

**THE
ROYAL ASTRONOMICAL
SOCIETY OF CANADA
ANNUAL REPORT
1967**



**SUPPLEMENT TO THE JOURNAL
March 1968**

PRESIDENT'S MESSAGE

The year 1967 has been an interesting one for Canadians in general and for our Society in particular. Our centennial project, a series of review papers by several authors entitled "Astronomy in Canada, Yesterday, Today and Tomorrow", has appeared as an enlarged edition of the October Journal. Many of you will want to secure a copy of the handsome paperback reprint. Our thanks to Miss Ruth J. Northcott whose persistence and determination rallied the necessary co-operation.

The General Assembly in Montreal, at which we were guests of the Centre d'Astronomie, demonstrated again the success which results from careful planning. Noteworthy recollections which come to mind include the excellent facilities of the University of Montreal, the membership participation, the Petrie Memorial lecture by Dr. Helen Hogg, the bilingual showing at the Dow Planetarium, and the sight-seeing tour which brought us to a station of the new metro subway and thence to Expo '67. President Philippe Mailloux and his competent collaborators are to be commended. President Jim Wright of the Calgary Centre extended a cordial invitation to come west for the 1968 General Assembly.

The 156-inch quartz blank, intended for the Queen Elizabeth II Telescope on Mount Kobau, has been fabricated successfully by Corning Glass Works. Final figuring will await development of the Optical Shop on the campus of U.B.C. Mount Kobau is now equipped with a variety of meteorological and optical instruments, including an All Sky Camera and a Polaris Image Monitor, to record seeing conditions. Also a 16-inch reflector has been installed to initiate a limited scientific program.

Canadian radio astronomers have scored a success in the use of radio telescopes at Penticton and Algonquin Park as a long base line interferometer. At a frequency of 448 MHz and a baseline of 3074 km (2000 miles), the diameters of certain radio sources have been measured as less than 0.02 seconds of arc.

A new Photographic Zenith Tube observatory has been established near Calgary, and will have its official opening during the 1968 General Assembly. Being on the same latitude as the Royal Greenwich Observatory, Herstmonceux, it will use the same star catalogue and be co-operatively engaged in a unique study of polar wander and earth movements.

Our Society is growing; we are revising our Constitution and By Laws; we are seeking Federal incorporation; we are continuing our dialogue between the French and English speaking sections of our membership. Our principal aim is to foster and encourage an interest in astronomy and kindred subjects, and in particular to foster and encourage this interest in young people.

Malcolm M. Thomson
National President.

REPORT OF THE NATIONAL SECRETARY

Canada's Centennial has been a year of special note in the history of The Royal Astronomical Society of Canada. The compilation of the significant and attractive publication "Astronomy in Canada" has reflected great credit upon the Editorial Staff of the Society and on the calibre of a wide range of authors; in addition, membership in the National Society has been maintained at a high level.

In the course of the past year, meetings of the National Council were held on January 7, March 17, May 19 and September 16; the Executive Committee met on May 20, October 30 and December 16. The Annual Meeting of the Society was held in Toronto on March 17, with the President, Mr. M. M. Thomson, in the chair (see June JOURNAL, p.147).

As of September 30, 1967, membership in the Society reached a total of 2,266 including 143 Life Members. The number of Centres which make up the National Society is recorded at seventeen; however, the Halifax Centre is having serious difficulty in retaining membership and its future is uncertain. The other sixteen Centres reported as follows:

Calgary	59	Niagara Falls	21
Centre d'Astronomie de Montréal	259	Ottawa	180
Edmonton	47	Quebec	56
Hamilton	67	Toronto	558
Kingston	30	Vancouver	74
London	24	Victoria	63
St. John's	15	Windsor	25
Montreal	197	Winnipeg	84
Unattached membership included:			
Canada	132	Foreign	37
U.S.A.	323	Honorary	15

The City of Montreal was the location for the annual General Assembly with the members of the Centre d'Astronomie de Montréal as hosts. The Assembly was held through the weekend of May 19 to 21 at the Université de Montréal (for details see the June JOURNAL, pp.147-8). The Chant Medal was awarded to Mr. Raymond R. Thompson, of the Toronto Centre, for outstanding work both in instrumentation and observational activity over many years. Mr. Thompson is the fourteenth recipient of the Chant Medal. Service Awards were presented to Dr. Helen S. Hogg, Dr. Peter M. Millman, Miss Ruth J. Northcott, M. Henri Simard and Mr. James F. Wright. (For the citations which accompanied the Medal and Awards, see the June JOURNAL, pp.149-50.)

The Sixth Canada-Wide Science Fair was held in Quebec City, May 10-12. The winner of the Society's special prize in the astronomy section was Peter Jennings of Niagara Falls, Ontario; the entry of Douglas O'Brien of Ottawa, won second place. On behalf of The Royal Astronomical Society of Canada, the second vice-president, M. Henri Simard, made the presentation of the certificate which accompanied the Society's award.

Following the Council meeting of September 16, a special dinner gathering was held to honour this year's recipient of the Society's Gold Medal, Robert H. Chambers, who is the twenty-fourth student to receive this Medal since its inception over sixty years ago. The presentation was made by the National President, Mr. M. M. Thomson.

It was with regret that the National Council accepted the resignation on May 20 of Dr. W. E. van Steenburgh as Honorary President of the R.A.S.C. However, the Council was most fortunate in persuading Dr. C. S. Beals, formerly the Dominion Astronomer, to accept this important position for a period of two years.

The sympathy of the Society is extended to the families and friends of the following members who died during 1967:

Mr. De Lisle Garneau (Life Member, Montreal)	M. J. Peridier (Life Member, France)
Mr. Gordon Garrett (Toronto)	Mr. D. M. Sinclair (Canada)
Mr. Jacob Herrmann (U.S.A.)	Prof. Joel Stebbings (Honorary Member, U.S.A.)
Prof. E. Hertzprung (Honorary Member, Denmark)	Mr. W. Stothard (Life Member, Vancouver)
Mrs. J. C. Rothwell (U.S.A.)	Mr. S. Walsom (Toronto)
Mr. George Wedge (Montreal)	

NORMAN GREEN, *National Secretary.*

REPORT OF THE LIBRARIAN

The Society possesses the finest collection of non-technical astronomical literature in Canada. This year, the collection has been increased by the addition of about fifty monographs, several hundred periodical issues and an equal number of other items. An additional one thousand technical items were transferred to the library of the David Dunlap Observatory.

Unfortunately, through lack of space, about half of our collection is in storage. With the opening of the McLaughlin Planetarium and the consequent relocation of Toronto Centre activities, additional library space will soon be available in the basement of the National Office. Cataloguing and reshelving of our entire collection (several thousand items) is planned for early spring.

The collection of films and 35mm slides continues to be in demand and, as a result, will be greatly expanded in 1968. I am grateful to Mr. Moody Kalbfleisch for his help in maintaining our film collection. Any member or group of members of the Society is welcome to borrow slides and films; this can be done by writing to the National Office.

Once again, I wish to thank the National Council and other friends of the Society for their help and generosity during 1967.

JOHN R. PERCY, *National Librarian.*

REPORT OF SECRETARIES OF CENTRES

CALGARY CENTRE

Nine general meetings were held, the first four in the Science Building of the University of Calgary sponsored by Dr. D. J. Fry, and the remaining five in the Lecture Theatre of the Calgary Centennial Planetarium by kind permission of the City of Calgary Parks Department. Ten Council meetings were also held. The program for the general meetings was as follows:

- January 11—Junior Forum: Brian Spragg: "Observatories"; David Fisher: "Astrophotography"; Film: "Ranger VII, VIII, IX".
February 8—F. Campbell, Ph.D.: "White River Ash Fall"; Film: "Flight of Gemini 8".
March 8—S. R. Sreenivasan, Ph.D.: "Thermal Conditions in the Structure of the Sun"; Film: "Living in Space".
April 12—H. A. Buckmaster, Ph.D.: "Developments in Radio Astronomy".
May 10—R. Gretner, Ph.D.: "The Top of Canada"; Film: "Above the Horizon".
September 13—A. W. Harrison, Ph.D.: "The Aurora"; Film: "Origins of the Weather".
October 11—W. Allan: "Unidentified Flying Objects".
November 8—D. Venkateson, Ph.D.: "Solar Terrestrial Relationships".
December 13—Junior Forum: Lorne Benedict: "Quasars"; Larry Duff: "Theory on Propulsion of U.F.O.s"; Gary Wright: "Life on the Planets"; Films: "What on Earth" and "Motions of the Planets".

An observing group was formed and six meetings were held during the year at Gordon Sadler's residence. As part of the Centennial program of the town of Magrath, Alberta, an excellent display and exhibition of telescopes was held under the direction of twelve of our members. A number of our members were called upon to act as judges at the Calgary Schools Science Fair. We were fortunate to attend a series of lectures arranged by the Planetarium and the speakers included Dr. Helen S. Hogg, Dr. Peter M. Millman and Mr. Malcolm Thomson. Jim and Norma Wright, President and Secretary of the Centre, moved to Vancouver in September and their leadership and enthusiasm are much missed. The official address of the Calgary Centre is now c/o Calgary Centennial Planetarium, 11th St. and 6th Ave. S.W., Calgary, Alberta.

F. J. HOWELL, *Secretary*.

EDMONTON CENTRE

In January the meeting place of the Centre was moved from the Queen Elizabeth Planetarium to the Campus Towers, room 262. The program during our fiscal year included:

- November 10, 1966—R. Allin: "Quasi-Stellar Objects".
December 8, 1966—R. Allin: "Telescopes and Mounts".
January 16, 1967—Business meeting.
February 13—G. L. Cumming, Ph.D.: displayed photographs of a meteor seen over Alberta; R. Allin: "Telescopes".
March 13—A. Smith and R. Haeckel: "Construction of our Observatories".
April 10—G. L. Cumming, Ph.D.: "Photo-Electric Astronomy".
May 8—J. Wright and R. Nelson (Calgary Centre): "Our Tour of Planetarium Installations".

G. E. WILLIAMS, *Secretary*.

HAMILTON CENTRE

During 1967, four Council meetings, eight regular meetings and eight junior meetings were held, the latter in the Physical Sciences Building of McMaster University. The programs of the Centre included:

- January 5—J. G. Craig, B.Sc.: President's Address: "Why Astronomy?"
 February 2—R. C. Roeder, Ph.D.: "Quasi-Stellar Radio Sources".
 March 2—Junior Night: D. Craig, Junior President, directed a group talk on Space-ship Command Module.
 April 6—N. Green, B.A., L.Th.: "Wandering Through the Spring Skies"; Amateur Picture Night with slides shown by W. A. Fautley, L. V. Powis, F. Schnieder and G. A. Thede.
 May 4—Thomas Morris: "New Mathematics".
 October 5—Annual Meeting and Election of Officers.
 November 2—K. Redish, B.Sc.: "Data Processing Computers"; a tour of McMaster University Data Processing Centre.
 December 7—Guided tour through the Atomic Reactor Centre at McMaster University.

Six meetings of the Discussion Group were held and the amateur telescope makers held meetings every second week throughout the year on their project of a 10-inch F8 reflecting telescope, which was completed with the exception of the electric drive and mount; all parts except the tube were made by hand.

Six evenings during the year were dedicated to group displays as follows: May 11-13: Burlington Fair; June 24: Boy Scout Night at Camp Nemo; July 15: Hoover (Y.M.C.A.) Camp Field Night; July 22: Cub Scout Night at Camp Nemo; September 8-9: Centennial Field Night at McMaster University; November 8: Lectures and telescopes for students at Hillcrest School, Hamilton.

Eight meetings of the Observation Group were scheduled; A. G. Freeth and R. McCallum commenced operating a radio telescope made by Mr. Freeth on July 22 by recording solar radiation; operating on 136MHz, they have received signals from satellites ESSA 2 and 6, and Nimbus.

The Centre was pleased to honour Larry R. Hewitt of Brantford with a science award.

ROBERT LANG, *Secretary*.

LONDON CENTRE

During 1967 three meetings were held at the University of Western Ontario. The programs were as follows:

- April 13—Annual H.R. Kingston Memorial Lecture: J. D. Fernie, Ph.D., Astronomy Department, University of Toronto: "A Review of Stellar Evolution".
 November 3—R. Hawkins: "Variable Star Observing and the A.A.V.S.O."; Current colour slides of astronomical objects.
 December 7—John Galt, Ph.D., Dominion Radio Astrophysical Observatory, Penticton: "Recent Canadian Contributions to Radio Astronomy".

W. GORDON GRAHAM, *Secretary*.

MONTREAL CENTRE

During the past year, eight meetings of the Board of Directors were held at our observatory, and eight regular meetings in the Macdonald Physics Building, McGill University, with programs as follows:

- October 20, 1966—Annual Meeting and Election of Officers; presentation of awards; review of members' activities.
 November 10—Because of illness the scheduled speaker could not appear; three members repeated their respective talks previously given at the Saturday evening meetings.

- December 8—Films: “The Flaming Sky”, “Comets”, “Asteroids and Meteors” and “Universe”.
- January 12, 1967—L. A. Higgs, Ph.D., National Research Council: “Structure and Evolution of the Galactic System from the Point of View of a Radio Astronomer”.
- February 9—A. G. MacNamara, Ph.D., National Research Council: “Rocket Exploration of the Upper Atmosphere”.
- March 9—D. Davies, Dow Planetarium: “Mechanical Models of the Universe”.
- April 13—D. W. Sida, Ph.D., Carleton University: “Cosmology — Facts and Theories in Search of Each Other”.
- May 11—Film: “The Search for the Tunguska Meteorite”; social gathering.

Our thanks go to Dr. T. F. Morris for the interesting programs, to Mrs. J. Dumas, Convenor for the Social Committee, and to McGill University for providing the facilities for our public meetings.

Attendance at the Observatory was somewhat lower than the previous year, mostly due to Expo '67 and the transportation strike but totalled 2,332 with the Saturday evening series accounting for 1,169 of this. No Star Night was held this year.

Observational activities were organized for three meteor showers and these sessions together with individual members, brought the total number of meteors observed (by 36 members) to 1,854 while out-of-town groups reporting to our Centre boosted this number to 2,542. Solar activity was reported by nine members for the “naked-eye” program while 12 used binoculars and/or telescopes. 20 observers participated in the Comet and Nova Search Program and handed in 1,601 reports on 60 areas.

From January 1, 1967, to the end of our fiscal year, 89 successful timings of lunar occultations were reported and there is no doubt that the goal of 100 timings for 1967, a Centennial project of the Centre, will be reached. 20 members participated. Satellite observations were at an all-time low, with 2 observers contributing 83 observations of Echo I, Echo II, and Pageos I. Our thanks are extended to Jim Low for preparing the schedules of predicted passages. 2,201 negative and 92 positive Aurora Reports were received and submitted to the National Research Council (as are the Meteor Reports).

W. JUTTING, *Secretary*.

NIAGARA FALLS CENTRE

During Canada's Centennial year, 8 regular meetings and 6 executive meetings were held. In addition, a program was presented to the Y.M.C.A. in St. Catharines and a Public Film Night was presented in Niagara Falls.

This year, we changed both the location and the date of our meetings. Our meetings are now held on the 2nd Thursday of the month in the auditorium of the Drummond Hill Public Library.

Our programs and speakers for the year were as follows:

- January 12—Walter Semerau: “A Solar Observatory”.
- January 18—Program for the Y.M.C.A. in St. Catharines.
- February 9—A. Kindy: “Reports of Observations of Colours on the Moon”. H. Maclean: “How to Use the R.A.S.C. Handbook”.
- March 9—John Percy, M.A., National Librarian: “Birth and Death of Stars”.
- April 13—Robert Winder: “Building a 12½” Telescope”.
- May 11—Public Film Night.

July 29—Picnic and tour of Walter Semerau's Solar Observatory.

October 12—Annual Election of Officers.

November 17—Annual Banquet. Ernst Both, Curator of Astronomy at the Buffalo Museum of Science: "Mars".

December 17—Edward Lindberg, Buffalo Astronomical Association: "The Grinding of the Mirror and the Building of the Observatory at Newfane for the Buffalo Astronomical Association".

This Centre also planned and held a number of Public Star Nights during the year. Unfortunately, bad weather on some of the planned dates curtailed several of our observing evenings.

ROBERT C. DORAN, *Secretary*.

OTTAWA CENTRE

Regular meetings of the Ottawa Centre were held at the Dominion Observatory with the kind permission of Dr. John Hodgson, Director of the Observatory, as follows:

January 17—Annual Dinner Meeting, O. M. Solandt, Ph.D., Chairman of the Science Council of Canada, spoke on the tasks that lie before the Council.

February 21—J. H. Hodgson, Ph.D., Director, Observatories Branch, Department of Energy, Mines and Resources: "The Mount Kobau National Observatory".

March 16—Malcolm M. Thomson, M.A., Chief, Astronomy Division, Dominion Observatory and National President of the R.A.S.C.: "Keeping Canada on Time".

April 21—P. M. Millman, Ph.D., Head, Upper Atmosphere Research Section, Radio and Electrical Engineering Division, National Research Council, introduced a documentary film produced for the U.S.S.R. Academy of Sciences on "The Search for the Tunguska Meteorite".

October 13—V. Gaizauskas, Ph.D., Solar Physics Section, Dominion Observatory: "A Winter in the Sun" (Kitt Peak and Sacramento Peak Observatories).

November 3—Film Night; on Mars — "Planet of Wonders" (U.S.S.R.), "The Log of Mariner IV (U.S.A.) and on Radio Astronomy — "The large Nancy Radio telescope" (France), "Window into Space" (Australia).

November 23—J. L. Locke, Ph.D., Radio Astronomy Section, Radio and Electrical Engineering Division, National Research Council: "Measuring Quasars with a radio telescope 2000 miles wide".

December 11—W. H. Wehlau, Ph.D., Head, Department of Astronomy, University of Western Ontario: "Review of Astronomical Research at the University of Western Ontario".

The Observers Group have made active use of the Small Dome at the Dominion Observatory for optical observations and the Defence Research Board Quiet Site for both optical and radio observations.

Rick Lavery was named "Observer of the Year" for his visual and photographic observations of meteors. Doug O'Brien again achieved distinction in his Science Fair Activities.

L. R. McNARRY, *Secretary*.

CENTRE DE QUEBEC

1967 a progressé sur le dynamisme donné l'année précédente où la grande majorité de l'exécutif avait été remplacée. Le Conseil se réunit au début de chaque mois et a déjà mis un certain ordre dans les affaires du centre de Québec.

Du 12 au 14 mai 1967, notre centre a eu le plaisir de recevoir l'AAVSO (American Association of Variable Star Observers). Cette réunion a eu lieu au Motel Holiday Inn et a permis à plusieurs membres de cette association de communiquer à leurs confrères un résumé de leurs observations et de leur travail effectués au cours des six derniers mois. Un certain nombre de personnes du Centre de Québec ont assisté avec plaisir à une conférence donnée par le Dr Ian Halliday de l'Observatoire d'Ottawa, intitulée: "Some Problems in Solar System Astronomy". Nous remercions notre président d'avoir su faire de l'organisation de ce congrès un franc succès.

9 janvier—Jean-Denis Carett, Ph.D.: "L'âge de notre univers"; Projection d'un film.

13 février—J. H. Hodgson, Ph.D., de l'Observatoire d'Ottawa: "The Mount Kobau National Observatory"; Projection de diapositives et d'un film.

6 mars—Dr. A. Kokline du Centre de Recherches canadien et perfectionnement des armes: "La Spectroscopie dans la recherche spatiale"; Projection d'un film.

3 avril—Dr. Albéric Boivin: "Les lasers et leurs applications"; Projection d'un film.

1 mai—Yvon Dufour: "Les Comètes"; Projection de diapositives.

5 juin—Assemblée générale de la Société; Election des membres du Conseil; Projection d'un film.

14 septembre—Soirée d'observation à l'observatoire de Yvon Dufour au Mont Bélair.

2 octobre—Le professeur Claude Frémont: "Seuls dans l'Univers?"; Projection de diapositives et d'un film.

6 novembre—Jean-Paul Boudreault: "Vues récentes sur la structure de la Galaxie"; Projection de diapositives et d'un film.

4 décembre—Quelques démonstrations sur l'utilisation de l'énergie solaire; Projection du film: "Our Mister Sun".

Les soirées populaires du début de chaque mois ont eu lieu à l'Université Laval qui nous fournit gracieusement un local à cette fin.

La publication mensuelle du Bulletin apporte aux membres des nouvelles sur les activités du Centre et sur l'astronomie.

JEAN-PAUL BOUDREAU, *Le secrétaire.*

ST. JOHN'S CENTRE

The past year has been an active one for this still-new amateur astronomical society, and a red-letter one in that we received two visiting astronomers from the mainland.

In January, we were paid a visit by Dr. John Hodgson, Director of the Observatories Branch of the Department of Energy, Mines and Resources. Dr. Hodgson took time off from his seismological business here to visit and speak to our members.

On October 15 we had the extreme pleasure of welcoming Malcolm M. Thomson, National President of the R.A.S.C. Mr. Thomson was accompanied by his wife. The couple was entertained by members during their too-brief stay, and Mr. Thomson lectured on his work and greatest interest — timekeeping.

Early in the year a study group was formed, comprised of members unfamiliar with the sky. Mrs. Russell convened this group once monthly. The Planetarium was used for illustration.

A successful field outing was organized in August, and held at Karwood Cabins, Donovans. Seven members were present, as well as a few guests. Three telescopes were set up.

A Centennial project was planned, to take the form of an essay contest. A committee was set up to get the project under way.

Ten regular meetings were held during the year, with programs as follows:

October—Annual Meeting.

November—Cyril Snook, M.A.: “Types and Characteristics of Galaxies”.

December—Films.

January—J. H. Hodgson, Ph.D.; Director, Observatories Branch, Ottawa: “Mount Kobau”.

February—Carl Stevenson, M.Sc.; “Spectroscopy”.

March—Frederick A. Aldrich, Ph.D.: “Marine Biology and Astronomy Combined”.

April—Mars Night: Short talks on various aspects of Mars given by three members and followed by discussion.

May—A. J. Provan: “The Calendar”.

June—Films.

September—General business.

R. G. KNIGHT, *Secretary*.

TORONTO CENTRE

The Toronto Centre held ten regular meetings in addition to the programs in the parks and at the Canadian National Exhibition. Speakers and subjects were:

January 20—Henry C. King, Ph.D., Director of McLaughlin Planetarium, Toronto: “The Planetarium”.

February 17—John Percy, M.A., Dept. of Astronomy, University of Toronto: “Stars that Vary”.

March 17—Professor S. C. Temisvary, State University of New York, Albany, N.Y.: “What are Sun Spots?”.

April 14—Members Night: A. L. Ostrander: “Twilight on the Moon”; R. R. Thompson: “Observing Eclipsing Variables with Binoculars”; R. T. Dickinson: “The Palamar Observatory”; James Kemp: “Construction of the McLaughlin Planetarium”.

May 5—Sidney Soanes, Ph.D.: “Recent Discoveries Regarding the Rotation Period of Mercury”; “Natural Satellites of the Earth”.

June 16—Special Report on the General Assembly in Montreal, by delegates to the assembly.

September 22—Tour of McLennan Physics Building, University of Toronto.

October 20—E. R. Seaquist, Ph.D., Assistant Professor, Dept. of Astronomy, University of Toronto: “The Magnetic Field of the Galaxy”.

November 17—R. W. Nicholls, Ph.D., Professor and Chairman of the Faculty of Arts and Science, York University: “Space Spectroscopy and the Vacuum Ultraviolet”.

December 15—R. Terence Dickinson: “The Planet Saturn”.

In 1967 the number of “Sky-Gazing” parties in the parks was reduced but a more complete program of displays, models and films was provided. At the five parties scheduled in Toronto and one in Orillia, all but one were favoured with good weather. Estimated attendance exceeded 3,700. Over fifty members of the Centre contributed to the program in the parks.

The Centre presented its customary display at the Canadian National Exhibition. Since the moon was visible on only two nights, and the planets were not visible, public interest was small and visitors limited.

The Telescope Makers group headed by Jesse Ketchum, held twenty-two meetings with an average attendance of 22. Forty-two telescopes were reported finished in a

variety of sizes: two, four and a half inch reflectors — one, five inch refractor — twenty-six, six inch reflectors — four, eight inch reflectors — five, ten inch (3 reflectors, 1 Cassegrain, 1 Springfield) — and four, twelve and a half inch reflectors.

C. E. HODGSON, *Secretary*.

VANCOUVER CENTRE

During 1967 the Vancouver Centre held the following lecture meetings in the Hennings Buildings on the campus of the University of British Columbia.

January 10—Annual Dinner Meeting, Faculty Club, U.B.C. C. Goudas, Ph.D., Boeing Scientific Research Laboratories, Seattle: “The Lunar Shape and Surface”.

February 14—Edward J. Mannery, Department of Astronomy, University of Washington: “A Telescope Site Survey in Central Washington”.

March 14—A. V. Okulitch, Ph.D.: “Geology of the Lunar Surface”.

April 11—Members Night: G. Morgan: “Paradoxes in Astronomy”; E. Pfannenschmidt: “Petzral Astro Camera”; W. Olson: “Holograms”.

October 10—Dave Rodger: “The H. R. MacMillan Planetarium”.

November 14—W. L. H. Shuter, Ph.D.; “Recent Observations of Quasars using Widely Separated Antennas”.

December 7—Malcolm Thomson, M.A., National President, R.A.S.C.: “Time in Canada”.

The paid-up membership of the Centre is approximately 50, and notices of monthly meetings are sent as well to some 20 additional interested people.

The Telescope and Observers Section has continued to be active, meeting once a month for discussions, and publishing a Newsletter, prepared principally by Per Joensen.

J. K. PETRIE, *Secretary*.

VICTORIA CENTRE

The Centre held seven regular and four Council meetings during the year. The program included:

January 11—Roland R. LaPelle, B.S.E.E.: “Simulation and Exploration of Space”.

February 8—J. Murray Fletcher, M.A.: “Quasi-Stellar Sources”.

March 8—Miss Judy Robinson, M.A.: “The Evolution of Stars”.

April 19—Two films: “The Flight of Gemini 4”, and “Eyes to the Sky”.

October 11—H. Grayson-Smith, Ph.D.: “Some Speculations on Life on Other Planets”.

November 8—Michael W. Ovenden, Ph.D.: “Cosmology”.

December 8—Annual Dinner; election of officers; speaker: Malcolm Thomson, M.A.: “Time in Canada”.

All meetings, as well as the Friday evening observational program, were held in the facilities of the University of Victoria for whose unflinching assistance the Centre is much indebted.

The Centre presently has seventy members with an encouraging growth of student interest.

W. DAMER, *Secretary*.

WINDSOR CENTRE

During 1967, three regular meetings and two Executive meetings were held as well as a joint meeting with the Detroit Astronomical Society. The programs were as follows:

March 21—Panel discussion on Unidentified Flying Objects: Henry Lee; Cyril

- Hallam; Andrew Taylor; Dan Rahn; Glen Chapman and Mark Gerasenoff.
- May 13**—Bus trip to Adrian, Michigan, including a planetarium demonstration and a tour of the observatory. Also included was a tour of the Fermi Atomic Power Plant at Monroe, Michigan, where a short film on power development by nuclear means was shown.
- June 20**—Telescopic observations of stars at D. C. Bawtenheimer's observatory: "Poplar Lodge"; Henry Lee: "Delegate's adventure at the General Assembly in Montreal".
- August**—A joint meeting with the Detroit Astronomical Society at Detroit.
- September 26**—Star gazing night at Memorial Park, Windsor.
- October 18**—Lunar eclipse viewing morning.
- November 21**—Annual Meeting, Election of Officers and social hour; D. C. Bawtenheimer: "Current Events"; Henry Lee: Educational talk; Michael Hastings-Trew: "Devising and Teaching of the course for the Starman's Badge of the Boy Scouts"; Henry Lee: Slides of the moon's surface.

J. M. MEREDITH, *Recorder*.

WINNIPEG CENTRE

Seven regular meetings were held during 1967. The speakers and topics were:

- January 30**—J. N. R. Scatliff, M.D.: "Viewing the Spring Skies".
- February 24**—P. M. Abel, B.Com., B.Sc.: "Visit to South America and a View of the Southern Skies".
- March 17**—G. Stasiuk: "Life on other Planets"; Film: "The Inquisitive Giant".
- June 2**—Junior Members Night.
- October 6**—J. K. Fondren, B.A., M.A.: "Deep in the Heart of Texas".
- November 3**—J. B. Thompson: "From Saucers to Science".
- December 4**—Malcolm M. Thomson, M.Sc., National President, R.A.S.C.: "Keeping Canada on Time"; Annual Meeting.

The Council met on six occasions to review the programme. Several observation nights were held during the summer.

J. MOHLER, *Recorder*.

THE ROYAL ASTRO
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A S S E T S

	1967	1966
CURRENT ASSETS		
Cash on hand and in bank	\$ 9,704.18	\$ 8,210.50
Accounts receivable	7,784.68	4,220.34
Grant receivable from Province of Ontario	—	1,000.00
Accrued debenture interest	78.75	78.75
Prepaid expense and deferred charges	278.84	346.98
	<u>\$17,846.45</u>	<u>\$13,856.57</u>
INVESTMENT		
Canada Permanent Trust Corporation 5½% debenture, maturing Jan. 2, 1968	\$ 3,000.00	\$ 3,000.00
FIXED ASSETS (at cost)		
Land — 252 College Street	\$17,000.00	\$17,000.00
Building	17,500.00	17,500.00
Office furniture and equipment	2,958.78	2,958.78
Apartment equipment	1,127.80	808.62
	<u>\$38,586.58</u>	<u>\$38,267.40</u>
<i>Less:</i> Accumulated depreciation	7,977.06	7,400.92
	<u>\$30,609.52</u>	<u>\$30,866.48</u>
<i>Library</i> — Nominal value	\$ 100.00	\$ 100.00
	<u>\$51,555.97</u>	<u>\$47,823.05</u>

APPROVED ON BEHALF OF THE NATIONAL COUNCIL:

J. E. Kennedy, *President*
J. F. Heard, *Treasurer*

OF CANADA

ER 31, 1967

umber 31, 1966)

LIABILITIES AND SURPLUS

	<u>1967</u>	<u>1966</u>
CURRENT LIABILITIES		
Accounts payable and accrued charges	\$ 118.16	\$ 16.20
DEFERRED REVENUE		
Advance on future grants by Government of Canada	\$ —	\$ 3,500.00
Membership fees for ensuing year	4,381.05	2,545.40
Advance subscriptions to Journal and Handbook	6,422.82	4,448.35
Advertising for future publications	1,710.00	1,810.00
Unappropriated life membership fees (per statement)	<u>3,251.61</u>	<u>3,122.63</u>
TOTAL LIABILITIES	<u>\$15,765.48</u>	<u>\$15,426.38</u>
SURPLUS (per statement)	\$33,942.63	\$30,560.52
LIBRARY FUND RESERVE (per statement)	<u>1,729.70</u>	<u>1,819.95</u>
	<u>\$35,672.33</u>	<u>\$32,380.47</u>
	<u>\$51,555.97</u>	<u>\$47,823.05</u>

To the Members and National Council,
The Royal Astronomical Society of Canada.

Attached hereto are the balance sheet of The Royal Astronomical Society of Canada as at December 31, 1967 and statements of revenue and expense and surplus for the year ended on that date.

These statements were prepared from the books and records of the Society and from information given to me, without complete audit or verification of the accounts.

Toronto, Canada,
May 20, 1969.

MORRIS ALTMAN,
Chartered Accountant.

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

STATEMENT OF GENERAL REVENUE AND EXPENSE
FOR YEAR ENDED DECEMBER 31, 1967

(With comparative amounts for year ended December 31, 1966)

R E V E N U E	<u>1967</u>	<u>1966</u>
Membership fees		
R.A.S.C. Centres	\$ 6,133.75	\$ 6,287.43
Individual members	2,976.40	3,019.50
Life membership reserve — annual appropriation	271.02	251.02
	<u>\$ 9,381.17</u>	<u>\$ 9,557.95</u>
Grants and Donations		
Government of Canada — annual grant	\$ 5,000.00	\$ 5,000.00
Government of Canada — adjustment for previous years	3,500.00	—
Province of Ontario — annual grant	1,000.00	1,000.00
Members' contributions	32.50	35.00
	<u>\$ 9,532.50</u>	<u>\$ 6,035.00</u>
Publications		
Journal of the R.A.S.C. (including Centennial issue in 1967)	\$ 5,898.97	\$ 3,575.60
Observer's Handbook	7,983.67	6,605.05
Special issues and reprints	3,862.81	1,429.30
Publication fees	2,250.00	1,100.00
	<u>\$19,995.45</u>	<u>\$12,709.95</u>
<i>Add:</i> Foreign exchange premiums	594.72	560.75
	<u>\$20,590.17</u>	<u>\$13,270.70</u>
<i>Deduct:</i> Agents' discounts	1,497.90	878.53
	<u>\$19,092.27</u>	<u>\$12,392.17</u>
Advertising	1,810.00	2,095.00
Sale of Insignia	58.00	168.97
Debenture interest	157.50	157.50
	<u>\$40,031.44</u>	<u>\$30,406.59</u>
TOTAL REVENUE		
E X P E N S E		
Publications	\$26,536.44	\$19,517.01
Staff salaries	5,720.00	5,720.00
Stationery, printing and supplies	764.07	856.81
Postage and express (less amounts charged)	755.22	716.63
Telephone	168.67	189.00
Subsidies to Centres of the R.A.S.C.	100.00	300.00
Annual life membership grants to R.A.S.C. Centres	188.00	189.50
General Assembly	480.00	418.58
General and office expenses	657.71	417.51
Insignia, medals and awards	257.46	235.35
Contributions to staff pension fund	462.16	460.41
Contributions to Dr. Petrie memorial funds	—	150.00
Depreciation of office furniture and equipment (see note)	25.86	295.87
	<u>\$36,115.59</u>	<u>\$29,466.67</u>
TOTAL EXPENSE		
EXCESS OF REVENUE OVER EXPENSE	<u>\$ 3,915.85</u>	<u>\$ 939.92</u>

NOTE: The accumulated depreciation of the office furniture and equipment of the Society has reached an amount approximating their cost. The depreciation charged on this asset for the year under review was therefore calculated at an amount leaving a residual book value of \$100.00.

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
STATEMENT OF BUILDING REVENUE AND EXPENSE
FOR YEAR ENDED DECEMBER 31, 1967

(With comparative amounts for year ended December 31, 1966)

	<u>1967</u>	<u>1966</u>
REVENUE		
Rentals for space not occupied by Society	\$ 2,875.00	\$ 2,855.00
EXPENSE		
Property taxes	\$ 839.15	\$ 757.39
Fuel	337.50	427.50
Light, gas and water	266.62	255.58
Maintenance and repairs	1,347.05	2,584.16
Insurance	68.14	66.41
Depreciation of building	437.50	437.50
Depreciation of equipment	112.78	80.86
TOTAL EXPENSE	<u>\$ 3,408.74</u>	<u>\$ 4,609.40</u>
EXCESS OF EXPENSE OVER REVENUE	(\$ 533.74)	(\$ 1,754.40)

STATEMENT OF SURPLUS

Surplus at beginning of year	\$30,560.52	\$31,375.00
Excess of general revenue over expense for year	3,915.85	939.92
Excess of building expense over revenue for year	(533.74)	(1,754.40)
Net surplus at end of year	<u>\$33,942.63</u>	<u>\$30,560.52</u>

STATEMENT OF UNAPPROPRIATED LIFE MEMBERSHIP FEES

Balance at beginning of year	\$ 3,122.63	\$ 2,873.65
Add: Life membership fees received during year	400.00	500.00
	<u>\$ 3,522.63</u>	<u>\$ 3,373.65</u>
Deduct: Appropriation for year to General Account	271.02	251.02
Balance at end of year	<u>\$ 3,251.61</u>	<u>\$ 3,122.63</u>

STATEMENT OF LIBRARY FUND RESERVE

Balance at beginning of year	\$ 1,819.95	\$ 2,010.00
Add: Contributions received during year	50.00	—
	<u>\$ 1,869.95</u>	<u>\$ 2,010.00</u>
Deduct: Appropriation for purchase of books	140.25	190.05
Balance at end of year	<u>\$ 1,729.70</u>	<u>\$ 1,819.95</u>

SCHEDULE OF FIXED ASSETS AND ACCUMULATED DEPRECIATION
AS AT DECEMBER 31, 1967

	Cost	Accumulated Depreciation		
		Balance Dec. 31 1966	Dep'n. charged for Year	Balance Dec. 31 1967
Land	\$17,000.00	\$ —	\$ —	\$ —
Building	17,500.00	4,250.00	437.50	4,687.50
Furniture and office equipment	2,958.78	2,832.92	25.86	2,858.78
Apartment equipment	1,127.80	318.00	112.78	430.78
	<u>\$38,586.58</u>	<u>\$ 7,400.92</u>	<u>\$ 576.14</u>	<u>\$ 7,977.06</u>

RECEIPTS	Calgary	Edmonton	Hamilton	Kingston	London	Montreal	
Balance from 1966		\$352.45	\$ 524.27		\$180.36		
Membership Fees	372.00	320.00	541.65	NOT SUBMITTED	150.00	1,810.00	
Donations						35.00	
Educational Activities	2.75	59.00	155.95				
Annual Dinner	92.00						
Sales of Handbooks, etc.	2.80	2.00	24.00			12.00 25.00	
Bank Interest & Exchange		12.71	9.10			4.87 127.63	
Income from Investments						33.75 996.13	
Life Member Grants	8.00	4.00	6.00				38.00
General Assembly Subsidies							
Miscellaneous	50.00	18.67					
Total	\$527.55	\$768.83	\$1,260.97		\$380.98	\$3,031.76	

DISBURSEMENTS	Calgary	Edmonton	Hamilton	Kingston	London	Montreal
Fees remitted to N.O.	223.20	143.30	256.50		90.00	918.25
Library						32.10
Meetings & Newsletters		159.45	67.24		90.47	130.05
Annual Dinner	104.90					
General Assembly						
Equipment & Supplies						250.02
Office & Administration	42.67	16.65	99.26		8.50	118.00
General Expenses		67.24	49.59			471.16
Handbooks, etc.					7.20	
Investments, Etc.						49.80
Balance carried to 1968	156.78	382.19	791.72		184.81	1,062.38
Total	\$527.55	\$768.83	\$1,260.97		\$380.98	\$3,031.76

TORONTO CENTRE SPECIAL PURPOSE FUND

Balance December 31, 1966	\$4,012.00
C.N.E. Grant 1967	200.00
Bank and Investment Interest	328.00
	<u>\$4,540.00</u>

OF CENTRES

	Ottawa	Québec	St. John's	Toronto	Vancouver	Victoria	Windsor	Winnipeg	
022	\$ 626.23		\$ 43.60	\$1,312.00		\$2,057.35	\$ 69.64	\$ 8.65	
030	954.00	NOT SUBMITTED	94.50	3,459.50		315.00	186.00	451.50	
	45.44		50.00				13.50		
				200.00					
025	253.00			60.00			107.80		
000	127.60			2.50			4.00	1.00	6.00
008	18.99			3.63			81.23	3.17	
					328.29				
	34.00				50.00		22.00		4.00
									68.58
	7.95				42.34		2.00	2.35	
005	\$2,067.21		\$254.23	\$5,392.13		\$2,589.38	\$275.66	\$538.73	

030	572.40		56.70	2,087.20		189.90	107.10	273.60
000	75.44							
000	138.20		20.80	218.77		100.38		10.00
017	253.00		109.13			145.45		
				175.00				
	52.28			806.01		112.55		63.60
024	74.75		12.20			81.50	7.87	
005	56.28					3.00		62.48
	103.20		13.50				62.75	
019	741.66		41.90	2,105.15		1,956.60	97.94	129.05
005	\$2,067.21		\$254.23	\$5,392.13		\$2,589.38	\$275.66	\$538.73

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
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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 student standing first in first class honours in the graduating year of the Astronomy Division of the Mathematics and Physics course at the University of Toronto. Awards have been made to the following:

1906 — W. E. Harper	1929 — P. M. Millman	1956 — D. C. Morton
1907 — R. M. Motherwell	1931 — W. S. Armstrong	1960 — C. R. Purton
1909 — R. K. Young	1933 — K. O. Wright	1961 — R. C. Henry
1910 — R. J. McDiarmid	1935 — Miss F. S. Patterson	1962 — J. R. Percy
1911 — R. S. Sheppard	1937 — D. A. MacRae	1963 — P. H. Reynolds
1913 — E. A. Hodgson	1940 — W. F. M. Buscombe	1965 — A. F. J. Moffat
1914 — G. S. Campbell	1948 — R. W. Tanner	1966 — W. A. Sherwood
1926 — F. S. Hogg	1949 — I. Halliday	1967 — R. H. Chambers

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)	1951 — DeLisle Garneau (Centre d'Astronomie de Montréal)
1941 — H. Boyd Brydon (Victoria)	
1942 — W. G. Colgrove (London)	1953 — Jean Naubert (Centre d'Astronomie de Montréal)
1943 — Cyril G. Wates (Edmonton)	
1945 — Paul-H. Nadeau (Quebec)	1955 — Frank J. DeKinder (Montreal)
1948 — Isabel K. Williamson (Montreal)	1956 — Maurice Drolet (Quebec)
1949 — Frank Sisman (Hamilton)	1959 — Earl Milton (Edmonton)
1950 — F. Keith Dalton (Toronto)	1967 — R. R. Thompson (Toronto)

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. Recipients to date are:

1959 — E. J. A. Kennedy (Nat. Secretary)	1965 — D. C. Bawtenheimer (Windsor)
J. H. Horning (National Treasurer)	John F. Heard (Toronto)
1960 — Charles M. Good (Montreal)	A. M. Crooker (Vancouver)
Miss F. Laforest (Montréal)	Ernest S. Keeping (Edmonton)
Frederic L. Troyer (Toronto)	W. S. Mallory (Hamilton)
1961 — *Robert Peters (Victoria)	1966 — P. Lemieux (Montréal)
1962 — Jean Asselin (Montréal)	S. Litchinsky (Calgary)
Robert J. Clark (Vancouver)	W. J. McCallion (Hamilton)
Jesse Ketchum (Toronto)	W. A. Warren (Montreal)
Joseph A. Pearce (Victoria)	1967 — H. S. Hogg (Toronto)
1963 — Edwin E. Bridgen (Montreal)	P. M. Millman (Ottawa)
Miss M. S. Burland (Ottawa)	R. J. Northcott (Toronto)
A. Vibert Douglas (Kingston)	H. Simard (Montréal)
1964 — C. S. Beals (Ottawa)	J. F. Wright (Calgary)
M. W. Burke-Gaffney, S.J. (Halifax)	
W. T. Goddard (Hamilton)	

* Deceased

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

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(The 1968 Officers of the Centres are printed in the *Supplement*, p. 18)

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Dr. Bart J. Bok (Australia)	Dr. Martin Schwarzschild (U.S.A.)
Dr. I. S. Bowen (U.S.A.)	Dr. Harlow Shapley (U.S.A.)
Dr. Gerald M. Clemence (U.S.A.)	Dr. Iosif S. Shklovsky (U.S.S.R.)
*Professor E. Hertzsprung (Denmark)	Dr. A. Unsold (Germany)
Dr. A. H. Joy (U.S.A.)	Dr. G. Van Biesbroeck (U.S.A.)
Dr. J. H. Oort (Netherlands)	Dr. R. v. d. R. Woolley (England)

*Deceased

