

NATIONAL NEWSLETTER

October, 1977



The 1977 General Assembly. *Photos by: E. Efston, J. Low, and I. McGregor*

NATIONAL NEWSLETTER

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Except as noted above, please submit all material and communications to:

NATIONAL NEWSLETTER

c/o Ian McGregor,

McLaughlin Planetarium,

100 Queen's Park,

Toronto, Ontario,

M5S 2C6

Deadline is two months prior to the month of issue.

Editorials

Thanks, Norman

Readers will note that something is missing from the masthead this month. It is a name that first appeared on the masthead of the April, 1972 issue: the name of Norman Green.

In his letter of resignation, Norman writes: "It has been a source of much satisfaction to have seen the *NEWSLETTER* grow from a news sheet to a multi-page publication; from a few items of news, to a really worthwhile, interesting and informative booklet."

All of us who have had the pleasure of working on the *NEWSLETTER* with Norman feel that a great deal of the credit for the success of the *NEWSLETTER* belongs to him. During his two-year term as editor, and for the past three years as an assistant editor, Norman Green has worked tirelessly on many aspects of the publication. His thorough knowledge of astronomy, his mastery of all the facets of English composition and grammar, his ability to handle minute details that many of us would shy away from, his flawless sense of what is appropriate, plus his dedication to hard work for the benefit of the Society, its members, and astronomy have made Norman Green an invaluable member of the staff.

We shall miss him. And we are grateful to him not only for his service to the *NEWSLETTER*, but for his more than forty years of service to the Society.

Thank you, Norman. Good luck!

Welcome!

It is with pleasure that we welcome four new members to the editorial staff of the *NATIONAL NEWSLETTER*. They are Mr. Ian McGregor, Dr. Paul Marmet, M. Damien Lemay, and Mr. Barry Matthews.

Replacing Norman Green as our production co-ordinator in Toronto is Ian McGregor. Ian has been a member of the Society since 1964 and has an impressive record of service in the Toronto Centre, particularly in educational activities. He recently joined the staff of the McLaughlin Planetarium as a producer.

Dr. Paul Marmet and M. Damien Lemay, both of the Quebec Centre, have been appointed to provide better service to our French-speaking members. Dr. Marmet will serve as our French editor while Damien will report, *en français*, on the activities of our French-speaking Centres in Montreal and Quebec. Dr. Marmet, a member of the Physics Department of Laval University, is a long-time active member of the Quebec Centre and a recent recipient of the

Society's Service Award. M. Lemay, also active in the Quebec Centre, has recently been appointed to the Society's Executive Committee. He won the Grand Prize in the Observing Competition held by the Calgary Centre in connection with the 1976 General Assembly.

Barry Matthews is an active member of the Ottawa Centre and a founding member of the present Halifax Centre. As our Eastern Regional Editor, he will report on news from Centres east of Winnipeg. Paul Deans will continue as Western Regional Editor, reporting on activities from Winnipeg and west.

With the addition of Damien Lemay and Barry Matthews, there are now three people whose specific role is collecting and reporting on local and centre news items of interest to the membership at large. We hope that this will result in more news of local activities. However, we cannot print news that we are not informed of, and communications from many Centres has been, at best, a trickle. Please co-operate by sending news items to your regional editor, bearing in mind the deadline shown on the masthead.

Also, it would be appreciated if Centre Newsletter Editors would send one copy of each edition of their newsletter to their regional editor, as well as a copy to the *NATIONAL NEWSLETTER* editorial office at the McLaughlin Planetarium. The regional editor will be looking for news items, while "headquarters" will be looking for feature articles in Centre newsletters that are of sufficient interest to the membership at large to justify reprinting in the *NEWSLETTER*.

We hope that the foregoing changes will result in better service to the membership.

Nominations invited for RASC Service Award

The Awards Committee of National Council invites nominations from Centre Councils and the membership at large for the Service Award of the Royal Astronomical Society of Canada.

The Service Award is a major award given to a member in recognition of outstanding service, rendered over an extended period of time, where such service has had a major impact on the work of the Society and/or a Centre of the Society. The Award is a small bronze plaque which is given only by resolution of the National Council upon recommendation of a special committee (the Awards Committee) of the Society. The Award is presented at the Annual Meeting of the Society.

To be eligible for this Medal, a member must:

- (1) Be currently a member in good standing;
- (2) Have been a member in good standing for at least ten consecutive years prior to the date of nomination for the Medal;
- (3) Have rendered substantial service of a well-defined nature to the Society and/or a Centre of the Society over a period of at least ten years, or more. Such service should have had a major, constructive impact and would involve a very substantial and continued commitment on the part of the donor.

A member shall not receive more than one Service Award. For a list of the recipients to date, please refer to the *Supplement* to the *JOURNAL*.

The Service Award may be given posthumously to a member who would otherwise be eligible.

Centres are requested to limit nominations for this Award to one every three years on the average.

Nominations should be sent to the Awards Committee of the Royal Astronomical Society of Canada, 124 Merton Street, Toronto, Ontario M4S 2Z2. Nominations for 1978 should reach the committee *no later than December 15, 1977*.

DUES DUE

All members are reminded that their 1978 fees were due on October 1, 1977. Members of Centres should remit directly to their Centre's Treasurer; unattached members should send their fees to the National Office, 124 Merton Street, Toronto, Ontario, M4S 2Z2. Please include apartment numbers and your postal code.

Fees are \$12.50 for regular members and \$7.50 for members *under the age of 18 years as of October 1*, with proof of age required to be eligible for the student rate. As well, some Centres have special fees in addition to the above. Please consult your local treasurer for further details.

Treasurers of Centres are reminded that all membership fees received up to December 31

must reach the National Office by January 15 in order to permit membership lists to be updated in time to mail the February issue of the *JOURNAL*. It will not be possible to retain membership and receive the publications of the Society unless such fees are received by January 15.

National President's Report

by A. H. Batten

I am writing this shortly after the very successful General Assembly at which every Centre was represented. Thus, I have recently had the opportunity to meet or renew acquaintances with many of you. Those of you who were not there will be glad to know that Council received the final report of Dr. Percy's committee and it was discussed at length by Council and by the General Assembly. While much of the report will need careful consideration before any of its recommendations are implemented, Council did agree in principle to set aside a portion of the capital received from the sale of 252 College St. as a special products fund, the income of which will be used in grants and loans to Centres. The General Assembly also moved to set up a committee to look into ways in which the Society might increase its membership. This is important to us for many reasons, not the least of which is that, despite the large capital sum the Society received selling its property, its financial position is not strong. No doubt we shall move to adopt other recommendations of Dr. Percy's after due consideration.

As you will see from the minutes, Council has also moved to honour the memory of two of our prominent members who died last year. There will be the Ken Chilton Memorial Prize offered each year for an outstanding astronomical achievement by an amateur astronomer. We hope that it will be possible for the first award to be made in 1978 for the year 1977. We have also opened an appeal to raise money to reprint in our *JOURNAL* many of the anecdotal articles about famous astronomers that were written by the late Dr. J. F. Heard. In this way we shall have a permanent memorial of one who served our Society in many capacities over a long period of time. I hope that many of you will contribute to this fund.

Ed. Note: The J. F. Heard Fund will remain open for one year and contributions from any member or Centre will be gratefully received at the National Office. Cheques should be made payable to the Royal Astronomical Society of Canada, "J. F. Heard Memorial Fund". Receipts will be issued for tax purposes.

Nominations for RASC Officers 1978–1979

The By-Laws of the Society provide for a Nominating Committee composed of the three surviving immediate Past Presidents, whose duty it is to prepare a slate of candidates for the offices of the Society.

Next May, we must elect the following officers: President, 1st Vice-President, and 2nd Vice-President. Normally, there is a progression through these offices: the 2nd Vice-President becomes 1st Vice-President; the 1st Vice-President becomes President. However, this progression is not dictated by the Constitution, and alternative nominations may be made for any of these offices.

If any member wishes to make suggestions in this regard, he should contact the Committee Chairman, Dr. J. D. Fernie, c/o the National Office, 124 Merton Street, Toronto, Ontario, M4S 2Z2.

As well, the By-Laws provide that "any five members of the Society, in good standing, may nominate additional candidates for any office, provided that such nomination, accompanied by a letter of acceptance from the nominee shall be received by the Secretary of the Society, not less than sixty days before the date of the annual meeting".

It would be appreciated if any such nominations, (together with a short resume) were submitted no later than *March 1, 1978*, in order to allow for the printing and mailing of ballots.

Full details pertaining to nominations are outlined in By-Law 1, Article 11(a), as published in the June, 1969 *JOURNAL*, pages 155–168.

RASC Service Award Winner Given Civic Reception in St. John's

Peter Allston, St. John's Centre delegate to the recent General Assembly, reports that a civic reception was held in St. John's, Newfoundland, on July 13 at a city council meeting to congratulate Mrs. Dora Russell on her recent receipt of the Society's Service Award. The reception was attended by many of the members of the St. John's Centre. The following photographs were taken by Mr. Allston.



Photo #1:
Her Worship, Mayor of St. John's, Dorothy Waytt, congratulates Mrs. Dora Russell at a city council meeting on Mrs. Russell's being awarded the Society's Service Award.

Photo #2:
Some members of the St. John's Centre at the Mayor's Reception for Mrs. Dora Russell. From left to right: (back row) – Mr. Peter Allston, secretary; Dr. Ken O'Brien. (front row) – Mr. Randy Dodge, president; Mrs. Dora Russell, founding member; Mr. Jack Burridge, founding member; and Mr. David Bennett.



Toronto Hosts 1977 General Assembly

by Ian McGregor, Assistant editor

Every year one of the eighteen Centres in the R.A.S.C. plays host to delegates from across Canada, for an event known as the "General Assembly". A General Assembly has many meanings. It can be a formal business meeting; an opportunity to listen to or, better still, present a paper on some aspect of astronomy; or a casual talk and exchange of ideas over coffee with an amateur from a thousand miles away. It may mean the discovery of a new idea, a better appreciation of an old idea, a renewal of a friendship or the making of a new one. A General Assembly is all of these and much more.

This year Toronto played host to members from across Canada. This gathering represented the fourth time since 1962, when the term "General Assembly" was adopted to describe the Society's convention, that Toronto has been the meeting place. It is possible that it was only the second time all eighteen Centres, from Victoria to St. John's, were represented.

Beginning on Thursday, June 30th, the delegates arrived to register for the Assembly and prepare for the four days of activities. In the evening a very enjoyable wine and cheese party hosted by the Toronto Centre was held at the Margaret Addison Residence, followed by an informal slide presentation given in the lecture hall of the McLaughlin Planetarium. The programme held there could easily have been titled "How to Build an Observatory" as slides were shown on the construction of the Edmonton, Winnipeg and Toronto Centre observatories as well as the Innisfil Observatory. Other presentations included a humorous look at a summer astronomy programme held in Ontario provincial parks, and a slide show by the Ottawa Centre. The lecture hall was almost filled to overflowing and when a large group left to visit the McLennan Physics Laboratories and the Department of Astronomy at the University of Toronto, the slide session was still well-attended.

The Paper Sessions were held on Friday and Saturday mornings and in both cases came almost too early for many delegates following the late night activities. Dr. Tom Clarke of the McLaughlin Planetarium welcomed the Assembly to the Planetarium on the Friday morning, and during the two sessions chaired by Dr. Percy, a total of fifteen papers were presented. For details of the individual papers see "Abstracts of Papers Presented at Toronto" elsewhere in this issue. Following the Friday Paper Session the delegates gathered in Philosophers Walk for the traditional group photograph.

Friday night was the Annual Dinner, held this year at the Ontario Science Centre. It was the highlight of the Assembly. Over 230 delegates gathered for the splendid dinner hosted by the Ontario government. Following the dinner, three members of the Society were awarded the Service Medal – the Society's highest award. These members were: Dr. Paul Marmet (Quebec), Dora Russell (St. John's), and Dr. John R. Percy (Toronto).



Terry Dickinson speaking at the Annual Dinner at the Science Centre. *Photo by E. Efston.*

The dinner was highlighted by Terry Dickinson's interesting slide talk entitled "Revision of the Ceti Equation", which discussed the possibilities of extraterrestrial civilizations. The introduction of a "Star Trek" factor and other new ideas provided an optimistic conclusion to a subject very much in people's minds, especially following the inconclusive Viking results from Mars.

To prepare delegates for 1978, several "blue-eyed Arabs" from the oil sheikdoms of Alberta put in an appearance to announce next year's Assembly in Edmonton and to share some samples of the Alberta tar sands with delegates.

On Saturday afternoon, Dr. Alan Batten, our National President, called the Annual Meeting to order. A summary of the proceedings of the Annual Meeting will be found in the August issue of the *JOURNAL*. One interesting aspect of the Annual Meeting was a survey taken of the approximately 150 delegates present which showed all eighteen centres were represented.

With the Annual Meeting concluded, the delegates dispersed only to meet again in the evening at the David Dunlap Observatory for an excellent banquet, hosted by the Observatory. Under clear skies, people ate and walked around the grounds while the 74-inch telescope was turned to the Hercules Cluster. After sunset, the winners of the Display Competition were announced and the three top prizes awarded. See "Toronto Display Competition" elsewhere in this issue for the list of successful entries.

Visits to the other observatories in the Toronto area were popular among the delegates and two buses set off from the David Dunlap Observatory grounds late in the evening. At Schomberg, the Toronto Centre's Observatory Log Book had names added to it from across Canada, while at Innisfil Jack Newton's Observatory was open for demonstration. The visits lasted early into the morning.

On Sunday morning a group of over one hundred very sleepy delegates gathered at the Planetarium for a presentation of the current public show *New Worlds*. For many delegates it was their last Assembly activity before returning home, while for others it was the beginning of a visit to the city of Toronto.

The tremendous success of the Toronto General Assembly of 1977 was due to the efforts of the Organizing Committee and particularly its chairman, Ann Scott. To Ann and all the members of her committee, to the McLaughlin Planetarium, to the Ontario Science Centre and the Department of Astronomy, University of Toronto a special thank-you.

We look forward to Edmonton in 1978!

Toronto Display Competition

by Ian McGregor,
Assistant Editor

Following the success of the Display Competition in Calgary in 1976, the Toronto General Assembly continued this new Assembly activity and were pleased with the results. For details about the categories and rules see the *NATIONAL NEWSLETTER* in the August 1976 *JOURNAL*.

For the ten listed categories there were a total of 27 entries with good representation from across Canada. The winning entries are as follows:

1. Best Centre observing display – Toronto Centre
2. Best photographic star atlas – Gord Patterson (Saskatoon)
3. Best photometric project – Randolph Brooks (Halifax)
4. Best observing or reducing technique – Mario Lapointe (Quebec)
5. Solar System objects – a) Visual – Vincent Cottrell (Calgary)
b) Photographic – Michael Edwards (Halifax)
6. Deep Sky objects – a) Visual – No prize awarded
b) Photographic – Alan Dyer (Edmonton)
7. Atmospheric Phenomenon – a) Visual – Mark Zalcik (Edmonton)
b) Photographic – Don Hladiuk (Winnipeg)

Three prizes were also given by major commercial companies. From Unitron a gift certificate was awarded to Mario Lapointe (Quebec). From Focus Scientific, Mark Zalcik received a pair of 12 × 80 binoculars. Saskatoon Centre and Gord Patterson were the recipients of Edmund Scientific's 4¼" Astroscan.

One recommendation for future Display Competitions is to have two new categories possibly titled "General" and "Youth" in order to encourage greater participation and aid the competition judges.

The committee wishes to thank all participants for their interest. Special thanks are extended to the following who served as judges: Norman Sperling, Toronto Centre; Roy Bishop, Halifax Centre; George Ball, Victoria Centre.

Abstracts of Papers Presented at Toronto General Assembly

The 400th Anniversary of the Comet of 1577: A Discussion of the Observations.

**Steven N. Shore, Department of Astronomy and David Dunlap Observatory,
University of Toronto, and
Lys Ann T. Shore, Pontifical Institute of Medieval Studies,
University of Toronto**

The comet of 1577 occupies a unique place in the history of western astronomy. It was one of the first extensively observed comets to appear after printing had become widespread in Europe and was the centre of considerable scientific debate. We will review this controversy and discuss the observations of Tycho Brahe and Michael Maestlin, among others, of the comet; and the attempts to interpret these within the Ptolemaean and Copernican world-constructions. We will also present a previously unreported contemporary amateur observation of the comet of 1577. This observation will be contrasted with several published accounts. The importance of amateur observations of historic astronomical phenomena, especially comets, will be briefly discussed.

An Eighteenth Century Nova Scotia Observatory

Roy L. Bishop, Department of Physics, Acadia University, Wolfville, N.S. B0P 1X0

Under the granite backbone and forests of central Nova Scotia, an observatory was erected in the year 1765. Initially it was used as a station for the checking and calibration of surveying instruments; however, in 1767 and again in 1769 it was equipped with some of the best astronomical instruments from the Dollonds of London. Conceived by one of the most remarkable and capable individuals of the eighteenth century, and eventually but reluctantly paid for by the British Admiralty, this building merits consideration as possibly the earliest optically-equipped astronomical observatory in the Western Hemisphere.

A Nineteenth Century Nova Scotia Observatory

Roy L. Bishop

Through the efforts of Joseph D. Everett, Professor of Mathematics, Natural Philosophy and Astronomy at King's College, Windsor, Nova Scotia, an astronomical observatory was erected at that college in 1861. This was apparently the first astronomical observatory to be erected in Nova Scotia for educational purposes. Topped by a hemispherical roof, the observatory was of unusual design in that its walls rotated with the dome. It ceased to be used for astronomical purposes when Everett returned to Scotland in 1864.

The Astronomical League

**R.P. van Zandt, President, The Astronomical League, 7035 N. Willow Wood Dr., Peoria, 111.
61614**

The Astronomical League is an association of affiliate member amateur astronomical societies in the United States. For this reason, the Astronomical League has many interests and problems in common with the Royal Astronomical Society of Canada. This paper will describe some of the present and future programmes of the Astronomical League.

Astronomy for Campers: An Approach to Public Education in Astronomy on the Introductory Level

Andreas Gada, Toronto Centre, R.A.S.C.

During the summers of 1974 and 1975 a group of amateur astronomers from the Toronto Centre of the Royal Astronomical Society of Canada conducted a public education programme on astronomy in provincial parks in Ontario. This programme was called Project AFC: Astronomy for Campers. The project was sponsored by the federal government's Opportunities for Youth programme and was carried out in co-operation with the Ministry of Natural Resources. During the two summers of operation, the project presented over 100 programmes to more than 10,000 people.

This paper describes the projects structure in detail and discusses the considerations made and the techniques used to develop the programme.

The Temiskaming Astronomical Society

Peter R. Ryback, Cobalt High School, Cobalt, Ont. P0J 1C0

About two summers ago, a small group of amateur astronomers established the Temiskaming Astronomical Society in northeastern Ontario. For a club of its size, in a relatively unpopulated area, the Society has become quite active. This paper will discuss some of the Society's activities during the past year.

The Endless, Boundless, Stable Universe

Grote Reber, "Wetheron", Bothwell, Tasmania, Australia

The shift toward the red of spectral lines from distant galaxies can be adequately explained without recourse to relative motion. The "tired light" idea dates back to 1929 or before. To be plausible, a suitable mechanism must be proposed to extract energy from the photon. Also, the extracted energy must be accounted for and its existence demonstrated. These requirements were impossible as long as intergalactic space was considered a void.

During the past decade, evidence from hectometer wave radio astronomy and other sources has been accumulating. This evidence suggests that intergalactic space has considerable material in a very tenuous form. The interaction of light with this material and the consequences will be discussed. How intergalactic material is recycled will be mentioned.

Techniques for Deep-Sky Photography

Jack Newton, Toronto Centre, R.A.S.C.

This paper deals with and resolves many of the problems that plague the amateur astrophotographer, and describes the system that has proven itself very successful over the past few years. The paper is illustrated with 20 slides.

The subject is covered under the following headings: (a) The Telescope: size, mounting drive; (b) The Guide Telescope: magnification, illuminated eyepieces; (c) The Camera: type, features, technique for focussing; (d) The Film: exposures and processing.

An Automatic Grinding Machine

Michael P. Edwards, Halifax Centre, R.A.S.C.

We all know that as one's interest in optical observational astronomy increases, his desire to see fainter and fainter objects also increases. This leads to larger optical equipment. Usually, for the amateur, the cost of this equipment is the major problem blocking the attainment of the desired optics. The weight of large blanks also presents a problem due to the

balance of the physical work required in mirror grinding, and the human factor in laziness. This might lead to the construction of a machine which will produce large optics. The opportunity to construct an automatic grinding machine presented itself this past year at the Nova Scotia Technical College in Halifax. This paper will describe the design, techniques, construction and operation of the resulting machine in an illustrative manner.

Making a Photographic Star Atlas

Gordon N. Patterson, Saskatoon Centre, R.A.S.C.

This paper outlines how the Astrophotography Group of the Saskatoon Centre planned and carried out a field project: preparing a photographic star atlas of the Orion-Taurus region for presentation in the Observing Competition at the 1977 General Assembly. This project was used as a training vehicle for all the members involved, none of whom had any previous experience in field site astrophotography. The various problems encountered are described, together with the solutions arrived at by the participants.

The atlas covers 1600 square degrees of sky in 35 plates, each plate being presented in colour and black and white. The black and white prints are lettered showing various stellar features and have R.A. and Dec. lines drawn in. The colour prints, 8" x 10", are printed on Cibachrome from the original colour slides, taken on Fujichrome R 100 film.

Photoelectric Photometry for Amateurs

R. Dick and D. Welch, Ottawa Centre, R.A.S.C.

Photoelectric photometry is no longer beyond the reach of amateur astronomers. A three-colour photometer has been built and used to investigate the colour indices of members of several open clusters.

The design of the photometer is briefly discussed. The results of the photometry are discussed and shown to be in close agreement with published values.

Solid State Photometer

Rolf Meier, Ottawa Centre, R.A.S.C.

A photoelectric Photometer has been designed using an HP 5208-4204 photodiode as a sensor. The light beam is chopped with a perforated disc, generating a 500 Hz photocurrent signal. Amplification of about 100 is achieved using 741 op-amps. Low noise is achieved by band-limiting the amplification. A precise rectifier enables the use of a simple digital readout.

Preliminary results using a 10-inch relector indicate a useful range to 5th magnitude, with an accuracy of 0.01 magnitude.

Recovery of the Innisfree, Alberta, Meteorite

Ian Halliday, Alan T. Blackwell and A.A. Griffin, Herzberg Institute of Astrophysics, Ottawa and Saskatoon.

The Innisfree Meteorite fell early in the evening of February 5, 1977 about 140 km east of Edmonton. Two of the 12 camera stations of the Meteorite Observation and Recovery Project, operated by the National Research Council, photographed the event. Some other stations were close enough to the event but were clouded out. By February 14, analysis of the photographs indicated a strong possibility that some fragments had survived to fall as meteorites so a search party began combing the fields on February 17, using four snowmobiles. One stone meteorite weighing 2 kg was found that day while five smaller pieces were recovered in April after the snow melted, for a total mass of 3.8 kg.

The orbit of the meteorite before collision with the Earth has been derived and an estimate of the pre-atmosphere mass can be made. Studies of the various isotope effects have been

undertaken in other laboratories. The eight Canadian meteorites with known times of fall during the past 40 years are examined as a group with special consideration of the effect of winter conditions on meteorite recovery.

Cracking the Eyepiece Solar Filter Problem

Norman Sperling, Toronto Centre, R.A.S.C.; Assistant Editor, *Sky and Telescope* 49-50-51 Bay State Road, Cambridge, Mass. 02138

Eyepiece solar filters have been shattering in normal use for decades. This poses a hazard to the retina due to unfiltered sunlight, and to the cornea due to flying shards. Amateurs and planetaria often warn against such filters. Persuading the government actually to eliminate them from the market is a very complex and often frustrating activity. Recent progress with the U.S. Consumer Product Safety Commission and other agencies will be reported.

Invited Paper

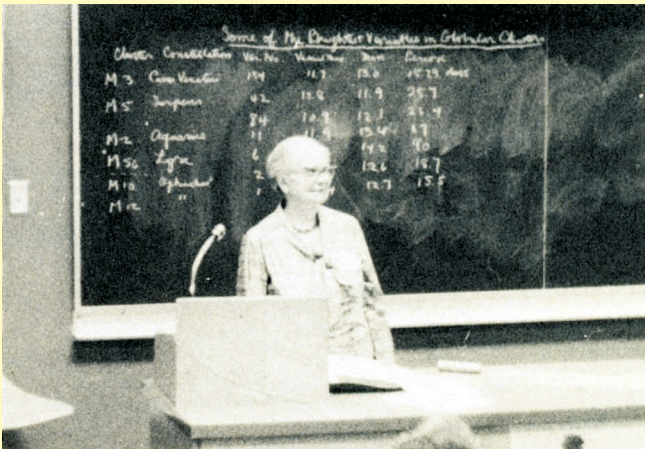
The Brightest Variable Stars in Globular Clusters

Helen Sawyer Hogg and Christine Coutts-Clement, Department of Astronomy and David Dunlap Observatory, University of Toronto.

The brightest variables in globular clusters present an interesting anomaly. Though some of them were discovered in the 1890's with relatively small telescopes and by amateur astronomers, they have been little observed by amateurs since. At the David Dunlap Observatory, the programme of variables in globular clusters has been pursued with the 74-inch and smaller telescopes for both the RR Lyrae stars and the brighter, slow variables.

The paper on the two bright Cepheids in Messier 5 (Coutts-Clement and Sawyer Hogg, R.A.S.C. *JOURNAL*, August 1977) summarizes the behaviour of the two stars from hundreds of observations made at the David Dunlap Observatory.

This paper discusses in further detail the discoveries of the bright variables in M5, M3, M2, and M56 and the progress of observations on them since their discovery. The A.A.V.S.O. is ready to prepare charts for observing some of these stars.



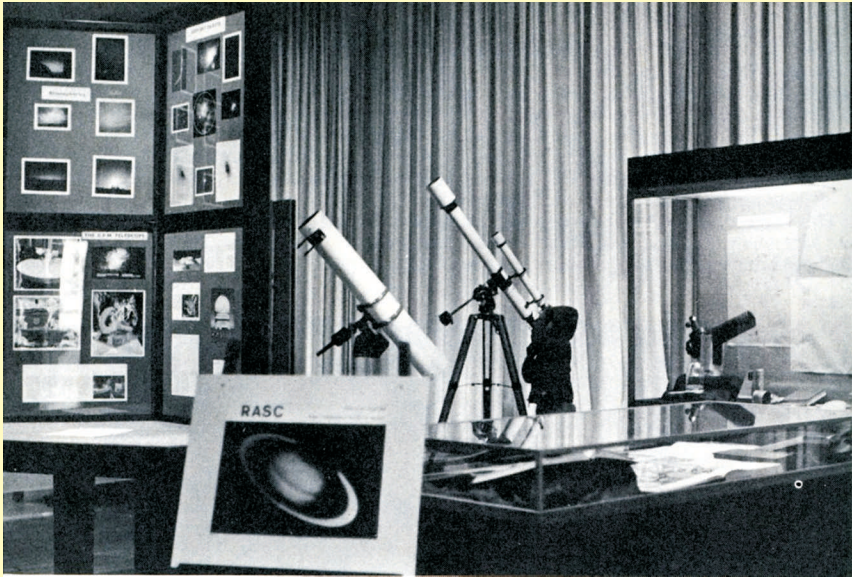
Dr. Helen Hogg, newly-elected National Honorary President of the Society, presents a paper on her favourite subject, globular clusters. *Photo by J. Low.*

Halifax Centre Display

by David L. DuPuy,
Halifax Centre

For the second year in a row, the Halifax Centre has made good use of a chance to show the public what our centre is about. The Nova Scotia Museum, where the Halifax Centre normally meets, sponsored a Societies Show earlier this summer. Four societies responded and the Halifax Centre put together an effective display covering about 750 square feet and on display for over a month.

As seen in the photograph, several telescopes were exhibited, and an entire display case was devoted to mirror-grinding techniques. Another display case featured a spread of the Society's publications with emphasis on *The Sky Tonight*. A series of photographs illustrated the range of astronomical objects, and one panel was devoted to the Canada-France-Hawaii Telescope. One of the more effective displays included a three-dimensional model of the stars that make up the Big Dipper with coloured foam balls to represent the stars. From the front of the display, no recognizable pattern emerged. But after reading the explanation, visitors could view the model from one side (from an x-mark on the floor), and sure enough, there were the better known parts of Ursa Major. Mike Edwards and Randall Brooks deserve most of the credit for assembling this display, with telescopes and other bits and pieces from other Halifax Centre members.



Revised Predictions for Eclipses of Saturn VIII (Iapetus)

Editor's Note: The following information was brought to our attention too late for inclusion in the August issue, and is taken from I.A.U. Circular 3074, dated May 16, 1977. This information supersedes that shown in the August issue.

A.W. Harris, Jet Propulsion Laboratory, provides the following predictions for the eclipses of Iapetus by Saturn and its rings on 1977 Oct. 19–20 and 1978 Jan. 7–8. The earlier predictions (Peters 1975, *Celes. Mech.* 12, 99; Porter 1976, *Handb. Br. Astron. Assoc.* for 1977, p. 63)

have been substantially revised with the help of the new theory for Iapetus by A.T. Sinclair, H.M. Nautical Almanac Office. The times are still uncertain by about ± 15 mm.

Event	1977 ET	1978 ET
Immersion, A ring shadow	Oct. 19 ^d 12 ^h 25 ^m	
Emersion, A ring shadow	19 13 55	
Immersion, B ring shadow	19 14 25	
Immersion, C ring shadow	19 17 31	
Disappearance, Planet shadow	19 19 31	Jan. 7 ^d 18 ^h 57 ^m
Reappearance, Planet shadow	20 05 07	8 04 12
Emersion, B ring shadow		8 08 04
Immersion, A ring shadow		8 08 49
Emersion, A ring shadow	20 05 11	8 10 48

New Venezuelan Astronomical Society

A new astronomical organization, Sociedad Venezolana de Aficionados a la Astronomia (SOVAFA) has recently been founded in Venezuela. According to its president, Domingo Sanchez P., its aims and objectives include encouraging the development of astronomical education in Venezuela, fostering public interest in astronomy, and encouraging and training amateur astronomers. SOVAFA plans to publish a bulletin and a year book, and to establish an astronomical library. The new organization would also like to establish close ties with other, similar societies "to exchange projects, different types of work and publications related to astronomy and its latest development".

Further information may be obtained from SOVAFA, Apartado do Correos 50829, Caracas 105, Venezuela, South America.



G.A. Delegate Eleanor Low examines display boards of the Toronto Centre. *Photo by J. Low.*

In Praise of Uncles

by Dr. J.D. Fernie
Past President, R.A.S.C.

It was during the course of my graduate seminar on the history of astronomy that I recently made a most profound discovery. Scarcely able to stifle the cry of “Eureka” that sprang to my lips at the time (it so infrequently does that I would stumble over the pronunciation) I have now regained sufficient composure to bring you the good news. It is quite simply that modern astronomy wouldn’t be what it is had not most of the great figures of the Copernican Revolution had uncles.

Take the case of young Nicholaus Koppernigk. There the kid was as a typical eight-year-old in Torun, fighting with the other boys and getting his clothes mussed up and throwing rocks at the ducks on the Vistula and all that, and probably looking forward to a great future emulating Dad as a magistrate. This all changed in 1483 when Dad passed on to The Great Court in the Sky, and Nick, now ten, and the other Koppernigk kids were packed off to live with Uncle Lucas Watzelrode. Uncle Lucas was a martinet. He was also a tyrant and a nepotist. No sooner had he been made Bishop of the local area, Ermland, than he began to see what he could do for the family. Nick and his no-good brother Andreas (whose avowed ambition it was to become a pirate) were appointed minor officials of Frauenburg Cathedral. This brought them a small but steady income, although years would pass before they ever did anything to earn it – in Andreas’ case, never. In due course Nick’s older sister was appointed the Mother Superior of a major convent, and the younger sister had an excellent marriage to a wealthy nobleman arranged for her.

By the time Nick was 24, Uncle Lucas had got him appointed as a Canon of Frauenburg Cathedral, which brought a yet better income. Nick celebrated this by immediately going off as a student to Italy for ten years, there to study medicine, Canon Law, and mathematics. And incidentally, we suppose, to think his first dark, heretical thoughts about the solar system. When he returned he became a kind of secretary-physician to his Uncle, who was having a hell of a time of it riding herd on the local Teutonic Knights. These merry cutthroats claimed Ermland as their own, while Uncle Lucas, in effect the local ruler as well as Bishop, had to forcibly nullify such claims. And he was pretty good at it, being described by the Grand Master of the Knights as “the devil in human shape”; they prayed daily for his death. Eventually, finding prayer ineffective, they did him in by food poisoning, and even Dr. Koppernigk was unable to save Uncle Lucas. Not too surprising really, when one considers one of his surviving medical prescriptions: Armenian sponge, ivory shavings, deer’s pulped heart, a beetle, boiled lizards and earthworms, calf’s gall, and donkey urine. Uncle Lucas was probably glad to go.

And so Nick finally took up his post of Canon, sixteen years after his appointment, and settled down to his life’s work as Church administrator, economist, statesman, and soldier (the Knights battled on). And, of course, he fooled with theoretical astronomy in his spare time. With his lifetime publication record of one preprint and three publications he would never have made associate professor, but he did become the father of modern astronomy. And all because Uncle Lucas got him a cushy job and let him go to Italy for training.

Next, take a look at Tyghe de Brahe (who, as a teenage snob, changed his name to Tycho as soon as he’d learnt Latin). Here the avuncular influence began almost at birth when his Uncle Jorgen Brahe abducted him, apparently without any great concern being shown by his parents (although his father, in a fit of mordant pique, did initially threaten the uncle with murder). Uncle Jorgen, described as coming of a line of truculent and quixotic noblemen, was a country squire and also vice-admiral in the Danish navy. In 1560, when Tyghe was thirteen, he was sent off to Copenhagen University to study rhetoric and philosophy, and it was while here that – much to Uncle Jorgen’s horror – the boy became infected by astronomy. Hardly a subject suitable for a nobleman who must one day manage his considerable estates! So Uncle Jorgen packed him off to study at Leipzig and other universities, but this time with a guardian-tutor who had strict instructions that the boy was to have his nose kept to the grindstone of law and philosophy and other gentlemanly pursuits. No science! But Tycho, as he had now renamed himself, was one of those rich kids who could afford to slip out and buy up books like the *Almagest* and small astronomical instruments when his tutor, Vedal, wasn’t looking, and then wait until Vedal had fallen asleep at night before sneaking out the window with cross-staff in hand and joy in his wicked heart.

Eventually Vedal had to admit defeat, but Uncle Jorgen was spared the ultimate appalling spectacle of Tycho going at astronomy fultime. Shortly after Uncle Jorgen had returned from

distinguished efforts at battling the Swedes, he was visited in his castle by the Danish King. The latter must have been half-blind or something, because he fell off the drawbridge, and Uncle Jorgen, being a vice-admiral and all, leapt into the moat to save his sovereign. Presumably a worthy sacrifice, but it ended in Uncle Jorgen dying of pneumonia.

There was one last effort made to save Tycho from his chosen dissolute career. This was the effort of another uncle, Uncle Steen Bille. Uncle Steen was a respectable alchemist, and for a while after he had taken young Tycho under his wing it looked as though Tycho would find happiness in searching for the means to turn base metals into gold and so forth. But Fate was against Uncle Steen. On the evening of November 11, 1572, as Tycho was stumbling home after a hard day at the lab, he relapsed into his bad habit of looking up at the sky, and there was this bloody great star blazing away.... Life would never be the same again.

In the case of Johannes Kepler the avuncular influence was decidedly negative. He spent his early years in a house that must have bulged with relatives, of whom he later had this to report: "My grandfather Sebald is remarkably ignorant, short-tempered and obstinate. His face betrays his licentious past." His grandmother was "restless, clever, and lying, a bearer of grudges, an inveterate troublemaker." Heinrich, "my father. A man vicious, inflexible, quarrelsome ... he ran the risk of hanging." Mom was accused of witchcraft, and later would have been burnt at the stake had Johannes not been able to save her. The numerous uncles and aunts fitted in nicely, for instance Uncle Sebaldus "was vicious and disliked by his fellow townsmen ... led a most impure life ... died in the end of Dropsy."

Little wonder that Johannes was practically psychotic by his adolescent years. But one can only believe that without these pressures he would not have been driven to escape home and take up school-teaching, where, since his class enrolment dropped to zero in his school year, he had time to do what really interested him – astrology.

And finally Isaac Newton. You may recall that he came of a farming family, and that his father died before Isaac was born. Since Isaac was an only child, this meant that his struggling mother could hardly wait for him to grow up and take over the running of the farm. She saw little value in an education, and only on Uncle William Ayscough's insistence was Isaac sent to a Grammar School. Here he proved an indifferent student until the school bully set upon him. Isaac, jolted out of his lethargy, not only rubbed the bully's nose along the school wall, but, his sense of revenge unassuaged, took on the bully academically as well. Isaac won. To his mother's despair, though, he turned out to be an unreliable farmer. When she'd go out expecting to find him slaving in the fields she'd discover him instead reading books under the hedgerows. It was Uncle William again who finally convinced a reluctant Mrs. Newton that her son might do better at Cambridge.

And what, you say, of that one other towering figure in the Copernican Revolution – good old Galileo? Well, so far as I recall, Galileo had no uncles, or at least none that impinged significantly on his life. And you know what happened to Galileo, don't you? He ended up in the hands of the Inquisition!

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J.F. Heard Fund

by **A.H. Batten**
National President

As you will have read elsewhere in this *NEWSLETTER*, the National Council has decided to set up a fund in memory of the late Dr. J. F. Heard, former President and National Treasurer of our Society and an indefatigable worker in its interests. After consultation with the representatives of the David Dunlap Observatory and members of Dr. Heard's family, it has been decided to reprint in the *JOURNAL* a number of the anecdotal accounts of well-known astronomers that Dr. Heard wrote over the years in the *David Dunlap Doings*. Council feels that these articles deserve a wider audience and a more permanent home than they have so far received. Eventually they will be bound together in a single reprint, and thus form a permanent memorial. Money collected in the fund, which is remaining open for a year, will be used to pay for the printing. Donations, which will be deductible for income-tax purposes, should be sent to the National Treasurer at 125 Merton Street, Toronto, Ontario M4S 2Z2. Cheques should be made payable to the Royal Astronomical Society of Canada and marked "J. F. Heard Fund". An official receipt will be issued.

Astronomy Update

by Dr. Doug Hube,
Edmonton Centre

Recent Results of Research in Astronomy

Discovery of the heaviest molecule known to exist in interstellar space, HC_7N (atomic mass = 99), has been announced by a team of radio astronomers from the National Research Council of Canada. The same group had found the previous record holder, HC_5N . It may be of interest to note that, while it contains a smaller number of atoms, this new molecule is approximately 33-percent heavier than the simplest of the amino acids (amino acetic acid = $\text{CH}_2\text{NH}_2\text{COOH}$; atomic weight = 75). [Announced on May 25, 1977, at a meeting of the Canadian Astronomical Society at London, Ontario.]

A rapidly-rotating star is not spherical. As is true of the Earth, the polar diameter of a rotating star is shorter than the equatorial diameter. The stellar surface near the poles, being nearer the star's centre, is characterized by a higher temperature than the equatorial regions. Hence, the radiated energy distribution is not uniform over the entire surface of the star. (The effect is known as gravity darkening – surface gravity as well as temperature depends on the distance from the centre of the star.) One way to determine the rotational velocity of a star is by measuring the widths of lines in its spectrum. In a rotating star, the spectral characteristics of emitted light, being a function of temperature, vary over the star's surface. As a result, the polar regions preferentially contribute to the ultraviolet radiation and the equatorial regions to the visual radiation emitted. Because rotational velocity (but not the rotational period) decreases with increasing stellar latitude, the rotational velocity of a star determined from line widths depends on the wavelength of the line which is measured. While this may seem to complicate the problem, it does permit one to determine the orientation (inclination to the line of sight) of the star's axis of rotation. [*Astrophysical Journal* **213**, 787, 1977 May 1; etc.]

A spectroscopic search for the third component in the Cygnus X-1 (HDE226868) system has not provided any evidence for the existence of such a body. If a relatively massive body had been found, it might be possible to account for the observed X-radiation by accretion onto a neutron star. As it is, the case for a black hole would appear to have been strengthened though not proved. [*Astrophysical Journal* **213**, 815, 1977 May 1]