



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



ANNUAL REPORT
RAPPORT ANNUEL

2020

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Front Cover—25 years of RASC Annual Report covers.
Each image is a live link to the respective Annual Report.

Produced by James Edgar
Layout and design by Catherine Berry

Note—The complete Annual Report is available on-line at:
rasc.ca/annual-report-2020

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA—2021

RASC Web Site

RASC eStore

National Office

Executive Director

Director of Finance

Office Manager

Youth Outreach Co-ordinator

Fundraising Consultant

Communications & Marketing Coordinator

Light-Pollution Outreach Intern

Administrative Assistant

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Communications and Marketing Assistant

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Adela Zyfi

Jenna Hinds

Lisa Di Veto

Renee Drummond

Nick Hammar

Katarina Holbrough

Samantha Jewett

Reem Khalifeh

Officers

President

1st Vice-President

2nd Vice-President

National Secretary

Treasurer

Director

Past President and Director

Journal Editor-in-Chief

Observer's Handbook Editor

Observer's Calendar Editor

SkyNews Editor-in-Chief

Robyn Foret

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Michael Watson

Eric Briggs

Catherine Carr

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2021 Committees

Astroimaging

Awards

Constitution

Education and Public Outreach

Finance

History

Inclusivity and Diversity

Information Technology

Light-Pollution Abatement

NextGen

Nominating

Observing

Publications

Stuart Heggie

Chris Gainor

Charles Ennis

Lauri Roche

Catherine Carr

Clark Muir

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Belleville

Calgary

Edmonton

Fraser Valley

Halifax

Hamilton

Kingston

Kitchener-Waterloo

London

Mississauga

C. F. de Montréal

Montréal

New Brunswick

Niagara

Okanagan

Don Town

Judy Sterner

Doug Thorp

Alister Ling

Greg Sebulsky

Patrick Kelly

Abigail Hughes

Richard Wagner

Jim Fairles

Jim Goetz

Rick Saunders

Jo VandenDool

Patrice Scattolin

Frank Tomaras

June MacDonald

Pauline Horton

Kevin Douglas

Ottawa

Prince George

Regina

St. John's

Sarnia

Saskatoon

Sunshine Coast

Thunder Bay

Toronto

Vancouver

Victoria

Windsor

Winnipeg

Yukon

National Members

Karen Finstad

Blair Stunder

Ross Parker

Marcellus Redmond

Marty Cogswell

Les Dickson

Daniel Sklazeski

Mitchell Bagden

Laila Zichmanis

Ralph Chou

Paul Delaney

Kenneth Lui (joint)

Hayley Miller (joint)

Nelson Walker

Tom Sobocan

Dennis Lyons

Peter von Gaza

Randall Rosenfeld

AGM MINUTES—2020

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

Minutes of the Annual General Meeting, Sunday, 2020 June 7 by Zoom.

1. Call to Order

The meeting was called to order at 18:05 EDT by President Dr. Chris Gainor (Victoria). Dr. Gainor did not call for Centres to sound off because members were appropriately using the chat function of Zoom.

(MOTION AGM2020-1: Gainor) To approve the agenda as circulated. Carried.

Jenna Hinds (Youth Outreach Co-ordinator) explained the features of Zoom relating to asking questions during the meeting.

2. Minutes of the 2019 AGM

The minutes of the 2019 Annual General Meeting had been circulated and published to all members of the Society in p. 5-6 of the 2019 Annual Report. The following motion was presented:

(MOTION AGM2020-2: Town/Hesser) That the minutes of the 2019 AGM be adopted as published. Carried.

3. Reports of Officers

President—Chris Gainor (Victoria)

A report from the President was also published before the Meeting, in the Annual Report.

Dr. Gainor introduced the Board: (Robyn Foret (Calgary), Charles Ennis (Sunshine Coast), Catherine Carr (Toronto), Eric Briggs (Toronto), Michael Watson (National), Colin Haig (Hamilton, retiring), Brendon Roy (Thunder Bay, incoming) and Dr. Phil Groff (Executive Director).

Dr. Gainor presented the RASC Statement on Human Rights:

In response to recent events, the Royal Astronomical Society of Canada wishes to state that it supports the peaceful protests and dialogue across the world aimed at addressing longstanding issues of racial inequality, and in particular anti-Black discrimination and violence. The Society is dedicated to equality of opportunity and treatment for all, regardless of race, sex, gender identity or expression, sexual orientation, national or ethnic origin, religion or religious belief, age, marital status, and disabilities. We are opposed to all forms of unlawful and unfair discrimination.

In response to a question from the floor about the Statement on Human Rights concerning the Anti-Harassment Policy G24 in the Policy Manual, Dr. Gainor asked Mr. Watson to respond. Mr. Watson noted that the statement included much of its language from the Anti-Harassment Policy and thanked Mr. Ennis and the Inclusivity and Diversity Committee for their input into this process.

Karim Jaffer (Montréal) on behalf of the Montreal Centre, questioned the use of the word "peaceful" and noted that the inclusive nature of outreach should be reflected by actions taken by the Board and volunteers to be inclusive and diverse. Mr. Ennis asked to respond, and noted that he would be addressing similar concerns in his report.

1st VP's Report—Robyn Foret (Calgary)

Mr. Foret shared details of his responsibilities, specifically:

- Strategic Plan
- Information Technology

- *SkyNews* Magazine
- Committee Structure

Mr. Foret was overseeing a major shift in how information technology was used in the Society by moving to the Cloud, and the IT Committee was changing to become an advisory board. The structure of the management of *SkyNews* Magazine was changed. A new publication, the 2021 Night Sky Almanac, by Nicole Mortillaro, with the RASC imprimatur, was available for pre-order from Firefly Books. Mr. Foret stepped in as the chair of the Nominating Committee although it was contrary to policy. The Nominating Committee was re-formed by the Board itself as a committee-of-the-whole.

Mr. Foret presented the names of the Board-appointed committee chairs:

Committees:

- Astro-Imaging—Stuart Heggie
- Awards—Chris Gainor
- Constitution—Michael Watson
- Education and Public Outreach—Laurie Roche
- Finance—Catherine Carr
- Fundraising—Charles Ennis
- History—Clark Muir
- Inclusivity and Diversity—Charles Ennis
- Information Technology—Walter MacDonald
- Light-Pollution Abatement—Bob King
- Marketing & Communications—Eric Wickham
- Nominating (Committee of the Board)—Michael Watson
- Observing—Blair Stunder
- Publications (Editorial Board)—Robyn Foret
- Trustees:
- Helm Fund—Catherine Carr, Colin Haig, Dave Lane
- Public Speaker Program—Charles Ennis, Bruce McCurdy
- Special Projects—Vikki Zsohar, Howard Trotter, Charles Ennis
- Robotic Telescope Working Group Team Leaders:
- Project Leader—Jenna Hinds
- Outreach—Jenna Hinds
- Operations—Stuart Heggie
- Science—Rick Wagner
- Astrophotography—Dan Meek
- Information Technology—Gary Fairfoul
- Board Liaison—Eric Briggs

Mr. Foret planned to submit a written report for the next Annual Report.

2nd VP's Report—Charles Ennis (Sunshine Coast)

Mr. Ennis reported on the activities of the Inclusivity and Diversity Committee, asking different organizations about their activities in that field, and the recommendation of Dr. Nicole Cabrera Salazar of Georgia State University who assisted the Canadian Astronomical Society/Société Canadienne d'Astronomie for their own Equity and Inclusivity Committee. Mr. Ennis noted that further actions were expected to be taken, as a further response to Mr. Jaffer's earlier question.

Mr. Ennis referred to the Special Projects Fund report circulated by Katrina Ince-Lum (Toronto), which fund was not very active in the past year. Two projects were funded: a West Coast First Nations project from the Vancouver Centre, and one other.

Mr. Ennis thanked Ms. Lisa di Veto (Fundraising Consultant) for her work in the area of fundraising for the Society.

Mr. Ennis reported that 8 Centres applied for roughly \$6000 from the Public Speakers Fund during the reporting period, about the same as the previous year, and referred to the written committee report.

Responding to a question concerning who would be eligible to receive inclusivity and diversity training as a part of the process in future, Mr. Ennis said that representatives from Centres would be asked to participate, and that training videos on the subject may be circulated for wider use.

Secretary's Report—Eric Briggs O

From his written report included in the 2019 Annual Report, Mr. Briggs read out amendments to the Policy Manual which had been made during the year:

“Unattached” members who have chosen not to join a regional RASC Centre were reclassified as “National” members.

Policy G9: Society Nominations and Elections was amended so that an eligible candidate should “have the support in writing of at least 3 members of the Society,” replacing the previous “have the support in writing of at least 3 people, one of whom is a member of the Society.”

Appendix A: Directors and Officers Code of Conduct, and Appendix B: RASC Board of Directors Agreement were deleted, and the Policy Manual retained the amended Policy B1: Board of Directors Terms of Reference, that no longer referred to Appendix A and B.

Policy B7: Board Appointments was retitled “Filling Board Vacancies.”

Mr. Briggs read out the proposed amendments of the by-laws, which were to be ratified later in the meeting:

By-law No. 1, Section 9—Board of Directors, 35.4 that “No person who is an elected officer of the Society may simultaneously be the President, Secretary, Treasurer, or a National Council Representative of a Centre” shall be amended to “No person who is a director of the Society or who is the President, a Vice-President, Secretary or Treasurer of the Society may simultaneously be the President, Vice-President, Secretary, Treasurer, or a National Council Representative of a Centre,” to be ratified at the 2020 Annual General Meeting.

Mr. Briggs read out the names of members who passed away during the year, and asked for a moment of silence in their remembrance:

Michel Bois (Ottawa); Martin Mills (Mississauga); Shirley McIntyre (Toronto); Charline Norgrove (Toronto); John Payzant (Edmonton); Peter Ross Simpson (Toronto); Robert Spencer (Mississauga); James M. Tisdale (Okanagan); George P Wanjoff (National).

Dr. Gainor also noted the passing of Kevin Kimball (Montréal) and Barry Shanko (Vancouver). Mr. Ennis noted the passing of Scott Harlow (Sunshine Coast) after the end of the reporting period. Ms. Hinds noted the passing of Rev. Patrick Power from the St. John's Centre. Mr. Briggs noted that any members who had passed away after the end of the reporting period or whose passing had been temporarily overlooked would be included in the next Annual Report.

Treasurer's Report—Catherine Carr (Toronto)

Ms. Carr presented an overview of the written report that was presented in the Annual Report and Finance Committee Report that had also been circulated. She noted that the Society had experienced an operating loss for 2019, \$117,170, and that that was an improvement on the previous year, when the operating loss was

\$137,018 in 2018. Outside of the written report, she described the Emergency Membership Fund that was set up to defray the costs of membership for members in financial hardship due to the effects of the coronavirus pandemic. That fund had not been heavily used yet, but members were supporting that file.

Ms. Carr responded to a question from David Chapman (Halifax) about the loss incurred by the 2019 General Assembly, but no detailed reason other than low attendance was available for why it had lost money.

Ms. Carr and Dr. Groff responded to a question from David Brown concerning details of the emergency membership fund.

Responding to a prompt from Don Town (Belleville), Ms. Carr encouraged members to read the Notes to the Audited Financial Statements, in particular Notes 4 (Investments), 5 (Investment in SkyNews, Inc.), and 12 (Expense allocations.)

Ms. Carr and Dr. Groff responded to a question from Laurie Roche (Victoria) that there were no appreciable costs to the Society from the cancellation of what would have been the in-person 2020 General Assembly in Coquitlam, due to refunds.

Dave Lane (Halifax) asked about a court case concerning SkyNews Inc. Dr. Groff responded that the Society was not a defendant in any ongoing matter, and that SkyNews on behalf of the RASC had recently negotiated a settlement with a former employee.

(MOTION AGM2020-3: Carr/Ennis) that the audited financial statements be accepted. Carried.

Executive Director's Report—Phil Groff

Dr. Groff briefly expanded on his written report, describing his earlier plans to visit in person with Centres, “new normal” operations at the National Office during the coronavirus pandemic, online offerings being conducted via YouTube and Zoom for public outreach in astronomy, and the new information technology infrastructure.

Responding to a question about possible future consolidation of the *Journal* of the RASC and *SkyNews*, Dr. Groff described the consolidated Editorial Board, and noted that the *Journal* does not make money, but expressed hope that it would have a role in the Society's future nevertheless, bearing in mind the way that *SkyNews* had been turned around.

Walter MacDonald (Kingston) asked if the online resources that the RASC had started to use so effectively would continue to be used after the end of the coronavirus pandemic. Dr. Groff thanked Ms. Hinds for her frequent activities in providing such online outreach during the crisis and stated that the RASC did not plan to step back from its new activities after the crisis was over. Ms. Hinds noted that she was working on a guideline for hosting online star parties that should be useful for Centres. Dr. Groff was unwilling to make a recommendation as to when normal operations might start again, deferring to government and health authorities, and follow the best scientific advice.

4. Reports from Committees

The following Committees presented their reports to the Society:

Astro-Imaging Certificate Committee: Eric Briggs, as Board liaison, briefly spoke about this program.

Awards Committee

Colin Haig announced the 2020 RASC Award Winners:

- Service Award: Steve Holmes (Kitchener-Waterloo), Dennis Krause (Okanagan)
- Simon Newcomb Award: John A. Read (Halifax)
- Qilak Award (presented by CASCA): Julie Bolduc-Duval
- Qilak Award (présenté par la Fédération des Astronomes)

Amateurs du Québec): Jean-Marc Perreault

- Chant Medal: Dr. Michel Duval (Centre Francophone de Montréal)
- Ken Chilton Prize: Peter Pekurar (Kitchener-Waterloo)
- Fellow of the RASC: David M.F. Chapman (Halifax), Randall Rosenfeld (National)

Dr. Gainor announced awarding the President's Award posthumously to Barry Shanko (Vancouver).

Constitution Committee—

Mr. Watson presented links to the Annual Report and noted the proposed bylaw amendments.

Education Committee—Laurie Roche

Ms. Roche noted the written report that she had circulated. thanked the members of the committee: Karim Jaffer, Lucas Kuhn, Tony Schellinck, Ron MacNaughton, Colleen O'Hare, Linda Pulliah, Kirsten Vanstone, and Krista van Laerhoeven.

History Committee—Clark Muir (Kitchener-Waterloo)

Mr. Muir congratulated Mr. Rosenfeld for his RASC fellowship. He briefly described the new RASC History Project, an oral history exercise to gather locally held lore.

Information Technology—David Lane (Halifax)

Mr. Lane described the restructuring of the committee into a working group, and replacing the iMIS system.

Observing—Blair Stunder (Prince George)

Mr. Stunder noted that eight observing certificates had been awarded so far in 2020. He noted that the Explore the Universe/ Explorer l'Univers and Explore the Moon/Explorez la Lune certificate programs had been made available in French for the first time, and that a double stars observing program was being prepared.

5. Election of Board Members

(MOTION AGM2020-4: Nominating Committee) To acknowledge the acclamation of Charles Ennis, Catherine Carr, and Brendon Roy to the board of directors. Carried.

6. Motion re: By-Law Amendment

(MOTION AGM2020-5: Constitution Committee) that the proposed amendments to By-Law #1 of the Society, passed by the Board of Directors on 2020 March 7, be approved. Carried.

7. Election of Auditor

(MOTION AGM2020-6: Carr/Chou) To Appoint as Auditors Tinkham and Associates for 2020. Carried.

8. Other Business

Dr. Gainor noted a special award being prepared for Catherine Berry in thanks for her work on preparation of annual reports for several years.

Dr. Groff noted the possibility of the 2021 General Assembly being hosted in person in Winnipeg. There was general approval of the idea of continuing to host portions of general assemblies online.

(MOTION AGM2020-7: Watson/Ennis) A vote of extreme thanks and appreciation to Colin Haig for his service to the Society over the past 10 years. Carried.

(MOTION AGM2020-8: Attwood/Hesser) to acknowledge Chris Gainor's role as president and to thank him for his hard work. Deferred.

9. Adjournment

(MOTION AGM2020-9: Town/Poole) To adjourn. Carried.

Mr. Haig thanked Ms. Hinds for her hard work in preparing the teleconferences for the GA.

The meeting was adjourned at 20:15 EDT.

Respectfully submitted,

Eric Briggs

National Secretary

PRESIDENT'S MESSAGE

In January 2020, I looked to the sky at long-time favourite Orion the Hunter, lording over our Calgary winter skies offering the same delights as years past. No matter how many times I explore his treasures, I am equally amazed and grateful. Much attention was given to Betelgeuse too as a dimming to 40% of normal spiked much speculation around an impending supernova. Then in February, the initial results of NASA's *InSight* lander revealed that Mars is seismically active and through the year more than 500 Mars-quakes have been recorded. This was our first Mars headline of the year but just a teaser for what was to come.

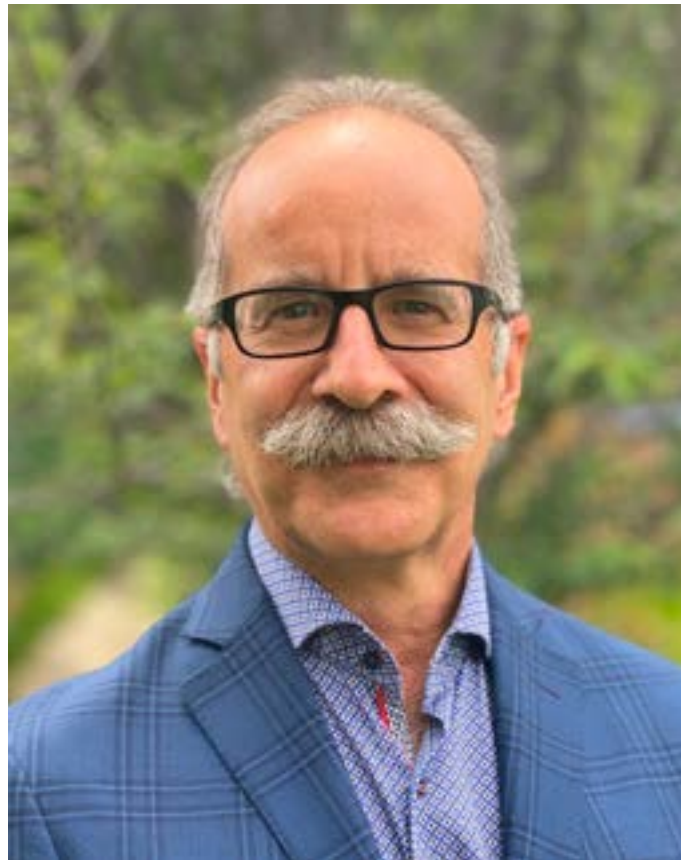
Then there was March! Lenin is purported to have said that "There are decades when nothing happens and then there are weeks when decades happen!" Such was the week of March 9 as the World Health Organization declared COVID-19 a pandemic, defined as an infectious disease that has spread across multiple continents or worldwide. Not to belabour the point, but our world, in every way, was changed. The battle between science and conspiracy theories and beliefs raged on and continues to this day, an ongoing testament to the human condition. While we know that Mr. Spock, with a large dose of cheese, was right when he states "The needs of the many outweigh the needs of the few"; misinformation continues to play a role in the human condition. We think that we have abandoned the covered wagon and the snake-oil salesman but alas, it appears we have just replaced him with Social Media and sensationalist journalism.

It is important to note that the RASC had weathered a similar event in the influenza pandemic of 1918. In the 1919 Annual Meeting minutes, it is noted by K.M. Chadwick, Secretary of the Victoria Centre "Owing, unfortunately, to the ban on public meetings and to the ill health of one of the lecturers, the Society has been unable to hold its full number of meetings." This on the tail of the 1918 Annual Meeting where the minutes noted the end of the Great War, the loss of some members and the return of others. Trying times!

The pandemic in 2020 started with much debate about would we, could we, should we with regard to meetings, public outreach, our Annual General Meeting and General Assembly, etc. Pivot and Cohort became part of our vernacular and the definition of Zoom changed from "move or travel quickly" to the way we meet. There were others before Zoom, and much bigger players too, but Zoom has done to video conference what Kleenex has done to facial tissue.

And pivot we did; local events fell by the wayside in order to meet the wildly varying protocols the provincial governments enacted and the heroic Vancouver General Assembly Team turned the Society's premier opportunity to meet and greet colleagues from across the country into the best-attended General Assembly in the history of the Society. Kudos to Hayley Miller and the Vancouver Centre Team. As work from home and Zoom meetings and webinars became the norm, new outreach programs such as The Insider's Guide to the Galaxy, Self-Isolation Star Parties, and Explore the Universe Online reached more and more enthusiasts and on-line Centre meetings began to see attendance from fellow members from across the country.

And then, just three months after its discovery, Comet NEOWISE (C/2020 F3) became a naked-eye object and put the night sky top of mind for many Canadians; a nice primer for some up and coming planetary spotlights. Those did not disappoint! Skilled Lucky Imagers offered up some amazing Mars imagery around opposition in October, to be followed shortly by those images of the spectacular conjunction of Jupiter and Saturn in December with a 6.1 arcminute separation.



Space travel was also very much in the news in 2020, with SpaceX successfully ferrying American astronauts to the *International Space Station* in May in typical SpaceX precision, considered to be a demonstration of the Crew Dragon vehicle, and then again in November with an official Crew Dragon mission, dubbed Crew-1, bringing four astronauts to the ISS. SpaceX also continued to launch its StarLink satellites in 2020. With no fewer than 14 launches, the controversial LEO internet service continues to populate low-Earth orbit with a planned 12,000 satellites. Love it or hate it, 14 successful launches with booster recovery, and reusing 1 booster 6 times to date, is a monumental achievement in every sense. Three new missions to Mars were launched in 2020. The United Arab Emirates launched their first interplanetary mission, the orbiter al-Amal (Hope), China launched an orbiter, lander, and rover, Tianwen-1 (heavenly questions), and NASA launched the Perseverance Rover.

While 2020 challenged us in new ways, the RASC ended the year on a number of high notes:

- we constituted a new Next Generation Committee, focused on the age 13–24 demographic
- we awarded the greatest number of observing certificates ever
- we achieved our most successful fund-raising results ever
- we added professional staff functions for Marketing and Communication and Light-Pollution Abatement
- and we recorded our highest membership count ever

Our Standing Committees continue to contribute to their specific arenas in meaningful ways, and our publications continue to shine too, with *SkyNews* evolving from being *Sky & Telescope Light* to becoming a unique magazine having its very own identity; and it keeps getting better and better with every edition.

In 2020 we also saw wide-spread and troubling examples of racism and intolerance, and the RASC's Inclusivity and Diversity Committee is helping all of us better understand the positive roles we can play as individuals and as a Society to combat this. Helen Sawyer Hogg reminded us that the Stars belong to Everyone and the RASC strives to realize this truth.

With all of our successes, it is clear that the work of the Society is needed and that our members are willing to support that work and it has been an honour and a privilege to be a part of this organization in a leadership role.

What a difference a year makes! And yet, while everything has changed, nothing has changed. As 2020 comes to a close and I look to the skies, there is our old friend, Orion the Hunter, watching down on us with his wares, inviting us to look up and follow him on his journey into 2021.

A. Robyn Foret (he/him)
President

EXECUTIVE DIRECTOR'S REPORT

We are living in interesting times. Proverbially that phrase is supposed to be both a blessing and a curse, and 2020 certainly seemed determined to give us a little of Column A and a little of Column B at every turn. Continuing my personal transition into the role of Executive Director, begun only in October 2019, I enthusiastically set about my plan to visit every Centre as quickly as possible. Such well-intended plans however, quickly fell apart. It was during my first, and as it turned out, only, trip to visit Centres out west, that the Covid Pandemic finally came home to roost and a looming travel ban forced my early return.

In the midst of the uncertainty gripping the whole nation in late March 2020, the whole staff pondered what we should do to best support our Society through an indeterminate period when it seemed that the very face-to-face activities that have come to define RASC membership and outreach were going to be impossible. I am indescribably proud of what happened next. The whole team rallied to this challenge, and helped to pivot the organization toward online, virtual events that were both educational and social. In the process we learned quite a lot, namely that there was pent-up demand for content, and also that the National Office staff and our amazing volunteers had the talent and drive to provide it. Over the ensuing months we ended up producing many hours of online content, in various series including: 25 sessions of *Insider's Guide to the Galaxy*, 10 sessions of *Explore the Universe Online*, 7 episodes of *How to Use the Observer's Handbook*, 6 *Self-Isolation Star Parties*, and 9 *Special Speakers Series* events. We had more than 5,000 views on Zoom, and more than 20,000 views of this content when rebroadcast on YouTube. Indeed, the RASC's YouTube subscriber base increased from 170 at the start of the year, to more than 1,450 by the end. Much of this activity was organized by RASC's Outreach Coordinator, Jenna Hinds, but was made possible by the generosity of our volunteer presenters. I would particularly like to thank Chris Vaughan, John Read, and James Edgar for their ongoing participation in long-running series, as well as the individual guests and special speakers who are unfortunately far too numerous to name here, but whose names can be found on our YouTube page. Finally, I want to mention the extraordinary team of volunteers in Vancouver who managed, on short notice, to transform our General Assembly into RASC's first ever Virtual GA.

While much of our activity was focused online in 2020, we shouldn't lose sight of the fact that our membership remained very personally connected to this Society. When some members were having trouble paying their annual fees due to Covid related financial challenges, the membership rallied, and through donations to our Emergency Fund, provided bursaries for all who needed them, as well as providing some financial relief for the Society in the face of the same economic downturn that the rest of Canada was facing. Thanks to all the support and efforts of our membership and volunteers across the country, RASC has finished 2020 in an even



stronger position than when we started. We managed to balance our books, ending the year in the black, and even saw our membership numbers, which seemed under threat in April, reach record heights by December's end.

Our efforts, begun in 2019 to revitalize *SkyNews*, continued under the capable leadership of our new Editor-in-Chief, Allendria Brunjes, assisted by Designer, Isabelle Santiago. Our record membership numbers are attributable in no small measure to the efforts of Adela Zyfi, our membership coordinator, assisted by part-time student, Katarina Holborough. Two other part-time students who joined the team by the end of 2020 are Reem Khalifeh, helping with social media, and Samantha Jewett, supporting the development of our Robotic Telescope curriculum. I'm grateful to all the staff for their hard work in a difficult year. I'm also extremely grateful to the management support provided by Renata Koziol, our Director of Finance, and our Fundraiser, Lisa Di Veto. It is safe to say that without their efforts, the Society would not have weathered the

financial challenges of the past year nearly as well. Finally, I must thank our Board of Directors for their thoughtful leadership during trying times.

As the interesting times of 2020 give way to a year of new challenges in 2021, not least of which will be the ongoing pandemic,

we can rest assured that this team and this Society are stronger than ever, and ready to take on whatever comes next.

Clear Skies in 2021

Phil Groff, PhD
Executive Director

SECRETARY'S MESSAGE

During the year starting with the 2020 Annual Meeting on June 7, there were three National Council meetings and 13 Board meetings.

The Fundraising Committee was closed down and the Fundraising Consultant is now considered a staff function. The Marketing Communications Committee was dissolved and its work is now the responsibility of the Executive Director to delegate. The Board is now responsible as the Nominating Committee, as a committee of the whole. The Publications Committee was renamed to become the Editorial Board, and references in the RASC Policy Manual were accordingly amended. Policy G4 was amended to delete the opportunity to purchase a PDF version of the *Observer's Handbook*.

By-law No.1 of the Society was amended in Section 2.1, 5.2, 8.4, 8.5 and 9.4.14, as reported elsewhere in this Annual Report, changes to be ratified at the Annual Meeting.

We offer condolences to the families of the following members who passed during the reporting period:

- Anthony Adamson (Toronto)
- Diane Bell (Victoria)
- Steve Capling (Prince George)
- Mario Fabris (Windsor)
- Wayne Gilbank (Toronto)
- Scott Harlow (Sunshine Coast)
- Lloyd Higgs (Ottawa)
- Kevin Kimball (Montréal)
- John Murray (Windsor)
- Rev. Patrick Power (St. John's)
- Barry Shanko (Vancouver)
- Elmore Wilson (Windsor)
- Walter Zukauskas (Halifax)



Eric Briggs
National Secretary

Membership Statistics 2010-2020

Centre	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Belleville	35	35	31	26	28	33	28	31	30	31	37
Calgary	463	463	460	458	421	460	434	381	336	282	271
Edmonton	311	311	325	332	302	294	274	277	229	235	260
Halifax	178	178	160	172	164	172	170	169	153	154	159
Hamilton	109	109	123	113	111	116	109	103	78	61	66
Kingston	63	63	60	64	67	65	72	75	66	66	74
Kitchener-Waterloo	134	134	142	135	114	126	130	109	115	106	115
London	114	114	116	115	119	124	129	110	126	104	118
Mississauga	177	177	180	183	170	179	188	168	132	123	120
C.F de Montréal	21	21	18	18	20	17	18	16	18	20	22
Montréal	171	171	169	143	135	126	117	109	110	91	87
New Brunswick	96	96	103	108	91	88	77	66	68	68	66
Niagara	100	100	98	95	88	78	73	62	69	69	71
Okanagan	145	145	141	133	133	122	124	115	106	92	116
Ottawa	391	391	387	372	358	361	343	319	325	328	370
Prince George	68	68	78	92	99	76	57	66	63	69	64
Québec				13	15	15	18	16	20	20	17
Regina	86	86	84	78	88	111	94	80	75	62	62
St. John's	79	79	74	60	61	58	57	58	47	44	45
Sarnia	15	15	16	11	15	14	20	12	11	15	15
Saskatoon	74	74	83	85	83	75	73	68	70	70	72
Sudbury	24	24									
Sunshine Coast	53	53	57	72	65	69	50	43	32	38	35
Thunder Bay	40	40	45	45	46	49	45	51	50	46	46
Toronto	757	757	803	824	860	904	869	782	611	573	554
Vancouver	284	284	262	254	236	254	217	198	226	228	244
Victoria	264	264	276	257	235	216	202	176	163	164	166
Windsor	100	100	104	116	106	107	96	84	90	100	96
Winnipeg	208	208	222	240	214	228	221	210	178	180	168
Yukon	32	32	34	32	44						
National Members	436	436	402	432	413	429	431	428	446	435	434
Honorary	15	15	14	15	15	15	15	15	15	15	15
	5028	5043	5066	5093	4916	4981	4760	4410	4077	3908	4010

Membership by Type

Type	Number	% of Total
Ordinary	3892	77.3
Family	732	14.5
Life	270	5.3
Youth	146	2.9
Honorary	(15)	.3

Membership by Country

Country	Number	% of Total
Canada	4821	95.5
USA	193	3.9
Other	29	.6

TREASURER'S MESSAGE

What a year it's been. We began with uncertainty, a quick pivot to a virtual GA, and then the initial disbelief of cancelled plans turned into a year that was at once a blur yet interminably long.

I would like to thank all our incredible staff at National Office for delivering outstanding programming and supporting our members during a difficult time. Despite being forced to adapt to new circumstances like working from home, our staff remained committed, nimble, and engaged. I'd also like to thank our generous members for your donations to the RASC Emergency Fund, which raised \$33,418 to assist fellow members and to help the Society continue to operate during this challenging time.

I am pleased to report that, despite the difficult circumstances we faced, RASC's annual financial audit went smoothly and our auditors continue to be satisfied with our financial practices and management. We even enjoyed a modest excess of revenue over expenses this year, in the amount of \$24,459. This is especially notable when compared to 2019's operating loss of (\$117,170).

Membership fees remained relatively stable at \$243K, which is a slight increase compared to 2019. Unfortunately, the Society experienced a slight decline in Publication revenue year over year, seeing \$241K in revenue in 2020 compared to \$251K in 2019.

The nature of our interactions this year was mainly virtual, and so our Education and Public Outreach expenses decreased compared to 2019. These "expenditure pauses," which amounted to (\$48) among various operational and programming expenses, contributed to the surplus of revenues over expenses in 2020.

In addition, I am very happy to report that *SkyNews* Magazine has achieved a strong turnaround in performance. In 2020, this investment added \$2,424 in revenue to our statements, compared to a loss of (\$64K) in 2019.

One thing did not change in 2020: our love of astronomy has remained strong during a tumultuous year. Taking solace at the eyepiece is often a solitary pastime, and it gave me a sense of much needed stability and remembrance of my place in the Universe. And yet, I missed sharing the sense of amazement and wonder as friends, family, or neighbours once lined up for their turn at our telescope. Sharing the Universe is what brings us together in our



humanity; let us hope that before too much longer, we will share the delight of stargazing with each other again.

Catherine Carr
Treasurer

AUDITOR'S REPORT

Financial Statements of

**THE ROYAL ASTRONOMICAL
SOCIETY OF CANADA**

**LA SOCIÉTÉ ROYALE D'ASTRONOMIE
DU CANADA**

December 31, 2020

INDEPENDENT AUDITOR'S REPORT

To the Members of
**The Royal Astronomical Society of Canada /
La Société Royale D'Astronomie Du Canada**

Qualified Opinion

We have audited the financial statements of The Royal Astronomical Society of Canada / La Société Royale D'Astronomie Du Canada ("the Society") which comprise the balance sheet as at December 31, 2020, and the statements of revenue and expenses, changes in net assets, and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, except for the possible effects of the matter described in the *Basis for Qualified Opinion* section of our report, the accompanying financial statements present fairly, in all material respects, the financial position of the Society as at December 31, 2020, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Basis for Qualified Opinion

In common with many charitable organizations, the Society derives revenue from donations, the completeness of which is not susceptible of satisfactory audit verification. Accordingly, our verification of these revenues was limited to the amounts recorded in the records of the Society and we were not able to determine whether any adjustments might be necessary to donation revenue, excess of revenue over expenses, and cash flows from operations for the years ended December 31, 2020 and 2019, current assets as at December 31, 2020 and 2019, and unrestricted net assets as at January 1 and December 31 for both the 2020 and 2019 years. Our audit opinion on the financial statements for the year ended December 31, 2019 was modified accordingly because of the possible effects of this limitation in scope.

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are independent of the Society in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our qualified opinion.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Society's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Society or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Society's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Society's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast doubt on the Society's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Society to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

TORONTO, Ontario
April 21, 2021



Licensed Public Accountants

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

As at December 31	2020	2019
Assets		
Current		
Cash	\$ 275,219	\$ 161,605
Accounts receivable	25,977	19,680
Loan receivable from SkyNews Inc. (note 5)	4,500	18,000
Inventory	34,028	34,483
Prepaid expenses	8,010	20,838
	347,734	254,606
Long term		
Investments (note 4)	529,319	593,655
Investment in SkyNews Inc. (note 5)	136,990	134,566
Loan receivable from SkyNews Inc. (note 5)	-	4,500
Capital assets (note 6)	91,351	64,391
Collections (note 7)	34,646	20,782
	792,306	817,894
	\$ 1,140,040	\$ 1,072,500
Liabilities		
Current liabilities		
Accounts payable and accrued liabilities	\$ 34,641	\$ 43,861
Deferred revenue		
Membership fees for ensuing years	163,119	141,607
Journal subscriptions	23,550	30,111
Unamortized life membership fees (note 8)	13,252	15,902
	234,562	231,481
Loan payable (note 9)	40,000	-
	274,562	231,481
Net Assets		
Unrestricted	312,739	295,585
Internally restricted (note 12)	552,739	545,434
	865,478	841,019
	\$ 1,140,040	\$ 1,072,500

Commitments (note 11)

On behalf of the Board:

A Robyn Forest President

CCarr Treasurer

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
Statement of Changes in Net Assets

Year ended December 31	Internally Restricted (note 12)	Unrestricted	2020	2019
Balance, beginning of year	\$ 545,434	\$ 295,585	\$ 841,019	\$ 958,189
Excess of revenue over expenses (expenses over revenue) for the year	-	24,459	24,459	(117,170)
Transfers (note 12)	7,305	(7,305)	-	-
Balance, end of year	\$ 552,739	\$ 312,739	\$ 865,478	\$ 841,019

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
 Statements of Cash Flows

Year ended December 31	2020	2019
Cash provided (used) by operating activities		
Excess of revenue over expenses (expenses over revenue) for the year	\$ 24,459	\$ (117,170)
Charges not requiring a current cash payment or receipt		
Amortization of capital and intangible assets	19,684	20,220
Amortization of life membership fees	(2,650)	(2,650)
SkyNews Inc. (income) loss	(2,424)	64,171
	39,069	(35,429)
Changes in non-cash working capital components		
Accounts receivable	(6,297)	40,197
Inventory	455	(12,476)
Prepaid expenses	12,828	1,824
Accounts payable and accrued liabilities	(9,222)	(12,449)
Deferred revenue	14,951	13,708
	51,784	(4,625)
Cash provided (used) by investing activities		
Investments (net)	64,336	76,607
Loan to SkyNews Inc. (net of repayments)	18,000	(22,500)
Purchase of capital and intangible assets	(46,642)	(4,437)
Purchase of items for collections	(13,864)	(20,781)
	21,830	28,889
Cash provided (used) by financing activities		
Proceeds from loan (note 9)	60,000	-
Loan forgiveness (note 9)	(20,000)	-
	40,000	-
Increase in cash during the year	113,614	24,264
Cash, beginning of year	161,605	137,341
Cash, end of year	\$ 275,219	\$ 161,605

See accompanying notes to financial statements.

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

Notes to Financial Statements
December 31, 2020

1 Organization

The Royal Astronomical Society of Canada / La Société Royale D'Astronomie Du Canada ("the Society") is a Canadian corporation without share capital and a registered charitable organization, incorporated for the purpose of stimulating interest in and promoting astronomy and related sciences. The Society is not subject to income taxes pursuant to exemptions accorded to registered charities in the income tax legislation.

2 Significant accounting policies

These financial statements have been prepared by management in accordance with Canadian accounting standards for not-for-profit organizations.

a) Cash

Cash includes cash on hand and deposits in financial institutions.

b) Investments

The Society has elected to value all investments, with the exception of the investment in SkyNews Inc., at fair value, which is based on quoted market values.

c) Investment in SkyNews Inc.

The Society purchased SkyNews Inc., a private corporation, on June 29, 2015 to further the Society's mission. SkyNews Inc. publishes a highly regarded magazine which provides an excellent source of educational information on astronomy and allied sciences to the public.

The Society owns 100% of the shares of SkyNews Inc., a profit oriented entity, and accordingly controls the corporation. The Society has elected to account for the investment using the equity method.

d) Inventory

Inventory is comprised of publications and promotional items for re-sale and is carried at the lower of cost and net realizable value. Cost is determined on an average cost basis.

e) Collections

Collections are capitalized in the Society's balance sheet but not amortized. Collections consist of a library and the Dorner Telescope Museum. The library is recognized at a nominal value. The museum collection is recognized at cost as items are purchased. Costs incurred to maintain these collections are expensed as incurred.

f) Capital assets

Capital assets are recorded at cost. Cost comprises the purchase price and any directly attributable cost of preparing the asset for its intended use.

A capital asset is tested for impairment whenever events or changes in circumstances indicate that its carrying amount may not be recoverable. An impairment loss is recognized in the statement of revenue and expenses when the carrying amount of the asset exceeds the sum of the undiscounted cash flows resulting from its use and eventual disposition. The impairment loss is measured as the amount by which the carrying amount of the capital asset exceeds its fair value. An impairment loss is not reversed if the fair value of the capital asset subsequently increases. As at December 31, 2020, no such impairment exists.

Amortization is provided over the estimated useful lives of the assets using the straight-line basis as follows:

Tangible assets:	Telescope	7 years
	Computer hardware	3 years
	Office furniture	10 years
	Leasehold improvements	15 months
Intangible assets:	Software	5 - 10 years
	Website development	3 years, 1/2 in year of acquisition

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

Notes to Financial Statements
December 31, 2020

2 Significant accounting policies continued

g) Revenue recognition

i) Membership fees

Membership fees received in the first half of the year are recognized during the current year. Those received in the second half of the year are recorded as deferred revenue and recognized in the following year. The Society previously offered life memberships to members. Life memberships received in prior years were credited to unamortized life membership fees liability account, as described in note 8. The unamortized life membership fees are being recognized as revenue evenly over 10 years to 2025.

ii) Contributions

The Society follows the deferral method of accounting for contributions. Unrestricted contributions are recognized as revenue when received or receivable, if the amount to be received can be reasonably estimated and collection is reasonably assured.

iii) Investment income

Investment income is recognized on an accrual basis. Changes in the unrealized gain or loss on investments, being the difference between cost and fair value, is recognized in investment income for the year.

iv) Subscriptions and publications

Journal subscription revenues are amortized into income over the subscription period. Publications are recognized as revenue when shipped.

h) Contributed services

The Society is dependant on the voluntary services of many individuals. The value of donated services is not recognized in these financial statements.

i) Allocation of common expenses

The Society allocates a number of its expenses by function: national operations, member services and public outreach. The costs of each function include an allocation of the costs of personnel, fundraising and computer and IT costs.

Personnel costs are allocated based on the number of hours spent on each function; fundraising expenses are allocated primarily to national operations as the majority of cost relates to general fundraising activities. Smaller portions are allocated to member services and public outreach for expenses related to fundraising for Centres and communications with members. Computer and IT costs are allocated based on the estimated usage of technology by each function.

j) Management estimates

The preparation of financial statements in accordance with Canadian accounting standards for not-for-profit organizations requires management to make estimates that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Significant estimates include the impairment of financial assets and the useful lives of capital assets. All estimates are reviewed periodically and adjustments are made to the statement of operations as appropriate in the year they become known.

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

Notes to Financial Statements
December 31, 2020

2 Significant accounting policies continued

k) Financial instruments

i) Measurement

The Society initially measures its financial assets and financial liabilities at fair value. The Society subsequently measures all its financial assets and financial liabilities at amortized cost except for its investments which are measured at fair value. Changes in fair value are recognized in the statement of revenue over expenses for the year.

Financial assets measured at amortized cost include cash and accounts receivable. Financial liabilities measured at amortized cost include accounts payable and accrued liabilities.

ii) Impairment

At the end of each reporting period, the Society assesses whether there are any indications that a financial asset measured at amortized cost may be impaired.

When there is an indication of impairment, the Society determines whether a significant adverse change has occurred during the period in the expected timing or amount of future cash flows from the financial asset and it reduces the carrying amount of the asset to the highest of the following: i) the present value of the cash flows expected to be generated by holding the asset discounted using a current market rate of interest appropriate to the asset; ii) the amount that could be realized by selling the asset at the statement of financial position date; and iii) the amount the Society expects to realize by exercising its rights to any collateral held to secure repayment of the asset net of all costs necessary to exercise those rights. The carrying amount of the asset is reduced directly or through the use of an allowance account. The amount of the reduction is recognized as a bad debt in the statement of revenue and expenses. When the extent of impairment of a previously written-down asset decreases and the decrease can be related to an event occurring after the impairment was recognized, the previously recognized impairment loss is reversed to the extent of the improvement, directly or by adjusting the allowance account. The amount of the reversal is recognized in the statement of revenue and expenses in the period the reversal occurs.

iii) Transaction costs

Transaction costs are recognized in the statements of revenue and expenses in the period incurred, except for financial instruments that will be subsequently measured at amortized cost. Investment management fees associated with the Scotia McLeod managed portfolio are expensed as incurred.

3 Helm Fund

The Society is trustee of an endowment fund created by Mr. Walter J. Helm (a former Royal Astronomical Society of Canada member) who passed away June 5, 1960. In his will he provided a bequest to the Society that was to be used to support the general purposes of the David Dunlap Observatory (DDO) in Richmond Hill, Ontario. Under the terms of a 2010 court interpretation, the income of the Helm Fund is presently being applied in support of on-going public education programs at the DDO site.

The fair value of the total assets of the Helm Fund under administration by the Society at December 31, 2020 are \$724,199 (2019 - \$148,402) and are excluded from the Society's financial statements as the Society is not the legal owner or beneficiary of the Fund.

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

Notes to Financial Statements
 December 31, 2020

4 Investments

As at December 31	2020	2019
Managed portfolio at ScotiaMcLeod		
Fixed income investments	\$ 239,314	\$ 278,163
Canadian equity investments	180,102	180,023
U.S. equity investments	100,262	115,743
Cash	9,641	19,726
	\$ 529,319	\$ 593,655

The fixed income portfolio includes 18 investments (2019 - 17 investments) comprised of government and corporate bonds with stated interest rates ranging from 1.75% to 3.55% (2019 - 1.20% to 4.00%), maturing on dates ranging from March 5, 2021 to September 1, 2025 (2019 - June 15, 2020 to June 15, 2024).

The Canadian equity investments include share and trust units of 38 Canadian entities (2019 - 33 Canadian entities). The single largest holding is 98 shares of Royal Bank with a market value of \$10,250 (2019 - 103 shares of Royal Bank with a market value of \$10,583).

The U.S. equity investments include share and trust units of 31 entities (2019 - 32 entities). The single largest holding is 23 shares of Microsoft Corp. with a market value of \$5,116 US\$ (2019 - 31 shares of Microsoft Corp. with a market value of \$4,889 US\$).

The fixed income and equity investments have been recorded at market values based on pricing information provided by Scotia McLeod.

5 Investment in SkyNews Inc.

The Society purchased 100% of the common shares of SkyNews Inc. on June 26, 2015. The fiscal year end of SkyNews Inc. is March 31, accordingly, the net income for the year ended March 31, 2020 has been recognized in the financial statements of the Society in 2020. The following summary is taken from the unaudited financial statements of SkyNews Inc.

As at March 31	2020	2019
Total assets	\$ 90,289	\$ 82,815
Total liabilities	263,189	258,139
Total deficit	(172,900)	(175,324)
Year ended March 31	2020	2019
Total revenue	\$ 557,884	\$ 583,103
Total cost of sales	420,664	583,161
Total expenses	134,796	64,113
Net income (loss) for the year	\$ 2,424	\$ (64,171)

There is significant uncertainty as to whether the investment in SkyNews Inc. is impaired. Management estimates that no impairment exists at December 31, 2020 due to changes implemented at SkyNews Inc. The investment is recognized on the balance sheet at \$136,990 however it is possible that the investment may be unrecoverable in future years.

In 2019 the Society loaned \$30,000 to SkyNews Inc. with repayment terms of \$1,500 per month, interest free. The balance outstanding at December 31, 2020 is \$4,500 (2019 - \$22,500).

Included in membership services expense is \$48,342 (2019 - \$50,172) for purchases of SkyNews Magazine in the year which is distributed to Society members as part of their membership subscription. The Society also expensed \$6,236 (2019 - \$6,236) in advertising and marketing for advertisements in SkyNews Magazine.

These transactions were made in the normal course of operations and have been measured at the exchange amount, which is the amount of consideration established and agreed to by the related parties.

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

Notes to Financial Statements
 December 31, 2020

6 Capital assets

	2020		2019	
	Cost	Accumulated Amortization	Cost	Accumulated Amortization
Tangible assets				
Telescope	\$ 51,947	\$ 20,408	\$ 51,947	\$ 12,987
Computer hardware	22,950	20,978	22,950	18,571
Office furniture	6,664	3,614	6,094	3,021
Leasehold improvements	4,989	4,989	4,989	4,988
Intangible assets				
Software	150,669	96,204	104,594	87,590
Website development	13,715	13,390	13,715	12,741
	\$ 250,934	\$ 159,583	\$ 204,289	\$ 139,898
Net book value		\$ 91,351		\$ 64,391

Included in software is \$46,075 (2019 - \$nil) of costs related to a project not complete or in use as at December 31, 2020. Accordingly, no amortization has been taken in the current year on this asset.

7 Collections

	2020	2019
Dorner Telescope Museum	\$ 34,645	\$ 20,781
Library	1	1
	\$ 34,646	\$ 20,782

8 Unamortized life membership fees

	2020	2019
Life membership fees as of January 1	\$ 15,902	\$ 18,552
Deduct: Amortization to income	(2,650)	(2,650)
Balance, December 31	\$ 13,252	\$ 15,902

9 Canada Emergency Business Account (CEBA) loan

The Society received a \$60,000 loan under the federal government's Canada Emergency Business Account (CEBA) program which provides assistance to small businesses and not-for-profit organizations in paying non-deferrable operating expenses. The CEBA program is designed to assist organizations dealing with the economic impact of the COVID-19 pandemic.

The loan is interest free and no payments are required until December 31, 2022. Any portion of the loan can be repaid at any time without penalty. Provided \$40,000 of the CEBA loan is repaid on or before December 31, 2022, the remaining \$20,000 will be forgiven. The Society has recognized the forgivable portion as government assistance included in grants in the statement of revenue and expenses at December 31, 2020 as there is reasonable assurance that the Society will be entitled to the grant.

If the loan is not repaid in full by December 31, 2022, the government assistance will be reversed and the full \$60,000 loan would become payable. Interest would be payable monthly, charged at 5% and the balance of the loan would be due in full December 31, 2025.

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

Notes to Financial Statements
 December 31, 2020

10 Grants

Included in grants is government assistance totalling \$44,435 (2019 - \$Nil) which includes the CEBA loan forgiveness referred in note 9.

11 Commitments

The Society leases space for offices and a museum. The leases extend to December 31, 2021. The minimum annual payments required under the leases, excluding an estimate of the proportionate share of property taxes, maintenance and insurance for the premises, for fiscal 2021 is \$27,130. Property tax, maintenance and insurance in addition to the base rent is estimated at \$26,000 for calendar 2021.

The Society also has an ongoing commitment for the remote observatory and telescope hosting which extends to May 1, 2022. Annual payments totalling \$19,400 for 2021 and \$6,600 for 2022 are required under this agreement.

12 Internally restricted net assets

The Society has internally restricted certain funds. The Ruth Northcott Education Fund was established in 1969 and funds are used for a variety of specified purposes related to public education and outreach. The RASC Legacy Fund was established in 1990 for the purpose of providing for the long-term growth of the Society.

An amount equal to the investment income (loss) for the year is transferred to all funds annually on a proportionate basis. All disbursements from these funds must be approved by the Board of Directors.

	2020			2019
	Ruth Northcott Education Fund	RASC Legacy Fund	Total	Total
Fund balance, January 1	\$ 230,160	\$ 315,274	\$ 545,434	\$ 495,946
Transferred from (to) unrestricted net assets:				
Investment income (loss)	1,541	2,111	3,652	32,491
Donations	4,021	1,042	5,063	23,913
Expenses	(1,410)	-	(1,410)	(6,916)
	4,152	3,153	7,305	49,488
Balance, December 31	\$ 234,312	\$ 318,427	\$ 552,739	\$ 545,434

13 Expense allocations

Personnel, fundraising and computer and IT costs were allocated as follows:

	2020			2019		
	Personnel costs	Fundraising expenses	Computer & IT costs	Personnel costs	Fundraising expenses	Computer & IT costs
National operations	\$ 67,047	\$ 44,927	\$ 8,424	\$ 61,856	\$ 44,811	\$ 8,365
Member services	117,245	5,616	16,848	105,020	5,601	16,731
Public outreach	90,501	5,616	8,424	80,546	5,601	8,365
Light pollution prevention	6,822	-	-	-	-	-
	\$ 281,615	\$ 56,159	\$ 33,696	\$ 247,422	\$ 56,013	\$ 33,461

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

Notes to Financial Statements
December 31, 2020

14 Financial instruments

The Society is exposed to various risks through its financial instruments. The following analysis provides a measure of the Society's risk exposure and concentrations.

Credit risk

Credit risk is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. The Society is exposed to credit risk through its cash, accounts receivable, loan receivable and investments. Credit risk related to cash is minimal as funds are fully insured and held by credit-worthy parties. Accounts receivable are generally unsecured. The investment policy requires diversification of investments within categories, and sets limits on exposure to individual investments.

Liquidity risk

Liquidity risk is the risk that the Society will not be able to meet a demand for cash or fund its obligations as they come due. The Society meets its liquidity requirements by ensuring adequate cash is maintained and investments are available to be converted to cash if and when required.

Market risk

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices. Market risk is comprised of currency risk, interest rate risk and other price risk.

Currency risk

Currency risk reflects the risk that the Society's earnings will decline due to the fluctuations in foreign exchange rates. The Society has cash, investments and accounts receivable denominated in U.S.\$ totaling \$145,758 US\$ at December 31, 2020 (2019 - \$127,397). The exchange rate used to convert US\$ assets at December 31, 2020 is \$1 US = 1.2732 Cdn (2019 - \$1.2988 Cdn).

Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Society is subject to interest rate risk to the extent of its fixed income investments and cash on deposit with financial institutions that earn interest at market rates. The Society manages its exposure to the interest rate risk of its cash by maximizing the interest income earned on excess funds while maintaining the liquidity necessary to conduct operations on a day-to-day basis. Fluctuations in market rates of interest on cash do not have a significant impact on the Society's results of operations.

The primary objective of the Society with respect to its fixed income investments is to ensure the security of principal amounts invested, provide for a high degree of liquidity, and achieve a satisfactory investment return.

Other price risk

Other price risk refers to the risk that the fair value of financial instruments or future cash flows associated with the instruments will fluctuate because of changes in market prices (other than those arising from currency risk or interest rate risk), whether those changes are caused by factors specific to the individual instrument or its issuer or factors affecting all similar instruments in the market.

The Society is exposed to other price risk because of its equity investments.

Changes in risk

There have been no changes in the Society's risk exposures from the prior year.

LPA COMMITTEE REPORT

LPA Committee Membership

Bob King, Chair (Calgary)
Richard Huziak (Saskatoon)
Janice Allen (Calgary)
Chris Weadick (New Brunswick)
Peter Brackett (Calgary)
Robyn Foret, ex officio & Board Liaison (Calgary)
Roland Deschene (Calgary)
Phil Groff, ex officio (National Office, Toronto)
Robert Dick (Ottawa)
Nick Hammar, staff support (National Office, Victoria)

Discussion

During 2020, the National Light-Pollution Abatement Committee (LPAC) re-evaluated its mandate and priorities then developed goals for 2020 and 2021 that will realize these priorities, accounting for resource constraints and stakeholder feedback. The main areas of effort are devoted to improving the application processes and sustainment support for our flagship dark-sky preservation program and on providing Light-Pollution Abatement resources that can be used by local Centres.

Effecting positive changes in the use of artificial light at night (ALAN) requires effort on many fronts, the most fundamental of which is changing cultural norms and personal behaviours with respect to ALAN. This re-education process requires constructive engagement with laypeople, decisionmakers, and legislators. This engagement is guided by consistent key messages that, in turn, are supported by relevant educational materials and programs. Dealing with legislators is difficult because of the very decentralized nature of government in Canada, which is determined by the constitutional distribution of legislative powers. Furthermore, the RASC has very limited ability to lobby governments due to legislated limits on the activities of charitable organisations and due to its limited human and financial capacity. Consequently, promoting and supporting Light-Pollution Abatement laws must be undertaken by local RASC Centres and devoted individuals, who may require educational resources, exemplars, and guidance from the LPAC.

Given this framework, the LPAC's goals for 2020 and 2021 are focused on revitalizing our dark-sky preservation program and on providing supportive resources and guidance for local Light-Pollution Abatement efforts. The RASC's dark-sky preservation program is intended to protect the nocturnal environment and it is an excellent communication channel through which to educate people, both directly and with partners. However, commitment by DSP operators has been mixed and operational support by the RASC needs to be strengthened. Efforts to restructure and revitalise the program are underway. Another key communication channel is our LPA website, which is being re-organized. And to support local LPA efforts, the LPAC is consolidating and organising resources for internal RASC use and it is reaching out to organisations that write codes and recommended practices that guide ALAN practices. Progress on these and other goals during 2020 is summarized below. The summary is organised by directional priority, followed by an itemised discussion of progress on related goals.

1) Directional Priority: maintain extensive resources on LPA initiatives:

a) Update and reorganize the LPA website

This is well underway. Content was updated and out-of-date content was removed; some pages were combined. Work

to update all content continues and we are developing dedicated webpages for each dark-sky preserve, nocturnal preserve, and urban star park as part of our commitment to promote DSPs.

b) Update list of Centre's LPA leader and local initiatives on the LPA website: response was weak, with just over half of Centres responding with a contact name and little or no information about local LPA activities was provided.

c) Public outreach & education:

i) During 2020, a three-part series about "The Biological Basis for the Canadian Guidelines for Outdoor Lighting" was published in the JRASC (June, October and December issues). Robert Dick also contributed ten sections to the International Union for Conservation of Nature (IUCN) publication "The World at Night: preserving natural darkness for heritage conservation and night sky appreciation," which is in print and soon will be distributed to the UN, governments, and NGOs. He also contributed to the *Berkshire Encyclopedia* (to be published in 2022, but now promoted on their website) and contributed articles to *HarrowSmith* magazine (April 2021 issue and in their Annual Almanac). In the future we intend to produce articles for the JRASC, *SkyNews*, & other public magazines.

ii) The @RASC_LPA twitter account has 5140 followers, there are 791 likes on The Royal Astronomical Society of Canada Dark-Sky Preserve Program Facebook page.

2) Directional Priority: liaison with the IDA and other LPA groups

a) Provide website links to/from other LPA organisations: where appropriate, links were corrected or added to our revised LPA webpages.

b) Participate in select conferences: The United Nations/Spain/IAU Workshop on Dark and Quiet Skies for Science and Society was attended virtually. Discussions at this conference were wide ranging and the organizers prepared a document that describes what measures governments and private enterprises can adopt to mitigate the negative impact of technological implementations on astronomy

(see www.iau.org/static/publications/dqskies-book-29-12-20.pdf).

3) Directional Priority: LPA Certificate of Merit program

a) Determine need for the LPA Certificate program & make recommendation to the Board: The LPAC recommended cancelling the LPA Certificate of Merit program because: no LPA Certificates have been awarded since 2007; identifying meritorious recipients is time consuming; and the award appears to have little lasting impact. The Board approved the recommendation.

4) Directional Priority: conduct research on current light-pollution levels

a) Provide input to the Canadian Energy Code for Buildings, National Building Code, CaGBC/USCGB LEED 4.1 standards, etc.: We critiqued the outdoor lighting section of LEED v4.1 Building Design and Construction. The outdoor-lighting section deals with exterior lighting for buildings, area and landscape lighting, and illuminated signage for new construction in all lighting zones ranging from preserves to urban areas with high intensity use. Our recommendations call for elimination of permitted up light, significantly

reduced luminaire glare ratings in all zones, lower sign luminance, limiting lamp colour temperature to below 3000K, and more use of dimmers and curfews. Our formal submission is planned for April 2021.

5) Directional Priority: sharing of strategies and techniques to effectively engage individuals, companies, and municipalities in adopting effective measures to reduce Light-Pollution :

a) Strengthen the dark-sky preserve program, its scope, and its documentation and process management: This is our flagship program. It has two broad components: the application process and operations & sustainment. Since its inception in 1999, the DSP program has developed due to the efforts of passionate individuals and we have now recognized the need to centralize documentation, standardize governance and administrative processes, and improve active monitoring and support of established DSPs. We also determined that to manage the program effectively and consistently, a permanent staff position in National office is needed. This role would also support the LPAC's internal support services to Centres. As an interim step to moving to a permanent position, we were able to hire Nick Hammar for a six-month term with the assistance of a government grant (thank you Lisa Di Veto, RASC Fund Development) and matching funds from National Office. Nick's contributions have been critical to consolidating and centralizing our existing DSP documents, LP bylaws, presentations, etc. and updating our LPA website. Going forward in 2021, he and the LPAC will work to transform our somewhat ad hoc DSP application process to follow stage-gated, project development principals, and we will re-organize and simplify the CGOL and related documents to provide clearer performance criteria and guidance to applicants and DSP operators. We also will work with Centres to ensure DSPs have access to local support for public outreach.

b) Update the Canadian Guide for Outdoor Lighting: The 2018 CGOL was revised and posted on our LPA website as the 2020 edition. The new edition includes additional information on luminance and ways to modify non-compliant fixtures so they can be made compliant to the CGOL. This version has been circulated to Parks Canada, the IDA, and the IUCN.

c) Operational support for DSPs:

i) Cypress Hills Inter-Provincial Park DSP: provided stakeholder input for lighting for turbines, substation, and maintenance buildings for a proposed wind farm adjacent to the DSP in Alberta.

ii) Torrance Barrens DSP: working with local supporters and Ontario Environment to resolve access restrictions imposed to deter harmful land use in ecologically sensitive areas. These restrictions impaired access to observing sites.

iii) Started a communication with SaskTel Communications regarding the effect of cell tower strobes on dark-sky preserves and acreages.

d) Create a library of LP presentations that can be adapted and used by Centres: The numerous LPA presentations prepared by committee members have been consolidated. These need to be vetted to ensure the material is up-to-date and that rights to retain and distribute copyrighted content is obtained. We expect to make this library available to Centres in 2021.

e) Compile a library of LPA bylaws: 23 bylaws from across the country have been collected and links to municipal websites are being verified. We expect to make this library available to Centres in 2021.

f) Publish a public-facing, position statement about the Starlink satellites: a position statement was drafted in consultation with CASCA; however, publication has been paused. The commercialization of space (by Starlink and others) is unregulated and requires international discussions to develop suitable laws. The IAU and IDA (and others) have engaged various commercial stakeholders, nations, and the United Nations. The LPAC will monitor developments to determine how and when our support can be most influential.

g) Ad hoc support: We frequently receive requests from individuals (members and others) for dedicated assistance to solve their local Light-Pollution problem. Responding can be very time consuming, so the committee decided to formally take on such requests only if the effort potentially advances LPA efforts nationally and for long term. We dealt with two such issues:

i) The LPAC provided a letter of support to a person in Swift Current, SK, who is applying for legal support to sue a commercial neighbour about serious light trespass. The local LP bylaw is not being enforced and the law firm to which the person is applying specializes in environmental law.

ii) Greenhouse lighting: this problem is increasing in many parts of the country and is harming local nocturnal environments and some DSPs. A document about the harms of uncontrolled greenhouse lighting and recommended solutions is being prepared. It can be used by Centres and individuals seeking local regulation.

Bob King
Chair

Budget

Item	Comment	Budget	Actual	Variance
LEED & IES document purchases	None purchased	\$250	-	(\$250)
ALAN 2020 (Spain)-travel	Changed to a virtual conference due to COVID-19	\$3000	-	(\$3000)
DSP/USP/NP Ceremony Attendance-travel	None held	\$1000	-	(\$1000)
TOTAL		\$4,250	-	(\$4,250)

NEXTGEN COMMITTEE REPORT

Committee Chair	Émilie Laflèche, Montréal Centre
Internal Officers	Aline Alcaraz, Montréal Centre Ivan Tockovski, Toronto Centre
Communications Directors	Aden Horbachewsky, Yukon Centre Lucas Kuhn, Vancouver Centre
Equity and Diversity Coordinator	Amaya Senso, Montréal Centre
Social Media Coordinator	Keegan Oickle, Halifax Centre
Treasurer	Meredith Miller, Vancouver Centre

The new NextGen Committee was constituted by the Board of Directors in July of 2021.

Terms of Reference

The Next Gen Committee's purpose is to address the needs of current and future RASC youth members (meaning members between 13 and 25 years of age, inclusive) as they relate to programs and services of the Society. The committee serves to represent the unique viewpoints, values, and experiences of the Society's youth members as they apply to their RASC membership, including a core dedication to upholding the ideals of respect, inclusivity, and diversity within the Society.

Accountability

The committee is accountable to the Board and reports directly to the Board a minimum of two times a year, or as required. The committee will supply copies of its plans, minutes, reports, and other documents to the Board upon request. The committee will provide an annual report to the National Council.

Authority

The committee has the authority to:

- Create, and ensure the maintenance of, an inclusive, safe, and respectful environment for all youth members within the Society;
- Promote and foster productive communication between youth members and their centres/the Board;
- Amplify, and diversify the representation of, youth voices at the RASC National level;
- Provide opportunities and funding (e.g., scholarships/bursaries) for youth members;
- Encourage and facilitate networking, mutual support, and the sharing of ideas between the Society's youth members;
- Promote the Society's STEM focus at youth-led and youth-focused external events, in collaboration with other committees such as the Education and Public Outreach, Robotic Telescope, Observing, Astro-Imaging, and History committees;
- Contribute to the social media presence and public outreach initiatives of the RASC by hosting Next Gen social media channels, which aim to showcase the contributions and involvement of youth members within the Society;
- Assist the Society Office's Youth Coordinator in execution of approved programs targeting youth members;
- Lead the RASC involvement of the Canada Wide Science Fair.

Projects

1. NextGen Scholarship Program

The RASC NextGen Committee is providing a total of \$1500 worth of scholarships to youth members in the society. The \$1500 is split

into two separate bursaries, a \$500 Community Leadership Fund and \$1000 Post-Secondary Scholarship.

Advertisement for both of these funding opportunities began in February 2021, applications opened on March 1, 2021 and closed on May 28, 2021. Scholarships will be announced and awarded on June 25, 2021 at the Youth General Assembly.

2. Passport to the Universe (Working Title)

The NextGen Committee is proposing a project that would complement the current youth membership cards with a 14-page (approx.), passport-sized booklet that serves as a young RASC member's interactive introduction to the community of the RASC and to observing the night sky.

The Passport to the Universe (name-pending; other options include the RASC Youth Portfolio) is a project idea conceived with the purpose of creating a fun, innovative way to attract youth members to the RASC and provide them with a tool/portfolio that may act as a replacement for the current membership card with an "interactive" tool/portfolio to encourage and track their engagement and development throughout their years in the RASC.

The Passport will offer a French and English version, as our Committee believes that the inclusivity of both national languages is a must, if we are to be aligned with our principles on diversity and inclusion.

The passport's first couple of pages will contain a message from the National Office, a message from the NextGen Committee, and a place to fill in all membership information before mailing it out. The goal of this passport is to spark an interest in observing at an early age and provide youth with a physical item that connects them to the Society and its other youth members. All decisions about this passport regarding observing goals will be approved first by the Observing Committee, and thus are subject to change.

3. RASC General Census

One of the main goals of the NextGen Committee is to identify potential shortcomings in the Society, offer solutions, and collaborate with the other committees in the RASC to implement positive changes, and engage in initiatives to encourage growth to the fullest potential of each Centre in the RASC, Canada-wide. Planned programs that our Committee wishes to develop, such as the Community Outreach events (including Heritage Nights, new-Canadian oriented events, local-language oriented events, among others) may only effectively be implemented by first gathering demographic and other important data from the members in the Society through the General Census, analyzing the results, identifying important points and developing the programs to reflect the results and the betterment and growth of each member in the Society, whether identified as a youth or not.

Initially, the General Census began as a survey for youth members, but through collaboration with the Diversity and Inclusivity Committee and others, the project has developed into a Census for every member in the Society.

Upon approval, the Census will be sent to all members through a Google Forms survey (where a trusted adult will complete the Census for minors below a certain age). The data will then be analyzed by the NextGen Committee and our collaborators and the results will be presented in a report that will be shared with

the other committees to use for their reference. Our Committee will use the data to continue development on our Community Outreach and related events.

It is planned for the General Census to become a regular project that will be improved and expanded over the years as a cross-committee collaboration.

4. NextGen Merchandise

Our Committee will design new, NextGen-branded merchandise for sale to youth and all other members of the RASC. For the first round of designs, we aim to make t-shirts, face masks, and laptop stickers with the Committee logo on them.

5. Youth General Assembly

On June 25, 2021, we will host a virtual youth-focused conference with a day's worth of guest speakers and activities. We will be encouraging current youth members of the RASC to attend, since they will be provided the chance to network and socialize with other youth members, as well as hear professional astronomers or astrophysicists present on their career paths in STEM and how to engage the next generation in the space industry. All youth members who pre-register will receive a small gift bag in the mail composed of RASC National and NextGen merchandise. This event will be hosted the same weekend as the 2021 National General Assembly.

6. NextGen Social Media Initiative

The NextGen Social Media Initiative was started by the previous RASC Youth Committee with the goal of making content that

highlights, engages, and educates youth members of the RASC. The NextGen Committee aims to take what was started with the Social Media Initiative and improve it by making the content more consistent and professional. There are a few different types of posts that are posted every month. The monthly Youth Member Recognition series is meant to highlight the contributions to astrophotography, community engagement, and other astronomy-related projects that youth members are undertaking within the RASC. Event promotion posts are posted when needed to promote upcoming events. The Intergalactic Inquiries series involves bi-monthly posts that answer commonly asked astronomy questions, which are sometimes sourced from Q&As held on our Instagram Stories. The Space Scoop series includes bi-monthly posts that can report on a variety of current topics, including "what's in the sky" (at the start of each month) observation challenges, upcoming astronomical events, space exploration mission achievements and updates, Canadian research spotlights, amateur astronomy tips, and international awareness days.

7. NextGen Web Content

The NextGen Web Page will be a place for public information and updates on the NextGen Committee. This will include a summary of what the Committee is working on, information about the Committee members, the NextGen Scholarship and possibly a Q&A section of common questions, if we feel this is needed.

Émilie Laflèche
Committee Chair

OBSERVING COMMITTEE REPORT

Summary

COVID-19 happened. Despite that, in 2020, the Observing Committee was thrilled to receive and approve many observing certificates! This was likely due in part to the efforts of Jenna Hinds and John Read and their Explore the Universe online webinar, not to mention the three observing program videos produced in Halifax (again with John Read's help).

A discussion started on supporting members interested in EAA.

And the committee was pleased to launch a new observing certificate program, the first in a number of years: the Double Stars program.

The author thanks James Edgar, Dave Chapman, Blair Stunder, Chris Beckett, Dale Armstrong, Dr Randy Boddam, Melody Hamilton, Karol Socander, and Bill Weir in the preparation of this report.

Acronyms

We use short forms for brevity in this report.

- ETU = Explore the Universe
- ETM-T = Explore the Moon-Telescope
- ETM-B = Explore the Moon-Binocular
- IWLOP = Isabel Williamson Lunar Observing Program
- FNGC = Finest NGC
- EAA = Electronically Assisted Astronomy

The Team

Many of the committee members were active, helpful, and cheerful through the year. There were some lively discussions but everyone is respectful and positive. The committee seems healthy and the team members happy despite the sombre situation.

The author wishes to thank the following team members for their many contributions through the calendar year of 2020: Dale Armstrong, Chris Beckett, Dr Randy Boddam, Dave Chapman, Charles Ennis,

Melody Hamilton, Bruce McCurdy, Murray Paulson, Blair Stunder, Jo VandenDool, and Bill Weir. The committee also has Roger Hill, Karol Socander, and Vikki Zsohar on board, representing over a dozen RASC centres.

Through the strange year, committee members shared their own personal observations, sketches, and photos. That added to the fun factor.

Observing Certificates

If this accounting is correct, we processed 39 certificates! That's near the high number 40 from 2007.

The following people earned RASC observing certificates: Charles Banville (Victoria, ETM-T), Chris Baldock (National, ETU), George Pattern (Victoria, ETM-B), Andrew Bennett (Calgary, ETM-B), Murray Hunt (Edmonton, ETU), Abby Choi (Vancouver, ETU), Chris Sarkassian (Public, ETU), Tim Yaworsky (Saskatoon, ETM), Ian Bain (Toronto, ETU), Stewart Cameron (Halifax, ETU), Denis Pilon (Regina, ETU), Stephen Brown (Ottawa, ETU), Lisa Ann Fanning (Halifax, ETU), Karthika Das (Public, ETU), John Peddle (St. John's, ETM-T), David Hawkins (Okanagan, ETM-B), Luke Cacco (Niagara, ETU), Paul Jomm (Niagara, ETU), Swapna Shivastava (Mississauga, ETU), Alexandre Viau (Montreal, ETU), Alex Vio (CDFM, ETU), Karen Hamblin (Halifax, ETU), Anita Carpenter (Okanagan, ETU), John Carpenter (Okanagan, ETU), Troy Sweeney (Halifax, ETU), Elsie

Ferguson (Halifax, ETU), and Atul Dave (Toronto, ETU).

The following ambitious observers earned multiple certificates in the calendar year: Robert Millard (Ottawa, ETM-T, ETU, and IWLOP), Tony Schellinck (Halifax, ETM-T and FNGC), Mike Matwyuk (Prince George, Messier and IWLOP).

Some other notable certificates were awarded. Christopher Cokinos (National, IWLOP) lives in Tucson. A number of our own committee members, Dave Chapman (Halifax, ETU), Blair Stunder (Prince George, ETU), and Melody Hamilton (Halifax, IWLOP), were certified. Finally, Arushi Nath (Toronto, ETU) may be the youngest to receive a certificate!

Outstanding work, all!

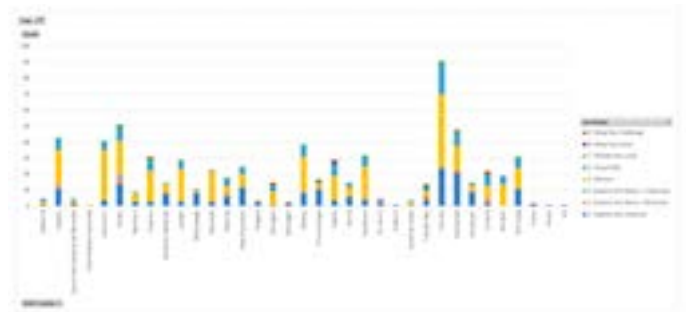
Chapman was pleased to note certification announcements reappearing in Bulletin. Almost all certificates were noted on Facebook, Twitter, and the relevant program pages on the web site.

Certificates Analyzed

The certificates "database" was updated by Stunder through the year. Nancarrow cleaned the data, generated a pivot table and pivot chart organized by year and by certificate type (a first).



Quick analyses shows that 2020 was an excellent year nearly topping highs of the early 2000s. Most of the certificates awarded in 2020 were for the ETU. Curiously Messier and FNGC were very low.



Analysis by Centre is interesting although per capita weighting was not applied. The data quality for National Members is poor but will be refined in future reports. Discounting non-Centre-specific entries, Halifax is going gang-busters!

Double Stars Program

The Observing Committee was very pleased to announce the Double Stars observing certificate program. It was an idea hatched by Nancarrow over 7 years prior. He was supported by a great number of people within and outside the committee. It is posi-

tioned as an intermediate level program, after the ETU and on par with the Messier and FNGC.

In late October, the DS website program page was launched with general description, requirements, and helpful links. A number of documents are provided including a Quick Guide, a Full Guide, and full Log Book or individual Log Sheet. Observing Lists are available in PDF, SkyTools, SkySafari, Stellarium, and Excel formats. A Supplement PDF file provides extensive information on their primary pairs of observing targets along with other companion stars.

Committee members Hamilton and Chapman started immediately working on the DS observing program. There are approximately a dozen members across the country known to be working on the program.

Other Activities

The ETM materials, Binoculars and Telescope, were translated to French by Pierre Paquette. Randy Boddam relayed his thoughts of a Comet Observing Certificate after a conversation with Rick Wagner of Kingston. Chris Beckett shared the existing comet observing information on our website. At a Halifax online event, Dave Chapman noted Phil Groff saying new members would receive a copy of the *Explore the Universe* guide book. ObsComm did not know of this decision but supported it. Hinds and Read started the online webinars for the ETU. There was a little misstep about photographs being permitted but this was corrected in a later show.

Blake Nancarrow shared some discussion points from Toronto where some members expressed dismay at the lack of support for Electronically Assisted Astronomy. The national board added an agenda topic item and approved the forming of an EAA working group. A meeting was held in September, attended by Blair Stunder, Jay Anderson, Blake Nancarrow, Charles Yung, Alex Arjomand, and David Lee.

When the in-person General Assembly event in British Columbia was cancelled, it scrubbed an in-person meeting of committee members. No committee meetings were held.

Special Observing Recognition

Nelson Walker—Victoria: Walker received eleven observing awards from the Astronomical League and is currently working on three other Astronomical League Observing Programs.

Michael Eric Boshat—Halifax: Our Solar Observer was recognized for his cumulative contribution since 1999 of 3500 sunspot observations in support of the American Relative Sunspot Number program and service to the AAVSO Solar observing program.

Malhar Kendurkar—Prince George Centre: Discovered comet C/2020 Q2 GSNT1. This adds to his list of supernovae. The GSNT is short for "Global Supernova Search Team."

Budget

The author has no details for the ObsComm budget at the time of writing but it is safe to say there were no major expenditures. Or possibly none. The author continues to investigate.

The committee has discussed a tentative pin design for the new Double Stars program, assuming there is sufficient uptake. That will incur some expense in the future but the team has already considered combining pin orders to realise some economies.

Outlook

The 2021 year is looking to be on par with 2020. Fingers crossed; we might break our annual record for certifications!

If lucky, we'll award new Double Stars program certificates by the end of 2021.

Colophon

Notes, facts, and figures assembled by Nancarrow in Evernote. He drew from committee documentation, the "database" in Excel, social media sources, RASC web pages, Observing Committee emails, and the RASC Bulletins. Data was cleaned and manipulated in Excel to produce the charts. Content migrated to Word for the formal report. Output to PDF.

Apologies for errors and omissions. Please submit corrections, additions, and requests for deletions to the author.

Blake Nancarrow

Committee Chair

ANNUAL REPORTS FROM THE CENTRES

BELLEVILLE CENTRE

The Belleville Centre remains a small group, with about 30 members. Monthly meetings are on the first Friday of each month at Loyalist College. These meetings have been virtual via Zoom since March due to the pandemic. We anticipate that this method will continue well into 2021.

Normal topics in our Monthly Zoom video calls include:

- reports from our Treasurer and National Council Rep.
- sharing observing reports and recent astrophotographs taken by our members
- presentations on various topics by Centre members
- What's Up and the observing challenge for the month

Under normal circumstances we have been doing a good amount of public outreach, with regular solar viewing and night sky viewing at Presqu'ile Provincial Park. Each year around Astronomy Day in April we set up displays and telescopes at Quinte Mall and host public viewing sessions. Again, such events have been cancelled due to COVID-19.

Every year in September, in collaboration with the Kingston Centre, we host a weekend star party called Fall 'n' Stars. Attendance has been in the 20-30 people mark for many years. This star party was held for many years at a Boy Scout camp north of Belleville, near Thomasburg. Our agreement with Scouts Canada expired and we moved the event to a trailer park in the far southeastern corner of Prince Edward County where we also have a spring observing event in May. We hope to resume both of these in 2021.

On the social side, we had to cancel our "after-meeting" meetings held in local restaurants and summer

Star-B-Q held at Presqu'ile Provincial Park. Our annual Christmas Dinner, which includes sing-alongs, music by Centre members, and gifts also had to be cancelled this year.

Our online presence involves an eNewsletter sent to club members as well as a Facebook page.

Dave Cotterell
President

CALGARY CENTRE

2020 was another very active year for the Calgary Centre but was severely impacted by the Covid Crisis.

In person meetings were cancelled as of March 2020

Calgary Centre's Public Outreach efforts hosted many public events, but switched to on-line council meetings and monthly general meetings as of April 2020.

A key Covid online outreach program was the Saturday morning sessions with the junior grade students via the Calgary public library with typically about 50 students logging in for the sessions.

Simon Poole was the key presenter and organizer of this outreach programming focusing on the lower student grades.

Some example topics are per table below.

Date- 2020	Calgary Public Library On-Line Program
19-Sep-20	Explore the Moon
26-Sep-20	Astronomy for Youth (12-18)
03-Oct-20	Explore the Solar System
10-Oct-20	Thanksgiving Weekend: No Program
17-Oct-20	Observing the Night Sky
24-Oct-20	Mars: The Red Planet
31-Oct-20	Halloween Sky
07-Nov-20	The Autumn Sky
14-Nov-20	Constellations of the Night Sky
21-Nov-20	Purchasing Astronomy Equipment for Youth
28-Nov-20	Moons of the Solar System
05-Dec-20	The Winter Sky
12-Dec-20	Meteor Showers
19-Dec-20	Exoplanets

In-Person Public Events & Volunteer Record For 2020

Date	Location	Public	Volunteers
Jan 27-31	Canmore/Cochrane	90	1
Feb 1	Rao—Open House	180	4
Feb 24	Hawkwood School	97	1
Mar 14	Emerald Lake Lodge Corporate Event		1

Centre Members also continued to show support to our communities of interest, the University of Calgary (Rothney Astrophysical Observatory Public Nights), Alberta Provincial Parks, and the Banff and Waterton National Parks.

Special mention to Ken and Bev From, owners of All-Star Telescope for their support of the Calgary Centre, and for their generous sponsorship.

Membership

At the end of November 2020, the Centre had 440 members.

At our upcoming public events, volunteers highlight Centre activities and the benefits of RASC membership to encourage attendees to join the RASC.

Our Social Media campaign continues to attract growth and likely help to sustain awareness to the public concerning our activities in the Calgary Centre and support the membership level we currently maintain.

Our Youth Group helps with the addition of new Youth Members and their families.

Active programs promoting events with Meetup.com encourages the interested public to attend our events, usually augmenting attendance significantly and supporting healthy membership sustenance.

A Calgary Centre Facebook page also promotes events but encourage participation of members in sharing their astronomical areas of interest and astronomical events. Many members submit their work through this site increasing awareness of astronomical

events to the community. Twitter and YouTube are also used to disseminate astronomical information to the community.

General Meetings

General meetings were held on the third Thursday of the month in-person at the main Calgary Center Library Branch until March and then online hosted by the Calgary Public Library, featuring the following main speakers and topics:

Jan	Amanda Obodovsky, M.Sc. "Impact Craters in Seismic Data"—held in-person
Feb	Steve Donaldson & Roland Deschene "Myths and Misconceptions About Astronomy"
Mar	Roland Dechesne—Are we alone?—Cancelled—COVID issue
April	Jack Milliken and Don Hladiuk—2020:A space Odyssey. Member showcase: Cancelled—COVID issue
May	Dr. Phil Langill—Spectroscopy U of C. Cancelled—COVID issue

The following events were held online because of COVID crisis

Sep	Dr. David Levy for our Peter Sim Lecture
Oct	Fred Espenak—Eclipses
Nov	Dr. Cherry Ng—Fast Radio Bursts

Public Education

Centre member Don Hladiuk appears on the CBC radio Eye-Opener show the first Tuesday of every month presenting Sky Highlights for the month.

Casino

Robyn Foret did his usual incredible job organizing the October 11 & 12 casino during the raging Covid Crisis, which kept most of our senior volunteers away. Incredible result.

Ralph Klein Park Observatory Building Plans

Robyn Foret again has been the driving force in organizing the casino funding and the actual planning of an observatory building within the SE boundaries of the City of Calgary. More updates on this incredible development in 2021.

Other Activities

The Centre newsletter, The StarSeeker, is distributed electronically nine times in the year.

RASC Calgary Centre Council January and February 2020 meetings were held at the Calgary Public Library Central Branch and then were hosted online by the Calgary Library.

Note: considerable time and leadership resources were spent dealing with some membership issues arising from the 2018 RASC National Annual General meeting held at the University of Calgary, June 2018.

Peter Brackett

Secretary

EDMONTON CENTRE

The date was 2019 December 31. Everyone across the globe was celebrating with great anticipation and excitement, in one way or the other for the upcoming decade. People had plans on how their life was going to change in this new decade. Little did they know the impact one change would make to the entire world. COVID-19 was just a virus in 2019 but China was the first country to lock down in January, and by March the Canadian government followed in their footsteps. As of March 15, the Edmonton Centre ceased all in-person meetings and events. Everything in our lives were forced to go virtual and we weren't the exception. Decisions needed to be made, and they needed to be made quickly. First things first, a \$200-a-year virtual Zoom subscription was approved for all meetings: regular monthly meetings, and Council meetings were all to be conducted on Zoom. Observer Meetings, Astro Cafes, as well as upcoming programs that were going to be in person at the newly renovated Queen Elizabeth Planetarium, were all to be conducted online through Zoom; programs like the Introduction to Stargazing and What's up Over Edmonton. Like all new things, there was much we all had to learn when it came to online technology and many more glitches that we had to fix. A glitch ended up being synonymous to being stuck in traffic. But the world came together, and we all tried to help one another, and we were patient with each other's technical difficulties.

At the end of 2019, the people attending the Observer's group meetings requested that we change our usual meeting spot at the Boston Pizza on the west end to a more central downtown location. Two meetings were held in person and eight were hosted via Zoom. On March 16, the Observer's Group meeting was the first of the many Centre meetings hosted online. As mentioned above, it was a bit challenging for both the participants and the host, but they made it work with guidance and patience, as we have been attracting former members and guests from outside of the Edmonton and greater area to as far away as North Carolina.

Distant guests were attending many meetings virtually. One of our previous members, Franklin Loede tuned in from North Carolina, and became regular again at our monthly meetings. Our meetings seem to have gotten shorter when done virtually. This could have been because of the ease of talking to one another had come to a standstill and as a result there were more silences in the crowd when our president and meeting host told one of his many jokes. But all jokes aside, some topics in our in-person monthly meetings had become a program of its own. Things like What's up in the Sky for the current month focused more along the lines of our more northern Edmonton skies. The virtual meetings allowed us to connect with people across North America and had featured guests tuned in to present their research from places like Hawaii.

By October, many businesses and events managed ways to alter their plans to continue forward alongside the COVID-19 restrictions. The anticipated annual Jasper Dark-Sky Party had figured out a way to adhere to COVID-19 guidelines and still proceed with their event. They reached out to the Centre to see if we were interested. However, after discussing it with our council members, it was decided that we would decline, due to the close contact RASC members have when sharing their telescopes. There was discussion whether we could hook up a telescope to a display on a screen. However, due to the timeline and lack of suitable equipment, it was not pursued.

If the pandemic has taught us anything, it is "patience is a virtue." The Black Nugget Lake Observatory committee as well as the rest

of the members of the RASC were looking forward to seeing the first light of a long-awaited custom built 32" telescope in 2020. Unfortunately, telescope construction by Edmonton RASC member Roman Unyk was understandably delayed. This gave the committee members more time to work on the housing of the telescope.

However, construction of the observatory was shut down for a short while due to provincial COVID-19 restrictions. An exemption was requested, and granted, allowing BNLO volunteers wearing appropriate PPE to essentially complete building of the 14-foot domed observatory that will house the 32" scope. Partial landscaping of the grounds was also finished by BNLO volunteers in 2020. Construction of the telescope continues, with first light hoped for in 2022.

Overall, the pandemic has been a blessing in disguise in many ways. Sure, we had our technical glitches and at times still do, however, with our outreach spreading across North America and people finding ways to go out and still follow COVID 19 protocols, our membership has increased by almost 10%. Astronomical gear as well as telescopes taken from our very own loaner program are at their highest, despite us needing to close and reopen the program throughout the year to abide by COVID-19 restrictions. Across Canada, telescope shops have been out of stock and there is a wait list for the scopes we have in our storage facility downtown when the program reopens again.

2021 brings hopes of vaccination and hopefully a sense of normality back into our lives, but the question that once was "how are we going to adjust to these unprecedented changes?" Has now moved to "how can we keep these changes?"

Sukrit Ahluwali
Secretary

HALIFAX CENTRE

Despite the effects of the pandemic, Halifax Centre had a busy and successful year with regular meetings and a variety of outreach events promoting astronomy to its members and the public, when allowed. The Outreach Committee and many Centre volunteers carried out activities and worked in partnership with Saint Mary's University (SMU), Dalhousie University, the Minas Astronomy Group, and The Discovery Centre to host and support many programs and activities.

Centre Meetings

Ten monthly meetings were held the first Saturday of each month. For the first three months, they were held in facilities provided by SMU and the Board met immediately before the Members' meeting. The Centre's library cart was available for members to peruse, and refreshments were served during the break at each meeting. Following the provincial lockdown on March 22, Members' meetings and Board of Directors meetings were held via Zoom. Members' meetings were recorded and posted on the Halifax Centre YouTube channel. The Annual General Meeting (AGM) was held using Zoom on 2020 December 5. Our Members' BBQ traditionally held in September was cancelled.

The Halifax Centre continued hosting a series of speakers at each monthly meeting with attendance varying from 40 into the 50s with an increase in the number of female members. Regular presentations included Paul Heath's monthly installment of Food for the

Soul, Paul Gray's Members' Photo Montage, Dave Chapman's What's Up?, and Judy Black's News from the Board. Continuing as part of our meetings were presentations of sections of the *Observer's Handbook* by members Paul Heath (Dwarf Planets), Paul Gray (Meteors), Judy Black (Lunar Observing; Weather Resources on the Internet), David Hoskin (Solar Observing), and Pat Kelly (Minimum Visual Magnitude; Astronomical Twilight and Sidereal Time).

Special meeting presentations included News from National RASC (Phil Groff), What's Happening to Betelgeuse? (David Turner), launch 50 Animals that Have Been to Space (John & Jennifer Read), Variable Stars: Observing and Reporting (Paul Gray), Anatomy of an Imaging System: What Toys do you Need? Parts 1 & 2 (Blair MacDonald, Jerry Black), Cap the Light. Save the Night (Tim Doucette), All About Mars: The Science of What You're Seeing (Pat Kelly), Double Stars (Pat Kelly), and Paul Gray presented How to read an RASC Calendar: Front to Back and Back to Front, at the AGM. Discussion of RASC lunar observing programs was recorded in The Litchfield Discussion by Jerry Black; it was hosted by Melody Hamilton and Judy Black and posted on the Halifax Centre YouTube channel.

Halifax Centre Website (<https://halifax.rasc.ca/index.php>)

The Centre's website is administered by Jerry Black and Dave Lane and is hosted at Saint Mary's University. It is a responsive web design, includes updated Halifax Centre information and has site search capabilities.

Halifax Centre Policy Development

Adjustments made to the reporting mechanism for all appointed positions (except National Council Representative and Honorary President) were approved. Thanks to the work of Judy Black (Chair, Governance Review Committee), Paul Gray, and Gregg Dill, three new policies were approved:

- Policy G8: RASC Halifax Centre Astroimaging Contest (revisions only)
- Policy G9: RASC Halifax Centre Guidelines Regarding In-Camera Sessions, and
- Policy G10: Policies Regarding Permitted Commercial Activities at RASC Halifax Centre Meetings and Events

St. Croix Observatory (SCO)

The Centre's dark-sky observing site is approximately 40 minutes from Halifax. The observatory has three buildings: observatory with a roll-off roof and a 16" Go-To Sky-Watcher Dobsonian, warm room, and storage/toilet facility.

An upgrade to the site was proposed. The Board of Directors Meeting on Requisition was held in September to specifically identify and address the need for, and financing of, improvements. Consequently, a Members' Meeting on Requisition was held in October. Members agreed to the Board's proposal for the upgrade and for requesting member donations to augment available Centre funds. Blair MacDonald, Jerry Black, and Jason Dain generously provided astro-images for purchase as part of the fundraising endeavour.

Halifax Centre Newsletter — Nova Notes

Charles White produced 4 editions in 2020, with a range of 9 to 16 pages per issue that were posted on the Halifax Centre website with notifications emailed to our list. An average of 9 copies were printed and mailed to members. The newsletter contained articles, photos, astrophotos, Paul Heath's poetry, and Members' Meeting write-ups provided by Centre members. Publication will carry on through 2021.

The contributors to *Nova Notes* were Dr. Roy Bishop, Judy Black, Michael Boschat, Paul Heath, Pat Kelly, Fiona Morris, and Charles

White. Photo contributors were: Jerry Black, Michael Boschat, Dave Chapman, Jeff Donaldson, Art Cole, Jason Dain, Jeff Donaldson, David Hoskin, Blair MacDonald, and Charles White. Astro-sketchers were Dave Chapman and Michael Gatto.

This was Charles White's final year as Editor. We thank him for the three years of dedicated service to producing the record of our Centre's activities in *Nova Notes*.

Education and Public Outreach

The Halifax Centre can be proud of its outreach again this year during the first three months before lockdown and in the months following. We participated in the following: library presentations, school and park presentations, youth-group talks, and a few outreach events. SCANS sessions were held virtually, and student introductory astronomy classes (THRIVE) were held. Members also made astronomy presentations in support of other groups' events such as The Discovery Centre and The Deanery Project. We celebrated over 3,500 Galileo moments in 2020, with approximately 25% being youth!

Several virtual sessions regarding astrophotography processing using ImagesPlus (Blair MacDonald) and PixInsight (Jeff Donaldson) were held virtually and recorded. Tony Schellinck also provided several videos about purchasing telescopes, InOMN, and how to use binoculars.

Thanks to funding from RASC and Toronto Centre, additional videos of the 2015 RASC GA presentations are posted on the Halifax RASC YouTube channel. These were produced by videographer Halley Davies.

Nova East Star Party, Smileys Provincial Park

Nova East 2020 was cancelled as a camping event due to COVID-19. However, six members slated to present in August agreed to a speaker series with one per week from August 4 to September 11. Thank you to Kathy Walker, Paul Heath, Tony Schellinck, Pat Kelly, David Hoskin, and youth members Keegan Oickle and Fiona Morris. These sessions were recorded and posted on the Halifax Centre YouTube channel.

Halifax Centre Astroimaging Contest

The astroimaging contest was held with a record 34 submissions. The winners were announced virtually at the October Members' Meeting. Thanks to our adjudicators Blair MacDonald and Mary Lou Whitehorne. Congratulations to our winners Jason Dain for Wide-Field (Milky Way Bayswater), David Hoskin for Solar System (Aristoteles and Eudoxus, the 'Bike Wheel' lunar craters), and Jeff Donaldson for Deep-Sky/Prime Focus (IC1805). Jerry Black won the People's Choice Award for his photo Observing Comet NEOWISE in Solitude. Thank you to all who submitted and to Alan Sutherland of Atlantic Photo Supply for the generous canvas reprint prizes for the winners.

Dark-Sky Preserve (DSP) Support

The Centre supported Kejimikujik National Park and National Historic Site which has been a Dark-Sky Preserve since July 2010. The Dark-Sky Weekend was cancelled this year due to major renovations being done to the front country at the Park (and to COVID-19). Thanks to co-chairs David Chapman and Tony Schellinck for their continuing consultations with the Park.

Member Achievements & Recognition

RASC Explore the Universe observing certificate was awarded to Stewart Cameron, David Chapman, Lisa Ann Fanning, Karen Hamblin, and Troy Sweeney. RASC Explore the Moon observing certificate (telescope version) was awarded to David Hoskin and Tony Schellinck. RASC Finest NGC observing certificate was awarded to

Tony Schellinck. RASC Isabel Williamson Lunar Observing Program (IWLOP) certificate was awarded to Melody Hamilton.

Four members received special honours. John Read received the RASC Simon Newcomb Award and Dave Chapman received the distinction of Fellow of the RASC. Jason Dain won the *SkyNews* Photo of the Year. John McPhee won the 2020 Friends of Keji Photo Contest with his photo Milky Way, Jupiter, Mersey River.

Several of our members were recognized in various publications: Chronicle Herald (Michael Boschat), Our Canada in Readers' Digest (David Hoskin), *SkyNews*—Rising Stars (Keegan Oickle and Fiona Morris), *SkyNews* (Tim Doucette (cover), John Read, Dave Chapman), *JRASC* (Blair MacDonald, David Turner) and banner of the online RASC Weekly (Blair MacDonald, Art Cole).

Goals for 2021

For the coming year, hopefully with pandemic restrictions being reduced as the year progresses, the Halifax Centre is committed to facilitate and instigate public and member education and outreach programs. The Centre will continue the sidewalk observing sessions and library talks. It will support Kejimikujik National Park and National Historic Site, maintain the Centre and Astronomy Nova Scotia websites, and revise the Board Reference and Policy Manuals as required. Nova East Star Party date is 2021 August 6-8 but is on hold until restrictions for gatherings and provincial park camping abilities are established. The Centre will also determine the Centre's fiscal, event and activity priorities for the coming 3-5 years, including its relationship with The Discovery Centre and the planetarium.

Judy Black

President



2020 has proven to be a difficult year for the Hamilton Centre. Up until April, the club was continuing its mandate of providing knowledge, support, and guidance in astronomy to our members and the community at large. The COVID-19 pandemic, which started in full in March, brought everything to a crashing halt. We were no longer able to directly interact with anyone due to lockdown restrictions and given that our membership demographic is older, we had an increased responsibility to the members not to further endanger them with in-person gatherings of any kind, meetings, the observatory, or any public gatherings for events like sidewalk astronomy. At first, we did not do very much, since there was the hope that this was short lived, and we would be able to get back to some more normal situation soon. As it became more and more apparent that this pandemic was going to be in place for a while longer, we began to put plans in place to increase our virtual presence and to seek alternate methods of getting the "word" out for astronomy.

The main change to our day-to-day activities came in the form of the move to a virtual meeting environment based on Zoom. This service was used for all general and board meetings, public events, and education opportunities. Our general meeting format was moved to a weekly event of an hour duration. This was chosen to provide our membership with a more frequent and scheduled social event. The meetings have been very informal with members getting together to talk astronomy and share stories. Anyone can present at our meetings and very frequently do, on a wide range of topics. We have been treated to impromptu talks on astrophotog-

raphy, image manipulation, 3-D printing, not to mention numerous slide shows of the latest member astrophotos. In addition, several guest speakers have been organized to present. The virtual nature of the meetings has allowed us to get a much broader group of speakers, including from the KECK, CFHT, SnoLabs, University of Toronto, University of Western Ontario, and several astronomy vendors, equipment manufacturers, and amateur astronomers. It is hopeful that, even after we can get back to some type of normal, we will keep up some sort of virtual get-together as it has proven to be entertaining and well received.

Several members have also made themselves available to the public and have given talks to schools, clubs, and seniors groups on several topics such as general astronomy, the RASC, the Hamilton Centre, and astrophotography. These talks have been delivered either online using tools like Zoom or over the phone utilizing a conferencing service.

We continue to utilize the club website, Facebook, and Twitter to announce the events to the public and provide people with daily doses of astronomy news and information. Regular observation evenings and public events have been curtailed until such time as it is deemed safe to gather in groups.

For education, the club started to review the NOVA program that we had been delivering for several years now to see if it could be updated for more current scientific information and technological advances. We have reached out to the national body to see the interest in expanding this concept out to include all the Centres and, as of the end of the year, plans have started to move this update exercise to national under the Education and Public Outreach Committee and will be including most of the other Centres in this effort.

2021 is looking to be a continuation of the new reality that started in March of 2020, but it is the hope that, with the development of the vaccines and the inoculation of the public, we may well see some type of a return to a more normal life by the end of the year. In the meantime, Hamilton Centre will continue to adapt to our changing reality to deliver astronomical knowledge and leadership to our members, organization, and the public we serve.

Greg Stopelli
Secretary

KINGSTON

CENTRE

Introduction and Background

In this our 59th year (1961–2020), the Kingston Centre is holding its own. Membership numbers have been relatively stable around 65 for the last 10 years and our financial status is good.

We have been provincially incorporated as a not-for-profit entity since September 2005, and as a federally registered charitable organization since September 2006. We have been running short of a full slate of Executive for some years now, with many Executives doubling up on duties and jobs that required work.

Since then, we have been working with a fixed \$23/member fee and have run small surpluses in 9 of the last 10 years. Donations to the Centre continue to contribute more than membership fees, but this cannot continue as donations for public outreach and for a Centre observatory will not happen if there is no outreach and no observatory.

The Executive is still in the older governance model (members directly elect Officers), awaiting the proclamation of provincial legislation to start the move to the new Board of Directors model (members elect Board of Directors, Board appoints Officers), along with a volunteer or three to get the draft done.

Future Goals

Our search for observatory land is now well over a decade old and has not had any success in locating land for purchase or long-term lease. Without a central meeting place for observing groups, work parties, or outdoor social events, the Centre is in a holding pattern with much of its library, equipment, and outreach material in storage at members' homes. We are looking at additional member benefits such as paid access to a remote telescope. Surveys show that interested members want to drive the telescope, not simply submit observation requests.

The past year

COVID—how can we have a report on 2020 and not talk about COVID? Our last regular in-person events were our monthly meeting on February 13 and an Astronomy on Tap event on February 27.

Our March meeting was cancelled and our first virtual meeting using the Zoom videoconferencing platform was held on 2020 April 9. Regular monthly meetings continued virtually in May, June, September through December.

Starting on 2020 April 29, we now hold an additional virtual Weekly Social Chat on Wednesdays for 1 hour. This is an informal coffee house style with a host moderator and any and all members and their guests can show off a few images, ask questions, etc. It has been a big success and will continue for the foreseeable future.

2019–2020 Meeting Summaries:

November 14, was the Centre's Annual General Meeting and Elections. Nominees must be a member in good standing, be at least 18 years old, be mentally competent, and cannot be bankrupt.

- President—no nominees or volunteers
- Vice-President—no nominees or volunteers
- Treasurer—Susan Gagnon Acclaimed (2-year term) Carried Motion AGM2019-05
- Editor—no nominees or volunteers
- NC Representative—no nominees or volunteers.
- Appointment of Auditor—Stephen Craig acclaimed. Carried Motion AGM2019-06

The remaining Board consists of: Treasurer Susan Gagnon, Secretary Kevin Kell, Librarian Kim Hay.

The Board will ask for volunteers or nominees going forward and make appointments as needed. At a minimum we require a President, Secretary, and Treasurer.

After which the invited guest speaker Patrice Scattolin from Montréal spoke about his Winter Star Party experiences.

December 12, the Centre did not hold a Regular Monthly Meeting but rather gathered for a Holiday Dinner at a local restaurant with a tableful of door prizes!

2020 January 9: a regular meeting without an invited speaker featured member presentations: Laurie Graham-Planetary Nebula, Rick Wagner-What's Up in the Sky, Hank Bartlett- ISS transit of the Moon. Following the break were observing reports from Brian Hunter, Rick Wagner, Steve Craig, Bruce Elliott, and Kevin Kell.

February 13, a regular meeting without an invited speaker featured member presentations: Peggy Hurley-Stonehenge, Rick Wagner-What's Up in the Sky. Following the break were observing reports from Graeme Hay, Kevin Kell, Bruce Elliott, Steve Craig, Rick Wagner, Hank Bartlett, and Peter Hutchison.

March 12—COVID-19 cancellation

April 9—first test virtual meeting with National Zoom account. Susan Gagnon gave a remote tour of her observatory. David Levy read some poetry. Was terminated early by another witless user that shutdown our meeting.

May 14—a regular meeting with an invited speaker featuring Phil Groff, Executive Director, speaking on the State of the RASC.

Regular segments followed: Rick Wagner—What's Up in the Sky. Following the break were observing reports from Steve Craig, Mark Kaye, Rick Wagner, Kevin Kell, Brian Hunter, Mark Deslaurier, and Hank Bartlett.

June 11—a regular meeting without an invited speaker featured member presentations: Rick Wagner—What's Up in the Sky, Steve Craig—Battersea Observatory, Hank Bartlett—Hank's Sun Spot. Following the break were observing reports from Rick Wagner, Bruce Elliott, David Levy, Mike Hanes, Keith Neumark, Graeme Hay, Ian Levstein, Paul Winkler, Graeme Hay, Kevin Kell, and Kim Hay.

July-August—no regular meetings.

September 9—a regular meeting with an invited speaker featuring Paul Gray, Halifax Centre, speaking on "Construction of a backyard observatory."

Following the break were regular segments: Rick Wagner—What's Up in the Sky, Hank Bartlett—Hank's Solar Spot, followed by observing reports from Graeme Hay and Bruce Elliott.

October 14—a regular meeting without an invited speaker featured member presentations: Kevin Kell—small-job volunteer list, Rick Wagner—What's Up in the Sky, David Levy—poetry reading, Hank Bartlett—Hank's Sun Spot, Susan Gagnon on the National outreach virtual meeting and a local Pathfinder virtual outreach session. Following the break were observing reports from Rick Wagner, Bruce Elliott, Mark Deslaurier, Asser ElGindy.

November 11—Annual General Meeting and Elections for Secretary, Editor, Librarian, National Council Rep. No invited guest speaker but with member presentations after the AGM. Rick Wagner—What's Up in the Sky, Laurie Graham—How Old is Everything?, Kevin Kell—Trifecta visit to the three local Dark-Sky observing sites in the eastern Ontario region: Lennox and Addington Dark-Sky Viewing Area, The Ministry of Natural Resources Irvine Lake "Nirvana" airstrip, and the north Frontenac Dark-Sky Preserve, and Bruce Elliott. Kevin Kell talked about a new initiative of an Annual Members' Image Gallery, for members to submit their best image, why they chose it, and the tech specs behind it.

December 9—normally our Holiday Dinner but COVID-19 Cancelled.

A regular meeting with a scheduled invited speaker—Jenna Hinds (National Office) on the RASC Robotic Telescope Project. Followed by John Hurley—RASC National Council Report, Rick Wagner—Science on the Robotic Telescope, Rick Wagner—What's Up in the Sky, Member Observing Reports—Steve Craig, Kevin Kell, Hank Bartlett—Hank's Sun Spot.

Kevin Kell
Secretary

Our Kitchener-Waterloo Centre started its 68th year as an astronomy club. First founded in 1953 as the Kitchener-Waterloo Amateur Astronomers and Telescope Makers. We became a centre of RASC in 1984. Our members have long experience in the night sky. We hold two meetings a month, the first being the General meeting held at Wilfrid Laurier University and the second, Stargazers 101, is held in a local Zehrs store in Kitchener. The meetings are the focus of club activities. While the General meeting has traditionally covered subjects more theoretical, Stargazers 101 has been a forum for more hands-on presentations.

January started off normally with the usual presentations of observation reports, talks on various topics as Listening to Meteorites, members' visits to observatories in California, Arizona, Chile, and Holland, and the introduction of new astronomy equipment. Standard presentations were "What's New in the Night Sky," our longest running talk of "What's Up" in the next month, and Moons, Planets, and Deep Sky objects.

February started out well with the club having a month-long display of members' astro-images at Kitchener City Hall. An introduction to the night sky was given at the KW Telescope store to new telescope buyers. We were getting updates on incoming comets like Atlas and T2 PanSTARRS. The skies were starting to clear.

And then the world was hit by the outbreak of the Covid 19 Pandemic. Well, if anything, astronomers are adaptable, and we quickly adapted to meeting online using the ZOOM webinar program. Online meetings started out with 20 attendees and quickly doubled in size. Meeting formats carried on as normal. Going online made it easier getting guest speakers. In April, we had famed planetary imager Christopher Go give us two 3-hour sessions on astroimage processing from his home in Cebu, the Philippines. He gave us a live demonstration of imaging Jupiter and Saturn. The 12-hour time-zone difference helped.

In May, Larry Mitchell, his son Jason, and Jim Goetz built our Centre's only piece of infrastructure. We installed an outhouse at our dark-sky observing site. It is called "The House of Many Moons."

Our 17th annual Astrophotography Contest had a record 46 entries in 7 categories, including the new category of Remote Data Acquisition. As always, the quality of images was excellent and there was a seven-way tie in the Best Overall category.

Then in April, two highly anticipated comets broke up. Feeling let down by our "Comet Lady," we were a little jaded when she announced the approach of Comet NEOWISE. In June, we finally woke up and started a lot of predawn observing of the best comet appearance in decades. It then moved into the evening sky with the last good day on July 28.

Adhering to the pandemic restrictions, we started going out to our dark sites for a summer of really clear skies. Regular star parties were off the table so we resorted to Sidewalk Astronomy. Without promoting events, we just set up telescopes and showed the night sky to whomever passed by. This kept the numbers small and spread out throughout the evenings. John Dobson would have been so proud.

The Perseids were a disappointment this year but Jupiter and Saturn were perfectly positioned to give people their first look at the planets. After sunset, from right to left were Jupiter, Saturn, Neptune, Mars, and Uranus, all in the same quarter of the sky.

In late September we held our members-only Equinox Star Party at



Marie Newnham



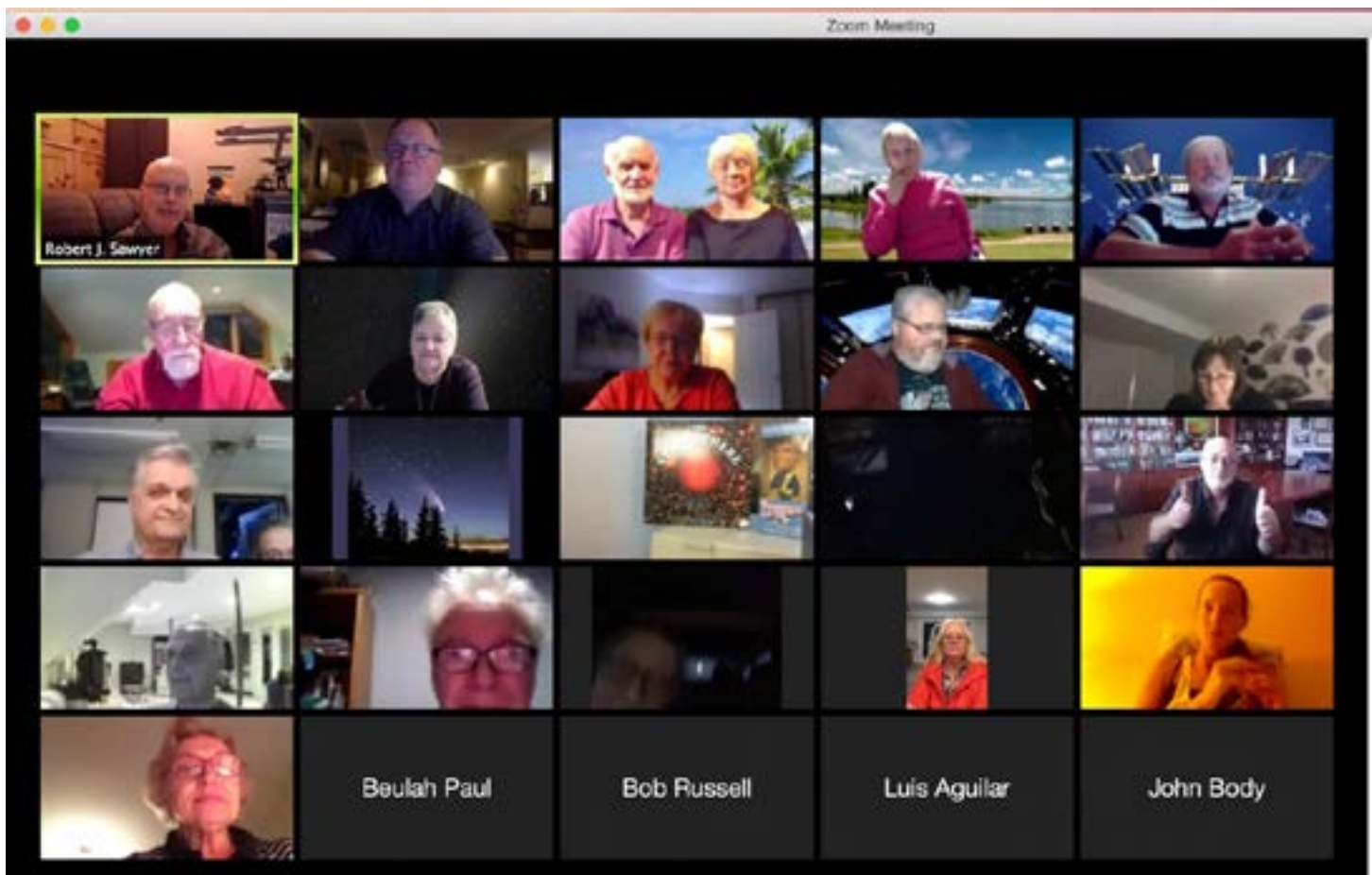
Ellen Papenburg



Peter Pekurar



Steve Holmes



the Huron Church Camp at Bayfield. This year we had clear skies on all three nights with some very cold evenings.

People

At the heart of our club are the people who bring their years of experience and passion to make things work. Here are some of our most notable members of 2020.

Ellen Papenburg has been in amateur astronomy for 50 years. Her greatest interest is following comets. Our “Comet Lady” created a buzz in the club with Comet Atlas and Comet T2 PanSTARRS until they fell apart approaching the Sun. She redeemed herself when Comet NEOWISE made a spectacular trip across our sky. This comet event became the club’s highlight of the year.

Marie Newnham has a passion for our Moon. There is always something new to learn when she speaks. The deep sky pales in comparison to her knowledge of things to observe on our lunar neighbour. Ellen and Marie have spoken at almost all of the meetings this year and we still can’t hear enough from them.

Steve Holmes, our twice-time President, has guided the club for many years. He was one of the leading members in the introduction of astrophotography into the club. He has run the club’s Astrophotography Contest for many years and is our lead with the RASC Robotic Telescope. Steve’s efforts were recognised this year with the RASC Service Award at the 2020 General Assembly.

Peter Pekurar is a telescope maker and has worked on a number of projects over many years. His “Hobbit” telescope is recognised as an impressively unique design. At Stellafane 2019, he demonstrated his spray silvering technique for telescope mirrors. For his success in advancing telescope technology, Peter was awarded the Ken Chilton Prize Award at the 2020 General Assembly.

Conclusion

By the autumn, the club was fully adjusted to the new normal with the pandemic. Talks at the fall meetings were on the Schupmann Telescope, Interstellar Objects, Swirls on the Moon, the OSIRIS REX mission, and Dr Lauche Scott on monitoring satellites and space debris. The December meeting ended the year with Dr. Bradley Schaefer presenting the Star of Bethlehem, New Discoveries.

All in all a very successful year for the K-W Centre. We are anticipating great things happening in 2021.

Jim Goetz
Secretary

LONDON CENTRE

The London Centre is pleased to report that, while 2020 was a challenging year due to COVID-19 impacting in-person meetings, the leadership of the Executive Team enabled the Centre to maintain our regular monthly member meeting schedule and host outreach events using the Zoom video platform.

Membership Report

Despite the challenges of COVID, the membership increased from 78 members to 87 for a growth of 11.5%.

Monthly Meetings

The London Centre held its regular meetings in 2020 on the third Friday of each calendar month. The meetings were opened by Norm McCall, President followed with a Power Point Presentation on observing by Dale Armstrong, the Observer's Chair and followed with either a Member or Guest of Honor presentation.

In March, due to COVID-19 restriction, we switched to on-line meetings using the Zoom video platform. The typical attendance at our monthly Member Meeting ranged from 20 to over 63 for a special Guest of Honor speaker.

The main or Guest of Honour (Goth) speaker and talks are listed as follows:

- 2020-01-17 goth, Steve Holmes, Kitchener Centre, "The Carrington Solar Event of 1859 and Its Implications."
- 2020-02-21: Bill Gardner, London Centre, "Portable vs. Permanent Astro-Imaging Setups."
- 2020-03-20 This was our first Zoom meeting. Peter Jedicke Past President, London Centre presented on "The Nature of Time"; and Dr. Mark Tovey Postdoctoral Fellow, Western University, presented a workshop on "Star Patterns in an illustration by Gustav Dore."
- 2020-04-17 GoH, Randall Rosenfeld, Archivist, "Truth at the Eyepiece—Do We See Eye-to-Eye with our Astronomical Predecessors, and If Not, Why?"
- 2020-05-15 GoH, Dr. Robert Jedicke, Research Professor, Institute for Astronomy, University of Hawaii, "Asteroid Mining."
- 2020-06-19 GoH, François van Heerden, Toronto Centre, "Using Live Video (Electronically Assisted Astronomy) for Public Outreach."
- 2020-07-17 GoH; Rick Saunders, London Centre, "Image Processing for Astrophotography."
- 2020-08-21 GoH, Dr. Gerald Schieven (24th London Centre President, 1980–1981), "From Baby Planets to Black Holes: ALMA and the Event Horizon Telescope."
- 2020-09-18 GoH; Dave Chapman, FRASC and Society Life Member, Dartmouth, Nova Scotia; and Cathy LeBlanc, Acadia First Nations Mi'kmaq Cultural Interpreter, and a member of the Big Drum group Women of the Shore. Presentation: "Connect with Mi'kmaq Moons—a Two-Eyed Seeing Approach."
- 2020-10-16 Members' Night, Dale Armstrong "Observing Mars" and "What's Up in the Sky," Mohammed Mubeen "A Two-Year Journey in Astronomy," Tom Glinos "Building Aluminizing Equipment," Patrick Whelan "A Backyard Astro-Hut." This was our most-attended meeting with over 60 visitors.
- 2020-11-20 GoH, Randy Attwood, Mississauga Centre, former Executive Director, presented "Apollo 13—The Flight That Failed."
- 2020-12-18 Dale Armstrong, Vice-President London Centre presented "Arizona Observing Trip 2020."

At the November Member Meeting Dave McCarter was presented with a plaque acknowledging the many hours of service, leadership, and enthusiasm that he provided to the Centre over many years.

The monthly meeting attendance varied from a low of 21 to a high of 63. The March meeting was cancelled due to COVID restrictions.

The Centre had two formal Executive Meetings held via Zoom on August 30 and December 19.

Center Outreach Events

In 2020, there was a total of 20 Public Outreach Events (including 7 Zoom webinars) for a total of 1,178 public visitors including 262 youth. London Volunteer person hours for January 13 through November 28 came to 78 person hours.

Western University Hume Cronyn Observatory Outreach

A major area of outreach for the London Centre is our coordination with Western University in hosting Hume Cronyn Public Outreach activities for a variety of groups. As these events are highly promoted on Facebook and social media, they garner much interest from all age groups. The highlights are summarized in the following sections.

Cronyn Public Night Events

During January and February there were 4 Public Nights involving 206 visitors, including 157 adults and 49 youth.

Two Centre members who assisted in these events were Robert Duff (4 events) and Mark Tovey (1 event). London member and graduate student Heather MacIsaac coordinated the Public Night on January 13. This outreach represented 10 volunteer person hours by London Centre.

Cronyn Special Public Events

There were 2 Special Public Events at Hume Cronyn Observatory, 2020 February 11 and August 6, involving some 157 guests (77 adults and 80 youth). There were 150 visitors for the Girls and Women in Space Night (International Day of Women and Girls in Science), February 11; and 7 participants in the Zoom Solar Observing event for the Pocket-Sized Farms Virtual Camp, August 6.

The 4 Centre members who assisted in these events were: Robert Duff, Norm McCall, Mohammed Mubeen, and Mark Tovey.

Exploring the Stars Events

Eight Exploring the Stars events took place at Cronyn Observatory between January 16 and March 12. Winter semester bookings saw 176 visitors (43 adults and 133 youth) for 8 events. All events were cancelled on March 12 due to COVID-19.

Robert Duff assisted in these 8 events, putting in 12 volunteer Member Person hours.

Virtual Public Nights

London members participated in 5 Cronyn Observatory Virtual Public Nights: July 11 - September 26 (International Observe the Moon Night), October 24th (Mars Opposition) and November 28.

Zoom events from the Hume Cronyn and SkyThrall Observatories included London Centre Members: Peter Jedicke, Robert Duff, Mark Tovey, Henry Leparskas, Norm McCall, and Heather MacIsaac. Attendance ranged from 20 to 272, with 623 visitors total; London Centre contributed 44 volunteer hours.

SkyThrall—Virtual Astronomy Event

The London Centre held a Zoom event for the Westmount Cub Pack on September 29, in coordination with Dave Chisholm of the Ottawa Centre, who is also a Group Commissioner for Scouts Canada. Dave has been doing "Introduction to Astronomy" sessions for Scout groups across Canada. London participants included Norm McCall, from his backyard SkyThrall Observatory, and Peter Jedicke and Robert Duff from their homes.

Two PowerPoint presentations were given by Dave and Norm. Live observations of the Sun were made from SkyThrall using Norm's Celestron C-11 telescope.

Archival of Centre Records

Norm McCall initiated archiving London Centre activities with the collection of historical records, files, documents, and pictures made over the years. Two identical digital copies will be stored on external disk drives. The archiving effort is on-going and will be completed in 2021.

Fingal Observatory Upgrade

Under the direction of Norm McCall, the Centre undertook a project to upgrade the solar panels, battery charger, and associated wiring system at the club's Fingal Dark-Sky Observatory. The existing 12-year-old 80W solar panel had degraded over time. The replacement consisted of two 160W solar panels, a 40A MPPT Charge Controller, a PM50 power tracking meter, a new circuit-breaker panel, and a lightning surge arrestor.



Figure 1: Solar Panels on Roof of Fingal Warm-up Room



40A MPPT Battery Charging System, Fuse Panel, Power Meter & Lightning Arrestor

Observing Certificate Achievements

The London Centre actively encourages members to complete RASC Observing Certificates. This year Bill Gardner completed and received the RASC Wide Field Certificate. Previously, in 2019, **Henry Leparskas** completed the Explore the Moon Certificate and was presented with the framed Certificate.

Centre Observing Events & Activities

2020 was both a difficult year and an exciting year from the point of observational astronomy. On the one hand, while the pandemic threatened to shut down the London Centre's observing facility, both comet Neowise and the opposition of Mars motivated members to get out and observe.

Due to COVID-19 public health restrictions and protocols, impacting the use of our Fingal observatories, Dale Armstrong, with assistance from Public Health, was able to develop a policy governing the use of the observatories and the observing pad. As our observing pad is the floor of a former aircraft hanger, there is an enormous amount of room for the requisite social distancing. The solution was to restrict access, allowing only one observer per observatory, per night. One unforeseen curveball was that the Fingal Wildlife Management Area became so overrun with day visitors that they were forced to change their gate lock, restricting the number of keys available to London Centre. It took until the beginning of August before the issue was fully resolved.

There were 24 different observing sessions at Fingal over the course of the year. These ranged from solo trips to good turnouts for observing nights on August 22 and September 19. On December 12, Dr. Peter Brown and Dr. Margaret Campbell-Brown joined Dale Armstrong at Fingal for a brief window of Geminid meteor observing. Peter remarked that it was the best Geminid show he'd seen in ages.

As comet Neowise was not easily visible from Fingal, there were numerous trips to dark sites north of London over the course of July. Observatory Drive, near the Elginfield Observatory, saw at least four visits to see the comet. In addition, on July 18, several members joined Frank Sowa at Port Franks beach to see the comet under the dark skies of Lake Huron.



Figure 3: Comet Neowise at Black Lake, by Ryan Fraser.

Member Astrophotography Pictures

The following are small sampling of the beautiful images taken by London Centre members.

Summary

In spite of the restrictions of COVID-19, the London Centre Executive considers 2020 a very successful year. We are proud of Member achievements and of their support in stimulating public interest in astronomy by hosting on-line Visual Astronomy events and maintaining a consistent Monthly Meeting schedule.

Norm McCall

Vice-President

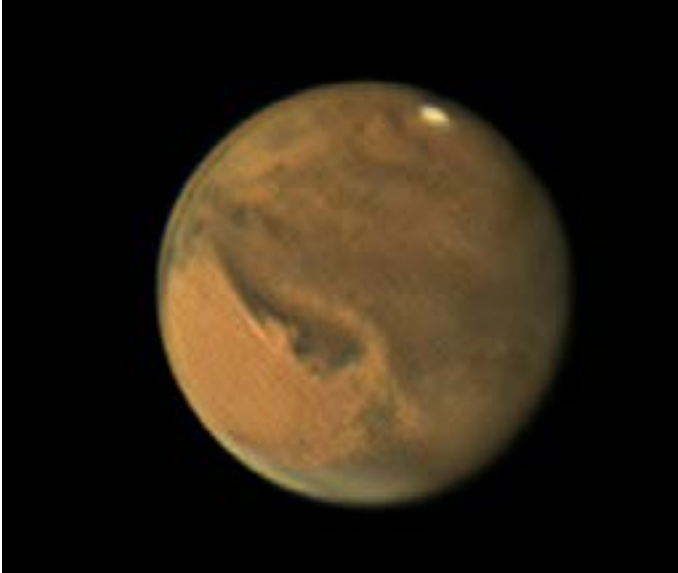


Figure 6: Mars at Fingal, by Dale Armstrong.



Figure 5: Milky Way and Fireflies at Fingal, by Mohammed Mubeen.



Figure 7: Soul Nebula by Ewa Pasiak.



Figure 4: Comet Neowise at Port Franks, by Joe O'Neil.

MISSISSAUGA

CENTRE

The year 2020 was an unusual one for the Mississauga Centre and for everyone worldwide. With the onset of the COVID-19 pandemic, the National Office and all the Centres had to rethink how to support and interact with the membership. For the Mississauga Centre, the year began as usual with Friday night meetings at 8:00 p.m. at the University of Toronto Mississauga. Five in-person meetings were held, but by mid-March the in-person meetings were cancelled, and the Centre had to determine how to continue our programs and our relationship with our members.

The National Office led the way, using Zoom and YouTube to reach out to all members with online programs. The Mississauga Centre followed, starting online programming on June 19, with a Potpourri Night using Zoom. Next came some excellent Speaker Nights, and eventually the Centre ramped up to two meetings a month using Zoom and YouTube.

Thanks go to everyone who pitched in to find speakers and volunteered to present at Potpourri Nights, and to all the members who came online to support the virtual meetings. As 2020 comes to a close, we are still in the virtual world, but we are together in supporting our Centre.

The year 2020 brought us the exciting visit of Comet NEOWISE to our skies. Our members, following pandemic rules, went outside to observe and photograph the memorable event, and our Centre email list was alive with their stories and wonderful pictures. In December 2020, the excitement of the conjunction of Jupiter and Saturn gave members another opportunity to discuss, observe, and photograph the sky.

The Mississauga Centre thanks the University of Toronto Mississauga for their generous donation of their facilities for our meetings. We hope to be back in person soon.

In 2020, there were eight Speaker Nights:

- | | |
|--------------|---|
| January 24 | Dan Falk—Time Travel in Fact and Fiction |
| February 21 | Dr. Elaina Hyde, York University—Telescopes and Data Science, a Match Made in the Heavens |
| July 10 | Randy Attwood, Mississauga Centre President—Apollo 13: The Flight that Failed |
| September 11 | Robert Sawyer, Author—The Oppenheimer Alternative |
| October 16 | Professor Paul Delaney, York University—Water in the Universe |
| October 30 | Professor Gary Crawford, Retired, University of Toronto Mississauga—From the Weird to the Inspired in the World of Archaeoastronomy |
| November 13 | Leslie J. Sage, Astronomy editor, Nature Magazine, and contributing editor, RASC <i>Journal</i> —My Life with Nature |
| November 27 | Dr. Michael Daly, York University—The OSIRIS-REx Mission |

Centre Activities and Events

- Members enjoyed eight Potpourri Nights with members giving presentations on many interesting and informative topics including: Travelogues of visits to the Lowell and Mt. Wilson Observatories, updates on the Society's activities, tips on imaging and using cameras, telescopes and other equipment, an introduction to white dwarfs, neutron stars, black holes, and wormholes, the postal history of Apollo 13, presentations on constellations, the sky tonight, Comet NEOWISE, solar eclipses, space topics, and book reviews.
- The Centre Annual General Meeting was held on February 21.
- The new Mississauga Centre website went live on October 22. It was designed to be more informative, attractive, and usable. Thank you to Rob Neill for his work on this project.
- Work was begun in 2020 on the creation of a Centre Policy Manual, with expected completion and Council approval in the spring of 2021.

- A presentation was given on achieving the Explore the Universe Certificate by a Mississauga Centre member, Swapna Shrivastava, who achieved the certificate in 2020.
- Two New Member Welcome Meetings were held in 2020—March 6 and October 14—to introduce new members to the RASC and the Mississauga Centre and to answer questions.
- Volunteer Committees were created to help run the Centre and have more members involved in the working of the Centre.
- The Centre held the yearly Astrophotography Contest.
- The Centre telescope loan program has been active throughout 2020, with 25 loan sessions of scopes from our collection of 6 different telescopes.
- During 2020, the Mississauga Centre continued to sponsor the Mississauga Clear Sky Chart.
- The Centre cancelled the Centre Picnic and Auction because of the pandemic. They are two events that members enjoy each year and were missed.
- Centre public outreach star parties and astronomy courses were not held due to the pandemic.

Mississauga Centre Outreach Numbers for 2020

Our public outreach events were cancelled starting in March due to the COVID-19 pandemic.

- On March 2, Randy Attwood made a presentation to a Scout group in Oakville (organized by one of our youth members). Randy gave a talk and there was Moon observing.
- On November 9, Randy Attwood gave a virtual talk to grade 9 students at Cawthra Park Secondary School.
- On November 26, Randy Attwood gave a virtual talk to grade 9, 10, and 12 students at Cawthra Park Secondary School.

The outreach participants were as follows:

- Total participants: 105
- Total youth: 90 (as a part of the total number of participants)

Thank you to all the Centre Councillors, volunteers, and members for their involvement and enthusiasm.

Sheila Stephenson

Secretary

CENTRE FRANCOPHONE

DE MONTREAL

La programmation de l'année 2020 fut bouleversé par la COVID-19. A partir du mois de mars les rencontres sont devenues virtuelles. L'horaire alors prévu fut maintenu mais de façon virtuelle et ce, pour le reste de l'année, les réglementations sanitaires provinciales ne permettant pas d'organiser des rencontres en personnes durant la majorité de l'année. Les conférences au centre de loisir ainsi que les conférences au parc de l'Île de la Visitation furent virtuelles.

Le projet d'observatoire qui avait pris naissance l'année précédente a progressé et le travail de construction a eut lieu tout au cours de l'année pour se terminer en décembre avant l'arrivée de la neige. Le

choix fut arrêté sur un observatoire de type à toit coulissant. Les dons des membres ont défrayé la grande majorité des dépenses reliées à la construction de l'observatoire. Il fut construit presque exclusivement par des bénévoles. L'observatoire n'est pas encore fonctionnel mais l'édifice est complet et le télescope ainsi que le système de sécurité nécessaire sont en préparation. Avec deux colonnes en ciments il est aussi prêt pour l'expansion avec un deuxième instrument.

Peut d'observations au terrain ont été organisés durant l'année. La plus grosse des efforts ayant été dirigé vers la construction de l'observatoire. Il ne faut pas aussi oublier l'entretien du terrain pour le rendre plus accueillant. Entre autres, il faut mentionner la murale de Orion peinte par Roger Gagnon. Les résultats sont probants et nous espérons une ouverture de l'observatoire en 2021 et un regain des activités d'observations.

Patrice Scattolin

Secretary

MONTREAL CENTRE

As of New Year's Day, 2020 January 1, the Montreal Centre had no idea that the coming year was going to be such a difficult one. Through January, February, and the first week and a half of March, the Montreal Centre activities all continued on as usual. All that changed, when on March 11 the World Health Organization declared the Corona Virus a global pandemic. With new rules in place, the Centre was able to continue activities by switching over to online events using Zoom.

Events January—March 11

In January, we held two Members' Clubhouses on Saturday, January 4 and 18, two on January 10 and 24 at McGill University's Morgan Arboretum Conservation Centre. On Wednesday, January 8, the Centre held a Members' Library Clubhouse, a Members' Movie Night on Wednesday, January 15, and a Members' Library Workshop on January 22.

In February, the Centre held a Members' Clubhouse on Saturday, February 15, two on February 7 and 21 at the Morton Arboretum Conservation Centre. February 5 was a Members' Library Clubhouse; a Members' Movie Night was held on February 12 and a Members' Library Workshop occurred on February 17.



Figure 3 — Poster: Imaging the Invisible

The Wednesday events of January and February were at the Isabel K Williamson Library, John Abbott College.

Two public outreach events were held during February, one at the Benny Library and one at the Beaconsfield Library. Two other public events were held at the auditorium of John Abbott College—one in January and one in February.

Online Member’s Zoom Events March 11—December 31

Reference: Nicole Laporte’s article from February’s Skyward

The Morgan Arboretum Conservation Centre and the Isabel K. Williamson Library have fallen silent since the COVID-19 Pandemic social distancing began in March last year. As a result, the Montreal Clubhouse meetings have moved online through Zoom to help members stay in touch and exchange ideas. The clubhouses are held every Wednesday and Saturday at 8 p.m. and they range from informal gatherings, to member speakers, and guest speakers.

The talks by member speakers have been informative and cover many aspects of astronomy. The topics covered in the past year include:

- **Art in Astronomy:** The visual arts, music and poetry inspired by the sky.
- **Astrophotography:** Equipment, tracking, software, remote astrophotography and techniques on how to photograph meteor showers and the sun.



Figure 2 — Taara Jaffer and Léa Desbiens receiving their Montreal Centre’s Speaker Certificates



Figure 1 — Poster: The Winter Night Sky



Figure 4 — May 20: The Flight of Apollo 11 Revisited



Figure 7 — July 8: Making Contact

RASC Montreal Centre Presents a Zoom Public Event

History of Astrophotography

Saturday, June 6th 2020 8pm EDT

Host: Ron Brasher

Zoom Meeting: <https://zoom.us/j/96197794903>
Meeting ID: 961 9779 4903

This is a FREE PUBLIC EVENT.

Figure 5 — June 6: History of Astrophotography

RASC Montreal Centre & RASC Ottawa Centre Present a Zoom Event

PERSEIDS Meteor Shower

Saturday Aug 8, 2020 8pm EDT

Zoom Meeting: <https://zoom.us/j/62231362030>
Meeting ID: 622 3136 2030

This is a FREE PUBLIC EVENT.

Figure 9 — August 8: Perseids Meteor Shower

RASC Montreal Centre National Zoom Event, open to amateur astronomers, educators & students

Amateur Backyard Spectroscopy

You Can Almost Touch the Stars!

Saturday, June 27th 2020 8pm EDT

Zoom Meeting: <https://zoom.us/j/96129628951>
Meeting ID: 961 2962 8951

This is a FREE PUBLIC EVENT.

Figure 6 — June 27: Amateur Backyard Spectroscopy

RASC Montreal Centre Presents The 2020 Townsend Lecture

What Can We Learn From Exoplanets?

Sat, Sept 5th 8pm EDT

Zoom Meeting: <https://zoom.us/j/96129628951>
Meeting ID: 961 2962 8951

This is a FREE PUBLIC EVENT.

Figure 10 — September 5: What Can We Learn from Exoplanets?

RASC Montreal Centre Presents a Zoom Event

Comet NEOWISE c/2020 f3

A Visible Comet to Enjoy in the month of July!

Zoom Meeting: <https://zoom.us/j/86397627042>
Meeting ID: 863 9762 7042
Password: 037363

This is a FREE PUBLIC EVENT.

Figure 8 — July 22: Comet NEOWISE

RASC Montreal Centre & Space Concordia Present a Free Public Zoom Event

An Orbiting Lunar Station

The Gateway to Mars & Beyond

As humans look to return to the Moon and venture to Mars, the current focus is on developing the new technology and skills needed for operations in deep space. Astronauts on these future missions would find themselves cut off from supply lines and communication with Earth for years on end.

Dr. Jamil Shariff will discuss the upcoming Lunar Gateway project: a space station orbiting the Moon where these new space-based capacities will be developed. He will explain how advanced Canadian robotics, including the Canadarm3, will be critical to this endeavour.

Presented by:
Dr. Jamil A. Shariff
Astrophysicist
Member of Technical Staff at MDA

Saturday Oct. 10, 2020 @ 8:00 PM EDT

E-mail montrealrasc@gmail.com for info

This is a FREE PUBLIC EVENT.

Figure 11 — October 10: An Orbiting Lunar Station

- **History of Astronomy:** Influential astronomers that have had a profound impact from Charles Messier to Caroline Herschel.
- **Inclusiveness and Diversity:** Astronomy is for people of all backgrounds and genders.
- **Observing Programs:** Where to find information and how to get started on RASC Observing Programs: Explore the Universe, Explore the Moon, Messier Catalogue, and the Montreal Centre's Double Stars Certificate program.



Figure 12 — October 30: Spooky Nights



Figure 13 — December 6: Mars 2020

- **Observing Targets:** Aurora Borealis, constellations, deep sky objects, double and variable stars, eclipses, lunar and solar observing, meteor showers, and planetary conjunctions. Space Missions: Launch vehicles, missions to the Moon and Mars

Thanks to all the member presenters who shared their passion for astronomy in the past year: Greg Beaton, Thomas Bracken, Ben Chu Tang, Bettina Forget, Carl Jorgensen, Trevor Kjollien, David Levy, Dominique Mackenzie, Morrie Portnoff, Daniel Provençal, Marc Ricard, Virginia Rufina Marquez-Pacheco, David Shuman, Alex Stefanescu, and John Thompson.

Online Public Zoom Events March 11—December 31

The Centre held a total of 15 online public events and 5 online outreach events during the COVID-19 shutdown.

Some of Our Public Event Posters are displayed on these pages.

The Annual General Meeting was held by Zoom on November 14.

Carl Jorgenson
Secretary

At the end of 2020 the NB Centre membership stood at 96, a decrease of 2 over the year. There were six new members and eight people did not renew.

Two general meetings were held during the year, one in Saint John and one in Fredericton, before pandemic conditions were declared in mid-March. The mean attendance was 16 (range 14 - 18). Meetings consist of a What's Up talk, observing and imaging reports, Show & Tell / Buy & Sell, and presentations by members and guests. A guest presentation on Mars missions was given by Dr. Catherine O'Connell-Cooper, a planetary geologist with the Mars Science Laboratory at UNB Fredericton. Topics of member-presentations included the Unistellar eV telescope, the beginnings of radio astronomy, comets, plans for an Urban Star Park in Hanwell, and building a telescope.

Public outreach is a focal point of Centre activities and in 2020 we reported 171 events that involved more than 160,000 people. These include 63 events for 1859 people conducted in-person or online to a defined audience. There rest were online presentations and telescope views broadcast over Facebook or YouTube, including weekly presentations of the Sunday Night Astronomy Show by Chris Curwin, Paul Owen, and Mike Powell. In addition, 839 *Star Finders*, 761 *Moon Gazer's Guides*, and 14 *Getting Started in Astronomy* guides were distributed.

Approximately 28% of the events were for night or day observing, 22% were presentations for school and youth groups, and 50% were presentations to others. The events involved an estimated 1079 volunteer hours by Centre members. Of the 1859 participants who attended events in person or as a defined group online, 954 (51%) were under the age of 21.

Four Centre or Council business meetings were held in the year to conduct Centre business, one of which was conducted via Zoom. At the Annual Meeting in October election results for the Council positions were announced. President: June MacDonald; 1VP: Chris Curwin; 2VP: Paul Owen; Treasurer: Emma MacPhee; Secretary: David Penney; Councillors: Mary King, Daniel LeBlanc, Detlef Rudolph, Chris Weadick. The National Council Representative position is vacant and being filled by June MacDonald.

The process of obtaining charitable status for RASC NB Inc. is ongoing. Regular meetings of the Centre and Council will be resumed in 2021 via an online format until personal gatherings are permitted.

Curt Nason
Secretary

The Niagara Centre had a quiet year, probably just like every other Centre. Before the pandemic started shutting everything down, our last monthly meeting at the Niagara Falls Public Library was on February 20. Our last public star night was on February 27 at the Niagara on the Lake library. This was a new venue for us, and we liked it. We hope to return some day.

We cancelled all our public events for the remainder of 2020. We could not hold monthly general meetings for the remainder of the spring. Our membership fell from just over 100 to just over 90. We had several new members join after the pandemic started. We think this is good retention, considering the situation.

In the early summer, we reopened our members' observatory with social distancing regulations, and monthly members' nights were able to continue. Several work parties did a lot of repairs and upgrades.

Comet NEOWISE and the planets were the year's observing highlights. In September, we started executive and monthly meetings using the National Zoom account. Our members have given us positive feedback on our Zoom meetings. Considering the situation, it has been a good substitute for meeting in person.

We published our own 2021 calendar, featuring pictures from our members. Forty copies were sold.

A new executive was elected in October.

RASC Niagara guest speakers 2020

January	Philip Downey, An Astronomer's Guide to the US Southwest
February	John Vanderbrugge, Iceland: Landscapes and Aurora
March to June	cancelled due to COVID-19 pandemic
September	Zoom, chat session
October	AGM
November	Alan Ward and Peter Pekur, Optical Coatings and Amateur Telescope Making
December	Phil Groff, Everything You Wanted To Know About the RASC But Were Afraid To Ask

Philip Downey
Secretary

GENERAL

The Okanagan Centre has regular meetings across the Southern Interior of British Columbia. The Centre is organized into three meeting groups to accommodate the three major population centres of Vernon, Kelowna, and Penticton. Each group holds monthly meetings and outreach events in their local areas, and meet together for the AGM, an Annual Fundraising Dinner, and many observing events. The Centre operates the Okanagan Observatory, 40 kilometres southeast of Kelowna, near Big White Ski Resort. Our

membership in December 2020 was 142, an small decrease of 2 members for the year.

MEETING GROUPS AND OUTREACH ACTIVITIES

MONTHLY MEETINGS

The Okanagan Centre had a full slate of meetings planned for 2020, but these were cancelled in March due to COVID-19. A few meetings were held via Zoom over the remainder of the year. Members kept in touch via our news group, with informal posts and members sharing observations and online events.

OUTREACH

Led by coordinator, Colleen O'Hare, the Kelowna group started 2020 off planning many school and library visits. Unfortunately, due to COVID-19, these plans were scuttled in March. By then we had managed to do 9 school visits (total guests 362, youth guests 341), 1 school telescope observing session (total guests 50, youth guests 35), 2 adult visits (20 guests) and 1 adult observing session (12 guests).

We continued after that with Zoom meetings. We ended with 16 school visits (total guests 205. Youth guests 181), 7 Library Summer Reading Club visits (total guests 142, youth guests 181) and 2 adult group visits (total guests 20). We did not hold any public events at the Okanagan Observatory.

OKANAGAN OBSERVATORY

The Okanagan Observatory was closed to the public due to COVID-19 concerns. It did remain open and available for members to enjoy the dark skies, provided they follow strict COVID-19 safety protocols. No formal events were held on the site. Volunteers were able to do a bit of on-site work such as security improvements, radio program construction, and maintenance of public display areas.

ANNUAL FUNDRAISING DINNER

This event was cancelled for 2020. The committee expects to continue with this annual event once health measures ensure it will be safe to do so.

Christine Janzen
Secretary

I am pleased to report that the Ottawa Centre has remained a strong, healthy Centre in 2020 in spite of the challenges introduced by the COVID-19 global pandemic. Let me share with you the highlights of 2020.

Without a doubt the most remarkable achievement of 2020 was our ability to offer monthly meetings uninterrupted throughout COVID-19. Without missing a beat, we transitioned seamlessly from offering meetings at the Canada Aviation and Space Museum to the Zoom platform on the internet. Thanks to Dave Chisholm, our meeting chair, and Chris Teron, our meeting tech and organizer, for making this happen. Many thanks also to Jenna Hinds at the National Office for providing the technical guidance and support for getting us launched.

I know many of you will agree with me that our monthly meetings are a source of pride. The meetings are brimming with interesting

content delivered by a diverse group of presenters from inside and outside the RASC. The monthly astro-images from members tell many stories of long nights filled with wonder and awe. We are truly fortunate to be able to continue this wonderful tradition at the Ottawa Centre without interruption during a very challenging time.

Public Outreach

Due to the pandemic risks presented to our members and guests, we did not host a public stargazing program in 2020. This is indeed very sad and may very well be the first time this has happened since the Ottawa Centre was founded in 1906. Our public star parties have always been very popular and have touched countless numbers of people in Ottawa and region. Paul Sadler, our star-party coordinator for the past few years, took the program to new heights. As a testament to his organizational skills, he received many inquiries this year about the status of the stargazing program and when it will return.

I am confident that our public stargazing program will come back with a roar after the pandemic is behind us. We have been approached by several groups outside the RASC that are interested in partnering with us in new, innovative ways.

You may recall my report last year on the extraordinary outreach achievement of Dave Chisholm. He delivered many presentations to Cubs, Scouts, Pathfinders, school groups, and various adult groups. He continued on his torrid pace in 2020. Here are the stats from his work to date. Notice how he transitioned from in-person programs to online programs as the pandemic arrived.

Count/Date	Group	Adults	Youth	Type
1 January 6	Seniors	25	0	In Person
2 February 11	Beavers	5	21	In Person
3 February 19	Cubs	5	22	In Person
4 February 24	Guides	2	30	In Person
5 February 25	Cubs	5	17	In Person
6 March 2	Beavers	5	20	In Person
7 March 5	Scouts	5	30	In Person
8 April 15	Pathfinders	1	11	Virtual
9 April 22	Scouts & Venturers	3	19	Virtual
10 April 27	Sparks	3	13	Virtual
11 May 5	Scouts	3	11	Virtual
12 May 11	Cubs	3	12	Virtual
13 May 12	Beavers	3	17	Virtual
14 May 13	Cubs & Scouts	4	14	Virtual
15 May 14	Cubs	2	10	Virtual
16 May 19	Beavers	2	10	Virtual
17 May 21	Scouts	3	6	Virtual
18 May 25	Cubs	2	13	Virtual
19 May 27	Cubs	3	17	Virtual
20 June 2	Cubs	3	13	Virtual
21 June 9	Scouts	3	12	Virtual
22 June 17	Cubs & Scouts	2	11	Virtual
23 September 22	Beavers	3	9	Virtual
24 September 29	Cubs (London)	6	14	Virtual
25 October 5	Beavers	3	10	Virtual
26 October 12	Pathfinders (Kingston)	3	12	Virtual
27 October 13	Scouts	3	17	Virtual
28 November 3	Cubs	2	15	Virtual
29 November 18	Grade 6 Class Kanata	1	28	Virtual
30 November 20	Beavers (Montréal)	3	11	Virtual
31 November 20	Cubs (Montréal)	3	8	Virtual
32 November 23	Cubs	2	14	Virtual
32 November 30	Scouts (Montréal)	3	10	Virtual
TOTALS		124	477	
(7 In-person, 26 Virtual)		601 people reached		

On behalf of all Ottawa Centre members, thank you Dave for touching so many people. I am sure they will carry warm memories of your astronomy talk for the rest of their lives.

Member Programs

In late spring, many of us had the pleasure of attending an online astrophotography session hosted by Paul Klauninger. Paul is widely known in the Ottawa Centre for his dazzling astro-images that he shares at monthly meetings. He is a very experienced astrophotographer and a gifted communicator. Paul spent several months preparing for the workshop and it clearly showed. Course feedback was entirely positive.

In late summer, Paul Sadler hosted a Telescope Clinic for members. Paul polled members for their needs which culminated in a hands-on evening where social distancing was respected due to the pandemic.

I continue to be amazed at the calibre of our Centre's newsletter AstroNotes. Editor Gordon Webster has ensured that each issue is full of interesting content for members. While there are many things on the internet that compete for our time, I still find AstroNotes an essential read for Ottawa Centre members.

Gordon was also very active organizing member-only star parties at our Centre's observatory site, Fred Lossing Observatory (FLO). Gordon organized several star parties and ensured that public health guidelines were respected.

Also at FLO, Rick Scholes has continued to offer a series of training programs for members on the use of the 18-inch Dobsonian. Rick is the Director of the FLO site and is a driving force behind the ongoing enhancements of the site (more on this later).

I encourage all Centre members to browse the website (www.ottawa.rasc.ca). Centre webmaster Mick Wilson has been very active making a lot of under-the-cover enhancements to the website to ensure it remains stable and available to everyone. Two sections deserve special attention—the Observer Images section and the AstroNotes section. Observer images, shared at monthly meetings, are posted online. There is a powerful search tool to help find images. AstroNotes issues have also been professionally archived online.

Fred Lossing Observatory Site Enhancements

The FLO site and observing grounds are a major asset for Centre members. The property is leased from our landlord, the Mississippi Valley Conservation Authority (MVCA). A new 5-year lease was signed in March with MVCA. Due to COVID-19 restrictions imposed by the MVCA, the FLO grounds were closed from mid-March until mid-May. The clubhouse and 18-inch telescope reopened in mid-June.

Several upgrades to the FLO site were completed this year, including: The addition of gravel to a 60-metre section of the access lane.

The expansion of the south observing mound to more than double its previous size. The mound was covered with topsoil and seeded with clover. A fence will be added at the perimeter and it will be open for use in spring 2021.

Last year a new SkyShed observatory was installed. A 14-inch Meade SCT was installed in the observatory. While it is working mechanically, there are alignment issues. Paul Klauninger and Tim Cole are investigating the problem. The pace of development has been slowed by COVID-19.

Last year a 6-inch refractor and silo observatory originally owned by Rolf Meier was moved to the FLO site. The observatory and observatory equipment were donated to the RASC Ottawa Centre by Rick Scholes.

We had engaged a contractor to pour a concrete pad and attach the silo observatory on top of it. However, the work schedule has been severely impacted by COVID-19 and the new target date for installing the observatory is Spring 2021. After the observatory is in place, we plan to install a secure door as well as a better mechanism to rotate the dome.

We are also planning to upgrade the electrical panel on site. We will also dig a trench to lay a power line to the new north observing mound.

Rick Scholes deserves a lot of credit for the ongoing maintenance and improvements to the FLO site. Thank you Rick.

**In Memoriam—Lloyd Albert Higgs
(1937 June 21–2020 July 20)**

In July, we learned of the passing of former Ottawa Centre member Lloyd Higgs. Gordon Webster wrote a beautiful tribute to Dr. Higgs in the August 2020 AstroNotes. I reproduce it here.

Lloyd was born in New Brunswick, attended the University of New Brunswick and went to Oxford University as a Rhodes Scholar, receiving his D.Phil. degree in 1961. He then began his career in research with the Radio and Electrical Engineering Division of NRC in Ottawa.

As well as being a Rhodes Scholar, a Queen's Scout, and an esteemed Rotarian, Dr. Higgs was one of Canada's most respected astronomers.

Dr. Higgs joined the RASC shortly after moving to Ottawa and took an active part in a number of capacities, including a term as Ottawa Centre president 1971–72. Always an enthusiastic supporter of the RASC, he contributed many scientific papers and reviews to the Society's publications and he edited the *Journal* from 1976 to 1980. His election as the Society's Second Vice-President in 1984 led to a term as President in 1988–90, during which time he spoke at meetings of nearly all the twenty-two Centres. He received the Service Award in 1983 and as stated in the citation "few professional astronomers have been willing or able to commit themselves so whole-heartedly to the Society, yet he always gave the impression that he was the beneficiary." On stepping down from his editorial role, Higgs wrote, "the frequent contacts with enthusiastic amateur astronomers were refreshing experiences which never failed to re-ignite my own flagging spirits" Undoubtedly many amateur members feel the same way about their encounters with him.

Thanks

On behalf of Ottawa Centre Council, I wish everyone a healthy and happy 2021 with clear skies and lots of observing opportunities.

Mike Moghadam
President

PRINCE GEORGE

CENTRE

Up until March 15, when COVID-19 forced the Centre to close the observatory to the public, several members presented astronomical talks at our weekly Friday Public Open Houses. Subjects were "Super Novae," "Sound of the Spheres," "The Golden Age of the Space Telescope," "Lunar Phases," "Circumpolar Constellations," "Constellations of the Zodiac," "Light Pollution," "Venus—Variations in Brightness," "The James Webb Space Telescope," and "Betelgeuse—What's up with it?"

Always a big hit with the public, the one session "Introduction to Astronomy" workshop was also presented.

Unfortunately, the "Science of the Aurora" lecture by Yukon Centre President Vikki Zsohar was cancelled.

Interviews were conducted by CKPG TV, PG Daily News, CBC Daybreak North, and Prince George Matters with Centre President Malhar Kendurkar, the "First Person in Canada to discover 94 Supernovae in one year."

Glen Harris
Secretary/Treasurer

REGINA

CENTRE

A Year of Change

As the year began, the news was full of stories of the new virus in China and the severe lockdown measures they were implementing. By March 11, the virus had a name, SARS-CoV-2, and the World Health Organization (WHO) had declared COVID-19 a pandemic. Our year was about to change dramatically. The Saskatchewan Science Centre closed and our access to the Kalium Observatory was curtailed. This ended both our face-to-face Centre Meetings and our primary public outreach vehicle. The requirements for social distancing and the risk of transmitting the virus via eyepiece contact, brought an end to our other event-based public outreach.

An evaluation of the potential financial impact told us we would be fine. Our revenues would drop significantly but we would avoid meeting-room rentals and National General Assembly travel expenses. The question became how to serve our members and what support we could provide to the public. Quick action by National Office to establish Zoom accounts allowed us to pivot to on-line meetings. This benefitted our members because it allowed us to reach outside the Regina area. It also enabled us to continue making our meetings open to the public.

As the summer progressed, people were looking for activities and the emails and phone calls to our support line increased significantly. The most common question was what telescope should I buy? The demand was so great that most telescope stores were having difficulty keeping telescopes in stock. This yielded an uptick in our membership levels and will hopefully translate into even more as the pandemic wanes in 2021.

Member Events and Awards



Due to the pandemic, all our face-to-face member events were cancelled. This included the Messier Marathon in March, the summer and fall Star-BBQs at Davin, and the Annual Christmas Dinner. Probably the most painful was the cancellation of the Saskatchewan Summer Star Party (SSSP). This is a “must attend” event for many of us. We decided to continue with the sale of T-shirts, and Vance Petriew developed a new logo design to commemorate the cancellation. It symbolized the star party being sucked into the blackhole of COVID-19 and was so popular that our sales were almost at the level of a normal year.

We held ten Centre meetings covering many topics, several of which were specifically requested by our members. The first two meetings were face-to-face, but the others were held via Zoom. They included:

- Astro Show and Tell by all members, and Basic Intro to Telescopes by Vance Petriew and Paul Meyer
- Filter Types and Usage by Pierre Schierle
- Vintage Refractors by Shane Ludtke
- On-Line Opportunities during COVID-19 by Pierre Schierle
- The Kuiper Belt by Dr. Samantha Lawler
- Green Laser Pointer Training by Pierre Schierle, and ZWO ASiAir PRO Product Overview by Paul Meyer
- Getting Started on Variable Stars by Vance Petriew
- Phosphine Discovery on Venus by Dr. Samantha Lawler
- National Observing Programs by Denis Pilon
- Update from National by Phil Groff, National Executive Director

Denis Pilon completed the Explore the Universe list and received his pin and certificate. His sketches, especially those of the Moon, are excellent.

Public Outreach

We did manage to hold two public outreach events in early February before the pandemic was declared. The first was a star night in Brownsville, Texas, by Denis Pilon, one of our snowbirds. The second was a presentation on astrophotography to the Regina Photo Club by Paul Meyer, with assistance by Dan Heiberg. These two events reached a total of 53 adults. All our standard public events that typically reach around 2,500 people had to be cancelled. Examples of these include:

- International Astronomy Day
- Cathedral Village Arts Festival
- Canada Day
- SSSP solar and night viewing

- many Provincial Park events
- library and school visits
- special request events.

The impacts were similar with the Kalium Observatory. The Kalium team includes Ron Haughey, Francis Israel, Len McDonald, Jerry Shen, and Malcolm Warren, all of whom volunteered 38 hours in January and February before we had to close. In that short time, they held 3 Saskatchewan Science Centre camps, 4 regular public nights, and 1 nature-group event reaching 115 adults and 74 youth for a total of 189 people. Typically, they would reach 750 to 1,000 people over the course of a year.

Asset write-down

Over the past few years, we have been focusing on improving our financial management. This year we completed the final step by correcting the book value of our fixed assets on our 2019 year-end financial statements. The Regina Centre had not been recording depreciation on its fixed assets for quite a while. There was also a point in time where market values were incorrectly recorded as book values for several fixed assets. The result was a substantial overstatement of our fixed assets. Here is what was done.

- An asset inventory was conducted to establish those assets still in our possession.
- A thorough research of our History Book and historical financial records was done to establish the original purchase price and date of each asset.
- An internet search of historical prices was done to validate our understanding of the current financial records.
- We established a standard useful life for each of our various types of fixed assets.

With this information in hand, we then worked with our accountant to establish the asset write-down required to reflect a proper book value of our fixed assets.

- We found several assets that no longer existed and as a result they were written down. The following are a few examples:
- The original Davin Observatory was torn down years ago. The observatory currently at Davin is the Fr. Lucian Kemble Observatory, not the original.
- A telescope was still on our books that we had donated to the Arcola Museum years ago.

Assets over 20-years-old are considered vintage assets and assets over 100-years-old are considered antiques. These may have market values, but they should all have been fully depreciated yielding zero book value. Almost all our telescopes and accessories met these criteria. The following are a few examples:

- The Brashear Telescope that is on loan to the Western Development Museum is an antique.
- The Millennium Telescope and all the accessories at the Kalium Observatory are now vintage equipment.

Some low-value assets were recorded as having a book value but should have been expensed at the time of purchase. The following are a few examples:

- The Astronomy Poster Displays or A-frame signs used for outreach.

The result is that the only fixed assets we hold that still have a book value are our two Lunt Solar Scopes and the two large 4" x 8" paintings that were purchased through donations for the Kalium Observatory. The Davin Land is recorded as part of the observatories at its original purchase price / book value of \$1. Clearly, its market value today is much higher. The 2019 financial statements, fixed asset values, and the asset write-down were approved by our accountant and then by the Regina Centre Council. The result is

that our fixed assets were reduced from \$72,725.63 to \$3,783.16 for a write-down of \$68,942.47. While we still had an operating profit in 2019, the write-down created a loss on our 2019 Income and Expense statement. Our 2020 financial statements reflect the further depreciation of these assets that occurred this year.

It has been an honour to serve the Regina Centre and the public over this past year.

Clear and Dark Skies,

Pierre Schierle
President



St. John's Centre had a very interesting year, which started off as normal with the Annual General Meeting and proceeded with regular activities until February 2020 when a year (and more) of challenges started. Mid-February brought a record snow-hurricane (90 cm snow with 130 kph wind) and subsequent week-long State of Emergency, store closures, power outages, stay-at-home orders followed within a few weeks by a Global Pandemic. All face-to-face events were cancelled, including outreach, observing, and star parties. Monthly meetings shifted to online Zoom, and while well attended with varied topics, we've sustained an almost 20% drop in membership.

Thanks to the RASC National's remarkable response to the Pandemic, we were able to resume our monthly meetings via the RASC Zoom facility in April and have been able to use that facility ever since. An unanticipated benefit of the Zoom platform has been the ability to record meetings and provide them to the wider audience via Youtube, also allowing members outside the city to attend meetings and all members to attend other centre's meetings.

Our Internet presence via Webpage, Youtube, Twitter, Instagram, and Facebook continues a renewed interest in astronomy and enhanced public awareness. An increasing number of members continue to advance efforts in Astrophotography with tremendous results, complemented by an active email discussion-list. As a benefit to members, we were able to offer (pre-pandemic) 3 free planetarium shows that were topical and well attended.

We revived the Centre Newsletter with several issues distributed online as another way to keep members informed. Additionally we started doing Hangout sessions for live telescope views and informal chats.

Our membership year runs from October's Annual General Meeting through September with no planned public meetings during July and August. Unfortunately, we were unable to host any Summer Star Parties. Fortunately, we haven't been short of topics for speakers and were able to program a Member's Night during the year.

Meeting highlights were:

- October 2019 Talk—Dr. Sue Hart, a recent observing visit to Yukon.
Annual General Meeting and Election of Officers.
Review of the year's meetings and events.
- November 2019 Members' Night—Report of Mercury Transit Event—Limited public engagement due to clouds at the end.

- December 2019 Christmas Social. Short talk on eyepiece projection equipment and technique.
- January 2020 Perimeter Institute Lecture, Dr. Emily Levesque
- February Talk—Phil McCausland, Tagish Lake Meteorite Expedition
- March Due to global Pandemic we were unable to host a member meeting and Zoom online was yet to be available so we reluctantly had to cancel the meeting.
- April Lecture—Dr. Mike Morrow, When Stars End with a Bang
- May Lecture—Dr. Alison Leitch, Substance Use in the Solar System
- June Talk—Bernard Day, Building an Observatory on a Hill
- September Summer Review, extensive coverage of Comet Neowise Observations

Outreach Activities

- 3 planetarium shows (pre-covid)
- Mercury Transit (pre-covid)
- 3 observing sessions (pre-covid)
- Neowise Observing sessions, informal with safe distancing

We make extensive use of RASC material (*Star Finders, Moon Guides, SkyNews*) at all outreach events.

We are a small centre, but had managed to replace fall-offs with new members, both young and old until the Pandemic started. We are empowered by public participation and the opportunity to embrace their interest in Astronomy. The Pandemic brought a renewed interest in beginner telescopes, but resulted in limited supply and some disappointment for many.

We look forward to more events where we can show the public the true nature of the RASC, however we will need a large effort after the Pandemic to bring back the public interest in face-to-face events and Society membership.

Randy Dodge
Secretary



The Sarnia Centre meets Monday at 7 p.m. in the week of the month closest to the full Moon. During the 2020 observing year, we started regular monthly ZOOM meetings. At our meetings we present upcoming astronomy events and have local and guest speakers talking on specific topics associated with the local astronomy wants and needs. We communicate regularly with members through a group email. At our monthly meetings we have a "What's Up This Month" video prepared by Youth Member Domonic Dopson and "What are they doing in SPACE" video prepared by Youth Member Massimo Dopson. These videos are made monthly and specific to the interests of the Sarnia Centre and astronomy events or accomplishments within the global astronomy family. Our group is diverse with many male & female high-school students mixed with retired backyard astronomers. We do not offer the NOVA program but have lent out some equipment for new interested people looking to join.

Some in our group have participated in the RASC observing certificate programs. Recently, Sarnia Centre member Shelly Jackson had her image highlighted in the JOURNAL magazine June 2021 page 122. She was also awarded the Astroimager-Deep-Sky Certificate in February 2021.

Outreach has been difficult during COVID-19. Pre-COVID we had at minimum three city-wide events throughout the spring-summer-fall months, held at public locations. We were regular participants at Sarnia Hobby Fest. At the cities two largest community parks, Canatara and Mike Weir, we regularly would hold public viewing sessions with various telescope set up for the public to observe and be educated about. We would advertise these local public events in the newspaper and on the radio and we had local sponsors for the events. Due to the lockdown, we have stopped all outreach until further notice.

Paul Dopson
Secretary

SASKATOON CENTRE

2020 began normally with regular monthly meetings and a new Visual Observing for Beginners program run by Jim Goodridge to encourage new members to get under the stars. The program was held monthly at the University of Saskatchewan (U of S) Observatory, occurring immediately following the monthly General Meetings.

On February 11, member Rina Rast joined other U of S astronomy lecturers to present the talk Women in Astronomy to celebrate the International Day of Women and Girls in Science. 130 people attended their talk.

As weather warmed, we ramped up planning for spring star-nights, Random Acts of Astronomy outreach activities and the Saskatchewan Summer Star Party (SSSP). By March, COVID-19 was on our minds, but no one appreciated the rapid rate at which the virus would bring all of our planning to a screeching halt. By the beginning of March, it became clear that the in-person visit by Executive Director Phil Groff would not occur, and our U of S meeting room became off limits. In that uncertain time, the March General Meeting was cancelled and in April, Centre meetings went on-line. By April, the SSSP Committee had determined that they could not guarantee that COVID-19 issues would resolve by late summer, so the decision was made to cancel the 2020 event.

Centre member Tim Yaworski was one of the featured speakers at the online June RASC General Assembly 2020. He presented a 60-minute Introduction to Astrophotography workshop during one of the weekend sessions. Our Centre Rep., Les Dickson, also virtually attended the GA on our behalf.

The Sleaford Observatory, jointly operated by our Centre and the U of S, had three major upgrades in 2020. A previous security fencing, remote operation of the roof, cloud sensor, and internet installation allowed for of the roll-off observatory to be automated. This paved the way for an April 2020 installation of a University of North Carolina robotic telescope, now called PROMPT-USASK, placed on a Planewave mount. A second scope, a C-14 on a Fornax 100 mount, was installed in November but will not be functional until 2021. Work on the telescopes was led by our president, Daryl



Conjunction
Photo courtesy Tim Yaworski

Janzen (U of S Department of Physics and Engineering Physics). In June, SaskPower upgrades at the Sleaford Observatory required construction work to retrench the main power run from the Sleaford Schoolhouse to the RASC storage shed, with work led by Darrell Chatfield. (see photo)



Darrell at Sleaford
Photo courtesy Darrell Chatfield

Comet NEOWISE gave us all a break in July and many members got out to take photographs or just observe this beautiful comet.

In August, eleven die-hard observers decided to brave the Cypress Hills Dark-Sky Campground (with park COVID-19 distancing rules) and managed five or more clear observing nights in an unofficial star party. The SSSP Committee also decided that they would not be totally defeated and designed tee shirts and lapel pins, selling the same number on-line as they would have during a normal star party. This testifies to the dedication of SSSP attendees! (see photo)



SSSP Void
Photo courtesy Vance Petriew/SSSP

Missing this year were star-nights and presentations normally done at the Cypress Hills, Old Man On His Back and Grasslands Dark-Sky Preserves, normally supported by Saskatoon and Regina Centre members. The parks opened mid-season, but all public programming was suspended.

One positive result of COVID-19 was an increase in written articles and astrophotographs submitted to our Saskatoon Skies newsletter, making editing a little easier than in other years.

The year ended with the Great Conjunction of Jupiter and Saturn, a good opportunity for both visual observing and astrophotography, even though this event happened low in our sky.

General Meeting Speakers in 2020

January	Jim Goodridge—What's Up This Month? Rick Huziak—Will Betelgeuse Explode Next Week? Colin Chatfield & Tara Magee—Saving the Northeast Swale
February	Les Dickson—The RASC National Website Jim Goodridge—Visual Observing for March Rick Huziak—So What's Betelgeuse Doing Now? Mike Dolan—DigiCamControl: Freeware for Your DSLR
April	Jenna Hinds, RASC Outreach Coordinator—The RASC Robotic Telescope
May	Philip Groff, Executive Director RASC—Greetings from the RASC National Office

June	Tim Yaworski—Astronomy Outreach During Covid-19
September	Rielly Castle & Alexander Magnus, U of S-A Photometric Analysis of RRab Lyrae Variable V413 CrA
October	Ron Waldron—Chasing the Northern Lights
November	Colin Chatfield—Track the Sky
December	14 member short talks—Experiences in Astronomy

Richard Huziak
Secretary

SUNSHINE COAST CENTRE

For the Sunshine Coast Centre, 2020 was a year unlike any other, as it was for the entire world. The following are some highlights and challenges for our club over the past year.

Our Executive met 10 times in 2020, and 8 of those meetings were held via Zoom.

Due to the COVID-19 pandemic, public meetings, public outreach events, and access to our outstanding local observatory stopped overnight in March. We did have 2 in-person public meetings with guest speakers in January and February, with a total of 79 attendees. The March meeting was simply cancelled due to the pandemic, but thereafter our Executive worked out systems for offering monthly meetings on our regular schedule via Zoom, including featured speakers. After a slow start, the Centre got word out that we would be carrying on with monthly meetings via Zoom, with time allotted for attendees to share astronomy news and views. Attendance recovered, and in some cases exceeded previous in-person attendance. As well, there were eventually attendees from many sites around North America and even one from Uganda. (More on Harry later.) So awareness of our small community astronomy club was actually much enhanced during the pandemic shutdown. Total attendance for all meetings in 2020 was 384, supported by 120 total volunteer hours.

In 2020, our Board Executive completed an inventory of our "library" of telescopes, tripods, and assorted observation equipment, as well as books. During the year, from these items donated to SSC, three telescopes found their way out to new homes: one to a member of the public in return for a \$200 donation to the club, one to a cash-strapped grandmother for her grandson (\$50 donation), and one went to a young man in Uganda who is hoping to be an astrophysicist. (Please see the "Helping Harry" from a local paper, available via this link <https://www.thelocalweekly.ca/helping-harry/>).

At our October AGM, both our Secretary and our Social Media Coordinator stepped down from the Board. Two new and enthusiastic members joined the Board, including a new Secretary, Richard Mitchell; member Bill Haskett has volunteered to be our National Council Representative. Discussion is ongoing regarding reaching out to diverse communities with special focus on attracting young people for the coming years.

Despite the 2020 challenges, our Observatory was not neglected, with 140 volunteer hours spent on routine maintenance to buildings and equipment.

Our local President, Bruce Fryer, and 2nd Vice-President of the RASC, Charles Ennis, continued to shepherd a local television series “Night Lights,” a series featuring all aspects of astronomy. The program was developed with the support of the local Eastlink cable television provider and is now available to other Eastlink subscribers across the country. Even better, other clubs across the country are now contributing content.

Challenges we faced in 2020 are mostly self evident. Public awareness was maintained toward those who were already tuned in to the local astronomy club, however the total stoppage of general public-outreach events no doubt was a loss for us. Another challenge of 2020 was the diminishing membership in the local club. Some losses were the usual attrition, but numbers indicate that the club needs to do some work to attract new members as well as more actively encourage renewals. One successful initiative has been to restart our monthly newspaper column, which has proved popular. (See a sample column [Two Alignments Close Out the Year](https://www.coastreporter.net/in-the-community/two-alignments-close-out-the-year-3417981) at <https://www.coastreporter.net/in-the-community/two-alignments-close-out-the-year-3417981>)

The Sunshine Coast Centre continues to face the challenge of engaging local government in the pursuit of a Dark-Skies Program. It has been frustrating to be greeted with enthusiasm by local politicians only to find after years of effort that simple low-cost measures have still not been put in place. This work will be continuing.

Like clubs everywhere, our small Centre had a challenging 2020. We will be continuing with efforts in the areas of outreach, diversity, membership, and community enhancement. We look forward to a more ‘normal’ year in 2021.

Gwen Willox
Past Secretary

THUNDER BAY

CENTRE

Membership

As of the end of December 2020, the Thunder Bay Centre had 41 members.

General Meetings

Our general meetings are held on the second Tuesday of each month, excluding July and August, providing 10 monthly meetings for the year. Due to the emergence of COVID-19, we were unable to hold our regular in-person meetings at Fort William Historical Park after the month of March.

The following are the presentations given at the monthly meetings we were able to hold:

January	Brendon Roy—“Finding the Sun’s Sisters and Brothers”
February	Mark Smyk—“Wiping the Slaters Clean: Ground Zero in Lake Superior” For this meeting, we were lucky enough to have Mark Smyk, a geological consultant who has worked for decades with the Ontario Geological Survey, give us a presentation about meteorite-impact evidence found in northern Lake Superior.
March	Movie—“Clara”

Outreach Events

February Science Carnival hosted by Science North

This year, Science North held their Science Carnival at Victoriaville Mall. Attendance was estimated to be between 1600–2000 adults and children. Three members of the Centre attended and there were various interactive displays set up for the kids, including Phases of the Moon Box, Build Your Own Constellation Box, and a hands-on Making Craters on the Moon display. As usual, *Star Finders* and *Moon Gazer’s Guides* were well received by both children and adults.

All further outreach activities for the year were cancelled due to COVID-19.

Tracy Irvine
Secretary

TORONTO

CENTRE

Toronto has been one of the hot spots for COVID-19 in Canada, and has gone through multiple lockdowns and restrictions. Toronto Centre’s activity continued despite this, and changed because of it.

The Toronto Centre finished fiscal 2020 with 726 members. The Centre gained 110 new members during the year, but 219 members did not renew their memberships for a net loss of 109 members compared to the prior year. Two members passed away in 2020.

The Centre’s bi-monthly newsletter SCOPE was not published during the 2020 fiscal year.

Regular Centre activities, including public outreach and regular Centre meetings, continued until the last in-person meeting on March 11, including:

- Seventeen astronomy outreach events, through the Centre’s agreement with the Town of Richmond Hill, that welcomed 430 guests to the David Dunlap Observatory (DDO), including family nights, lecture nights, planetarium days, and private group/school group visits
- Public star parties at the Ontario Science Centre (OSC), Dunlap Institute, and Millennium Square in Pickering
- Monthly solar observing at OSC
- Outreach at public libraries, seniors’ homes, and with Scouts and Guides
- Four Recreational Astronomy Night meetings (with the fifth cancelled due to weather), and five Speaker’s Nights, all at the OSC
- Two New Observers in Visual Astronomy (NOVA) courses
- First Light course (first of three planned sessions only)

Cloudy skies during the winter of 2019-2020 caused cancellation of a number of planned events. In particular, the Centre’s City and Dark Sky star parties were clouded out.

Activities stopped short in March 2020; in Q1 and Q2 there was very little outreach activity.

In March and April, the Audio-Visual (AV) team of of Betty Reid, Andrew Reid, Ennio Cellucci, and Ward LeGrow worked with meeting planners Paul Delaney and Paul Markov to move meetings online. Between April 1 and September 16 the following were held, virtual/online:

- Nine Centre meetings
- Seven DDO presentations

- One star party with the OSC

The Centre's meetings are both streamed live and published on YouTube. There have been over 6000 total views of the Centre's programs, either live or via YouTube.

The Centre's followers on Facebook, Instagram, and Twitter were up by double digit percentages in 2020.

The Centre's awards had to be done virtually. Seven members were awarded for their contributions or achievements. Six Centre members received Ontario Volunteer Service Awards. And three members were awarded RASC Observing Certificates.

The Telescope Loan Program had a total of nine loans to the end of March. It has been suspended since then.

The Centre's Carr Astronomical Observatory (CAO) hosted 320 site visits prior to March 15, including public outreach and members' usage. The CAO was closed from March 15 until June 30, while the CAO committee worked diligently on protocols to make visits safe. It reopened July 1 with restrictions and added safety procedures, but had to reclose on October 1 as the second wave of COVID-19 hit Ontario. Site maintenance was done on a minimal as-needed basis, with no work parties in 2020.

Governance continued as Toronto Centre Council met for:

- Three regular meetings, with at least some Council members present in person
- One emergency online/remote meeting
- Three regular meetings that were online/remote only

Ed Treijs
Secretary

VANCOUVER CENTRE

Vancouver Centre is in its 89th year and we are thrilled to be celebrating our 90th anniversary in 2021.

As with all other Centres and our National Office, 2020 was a difficult year. Our public events ended in March and we have had no in-person public events since. The COVID-19 global pandemic drastically changed the way we had to communicate with each other and celebrate astronomy. Zoom lectures and webinars became the only way we could see each other regularly and group observing also went virtual. We very quickly had to transition to a virtual world, but in many ways, what we have learned this year will be useful going forward. Thankfully, and with the aid of technology, Vancouver Centre has been able to continue with our mission to advance education in astronomy and allied sciences.

Our relationship with Simon Fraser University's Trottier Observatory and its Friday evening Starry Nights has continued and, with COVID-19, went virtual. Vancouver Centre has been assisting with members acting as Zoom moderators while the SFU Observatory staff controlled the observatory telescope remotely, engaging with the public in the virtual format.

At the start of the pandemic, we had concerns about loss of membership, but Vancouver Centre is happy to say that despite some month-to-month fluctuations, we did not see an overall loss. In December 2019, we had 282 members and we ended 2020 with 288 members.

As to the 2020 General Assembly—back in the Summer of 2019, the National Office reached out to Vancouver Centre to host 2020 as it

was the "West Coast's turn" and there had been no Centre stepping forward in the year or two prior, as is usual. Council for Vancouver Centre accepted the challenge and with barely ten months to plan, our amazing Events Coordinator, Hayley Miller, and the equally amazing members of her GA Committee, pulled together everything necessary to host the GA in June 2020. However, as we all know, by March of 2020, the COVID-19 global pandemic was upon us and by the end of April, it was apparent that there was no way an in-person General Assembly could go forward. Again, our rock star, Hayley Miller, and her Committee members, with the assistance of the National Office, moved the entire GA to a virtual meeting and it ended up being a great success despite the setback.

Here is a summary of our events for 2020 (both in-person and virtual). In the fall, we partnered with the Sunshine Coast RASC and held joint virtual meetings to share speakers:

January	Anna Hughes—Magnetic Fields Around Dwarf Stars
February	Dr. Howard Trottier—Art and Science at the Trottier Observatory
February 21	and the Paul Sykes Memorial Lecture—Mary Beth Laychak, 40th anniversary of the Canada-France-Hawaii Telescope
March	Girl Guides—"Women's Day Career Celebration"
March/April/May/June	Robert Conrad—Webinar series for Observational Astronomy Basics Part I
April	Dr. William Wall, Celestial Orbits
May	Bill Burnyeat—The Early Greek Astronomers
June	General Assembly
June/July	Robert Conrad—Webinar series for Observational Astronomy Basics Part II
July meeting	Various presenters on astrophotography and a Trivia Contest
September	Charles Ennis—Ancestor's Skies
October	Dr. Arif Babul—Large-Scale Structure of the Universe
November	Theresa Fisher—Next-Generation Biosignatures for Exoplanets
November/December	Robert Conrad—repeat of Webinar series for Observational Astronomy Basics
December	Hayley Miller—The Art of Space

Vancouver Centre is looking forward to 2021 with astronomy continuing in the virtual realm for the foreseeable future.

Suzanna Nagy
Secretary

Summary

2020 was an unusual year for the Victoria Centre. It started out like other years but, like everyone else on this planet, we were heavily impacted by a microscopic airborne body that created a global pandemic. We were shut down during the period April to June as we learned to adjust to our new world by staying home, and worried for the safe return home of some of our members stranded by these sudden changes. Creativity, flexibility, and the cooperation and support of existing alliances though, allowed us to continue to have a productive year, as well learn new words and tools, all the while complying with our Provincial Health Officer's orders both in letter and in spirit!

At the end of the year we had 265 members, down only very slightly from one year earlier. We found ways to have virtual events, so in total we held 136 events with over 3000 Galileo moments. Bruce Lane published 12 issues (!) of *SkyNews*—no summer break for him, which greatly helped keeping members informed. And the rescued Joe Carr kept our members up to date on all the happenings with our website and mentored us on how to use Zoom so we could continue to “meet” in a virtual realm. Given the environment we had to deal with, it was a reasonably successful year. We gained some useful acquisitions but lost one irreplaceable soul with the untimely passing of our librarian and visual observer extraordinaire, Diane Bell, who jokingly said that when it comes to the night sky I am a bit of a “savant.”

Highlights and lowlights of the year follow.

Victoria Centre Events

Regular events

Monthly Meetings

We had 7 meetings this year (losing 3 of the usual 10 due to the closure of usual venue the University of Victoria) with 285 attendees

January	Dr. Gerald Schieven (NRC Herzberg)— From Baby Planets to Black Holes:ALMA Explores the Cold Universe (35 attended)
February	Mary Beth Laychak (CFHT Public Outreach)— The Canada France Hawaii Telescope ... the First 40 Years (67 attended)
March	Dr. Tyrone E. Woods (Plaskett Fellow at NRC-Herzberg)— When Stars Explode: Understanding Supernovae from Tycho to Today (42 attended)
April	
May	
June	
September	Dr. Phil Groff (Executive Director of RASC)— An overview of RASC from an National perspective (37 attended)
October	Luca Vanzella (Edmonton Centre, RASC)—

Dynamic Skyscape Images (34 attended)

November Jay Anderson (Winnipeg, former editor RASC *Journal*)— Eclipses (34 attended)

December Dr. Abedin Abedin—Meteoroid Streams

Astro Cafes

We had 40 Astro Cafes in 2020, 8 in person and 32 on ZOOM, with over 1140 attendees. To make up for the inability to assist with the Friends of the Dominion Astrophysical Observatory (FDAO) summer star parties, which were closed by provincial order, we continued Astro Cafes throughout the summer in 2020 thanks to the dedication of Chris Purse. This meant 7 more cafes than last year and 240 more attendees.

School Programs

The school programs under Sid Sidhu and Lauri Roche also began its usual busy year—until schools shut down. The difficulty teachers faced juggling in person and on-line classes when schools reopened on a limited basis in September required a rethinking of how to offer this program, while complying with provincial health orders and not overwhelming teachers. Working with the FDAO, they found a way to offer virtual programs, so despite the situation seven presentations were done in the period September to December—furthermore this outreach program reached further out than usual, five of the sessions were delivered in the Lower Mainland! In total Sid and Lauri made 77 presentations (only 15 of the planned presentations were cancelled due to Covid) with 1587 Galileo moments.

Observation Sessions

The usual cloudy winter weather stopped many of the planned observations at the VCO with only 3 sessions between January and March. Then, with the pandemic, we were not allowed on the grounds again until late September, and even then only on a limited basis after filing and getting approval for our Pandemic Compliance Plan. Nevertheless we got in another 9 sessions between October and December for a total of 12 sessions this year and 47 attendees (only down 5 sessions for 2019, but over 100 fewer attendees due to the requirements of social distancing). However, masked local RASCals continued to observe from balconies and fields and engaged, from a socially approved distance, with members of the public for some of the extraordinary astronomical events that occurred this year, such as:

- Comet Neowise
- Mars in Opposition
- Conjunction of Jupiter and Saturn

Special events

Alas, our usual special events like Astronomy Day, the Summer Star parties, the Saanich and Fairfield fall fairs were all cancelled this year due to the pandemic.

Acquisitions/Losses

Membership

We had 265 members at the end of the year (down only slightly from 2019 when we had 268 and from our peak in 2018 when we had 277). Alas, we lost our beloved librarian and visual observer extraordinaire, Diane Bell, with her sudden passing in November.



Equipment

the TCO 16-inch Ritchey-Chrétien scope was returned to its manufacturer in California this summer after the technical committee got special permission to retrieve it. Unfortunately, the manufacturer was unable to repair it and provided an in-store credit toward its replacement. We were very fortunate, however, that Gary Sedun located a used OGS (Optical Guidance System) 12.5-inch Ritchey-Chrétien research-grade reflector that was in good condition. John McDonald and Reg Dunkley purchased this scope and donated to the Centre. It was installed in the summer and tested when we were allowed limited access to the VCO in the fall.

Barbara Lane
Secretary

WINDSOR
CENTRE



2020, What A Year It Was!

There were so many changes to our scheduled routines that we had to overcome. We however continue to maintain our stable membership of 90 - 100 members who regularly attended our monthly meetings held at the City of Windsor's Ojibway Nature Centre, cancelled of course due to the COVID-19 pandemic.

The Heavens Open Up

The early morning tracking of comet Neowise by many members in the clear summer skies captured much attention. This once-in-a-lifetime event for many had members scurrying to various locations to seize the best shot of this astounding comet.

As the year was coming to an end, the early evening "Star of Bethlehem," scarcely peeping through the clouds as it made a quick and brief appearance for those enthusiasts waiting to snap a picture of the Saturn / Jupiter conjunction.

Public Outreach

2020 was the Windsor Centre's 75th Anniversary. We started the year in anticipation of many Public Outreach events, including, Library presentations, solar viewing on Earth Day, and numerous River Front Events: April 3 when Venus passes through the Pleiades,

- August 28-29 Saturn and Jupiter with an almost full Moon
- September 25 Moon two days past first quarter with Saturn & Jupiter close by
- October 24 Mars / Moon viewing party.

Our Community Events included:

- May 9 Science Rendezvous hosted by the University of Windsor
- August 7-10 Comber Fair
- September 19 Open Streets Windsor
- November 2-7 ArtSpeak Gallery Astrophotography Show and Sale

A further proposed plan by our Honorary President, Dr. Bill Baylis, was to construct a model of the Solar System, (to scale), set up along the River Front.

This entire schedule had to be put on hold due to the Covid-19 pandemic.

We did however have visitors at the observatory a few times during the year. They were in small groups, 2-4 people, to abide by the COVID-19 safe-distancing rules.

We did have a unique event at the RASC Windsor Centre. A Special Anniversary RASC Windsor Webinar, the 2019 Nobel Prize in Physics winner, Dr. James Peebles, graciously accepted the invitation.



On May 1, Dr. James Peebles made a Zoom presentation, and remarkably captured the audiences' attention for approximately an hour, followed by a question period. This Special Guest Speaker was arranged by Dr. Chitra Rangan of the University of Windsor. President Randy Groundwater, arranged for many Centre members to attend and it was enjoyed by all.

Attending The Ga

The RASC GA and AGM, both held on June 7 via ZOOM, were attended by Michael Mastronardi.

The National Council Representative, Tom Sobocan, attended the National Council meeting on April 19 via Zoom.

Observatory

The observatory, located near Comber, has been a more frequent meeting place for members this year where the members could safely gather outside and still maintain social distancing.

We added a large-screen TV to increase with the visual presentation for the visitors on the not-so-clear sky nights' at the observatory. We also had to replace the roof as part of our regular maintenance to the observatory. Mahayarrahh-Starr Livingstone painted the dome. This however led to the discovery of the great black hole North East of the Dome...

Light-Pollution Abatement

This troubled pandemic year has however been of great advancement to the light-pollution abatement progress around the Leamington and Kingsville Communities. Mahayarrahh-Starr Livingstone has attended town council meetings in Kingsville where he did a short presentation, and in Leamington via a ZOOM meeting. Both communities now have By-Laws enforced and fines implemented to control light pollution. Further control is required to implement in other nearby communities.

Directorate Of Observing

Our members alternately take turns presenting the “Director of Observing” report each month. Thanks to Steve Mastellotto, Susan Sawyer-Beaulieu, Juliana Grigorescu, Nancy Ng, & Jessie Passa for their great efforts and reporting.

Meetings And Dates

A brief summary of the presentations for the months we were able to hold meetings:

- January 21 January is traditionally our movie night. National Geographic, “One Strange Rock,” Season 1, Episode 2 was the feature.
- February 18 Juliana Grigorescu did a presentation on Open Clusters and Globular Clusters.
- November 17 meeting via ZOOM—Michael Mastronardi reviewed the Proposed Slate of Executives for 2021 Council, Greg Mockler discussed the financial statement, and Mahayarrahh-Starr Livingstone discussed Public Education and Light-Pollution Abatement.

The upcoming year begins with ZOOM meetings scheduled until June, and a plan to carry forward with our 75th Anniversary events of 2020.

Our Goal is to continue with public awareness while attracting new members from within our younger generation.

Sandra van Gaalen
Secretary



The Winnipeg Centre membership currently stands at approximately 234 as of January 2021.

We hold monthly meetings that are open to the public. This year only three of the meetings were held at St. John's College at the Fort Garry Campus of the University of Manitoba. The last meeting was held at the U of M in March on Campus. The meetings are designed to accommodate a wide range of knowledge and experience in the audience. We start with a beginner's session, followed by “What's up,” which is a review of upcoming astronomical events and viewing opportunities for the month, and “What's new,” which is an update of current astronomical topics and events in the astronomical news. We also have sessions on other topics of interest including RASC programs and certificates, imaging, astrophotography, and computer applications. This year we also had sessions presented by Dennis Lyons on green laser pointer safety, regulations, and certification.

Following a coffee break, we have a presentation by a keynote speaker. This year's visiting keynote speakers were:

We had a special guest from the National who our main speaker in March was. Dr. Philip Groff took the time to fly in. We talked about the possibility of having the GA meeting where Dr. Groff and myself had the pleasure of touring potential sites here in Winnipeg. Tourism Winnipeg took us to breakfast and a guided tour of the city.

Feature Presentations:

- Philip A. Ferguson, Ph.D., P. Eng., will do the “Orbital position of satellites using “accidental” images of space junk.”
- Dr. Philip Groff. “RASC National and Q & A”.
- Gerry Smerchanski “The Great Astronomy Debate of 1920”
- Scott Young (The Director of Planetarium) “Mars”
- James Somerville Edgar (Editor of the RASC *Observer's Handbook*) Topic: *Journal* and *Handbook* production.
- Astro-photos—Hosted by Jay Anderson, He showed some of the photos submitted by Centre members.
- Dr. Mario Livio Topic—“A fresh biography of Galileo Galilei which puts his scientific discoveries in today's context.”

During the year, we have added the What's on at the Planetarium, hosted by Scott Young (Planetarium Director), to open relationships with the Planetarium.

The meetings are well attended and often attract 80 or more members and guests. The meetings are followed by pizza and beer at a local restaurant.

The meetings are recorded and are available on YouTube and Facebook, which started in the fall.

Zoom meetings started on April 2020, which also includes the Virtual Boston Pizza by Zoom. The Virtual Boston Pizza is a social event for the members to engage to treat it as though we were at Boston Pizza.



Dr. Philip Groff (left) hosted by Bryan Stach (right)

RASC Potluck was January 29 at one of our Member's house.

Our July meeting was a barbecue held at St. Vital Park due to COVID-19, to maintain social distancing.

Our Centre maintains an observatory at University of Manitoba's Glenlea Research Station, about 15 km south of the city. There we have a dome, which houses a 12-inch Meade LX telescope; plus, we have a warm room complete with restroom facilities. A large concrete pad to the south, complete with power posts, allows for the members to setup their own equipment. This site is where we hold our "Member's Observing Night," on the Saturday following our regular meetings. Our Observatory Director, Bryan Stach, has been actively upgrading and maintaining the building. There are some concerns with the encroachment of light pollution, leading to ongoing debate on possible future relocation. The observatory is situated adjacent to the Red River with the inherent annual concerns of flooding.

Glenlea was closed for the better part of the year; it re-opened with restrictions in May, but was closed again on November due to the COVID-19 Code RED imposed by the Province. When Glenlea was open during the early fall, Silvia Graca and Gerry Smerchanski started the Astro Sketching Program, held at Glenlea when it was open. Everyone had a mask and retained social distancing. It's currently active and keeps the member's engaged, during the Code RED, Members are sketching at their homes and sharing them online/emails with the members who are part of the program.

The Centre newsletter *Winnicentrics*, edited by Kaeren Anderson, contains a list of local and astronomical upcoming events, an astrophotography gallery featuring members' astroimages, and articles on astrophotography and digital image processing, astronomy news, and articles of interest. Gord Tulloch took over editing *Winnicentrics*, which he has expanded to include more content.

A complete redesign of the Winnipeg Centre website was just completed. Gord Tulloch is our Webmaster who created and maintains the new webpage of the Centre. As part of the maintenance, we created a new program called the Beginner's Package. When a new member is brought on board, Gord will send the Beginner's Package, which explains a little about club and what resources, programs, events etc. are available. He is doing an excellent job on running and maintaining the webpage.

The Winnipeg Centre Facebook account is more active with 148 members and growing.



Dr. Mario Livio Topic—"A fresh biography of Galileo Galilei which puts his scientific discoveries in today's context."

We have an active "free" loaner telescope program with a variety of telescopes available for club members, including a solar (PST) scope. We generally lend scopes out for a month, or longer if the demand is low. Due to COVID-19, the program was closed for the most part of the year. It was open for a short time when the restrictions were lifted but closed again in November.

Spruce Woods Star Party (SWSP) was cancelled due to COVID-19, with the feeling that it would put the member's safety in jeopardy.

The Winnipeg Centre was unable to participate in any regular outreach astronomy events due to COVID-19:

1. Centre members provide presentations followed by a telescope viewing session at Oak Hammock Marsh, a nature Centre located



Glenlea Observatory



Glenlea Observatory

30 km north of the city, for their monthly Astronomy Observing Night. It was closed from April to August and reopened in the fall.

2. The Centre has partnered with the Department of Physics and Astronomy of the University of Manitoba for their “Open House” program. Held on the last Wednesday of the month during the scholastic year, it welcomes University students to come to the University Planetarium for a presentation followed by an observing session at the Ewen Campus Observatory, with supporting telescopes provided by RASC members. The program was active for a few months but was shut down in April 2020.

3. 2020 International Astronomy Day, as well as Science Rendezvous at the U of M with supervised solar scopes for public viewing has been cancelled.

4. Spruce Woods Public Outreach: Cancelled.

5. The Nature Conservancy of Canada at the Westin Family Tall Grass Interpretive Centre as part of the process in creating a Dark-Sky Preserve. Dennis Lyons did a presentation for NCC on July 30.

6. The Winnipeg Centre supports the Manitoba Schools Science Festival by providing a cash prize to the person with the best astronomically based display—cancelled.



Manitoba Parks Astro Webinars

Manitoba Parks approached Silvia Graca and Gerry Smerchanski to do a “Discover Parks after Dark” Webinar. The Provincial Government is trying to provide online Services to the Public during the pandemic.

Membership Giveaway

Winnipeg Council agreed to purchase memberships to Oak Hammock Marsh Interpretive Centre and Manitoba Museum as a Thank-you gesture to raffle off to members.



Gord Tulloch giving a telescope for the kids at Christmas.

Winnipeg Centre Giveaway Contest

Two beginners’ telescopes were donated with which we created the contest, open to children. The child had to write a one-page essay on “What I would do with a telescope?” All the children who entered the contest would receive a one-year membership and an invitation to attend the SWSP 2021. The idea was to open up the club for younger members to join in. Included is a picture of Gord Tulloch giving a telescope for the kids at Christmas.

Ed Wright

Secretary

YUKON CENTRE

In November 2019, the Yukon Centre continued to deliver its non-credit continuing education course “Universe from Your Backyard” at the Yukon University. Educators were Vikki Zsohar and Forest Pearson. There were 5 registered students in this course.

Members of the Centre observed the Mercury opposition at Fish Lake, with about 10 participants.

In December, the Yukon Centre presented its “Solstice” public talk at Yukon Beringia Centre by Vikki Zsohar. We had 50 participants during this event.

In January 2020, David Levy visited Whitehorse and gave a presentation at the Whitehorse Public Library, to 20 visitors. The Western University and the Canadian Space Agency hosted “Junior Astronaut Training for Instructors” in Whitehorse. Three Centre members participated in this training.

In February, Professor Wayne Horowitz (University of Jerusalem) held a presentation to society members about “The Northern Lights over Southern Mesopotamia.” Approximately 30 people visited this event.

In March, the COVID-19 pandemic did temporarily shut down our public programs, and we saw a decline in membership. However, in July 2020, Christa Van Laerhoven presented “Loony Moons” via Zoom for RASC members, with about 20 participants.

In September, we were able to re-open with restrictions and a COVID-19 operational plan in place, and we had a social-distanced Yukon Star Party with 20 visitors.

We did not expect that the 2020 Mars Opposition would be the Yukon Centre’s main event. There were more than 300 people who visited the two observation sites for viewing: about 200 people were at Grey Mountain Road Lookout, while the observatory had more than 100 visitors. We had good skies and everyone who looked in the telescopes could see surface features on Planet Mars.

The Yukon Centre hosted five school groups, two Girl Guide groups, and held two astronomy education events for secondary school students in 2020, with a total number of about 200 students.

Noemi Vikki Zsohar

President

CENTRE TREASURERS' REPORTS FOR FISCAL YEAR 2020

		Belleville	Calgary	Edmonton	Halifax	Hamilton	Kingston	Kitchener-Waterloo	London	Mississauga
REVENUE										
Membership	Membership Fees—Centre Fee	787	12,291	7,160	3,027	2,918	1,232	2,987	3,090	3,387
	Membership Fees—Affiliate									
	Membership Fees—other		151							
	Centre Newsletter				157					
Donations / Fundraising	Donations		1,207	49	175		1,345			521
	Fundraising		13,907			2,624		243		480
Sales Revenue	Sale of <i>Observer's Handbooks</i>						25			
	Sale of <i>Observer's Calendars</i>		744	200	750	440	360	454	380	450
	Other Publication Sales				860		35			
	RASC promotional items									
	Other Sales			20						
Subscription Revenue	<i>Astronomy / Sky & Telescope</i>									
	Other									
Events Revenue	Star Parties			298			65			
	Annual Dinner		1,923							
	Astronomy Day									
	Meetings									
	Other Events									
General Assembly Revenue	General Assembly		4,052							
Miscellaneous Revenue	Interest and Dividends	1	43	39	315		284	148		
	Advertising									
	Observatory Site									
	Equipment Rentals/Loans		1,751							
	Public Services, events, outreach				500					
	Miscellaneous		899			150	291			
TOTAL REVENUE		788	32,916	7,767	5,784	6,132	3,637	3,832	3,470	4,838
EXPENDITURES										
Sales Expenses	RASC Publications		3,996		1,131	693		405	387	622
	Other Publications						170	315		
	Newsletter						5		23	
	RASC promo items									
	Other		13	204						40
Event Expenses	Star Parties		208		101			350		
	Annual Dinner		1,604					70		66
	Astronomy Day									
	BIYA									
	Meetings		99	1,487	282	696	730			806
	Other Events		888		832		74			
Travel	General Assembly and Council Meetings					616				
Administrative Expenses	Office Administration	22	351	3,689	392		48	333		291
	Equipment and Supplies		209				93		271	155
	Insurance		3,753	400	1,462		432	507		454
	General Expenses and Audit	62	332	77			45			321
	Awards		1,724	100					100	75
	Donations	53	5,473		120					
	Advertising		117							226
Miscellaneous Expenses	Observatory and Site Expenses		4,583	20,201	1,017	2,602	68	546	3073	
	Equipment & Supplies/Library									
	Depreciation	638	1,520		479					
	Miscellaneous		2,264	1,013		2,891		66		
TOTAL EXPENDITURES		775	23,535	27,171	5,816	7,497	1,665	2,592	4,801	2,830
SURPLUS OR DEFICIT ON OPERATIONS		13	9,381	19,404	32	1,366	1,972	1,240	611	2,008
	Current assets	6,219	112,521	91,767	18,377	24,958	32,976	19,082	11,506	23,311
	Capital assets	5,742	21,000		12,135	104,178	200		33,542	
	Total assets	11,961	133,521	91,767	30,512	129,136	33,176	19,082	45,048	23,311
LIABILITIES	Current liabilities		92,779							376
	Long-term liabilities									
EQUITY	Net Equity		40,742	91,767	30,512	129,136	33,176	19,082	45,048	22,935
TOTAL LIABILITIES AND EQUITY		11,961	133,521	91,767	30,512	129,136	33,176	19,082	45,048	23,311

CENTRE TREASURERS' REPORTS FOR FISCAL YEAR 2020

		C. F. de Montréal	New Brunswick	Niagara	Okanagan	Ottawa	Prince George	Regina	St. John's	Sarnia
REVENUE										
Membership	Membership Fees—Centre Fee	3,758	1,808	1,938	2,465	7,793	1,697	864	1,275	
	Membership Fees—Affiliate									
	Membership Fees—other				530			346		
	Centre Newsletter									
Donations / Fundraising	Donations	941	145	375	7,601	9,090	2,294	675	350	
	Fundraising			17	8,300		12,850	2,640		
Sales Revenue	Sale of <i>Observer's Handbooks</i>									
	Sale of <i>Observer's Calendars</i>		955	90	880	1,666	458	902	840	
	Other Publication Sales									
	RASC promotional items				20					
	Other Sales				20		43	2,659		
Subscription Revenue	<i>Astronomy / Sky & Telescope</i>									
	Other									
Events Revenue	Star Parties									
	Annual Dinner					3,030				
	Astronomy Day									
	Other Events								1,207	
General Assembly Revenue	General Assembly									
Miscellaneous Revenue	Interest and Dividends	784		367	146	970		296		
	Advertising									
	Observatory Site			20		380				
	Equipment Rentals/Loans	349				10			10	
	Public services, events, outreach						841			
	Miscellaneous			903	458	100	14,540			
TOTAL REVENUE		5,832	2,908	3,711	20,420	23,039	32,723	8,382	3,682	
EXPENDITURES										
Sales Expenses	RASC Publications		858	98	523		539	950	914	
	Other Publications		170						42	
	Newsletter		62							
	RASC promo items									
	Other			567		28	73	2,508		
Event Expenses	Star Parties									
	Annual Dinner					485				
	Astronomy Day				68	3,682				
	BIYA									
	Meetings		45	57	88	318		450	136	
	Other Events	1425	100		170			11		
Travel	General Assembly and Council Meetings									
Administrative Expenses	Office Administration		101	14		896	40	94	455	
	Equipment and Supplies			5	385		113			
	Insurance	986			420	1,548	1,630		483	
	General Expenses and Audit	164		711				597		
	Awards		100			498				
	Donations		26	48						
	Advertising		216			230	1,171			
Miscellaneous Expenses	Observatory and Site Expenses	576		2,402	16,746	1,749	7,260	697		
	Equipment & Supplies/Library	978				71				
	Depreciation	4,281		707		4,078		453		
	Miscellaneous	256		787	55	77	14,930	587	49	
TOTAL EXPENDITURES		8,666	1,950	5,396	18,455	13,660	25,756	6,346	2,080	
SURPLUS OR DEFICIT ON OPERATIONS		2,834	958	1,685	1,965	9,379	6,957	1,882	1,603	
ASSETS	Current assets	74,471		9,876	48,387	62,384	17,519	24,311	7,958	
	Capital assets	25,737		15,280	281,507	25,378	123,561	3,330	23,556	
	Total assets	100,208		25,156	329,894	87,918	141,080	37,641	31,514	
LIABILITIES	Current liabilities						494	611	128	
	Long-term liabilities									
EQUITY	Net Equity	100,208		25,156	329,894	87,918	141,574	27,031	31,386	
TOTAL LIABILITIES AND EQUITY		100,208		25,156	329,894	87,918	141,080	27,641	31,514	

CENTRE TREASURERS' REPORTS FOR FISCAL YEAR 2020

		Saskatoon	Sudbury	Sunshine Coast	Thunder Bay	Toronto	Vancouver	Victoria	Windsor	Winnipeg	Yukon
REVENUE											
Membership	Membership Fees: Centre Fee	2,096	675	835	933	16,428	6,471	6,164	2,356	3,994	840
	Membership Fees: Affiliate										
	Membership Fees: other										
	Centre Newsletter										
Donations / Fundraising	Donations	400	744	1,824		8,190	743	130	2,070	364	218
	Fundraising	607					233		183		
Sales Revenue	Sale of <i>Observer's Handbooks</i>							24			
	Sale of <i>Observer's Calendars</i>			299		453	391	470	300	1,322	
	Other Publication Sales								1,580		
	RASC promotional items						19				
	Other Sales						124		300		
Subscription Revenue	<i>Astronomy / Sky & Telescope</i>										
	Other										
Events Revenue	Star Parties	3841									
	Annual Dinner							2,180			
	Astronomy Day										
	Other Events										1,035
General Assembly Revenue	General Assembly										
Miscellaneous Revenue	Interest and Dividends	503			10		9,680	5		46	
	Advertising										
	Observatory Site					3,860			970		
	Equipment Rentals/Loans										
	Public Services, events, outreach					15,317		857	280		
	Amortized deferred capital contributions										
	Miscellaneous		10,000	2		11,269	8				
TOTAL REVENUE		7,646	11,419	2,960	944	54,611	17,669	9,830	8,039	5,726	2,093
EXPENDITURES											
Sales Expenses	RASC Publications			255	437	1,748		732	225	808	
	Other Publications				42				1472	424	
	Newsletter							96			
	RASC promo items				35		57			593	
	Other						215				
Event Expenses	Star Parties	3,278									
	Annual Dinner							2,886		111	
	Astronomy Day						353				
	BIYA										
	Meetings		3	275			1,104	25	832	635	443
	Other Events						2,196		190		566
Travel	General Assembly and Council Meetings										
Administrative Expenses	Office Administration	394	4	221	63	32,367	242	295		119	48
	Equipment and Supplies			75					85		
	Insurance	1,590	960	978			420	575	642	703	1,201
	General Expenses and Audit					7,641	709				
	Awards							38		432	
	Donations										
	Advertising						546		384	771	
Miscellaneous Expenses	Observatory and Site Expenses	766					2,176	1,928	3,735	415	2,677
	Equipment & Supplies/Library						31	205			
	Depreciation	1,326				20,036					
	Miscellaneous				96		65	373	63		288
TOTAL EXPENDITURES		9,556	967	2,103	674	61,792	8,114	7,253	7,628	5,012	5,223
SURPLUS OR DEFICIT ON OPERATIONS		1,910	10,452	857	270	7,181	9,555	2,577	411	714	3,131
ASSETS	Current assets	25,196	10,452	4,660		132,075	363,384	12,113	9,661	19,219	340
	Capital assets	30,217	66,500	57,892		323,757	22,250	46,015	80,000	25,000	99,469
99469	Total assets	55,412	76,952	62,552		455,832	385,634	58,128	89,661	44,219	99,810
LIABILITIES	Current liabilities					19,134					3,321
	Long-term liabilities					41,258					64,348
Equity	Net Equity	59,828	76,952	62,552		395,440	385,634	58,128	89,661	44,219	32,141
TOTAL LIABILITIES AND EQUITY		59,828	76,952	62,552		455,832	385,634	58,128	89,661	44,129	99,810

FUNDRAISING REPORT 2020

RASC Fundraising Report

2020 was a year unlike any other. With well established events and activities serving members and the public abruptly disrupted or cancelled in March, the organization quickly adapted. Online observing, webinars and workshops were developed and Society governance at all levels continued to advance astronomy for members and Canadians across the country. Previously little used platforms such as Zoom, YouTube, and social media were implemented and output greatly expanded, allowing RASC to continue to bring astronomy to the nation.

At National, we're extremely grateful for member support. When it became known that some of our constituents could not renew due to the pandemic's impact, more than one hundred members stepped forward and donated to bursaries for those in need as well as to offset operating losses resulting from COVID-19. Thank you so much for demonstrating such consideration for your fellow astronomers! By the way, if your Centre would like to explore fundraising options in your area, please don't hesitate to contact me in case I may provide information or assistance. (ldiveto@rasc.ca, 519-754-1803)

In 2020, the total of individual giving, foundation and government

funding is approaching an extraordinary \$340,000 in this most unprecedented year. That includes one-time COVID-19 subsidies, nearly 700 donations from members, and significant foundation and government grants for program and operating costs.

- 26,875 Federal COVID-19 Subsidies
- 113,840 Individual Donations
- 197,765 Foundation & Government Grants
- \$338,480 Total Grants & Donations

At the time of this writing, vaccinations are rolling out but, with new variations of COVID-19 circulating, lockdowns continue and life is not back to normal. We're fortunate that astronomy is a safe and meaningful activity individuals and families can engage in online or from their own backyards. New audiences are looking up at the sky, learning to use binoculars and telescopes, attending online webinars, and trying astrophotography for the first time. Quite remarkably, RASC membership is at its highest level. All of us at the Society are greatly appreciative for the public's interest and the generous support provided by members, charitable foundations, and government agencies. Once again, thank you!

Lisa Di Veto

Fund Development Associate

DONATIONS 2020

The Royal Astronomical
Society of Canada
Charitable Registration
#119126282 RR0001

RASC Donations

\$100–\$249

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Elaine Bonnenfant
Jim Boyko
Donald Bradt
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Brent Cunningham
Joseph De Koninck
Roland Dechesne
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\$25,000–\$100,000

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RASC Calgary Centre

Robotic Telescope

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Peter Tumilty

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Brian Banks
James Edgar
James Hinds

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Kevin Watson

Ruth Northcott Education Fund

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Shawn Lee
Pranab Mukherjee
Betty Robinson
Lauri Roche
John Ross
Brian Scorthorne
Robert Victor
Warren Wakarchuk

\$250–\$499

Amelia Wehlau

\$500–\$999

Christina Barker
Don Hladiuk
Donald Morton

Legacy Fund

\$100–\$249

Jeff Booth
Searle Hartman
James Hesser
Ronald Kerr
Pranab Mukherjee
David Turner
Warren Wakarchuk

Thank you for your generous support.
Gifts of \$100 plus are gratefully recognized.

2021 AWARD WINNERS

Ken Chilton Prize	not awarded	Fellowship Award	Roland Dechesne (Calgary) James Edgar (Regina and Halifax) Michael Watson (National Member)
Service Award	Diane Bell (Victoria) Andrew Bennett (Okanagan) Zoltan Boda (Okanagan) Darrell Chatfield (Saskatoon) Paul Delaney (Toronto) Ellen Dickson (Saskatoon) Dr. Leslie (Les) Dickson (Saskatoon) Blair MacDonald (Halifax) Ronald (Ron) Waldron (Saskatoon) Ian Wheelband (Toronto)	Chant Medal	not awarded
		The Plaskett Medal	Dr. Ziggy Pleunis (McGill University)
		President's Award	Renata Koziol (Society Office)
		Simon Newcomb Award	not awarded
		Qilak Award	not awarded

2020 CERTIFICATES

EXPLORE THE MOON—BINOCULAR

Andrew Bennett (Edmonton) David Hawkins (Okanagan) George Pattern (Victoria)
Abby Choi (Vancouver)

EXPLORE THE MOON—TELESCOPE

Charles Banville (Victoria) John Peddle (St. John's) Tim Yaworsky (Saskatoon)
Robert Millard (Ottawa) Tony Schellinck (Halifax)

EXPLORE THE UNIVERSE

Ian Bain (Toronto) Lisa Ann Fanning (Halifax) Luke Sacco (Niagara)
Chris Baldock (National) Elsie Ferguson (Halifax) Chris Sarkaissan (National)
Stephen Brown (Ottawa) Karen Hamblin (Halifax) Swapna Shrivastava (Mississauga)
Stewart Cameron (Halifax) David Hawkins (Okanagan) Blair Stunder (Prince George)
Anita Carpenter (Okanagan) Murray Hunt (Edmonton) Troy Sweeney (Halifax)
John Carpenter (Okanagan) Paul Jomm (Niagara) Alexandre Viau (Montreal)
Dave Chapman (Halifax) Robert Millard (Ottawa) Alex Vio (National)
Atul Dave (National) Arushi Nath (Toronto)
Kathika Das (National) Denis Pilon (Regina)

FINEST NGC

Tony Schellinck (Halifax)

ISABEL WILLIAMSON LUNAR OBSERVING PROGRAM

Christopher Cokinos (National) Melody Hamilton (Halifax) Mike Matwyuk (Prince George)

MESSIER OBJECTS

Mike Matwyuk (Prince George)

PAST AWARD WINNERS

Below is a list of former winners of the Society Awards.

For names before 2000, please refer to "Looking Up—A History of the RASC" by Peter Broughton. www.rasc.ca/sites/default/files/LookingUp-300-text.pdf

For names after 2000, go to the RASC website www.rasc.ca/rasc-awards

CHANT MEDAL

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. The 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 carried out in astronomy and closely allied fields of original investigation.

2001 Richard Huziak (Saskatoon)

2002 Dr. Roy Bishop (Halifax)
2006 Ed Majden (Victoria)
2008 Dr. Geoff Gaherty (Toronto)
2018 Peter Broughton (Toronto)
2020 Michel Duval (Montréal)

FELLOWSHIP AWARD

Developed jointly by the Awards and Nominating Committees, and approved by the RASC Board of Directors in November 2013, the award of Fellow of the RASC (FRASC) is created to acknowledge the work of long-serving members. It recognizes those outstanding members who have made extraordinary contributions to the Society over the long term, much of which service has been rendered at the national level.

2014 Randy Attwood (Mississauga)

Dr. Roy Bishop (Halifax)
Peter Broughton (Toronto)
Dr. James Hesser (Victoria)

2015 Robert Dick (Ottawa)

Dave Lane (Halifax)
Dr. John Percy (Toronto)

Mary Lou Whitehorne (Halifax)

2016 Jay Anderson (Winnipeg)

Alan Batten (Victoria)
Doug Hube (Edmonton)
Franklin Loehde (Edmonton)
Patrick Kelly (Halifax)

2018 Peter Jedicke (London)

2020 David M.F. Chapman (Halifax)
Randall Rosenfeld (National Member)

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 recently.

2009 Brian Battersby (Prince George)

2010 Brian Battersby (Prince George)

Lise Charlebois (National Member)
Ted Dunphy (New Brunswick)
Paul Gray (New Brunswick)
Kim Hay (Kingston)
Marc Keelan-Bishop (Belleville)
Don Kelly (New Brunswick)
Rémi Lacasse (National Member)
Dave Lane (Halifax)

Damien Lemay (Québec)

Ron Macnaughton (Toronto)
Chris Weadick (New Brunswick)
Jennifer West (Winnipeg)

2012 Holly Ayles (New Brunswick)

2014 Kathryn Gray (Halifax)
Nathan Gray (Halifax)

2020 Peter Pekurar (Kitchener-Waterloo)

PLASKETT MEDAL

The Royal Astronomical Society of Canada and the Canadian Astronomical Society together present an award in recognition of the pivotal role played by John Stanley Plaskett in the establishment of astrophysical research in Canada. The award is made to the graduate from a Canadian university who is judged to have submitted the most outstanding doctoral thesis in astronomy and astrophysics in the preceding two calendar years. An award need not be made every year.

2009 Dr. Catherine Lovekin
(Saint Mary's University)

2010 Dr. Helen Kirk
(University of Victoria)

2011 Dr. Kaitlin Kratter
(University of Toronto)

2012 Dr. Pier-Emmanuel Tremblay
(Université de Montréal)

2013 Dr. Yasuhiro Hasegawa
(McMaster University)

2014 Dr. Andrew Pon
(University of Victoria)

2015 Dr. Anne Archibald
(McGill University)

2016 Dr. Jonathan Gagné
(Université de Montréal)

2017 Dr. Fereshteh Rajabin
(Western University)

2018 Dr. Gwendolyn Eadie
(Queen's University)

2019 Dr. Alexandra Tetarenko
(University of Alberta)

2020 Dr. Simon Blouin
(Université de Montréal)

PRESIDENT'S AWARD

Established in 2008, this award is to be given at the President's discretion, usually once a year, to a member who has made an important contribution to the Society, and to be presented by the President either at the General Assembly or during a visit by the President to the home Centre of the recipient.

2010	Sid Sidhu (Victoria);	2017	Dave Garner (Kitchener-Waterloo)
2011	Mayer Tchelebon (Toronto)	2018	Rick Huziak (Saskatoon)
2012	Randall Rosenfeld (National Member)	2019	Michael S.F. Watson (National Member)
2013	Dave Lane (Halifax)	2020	Barry Shanko (Vancouver) (posthumously)
2014	Robert Dick (Ottawa)		
2015	Walter MacDonald (Kingston)		
2016	Terence Dickenson (Toronto)		

QILAK AWARD/LE PRIX QILAK

This award is jointly administered by CASCA, the FAAQ, and the RASC, instituted to acknowledge excellence in astronomy outreach and communication. One prize can be awarded annually in each of the three founding societies

2012	Colleen O'Hare (Okanagan)	2017	Paul Heath (Halifax)
2013	Robert Duff (London)	2018	Dr. Rob Thacker (Halifax) RASC Mike Moghadam (Ottawa) Daniel Brousseau (Sherbrooke)
2014	Dr. Howard Trottier (Vancouver)	2019	Chris Curwin (New Brunswick)
2015	Toronto Centre DDO Volunteers (Toronto)	2020	Not awarded
2016	Doug Cunningham (Toronto)		

SERVICE AWARD

The Service Award was established in 1959 and takes the form of a bronze medal presented to members who have performed outstanding service to a Centre or to the National Society. Below is a list of recent winners of the Service Award.

2014	Jay Anderson (Winnipeg) Dave Gamble (Okanagan) Susan Gagnon (Kingston) Dr. James Hesser (Victoria) Greg Lisk (Belleville) Chris Stevenson (St. John's) Mary Lou Whitehorne (Halifax)		Bruce Fryer (Sunshine Coast) Robyn Foret (Calgary) Mike Hanes (London) A.W. Scott Masterton (Toronto) Ed Mizzi (Hamilton) Blake Nancarrow (Toronto) Roger Nelson (Calgary) Vance Petriew (Regina) Linda Pulliah (National Member) Laurie Roche (Victoria) Rick Saunders (London) Danny Sklazeski (Sunshine Coast) Leslie Strike (Mississauga) David Thompson (Sunshine Coast) Luca Vanzella (Edmonton)
2015	David M.F. Chapman (Halifax) Colin Haig (Hamilton) Chris Malicki (Mississauga)	2017	Chris Teron (Ottawa) Eric Briggs (Toronto) Simon Hanmer (Ottawa) Katrina Ince-Lum (Toronto) Michael Moghadam (Ottawa) Charles O'Dale (Ottawa) Dr. Brian Pihack (Niagara) Betty Robinson (Mississauga) Randall Rosenfeld (National Member) Stan Sammy (Niagara) Gerry Smerchanski (Winnipeg) Don Town (Belleville)
2016	Andy Blanchard (Hamilton) Gary Bennett (Hamilton) Paul Gray (Halifax) Hugh Pett (Okanagan)	2018	Colleen O'Hare (Okanagan) Grant Rice (Okanagan) Brian Lucas (Sunshine Coast) Neil Sandy (Sunshine Coast)
		2019	Michael Bradley (Sunshine Coast) Joanne Burns (Belleville) Phil Chow (Toronto)
		2020	Dennis Krause (Okanagan) Steve Holmes (Kitchener-Waterloo)

SIMON NEWCOMB AWARD

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

1994	Michael S.F. Watson (National Member)	2003	Alister Ling (Edmonton)	2013	Alan Whitman (Okanagan)
1999	Terence Dickinson (Toronto)	2004	Mary Lou Whitehorne (Halifax)	2016	Martin Hellmich & Halley Davies (Halifax)
2001	Dan Falk (Toronto)	2006	Dr. Warren Finlay (Edmonton)	2017	Ivan Semeniuk (Toronto)
2002	Dr. David Levy (Kingston)	2007	Alan Dyer (National Member)	2018	Nicole Mortillaro (Toronto)
		2008	Gary Seronik (Victoria)	2020	John A. Read (Halifax)
		2009	James Edgar (Regina)		
		2011	Jay Anderson (Winnipeg)		
		2012	Randall Rosenfeld (National Member)		

HONORARY MEMBERS OF THE RASC

Dr. Oscar Álvarez-Pomares (Cuba)	Prof. Andrew Fraknoi (United States)	Dr. Lisa Randall (United States)
Dr. William Bottke (United States)	Dr. Owen Gingerich (United States)	Dr. Sara Seager (Canada)
Dr. David L. Crawford (United States)	Dr. Jean Meeus (Belgium)	Dr. William Sheehan (United States)
Rev. Robert Evans (Australia)	Dr. Jay Pasachoff (United States)	Dr. Carolyn Shoemaker (United States)
Dra. Julieta Fierro (Mexico)	Dr. P.J.E. (Jim) Peebles (United States)	Dr. R. Brent Tully (United States)

PAST APPOINTED AND ELECTED OFFICERS OF THE RASC

Below are lists of former Honorary Presidents, Presidents, Secretaries, and Treasurers of the RASC. For names before 1990, please refer to "Looking Up—A History of the RASC" by Peter Broughton.

Honorary Presidents	2002-2004 Dr. Rajiv Gupta	2007-2014 James Edgar
1997-2001 Dr. Jack Locke	2004-2006 Peter Jedicke	2014-2016 Dr. Karen Finstad
2001-2005 Dr. Roy Bishop	2006-2008 Scott Young	2016-2018 Charles Ennis
2005-2010 Dr. Robert Garrison	2008-2010 Dave Lane	2018-2020 Roger Nelson
2010-2013 Dr. James Hesser	2010-2012 Mary Lou Whitehorne	2020- Eric Briggs
2013-2018 Dr. John Percy	2012-2014 Glenn Hawley	Treasurers
2018-2022 Dr. Douglas Hube	2014-2016 James Edgar	1998-2004 Michael Watson
	2016-2017 Craig Levine	2004-2006 David Clark
	2017-2018 Colin Haig	2006-2007 Alan Whitman
	2018-2020 Dr. Chris Gainor	2007-2012 Mayer Tchelebon
	2020- Robyn Foret	2012-2016 Denis Grey
		2016-2016 Susan Yeo
Presidents	Secretaries	2016-2017 Colin Haig
1998-2000 Randy Attwood	1999-2005 Kim Hay	2017-2018 Anthony Gucciardo
2000-2002 Dr. Robert Garrison	2005-2007 Stan Runge	2018- Catherine Carr

GENERAL ASSEMBLIES—2001 TO 2020

The following Centres hosted the General Assembly from 2001 to 2021:

2001 London	2008 Toronto, Mississauga and Hamilton	2017 Ottawa
2002 Montréal	2009 Saskatoon	2018 Calgary
2003 Vancouver	2010 New Brunswick	2019 Toronto, joint with AAVSO
2004 St. John's	2011 Winnipeg	2020 Vancouver—remotely
2005 Okanagan	2012 Edmonton	<i>The following Centres will host the General Assembly in the future:</i>
2006 Ottawa	2013 Thunder Bay	2021 Hosted by National—remotely
2007 Calgary	2014 Victoria	
	2015 Halifax	
	2016 London	

OFFICERS AND COUNCILS OF THE CENTRES—2021

BELLEVILLE CENTRE

c/o Greg Lisk
11 Robert Drive
Trenton ON K8V 6P2
rascbelleville.ca
greg-lisk@sympatico.ca

President	David Cotterell
Treasurer	Garth Penn
Secretary	Joanne Burns
National Representative	Don Town

CALGARY CENTRE

PO Box 20282
250, 300 5th Ave SW
Calgary AB T2P 4J3
Roland.Dechesne@cnrl.com

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Past President	Roland Dechesne
Honorary President	Dr. Phil Langill,

	RAO
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Second Vice President	David Brown
Treasurer	Russell Dueck
Secretary	Peter Brackett
Councillors	Andrew Bennett

	Jennifer Howse
	Eric Klaszus
	Larry McNish
	Andrea Poole
	Steve Donaldson
	Doug Thorp
	Phil Tracey
National Advisory Council Reps	Steve Donaldson
	Judy Sterner
	Doug Thorp

EDMONTON CENTRE

788, 10301-104 Street
Edmonton AB T5J 1B9
executive@edmontonrasc.com
edmontonrasc.com

President	Tom Owen
Past President	Geoff Robertson
Vice President	Abdur Anwar
General Secretary	Sukrit Ahluwalia
Treasurer	Florin Sabac
National Council Representatives	Alister Ling,
	Sharon Morsink

HALIFAX CENTRE

PO Box 31011
Halifax NS B3K 5T9
halifax.rasc.ca
halifax@rasc.ca

Honorary President:	Mary Lou Whitehorne
President	Judy Black
Vice-President	Pat Kelly
Treasurer	Gregg Dill
Secretary	Peter Hurley
National Representative	Pat Kelly

HAMILTON CENTRE

PO Box 969
Watertown ON L0R 2H0
905-689-0266 (observatory)
hamiltonrasc.ca
emizzi@cogeco.ca

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Vice President	Bob Prociuk
Secretary	Greg Stopelli
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Membership	Bob Prociuk
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76 Colebrook Road
RR 1
Yarker ON K0K 3N0
rasc.ca/kingston
kingston@rasc.ca

President	Kim Hay
Vice-President	Laurie Graham
Secretary	Asser ElGindy
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Editor	Kevin Kell
Librarian	Francesco Ambrogi
NC Rep	John Hurley

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519-763-0184
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secretary@kw.rasc.ca

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Outreach/Communications	Jim Goetz
National Council Rep	Jim Fairles
Past President	Steve Holmes

LONDON CENTRE

Norman McCall
114 Gardenvale Cres
London ON N6J 4B9
rasc.ca/London
info@rasclondon.ca

Honorary President	Peter Jedicke
President	Rick Saunders
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Treasurer:	Bill Gardner
Secretary:	Everett Clark
National Representative	Mike Roffey

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PO Box 98011
2126 Burnhamthorpe Rd W
Mississauga ON L5L 5V4
mississauga.rasc.ca
general@mississauga.rasc.ca

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Vice-President	Allan Connery
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Councillors	John Marchese
	Leslie Strike
	Keith Jarvie
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	Chris Malicki

CENTRE FRANCOPHONE DE MONTRÉAL

CP 206 Station St-Michel
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514-201-3889
lasam.ca
scattol@videotron.ca

President	Yves Martin
Vice-President	Patrice Scattolin
Treasurer	Yves Champagne
National Rep	Patrice Scattolin

MONTRÉAL CENTRE

PO Box 39061
 Montréal QC H3B 0B2
rascmontreal.org
info@rascmontreal.org

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 President Paul Simard
 Vice-President Morrie Portnoff
 Recording Secretary Terry Doucet
 Secretary Carl Jorgensen
 Treasurer Benchu Tang
 Director of the Observatory Alex Stefanescu

Public Events Co-ordinator Karim Jaffer
 Director of Research & Development David Shuman
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 Webmaster Richard Trottier
 Director of Observational Events Santiago Lopez
 Director Special Projects Karl Petruich
 Past President Katherine Dulong
 Director of Outreach Russell Fralich

NEW BRUNSWICK CENTRE

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 Riverview NB E1B 2V
nb.rasc.ca
president@nb.rasc.ca

President June MacDonald
 1st Vice-President Chris Curwin
 2nd Vice-President Paul Owen
 Secretary David Penney
 Treasurer Emma MacPhee
 National Representative June MacDonald

NIAGARA CENTRE

c/o Dr. Brian Pihack
 4245 Portage Road
 Niagara Falls ON L2E 6A2
astronomyniagara.com
tcrbarnes@hotmail.com

Past President Brian Pihack
 President Tim Barnes
 Vice-President Darlene Marano
 Treasurer Robert Lewis
 Secretary Philip Downey
 National Representative: Janice Low

OKANAGAN CENTRE

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 Kelowna BC V1W 4X3
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 V.P. Kelowna Anita Carpenter
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 Observatory Director Guy Mackie
 National Rep. David Hawkins
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OTTAWA CENTRE

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 1363 Woodroffe Ave
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