this southern Ontario city dweller. Those Winnipegers sure know how to add special events to a gathering!

On a different subject the last three issues of the *Journal* and the *National Newsletter* have been somewhat late in getting to the members and I must acknowledge some responsibility. This past spring the unexpected death after a lengthy illness of a dearly loved member of my immediate family was a terrible blow and has taken much of my time in recent months. Things will improve as time passes. I especially wish to acknowledge the effort and patience of the University of Toronto Press in helping during this difficult period.

And finally, I wish to welcome a new member to the staff of the *Newsletter*. Well-known Canadian amateur David Levy, member of the Kingston Centre and resident of Tucson, Arizona, will be writing a regular column starting with this issue. A recipient of the Society's prestigious Chant Medal in 1980 and co-discoverer of Comet Levy-Rudenko in 1984, David has authored or co-authored three books on observing. These are: *The Universe for Children*, 1984; *The Joy of Gazing*, 1985 (now in its second edition); and most recently, *Observe Comets: The Association of Lunar and Planetary Observers Guide to Cometary Studies*, 1985. I am sure we can all look forward to David sharing with us his knowledge, experience, insight, and perhaps most of all, love of astronomy.

# First Radio Quasar Observed by Amateur

by Frank Roy  
Ottawa Centre



The radio quasar 3C 298 along with eight other radio sources are identified on this chart recording made by Frank Roy of the Ottawa Centre.

On April 29, 1986, I observed the radio quasar 3C 298 using the Ottawa Centre's Indian River Observatory Radio Interferometer (IRORI). This quasar is listed in the Third Cambridge Catalogue as having a flux density of 47.1 jansky ( $1 \text{ jansky} = 10^{-26} \text{ Wm}^{-2} \text{ Hz}^{-1}$ ) at 178 MHz. Its position is Right Ascension 14h 19.1m, declination  $+06^{\circ} 29'$  (2000.0) and it is visible as a 16.8 magnitude object in the constellation of Virgo. It has a redshift of  $z = 1.436$ .

The radio interferometer at IRO is a transit instrument consisting of two parabolic cylinders, 15m by 5m in area separated by 180m in the east-west direction. I observed the radio quasar at a frequency of 238 MHz with a time constant of 10 seconds. The observation was made possible by the recent installation of low noise GaAsFET amplifiers with a measured noise temperature of 60°K. The recordings are in the form of interference fringes, with a fringe period on the equator of 96 seconds.

At our observing frequency, 3C 298 has a radio brightness of 39 jansky. In the accompanying Figure, eight other sources can also be seen (Virgo A, NGC 5128, 3C 317, Hercules A, 3C 353, 3C 363.1, W44, and Cygnus A). The antenna beamwidth in declination is about 15 degrees so that each record shows all the detectable sources in a strip of 15 degrees wide. Strong sources can be seen when the antennae are pointed more than 15 degrees away. In fact, extremely strong sources, such as Cygnus A (flux density of 8700 jansky at 178 MHz) can be observed whenever they are close to the meridian, irrespective of the antennae declination.

The most interesting aspect of this observation is that this is probably the only authenticated radio observation of a quasar by amateurs, making the IRORI the first amateur radio telescope to observe a radio quasar. In fact we can detect sources below 10 jansky with a time constant of 10 seconds. Encouraged by this progress, we hope to eventually be able to detect radio pulsars.

## REFERENCE

*Sky Catalogue 2000.0*, Volume 2, Alan Hirshfeld and Roger W. Sinnott and *Radio Astronomy* by John Kraus, 2nd Edition.

For more information on radio astronomy see the series of articles by Ken Tapping in the *National Newsletter*, 1978, 72, nos. 1-4.

## Across the R.A.S.C.

WINNIPEG: After hosting an excellent 1986 General Assembly of the Society, many members are we are sure planning a restful summer. In the Summer issue of *Winnicentrics*, Centre President Stan Runge reported on highlights of the year's activities including four Halley Skywatches which increased Centre membership, the new dome for the Glenlea Observatory, and plans for teaching the many new members with their new telescopes how to use those telescopes.

CALGARY: Editor Brian St. Goddard is trying to fully computerize *Starseeker* but still has a few glitches to clear up. The Centre traditionally presents an award for the best astronomy project at the Calgary Youth Science Fair. This year's winner is Keith Hitchon, Western Canada High School, for his project "A Proposed Method of Expressing the Initial Stellar Mass Distribution of a Globular Cluster." Keith won a one-year membership to the Centre, a trophy plaque for himself, and a trophy to be displayed at his school. Calgary also awarded a one-year membership to the two millionth visitor to the Calgary Centennial Planetarium. An estimated 1,070 people visited the planetarium on Astronomy Day.

HALIFAX: A high percentage (20%) of its membership are life members – rivaling the Ottawa and Victoria Centres. The Annual Camping Observing Weekend (COW) was held August 1–5 at West Point, Prince Edward Island. Darren Parker reports that Halifax is the leading Centre in the sales of the *Observer's Handbook*. It is the Centre's second most important source of revenue after membership fees and has helped to avoid a surcharge being added on to the regular fees.

EDMONTON: Many members travelled to Arizona for comet watching and sightseeing at the Kitt Peak and Lowell observatories. The spring issue of *Stardust* reports that the Edmonton Space Sciences Centre is planning to offer a workshop "to explain the many influences Comet Halley has had and will still have on our personal lives and of course, world politics."

HAMILTON: The Hamilton observing site has been renamed the Leslie V. Powis Hamilton Centre Observatory as a tribute to the man who did so much towards establishing a permanent observatory. The inside of the Marsh building has been completely redecorated and reorganized thanks to a special committee. The Marsh telescope has also been motorized. In June, a garage sale was held as a fundraiser. As well, a special reception was held on July 7 with Flamborough Town Council as a first step to resolve the observatory's light pollution problems.

MONTREAL: Montreal Centre now has its own telephone number (514 845-2612). It is listed in both the white and yellow pages of the phone books. In May, the first open house and telescope clinic was held at the observatory. A trip to the Mont Megantic Observatory for September is being organized by Jimmy Letourneau.

VANCOUVER: Rain held the number of visitors to Astronomy Day down to 100. Preliminary plans are being drawn up for the construction of permanent telescope piers at the Campbell Valley observing site.

TORONTO: The agenda has been set for the 1987 General Assembly to be held May 15–18. As so many members headed south in the early spring for Halley-hunting, the celebration of Astronomy Day was rescheduled to August with the lakeside Harbourfront as prime location.

NIAGARA: Spring activities were highlighted by a library display at the Centennial Library in St. Catharines and a well-attended banquet at the well-known Skyton Tower overlooking Niagara Falls.

OTTAWA: *Astronotes* reports the Centre membership is now 270 with one-third of this number having joined since September 1985. A successful Astronomy Day was held at the National Museum of

Science and Technology. Activities included a display of Real Manseau's replicas of antique brass astronomical instruments, talks and solar observing. Sandy Ferguson reports that a variable star observing program is being held during the summer.

SASKATOON: There was a respectable turnout for Astronomy Day with the Centre's activities featuring telescope displays, cameras, reference materials, display posters and a computer donated by a local department store.

*Across the R.A.S.C.* is a regular feature of the *Newsletter*. Centre Editors and/or Secretaries should send reports and newsletters to the Newsletter Editor. Deadline for the December issue is October 1.

## New National Officers

Four changes took place to the Society's National Executive Council at the Winnipeg Annual Meeting. Mrs. Mary Grey of the National Museum of Science and Technology in Ottawa is our new National President for a two year term. She succeeds Dr. Roy Bishop of Acadia University, Nova Scotia who has completed his term of office. Dr. Bishop now moves to Immediate Past President and joins Mr. Franklin Loehde as a Past President. Dr. Ian Halliday now steps down as one of the Society's past presidents. Dr. Lloyd Higgs of the Dominion Radio Astrophysical Observatory in British Columbia moves from Second Vice-President to First Vice-President. Mr. Damien Lemay of Ottawa is the new Second Vice-President and Dr. B. Ralph Chou of Toronto starts his first full term as National Treasurer.

We welcome Mary, Lloyd, Damien, and Ralph to their new positions and thank Roy, our outgoing president, and Ian for their dedicated service to the Society.

## Jean Meeus Wins Award

Jean Meeus, a meteorologist at the Brussels Airport in Belgium, has won the coveted Amateur Achievement award in astronomy. The international award, given each year by the Astronomical Society of the Pacific, recognizes outstanding contributions made to astronomy by amateurs.

The Society cited Mr. Meeus's many achievements in the area of computational astronomy, where he has made a world-wide reputation for himself. Not only has he performed important astronomical calculations that few others have done, but by means of his books and articles, he has taught others to do the same. Through his work, both professional and amateur astronomers have had much easier access to accurate celestial positions and to predictions for such astronomical phenomena as eclipses, conjunctions, occultations, and transits.

He is the author of a number of books in this area, particularly *Astronomical Formulae for Calculators and Astronomical Tables of the Sun, Moon, and Planets*. In addition, he has collaborated with the Austrian astronomer Hermann Mucke on a *Canon of Lunar Eclipses and a Canon of Solar Eclipses*, each covering a period of 45 centuries.

Mr. Meeus wrote several influential articles debunking the so-called "Jupiter Effect" (that the alignment of the planets might lead to terrestrial catastrophes), a notion discredited in good part through his efforts. His articles have appeared in astronomy magazines both in the United States and Europe.

He is currently vice-president of the Belgian Vereniging Voor Sterrenkunde (Association for Astronomy). In 1981 a newly discovered asteroid was named "2213 Meeus" in his honour.

The Astronomical Society of the Pacific was founded in 1889 to advance the science of astronomy and serve as a bridge between astronomers and the public. The Amateur Achievement Award is one of five major awards presented each year by the Society.

## Comet Halley from the Galapagos Islands

by Betty Robinson

While for travellers planning to see Comet Halley, Australia and New Zealand were perhaps the most dependable in terms of weather, an opportunity to participate in an Halley excursion to the Galapagos Islands was something not to be missed. As the astronomy coordinators for this trip, Randy Attwood and I spent 11 days in Ecuador and the Galapagos during April 1986. There were seven other Toronto Centre members also on the trip: Robert May, Anne Waterhouse, Walter MacDonald, Steve Chomniak, Lisa Truant, David Mills Sr. and David Mills Jr. Although a physically demanding trip, our decision to visit the Galapagos Islands was an appropriate one. Since astronomy is the study of life itself, what better place to observe than the Galapagos Islands, where the famous English naturalist Charles Darwin (1809–1882) collected information that eventually contributed to his, at that time, heretical, theory of evolution by natural selection.

An archipelago of 19 islands, the Galapagos Islands lie 1,000 km west of Ecuador on the equator. There are 13 major islands, six minor islands and 42 islets. Although the islands are on the equator, the strong Humboldt ocean current from the south cools the air, making the islands home to not only tropic birds but also birds more characteristic of arctic and subantarctic waters such as penguins and albatrosses.

Officially discovered in 1535, the islands used to be called Las Islas Encantadas or “bewitched islands.” Again, the powerful Humboldt current is responsible. The navigators of the mid-1500’s named them so because the current drew their ships off course so much they would end up at the Galapagos – as if the islands were bewitched.

Because of their isolation, the flora and the fauna evolved independently of the rest of the world. There are species of tortoises, birds, and plants found only in the Galapagos Islands. More astonishing, the evolution is localized even further – there are 10 different species of tortoise, with each island having its own. A week-long visit to this “laboratory of evolution” is a week-long lesson in natural history.

Last autumn at the Toronto Centre annual banquet guest speaker Fred Espenak asked me, when he heard about our expedition, if Charles Darwin had been in the islands at the right time to see Comet Halley during its 1835 return.

Published material on the 1835 apparition of Comet Halley is meagre. The return was bright, especially from the southern hemisphere. Recovered in August 1835 in Italy, the comet was naked-eye by late September and reached perihelion in mid-November. The maximum magnitude was +1; maximum tail length was 30 degrees. It was reported that during October, when at a distance of 0.4 astronomical units from the Earth, the comet became the most conspicuous celestial body in the sky with the exception of the sun and moon. On the night of October 14, it was visible all night among the stars of the Big Dipper with a 20 to 25 degree tail. By October 19, the tail was 30 degrees in length. Subsequent research told me that Charles Darwin was in the Galapagos Islands from September 17 to October 20, 1835. He must have seen Comet Halley from the Galapagos and elsewhere, during his five year voyage (1831–1836) on HMS Beagle.

I was able to locate three letters to and from Charles Darwin which mentioned Comet Halley. The appropriate excerpts are as follows:

*Letter from Charles Darwin to J.S. Henslowe (Darwin’s geology mentor), April 11, 1833.*

“We are all very curious to hear something about some great Comet, which is coming at some time: do pump the learned and send us a report.”

*Letter from J.S. Henslow to Charles Darwin, August 31, 1833*

The comet you speak of is expected in 1835, according to calculation – but it seems very doubtful whether the calculation is correct. The papers of course talk nonsense about it, but it is really something out of the ordinary cometical occurrences.”

*From Catherine Darwin (Darwin's sister) to Charles Darwin, October 30, 1835*

"... I suppose you saw the Comet in a different month from what we did in England; the middle of October was the best time for seeing it for us, but it was so hazy all the month, that it could not be seen well at any time. Erasmus (Darwin's brother) went to look at it with Dr. Holland through Sir James South's great telescope\* but there was such a mist, that it could be seen no better than with the naked eye. We had your friend Major Bayley to dine here not long ago, and he went out in the cold with me to look at the Comet through a Telescope. I saw it pretty well at last, but he could not."

\*South's telescope had a 12-inch object glass, the second largest in the world at that time.

The fact that Charles Darwin was a naturalist is not the only reason to suspect that he may have seen the comet. He did learn some astronomy, specifically relating to celestial navigation, so he wouldn't appear ignorant to the crew of HMS Beagle. He also made a point of visiting John Herschel, son of William Herschel who discovered Uranus, on the last leg of his famed journey, when he travelled to South Africa before returning to England.

The possibility that Darwin saw Comet Halley from the Galapagos Islands added tremendously to an already exciting trip.

Although an airline flies regularly to the Galapagos, once you arrive, you must spend the rest of your trip on a cruise boat. Furthermore, visitors are not permitted to go ashore at night. So as amateur astronomers not content with just looking at the sky, we had to request special permission from the Galapagos National Park Service to go ashore at night to photograph. We did receive permission, but lugging telescope and camera equipment for six people back and forth was a pain. However, out of the four nights ashore promised to us, only one was clouded out.

We planned our comet trip for the first two weeks of April, when Halley would make its closest approach to the Earth. On April 5, our first night in the islands, we watched the comet rise, naked-eye against a pitch-black sky and a blazing southern Milky Way. The tail was largely fan-shaped, but we could see an approximately four degree dust tail. We could not see the gas tail. The coma was very bright, and appeared the size of the full moon.

By April 11, closest approach, the curved dust tail had essentially disappeared; the fan tail was still obvious and the coma still large and bright. Our many photographs on a variety of films still did not produce any appreciable tail. However, Randy, Bob, and Walter were able to capture the lovely colours and striking dust cloud/Milky Way contrasts in the southern skies.

Our daytimer excursions in the Galapagos were full of delights. Each day we visited one, sometimes two of the islands, discovering the Galapagos on our own. We saw a seemingly endless variety of birds, animals, fish, flora, and even different types of lava. Some of the many highlights were blue-footed boobies, the giant tortoises, dolphins, land and marine iguanas, penguins, albatrosses, flamingos, doves, hawks, and sea lions. In fact, on the last day of our trip, some of us swam and played with the sea lions.

Our visit to the Galapagos islands was more than a comet expedition: it was an adventure in natural history.

## **Amateur Symposium in France**

A symposium on "The Contributions of Amateurs to Astronomy" is being hosted in June 1987 by the Société Astronomique de France. The main goal of the symposium is to enable amateur and professional astronomers to meet together and discuss cooperative projects and common concerns with attention to amateur participation in observing programmes, historical research, and the teaching and popularization of astronomy. The five-day event will have English and French as working languages. Requests for invitations should be sent before October 31, 1986 to Société Astronomique de France, 3, rue Beethoven, 75016 Paris, France with a 20 line summary of proposed papers.

## Bright Outer Planets

by Philip Mozel  
Toronto Centre

Now that all the Halley excitement is receding with the comet, we can turn our thoughts, and telescopes to other rewarding and exciting targets. Currently, three bright outer planets are still present in our skies and this summer provided excellent subjects for regular observation.

Mars, the Red Planet, reached opposition on July 10 and six days later was the closest (60 million kilometres) that it has been to the Earth since 1971. It therefore has presented a large, bright target. If you have grown tired of driving away from city lights in order to spot fuzzy celestial snowballs, then Mars is for you. At better than magnitude  $-2$  through most of the summer, locating the planet, even in light polluted skies has been no problem. But as the autumn passes, it will rapidly fade.

Every two years Mars comes to opposition but its low southern declination this year is a hindrance although numerous studies can still be undertaken. Keep in mind that Mars is the only planet whose actual surface can be clearly seen and profitably studied from Earth. We may watch for shifting cloud and haze patterns, dust storms, and changing albedo features. The southern polar cap is tipped towards us so we can witness it shrinking as Martian spring progresses. This season began in the planet's southern hemisphere on June 1 so the pre-opposition period revealed a prominent cap.

A giant instrument is not required to enjoy the changing face of Mars. A maximum disk diameter of 23.2 seconds of arc was achieved in July but despite its declining apparent size the planet has something in store for almost any aperture for the balance of the year. To enhance these observations, the use of filters is recommended. For example, an orange or red filter will increase the contrast of surface details while a violet filter can often dramatically highlight high altitude clouds. Sequential use of the proper filters allows one to construct a cross-section of the Martian environment from ground level to the uppermost atmosphere. A drawing in each colour will provide a permanent record of the evening's work while the table on page 111 of the *Observer's Handbook* allows one to determine what hemisphere of Mars has been under study. It is always exciting to compare a drawing with a topographic map of Mars to see if, for example, the clouds one recorded in green light were associated with one of the great Martian volcanoes. Here are some highlights:

*August:* South polar cap retreating rapidly.

*Late September:* White clouds may be present. Elysium may be bright. Frost patches may appear on light areas. Syrtis Major narrow.

*Early October:* Hellas may appear as a bright spot. Dust clouds may appear in the southern hemisphere.

*Late October:* Beginning of southern summer and northern winter. Yellow dust clouds and low contrast of disk features may be noticeable.

Being still relatively large and bright, Mars will be relatively easy to photograph using eyepiece projection. Kodak TP 2415 (black and white) or Ektachrome 100 colour film give very good results and are certainly worth a try.

Don't have a telescope? Not to worry. Mars is the most interesting object to watch with the naked-eye. It travels rapidly relative to the background stars and in the early summer performed a nice loop in Sagittarius while retrograding. In August, the planet resumed its direct, or eastward, motion and will pick up speed for Earthbound observers as the autumn passes. A tripod mounted camera, fast film, and a series of 30 second exposures every week or so should record the planet's motion relative to the stars.

Still in the southwest at sunset is Saturn. The north face of the rings has opened about 25 degrees as seen from the Earth and provide one of the most glorious sights in the heavens. Even if you don't study the planet systematically, share it with a friend and wait for the reaction! The persistent observer, on the other hand, may be rewarded with phenomena not unlike the variety found with Jupiter. While not as pronounced as those of Jupiter, belts and zones are found in Saturn's clouds. These differ inherently in colour and intensity over time and may be affected by the changing tilt of the planet with respect to the



Earth and Sun. Vague mottling and spots have been reported in the clouds but further observations are desperately needed. Again, try various filters. When finished with the planet try the rings. Multiple subdivisions, and perhaps spokes, were seen from Earth using modest apertures before the Voyager spacecraft flybys. Also, don't forget that more moons can be seen around Saturn than around Jupiter.

Speaking of Jupiter, this giant planet is visible all night long during September. The planet reached opposition on September 10 and it dominates the relatively inconspicuous constellation of Aquarius. At sunset, compare Jupiter in the southeast at magnitude  $-2.9$  with Venus low in the southwest at magnitude  $-4.5$ .

There you have it – several, easily visible planets and the dark, early evening skies of the late summer/early autumn. That's hard to beat so get out there and have fun!

*Note:* Serious planet watchers may wish to join the Association of Lunar and Planetary Observers. This organization collects and sorts data on solar system bodies submitted by its members. Observations of Mars may be used for statistical studies of surface features and for predicting the Martian weather. For more information write to: Association of Lunar and Planetary Observers c/o Dr. John Westfall, P.O. Box 16131, San Francisco, California 94116.

## The Observer's Cage

by David Levy

*Introduction:* This is a new column for the *National Newsletter* which will consist of ideas and reflections from someone who loves the stars. It will offer a blend of historical stories and thoughts born from many hours spent at the telescope eyepiece.

How do you go about observing? I recognize two customs used by most observers. The most common is what we might call the "star party protocol." Think of what happens at the typical star party – carloads of people arrive at an observing site, telescopes are set up everywhere and eyes prepare to look skyward. Now, covers off, eyepiece in, and you say "Let's look at the Ring Nebula!"

"All right," the sky replies, "if you want to see the Ring, and if you can find it, I'll show it to you." When the excitement of viewing this object fades, you ask for a second choice. "Mars," the observers shout! And once again the sky obliges.

During my hours of comet hunting I use a different custom. I reverse the process and let the sky, instead of the observer, choose what is to be displayed. As each session begins I look over a wide area of sky through which I will patrol.

"I do not know what you plan to show me tonight, a nebula, a very red star, a galaxy, or a comet. Whatever you offer, I want to see it."

Then I position the telescope to the first field of view I plan to examine, remove the covers, and focus. As I am about to start I look away from the eyepiece and back at the sky. With steadily declining light and emerging stars, the sky has been preparing itself for me just as I have been opening my telescope for it. No matter what I see, tonight will be a night for discovery. With a final gaze toward the sky I say, "It's your game, sky. Go ahead. Make my night!"

## Earlier Daylight Time in the U.S.

After a 10-year effort to extend the period of Daylight Saving Time, the United States has decided to begin Daylight Saving Time three weeks earlier in 1987. As in most of Canada at present, Daylight Time in the United States is in effect from the last Sunday in April to the last Sunday in October. Under the new legislation, people would set their clocks ahead an hour on the first Sunday in April and set them back an hour on the last Sunday in October. Daylight Saving was first introduced in Canada in 1918. See the *Journal of the R.A.S.C.*, Vol. 72, No. 4, 1978 for further discussion on the subject.

## A Comet Halley Educational Experience

by Ron Waldron  
Saskatoon Centre

*Editor:* Ron Waldron is a grade 7 teacher at Lester B. Pearson School in Saskatoon, Saskatchewan. This paper was runner-up in this year's Simon Newcomb Award contest for astronomical writing.

When I was ten years old, I was already a budding amateur astronomer. I can remember during one of my many evenings under the stars thinking about where I would be and what I would be doing when Comet Halley returned in 1986. At that time, the return of Halley was still a quarter of a century away. I remember predicting that I would probably be married with several young children and would likely be instrumental in showing the comet to my children and their friends. What I never imagined in those early years was that I would be employed as an elementary school teacher planning a Comet Halley Educational Program, the size and scope of what I am about to describe.

It all began with my attendance at the General Assembly of the R.A.S.C. in Edmonton, Alberta in July 1985. While there I "touched base" with both amateur and professional astronomers and gathered information about the return of Comet Halley. It was not long after that I began to develop "comet fever." Following the Assembly, I convinced the Saskatoon Board of Education that the best views of the comet's return required the purchase of a small telescope for teachers to use with their students. In August, the Board purchased a 14cm reflecting telescope from Celestron called the "Comet Catcher."

An important first step in preparing students for the return of Comet Halley was to find and witness the famous comet myself. I was anxious to locate it just as soon as I could. The third weekend in October provided me with my first opportunity. Although it was cloudy most of the weekend, Monday evening, October 21 looked promising. Unfortunately, the comet would not be rising until after midnight so at 3:00 am I awoke to try and see it. I packed up the telescope and drove to a site about five kilometres south-west of Saskatoon armed with a map showing the path of the comet among the constellations, I carefully scanned the area of Halley's location, the club of Orion the Hunter. For one-half hour I searched – no comet! Then, just as I was considering giving up, I checked the comet's location on the map once more, pointed the telescope at the area and "Eureka" – I had found it.

It is difficult, if not impossible, to describe the feeling I had upon viewing Comet Halley for the first time. I wanted to shout out loud, but there was no one around or awake to hear me. Although the comet appeared only as a faint and diffuse patch of fog, the image of discovery is not one I will likely ever forget. Suffice it is to say that I was ready to convey and create this excitement in the students I was teaching.

Our first project was to locate and interview senior citizens who remembered seeing Comet Halley in 1910. The problem was – how to find them? A phone call to a local radio station solved the problem. Denny Carr, an announcer, broadcast several radio appeals over a three day period. This brought us in touch with six Saskatoon seniors who had remarkably vivid recollections of Comet Halley.

Appointments for early evening interviews were made with each of the six seniors. In class, a set of interview questions was carefully prepared. In pairs, the students and myself began a series of visits with the six senior citizens who had responded to our radio appeal. Each interview was recorded on audio tape and a transcript of each was typed at a later date. Photographs were taken to provide both a visual record of the interview as well as a written one.

It was a real treat for me to see the way the students prepared and handled themselves during these interviews with seniors. Any barriers that we may imagine to exist between the very young and the very old disappeared quickly as both students and seniors became totally immersed in reliving a portion of the past. A bond of friendship formed quickly between the two and I could not help but become aware of how much each one had to offer the other. The set of recorded interviews and transcripts have become a part of the school archives and portions of the interviews were broadcast on CBC Saskatchewan Radio.

By this time the students and myself were becoming comet "experts." Our work with the senior citizen interviews was supplemented by reading and viewing as much about comets as we could find. It was time to prepare the school for the return of Comet Halley. What better way to reach the entire student population than to prepare a special Comet Halley Assembly. The date for the Assembly was set for Friday, November 15 to coincide with the appearance of the comet below the easily recognisable group of stars known as the Pleiades.

Again, I found the students becoming totally involved with the project with a minimum amount of encouragement from me. The first problem to tackle was how to present the comet in an exciting and somewhat imaginative way.

To explain what a comet is, we used a once popular game show called *To Tell the Truth*. Four contestants appeared on the stage to present four differing versions of what a comet is. There was Comet, the reindeer; Comet, the cleaner; Comet, the car; and Comet, the celestial visitor. The game show host encouraged the audience to show by applause which contestant they thought was telling the truth. The student with the real comet definition then stood up.

To show what a comet was made of, we dressed a student as the Swedish Chef (of Muppet fame), and had him demonstrate his recipe for a comet. This consisted of water, dry ice, sand and gravel, motor oil (to represent carbon), and a small household fan to represent the pressure of sunlight blowing out the tail.

To add the historical touch, we invited the six senior citizens to attend the assembly and present a slide/tape production showing excerpts from each of the six interviews. The School Board presented each senior with a transcript and audio tape of the six complete interviews so that they could share their memories of the comet with each other.

For entertainment, we invited a popular band from the fifties, Bill Haley and the Comets (really three grade 7 students), complete with dancers who almost stole the show with their well-choreographed jive routine. The assembly ended with the singing of "Hello Halley", a rewritten version of the popular song "Hello Dolly."

At the end of the assembly, I had previously arranged an evening tour at the University of Saskatchewan Observatory to try and view the comet as it passed below the Pleiades. Weather conditions were ideal and all the students in attendance got their first glimpse of the comet through the University's 15 cm refracting telescope.

Shortly before this assembly I received a call from a local radio station requesting our assistance in providing updates and information bulletins on Comet Halley. The student were asked to write 40 second radio "spots" and broadcast a different one daily over the station. For the students it meant a chance to write to a real audience. It also provided an opportunity to sharpen their skills of summarizing, editing and speaking. Every student in my classroom accepted and met the challenge with enthusiasm and a strong sense of purpose. For two and a half months, we presented over sixty different updates and information bulletins on Comet Halley. Once a week, parents assisted in driving groups of five students across the city to record at the station. The students became known as the Lester B. Pearson "Comet Kids." The station showed its appreciation for their efforts by providing each student with a "Comet Kid" T-Shirt and an engraved plaque to commemorate their involvement in the project. The announcer and I received a one-of-a-kind bright silver jacket with the slogan "I'm a Comet Kid" printed in bold blue letters on the back.

There were many educational and perhaps even lifelong spinoffs to the Comet Halley Educational Program. Besides a sense of pride and purpose in what we were doing, there was the realization that learning can be fun and that the best learning is not always found inside books or inside the walls of the classroom. The students did not simply learn about Comet Halley, they experienced it. It was an experience I am confident they will not forget. Even as I write these words, the students are talking about a Comet Kid Reunion.

For me, the program provided a way and means to convey my enthusiasm and love for astronomy to the students that I teach. Perhaps 76 years from now, many of those same students will remember and tell about how they experienced the return of Comet Halley in 1986.

## **Hi-Tech Council Includes Astronaut**

The provincial government of Ontario created a High Technology Advisory Council on July 10 which includes Canadian astronaut Roberta Bondar among its 28 members. The council will oversee a 10-year, \$1 billion technology fund and set priorities for high technology research and development to keep Ontario industry competitive. Bondar, a medical doctor and one of Canada's six member astronaut team, is based in Ottawa.

## International Astronomy Day

*Editor:* International Astronomy Day was officially celebrated by many astronomy clubs, planetariums, and observatories across North America on April 19. The following two reports provide some ideas of how the event was celebrated this year.

### REPORT FROM KINGSTON CENTRE *by Leo Enright*

Members enjoyed another successful day, the eighth since beginning such endeavours in 1979, and once again it was the cooperation of many of our members that made both of our events very successful.

The first activity was a mall display at the Frontenac Mall which probably featured the best display of astronomical equipment ever seen in this area. Over a dozen telescopes, including the Centre's own 25 cm Newtonian with its Dobsonian mount were on display. The exhibit, with the telescopes roped off in their own area, was a significant innovation for such events and two nationally stressed themes – Comet Halley and light pollution – were stressed. For Halley, the prospects for viewing it were the most frequently discussed topic, while material prepared by Centre president, David Stokes, provided a clear, well-written statement of the problem of light pollution.

It was a long, tiring, but rewarding day as many hours were spent meeting the public and discussing our projects, talking about the Society, and generally being “ambassadors for astronomy.” Hundreds of free handouts were distributed – two sets of pages on the problems of light pollution, information on Halley with star map, observing information for the current month, promotional material on the Society, and announcements of upcoming Centre meetings. The display included a section on observing the comet and it was very popular. A Comet Halley quiz with posters donated by Perceptor of Toronto was also popular. Meanwhile, Brad Baker conducted a one-hour solar observing session outdoors.

The second event was a star night at Fort Henry. In the early evening poor skies made the whole event “iffy” but the faithful were eventually rewarded and after 10pm, Comet Halley was the object to see. Until 11pm the skies were less than ideal as our Centre telescope and other instruments sought their quarry, but dozens of eager individuals were not prepared to go home without a good view. By midnight the southern sky was much clearer and with the additional assistance of Larry Manuel and Mark Sorensen, the comet was shown to the “endless lineup.”

One of the most memorable events was when a car sped into the parking lot and an eager driver bounced out saying, “I want to see Halley’s Comet again. The last time I saw it, I was seven years old and living in Dublin, Ireland.” He came to the 25 cm and in two seconds he was looking at something he had not seen in over 70 years. Then, after a half-hour observing Saturn and its moons, the happy gentleman bounced back into his car and sped off.

This was not the first time that I have met an interesting person and heard an entertaining story on Astronomy Day. The exclamation of delight, whether at seeing Saturn for the first time, splitting “Mizar” or viewing Halley for the first time (or for the first time in 76 years) are all rewards we experienced that evening. A fitting conclusion to the 1986 International Astronomy Day – the year of Comet Halley.

### REPORT FROM WINNIPEG CENTRE *by Len Gamache*

Our original plans for an April 19 Astronomy Day were washed out as we experienced cloudy nights, heavy rainfall, and flooding this spring in the Winnipeg area. However, at the invitation of the Manitoba Planetarium and the Manitoba Astronomy Club, the Centre agreed to participate in a public Comet Halley observing session. We were optimistic that there would be at least one clear night before the “mosquito season” began and it was agreed the event would be held on Saturday, May 3 in the town of Lorette about 15 km outside Winnipeg. This was also the date that the brand new Ash Dome for our Glenlea Observatory was supposed to arrive.

On Friday, May 2 about twelve members took part in a dome wrecking party at the observatory and within an hour and a half the wooden dome was dismantled. The next morning construction of the new metal dome began. There were plenty of workers and lots of things to be done – those not working on the dome itself were repairing and waterproofing the building. Finally, the dome was completed

and tested and this left us an hour to get cleaned up, collect the displays and telescopes, and travel to Lorette for the comet party.

We arrived at about 8:30pm with plenty of light left to set up. The displays were set up in a hockey area with the telescopes just outside the building. The public began to arrive at about 9:15pm but there was still too much daylight to see the comet. Dave Trimble set up a slide show which entertained and informed the public about comets and the night sky. Some of his slides were of the comet taken last December by members. Finally around 10:30pm the comet became visible in the telescopes and as the sky became darker, more and more people were able to spot the comet using their own instruments. This seemed to have a major effect on people who had never really noticed the night sky before. Youngsters were encouraged to try and remember what the comet looked like so that they could compare their observations at the next return in 76 years. Our optimism with respect to the weather was justified – it was a beautiful clear night. The comet party was a success.

As we started packing it up for the night I thought about the bone-tired members giving a lot more for the cause of astronomy than one would expect from an otherwise bunch of amateurs.

## My First Year

by Roderick Murray  
Toronto Centre

It is often said that the only difference between men and boys is the size of their toys and I must admit that I am no exception. You see, it was over one year ago that I bought my first telescope and that has made me somewhat reflective about my new hobby. Besides, I just wanted my neighbours to know what I've been up to at night in the backyard.

A telescope was one of those Christmas gifts that Santa never saw fit to lower down the chimney. This was a great disappointment for me, since I already had all the other gifts every boy wanted: P-F Flyer running shoes with a whistle, a microscope with a dissecting kit and a chemistry set with a Bunsen burner. To this day, I have never quite understood how something I wanted so very much could have eluded my grasp. "If only I could see the stars and planets, close-up, like" I dreamed. And so, my interest in astronomy remained a fleeting fantasy for many years and was limited to what my spectacled eyes could see.

It was not until my university days that my interest was rekindled. I came upon a survey course in astronomy which was especially geared to undergraduates who, like me, would never understand the intricacies of quantum mechanics, not to mention leptons, bosons, quarks and all that stuff. The average student in the class referred to Astronomy 200 as a "bird course" or an easy way to earn a university credit. Not! The universe was opened to my mind by a down-to-earth professor who was determined to demystify ideas celestial for the minds of young impressionable students. I was hooked and all it took was one look at a solar eclipse through a university telescope.

The desire for that first telescope reached its peak seven years later when, as a rookie school teacher in north-western Saskatchewan, I was called upon to teach elementary astronomy to grade 8 students. These impressionable children had perceptions of the universe which were, at times, limited by their small town upbringing. "Oh! if only THEY could SEE what I mean by the rings around Saturn, they'd be hooked too" I said to myself, fully hiding my true motives for such thoughts.

It was not long before I gave in to my better judgement and, with the help of my local banker, I arranged a loan that would see a flashy new telescope at my door within the week in return for monthly loan payments over the course of the next year. I cannot adequately describe what the winter sky looks like at -25 degrees Celsius on a clear and crisp, moonless winter night on the Canadian prairies. Suffice it to say that a telescope makes it all that more awesome to a novice observer. Within a few minutes of uncrating my new purchase, I was checking off Messier objects beginning with the Orion Nebula.

No one warned me, however, that it would resemble thick grey smoke, rather than the delicately beautiful pink and green seen in photographs. Likewise, no one told me that the moon would, more often than not, ruin views of the Virgo cluster of galaxies on clear nights. And, it came as some surprise

to me that a metal telescope tube would become equally as cold as the air around it in only a matter of minutes.

Yes, there were many disappointments in my first year as an amateur astronomer, but I was easily consoled by the many surprises, the magnificent views and how much I learned.

I am not likely to forget my first views of Saturn, the celestial showpiece floating in its magnificent halo. The impression that the remote galaxy NGC 4565 made upon me when it drifted into the eyepiece field after only 20 minutes of searching will not soon be forgotten, nor will my first encounters with the Sagittarius starclouds later that summer.

Now that I've been at it a year, I can say that my decision to pursue amateur astronomy has been something I do not regret. As my understanding and knowledge of our universe expands with each clear night of observing, so does my ability to share the universe with others.

Reprinted from *'Scope*

## Letter to the Editor

*Editor:* In the February 1986 *Newsletter* appeared an article (page L6) by Peter Ceravolo commenting on the article "Telescopic Planetary Observing" in the 1986 *Observer's Handbook*. It was accompanied by a reply (Page L7) by the original author Terence Dickinson.

Dear Sir:

Thank you for printing my article "Telescopes and Observing." Reading Mr. Dickinson's reply was very interesting but I disagree with one of his points and believe optical alignment is more critical in Cassegrain type telescopes than in Newtonians rather than vice versa. One must consider the function of the secondary in each type of telescope. In the Newtonian, the flat merely deflects the light to the side of the tube without modifying the beam. However, the Cassegrain secondary not only deflects the beam but amplifies the focal length of the primary (by five times in a Schmidt-Cassegrain). Added to this is the fact that the Cassegrain secondary has an optical axis (the Newtonian flat, of course, does not) and must be well-centred and squared with respect to the primary for even reasonable performance. It is primarily for this reason that most Cassegrains, commercial and home-made, fail to deliver optimum images. Most Schmidt-Cassegrain owners do not know how, or are even afraid, to touch the telescope with an Allan key in order to adjust the optics.

Peter Ceravolo  
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## Young Scientists Win Awards

by Melina Young

The Royal Astronomical Society of Canada recognized the work of four students at this year's Canada-Wide Science Fair. The Silver Anniversary Event, held in Calgary, Alberta, May 10-18, was the largest fair ever held in Canada as more than 370 students participated to compete for \$55,000 worth of prizes. The following winners in astronomical categories were the recipient of one-year memberships in the Society and book prizes.

Peter Brown of Fort McMurray, Alberta, won the Silver Medal in the Intermediate Physical Sciences category. His project entitled “Effect of Shock Waves on Coronal Holes” was an exploration of his own hypothesis that shock waves from solar flares can disrupt coronal holes. Brown tentatively confirmed his hypothesis and will continue his research.

Mark Levison and Scott Murray of Kingston, Ontario received Honorable Mention in the Senior Computer Sciences category. Their project “Computer Space Simulator” was a numerical method of answering any “N-body” gravitational problem in two-dimensional space. Different concepts in astrophysics were demonstrated with this system including Kepler’s Laws of planetary motion, orbital capture, and the “Gravity Whip” effect.

Thirteen year old Jeffrey Legault of Cornwall, Ontario received the Bronze Medal in the Junior Physical Sciences category. His project, “Jupiter: King of the Gods, Giant of the Planets” was a test of the hypothesis that the colour of Jupiter’s clouds is caused by the presence of phosphorus in variable quantities.

The Canada-Wide Science Fair is sponsored by the Youth Science Foundation, Canada’s only organizer of youth science activities. YSF’s programs include the Canada Awards for Participation in Science, National Students’ Science Council, Science Olympics, and two magazines – *Youth Science News* and *Flabbergast*. Science Fairs are the main program.

The Youth Science Foundation is a national non-profit organization funded by federal government grants, professional associations, and individual and corporate donations.

## Ways To End An Organization

*Editor:* When we think of our participation and contribution to your local astronomy club or centre, it would be well to remember that every member of that club or centre, and every member of our Society, is a volunteer. Unlike business companies which have well-defined rewards for work performed, volunteer groups are very dependent on the goodwill, cooperation and effort of their members to be successful.

The following list of “ways to end an organization” should be something to remember by both new and experienced members.

- Don’t attend meetings but, if you do, always arrive late.
- Be sure to leave well before the meeting is closed.
- Never have anything to say at meetings but, once outside, say plenty.
- When at meetings vote to do everything, then go home and do nothing.
- The day after the meeting find fault with the officers and members.
- Take no part in the structural affairs of the organization.
- Be sure to sit in the back so you can talk it over with a friend.
- Get all from the organization that it can give you, but don’t give the organization anything back.
- At every opportunity, threaten to resign and get others to do the same.
- Talk cooperation, but then don’t cooperate when called upon.
- If asked to help, say you can’t spare the time.
- Never read anything pertaining to the organization – keep your thoughts pure.
- Never accept an office – it is easier to criticize than to do things as an officer.
- If appointed to a committee, accept, then don’t give any time or service to the committee.
- If you receive a request for funds, ignore it.
- Don’t do any more than you have to and, when the others willingly and unselfishly use their abilities to help the cause, complain because the organization is run by a clique.

Reprinted from *Saskatoon Skies*

## Concerning Publications for Members of Centres

Copies of the *Observer's Handbook* for ordinary members of Centres are sent to each Centre in November, provided the Centre's account for *Handbooks* of the previous edition is up-to-date, and provided an order for *Handbooks* has been sent to National Office by the Centre (Forms for this purpose are sent to each Centre treasurer in August). *Handbooks* for life members and unattached members are mailed directly to these members from National Office.

A person paying a year's membership fee to a Centre in the fall (or later) receives the publications of the Society for the following calendar year. Thus the *Journal* and the *National Newsletter* will begin with the February issues. However, the potential member's name, address, and 60% of the fee must, of course, be submitted by the Centre to the National Office before that person can be listed as a member of the Society and start receiving these two publications. Centres are required to send lists of new members and the associated fees to National Office on the 15th of January, April, July, and October, but, unfortunately some Centres do not adhere to this minimum schedule. Submissions at more frequent intervals would ensure that many new members would start receiving the *Journal* and the *National Newsletter* even sooner.

In the case of overdue publications, members of Centres should first check with their Centre Executive to see if the above procedures have been followed.

ROSEMARY FREEMAN  
*Executive-Secretary*

## Due\$ Due

A new membership fee scale for the 1987 membership year was approved at the Society's Annual Meeting in Winnipeg on June 29. Effective immediately the following national fees are in effect:

– Regular Membership	\$25.00
– Youth Membership (under 18 years of age)	\$15.00
– Life Membership	\$500.00

For all foreign members, residents in the United States and overseas, these amounts are quoted in U.S. funds.

About half of the centres in the Society have additional surcharges in addition to the national fees. Members are advised to check with their centre to see what their fee should be. Unattached members should send their fees directly to the National Office.

The 1987 membership year runs from October 1, 1986 to September 30, 1987 while the national publications, the *Observer's Handbook*, the *Journal*, and the *National Newsletter* are distributed for the calendar year. All members receive one issue of the *Observer's Handbook*, six issues each of the *Journal* and the *National Newsletter* and, if they are affiliated with a centre, the newsletter of that centre.

*Renew now! Thousands of others will be.*