



Supplement to the JOURNAL

of the **ROYAL ASTRONOMICAL**
SOCIETY of **CANADA**

ANNUAL REPORT 1986

APRIL 1987

PRESIDENTS OF THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

1890–1894	C. Carpmael	1941–1942	F.S. Hogg
1895	L.W. Smith	1943–1944	A.V. Douglas
1896–1897	J.A. Paterson	1945–1946	A.E. Johns
1898–1899	A. Harvey	1947–1948	J.W. Campbell
1900–1902	G.E. Lumsden	1949–1950	A. Thompson
1902–1903	R.F. Stupart	1951–1952	C.S. Beals
1904–1907	C.A. Chant	1953–1954	J.F. Heard
1908–1909	W.B. Musson	1955–1957	R.M. Petrie
1910–1911	A.T. DeLury	1957–1959	H.S. Hogg
1912–1913	L.B. Stewart	1959–1960	A. McKellar
1914–1915	J.S. Plaskett	1960–1962	P.M. Millman
1916–1917	A.D. Watson	1962–1964	R.J. Northcott
1918–1919	A.F. Miller	1964–1966	K.O. Wright
1920–1921	J.R. Collins	1966–1968	M.M. Thomson
1922–1923	W.E.W. Jackson	1968–1970	J.E. Kennedy
1924–1925	R.M. Stewart	1970–1972	H. Simard
1926–1927	A.F. Hunter	1972–1974	J.L. Locke
1928–1929	W.E. Harper	1974–1976	J.D. Fernie
1930–1931	H.R. Kingston	1976–1978	A.H. Batten
1932–1933	R.K. Young	1978–1980	J.R. Percy
1934–1935	L. Gilchrist	1980–1982	I. Halliday
1936–1937	R.E. DeLury	1982–1984	F. Loehde
1938–1939	W. Findlay	1984–1986	R.L. Bishop
1940	J.A. Pearce	1986–	(Mrs) M. Grey

SECRETARIES OF THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

Corresponding Secretary 1890–1901; Secretary 1902–1919, General Secretary 1920–1949; National Secretary 1950 onwards.

1890–1899	G.E. Lumsden	1932–1935	R.A. Gray
1900–1902	W.B. Musson	1935–1958	E.J.A. Kennedy
1902–1917	J.R. Collins	1958–1964	J.E. Kennedy
1918–1919	W.E.W. Jackson	1964–1971	N. Green
1920–1923	A.F. Hunter	1971–1974	C.E. Hodgson
1924–1927	F.T. Stanford	1974–1977	D.J. FitzGerald
1928–1931	L. Gilchrist	1978–1980	N. Green
		1981–1987	R.P. Broughton

HONORARY MEMBERS OF THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

Dr. V.A. Ambartsumian (U.S.S.R.)
Dr. R.B. Baldwin (U.S.A.)
Dr. F.M. Bateson (N.Z.)
Dr. A. Dollfus (France)
Dr. Leo Goldberg (U.S.A.)
Dr. Stephen W. Hawking (England)
Dr. W. Iwanowska (Poland)

Dr. J.H. Oort (Netherlands)
Dr. A.R. Sandage (U.S.A.)
Dr. Martin Schwarzschild (U.S.A.)
Prof. Bengt G. Strömgren (Denmark)
Dr. A. Unsold (Germany)
Prof. H.C. van de Hulst (Netherlands)
Dr. R.v.d. R. Woolley (S. Africa)

THE REPORT OF THE PRESIDENT

1986 was a year of both highs and lows in Astronomy. Announcements of funding cutbacks that will curtail the research of many of our world class astronomers are of grave concern.

On the positive side, there is much to report. Comet Halley, although not a grand spectacle in Canadian skies, generated a great deal of public interest in astronomy. Members of the RASC from coast to coast responded to the challenge by holding observing sessions, preparing and distributing brochures and booklets, and by acting as information resource centres for educators, students, the general public and the media. A few acted as educational guides on tours to the world's best observing sites. An increase in membership to an all-time high of 3,500 and brisk sales of the Observer's Handbook that required a second printing testify to the success of their efforts.

Three Society members were active on International Halley Watch Committees. Chris Spratt of the Victoria Centre and Warren Morrison of the Kingston Centre acted as Recorders, coordinating amateur observations for the Northwestern and Northeastern Sectors of North America respectively. Dr. Ian Halliday, a past President of the Society and Ottawa Centre member, is Chairman of the Steering Committee of the I.H.W. Warren Morrison, who observed the Comet on November 30 may have been the last amateur in Canada to do so, although there were unconfirmed sightings later.

The 1986 apparition of Comet Halley will gain a place in history due to the outstanding success of the space probes. It will be years before all data from the Japanese, U.S.S.R., and the European Space Agency programmes are analyzed, but results to date have been tremendously exciting. The incredible detail of the Voyager-transmitted data and photographs of Uranus and its satellites is testimony to the genius and foresight of scientists and technologists. However, the sense of accomplishment in the 1986 Space Programme will forever be overshadowed by the overwhelming sense of shock and grief at the tragic accident to the Challenger and the loss of the heroic crew.

Congratulations are extended to: Christine Wilson, the first Canadian woman to discover a comet, for the discovery of Comet Wilson (1986I); and to members of the North York Astronomical Association and the David Dunlap Observatory for the publication in *The Astrophysical Journal Letters*, 1986 August 1, of their article "Optical Flashes in Perseus".

Canadian Astronomers announced a number of significant contributions during 1986, only a few of which are mentioned here:

- Due to the exceptional "seeing" conditions at the NRC's Canada-France-Hawaii Telescope in Mauna Kea, Hawaii, Dr. John Kormendy of the Dominion Astrophysical Observatory, National Research Council Canada, has found evidence that the Andromeda Galaxy contains a central black hole ten million times as massive as the Sun.
- Dr. L. Higgs of the Dominion Radio Astrophysical Observatory and Dr. J. Vallée of the Herzberg Institute of Astrophysics, NRC Ottawa, and their colleagues have discovered an extremely giant stellar wind bubble called BG2107 + 49. Astronomers are excited by the well-defined neutral hydrogen shell around the ionized hydrogen region, which will enable them to test their models of how such structures form in idealized conditions.
- Drs. M. Bell, P. Feldman, H. Matthews, and L. Avery of the Herzberg Institute of Astrophysics have detected deuterated cyclopropenyldene (C_3HD) in a number of dense, dark interstellar molecular clouds. It is expected that these observations will permit estimates to be made of the electron densities in the coldest, densest cores of interstellar molecular clouds.
- Dr. Bruce Campbell of NRC's Dominion Astrophysical Observatory, and Dr. Gordon Walker, University of British Columbia, using the Canada-France-Hawaii Telescope and a spectrograph modified with the help of Nobel Prize Laureate, Dr. Gerhard Herzberg, have developed a technique that is superior to any method currently in use, to search for undiscovered planets orbiting stars other than the Sun. They have found tantalizing evidence in four cases of low-mass stars called brown dwarfs or of large planets in long-term orbits.
- Two UBC astronomers, Drs. H.B. Richer and G.G. Fahlman, are studying the oldest known objects in the Universe. These are star clusters and are termed "globular clusters", because of their spherical shape. One major aspect of their work on these objects is the determination of their ages, as they are expected to be as old as the Universe itself. The best derived ages for these systems is about $16 + 10^9$

years, and this constitutes the most accurate determination of the age of our Universe. These observations were carried out at CFHT.

The Society owes a special vote of thanks to retiring Past President Dr. Ian Halliday who through the natural sequence of acting as Vice-President and President devoted ten years to serving on the Executive of the Society in addition to the years he was Editor of the Journal.

The Winnipeg Centre is to be congratulated for a particularly well-organized and smooth-running General Assembly held on June 27 to 30, 1986. The well-attended second annual Helen Sayer Hogg Public Lecture, jointly sponsored by the RASC and the Canadian Astronomical Society, got activities off to a stimulating start with Dr. Barry Madore's talk "Space Telescope: Mankind's New Tool for Measuring the Ultimate Frontier". Two invited papers and a full schedule of submitted papers made up what was described as exceptional paper sessions to which retiring President Dr. Roy Bishop's address at the Banquet, "What We Bring We Find", provided a thought-provoking finale. For a detailed account of the General Assembly Programme and activities, refer to the National Newsletter Vol. 80, No.5, October 1986.

The General Assembly Banquet was also the occasion for the presentation of several awards. The Chant Medal was awarded to Warren Morrison, Kingston Centre, and Service Awards were presented to Randall Brooks, Halifax Centre, and a surprised Leo Enright, Kingston Centre. David Chapman, Halifax Centre, was the recipient of the Simon Newcomb Award. Other awards presented during the year included Messier Awards to Mark Sorensen, Kingston Centre, Allen Legare, Windsor Centre, and David Chapman and William Thurlow, Halifax Centre. Peter Brown of the Edmonton Centre was the winner for the third time in a row of the prize provided annually by the RASC to the winner of the Astronomy Category of the Canada Wide Science Fair. Second prize was awarded jointly to Mark Levison and Scott Murray; Jeffrey Legault won third prize.

The financial status of the Society improved in 1986 due to the increase in membership and Handbook sales, making it possible to eliminate the deficit accumulated during the last few years. However, due to concern over increasing operating costs and the anticipated loss of the government grant in support of the Journal of the RASC, a motion was passed at the Annual Meeting to increase membership fees. Beginning on October 1, 1986, the annual membership fees became: Regular \$25, Youth \$15, and Life \$500.

The National Office became part of the Computer age in 1986 when, thanks to the efforts of the Computer Committee chaired by past President Franklin Loehde, an IBM compatible TRON Enhanced XT system was installed.

Library space at 136 Dupont Street has been an on-going problem. Following a National Council decision to convert the Library to a more specialized reference source with particular emphasis on the history of astronomy, the Library Committee, the Historical Committee and the Executive Secretary met, under the direction of Librarian Brian Beattie on May 25 and November 23, to initiate action to provide more shelf space. The Librarian is preparing a list of books removed from the shelves; the books will be held at the National Office until discussion by National Council determines what further action is to be taken.

Due largely to the efforts of our Recorder, Leo Enright who prepared promotional material and coordinated RASC participation in International Astronomy Day, this annual event is gaining in popularity and generating new interest in astronomy, the happy result of which is the growth in the Society's membership.

A special note of thanks is due our Editors for their outstanding service to the Society: Dr. Alan Batten (Journal of the R.A.S.C.), Dr. Roy Bishop (Observer's Handbook), Ian McGregor (National Newsletter), and to Mrs. Marie Fidler, Editorial Assistant. A personal expression of appreciation is extended to all members of the National Council for their encouragement and support. And last, but not least, we are all indebted to our Executive Secretary, Ms. Rosemary Freeman, on whom we depend for the day-to-day operation of the National Office, and whose dedication goes far beyond the call of duty.

MARY W. GREY *President*

REPORT OF THE NATIONAL SECRETARY

It is hard to realize that a double term of six years has passed since I succeeded Norman Green as Secretary. What a privilege it has been to work with four presidents each bringing different styles and points of view to their office. It has been a time of dramatic change in the Society, involving our move from rented quarters into our own building and the acquisition of a computer. The Library, it seems, will have a new lease on life with a real purpose which we hope will be recognized even beyond the Society. The publications continue to improve year by year. And membership has grown impressively due to the efforts of many, many dedicated people across the country. The reports of Centre Secretaries in this Annual Report give but a sample of the ways in which public awareness of astronomy is being fostered. The membership figures as of September 30, 1986, are compared with those of the previous year in the following summary:

	1985	1986
Calgary	192	240
Edmonton	103	117
Halifax	78	121
Hamilto	56	79
Kingston	37	44
Kit-Waterloo	22	19
London	36	46
Centre Français de Montréal	43	44
Montreal	96	118
Niagara	44	54
Ottawa	213	276
Quebec	54	75
St. John's	12	18
Sarnia	22	19
Saskatoon	44	48
Toronto	825	1123
Vancouver	116	116
Victoria	145	146
Windsor	43	52
Winnipeg	44	69
Unattached to Centres		
Canada	264	298
United States	354	371
Overseas	57	57
Honorary	14	14
	<u>2914</u>	<u>3564</u>

Throughout the years continuity in the National Office has been a key element in the success of the Society. Without Rosemary Freeman's careful attention and persistent prompting, many of the important details would not have been attended to.

The Federal government has sustained and upheld our scientific publication for many decades. The Society gratefully acknowledges the financial support of the *Journal* during the past year by the Natural Sciences and Engineering Research Council of Canada.

PETER BROUGHTON, *National Secretary*

CALGARY CENTRE

With interest in astronomy remaining high with the return of Comet Halley, The Calgary Centre continued to grow and expand its activities within the surrounding community.

Many astronomical tours of our own facility, the Wilson Coulee Observatory, were given to interested groups including schools, cubs, scouts, and girl guides. These tours were scheduled around our monthly Observatory group meetings held at the observatory which further enabled members to practice and refine their observing skills.

The Calgary Centre also assisted the Provincial parks people in presenting 'astronomical camping' outings at selected provincial campgrounds over the summer. Although the weather was not conducive to observing, many individuals enjoyed the event.

Many social functions for members and their families were held over the course of the year. These included the annual summer barbecue held on Aug. 9, the Mt. Kobau star party on July 31 – Aug. 4, and our annual Christmas function on Nov. 21 at which various awards and prizes were presented.

An 'astronomical holiday' in Australia during late March and early April was undertaken with a travel agency. The Calgary Centre's involvement played a key role in its success. Many excellent pictures and slides were taken. An excellent audio/visual presentation of the event was presented at one of our nine general meetings which included:

- January 16 Annual meeting;
S. Hum: "Mount Kobau star party";
J. Findlay: "430 Tonnes of Precision";
J. Burneth: products of the shuttle program;
O. Aaquist: radio contour images of planetary nebulae;
- February 22 slide presentation on MARS.
- March 20 Dr. Venkatesen: "Cosmic Ray Probing of the Heliosphere";
- April 17 Dr. C. Galas: "X-ray Supernova Remnants".
- May 15 Members' talks.
- June 19 Open house at Rothney Astrophysical Observatory with talks given by Dr. E. Milone, F. Babott and T. Emaid of the University of Calgary;
- September 18 D. Milbrant: "The Making of a Star Show";
- October 16 Dr. L. Cogger: "The Viking Explorer and Northern Lights";
- November 20 D. Hladiuk: "Astronomy from Down Under".

As part of our efforts to inform both our membership and the public, an introduction of a constellation was presented at each of our general meetings as well as any astronomical event that was upcoming. Examples of astrophotography done by members were presented at many of our meetings.

As the Centre grows and matures, we are looking forward to increased participation and diversification of our activities and programs.

R. F. LOBLAW, *Secretary*

EDMONTON CENTRE

For the Edmonton Centre, 1986 was another active and successful year and was carried out under the directorship of our Centre's president, Robert C. Carson.

At the Annual Meeting held in January, the Annual Awards were presented by the president. The Astrophotography Award was presented to Bryce Heartwell. The President's Award was presented to Anthony Whyte.

A keen loss was experienced by our Centre when it was reported, shortly before the beginning of this year, that the Centre's 17.5 inch Dobsonian Telescope mirror had been stolen. This led to the ordering of a new mirror which should arrive early next year.

Librarian, Vincent Cottrell, reported many additions to our Centre's library this year. This was due to

the donations of books by a number of Centre members and included a complete set of RASC books dating from the 1900's which were received from an out-of-province donor.

The year 1986 marked the reappearance of Comet Halley. This phenomenon caused a tremendous observing interest in our city. Thousands lined up for a view of the comet through telescopes set up at the Edmonton Space Sciences Centre's observing deck. Many slides of Comet Halley and other comets were shown by Centre Members at our regular meetings and Comet Halley lectures were held in the Margaret Zeidler Star Theatre at the Edmonton Space Sciences Centre.

A number of star nights were held on the Coronation Park grounds. Assistance in the manning of the telescopes was given by Centre members. Also, during this year, many observers took their telescopes to a site in Elk Island National Park and a newly found site in the Blackfoot Integrated Use Area. At the September meeting, our president announced that Mel Rankin, one of our ardent observers, had observed the required total of Messier Objects which entitles Mel to a Messier Certificate. In addition to this accomplishment, Mel has made outstanding contributions to our Centre as National Representative and especially as our Treasurer for many years. He has completed another year of faithfully giving the Treasurer's Report at each meeting and keeping our Centre's accounting in excellent order.

Alan Dyer, executive director of programming with the Space Sciences Centre has again kept our Centre informed with up-to-date coverage of the showings at the Edmonton Space Sciences Centre.

Editor of *STARDUST*, Craig Makarowski, has successfully presented the monthly issues to the members. During Craig's visit to Australia to view Comet Halley, Peter Ceravolo assisted in producing the Centre's newsletter.

Six council meetings were held during this season at either the president's home or in the Space Sciences Centre's boardroom.

Our Centre has held ten regular meetings in the Space Sciences Centre's classroom. The speakers and the topics they presented are as follows:

- January 13 Mark Anderson – "Photometric Research with an Amateur-Built Telescope and Photometer."
- February 10 Dr. Roy Bishop, National President – "Spectroscopic Binary System SS433."
- March 10 David Beale – Showed slides taken in Arizona.
Russ Sampson, Community Programmer of Astronomy, gave a report of Astronomy Courses available.
Paul Dean, Producer Astronomy with the ESSC – "Voyager Flyby of Uranus."
- April 28 David Parker, David Beale and Alan Dyer showed slides of Comet Halley.
Dr. Harvey Richardson with the D.A.O., Victoria – "Big Telescopes and Bathrooms Around the World."
Robert Carson presented Dr. Richardson with a unique book entitled, "Outhouses of the East."
- May 12 David Beale, Douglas Hube, David Parker, Ed Shewchuk and Anthony Whyte showed slides they had taken of Comet Halley.
- June 9 Don Hladiuk, Calgary Centre's Exchange Speaker "Expedition to Australia to view Comet Halley."
- September 8 Craig Makarowski – "My Trip to Australia in the Springtime of this Year."
- October 20 Alan Dyer – "Beyond the Fourth Dimension."
- November 10 Russ Sampson – Showed slides of an aurora display.
Brian Martin – "Spectroscopy – Stellar Fingerprinting."
- December 8 "Members Night"
 1. Roman Unic – Spoke on "Ray Tracing."
 2. Craig Makarowski – Gave a talk on the functions of his telescope.
 3. Peter Ceravolo – Spoke about the building and the functions of his telescope.

Our Centre has greatly appreciated the contribution our social convener, Audrey Loehde, has again given this year in providing refreshments after the adjournment of our meetings.

The memberships of our Centre for this year reached the total of 120.

YNI EBBERS, *Secretary*

HALIFAX CENTRE

A successful year was completed under the direction of Dr. Norman Scrimger, President.

The observing program, under the supervision of Gordon Hawkins, Observing Chairman, was successful in spite of the fact that the weather-man refused to co-operate on our viewing nights as well as he would have liked. On the other hand there were some nice clear nights with a brightly shining moon.

Messier Certificates were gained by Dr. Bill Thurlow of Digby, and by Librarian David Chapman, and these Certificates were presented at the Annual Dinner, which was held in May.

Dave Chapman won the Simon Newcomb Award for his paper "Recurrent Phenomena of Venus and the Venus/Earth Orbital Resonance." Dave has recently gone to England for a stay of two years at the University of Southampton, after having just completed an assignment in the Arctic. He has recently been awarded the A.B. Wood Medal and Prize for his work in Shallow Water Acoustics.

We were again honoured by having National Past President Dr. Roy Bishop as Editor of the Observer's Handbook. Roy has an interesting set-up for teaching introductory astronomy at Acadia University. Six separate refractors of short focal length are available in a desk azimuthal mounting arrangement, for convenient viewing and calculating. The images are upright and correct from left to right, the same as in a prism monocular.

Treasurer Dr. David Tindall has reported the highest membership in the history of the Centre. There are 29 life members, six of whom became such during the year; 84 regular members, and eight youth members, for a total of 121, and in addition there are five associate members. The percentage of life members is quite high in our Centre. It is notable that quite an influx of younger members is taking place.

The highlight of the year was the outing at Purcell's Cove beginning at 4:30 a.m. on 22 March, when Halley's Comet was seen by 45 members and guests, many of whom had not seen it before.

The Annual Banquet in May was again both well-attended and enjoyable, this being the eighth successive such function. During the evening we were treated to a preview of Halley's Comet experiences by Dr. Bill Thurlow, who had gone to New Zealand, Dave Chapman, who had gone to Guadeloupe, and Doug Pitcairn, who showed slides taken locally.

For the first time, the Camping and Observing Week-end was held outside of Nova Scotia, when 12 members travelled to Prince Edward Island to observe from the property of Norma Fraser at West Point.

Nova Notes Editor Pat Kelly made the trip to Winnipeg for the G.A., where he was much impressed, and he reported on it.

The Service Award Medal went to Randall Brooks who was in England at the University of Leicester at the time of the G.A. The award was personally presented to him by Past National President Bishop at the regular meeting of this Centre on 17 December. We were most pleased to have Randall and Diane with us on that occasion. Randall was our speaker for this meeting. The requirements for nomination for the Award are onerous, as are the qualifications for receiving it. Randall is the second recipient member of this Centre, the first having been the late Father Burke-Gaffney.

Astronomy Day was held at the Nova Scotia Museum on 17 October, with observing, films, and displays, including working computers.

Doug Pitcairn, our National Representative and Secretary elect, has arranged for video tapes and films on astronomical subjects to be shown on regular meeting nights between 7 p.m. and 8 p.m. i.e., before the regular meeting and during the executive meeting, so that people who wish to come early may glean information. On some evenings there will be a lecture for beginners, instead of the tapes and films.

A group in Saint John, New Brunswick, is in the process of forming an Astronomy Club. Vice-President Darrin Parker has been communicating with Len Larkin with regard to this.

The C-8 telescope owned by the Centre is of great value to the members.

Graham Millar wrote an article entitled "Amateur Builds Remarkable Star Globes" which appeared in the National Newsletter under date of Oct. 1986. The amateur referred to is Milton Doyle, a life member of this Centre.

Sherman Williams, when initially looking for Halley's Comet in Jamaica, went out onto the beach

alone the first night. On subsequent nights a turn-out of visitors from the hotel was most welcome.

A summary of activities is as follows:

- 11 January Observing at Mount Umacke.
- 17 January Meeting. "Delta Scuti Variables" by Laurie Reed of St. Mary's Univ.
- 20 February Meeting. "Uranus" by Dr. David Turner of St. Mary's Univ.
- 21 March Meeting. "Invisible Astronomy" by Hugh Thompson.
"Babylonian Influence in Angkor Wat" by Graham Millar.
- 22 March Observing of Halley's Comet at Purcell's Cove.
- 18 April Meeting. "Astronomical and Space Stamps" by Pat Kelly of Technical Univ. of N.S.
- 23 May Annual Dinner. Previews of Halley's Comet Photos, etc. by members of the Centre.
- 20 June Meeting. Members' Night. Observer's Quiz; Identifying Astronomical Slides.
Gordon Hawkins, Observing Chmn.
"Halley's Comet Experiences" by Dr. Bill Thurlow (New Zealand)
Sherman Williams (Jamaica)
David Chapman (Guadeloupe)
"Special Table Mount for Tracking a Camera" by Gary McMahon.
"A Home-made Special Sundial" by Graham Millar.
- 2, 3, 4 August Camping/Observing Week-end at West Point, Prince Edward Island on property of Norma Fraser.
- 19 September Meeting. Report on G.A. in Winnipeg by Pat Kelly.
"First Attempts at Astro-Photography" by Pat Kelly.
- 17 October Nova Scotia Astronomy Day at the N.S. Museum. Displays, Slides, Films, and Observing.
- 21 November Meeting. "Amateur Astronomy in Arizona" by Dr. Larry Bogan of St. Mary's Univ.
- 12 December Meeting. Presentation of Service Award to Randall Brooks.
"Technology and the Advancement of Astronomy from the 17th to 19th Centuries" by Randall Brooks, Univ. of Leicester.

In addition, observing was carried out at Beaverbank on nine occasions. We were invited to view the Perseid Meteor Shower at Wilf Morley's camp near Bridgewater, on 11 Aug., but it was completely clouded out, and had to be cancelled.

RALPH FRASER, *Secretary*

HAMILTON CENTRE

In 1986 the Hamilton Centre held ten general meetings at McMaster University. The speakers were as follows:

- January Annual Meeting
- February John Feild, Hamilton Centre: "Comet Halley"
- March Ian McGregor, McLaughlin Planetarium: "The Planet Venus and the Ancient Maya"
- April Dr. Tom Bolton, University of Toronto: "Orbits of Comets"
John Feild, Hamilton Centre: "The Fifth Force"
- May Clifford Cunningham, Kitchener-Waterloo: "Pluto and Charon"
- June Dr. Ralph Chou, Toronto, spoke on solar filters and vision safety.
- September Mike DeVillaer, Hamilton Centre: "Techniques of Astrophotography"
John Feild, Hamilton Centre: "Perseids"
- October Dr. R. Fernie, University of Toronto: "Cepheid Variables"
- November Jim Winger and Bob Speck, Hamilton Centre, demonstrated mirror grinding techniques and the Foucault and Ronchi tests.
- December Murray Kating, Kitchener, gave a demonstration of photometric equipment.

There have been a number of noteworthy events in our Centre this year. Our observatory site has been renamed the Leslie V. Powis Observatory in memory of Les and in recognition of his many years of dedication to the Hamilton Centre and to the advancement of astronomy in this community. Our facilities include two observatories. The Chilton building has recently been completed thanks to the hard work of many members over the past two years. It is of roll-off roof construction and now houses several Centre telescopes. These include a 17½" reflector which was assembled and mounted under the direction of Barry Sherman. Thanks to his efforts many of us are now enjoying some spectacular observing. The Marsh building has seen many improvements this year, credit for these going to Doug Monk who put in many hours of hard work. Several members also undertook to redecorate the interior over the summer. Bruce Collier constructed a clock drive for the 5½" Marsh refractor, an improvement appreciated by the many users of this 'scope.

There have been a number of special observing projects this year. Mike DeVillaer has completed his photographic record of Comet Halley's visit with photographs spanning the months from September '85 to May '86. Under the leadership of Derek Baker a Jupiter observing program was instituted. Drawings were regularly made throughout the summer and fall. The result is a detailed record, including a number of strip charts which clearly show the rotation. A solar observing program is under-way with a number of members participating.

Many members, new and old, participated in the Beginners' Group. This proved an excellent way to help new members get started and to introduce them to the more experienced. Twice-monthly public nights continued to be held under the direction of John Gauvreau, John Feild and Ian Stuart. There have been a number of regularly scheduled members' nights at the observatory as well as impromptu gatherings on most clear nights.

Centre members have enjoyed eight issues of "Orbit", edited by Rob Allen, Derek Baker, Ian Stuart and Karyn Bennett. The emphasis this year has been on articles, drawings and photographs by Centre members. Successful fundraising events were held with the help of Neil Rogers, Derek Baker and a large proportion of the membership. Two mall displays proved to be worthwhile endeavours with many people attending public nights as a result.

With the improvements at the Powis Observatory, in 1987 Hamilton Centre members can look forward to an outstanding year of observing. We will be continuing the programs and activities mentioned above as well as further developing our observatory site and its facilities.

TONI QUINN, *Secretary*

KINGSTON CENTRE

Our 25th Anniversary Year of Founding (1961–1986) has been a year of service and celebration of commitment. Early expectations of Dr. A. V. Douglas when she wrote to National Office in January 1961, "We hope this may grow into a strong active Centre" are born out by the enthusiasm and contributions to amateur astronomy by the Kingston membership. At our anniversary banquet, National President Roy. L. Bishop presented the first *Dr. A. Vibert Douglas Award* to our President David M. Stokes for his leadership and promotion of interest in astronomy. In recognition and appreciation for the design and building of the Dobsonian mount for the Centre's 25 cm A. Vibert Douglas Newtonian telescope, Larry Manuel was awarded the *Dr. A. Vibert Douglas Award* for 1986 at our annual meeting in November. The Centre's telescope is more complete with the donation of three eyepieces by Martyn McConnell.

This year Leo Enright continued editing and writing excellent material for the Centre's newsletter *REGULUS* as well as traveling, giving talks, conducting tours and observing sessions. His dedication to amateur astronomy has earned him a myriad of awards and prizes this year. Most notably he received the Society's Service Award. We are delighted to congratulate Leo with this fine achievement. This year at our May meeting Leo reported viewing Pluto and now he is a member of the "Nine Planet Club."

Hein Van Asperen presented a paper, "The Astronomical Position Line", at the Winnipeg G.A. and

won second prize in the Open Category for his solar project. Our Vice-President David Levy gave a talk at the G.A. entitled, "In the Shadow of Kitt Peak."

Warren Morrison was awarded the National Chant Medal for his contributions to astronomical research. Congratulations to Warren!

Mark Sorensen received his Messier Certificate for observing the objects using his 11 × 80 binoculars with the indispensable aid of the Vehrenberg *Falkauer Photographic Star Atlas*.

Kingston Centre has been enhanced and welcomes the addition of Life Member and National Honorary President, Mr. Arthur E. Covington. Kingston now boasts nine life members.

Early year reports of Comet Halley by members continued with a special "view point" reported by Ruth and Terry Hicks who journeyed to New Zealand to see the fabled comet. The last sighting of Comet Halley reported to us by a Kingston member has been the November 29th and 30th observing sessions of Warren Morrison.

Our Library is flourishing with a donation of books by Dr. David Hanes of Queen's University and our purchase of David Levy's four books. Our Centre Librarian, David M. Stokes has printed a catalogue of the Centre's library holdings.

For the annual Kingston Science Fair our Centre will provide a judge and donate a prize for the best astronomy related project.

President David Stokes initiated a UFO referral service consisting of several members whose names are listed with the local paper and radio stations for inquiries made by the public about UFO sightings.

We enjoyed an increase in exchange speakers with London and Ottawa Centres and a speaker from the Edmonton Centre.

We welcomed member Jim O'Donovan from Ireland and relished his recitation of his involvement in the formation of an amateur group there. We are looking forward to future association with the newly formed West Cork Astronomical Society.

The Kingston Public Library is now receiving our newsletter and we are listed in their Community Data Bank. We are also listed in the *Clubs, Hobbies & Sports Directory* published by the Kingston District Community Information Centre.

This is a summation of our meetings. Various members of our Centre took part in our evening presentations as follows:

MURRAY ANDERSON: Mars; Slides from Kingston's International Astronomy Day.

HEIN VAN ASPEREN: Optics; Astronomical Position Line; Travelogue Winnipeg G.A.; New Stepper Motor.

LEO ENRIGHT: Champlain's Astrolabe; New Superfast Fujichrome Film; Travelogue G.A. 1986; Stellafane 1986; Solar Eclipse Slides; Greenwich Observatory.

TERRY AND RUTH HICKS: New Zealand and Comet Halley.

MARK KAYE: Barnard's Loop Photographs.

LARRY MANUEL: Optical Glass; Building a Refractor.

MARK SORENSEN AND LARRY MANUEL: Steliafane 1986.

DAVID M. STOKES: Gravity of Orbits; A clock for all Occasions; Computer Program for Moonrise and Moonset.

Special Guest Speakers:

DR. ROY L. BISHOP: "SS 433 – A Stellar Spectacle."

PETER CERAVOLO (Edmonton Centre): "Optical Design and Manufacture for Telescopes."

MARGARET COHOE: "The Kingston Observatory in 1855."

ARTHUR E. COVINGTON: "Radio Astronomy – 40th Anniversary."

DOUG GEORGE (Ottawa Centre): "Deep Sky Observing Techniques."

PETER JEDICKE (London Centre): "Fun with Ellipses".

DR. B. R. K. KASHYUP: "Indian Astronomy and Astrology."

MARK LEVISON AND SCOTT MURRAY: "Computer Space Simulator."

SUE KNIGHT SORENSEN, *Secretary*

KITCHENER-WATERLOO CENTRE

Comet Halley, Voyager's flyby of Uranus, Peter's trip to Arizona and to New Mexico, Ray's observations of Halley from Florida, and Peter's group outing to this year's Starfest all have made 1986 a most memorable year for members of this Centre.

In all this glory of space research how can we ever forget Challenger and her crew of seven?

As we enter 1987 I must say that the Kitchener-Waterloo Centre is actively planning their coming year's agenda. We are looking forward to a number of public star nites, an astronomy day display, more organized trips for the group and more educational astronomy for new club members.

During 1986 the Kitchener-Waterloo Centre continued to hold meetings the second Tuesday of every month at Wilfred Laurier University in room 2C8 with room 2C6 being an alternate. The group has their main observing site just outside Kitchener near the village of Ayr. The site consists of the main building being a two storey dome. Observing is done with the 12.5 inch scope. Below is an insulated room used for meetings and warming up on those cold nights. Two other buildings on the site are owned by individual members.

The following comprises the activities of the Kitchener-Waterloo Centre for the year 1986.

January	Annual meeting, election of executive. Comet Halley slides by Gerald Kennedy
February	The exploration of Mars by Vikings 1 & 2 by Peter Daniel
March	First year astronomy quiz by Ray Koenig
April	Stellar evolution by George Mudry
May	Comet Halley from Florida by Ray Koenig
June	Space past present and future by Bernd Mueller
July/August	No meeting held
September	Peter Daniel showed slides of trip to Lowell Observatory, Kitt Peak & the VLA
October	Transient lunar phenomena by John Doupe
November	Project universe series by Ray Koenig
December	Project universe series by Ray Koenig. Annual Christmas dinner and party

GEORGE M. MUDRY, *Secretary*

MONTREAL CENTRE

As 1986 came to a close, we reflect on our observations and events which kept us busy during the year. The first part of the year saw the monthly Planetarium lectures hosted by professional astronomers from the University of Montreal and Mount Megantic Observatory. Our utmost gratitude goes to Mr. Jimmy Letourneau who has dedicated long hours and made numerous telephone calls in arranging these talks for the past few years. Meanwhile the traditional Saturday evening talks at the Centre were in full swing. These informal talks were given by the members themselves. Dennis Ryan has done a great job in calling the membership and arranging these events. A total of twenty talks were hosted from November, 1985 to May 1986.

The Townsend Lecture was held on Feb. 27th and the guest speaker was Dr. Michael Shara of the Telescope Space Centre. Dr. Shara gave an excellent presentation with the help of audio and video displays. The topic was the "HUBBLE SPACE TELESCOPE". Again Mr. Jimmy Letourneau is credited with the organization of this informative talk which was held in the main auditorium of McGill University.

On May 6th the Centre acquired a telephone and answering machine which is a big asset to the club. May 31st saw our first OPEN HOUSE & TELESCOPE CLINIC. This was a day that the public could do some solar observing, looking and learning about the Centre and its history, and getting a free telescope tune up. The response by the public was pretty good for a first time.

The first few months of 86 gave the best view of Halley's Comet wherever weather permitted. Again this year good old Murphy's Law stuck to us like glue on major observations such as a grazing occultation, solar and lunar eclipses, comet viewing or just plain old observing in the country.

The annual Stellafane convention was revisited again this year by our members which took place on the first weekend in August. Unfortunately weather conditions did not co-operate. Meanwhile back

at the Centre, Mr. David Brown was awarded the Charles Good Award for excellence in observing and dedication to the Centre itself. David's main fields in observing are occultations (both regular and grazing) and galaxies.

Mr. Stewart Marshall and Dr. John Glaspey organized a field trip to Mount Megantic on Sept. 27th. The Observatory houses a sixty-three inch Ritchey-Chretien telescope which is computer controlled and fully equipped with a spectroscope. Several very spectacular images were viewed.

The Centre had a chance to visit the Montreal Seismographic Observatory located in downtown Montreal. Members had a chance to see the instruments actually working. The sensitive equipment even picked up a blast at a downtown construction site a few miles away.

From Nov 29 to Dec. 1, the Centre participated in a science display at the Pierrefond Library. We had a chance to bring about public awareness of our club and astronomy itself. A total of sixteen members gave their time and efforts to this display. The middle of December saw the Annual Christmas Party in which gifts were generously donated, but none as great as the Crombie telescope which was donated by Rev. Crombie's daughter. Rev. Crombie is one of the monumental figures who helped play a big role in creating the Montreal Centre. Mr. Bert Widdop did a fantastic job in restoring the scope to mint condition. The finished product was presented at the Annual Meeting.

In closing, the various Sections, lunar, solar, astrophotography, and Observing Committee were very busy and so were other volunteers doing repairs to the Centre's observatory. We are looking forward to 1987 for great events (which we hope will not be clouded out). As we closed 1986, our membership is up 20%, and we hope this is a trend for years to come.

GARY BOYLE, *Secretary*

SOCIÉTÉ D'ASTRONOMIE DE MONTRÉAL, CENTRE DE LA S.R.A.C.

Le Centre comptait 44 membres en 1986 dont 3 juniors. Ces membres bénéficiaient des activités et services mis sur pieds par la Société d'Astronomie de Montréal. En voici quelques exemples:

Causeries et conférences: Il y a eu 2 soirées d'observation, 33 causeries et 11 conférences lors des réunions du mardi soir. Notons que le mardi 1 avril nous avons accueilli Serge Pineault du Centre de Québec dans le cadre d'un échange de conférencier. Des cours d'initiation à l'astronomie et au calcul ont aussi été dispensés durant l'année. Pierre Bastien recrutait les conférenciers et Diane Carpentier les causeurs.

Journée mondiale de l'astronomie: En collaboration avec le planétarium de Montréal nous avons animé notre kiosque sur les découvertes de Voyager II en avril dernier. Ce même kiosque s'est mérité le prix de recherche lors du congrès annuel de l'Association des Groupes d'Astronome Amateur du Québec (AGAA) en juillet 86 à Port-Neuf et a aussi été présenté à l'expo-science de Montréal au printemps.

Concours Annuel des Fabricants de Télescope Amateur: La S.A.M. a tenu en août sa huitième édition du CAFTA.

Publication: Nous avons publié l'Annuaire Astronomique pour une vingt-et-unième année en 1986 et publié deux numéros d'un Bulletin de liaison grâce à une collaboration de la ville de Montréal.

Prix: Notons que Mme Huberte Palardy notre vice-présidente s'est mérité le prix Méritas pour son oeuvre depuis des années au niveau de l'astronomie amateur au Québec. Ce prix est une magnifique sphère armillaire créée par Réal Manseau et est décerné annuellement par l'AGAA. La S.A.M. pour sa part a honoré M. Pierre Bastien en lui décernant le prix Georgette Lemoyne pour son travail en tant qu'éditeur et collaborateur de l'Annuaire Astronomique. M. Patrice Gérin-Roze a reçu le prix L'Etoile d'Argent pour son travail d'initiateur à l'astronomie au niveau de la province de Québec.

En décembre nous avons appris la triste nouvelle de la mort de M. Lucien Coallier. Membre depuis 1955 M. Coallier s'est imposé comme un spécialiste de l'observation de la Lune, il fût président de la S.A.M. à plusieurs reprises et récipiendaire de nombreux prix durant sa carrière.

DIANE CARPENTIER, *Secrétaire*

NIAGARA CENTRE

All regular meetings are held on the fourth Thursday of the month in the LaMarsh Room of the Niagara Falls Centennial Library, at 7.30 P.M.

- January 23 Annual Meeting, reports, election of Directors.
Speaker: Mike Flegel (Chatham): "The International Halley Watch".
- February 27 Speaker: Debbie Fassel: "The Rainbow Connection– Steps to living in Outer Space"
- March 27 Speaker: Robert Jedicke : "Quantum Physics"
Also: slides of Comet Halley, taken by Greg Saxon and Marvin Scott.
- April 24 Members' Night. Equipment and slides shown and explained by members.
- May 22 Debbie Fassel was called upon at the last moment to replace the scheduled speaker.
Topic: "The McDonnell-Douglas Space Station.
- June 26 Speaker: N. Green: "Our Earth – Our History".
- September 25 Discussion on Membership fees and the proposed Observatory.
- October 23 More on the proposed Observatory, and more slides.
- November 27 Speaker: Robin Mols, Artist from Buffalo: Comet Halley in Chile, with slides and paintings.

The Spring Banquet was held on April 11. The Guest Speaker was Dr. D. Fernie; Topic: "Pulsating Stars".

The Niagara Centre / NFCAAA Fall Banquet was held on Nov. 15, and the Guest Speaker was Dr. W. Wehlau, whose topic was "Astronomy, an International Science".

Comet Halley still being of interest, the Niagara Centre organised three public viewing evenings on Jan. 10, May 2 and May 9, with attendance estimated at 400, 100 and 250, respectively. The summertime public Star Nights, also held at John Allen Park in Niagara Falls, were not as successful: out of the five planned, only one had a clear sky: May 16; the others were clouded out. And if we complained last year about the weather for our Members' Observation Nights, this year we only managed four: March 10, June 2, July 24 and Aug. 11.

Our annual display at the St. Catharines Central Library was a success again; we do get a number of requests for more information and some new members as a result. And on Oct. 6, seven optimists took their telescopes to Brock University in spite of the clouds and the muddy field, to assist Dr. John Black in showing the stars to his students, because the weatherman had promised clearing skies. He was right, too, only a few hours off: it cleared after 10 P.M., when we all had gone home in disgust.

At a special meeting of the executive on July 17, an Observatory Building Committee was created as a first step on the way to the Centre's own Observatory. In the first meeting of the new season on Sept. 25 this initiative received approval from the general membership even though it meant adding a surcharge to the membership fee.

And at the Jan. 23 Annual Meeting the membership count was 50.

W. JUTTING, *Secretary*

OTTAWA CENTRE

Membership reached an all-time high of 276, made up of 242 regular and 34 life members. Of the regular members 29 were junior members.

Public Meetings: The Council sponsored four public lectures during the year. The first was in January, when Dr. Ian Halliday of the Herzberg Institute of Astrophysics gave an illustrated talk entitled 'The Return of Halley's Comet'. In March Dr. Russell Redman, also of the HIA, spoke on the Voyager II fly-by of Uranus. In April Robert Hayward showed slides of 'A Tour of Selected Radio Astronomy Observatories of North America'. Finally, in May Dr. Roy Bishop, National President of the RASC, presented the latest findings and theories relating to the fascinating object SS 433. Dr. Bishop's talk was illustrated.

General: The Council held five meetings during the year. Major topics addressed were finances, Halley's Comet activities, fund raising, the observatory at Almonte, Astronotes, and various policy issues.

The question of finances was of particular concern as increases in insurance rates and printing costs tested the Centre's ability to balance revenues and expenditures. Costs resulting from careless use of equipment such as leaving heaters on at IRO are difficult to control as well. While the increase to \$25.00 in the regular membership fee will help, the new Council will have to address this issue, particularly with yet another increase in postal costs, and the possibility that we will have to pay for future access to the observatory. In this respect, the significance of sustaining membership donations and the efforts of Frank Roy, Sandra Ferguson, Irmi Underwood and Gary Susick of the Fund Raising Committee deserve recognition.

The Fund Raising Committee brought in some \$700.00 from two projects. The first project produced two sets of 30 slides from photographs taken by members. They were sold to individuals and local school boards. Net proceeds were approximately \$500.00. The second project involved the sale of T-shirts bearing the Ottawa Centre logo. This netted approximately \$200.00 for the Centre.

Observers' Group: During the year monthly meetings were held in Room 3001 of the NRC building at 100 Sussex Drive. These meetings were very well attended, with a large number of standing-room only capacity. Thanks are due to the NRC for providing us with an excellent room for the meetings.

On April 19, members of the group participated in International Astronomy Day at the Museum of Science and Technology. This included talks by several members, mirror grinding demonstrations, information displays, and solar and lunar observing.

The Novices' Workshops were held again this year and, in addition, a new program, the Junior Observers' Group, was started at the Museum of Science and Technology, with the help of the Ottawa Centre. Jill Pearse and Kyle Nunas, two young Centre members, are co-chairing the program. The sessions, held on the third Wednesday of each month, are divided into two age groups – 7-10 years and 11-14 years.

Once again an exchange was arranged with the Kingston Centre. Leo Enright spoke on the Holleford meteor crater at our June Observers' Group meeting. In turn, Doug George travelled to Kingston on August 22 to talk about deep sky observing techniques. This is an excellent program and is rapidly becoming a tradition for the two centres.

A small group of dedicated Centre members participated in a festival called 'Fall Rhapsody', sponsored by the National Capital Commission. A display was organized by Damien Lemay, Sandra Ferguson, Derek MacLeod, Kyle Nunas, David Lauzon, Serge Lemay, Fred Marmot, Doug George, Mercedes Pelayo, Chris and Kim Statham. It was set up on Victoria Island and manned for four consecutive weekends between mid-September and mid-October. A festival starmight held in Gatineau Park was clouded out, so the fifty people who turned up were treated to a slide show instead.

The President attended the General Assembly, where Frank Roy's display relating to the detection of the quasar 3C 298 on the Indian River Observatory Radio Telescope won first prize in its class. As usual, at least ten members of the Ottawa Centre attended the Stellafane convention in Springfield, Vermont. Consistent with the year as a whole, the weather at this year's Stellafane was terrible and many people went home early.

During the first half of the year many of the Centre's activities were focused on Comet Halley. The Special Activities Coordinating Committee conducted Halley's Comet Nights on December 11, 1985 at IRO, on January 4, 1986 at the Huntley Centennial School and on May 3rd at a school near Manotick. All were well attended.

Indian River Observatory: Improvements included the following:

1. Re-aluminizing of the secondary mirror on the 16" telescope and installation of a new focusing mount;
2. Complete renovation of the interior of the clubhouse, including two coats of paint and installation of a new carpet;
3. Major up-grading of the radio telescope by reducing the wire reflector spacing from 6" to 3", which improved the surface to $\lambda/16$, and increased sensitivity by about 30%. Also, low noise (60K) GaAsFET amplifiers were installed at both antennae. These improvements enabled the radio

telescope for the first time to detect a radio quasar, and on April 29th, the quasar 3C 298 was picked up. This was a first for amateurs and gives the Ottawa Centre a world class amateur radio telescope.

During the year the observatory was the site of a number of star parties, meteor observing sessions and special events such as the Annual Star Night for residents of Almonte and the night for the Cedar Hill Alternate School at Pakenham. Unfortunately, the weather during 1986 was generally poor and a number of other events, such as the Deep Sky Weekend, were clouded out.

As the 1987 season approaches, we all hope for improved seeing conditions and lots of wisdom and perseverance with which to face the challenges that lie ahead.

C. ROBIN MOLSON, *Secretary*

CENTRE DE QUÉBEC

Depuis 1985, mais surtout au cours de 1986, le Centre de Québec se relève d'une période plutôt calme. Je crois que la cause première de tous ces changements, est l'arrivée de plusieurs personnes plus jeune au niveau du conseil d'administration. Ce sont de nouvelles idées, une bonne volonté pour la pratique de l'astronomie et un dynamisme plus grand qui décrit le mieux ce nouveau conseil. Le but ultime est d'adapté les activités du centre pour qu'elles répondent mieux aux besoins des amateurs. Car tout compte fait, les seules ressources pour un amateur ce sont les clubs.

Ainsi les traditionnelles conférences mensuelles se feront plus rares; une à l'occasion. A la place nous proposons des causeries. Mais avant d'en parler soulignons les derniers conférenciers: Le Dr René Racine, directeur de l'Observatoire du Mont Mégantique nous a présenté les instruments modernes en astronomie professionnelle. M. Réal Manseau, astronome amateur historien, a fait revivre un peu l'histoire de l'astronomie amateur québécoise et les premiers temps du Centre de Québec. Quelques pionniers de l'astronomie d'ici assistaient à cette conférence et ont fait part de leurs souvenirs. Ce fût une soirée très enrichissante. Enfin la plus récente traitait de l'influence des nouvelles étoiles sur leur environnement. Notre invité était le Dr Gilles Joncas.

Nous n'écarterons pas définitivement les conférences du menu des activités. Mais depuis plusieurs mois maintenant nos membres sont invités à des causeries où l'échange de connaissances profite davantage aux amateurs. Nous espérons satisfaire nos membres autant sur le plan théorique mais surtout sur le plan pratique. Les sujets toucheront les différents domaines de l'astronomie abordable pour l'amateur. Il sera donc plus sensé de discuter de l'hypersensibilisation des films que du fonctionnement de la caméra à comptage de photons. Ce qui motive davantage un amateur c'est de voir le travail accompli par son confrère. Déjà quelques causeries ont eu lieu. Avec Denis Martel il était question de l'observation planétaire. On a comparé différentes méthodes techniques, discuté des détails faciles et difficiles à observer sur différentes planètes (Mars et Jupiter en particulier). Plus tard, la seconde causerie mensuelle invitait Yvan Bourassa de l'Astro-Club du Collège de Lévis et Luc Simard, membre du Centre pour nous présenter leurs résultats et expériences en astrophotographie.

En plus d'une dose de théorie bien mesurée les membres sont appelés aux soirées d'observation. Depuis plus d'un an maintenant, le Centre et le Collège de Lévis ont établi un protocole d'entente qui nous permet d'utiliser l'Observatoire du Collège. Ainsi à tous les weekends où la lune n'illumine, ni les nuages ne voilent le ciel, les membres se donnent rendez-vous. C'est principalement un Celestron 14" qu'on y retrouve. En plus de la gamme d'instruments personnels, le centre met à la disposition des participants sont Quantum 6" f:15.

ALMANACH GRAPHIQUE

En 1986 le Centre de Québec a publié la 42ième édition de l'Almanach Graphique. Au début c'est le Maryland Academy of Sciences de Baltimore, qui envoyait l'Almanach auquel le Centre apporta les

corrections en latitude avant de le faire imprimer en français. Bien que déjà distribué à quelques dizaines de milliers d'exemplaires dans le passé l'Almanach Graphique demeure très populaire. Nous profitons de l'occasion pour remercier la Société Nationale (S.R.A.C.) et l'Association des Groupes d'Astronomes Amateurs (AGAA) pour leur appui depuis plusieurs années.

Note: l'Almanach Graphique peut être obtenu gratuitement en envoyant une grande enveloppe affranchie au Centre de Québec.

CLERMONT VALLIÈRES, *Secrétaire*

ST. JOHN'S CENTRE

This year marked at least the twentieth year of existence for our centre, and many modest improvements. Our meetings continued to be held at the Newfoundland Marine Institute, with membership decreasing from about fifteen to nine.

The early months of the year saw our observing committee initiate a site search, under which several areas were proposed for evaluation. On January 20 a large fireball made its appearance over central Newfoundland skies, but, unfortunately, none of our members saw it. "Howley's Comet" was thought to have landed near a lake, and a geologist at Memorial University believes he may have found a possible site—this will be further investigated next summer.

We also record the death of one of our Centre's founding members. Dora Russell had spent many years involved in astronomy in Newfoundland and was most well known for her column in the Evening Telegram, titled "All About Stars". Dora also helped create a Girl Guide astronomy badge, and received a Service Award in 1977. In honour of her, our newly established newsletter was named after her column, and our library, with recent, extensive donations from Dora's collection of books, is now known as "The Dora Russell Astronomy Library." Dora will be missed by all in our Centre.

Throughout the year, our Centre continued with its public relations activities. Randy Joyce wrote several excellent articles for the local newspaper on observing Comet Halley and the 90% eclipse of October. The Newburys continued their activities with the Boy Scouts and Girl Guides. Our newsletter is now back in action, produced monthly on a computer.

The Executive have begun holding their own meetings so that long-range plans can be made for all our meetings and activities. It is hoped this and the shift of meetings to Sundays will draw more members to our meetings and make the meetings themselves more interesting by reducing business.

Finally, the year was ended in December by a Comet Halley retrospective. We felt this would make up for our lack of public events during March, where all concerned feared the famous Newfoundland horizon fog. This event was not to be compared with our rewarding efforts with Parks Canada late last year on Halley: only one member of the public showed up, but he did decide that he and his son would join the Society.

How many larger Centres can boast of a 200% rate of membership recruitment from public events?

The following is a list of our meetings:

- January 22 Gary Dymond on eclipses of Jupiter's moons and variable stars.
- February 17 Randy Joyce on observing Comet Halley.
- May 14 Paul Rodger's played a taping of CBC Radio's *Ideas* on Halley.
- June 11 Randy Dodge gave a slide show, including Voyager shots of Jupiter and Saturn.
- September G. Dymond on star-lore.
- October 20 Annual Meeting.
- November 18 Video on the Voyager probe.
- December 14 Comet Halley retrospective. Gifts for astronomically inclined people.

DAVID BOURGEOIS, *Secretary*

SARNIA CENTRE

This year was one of exceptional challenge for the Sarnia Centre. Financial restraints demanded novel and innovative solutions. Monthly meetings were constant in the program of the Sarnia Centre for the past 5 years. However the loss of our regular meeting facility at the Community College forced the elimination of regular monthly meetings. Meetings took place on Friday January 31st, 1986, Friday February 28th, Friday April 25th, and Wednesday November 19th.

The membership sought a change of priority towards observation type activities. Observing nights were set during the year.

The Sarnia Centre provided two representatives for our local radio station CHOK (1070) and its "Hot-line" programs. These were broadcast on Thursday February 20th and Thursday March 6th, 1986. The centre's secretary and National Council Representative defended Astronomy against sometimes hostile public opinion.

There was much unfair criticism received regarding our display in the shopping mall. The poor viewing of Halley's Comet was a disappointment.

The Sarnia Centre journal *Urania* was informally published during 1986. Individual copies were photocopied for members. The high cost of postage prevented us from sending copies of *Urania* to other centres this year. Perhaps in the future we will be able to afford to mail issues of our journal. The Post Office also increased the box rental rates. Unfortunately, the centre will not have a post office box and all future mail to the Sarnia centre should be sent to the president of the centre.

The Sarnia Centre provided assistance to youth groups, cubs, guides, and scouts. The centre provided an observation night for foster children at the Children's Aid Society camp on Tuesday, July 22nd, 1986.

The depressed local economy resulted in the transfer or unemployment of some of our membership. President for 1987, Derek Hitchens is optimistic for a good program in the year ahead!

JAMES TOWNSEND, *Secretary*

SASKATOON CENTRE

Activity in the Saskatoon Centre decreased slightly during 1986 as Comet Halley moved back into space. Activity was mainly composed of observation sessions at the Centre Observatory. Attendance at the General meetings was very good as people came to learn about Halley's Comet and Astronomy in general.

The Saskatoon Centre's 1986 celebration of International Astronomy Day was held Saturday, April 19, at The Mall At Lawson Heights, a local shopping centre. A good turnout of members, telescopes, and display materials including slides and a computer proved to be of interest to the public. Many questions were answered regarding Halley's Comet.

The Centre's annual two star star nights in 1986, to be held at Diefenbaker Park in Saskatoon were rained out for both nights. The Centre did not hold a public star night in 1986.

A Perseid meteor watch was held at Rystrom's Observatory Saturday August 9. The shower was not at its peak but the count obtained was 15 meteors per hour. An aurora built up later in the evening which fogged the sky. Cameras on tripods were set up hoping to capture some meteors on film.

The monthly programs at the start of the year were composed of video presentations dealing with Halley's Comet and the later programs were films from the National Film board. All General meetings were well attended by members of the public. The Centre was treated to a lecture by Dr. R. Skinner, Honorary President, who presented the latest theories of cosmology in a lecture titled *The Evolution of the Universe*. In the October General Meeting a slide presentation was given by Centre member R. Huziak who had just completed a world tour. The presentation of *Astronomy Around the World* was very informative and enjoyable. Richard has been sending Newsletter articles throughout the year describing his discoveries.

The Centre Newsletter with the format change was well received and is now providing good information.

W. J. FERNETS, *President*

TORONTO CENTRE

1986 will long be remembered for the return of comet Halley. Because of this famous comet, our membership, public education activities, and consequently public awareness of a local astronomy club, increased dramatically.

Starting with public education: we showed approximately 15,000 people Comet Halley in 1985/86 at Harbourfront, the Metro Zoo, and Centennial Park in gatherings organized by Randy Attwood and city star nights organized by Steve Spinney. We packed the auditorium of the Medical Sciences Building at the University of Toronto with a public lecture organized by Michael Watson, and we made the local and national newscasts several times. Subsequent public education activities under Phil Mozel and Brian Beattie had us setting up displays and telescopes at Harbourfront for Astronomy Day. Members also set up their telescopes on Saturday nights at the David Dunlap Observatory for the benefit of their visitors. Astronomy Toronto, produced by Randy Attwood at the studios of Rogers Cable TV, began its sixth season of quality shows on astronomy.

In 1986 there were 10 Members Nights organized by the Observational Activities Committee under Walter MacDonald, many of which had a theme. Examples of these include the portable observatory, astrophotography bloopers, Comet Halley, and observing earth satellites.

Many members travelled south to Florida, Barbados, Spain, Australia, the Galapagos Islands, New Zealand, Antigua, and Venezuela to see the comet.

The 1986 banquet featured guest speaker Fred Espanek from the Goddard Space Flight Center, and featured the following award presentations: the Bert Winnearls award went to Steven Spinney, the Andrew Elvins to Randy Attwood, the Jesse Ketchum award to Michael Watson, Messier certificates to Teo Talevia and Kim Rowe, and to Betty Robinson, Eric Galt, Brian Beattie, and Rob Rixen went membership certificates.

The Program Committee under Dr. Charles Dyer organized a series of eight lecture meetings, including a joint meeting with the Royal Canadian Institute. The program for fiscal 1986 was this:

October 20, 1985	Dr. John Percy on variable stars
November 15	Dr. Martin Duncan on the origin of comets
December 13	Dr. Rachel Webster on gravitational lenses
January 24, 1986	Dr. Roy Bishop on the rainbow
February 21	Dr. Tom Bolton on runaway stars
March 19	Dr. Lee Anne Wilson on stellar winds and mass loss
April 18	Dr. Philip Kronberg on super computers and applications to astronomy
May 16	Ian McGregor on the origin of constellations

Thanks to Steven Spinney and Walter MacDonald for operating the slide projector, and to Eric Galt, Paul, and Eric Gunter for helping with the refreshments for all the meetings.

When something like Comet Halley comes to town, the already onerous task of membership becomes even more so. Fortunately the Centre's Macintosh computer was up and running for this deluge, so Membership Secretary Susan Challenger was able to keep her head above water. In 1986, the Toronto Centre had 957 regular, 84 youth, 82 life, and 82 associate members, for a total of 1123. The membership count, excluding associate members, represents a 22.7% increase over 1985.

Because of all the new members these past two years, we formed a New Members Committee, under Kathleen Fall and Mary Anne Harrington. The two main functions of the committee were to issue name tags for members and to organize a special night to introduce new members to the Toronto Centre.

It is with regret that we record the deaths of four members in the past year: Mr. J. Vanderwilen, Mr. C. E. Thurgood, Mrs. Dorothy Graham, and Mr. Philip Morton.

As reported in our newsletter, the observatory in Schomberg (and the observing program under Tom Quigley) has been temporarily shut down pending the results of a working group under Ian McGregor studying observatory site alternatives. The observatory maintenance committee under Bob May has ensured the instrument and building are still in good condition.

The bimonthly newsletter, SCOPE, under the editorship of Betty Robinson, continued to fulfill its charge of communicating the activities of the Centre to all our members. The computer and Macintosh software have been very helpful.

The optical workshop, under the direction of John Morriss ran a fall series of classes.

A new group started in 1986 (perhaps a sign of the times)—the computer users group—to share ideas about using home computers with respect to astronomy.

In May of 1986 the Toronto Centre hosted the spring meeting of the Niagara Frontier of Amateur Astronomical Associations, which featured talks at the McLaughlin Planetarium and a banquet with renowned variable star observer Warren Morrison as guest speaker.

Thanks should be recorded for all Toronto Centre councillors (in particular to the retiring councillors) and volunteers who continually and tirelessly contribute their time and efforts to make the Toronto Centre what it is today: one of the best, most professional and active amateur astronomy clubs in North America. In particular, thanks should be recorded for president Randy Attwood, finishing his fourth and final year as president, whose dedication, initiative and drive, not only made the Halley madness fun, but provided a clear and strong direction for our future.

Finally, and very important, thanks must go on record to the McLaughlin Planetarium for letting us use their facilities and mailing address.

BETTY ROBINSON, *Secretary*

VANCOUVER CENTRE

12 Council meetings and 12 regular meetings were held in 1986, as we continued to meet throughout the summer months. The annual dinner was held in February, with Dr. Roy Bishop as guest speaker. In April we incorporated as a society. Astronomy Day, April 19, was successful, in spite of poor weather. Members travelled as far as Peru, Barbados, New Zealand or to Hawaii in search of Comet Halley.

In May we supported the 3-day event "Space Update '86" (sponsored by the B.C. Science Teachers' Association), some as lecturers and demonstrators and some as listeners. Two members attended the G.A. in Winnipeg and Art Holmes won an award. In October we participated in a "Celebration of Nature" (sponsored by the Greater Vancouver Regional District) at Campbell Valley Park (our observing site), where an estimated 10,000 people attended the 2-day event. The Observers' Group reported excellent viewing in the late summer months. The telescope committee completed the 10", the 15" mirror is ready, and at "Astrowap," again held in November, the 14" made by member Lance Olkovich was purchased for the Centre's use.

New library shelving was installed, and librarian Share Shavaga (assisted by Gerry Knight) re-catalogued all the material. Some of our books- plus Lance's 14" scope, were rented to Screen Gems (Canada) Ltd. for use in the filming of "Roxanne." The video committee completed a second video "Stargazing" for Cable TV (thanks to Rogers' Cable TV), starring members Pat Horrobin and Karl Miller.

In December we made a field trip to the Dominion Astrophysical Observatory in Victoria, under the guidance of Chris Aikman, and to the home observatories of George Ball and Jack Newton (thanks to the Victoria Centre).

We continued to use the auditorium of the Vancouver Museum for our regular meetings, and thanks to David Dodge, Supervisor of the Gordon Southam Observatory, we used the lecture room for all Council meetings, the coffee hour after regular meetings, and for special events. Through the courtesy of David Hurd, Director of the H.R. McMillan Planetarium, members were invited to two free shows, and the special extra showings on Astronomy Day.

Meetings for 1986

- January 14 Karl Miller – Presidential address.
- February 11 Film on Voyager/Saturn. Art Holmes on "How to make a Poncet Mount. Chandra Madhosingh on "A visit to JPL".

- March 11 Art on the Centre telescope. David Dodge on Comet Halley. Dr. Leigh Palmer on Voyager/Uranus.
- April 8 Planetarium show "Secrets of the Sun."
- May 13 David Dodge reporting on Comet Halley trip to Peru.
- June 10 Dr. David L. Strangway, President of UBC, on "Lunar Geology."
- July 8 "Astrophotography Seminar."
- August 13 Reports on Mount Kobau, and the G.A.
- September 9 Planetarium show "Going Up: the Story of the Space Elevator."
- October 14 Barry Shanko on the Hubble Space Telescope.
- November 11 Dr. Anne Underhill on "Wolf-Rayet Stars: some old and new ideas."
- December 9 Annual elections. Art Holmes spoke on "Time."

Note – each month "In Transit" (the sky of the month) was given by Greg Soderling or by Dave Dodge.

SALLY BAKER, *Secretary*

VICTORIA CENTRE

Membership once again increased during the past year, with 116 General, 7 Youth, and 23 Life members for a total of 146. Most of the new members joined as a result of our activities at the Hobby Show and the "Summer Evenings With the Stars".

May 10 was Astronomy Day this year, being changed locally from an April date to try to avoid bad weather. The Star Party at the Dallas Road waterfront area was well attended, but even then, the weather was not very good. The Centre's Evans-Vander Byl Telescope was present, but only operated about one hour before the intermittent clouds became a totally overcast sky. There were some individual members' telescopes set up also. The EVBT was also in use at several of the Saturday Visitors' Nights at the Dominion Astrophysical Observatory during July and August. A few of the members brought their telescopes for some of these evenings.

Because of the increasing public interest in astronomy, we held our "Summer Evenings With the Stars" again this August. Interest appears to have continued to the point that this program will remain an annual event. The four lectures were as follows:

- August 6 "An Astronomer's Scrapbook" – Jack Newton.
- August 13 Tour of the Dominion Astrophysical Observatory – Alan Batten.
- August 20 "The Solar System: Its Origin and Evolution" – Philip Stooke.
- August 27 "Exploring Space and Time" –

We had a display at the Victoria Hobby Show in April, to which several members contributed both time and display materials.

Apart from the above, our regular ten meetings were well attended; all but the Annual Meeting being advertised and open to non-members as part of our public education effort.

- September 11 "The Riddle of the Wolf-Rayet Stars" – Dr Anne Underhill.
- October 9 Annual Meeting, and "IAUs From Dublin to Hamburg", Dr Kenneth Wright.
- November 13 Film Night – 3 films: "Chasing the Eclipse", telling of preparations and activity during solar eclipse observations in Brandon, Manitoba; "Comet", with some mention of Comet Halley but mainly explaining what is known about comets in the solar system; and "Rhythmic", a light-relief film, dealing with those items an astronomer knows best – figures.
- December 11 "Halley's and Other Comets: isti mirant stella" – Dr Chris Aikman.
- January 8 "The Future in Space: USA and USSR" – Jeremy Preston and Tim Lomas.
- February 12 A visit by our President, Dr Roy Bishop, who gave a lecture entitled "SS433 – A Stellar Spectacle".

- March 12 "Globular Clusters: What They are Made of and How They Look" – Dr Carlton Pryor.
 April 9 "The Search for Planet X" – Dr Douglas L. Welch.
 May 8 Members' Night, with talks and demonstrations by members on their various projects.
 June 11 "On the Nature of Quasars" – Randall Pyke

JOAN STRINGER, *Secretary*

WINDSOR CENTRE

The year 1986 turned out to be a very productive year for the Windsor Centre. The most ambitious observing program to date was established by Alan Legary, Joady Ulrich and Matthew Bourdeau. Observing trips to Patrick Langan's residence in Rochester Township, Point Pelee National Park and the Ernie M. Warwick Conservation Area in Elgin County commonly referred to as "Eagle". We held observing sessions at Eagle on the weekends closest to new moon in the months of March, May through October, and December. Attendance has been as high as 50 people, despite the terrible weather conditions. Most of the observers attending Eagle have been members of the Detroit Astronomical Society. Special thanks must go to Patrick and Jeanne Langan for hosting another outstanding Astronomy Day Party for the fifth consecutive year. Our annual Astronomy Day Party held on June 10th, attracted over 60 people and proved to be our most successful to date.

Joady Ulrich, Henry Lee and Mamie Lee attended the General Assembly held in Winnipeg on June 26th to June 30th. Three Windsor Centre members attended the Stellafane Amateur Telescope Makers Convention on August 2nd. Seven members of the Windsor Centre attended the fifth annual Starfest '86, just outside of Mount Forest, Ontario. For International Astronomy Day (April 19th), the Windsor Centre held a public observing session, focusing on Halley's Comet at Western Secondary School in Anderdon Township. The University of Windsor and the Windsor Centre sponsored a lecture by Jim Loudon, (Staff Astronomer, University of Michigan Exhibit Museum) on November 8th concerning "Uranus: The Voyager-2 Discoveries". Nearly 300 people attended.

The Windsor Centre's public relations program established in 1985, has developed into the most extensive publicity machine of any centre in the R.A.S.C. It has created a flood of interviews from newspapers, magazines, radio and T.V. stations. Our education committee established in 1985 has coordinated our very successful and expanding educational program for the public. Members of this committee handled nearly 100 presentations for Boy and Girl Scouts, primary and secondary schools, as well as many private organizations. Special thanks must go to Randy Groundwater, Alan Legary, Matthew Bourdeau, Evan Kayahara, Steven Pellarin, Lorison Durocher, Joady Ulrich and Patrick Langan for their outstanding efforts on our education committee.

The Windsor Centre would like to thank our special guest speakers, Mr. James Mitchell, Mr. Michael Flegel from the Chatham/Kent Astronomy Club, Mr. Alistair Ling from the Montcalm Centre and Mr. Jack Brisbin from the Detroit Astronomical Society. Finally, we deeply appreciate the support of Mr. John Thompson from the Sarnia Centre and the public relations work by our Honorary President, Dr. John Huschilt on behalf of the Windsor Centre.

The Windsor Centre held nine membership meetings at St. Mary's Anglican Church Lecture Hall. Three council meetings were held during the year.

LORISON A DUROCHER, *Secretary*

WINNIPEG CENTRE

The Winnipeg Centre was involved in many activities during 1986. We participated in four Comet Halley Skywatches held for the general public. These were held in cooperation with the Manitoba Astronomy Club (MAC), an under 18 club, and the Manitoba Planetarium. The locations included the

Winnipeg Centre's Glenlea Observatory, Lorette, Landmark, and Steinbach – all in Manitoba. At Steinbach, an estimated turn-out of 4000 people kept members busy at telescopes for hours on end. A number of shopping mall displays were put on by centre members to inform the public.

Joint star parties for Winnipeg Centre and MAC members were held at the Glenlea Observatory where among others things, the Comet was observed and photographed. These joint sessions were quite successful and have continued to be arranged. They have helped to promote good interaction between the two clubs.

The Winnipeg Centre celebrated its 75th anniversary in 1986. The official birthday party took place at the 1986 General Assembly which we hosted at the University of Manitoba. The GA was a great success with over 100 people in attendance. The Planning Committee and their helpers were able to produce a smooth-running, nearly flawless event. A special award was presented to Guy Westcott by the Winnipeg Centre to recognize his efforts in promoting astronomy in Manitoba and for his tireless dedication to our centre. Guest speakers at the GA included Steven Edberg of the Jet Propulsion Laboratory in California, and David Levy, well-known astronomer from Arizona.

In conjunction with the 1986 GA, the Helen Sawyer Hogg lecture was given at the University of Manitoba. Special Guest speaker for this second annual talk was Dr. Barry Madore of the University of Toronto. His talk was entitled "Space Telescope: Mankind's New Tool For Measuring The Ultimate Frontier".

Several members of the Winnipeg Centre traveled to Arizona to observe Comet Halley. They brought back many stories and a collection of fine photographs that they took there.

A major achievement of the Winnipeg Centre in 1986 was the upgrading and re-opening of our observatory located near Glenlea, Manitoba. A year of fundraising efforts, including the acquisition of a government grant, culminated in the purchase of a 12 foot Ash dome. This was installed by centre members following the dismantling of the old wooden one. This new dome has finally enabled us to permanently install the centre's 14 inch Schmidt-Cassegrain telescope. Use of the facilities soon reached a level not seen for many years and many members spent the summer recess testing and becoming familiar with the new equipment. The observatory is open to all Winnipeg Centre members of good standing and must be booked through the Observatory Director Lawrence Mlodzinski.

Membership at the centre has increased with the coming of Comet Halley and it is hoped that our slate of monthly meetings and star parties will help keep the new workers interested and encourage them to become involved.

Our newsletter, *Winnicentrics*, continues to be published by editor Stan Runge. It helps keep members informed about current events in astronomy, and upcoming centre activities.

The centre's library which is located at the Glenlea Observatory has been completely reorganized, and new materials added and catalogued by librarian Chris Rutkowski.

Guy Wescott began production of a series of short television programs on astronomy-related topics. He works on them in association with a local community access television station, VPW. The series is called "The Silent Observer" and centre members are being encouraged to appear on it or submit ideas for future shows.

The Winnipeg Centre continues to meet on the second Friday of every month (except July and August) at the University of Winnipeg. The agenda for 1986 was as follows:

- January 10 Members Night – Various Topics
- February 14 Guy Westcott – Comets
- March 14 Stan Runge – An Amateur Astronomer's Darkroom
- April 11 General Meeting – Various Topics
- May 9 Dr. Karl Henize – Space Astronomy on Spacelab II
- June 13 General Meeting – Various Topics
- September 12 Len Gamache and Dave Trimble – Summer Observations
- October 10 Annual Business Meeting – Elections
- November 14 General Meeting – Future Centre Activities
- December 12 Bill Peters – Building a Good Cheap Telescope

GORD MATHEWS, *Secretary*

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GOLD MEDAL OF THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

The Gold Medal of the Society was established in 1905 as an encouragement to the study of astronomy. It is awarded to the graduating fourth year University of Toronto Arts & Science student who has both an A standing in his fourth year and the highest average mark in the two full courses and two half courses in astronomy which are contained in the Astronomy specialist programme, provided this average is over 80%. If no student satisfies these criteria, the award is not made.

1906 – *W.E. Harper	1937 – D.A. MacRae	1968 – P.G. Martin
1907 – *R.M. Motherwell	1940 – W.F.M. Buscombe	1970 – J. Kormendy
1909 – *R.K. Young	1948 – R.W. Tanner	1971 – Blake F. Kinahan
1910 – *R.J. McDiarmid	1949 – I. Halliday	1972 – M.J. McCutcheon
1911 – R.S. Sheppard	1956 – D.C. Morton	1976 – Chris Rogers
1913 – *E.A. Hodgson	1960 – C.R. Purton	1977 – M. De Robertis
1914 – G.S. Campbell	1961 – R.C. Henry	1978 – D.R. Gies
1926 – *F.S. Hogg	1962 – J.R. Percy	1979 – N. Duric
1929 – P.M. Millman	1963 – P.H. Reynolds	1981 – T.C. Box
1931 – W.S. Armstrong	1965 – A.F.J. Moffat	1982 – M.J. Gaspar
1933 – K.O. Wright	1966 – W.A. Sherwood	1984 – Glenn D. Starkman
1935 – Miss F.S. Patterson	1967 – R.H. Chambers	1985 – G.A. Drukier

*Deceased

CHANT MEDAL OF THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

The Chant Medal of the Society was established in 1940 in appreciation of the great work of the late professor C.A. Chant in furthering the interests of astronomy in Canada. This medal is awarded, not oftener than once a year, to an amateur astronomer resident in Canada on the basis of the value of the work which he has carried out in astronomy and closely allied fields of original investigation.

Awards have been made to the following:

1940 – Bertram J. Topham (Toronto)	1953 – Jean Naubert (Centre d'Astronomie de Montréal)
1941 – H. Boyd Brydon (Victoria)	
1942 – *W.G. Colgrove (London)	1955 – *Frank J. DeKinder (Montréal)
1943 – *Cyril G. Wates (Edmonton)	1956 – Maurice Drolet (Quebec)
1945 – Paul-H. Nadeau (Quebec)	1959 – Earl Milton (Edmonton)
1948 – Isabel K. Williamson (Montreal)	1967 – R.R. Thompson (Toronto)
1949 – Frank Sisman (Hamilton)	1979 – Rolf G. Meier (Ottawa)
1950 – *F. Keith Dalton (Toronto)	1980 – David Levy (Kingston)
1951 – DeLisle Garneau (Centre d'Astronomie de Montréal)	1986 – Warren Morrison (Kingston)

KEN CHILTON PRIZE

The Chilton Prize was established in 1977 by the National Council of the Society, in remembrance of Ken E. Chilton, an active member of the Hamilton Centre. The prize is awarded annually to an amateur astronomer, resident in Canada, in recognition of a significant piece of astronomical work carried out or published during the year.

Awards have been made to the following:

- 1978 – J. Newton (Victoria)
- 1979 – W. Morrison (Kingston)
- 1981 – C. McCaw (Vancouver)
- 1983 – C. Spratt (Victoria)

**SERVICE AWARD MEDAL
OF THE ROYAL ASTRONOMICAL SOCIETY OF CANADA**

The Service Award was established in 1959 and, on recommendation of a special committee of the National Council, this small bronze plaque is presented to members who have performed outstanding service to a Centre or to the National Society.

- | | |
|---|--|
| 1959 – *E.J.A. Kennedy (Nat. Secretary) | 1972 – Vern Ramsay (Toronto) |
| *J.H. Horning (National Treasurer) | B.F. Shinn (Winnipeg) |
| 1960 – *Charles M. Good (Montreal) | F. Schneider (Hamilton) |
| Miss F. Laforest (Montréal) | 1973 – Fred P. Lossing (Ottawa) |
| Frederic L. Troyer (Toronto) | 1974 – Ian Halliday (Ottawa) |
| 1961 – *Robert Peters (Victoria) | Fred Williams (Victoria) |
| 1962 – Jean Asselin (Montréal) | 1975 – D.J. FitzGerald (Toronto) |
| Robert J. Clark (Vancouver) | 1976 – F. Loehde (Edmonton) |
| *Jesse Ketchum (Toronto) | *Ken Chilton (Hamilton) |
| Joseph A. Pearce (Victoria) | R. Belfield (Winnipeg) |
| 1963 – Edwin E. Bridgen (Montreal) | Mrs. P. Belfield (Winnipeg) |
| Miss M. Burland (Ottawa) | 1977 – P. Marmet (Quebec) |
| A. Vibert Douglas (Kingston) | J.R. Percy (Toronto) |
| 1964 – *C.S. Beals (Ottawa) | *Mrs. D. Russell (St. John's) |
| *M.W. Burke-Gaffney, S.J. (Halifax) | 1978 – Mrs. Marie Fidler Litchinsky |
| W.T. Goddard (Hamilton) | (Calgary & Toronto) |
| 1965 – *D.C. Bawtenheimer (Windsor) | 1979 – *R. Noel de Tilly |
| *John F. Heard (Toronto) | (Centre d'Astronomie de Montréal) |
| A.M. Crooker (Vancouver) | A.W. Scott (Toronto) |
| *Ernest S. Keeping (Edmonton) | 1980 – S.A. Mott (Ottawa) |
| *W.S. Mallory (Hamilton) | 1981 – *L.E. Coallier (Centre d'Astro. Montréal) |
| 1966 – P. Lemieux (Montreal) | A. Covington (Ottawa) |
| *S. Litchinsky (Calgary) | H. Creighton (Toronto) |
| W.J. McCallion (Hamilton) | Miss I.K. Williamson (Montreal) |
| W.A. Warren (Montreal) | 1982 – D.P. Hube (Edmonton) |
| 1967 – H.S. Hogg (Toronto) | G.N. Patterson (Saskatoon) |
| P.M. Millman (Ottawa) | 1983 – C. Aikman (Victoria) |
| *R.J. Northcott (Toronto) | L.A. Higgs (Ottawa) |
| *H. Simard (Montreal) | 1984 – *L.V. Powis (Hamilton) |
| J.F. Wright (Vancouver) | J.A. Winger (Hamilton) |
| 1968 – *D.R.P. Coats (Calgary & Winnipeg) | P. Jedicke (London) |
| George Ball (Victoria) | H.N.A. Maclean (Niagara) |
| *Herbert Fox (Hamilton) | C. Hallam (Windsor) |
| 1970 – Norman Green (Hamilton) | H. Lee (Windsor) |
| J.E. Kennedy (Saskatoon) | 1985 – J. Cam Fahrner (Calgary) |
| 1971 – *K.B. Meiklejohn (Calgary) | 1986 – Randall Brooks (Halifax) |
| J.N.R. Scatliff (Winnipeg) | Leo Enright (Kingston) |

*Deceased

SIMON NEWCOMB AWARD

This award was instituted in 1978 to recognize literary ability among non-professional members of the Society.

- 1979 – William J. Calnen (Halifax)
- 1981 – Christopher Ruthowski (Winnipeg)
- 1982 – Phil Mozel (Toronto)
- 1985 – Donald F. Trombino (U.S.A.)
- 1986 – David Chapman (Halifax)

DECEASED MEMBERS FOR 1986

- Mr. J. Clow (U.S.A.)
- Mr. L. Coallier (Cdn Unattached)
- Mr. R.H. Common (Cdn Unattached)
- Mr. V. De Francisco (Hamilton)
- Mr. A.M. Donnelly (Victoria)
- Mr. Y. Girardeau (Ottawa)
- Ms. D. Graham (Toronto)
- Mr. M.L. Knock (Ottawa)
- Mr. G.J. Menard (Cdn Unattached)
- Mr. P.S.A. Morton (Toronto)
- Mrs. D. Russell (St. John's)
- Mr. J.C. Scott (Ottawa)
- Mr. H.D. Thomas (U.S.A.)
- Mr. C.E. Thurgood (Toronto)
- Mr. J. Vanderwilen (Toronto)
- Mr. P.S. Watson (Quebec)
- Mr. C.E. Welsher (U.S.A.)

CENTRES TREASURERS' REPORTS FOR 1986

	Calgary	Edmonton	Halifax	Hamilton	Kingston	Kitchener-Waterloo	London	Montreal	CF Montreal	Niagara
REVENUE										
Membership Fees	6664.56	3186.00	5115.43		1485.39	445.00		2604.00	857.50	1285.50
Life Members Grants	128.00	88.00	168.00		48.00			136.00	16.00	24.00
Donations	—	16.00	5.00		143.70			16.22	—	450.00
Educational Activities	—	—	30.00						—	—
Interest & Dividends	430.22	338.00	83.46		11.98	5.22		3170.08	—	5.66
Sales of Handbooks (Net)	—	—	941.17		47.00	23.00		3.00	12.00	43.00
Advertising	274.50	—	25.00		—	—		—	—	—
General Assembly (incl. Travel Grants)	249.62	—	224.00		—	—		—	—	—
Other Grants	—	—	—		20.00	—		—	—	—
Miscellaneous	2947.23	1011.00	78.35		—	86.00		377.55	—	2133.13
Total Revenue	10694.13	4639.00	6670.81	NOT REPORTED	1756.07	559.22	NOT REPORTED	6306.85	885.50	3941.29
EXPENDITURES										
Fees remitted to National Office	3655.50	1587.00	4008.00		1066.50	297.00		1203.00	514.50	898.50
Library	649.20	—	78.90		—	—		47.87	—	—
Meetings & Newsletters	1317.06	902.00	316.94		290.96	27.18		694.10	—	583.69
Annual Dinner (Net)	158.23	—	(-12.78)		—	—		—	—	1904.80
General Assembly (incl. Travel Grants)	249.62	72.00	621.40		—	—		—	—	—
Equipment & Supplies	—	65.00	—		118.00	—		439.98	—	6.94
Office Administration	212.30	69.00	105.38		124.18	—		237.32	17.50	41.88
General Expenses & Audit	—	50.00	—		—	—		44.80	77.50	—
Educational Activities	20.36	—	—		—	—		—	40.00	19.09
Insurance	—	—	—		—	—		675.80	—	—
Awards & Donations	201.41	55.00	168.92		164.78	—		143.00	—	—
Operating Expenses-Observatory	2212.16	1060.00	—		—	48.00		524.02	236.00	—
Miscellaneous	3497.66	—	50.00		—	1.74		45.81	—	26.00
Total Expenditures	12218.50	3860.00	5336.76	NOT REPORTED	1764.42	373.92	NOT REPORTED	4055.70	885.50	3480.90
Surplus or (Deficit) on Operations	(-1524.37)	779.00	1334.05		(835)	185.30		2251.15	—	460.39
Balance from 1985	10359.84	6294.00	1041.30		415.54	539.72		3885.80	—	925.62
Balance to 1986	8835.47	7073.00	2375.35		407.19	725.02		6136.95	—	1386.01
Other Assets	57389.46	2452.00	3000.00		—	—		—	—	1257.45

CENTRES TREASURERS' REPORTS FOR 1986

	Ottawa	Quebec	St. John's	Sarnia	Saskatoon	Toronto	Vancouver	Victoria	Windsor	Winnipeg
REVENUE										
Membership Fees	5957.50	1793.00	292.50	361.50	945.00	21421.50	3485.00	3336.50	997.50	2445.50
Life Members Grants	272.00	24.00	—	8.00	32.00	648.00	160.00	184.00	8.00	16.00
Donations	700.77	7.00	—	—	493.30	71.00	—	83.50	407.73	2484.95
Educational Activities	—	—	—	—	—	—	423.50	—	—	—
Interest & Dividends	266.98	377.00	80.00	42.50	170.41	2480.00	285.37	996.90	6.35	—
Sales of Handbooks (Net)	63.00	18.00	32.00	—	27.00	9.00	—	4.50	126.00	51.00
Advertising	30.00	—	—	—	—	1853.00	170.00	50.00	—	—
General Assembly (incl. Travel Grants)	391.60	—	—	—	—	1105.50	140.00	156.50	174.00	13541.80
Other Grants	—	350.00	—	—	—	—	—	—	—	—
Miscellaneous	2594.10	753.00	8.00	—	257.00	1283.77	150.00	118.58	220.40	10900.98
Total Revenue	10275.95	3322.00	412.50	412.00	1924.71	28871.77	4813.87	4921.48	1939.98	29439.63
EXPENDITURES										
Fees remitted to National Office	3796.50	579.00	187.20	219.00	585.00	12966.00	1672.50	1888.50	598.50	804.00
Library	—	83.00	69.56	20.00	46.00	—	106.64	70.31	—	—
Meetings & Newsletters	1663.76	342.00	—	—	445.24	5027.53	1491.35	505.87	319.96	172.46
Annual Dinner (Net)	1286.91	—	—	—	—	553.96	57.01	321.00	—	—
General Assembly (incl. Travel Grants)	—	—	—	—	—	1605.50	209.30	481.70	—	11661.86
Equipment & Supplies	—	1118.00	—	12.47	—	—	1797.26	39.93	24.61	—
Office Administration	342.70	371.00	—	—	140.09	3191.55	17.60	—	120.00	90.81
General Expenses & Audit	—	20.00	29.44	—	138.25	1177.11	595.79	—	—	—
Educational Activities	116.04	—	—	—	194.00	400.00	139.29	1183.69	—	—
Insurance	—	278.00	—	—	—	—	—	175.00	—	239.00
Awards & Donations	78.48	—	—	—	232.31	17.33	3.36	—	122.45	—
Operating Expenses-Observatory	978.17	400.00	—	—	—	1.00	—	426.54	—	15889.71
Miscellaneous	1101.53	885.00	1.75	2.00	—	2012.95	—	—	677.97	342.72
Total Expenditures	9364.09	4076.00	287.95	253.47	1780.89	27277.93	6090.10	5092.54	1863.49	29200.56
Surplus or (Deficit) on Operations	911.86	(754.00)	124.55	158.53	143.82	1593.84	(-1276.23)	(-171.06)	76.49	239.07
Balance from 1985	10977.64	5473.00	—	279.50	15715.87	34545.71	8399.96	2037.52	385.50	58.63
Balance to 1986	12025.04	4719.00	124.55	438.03	15859.69	36139.55	7123.73	1866.46	461.99	297.70
Other Assets	—	—	—	—	—	—	—	41920.00	—	61.37

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA

FINANCIAL STATEMENTS

DECEMBER 31, 1986

C. J. Fenham & Associates

C. J. Tinkham & Associates

Chartered Accountants

C. J. TINKHAM, C.A., C.M.C.
 D. C. TINKHAM, B.COMM., C.A., C.M.C.
 P. J. BROCKLESBY, B.B.A., C.A.

2842 BLOOR STREET WEST
 TORONTO - ONTARIO
 M8X 1B1

AUDITORS' REPORT

To the Members
 of

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA

We have examined the balance sheet of The Royal Astronomical Society of Canada as at December 31, 1986, and the statements of revenue and expenditure and deficit, for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these financial statements present fairly the financial position of the Society as at December 31, 1986, and the results of its operations for the year then ended in accordance with the accounting principles set out in Note 1 applied on a basis consistent with that of the preceding year.

TORONTO, Ontario
 February 25, 1987

C. J. Tinkham & Associates

CHARTERED ACCOUNTANTS

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
 LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
 BALANCE SHEET
 AS AT DECEMBER 31, 1986

A S S E T S

	<u>1986</u>	<u>1985</u>
<u>CURRENT</u>		
Cash and short term deposit	\$ 90,122	\$ 72,218
Accounts receivable	26,779	21,471
Prepaid expenses	216	305
Loan receivable	-	1,000
Accrued interest receivable	<u>8,542</u>	<u>-</u>
	<u>125,659</u>	<u>94,994</u>
<u>INVESTMENTS</u>		
Marketable securities - at cost	<u>3,019</u>	<u>3,019</u>
<u>SPECIAL PURPOSE FUNDS (Schedule C)</u>		
Cash and short term deposits (including accrued interest)	32,191	31,585
Marketable securities - at cost	4,000	4,000
Guaranteed investment certificate	<u>91,600</u>	<u>91,600</u>
	<u>127,791</u>	<u>127,185</u>
<u>FIXED</u>		
Office building, furniture, equipment, library (nominal value)	<u>1</u>	<u>1</u>
	<u>\$ 256,470</u>	<u>\$ 225,199</u>

Approved on behalf of the Council
 of the Society

James W. Beag
President

E. Ralph Chan
Treasurer

LIABILITIES

	<u>1986</u>	<u>1985</u>
<u>CURRENT</u>		
Accounts payable and accrued charges	\$ 29,424	\$ 34,426
Deferred revenue		
- Membership fees for ensuing year	23,941	21,690
- Journal and handbook subscriptions	20,595	17,587
- Unappropriated life membership fees (Schedule A)	<u>34,581</u>	<u>26,913</u>
	<u>108,541</u>	<u>100,616</u>
<u>SPECIAL PURPOSE FUNDS (Schedule C)</u>	<u>127,791</u>	<u>127,185</u>
<u>OPERATING SURPLUS</u>	<u>20,138</u>	<u>(2,602)</u>
	<u>\$ 256,470</u>	<u>\$ 225,199</u>

C. J. Tinkham & Associates

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
STATEMENT OF OPERATING SURPLUS
FOR THE YEAR ENDED DECEMBER 31, 1986

	<u>1986</u>	<u>1985</u>
<u>DEFICIT</u> , January 1	(\$ 2,602)	(\$ 17,874)
<u>Deduct</u> : Excess of revenue over expenditure	22,740	15,272
<u>SURPLUS (DEFICIT)</u> , December 31	\$ 20,138	(\$ 2,602)

C. J. Tenham & Associates

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
STATEMENT OF REVENUE AND EXPENDITURE
FOR THE YEAR ENDED DECEMBER 31, 1986

	<u>1986</u>	<u>1985</u>
<u>REVENUE</u>		
Membership fees		
- R.A.S.C. Centres	\$ 31,592	\$ 23,732
- Individual members	16,473	15,174
- Life membership: annual appropriation	<u>1,820</u>	<u>1,416</u>
	<u>49,885</u>	<u>40,322</u>
Grants and Donations		
- Government of Canada-annual grant	10,400	10,000
- Miscellaneous donations	<u>117</u>	<u>185</u>
	<u>10,517</u>	<u>10,185</u>
Publications		
- R.A.S.C. Journal: subscriptions	21,164	17,227
reprints	755	916
publishing revenue	9,849	8,291
- Observer's Handbook	<u>80,720</u>	<u>79,528</u>
	<u>112,488</u>	<u>105,962</u>
Miscellaneous income		
- interest on investments	14,291	12,215
- insignia sales	351	567
- rent	<u>9,568</u>	<u>9,600</u>
	<u>24,210</u>	<u>22,382</u>
	<u>197,100</u>	<u>178,851</u>
<u>EXPENDITURE</u>		
Publications (Schedule B)	106,083	109,188
Office salaries and employee benefits	30,416	27,855
Postage and shipping expense	5,635	4,124
General and office expense	3,631	3,554
Stationery, printing and supplies	-	995
Life membership allotment to Centres	3,657	2,123
General assembly and travel expense	6,612	3,537
Legal and accounting	1,325	1,325
Advertising and publicity	-	983
Insignia, medals and awards	1,885	1,278
Telephone	935	990
Insurance	967	702
Library expense	867	674
Office equipment purchases	6,066	-
Bad debts (recoveries)	468	258
Building expenses	<u>5,813</u>	<u>5,993</u>
	<u>174,360</u>	<u>163,579</u>
<u>EXCESS OF REVENUE OVER EXPENDITURES</u>	<u>\$ 22,740</u>	<u>\$ 15,272</u>

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THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1986

NOTE 1 ACCOUNTING POLICIES

The financial statements of the Society have been prepared in accordance with accounting policies generally followed by similar non-commercial organizations. The significant accounting policies observed in the preparation of these statements are summarized below.

(a) Membership fees:

Members' fees are credited to income for the related membership year. Accordingly, fees received at the end of the year for the ensuing year are included in deferred revenue. Life membership fees are credited to deferred revenue when received. 5% of the life membership fund is transferred annually to the general account.

(b) Publications:

Subscriptions to the R.A.S.C. Journal are credited to income for the subscription period.

(c) Investments:

(d) Special purpose funds:

The special funds of the Society are classified in accordance with the objectives specified by the donors or in accordance with directives issued by Council. The income of the various funds is recorded on the accrual basis.

(e) Fixed assets:

The office furniture, equipment and the library of the Society are carried in the accounts at a nominal value of \$1. Any new acquisitions are included in expenditure for the year.

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
 LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA

SCHEDULE A

UNAPPROPRIATED LIFE MEMBERSHIP FEES
 FOR THE YEAR ENDED DECEMBER 31, 1986

	<u>1986</u>	<u>1985</u>
BALANCE, January 1	\$ 26,913	\$ 25,605
<u>Add:</u> Life membership fees received in the year	9,488	2,724
	36,401	28,329
<u>Deduct:</u> Appropriation to general account	1,820	1,416
BALANCE, December 31	\$ 34,581	\$ 26,913

SCHEDULE B
PUBLICATION COSTS

R.A.S.C. Journal

Printing of journal	\$ 45,162	\$ 45,558
Printing of National Newsletter	11,441	12,112
Editorial assistance	1,000	1,000
Distribution costs	14,574	12,700
Reprints	1,242	1,810
	73,419	73,180

Observer's Handbook

Printing	29,835	29,089
Distribution costs	1,663	6,461
Advertising	1,166	458
	32,664	36,008
	\$ 106,083	\$ 109,188

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THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
SCHEDULE C
COMPOSITION OF SPECIAL PURPOSE FUNDS
AS AT DECEMBER 31, 1986

	RUTH NORTHCOTT <u>FUND</u>	ENDOWMENT <u>FUND</u>	<u>TOTAL</u>
Cash	\$ 3,878	\$ -	\$ 3,878
Term deposits	18,000	10,000	28,000
Securities	-	4,000	4,000
Guaranteed Investment Certificate	-	91,600	91,600
Accrued interest	<u>313</u>	<u>-</u>	<u>313</u>
	<u>\$ 22,191</u>	<u>\$ 105,600</u>	<u>\$ 127,791</u>

C. J. Fenham & Associates

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

NATIONAL OFFICERS AND COUNCIL FOR 1987
CONSEIL ET ADMINISTRATEURS NATIONAUX

Honorary President — Arthur E. Covington, B.A., M.A., Ottawa
President — Mrs. Mary Grey, B.Sc., (C.E.), Ottawa
1st Vice-President — Lloyd A. Higgs, Ph.D., Penticton
2st Vice-President — Damien Lemay, B.Sc., Quebec
Secretary — R. Peter Broughton, M.Sc., A.R.C.T., 136 Dupont Street, Toronto M5R 1V2
Treasurer — B. Ralph Chou, B.Sc., O.D., M.Sc., 136 Dupont Street, Toronto M5R 1V2
Recorder — Leo Enright, B.A., Kingston
Librarian — Brian Beattie, B.A., 136 Dupont Street, Toronto M5R 1V2

Editor of JOURNAL — Alan H. Batten, D.Sc., Ph.D., F.R.S.C., Victoria
Editor of OBSERVER'S HANDBOOK — Roy L. Bishop, Ph.D., Halifax
Editor of National Newsletter — Ian McGregor, B.Sc., B.Ed., Toronto
Executive Secretary — Miss Rosemary Freeman, 136 Dupont Street, Toronto M5R 1V2

Council — Past Presidents — Franklin Loehde, B.Sc., B.Ed., Edmonton
 Roy L. Bishop, Ph.D., Halifax

Representatives from Centres —

Calgary: D. Hladiuk	Centre D'Astronomie	Toronto: S. Bolton
Edmonton: F. Loehde	Mtl: P. Gerin-Rose	R. May
Halifax: N. Scrimger	Niagara: J. Dekker	K. Rowe
Hamilton: J. Winger	Ottawa: R.G. McCallum	St. Spinney
Kingston: H. Van Asperen	R. Meier	T. Quigley
Kit-Waterloo: G. Mudry	Quebec: D. Lemay	J.R. Attwood
London: T. Steckner	St. John's: R. Rodge	Vancouver: K. Miller
Montreal: M. Stewart	Sarnia: J. Thompson	Victoria: G.R. Ball
	Saskatoon: J. Young	Windsor: C.J. Ulrich
		Winnipeg: L. Mlodzinski

CENTRE SECRETARIES / SECRETAIRES DES CENTRES FOR 1987

CALGARY	Dr. Leone Martin, c/o Calgary Centennial Planet., P.O. Box 2100, Calgary, T2P 2M5
EDMONTON:	Lenora Roberts, #403-9927-114th St, Edmonton, T5K 1P8
HALIFAX:	Douglas Pitcairn, 13 Ferguson Rd. Dartmouth, B3A 4J8
HAMILTON:	Eric Golding, 94 E. 41st St., Hamilton L8T 2Z7
KINGSTON:	Sue Knight Sorensen, #1-50 Montreal Street, Kingston, S7K 3E8
KIT-WATERLOO:	Johnathan Doupe, R.R. #1, Ariss, N0B 1B0
LONDON:	Mark Sinkins, 405 Ridout Street, London, N6C 4A1
MONTREAL:	Gary Boyle, 8660 Jean Brillon, #404, Lasalle H8N 2G4
CENTRE D'ASTRO. MTL:	Diane Carpentier, 1326 Holmes, St. Hubert J4T 1P5
NIAGARA:	W. Jutting, 138 South Drive, St. Catharines, L2R 4W2
OTTAWA:	C.R. Molson, 2029 Garfield Ave, Ottawa, K2C 0W7
QUEBEC:	M. Clermont Vallieres, 15B, Rue Montcalm, Ste-Catherine G0A 3M0
ST. JOHN'S:	David M. Bourgeois, 36 Second St, Mt. Pearl, A1N 1Y5
SARNIA:	James Townsend, Box 103 Wyoming N0N 1T0
SASKATOON:	Ms. Lillia Wilcox, 2527 Clarence Ave, South, Saskatoon S7J 1M3
TORONTO:	Betty Robinson, 4348 Dallas Court, Mississauga L4W 4G7
VANCOUVER:	Mrs. Sally Baker, 2063 West 61st Ave, Vancouver V6P 2C6
VICTORIA:	Alice Newton, R.R. #1, 801 Stanehill Pl, Victoria V8X 3W9
WINDSOR:	L.A. Durocher, 453 E. Belle River Rd, R.R. #2, Belle River N0R 1A0
WINNIPEG:	Gord Mathews, 64 Wildwood Park, Winnipeg R3T 0C8

