
NATIONAL NEWSLETTER

Royal Astronomical Society of Canada

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The Society's prestigious Chant Medal was presented to Damien Lemay of the Quebec Centre at the Society's General Assembly in Toronto. Damien is shown with three other Chant Medal winners. From left to right: Damien Lemay, Warren Morrison (1986), David Levy (1980), and Rolf Meier (1979).
Photo by Ian McGregor.

NATIONAL NEWSLETTER

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Deadline for December issue is October 1.

The 1987 General Assembly In Toronto

by Dennis Ryan
Montreal Centre

This year's General Assembly in Toronto left me with two feelings. First, regret that I had never attended a General Assembly before, and second, enthusiasm about the possibility of attending future General Assemblies.

My wife Pauline and I left Montreal the Friday morning of the Victoria Day weekend under cloudy skies and arrived in Toronto about four in the afternoon. At Margaret Addison Hall we registered for the General Assembly and also for our room which turned out to be a lovely room with windows facing out from the front of the building.

While supper for Saturday and Sunday were already part of the GA program, we were on our own for Friday. Stew Marshall, Pauline and I had a lovely supper at a restaurant on Yonge Street after which we made our way over to the McLennan Physical Laboratories of the University of Toronto for a wine and cheese party.

This was our first chance to meet delegates from other centres and I ran into Alister Ling, formerly of Montreal and now living in Edmonton. The top floors housed the Department of Astronomy and we were brought up to the top floor to see the two telescopes housed there, an 8-inch refractor and a 16-inch reflector. By 10pm, we got our chance to observe through them. Unfortunately, being situated in downtown Toronto does not help and incredibly, the Physical Plant's smokestack is only about 15 m away to the south. There were many comments made about the agonies experienced when it is in operation.

In between trips to the telescopes we attended the much heralded "Murphy's Slide Show" and the song contest. Even though I have not done much astrophotography, the slide show was hilarious, and it must have been more so for astrophotographers that were there – you had to see it to believe it. The song contest consisted of a comic video by the Winnipeg Centre, Alister Ling with a song from his recent trip to Australia, and an entry from Gary Dymond from the St. John's Centre. Winnipeg won and received the song contest prize of a model radio telescope.

Saturday morning found us at the McLaughlin Planetarium for the paper sessions. The first presentation was by Dr. Robert Garrison of the University of Toronto talking on the latest findings on Supernova Shelton. He spoke about Ian Shelton, praising him as a hardworking and determined fellow. These qualities, plus luck, gave him the supernova. The slides of the supernova taken through the crystal-clear skies of Chile were superb.

Attempts by Pauline and myself to contact family members took some time and unfortunately we missed some of the paper sessions. But we did make it to Stew Marshall's paper. His topic was "The Equation of Time", the topic he had spoken on previously at a Montreal Centre meeting. The talk was well received.

Saturday night we were taken down to the waterfront for a supper-cruise aboard the Mariposa Belle, a boat dressed up as an old paddle-wheeler. It made its way past a Royal Navy destroyer docked in Toronto harbour and out to the Toronto Islands where we navigated through some of the channels, and then back into the harbour. During this time there was continuous music and a supper of cold meats, potato salad, and meat balls. Our five hour cruise docked at about 10:30 had been enjoyed by all.

On Sunday morning we returned to the McLaughlin Planetarium where we experienced its astronomy gallery, aptly called the Astrocentre. I won't try to describe it to you but it is definitely a "go-see". We also took in the current planetarium show hosted by Ian McGregor, where narrator James Randi, otherwise known as the magician "The Amazing Randi" efficiently trounced astrology in the show "Signs From The Sky: The Puzzle of Astrology". Ian said that many astrologers had seen the show and called afterwards to say they didn't appreciate it. No wonder.

After lunch we attended the Annual Meeting of the Society which for the most part consisted of the heads of various committees presenting their annual reports. But it was my first experience attending the Annual Meeting and I found it a fascinating experience. After this meeting there was free time for the delegates. I could not get hold of an uncle so we visited Pauline's sister.

Saturday night was the Banquet, held at the Park Plaza Hotel. We had a lovely meal of stuffed chicken with wine. Mrs. Mary Grey, our national president, presented various awards to recipients including the Chant Medal to Damien Lemay of the Quebec Centre. Afterwards there was a fascinating lecture by Jay Ingram of CBC's radio program "Quirks and Quarks" on the Vinland Map, purported to be the first map ever made chronicling the early Viking trips to North America. There followed a question and answer period, which once ended, spelled the end to our evening and everyone made their way back to the residence.

Monday morning we travelled to the David Dunlap Observatory. Situated about 15 km outside Toronto, the trip gave us our first real evidence of how much Toronto is indeed expanding. A few years ago, in 1980, there were just scattered houses. Now, as we travelled to the observatory, massive housing projects stood where there had been open fields. Not one or two but literally entire towns going up at the same time with plenty of advertisements along the road for other housing projects. It was rather disquieting.

But the observatory itself was great. We saw the 19-inch and the 24-inch located on the main building, as well as various labs. The "piece-de-resistance" was, of course, the main telescope, 74-inches in diameter. As tall as a five-storey building, it was impressive just to stand near the instrument. It is mainly used for spectroscopic work.

We came back to Toronto, got a bite to eat, and soon were headed back to Montreal, quite satisfied with our weekend.

Reprinted from Montreal Centre's *Skyward*

Abstracts of Papers Presented at the 1987 Toronto General Assembly

Supernova Shelton 1987A by Dr. Robert Garrison, David Dunlap Observatory, University of Toronto, Richmond Hill, Ontario.

The discovery and most recent news on Supernova 1987A were discussed. Some data and photographs obtained from the University of Toronto's Southern Observatory at Las Campanas were presented.

The Age And Distance Of h Persei by James A. Ireland, Toronto Centre

The galactic cluster h Persei (NGC 869) was analyzed from B and V pass-band photographic photometric data obtained using the 40.6 cm University of Toronto Cassegrain reflector. Seventy five stars were measured and calibrated to obtain a colour-magnitude diagram. Using the method of main sequence fitting, the results indicated a distance of about 1737 parsecs and an age of about 26 million years for the initial period of star formation in the cluster.

Analysis Of Visual And Photoelectric Observations Of Rho Cassiopeiae by Mohammed Dattu, Toronto Centre and University of Toronto Mentorship Program

Rho Cassiopeiae, a yellow supergiant, belongs to a group of stars which are visually among the most luminous known. A 10 year light curve starting from 1976 was plotted using visual and photoelectric observations. Three significant minima were identified and a computer program developed to study the periodicity of the star. A quasi-period of 483 days was found which verified other observations.

The Astrocentre Of The McLaughlin Planetarium: A Look Behind The Scenes by Dr. Thomas Clarke, Head, McLaughlin Planetarium, Royal Ontario Museum; Toronto Centre

On December 5, 1986, after nearly two years of planning and production, the Royal Ontario Museum officially opened the Astrocentre, a new astronomy gallery in the McLaughlin Planetarium. The background and rationale for the various displays was presented as well as a brief explanation of the workings of some of the elements, including the solar telescope, STELLARIUM, and the orrery.

Adding Astronomy To The Ontario School Science Curriculum by Dr. John R. Percy, Department of Astronomy and Erindale College, University of Toronto; Toronto Centre

Several years ago, the Ontario Ministry of Education embarked on a major revision of its school science curriculum. In the process, astronomy was almost lost. At the last minute, however, the Ministry of Education was persuaded to restore it. It now has a modest place in the elementary and secondary school science curriculum. The paper presented (1) an overview of the Ontario school science curriculum and the process by which it was revised (2) a description of the philosophy and content of the new astronomy units and (3) the author's personal experience in "lobbying" for the units, directing the writing of some of them, and helping to implement them in the schools.

ASTRONOMY TORONTO – Astronomy On Cable Television by J. Randy Attwood, Toronto Centre
One of the primary functions of the R.A.S.C. is to provide the public with information on astronomy. Apart from public lectures and summer star nights, an effective method to promote astronomy is through television. ASTRONOMY TORONTO has been on the air since 1981. Seen on Rogers Cable Television in the Metropolitan Toronto area, it is visible to an audience of over 325 000 subscribers and 50 programs have been produced to date. The ideas, trials and triumphs of producing these programs were discussed.

The Tercentenary of the PRINCIPIA by Dr. Roy L. Bishop, Halifax Centre

Isaac Newton's *Philosophiae Naturalis Principia Mathematica* was published 300 years ago. Generally regarded as the greatest single work in the history of science, the *Principia* laid out the rules and the framework of modern physical science. A short illustrated sketch of both the *Principia* and its author were presented.

The Demise of the Polo Park Sundial by Christopher A. Rutkowski, Winnipeg Centre

In 1959, a large sundial was erected in front of the Polo Park Shopping Centre in Winnipeg, Manitoba. The sundial was one of the largest in the world, and was an unique form of pre-stressed concrete construction. In 1985, redevelopment of the shopping centre did not include any allowance for the sundial and it was destroyed. The paper presented a short history of the sundial, remembered by many residents of Winnipeg as only a good place to sit while waiting for the bus.

The Steen River Astrobleme by Don Hladiuk, Placer CEGO Petroleum; Calgary Centre

The Steen River structure was interpreted to be a complex hypervelocity crater located in northwestern Alberta. The crater was originally discovered in 1953 during exploratory drilling of a geophysical anomaly. Using borehole data, the paper discussed the general physiography of this ancient impact feature.

Women Of Space by Myra J. Bannman, Winnipeg Centre

Since Valentina Tereshkova first took flight in 1963, many women have actively participated in the manned spaceflight program of the world. The achievements of women in space were discussed as well as a description of the current training many women, including one Canadian, are taking. The hope was expressed that the tragic deaths of Judy Resnick and Christa McAuliffe in the Challenger disaster would not deter women from aspiring to explore and experience outer space in an equal partnership with men.

The Science North Solar Observatory by Steve Dodson, Science North; Ottawa Centre

Sudbury's public solar observatory offers visitors to the Science North science centre an unique and engaging way of getting to know their nearest star, and demonstrates an unusual and highly successful liaison between an amateur group and a scientific institution. The instruments and theatre created locally at very low cost were described with much credit going to extensive community involvement, especially by the Sudbury Astronomy Club.

Two Schmidt Cameras For A Group Of Amateurs by Damien Lemay, Quebec Centre

Two years ago the Association des Groupes d'Astronomes Amateurs received an unexpected grant of \$10 000 for special projects. Members were asked for ideas and the decision to buy two Schmidt camera kits was made for the purpose of renting to members. The paper discussed how the project came to be, the training program for potential users, and the rationale for the rental rules.

Explaining The Equation Of Time by J.W. Stewart Marschall, Montreal Centre

The contribution of the ellipticity of the earth's orbit to the equation of time is easily visualized but that of the obliquity of the ecliptic is not. A model of the earth constructed from simple materials was devised to ease this problem. The construction of the model was described and its use demonstrated.

Light Pollution – What Should We Do? by Anthony Sosnkowski, Toronto Centre

The urbanization of our country and continent is causing severe and accelerating reductions in the esthetic quality of life under our night skies, the ability of amateur astronomers to observe seriously without long trips out of cities, and the scientific output of major observatories. Can we as an astronomical society remain passive? The paper announced that the Toronto Centre has started work on a specific draft resolution addressing the problem of light pollution to be presented at the 1988 Victoria General Assembly.

The L.V. Powis Observatory Centre by Michael Jefferson, Hamilton Centre

A brief history and description of the L.V. Powis Observatory Centre from initial land acquisition to the present day was presented. As well, the public education, observing activities and special-interest group programs carried on by the Hamilton Centre were described.

Experimental Observations Of Turbulence In Aurora by R.S. Iyengar, Mount Allison University; Unattached Member

Turbulence characteristics in aurora are inferred from ground-based photoelectric observations. Scale sizes of the order of 5 km and drift speeds of 13 to 26 m/s are obtained. Some high speeds presumably related to shock propagation are also observed. There is evidence for eddy decay time scales of a few seconds and fractions of a second.

Report of the May 1987 National Council Meetings

by Leo Enright
National Recorder

The National Council of our Society held two meetings on the occasion of the 1987 General Assembly in Toronto, Ontario. Both were held on the campus of Victoria College of the University of Toronto, the first on Friday May 15th, and the second on Sunday, May 17th, following the 1987 Annual Meeting of the Society. The National President, Mrs. Mary Grey, presided at both meetings, and seventeen of the twenty Centres of the Society were represented.

Meeting of Friday, May 15th

The essential agenda items of the first meeting included reports from all the officers and standing committees of the Society, and a number of other important matters.

The President's report noted the concern within the astronomical community for the continuing government cutbacks in funding which had meant the virtual closing of the Algonquin Radio Observatory. The President thanked Mr. Broughton for his six years of service as National Secretary, and Council extended a welcome to the new National Secretary, Dr. David Tindall of Halifax. The National Treasurer, Dr. Chou, reported a healthy increase in the assets of the Society over the past year, and the accumulated deficit of the Society had been totally retired and there was an operating surplus at the moment of about \$20 000. The Interim Income Statement for the first four months of 1987 showed the *Journal* subscriptions and *Observer's Handbook* sales were up, and overall, there was a healthy balance with which to face the remainder of the year.

Approval was given to a motion from the Editor of the *Observer's Handbook* to have the price of the 1988 issue increased by \$1. to \$10. for a single copy and other bulk order prices were increased by \$0.50. Council approved a motion to allocate up to \$5000 for advertising for the 1988 *Observer's Handbook*.

Mr. Beattie, the National Librarian, noted that of the 253 books that had been removed from the Library shelves and were offered to Centres, 98 had been requested by five of the centres and the remainder were still available if Centre Librarians wished to make a request.

The report from the Honorary Members Committee noted that Professor Hanbury Brown had accepted the Society's invitation to become an Honorary Member. The death of another Honorary Member was noted: Dr. Woolley of South Africa had recently passed away.

Approval was given for the purchase by the society of a computer software package, copies of which would then be distributed to the Centres.

The chairman of the Constitution Committee reported that the committee had completed the second draft of a revised set of bylaws for the Society. They would be presented to Council for discussion in September and presentation to the Society was anticipated at the General Assembly in 1988.

The Astronomy Day Coordinator noted that reports had been received from four of the centres of a successful Astronomy Day the previous Saturday, and more reports were requested from other Centres. The announcement was also given that in 1988 International Astronomy Day would be celebrated on Saturday, April 23.

Captain Auclair of the Cape Breton Astronomical Society presented a formal invitation for the Society to hold the 1989 General Assembly on the Canada Day Weekend at the Canadian Coast Guard College in Sydney, Nova Scotia. Mr. McCallum of the Ottawa Centre also made a presentation for the Ottawa Centre to host the 1989 General Assembly. Council approved the invitation from the Cape Breton Astronomical Society and councillors were pleased with the amount of planning that had already taken place for the event.

Meeting of Sunday, May 17th

During the second meeting, Council appointed the standing committees for 1987-1988. These are (with the chairman's name given in brackets): Awards (Mr. Franklin Loehde); Budget (Dr. Ralph Chou); Editing (Dr. Alan Batten); Executive (Mrs. Mary Grey); Finance (Dr. Ralph Chou); Historical (Dr. Peter Millman); Honorary Members (Dr. Roy Bishop); Library (Mr. Brian Beattie); *National Newsletter* (Mr. Ian McGregor); Nominating (Dr. Roy Bishop); and Property (Mr. Kim Rowe).

Council approved a motion to increase the amount given to a first prize for an astronomy-related project in the Canada-Wide Science Fair to \$100. and a one-year membership in the Society.

Approval was also given to a motion to extend travel assistance to all officers of the society to cover travel and accommodation expenses associated with attendance at a National Council Meeting.

Another motion also approved would allow one part of the Speakers' Exchange Grant to be given to a speaker who went to another Centre, if something unforeseen prevented the other speaker from completing the exchange.

The next meeting of Council was scheduled for Halifax on Saturday, September 26th, 1987.

Complete details of all the items 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 1987 Annual Meeting of the Society, which took place on May 17th, are being published in the October issue of the *Journal*.

Observer's Cage

by David H. Levy

The Canadian Family

Meetings happen when people get together to share. In the United States, several regional and national organizations meet annually so that their members can see one another and present the results of their work during the past year. The largest of these groups is the Astronomical League, consisting of over 8 000 members. On the West Coast there is the Western Amateur Astronomers. Also, there are two well-known associations that are based solely on observing, the American Association of Variable Star Observers (AAVSO) and the Association of Lunar and Planetary Observers (ALPO). Taken together, these groups present a picture of a very powerful amateur scene in the United States. Their meetings offer variety, instruction and lots of fun. Canada's picture is completely different. Instead of many groups, we have the Royal Astronomical Society of Canada, a society with which I have been involved since 1960. When I moved to Arizona in 1979, I was excited about getting a chance to see how the RASC compares with American groups.

I found that while the United States groups tend to be groups, clubs, and societies, the Royal Astronomical Society of Canada is a family, and our annual General Assemblies are family reunions. The sense of family is so much stronger with the RASC that it is really obvious at meetings. The only other group that comes close to exhibiting this feeling during their meetings is the AAVSO.

Last May's General Assembly in Toronto, meeting close to the centre of the RASC's population base, especially brought this feeling home. In the United States, we hear that Supernova 1987A was discovered by Ian Shelton from the University of Toronto. At the RASC we learn that SN 1987A was found by one of us, a member of our Canadian family. This southern hemisphere object is Canada's supernova, never to be seen from Canada, but a Canadian star and a member of our family nevertheless.

We gather at a General Assembly to share ideas, observations and friendships. Those of you who have never been to a GA are missing one of the best aspects of the RASC, one of the strongest arguments that in Canada, astronomers have a family.

The Fort Malden Telescope: The Story Continues

by **Hein van Asperen**
Kingston Centre

Philip Mozel's article in the October 1986 National Newsletter (L75) described the Fort Malden telescope and some research into the instrument's history. Mr. van Asperen adds some further information from his research. Ed.

Although Mr. Mozel did not mention it in his article, I expect that the Fort Malden telescope has a diameter of 70 mm with a focal length of 350 mm. I think this is true because in the Franeker Planetarium, Franeker, The Netherlands, there is an identical telescope with those dimensions. The two instruments share a one-to-one relationship between every curve in the stand, the rivets in the tube, and the control mechanism. This design was apparently standard as there exists a painting of Jan Pieters van der Bildt, the telescope's maker, with the same model.

Jan Pieters van der Bildt (1709-1791) constructed about 550 telescopes. He started numbering his telescopes after he had already made an unknown number, the highest known number being 538. The look-alike telescope in the Franeker Planetarium has number 368. It would be interesting to know the number of the Fort Malden telescope.

There is an extensive writeup on Jan Pieters van der Bildt in the book *Friesche Sterrekunst*. The title is in the Frisian language but the book is written in Dutch and was published to commemorate the bicentennial of the Franeker Planetarium.

Jan Pieters (van der Bildt was added later, because he was born in the village Vrouwenparochie in county Het Bildt) was the instrument technician at the Franeker University. While in that capacity he had to repair a British-made telescope and, curious to see how a telescope was made, he took the instrument apart. He noticed that the mirror was rather dull and polished it. But the owner was not impressed and demanded Jan Pieters either repair the mirror himself or have it done in England at his own cost. Jan Pieters asked for six weeks time and succeeded in making the mirror better than it was before. This started Jan Pieters in his career as a telescope maker around the year 1754.

In those days the mirrors were made of metal, which were poor reflectors of light and they deteriorated rapidly. Jan Pieters developed independently an alloy with superior surface quality. In the *Friesche Sterrekunst* it is stated that after more than 200 years, the reflecting surfaces were as good as new. This sounds hard to believe, so I wrote to the Curator of the Planetarium and he confirmed that the telescope "as is" is still usable. In his letter he also said that he had tested the telescopes belonging to the Planetarium which had been made by Jan Pieters son, Jan, and by his grandson, Bouke Eisma, and found them also in good condition. His other son, Lubbertus, also made telescopes but the quality of the instruments made by the sons was not as good as those of the instruments made by their father. It would be interesting to know if the Fort Malden telescope is still in the same good condition as the instrument in the planetarium.

The Curator had also known there was a van der Bildt telescope in Canada but he had not known where it was. A copy of Philip Mozel's article brought him up-to-date.

According to the Leeuwarder Courant of June 6, 1761, Jan Pieters observed the transit of Venus across the face of the Sun on that date. Leeuwarden is the provincial capital, 20 km east of Franeker. Today, Franeker is a small town with less than 10,000 inhabitants, but 400 years ago, in 1585, the second university in the northern Netherlands was opened in the city. One of the first professors of astronomy was Johannes Fokkes Holwards, who documented the famous variable star Omicron Ceti ("Mira").

The Franeker Planetarium was designed and built by Eise Eisinga, a Frisian amateur astronomer. He built the planetarium in order to show the burghers of Franeker that the conjunction of Jupiter, Mars, Venus, Mercury, and the Moon in May 1774 was a natural phenomenon and no reason for fright. The Planetarium is still in operation and well-worth a visit if you happen to be in Holland.

Beginners' Guide to Astrophotography Part 3

by Bryce Heartwell
Edmonton Centre

This article discusses the polar alignment of equatorially mounted telescopes. We will look at why polar alignment is required for astrophotography and two methods for doing polar alignment.

What is polar alignment?

An equatorial telescope mount, whether it is a fork or German type, has a polar axis. The polar axis is the axis around which the telescope revolves to track or follow the stars as they move across the sky. For a telescope to track properly, the polar axis of the telescope mount must be aligned to point to the north celestial pole. The north celestial pole is an imaginary spot in the northern sky to which the earth's rotation axis points and is very near the bright star Polaris. If a telescope is properly aligned, its polar axis would point to the same spot.

For astrophotography, the polar axis of the telescope must be properly polar aligned to allow the telescope to track objects across the sky. If a telescope is not properly polar aligned, the photographer will have to make corrections to compensate for the poor polar alignment.

Why is polar alignment important?

Polar alignment is not important when the telescope is being used for visual observations for short time periods. But when a telescope is being used for astrophotography, especially guided photography such as prime focus or piggyback photography, polar alignment becomes essential for the following reasons:

1. The main right ascension drive gear will track better thus reducing the number of corrections in right ascension that are necessary while guiding a photograph.
2. "Declination drift" will be reduced or eliminated. Declination drift is star drift in declination (north or south) and is directly caused by poor polar alignment. The further out the alignment is, the worse the declination drift will be. This drift will have to be corrected for during a photographic exposure.
3. Proper alignment reduces the chance of getting "field rotation" in a photo. Field rotation is a condition where stars near the guide star that was used to guide the photo will have relatively sharp images but stars further away from the guide star form into short arcs which appear to be rotating around the guide star. The further you look away from the guide star, the longer the arcs become. This effect is not seen while the photo is being guided.
4. Proper alignment allows the use of telescope setting circles.

Methods of Polar Alignment

There are several methods which can be used to polar align the telescope mount. Some methods are more accurate than others but may take longer to do. If a telescope is permanently mounted, it will be worth while to take the time required to do a good job of aligning the scope as it will only have to be done once. Portable scopes will have to be aligned each time the observer sets up.

A The Drift Method:

This method takes time but is quite accurate.

- 1) Roughly point the polar axis towards Polaris.
- 2) Install a Barlow lens and an illuminated reticle eyepiece into the focuser. (NB A reticle eyepiece is not essential but it is very useful as star drift north or south must be determined) High magnification will cause the star drift to become apparent sooner thus lowering the time required to polar align the scope.
- 3) Choose a star near the celestial equator and the meridian and centre it in the eyepiece. (NB Use a star chart to select a suitable star).

- 4) Align the reticle lines in the eyepiece so that drift in declination and right ascension will follow each set of reticle lines.
- 5) Ignore drift in right ascension other than to keep the star in the field and monitor the declination drift.
 - (a) If the star drifts south, the polar axis is pointing too far east.
 - (b) If the star drifts north, the polar axis is pointing too far west.
- 6) Make adjustments to the mount in azimuth in the proper direction and repeat the star drift test. Continue making adjustments until no star drift can be seen in declination for several minutes.
- 7) Now select a different star but this time one about 15 degrees above the eastern horizon although still near the celestial equator.
- 8) Again centre the star in the eyepiece, align the reticles, and monitor star drift in declination only.
 - (a) If the star drifts south, the polar axis is pointing too low.
 - (b) If the star drifts north, the polar axis is pointing too high.
- 9) Adjust the angle of the polar axis and repeat the drift test. Keep making adjustments until no drift is seen for several minutes.

If the method was followed carefully, the telescope will have good alignment.

B The Two Star Method

This method requires the use of setting circles which have been adjusted properly. Polar is used as a guide star to align the mount. (From *Sky and Telescope*, September 1979)

- 1) Roughly align the mount on Polaris with the declination axis at 90 degrees.
- 2) Choose either the star Epsilon Cassiopeiae or Eta Ursae Majoris depending on which star is higher in the sky. Epsilon Cassiopeiae is the easternmost star of the five stars that form the "W" shape of the constellation. Eta Ursae Majoris is the end star in the handle of the Big Dipper.
- 3) If *Epsilon Cassiopeiae* was chosen:
 - (a) Centre the star in a 50 power eyepiece.
 - (b) Rotate the telescope in right ascension east by "X" minutes. (See chart below for values of "X")
 - (c) Turn the telescope in declination north to Polaris at + 89.2 degrees.
 - (d) Centre Polaris in the eyepiece by moving the mount in azimuth and/or altitude. (For altitude, adjust the length of a pier leg).
 - (e) Repeat for accuracy.
- 4) If *Eta Ursae Majoris* was chosen:
 - (a) Centre the star in a 50 power eyepiece.
 - (b) Rotate the telescope in right ascension east by "Y" minutes. (See chart below for values of "Y")
 - (c) Turn the telescope in declination north through 90 degrees to the position of Polaris at (89.2 degrees. (You must go THROUGH 90 degrees when using this star)
 - (d) Centre Polaris in the eyepiece by moving the mount in azimuth and/or altitude. (For altitude, adjust the length of a pier leg).
 - (e) Repeat for accuracy.

Because of precession, you must choose "X" or "Y" for the year of observation.

Adjustments In R.A. Until The Year 1990

YEAR	"X" EPSILON CASSIOPEIAE	"Y" ETA URSAE MAJORIS
1986	24.1 m East	30.4 m East
1987	24.9 m East	31.3 m East
1988	25.8 m East	32.2 m East
1989	26.6 m East	33.1 m East
1990	27.5 m East	34.0 m East

The table gives us how many minutes of arc to offset from the selected star so that the telescope is aligned with Polaris. This method is quite fast after some practice but it is not nearly as accurate as the drift method. A greater number of corrections, primarily in declination, will be required while taking a photograph. If declination corrections are required more often than every couple of minutes, the polar alignment should be checked for accuracy.

There are many ways to polar align a telescope and I have outlined only two methods in this article. Part 4. in the October *Newsletter* will look at guided photographs.

Planetarium Community Meets

by Ian G. McGregor

A successful conference of the Planetarium Association of Canada was held at the Edmonton Space Sciences Centre in Edmonton, Alberta from June 23 to 26. Delegates gathered from across Canada and the United States as well as from Britain, East Germany, Spain, Chile and Mexico for the biennial conference of the Association which has a reputation for holding interesting and enjoyable conferences.

Highlights of the four-day conference included the high quality of the many papers presented during the paper sessions, the behind-the-scenes look at the giant Space Sciences Centre which ranks as one of the finest in the world, and the social events which provided good opportunities for casual conversation among this far-flung group of educators and audio-visual specialists. Topics of the papers ranged from astronomy teaching to exhibit design, from the use of the planetarium for anthropological research to the use of live theatre. Both the Devonian IMAX theatre and the Margaret Zeidler Star Theatre served as meeting locations and provided unusual, although definitely not unfamiliar environments for the delegates.

For the first time in several years, all six of Canada's major planetariums were well-represented and there was much exchange of ideas and experiences among this widely-spread group of planetarium facilities.

An enjoyable banquet held at the beautiful Four Seasons Hotel was the social highlight of the conference. Christopher Trump, the Vice President of Spar Aerospace Ltd. of Toronto was the guest speaker. He spoke of Canada's many achievements in space technology and the 25 years since the launch of the first Alouette satellite.

The Annual Meeting was well-attended and featured discussion on many topics relating to the planetarium community. Outgoing President Ian McGregor presented a lengthy report on recent developments in the international planetarium community and the growing number of Canadian facilities which now number about thirty.

A new council for 1987-1989 was elected at the Annual Meeting: President, Bob Hawkins (North York); Vice-President, Paul Deans (Edmonton); Secretary-Treasurer, Ian Cameron (Winnipeg); Membership Secretary, Ian McGregor (Toronto); *NORTH STAR* editor, Tom Wujec (Toronto); Councillor, Pierre Lacombe (Montreal); Councillor, Lorne Perry (Calgary); Councillor, Erik Koelmeier (Vancouver); and Past President, Ian McGregor (Toronto).

Membership in the Planetarium Association of Canada is open to anyone interested in promoting interest in astronomy whether associated with a planetarium or not. Membership inquiries should be directed to: Membership Secretary, Planetarium Association of Canada c/o McLaughlin Planetarium, 100 Queens Park, Toronto, Ontario M5S 2C6.

1988 Solar Eclipse Expedition

by Randy Attwood
Toronto Centre

At the 1987 General Assembly in May, the Toronto Centre announced that it is planning an expedition to see the March 18th, 1988 total eclipse of the sun from the Philippines. This will be the fifth organized eclipse expedition run by the Toronto Centre in the past 15 years. Other trips were to Quebec in 1972, Manitoba in 1979, Kenya in 1980, and North Carolina in 1984. Many avid Toronto Centre eclipse chasers have also sought out the lunar umbra on their own in between these expeditions.

This total solar eclipse, which was well described in the April *Journal* and *National Newsletter*, will be the best one since June 11th, 1983 and will not be topped until the long-awaited Hawaii-Mexico eclipse of July 11th, 1991. All members of the R.A.S.C. are invited to participate in this event.

The Toronto Centre expedition leaves Toronto on Saturday, March 12th, stopping in Chicago to board a Philippine Airlines direct flight to Manila. West coast eclipse chasers will be able to take an alternate flight out of San Francisco. on Monday, March 14th and Tuesday, March 15th, we will tour Manila. We will arrive on the island of Mindinao and tour its capital city Davao on Wednesday, March 16th and Thursday, March 17th.

On eclipse morning, Friday, March 18th, we will board a chartered aircraft for the one-hour flight to General Santos city, just 9 km from the centre line of the eclipse. We will have several hours to set up our equipment before totality, which takes place just after 9:00 am and lasts 3 minutes and 20 seconds.

After returning to Davao later in the morning, we will have the rest of the day to celebrate the event. The next day, Saturday, March 19th, we will return to Manila. Those returning to Canada will do so right away. However, excursions to other cities such as Hong Kong, Singapore, Taipei and Bangkok will be available.

Each person on the trip will be able to bring three pieces of luggage at no more than 70 lbs each for a total of 210 lbs. aboard the Philippine Airline flight. This extra allowance made especially for this trip will allow anyone to bring along a modest-sized telescope if they wish. Another plus on the trip is that if we get clouded out on eclipse day, we will be able to fly above the clouds to at least visually observe the eclipse. This is very unlikely to happen – the weather predictions for this eclipse and site are the best for any eclipse in recent memory.

The cost of the trip is very reasonable and affordable. Airfare, double occupancy in excellent hotels, breakfasts and transfers are included at \$2090.00 CDN. Single occupancy is available at \$2250.00 CDN. This is much cheaper than any other excursion planned for this eclipse.

Since we will be viewing from land, photography will be no problem. Many of the trip members have many eclipses under their belts and have had their eclipse photographs published in international astronomical publications. A series of lectures on observing and photographing the eclipse will be offered both before and during the trip to assist eclipse rookies.

One major concern of anyone considering joining this trip will be the state of unrest in the Philippines. A recent article in *Sky and Telescope* magazine described the Philippines as being quite unstable. On the other hand, many tours from Canada have been in and out of both Manila and Davao over the past few years with no trouble at all. It seems that trouble was found only when the author strayed away from large metropolitan areas into the countryside – something we do not intend to do. In fact, since that article was written, the situation in the Philippines has settled down considerably and continues to improve.

We will certainly not take risks to see this eclipse. Nor will we be scared away by the experiences of one individual. Over the next few months, we will be in close contact with the Philippine consulate in Toronto to monitor the state of that country.

If you are interested in going on this eclipse trip, we need a deposit of \$300 CDN to reserve your spot. Already one-third of the 44 spots are taken. The others should all be reserved by September. If you have any questions, contact me at (416) 624-4629 (evenings). The deposits should be made payable to the Toronto Centre R.A.S.C. and mailed to me at 4348 Dallas Court, Mississauga, Ontario L4W 4G7.

This is the perfect opportunity to see the most beautiful of all astronomical events.

Across the R.A.S.C.

CALGARY: The first-ever Alberta Star Part was held July 24–26 at Chain Lakes Provincial Park. In celebration of the event, Calgary Centre Council held an Alberta Star Party T-Shirt Design Contest with the winner to receive a \$25 gift certificate from Quasar Optics. Another project underway is the collection of original astronomical observations by Calgary Centre members. The purpose is to build up and preserve a library of astronomical observations. Mike Potter has set up a new computer bulletin board system and is offering part of its use to the R.A.S.C..

EDMONTON: President Peter Ceravolo reported in *Stardust* that their 17.5 inch (44.5 mm) mirror from Coulter Optics has arrived after a one year wait. Centre members decided to hold Astronomy Day in August this year – the sky is too bright in May, and there were no bright planets in the sky. George Moores has volunteered to organize a Centre picnic at Blackfoot. A summer solstice celebration was held at Buck Mountain and included a barbecue and celebration of the twilight.

HAMILTON: A beginners' Observing course has been started and will run one evening a month from April to September on Wednesday evenings. All meetings are held at the observatory.

KITCHENER-WATERLOO: In the late spring the Centre hosted three star nights. Two were for groups of about thirty schoolchildren each with the program consisting of a talk on astronomy and a visit to the Centre's observatory at Ayr. On June 5, the Centre held a public star night at the Laurel Creek Nature Centre. The annual picnic was scheduled for June 20 at the observatory in Ayr.

At the April meeting, President Ray Koenig presented a talk on the "Beginners Use of a Telescope" In May, the group watched the PBS Nova program, "The Rocky Road to Jupiter" which described the history of the planned Galileo mission to the giant planet.

Centre member Bernd Mueller is engaged in a light pollution study of the Kitchener-Waterloo area. Through the use of large scale topographic maps, Bernd is selecting promising sites for astronomical observations. Bernd plans to test the selected sites and present his findings at a future meeting.

MONTREAL: Because of time and other commitments, Dennis Ryan has had to cancel next year's Saturday Night Talks.

NIAGARA: Members of the Niagara Centre are running a photocopier fund raising campaign as well as fund raising for an observatory. Public star nights were scheduled throughout the spring and summer at John Allen Park. Michael Lenicki is compiling a database of historical happenings dealing with the Niagara Centre to help the Centre's Historical Committee. A booklet titled "A Brief History of the Niagara Centre" will be published later on. President John Dekker has been contacting local merchants to donate merchandise as prizes for a raffle. The proceeds of the raffle will go towards the construction of the proposed observatory.

OTTAWA: The newsletter *Astronotes* has a new look – courtesy of SkyWave Electronics Ltd., the newsletter is now laser printed. Astronomy Day celebrations were held May 9 at the National Museum of Science and Technology. The activities included displays and demonstrations during the day and a star party at night.

SASKATOON: Saskatoon Centre is on a fund raising drive to build a 16 inch (40.5 cm) reflector. A pair of 10X50 Bushnell binoculars is being raffled. The member who sells the most wins a Tririon *Sky Atlas 2000*. Astronomy Day was held on May 9 at Market Hall, followed by a public star night at Diefenbaker Park.

ST. JOHN'S: Astronomy Day activities in May included a display at the Village Mall and a star night at Cape Spear.

TORONTO: The 1987 General Assembly was held over the Victoria Day weekend. The attendance was good, and for the most part, the weather was excellent. Everything went smoothly, and several delegates commented on how much they had enjoyed themselves. With the G.A. over, Toronto Centre members are looking forward to getting back into more regular activities. Among these were star parties scheduled on two nights in June and July. Because of the G.A. in May, the Centre did not celebrate Astronomy Day in that month but instead scheduled a day of activities on August 22. Another project underway is the organizing of a solar eclipse expedition – open to all members of R.A.S.C. – to see the March 1988 eclipse in the Philippines. (See announcement elsewhere in this issue.)

VANCOUVER: Once again, Karl Miller had the unfortunate duty of reporting the death of a Vancouver Centre member: honorary president Dr. Michael Ovenden. An observing weekend was scheduled for the weekend of May 29–30 at Aldergrove Lake. A star party was scheduled for July 24–25 at Cascade Lookout.

VICTORIA: Victoria Centre members manned a display booth at the Hobby Show at the Victoria Curling Rink. “Summer Evenings With The Stars” talks were scheduled weekly through August at the University of Victoria. Astronomy Day was held May 9 on Dallas Road. Victoria’s 0.5 m mobile telescope was there along with the telescopes of other members.

WINDSOR: New Windsor President Lorison Durocher reported in *Aurora* that National President Mary Grey spoke to the Centre last January.

WINNIPEG: The Centre’s Celestron 14 inch (35.5 cm) telescope is getting a lot of use and there are many bookings. More upgrades to the observatory building at Glenlea, such as the addition of siding, are also taking place. A June 12 open house/barbecue was scheduled to show off the site.

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

Due\$ Due

It is now time to renew for membership in the Society for the 1988 membership year. The current 1987 membership year expires on September 30, 1987 and all fees taken at this time are for the new year. 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 1988 membership year runs from October 1, 1987 to September 30, 1988 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.

Astronomy in the House

The following interesting letter was received by our Executive Secretary, Ms Rosemary Freeman, in May.

Dear Ms. Freeman:

It isn't often that astronomy is brought up in the House of Commons but May 8th, 1987 was an exception.

Please find attached a copy of *Hansard* of that day where on page 5888 you will find both the contribution of myself and my colleague Mr. Bill Tupper, M.P.

Yours faithfully,
Dave Nickerson, M.P.
Western Arctic

The following are the excerpts from *Hansard*.

Commons Debates May 8, 1987, page 5888

INTERNATIONAL ASTRONOMY DAY Expression of Good Wishes to Amateur and Professional Astronomers

Mr. Dave Nickerson (Western Arctic): Tomorrow, Mr. Speaker, May 9, is International Astronomy Day. Amateur and professional astronomers the world over will take this opportunity to participate in special activities designed to make the general public aware of the joys of astronomy.

These activities in Canada will be coordinated by the Royal Astronomical Society of Canada which will mark the day by paying tribute to Mrs. Helen Sawyer Hogg who devoted her life to astronomy and the scientific popularization of this discipline.

The theme of this year's celebrations comes from one of Mrs. Hogg's works entitled *The Stars Belong To Everyone*. The House is pleased to extend its best wishes to all participants.

Commons Debates May 8, 1987, page 5890

ASTRONOMY Access by Canadian Astronomers to New Telescope In Hawaii

Mr. Bill Tupper (Nepean-Carleton): Mr. Speaker, through a collaborative agreement signed recently between the National Research Council and Britain's Scientific and Engineering Research Council, Canadian astronomers will have access to 25 per cent of the observing time on one of the world's best radio telescopes operating at sub-millimetre wavelengths, a previously inaccessible spectral window on the universe.

This facility, the James Clerk Maxwell Telescope, will start operating this June on the 4,300 metre high summit of Mount Mauna Kea in Hawaii. Mauna Kea is one of the world's best astronomical sites because of its very dry atmosphere and the absence of light pollution. For this reason, a growing number of major telescopes, operate there at visible, infrared and millimetre wavelengths, including the Canada-France-Hawaii Telescope, a world class facility used by Canadian astronomers working in the visible part of the spectrum.

The National Research Council will also give Canadian astronomers convenient access to the new frontier in astronomy, the unprecedented resolution and spectral coverage of the Hubble Space Telescope. Located far above the earth's atmosphere, the Space Telescope will provide opportunities for dramatic new discoveries when it is put in earth orbit in two years.

The next decades will truly be rewarding for Canadian astronomers and scientists.

Amateur Achievement Award

The Astronomical Society of the Pacific (A.S.P.) is soliciting nominations for its Amateur Achievement Award to recognize outstanding contributions to the field of astronomy by an amateur. The international award includes a plaque and a \$250 (US) cash prize.

Nominations can be made in writing by any individual or group. Nominees must not be employed in the field of astronomy in any professional capacity. Previous winners include Frank Bateson (New Zealand), George Alcock (United Kingdom), Ben Mayer (U.S.), Robert Evans (Australia), and Clinton Ford (U.S.).

Letters of nomination should include a concise statement (about 100 words) highlighting the qualifications of the nominee for the award. The letter should also be accompanied by a longer description of the nominee's contributions, including (when possible) publications, news clippings, a biography, etc. There is no special form to fill out.

All nominations will be read and evaluated by the wards Committee of the Astronomical Society of the Pacific. The final decision will be made by the A.S.P. Board of Directors.

Nominations should be sent by August 31, 1987 to: Amateur Award, Astronomical Society of the Pacific, 1290 24th Avenue, San Francisco, California USA 94122.

Greenwich Observatory on the Move

The 316 year old Royal Greenwich Observatory (R.G.O.) based at Herstmonceux Castle in Sussex about 70 km south of London, England is to move to the University of Cambridge in the next few years. The Observatory, founded by King Charles II in 1675 on a hill overlooking the river Thames, was moved to its present site in 1949 because of the need for clearer skies and more spacious grounds.

For several years the future of the R.G.O. has been the subject of bitter debate within the British scientific community with transfer either to the University of Cambridge, or University of Manchester, or merger with the Royal Observatory, Edinburgh, short-listed as the options available. The R.G.O. has become increasingly only an administrative headquarters as major telescopes have been built at La Palma in the Canary Islands – in particular, the 2.5m Isaac Newton Telescope and the planned new 4.2m William Herschel Telescope.

The decision announced in June to move the R.G.O. has met with much opposition, not only from the two losing institutions but also from the R.G.O.'s own staff who feel a move is not necessary at all! An appeal is underway and there is a very small chance the decision may be changed.

Bumper Stickers

A number of good humoured bumper stickers on astronomical subjects are being made available by the non-profit Astronomical Society of the Pacific. Slogans include: * Astronomy is Looking Up * Let the Stars Get In Your Eyes * Black Holes Are Out Of Sight * I Watch Heavenly Bodies and the somewhat more esoteric * Positrons Are Another Matter * Supernovae Are A Blast * Quasars Are Far Out * The Big Bang Was a Naked Singularity *

The requested donation is \$1.00 US for each sticker. Proceeds go to support the educational programs of the 98 year old scientific society. Write to: ASP., Bumper Stickers Department, 1290 24th Avenue, San Francisco, CA 94122.