



The Royal Society of Victoria

Promoting Science and Science Education



THE ROYAL SOCIETY OF VICTORIA INC.

2014 Annual Report

THE ROYAL SOCIETY OF VICTORIA INCORPORATED

ABN 62 145 872 663

ANNUAL REPORT FOR THE YEAR ENDING 31st DECEMBER 2014

Council has the honour to present its report to Members upon the activities of the Society during its 159th year of operation.

PATRON

The Hon Alex Chernov AC QC
Governor of Victoria

COUNCIL

OFFICE BEARERS

President	Dr W. D. Birch AM, BSc(Hons), PhD
Vice-President	Prof. P. Y. Ladiges AO, FAA, PhD, MSc, DipEd
Immediate Past President	Prof. L. Selwood, MSc, PhD
Honorary Secretary	Dr M. Williams, BSc, MSc, PhD
Honorary Treasurer	Mr N. P. Kennedy, BEng(ComEng), MSc(Comp)
Honorary Librarian	Dr T. A. Darragh, MSc, PhD, GradDipEd
Honorary Editor	Dr D. Lightfoot, DipMedLabTech, MSc, PhD
Honorary Archivist	Mr M. A. C. Carkeek, BA
Honorary Research Secretary	Prof. S. M. Rees, BSc(Hons), MSc, MPhil, PhD, DSc

MEMBERS

Prof. G. D. Burrows AO, CJCJ, BSc, MB, ChB, DPM, MD GradDipMHlthSc(Clinical Hypnosis),
DSc, FRANZCP, FRCPsych, MRACMA, FACHAM
Dr D. M. Churchill, BSc, MA, IPAA, PhD
Prof. T. J. Entwisle, BSc(Hons), PhD
Mrs H. J. Gardiner, BA, Cert IV Workplace Training
Lt Col R. M. Lightfoot (Ret), LLB, LLM, DipCivEng, DipElecEng, DipMechEng, BEMining (Hons),
RFD, FIEAust
Mr J. S. Link, MechEngDip
Mrs N. H. Williams, BSc, DipEd, MSc, FRACI
Mr D. Zerman, MPH, FFIA, CFRM, FAIM

TRUSTEES

Dr D. M. Churchill, BSc, MA, IPPA, PhD
Dr A. S. Finkel AM, PhD, FTSE
Prof. L. Selwood, MSc, PhD
Em. Prof. J. W. Warren, MA, PhD

RETURNING OFFICER

Mr I. D. Endersby, BSc

FELLOWS OF THE ROYAL SOCIETY OF VICTORIA

1995	David H. Ashton* Herbert H. Bolotin Phillip G. Law* Dewar W. Goode*
1996	Jerry M. Adams Clive K. Coogan* Suzanne Cory Sir Gustav Nossal Sir Arvi Parbo Graeme I. Pearman John A. Talent
1999	James M. Bowler Nancy F. Millis*
2001	Yvonne Aitken* Martin R. Harris Barry O. Jones John F. Lovering
2004	Thomas A. Darragh Joyce R. Richardson
2005	Hilary J. Harrington Murray J. Littlejohn
2008	David V. Boger
2010	Milton T. W. Hearn

* Deceased

PRESIDENT'S REPORT

Presidents reporting on the year just gone traditionally observe that the Society has faced challenges yet made progress, and for 2014 there is no exception. The Council has maintained its resolve to ensure the Society remains financially viable and explores new opportunities to fulfil our mission of promoting science to the community. I am grateful to all our members for the support you have shown for these developments, many of which I will comment on in my report.

As usual, our programme of twice-monthly public lectures has underpinned the Society's efforts to promote science, with a wide variety of expert speakers on diverse topics. These lectures have been very well attended, with average audiences numbering in the 60s, so clearly the hard work of the Science Programme committee, chaired by Sandra Rees, is paying dividends. Perhaps the standout, certainly in terms of attendance, was the lecture in September commemorating the 200th anniversary of Matthew Flinders, inspired by the enthusiasm of member Anwyn Martin. The Science Programme committee also co-ordinated the annual Young Scientists Research Awards in September, when the next generation of researchers present their latest discoveries, at the same time as being introduced to the Society. The winners and runners-up are to be congratulated and I hope they will be inspired by the experience to continue their membership of the Society. In a new initiative, the Society held an enjoyable social event for winners of bursaries in the Annual Science Talent Quest run by the Science Teachers Association. We also awarded the second Phillip Law Prize to Dr Madhu Bhaskaran, RMIT and our Research Medal for excellence in medical science to Professor Jane Visvader, who received her award from our Patron, His Excellency the Governor of Victoria, in December. These prestigious awards do much to further the reputation of the Society in the local scientific community.

A highlight of the scientific year was the annual symposium, held this year as a joint initiative between the Society and the Australian Association of Humboldt Fellows, on the topic of Early German Contributions to Victorian science. Planning for this event had a long lead time involving Professor Lynne Selwood and her AAHF colleagues and it's a great credit to everyone that the event was so successful. The Society is especially grateful for the support we received from the German Embassy and also from the Victorian Government, which hosted the closing function at 55 Collins Street. Many of the papers from this symposium will be published in a special issue of the *Proceedings of the Royal Society of Victoria* in 2015.

On the subject of the *Proceedings*, it's fair to say that it has been a challenge for the Society over the past few years. This year in particular we have been without an Editor on Council following Mary Familiari's resignation and also had no editorial support, so I'm grateful to Dr Mark Williams, our Honorary Secretary, for putting on another hat in order to assemble the papers from last year's symposium on Victoria's Energy Future for publication. At the time of writing, these were just about to go to the printers, so the 2014 Volume 126 (single issue) will be available early in 2015. As part of our efforts to kick-start the journal and move it into the modern era, the Society has been negotiating an agreement with CSIRO Publishing. A successful outcome will see the journal published in two issues in 2015, online and open access through the CSIRO's website, with a link established on the Society's website. I believe that this arrangement will not only be less costly, but also make the journal more attractive to potential authors.

Members will be aware that we dealt with some administrative challenges through the year. The first was the serious illness that struck James McArthur, our Property and Events Manager, early in the year. After intensive treatment, James made a good recovery and returned to work after several months. By the end of the year he had returned to full health, but at the time of writing he has suffered a reoccurrence and is undergoing more treatment. I'm sure I speak for all members in conveying best wishes to James, Amanda and the children for a full recovery. Doug McCann stepped in to help out during James's illness, allowing us to fulfil our rental commitments. Late in the year our Executive Officer, Dr Jillian de Araugo, tendered her resignation after 18 months with the Society. Jill worked with energy and enthusiasm and did a great deal to improve the way the Society operated, especially the modernisation of the website, with help from Helen Vorrath, an extensive revision of the Society's Rules, and the efficient project management of the car park redevelopment. Jill's resignation placed an additional burden on our loyal and dedicated staff while the Society sought a replacement, and I want to pay tribute to Alex Tsakmakis, Janet Jackson and James for taking on the extra duties. The Society is especially fortunate to have appointed Michael Flattley to the position of Executive Director, and I'm sure all members will extend a warm welcome to Mike and look forward, as I do, to working with him.

I referred above to this year's changes to the Society's Rules, inspired by the need to modernise the operations of Council, by reducing the number of Council members, their maximum term of office and the number of meetings. At the same time, there is a great opportunity and need to involve more members in what have traditionally been Council-dominated functions. These centre round the Council committees involved with the Science Programme, Membership, Publications and Records, and Science Outreach, the last incorporating the Science in my World project. An additional committee, dealing with Policy and Communications, has operated over the past few years in an informal way, but in 2015 will be given more of an official role. I'm grateful for Council members Sandra Rees, David Zerman and Helen Gardiner, who have chaired these committees this year and to those members who have contributed ideas and volunteered their services for committee work. Many of these members also participated in a Members Forum held in August. In particular, we should acknowledge the initiative taken up by Martin Harris, with help from members Helen Gardiner and Doug McCann, to set up the CoderDojo programme of computer education for school-aged children supported by Kieran Nolan at Wooranna Park Primary School. This activity is part of the Science Outreach Programme and complements our involvement with Thornbury Primary School, where Society volunteers led by Rick Tudor are assisting staff with their science teaching. Our annual fundraising event for the Science in my World project was held in May, when Nobel Laureate Professor Brian Schmidt entertained 80 guests at a luncheon at Morgans at 401. Our thanks go once again to Gary Morgan and his staff for their generous assistance to the Society in running this event. Mention should also be made of the Science Policy committee members Dennis O'Neil, Roslyn Gleadow, Peter Baines and Bernie Mace, who have cast their expert eyes over several draft position statements adopted by the Society this year.

Members and visitors who park will now be very familiar with the new car park, which has greatly improved the appearance of the site and its general functionality. Unfortunately, we have not yet been able to hire out any of the six long-term places as intended, but we will continue our efforts early in 2015. The renovation involved extensive discussion with Heritage Victoria, who eventually approved the project and used the opportunity to assess the Society's entire land under the new legislation. I wish to acknowledge the planning advice provided by the Society's long-time heritage advisor, Greg Corbin, as well as Dodge Phoenix's contribution to planting out the site. Another significant change foreshadowed last year was the departure of the Bureau of Meteorology from their monitoring station, which they've leased since 1908. Apart from the loss of a facility that generated significant public interest and valuable scientific data, the Society will forgo rental income from the BoM's move, so we will be looking for ways to recoup that in 2015. Our relationship with our significant tenant, Federation University Australia, remains strong and we greatly value their presence in our building.

The Society's financial situation is sound but, as ever, we maintain perpetual vigilance over expenditure in the light of reduced or static income from rental and membership, a situation that the Honorary Treasurer, Norman Kennedy, will expand on in his report. Our investments, the Science Fund, managed by Equity Trustees, have performed very well over the past year, but we would very much like to add significantly to the capital invested, to provide us with more funds to support scientific activities.

In closing, I would like to express my thanks to our retiring Councillors, who have given valuable service over many years to the Society. Richard Lightfoot, David Churchill, Diane Lightfoot, John Link, Tom Darragh (in the capacity of Honorary Librarian) and Malcolm Carkeek (as Honorary Archivist) have contributed generously with their time and in some cases their donations and I hope they will continue to remain active members of the Society. I am especially grateful for the valuable advice and support the Executive and I have received from retiring Vice-President, Pauline Ladiges, and we all wish her well in her continuing role with the Australian Academy of Science. Finally, on behalf of the Council, I express my thanks to Sandra McColl at Aitken Partners, the Society's legal advisors, for her timely counselling on several significant matters during the year. Let's all hope the Society has much less need for legal advice in 2015!

Bill Birch, President

THE HALL

Numerous organisations conducted over 265 meetings during the year. Federation University Australia continues the use of the two first floor offices and the Von Mueller Room.

METEOROLOGICAL OBSERVING SITE

The Commonwealth Bureau of Meteorology continued to rent the area at the corner of La Trobe and Victoria Streets adjoining the Society's Caretaker's cottage but vacated the land on 31st December 2014 due to moving their weather monitoring equipment to Olympic Park, Richmond.

CITY OF MELBOURNE

The Council wishes to acknowledge with gratitude the continued maintenance and refurbishment of the grounds of the Society as part of the City of Melbourne's open space system.

ACKNOWLEDGMENTS

The Society's thanks and appreciation are due to those people and organisations that contributed their valuable assistance during the year, notably:

- ◇ Mr Andrew Blogg and Ms Sandra McColl, Honorary Solicitors
- ◇ Mr Clive Wilmot for his generous donation in kind of off-site storage
- ◇ Mr Jonathan D. Madgwick, BBus ACA, Honorary Auditor
- ◇ Mr Dodge Phoenix, Gardener
- ◇ Mr Greg Corbin, Architect
- ◇ Volunteer assistance with the Newsletter – Mr Joe Bagnara, Mr Leon Costermans, Mrs Barbara Day, Mr Ian Farnsworth, Mr Richard Franklin, Ms Maretta Frolley, Mr Graham Miller, Dr Tom Mole, Mrs Elaine Muir, Ms Pam Procter and Mr Brian Simpson
- ◇ Volunteer assistance with archiving the Society's records and cataloguing the Library – Mr Malcolm Carkeek

ADMINISTRATION

Dr Jillian de Araugo	Executive Officer (until 3 rd October 2014)
Mr Alex Tsakmakis	Administration Officer - Finance (part time)
Mrs Janet Jackson	Administration Officer - Secretariat (part time)
Mr James McArthur	Functions and Property Manager

This Report is approved by Council for presentation to Members at the Annual General Meeting to be conducted Thursday 23rd April, 2015.

Bill Birch, President

2013 ANNUAL GENERAL MEETING

The 158th Annual General Meeting was convened on 24th April, 2014.

- The Councillors elected at the Ordinary Meeting held 13th March, 2014 were inducted for 2014.
- The Annual Report and Financial Statements for 2013 were received and adopted.
- Mr Jonathan D. Madgwick, BBus, ACA, was appointed Honorary Auditor.

FUNDRAISING

The Society acknowledges the following Members for their generosity (post-nominals omitted).

Michael Austin	John E Harrison	Paul Mulvaney
E Ron Ballantyne	Graeme J Hart	O T O'Flynn
David T Bellair	Walter Hesse	Richard O'Hair
Alan J Berry	Michael Hewitt-Gleeson	Maurice Pagnin
W D Birch	Peter T Hogan	Antonio Pagnin
Michael Boone	Peter W Holbeach	Margaret C Polmear
Kenneth W Bradley	Judith Hoy	Lady Primrose Potter
Graham D Burrows	Patricia Illing	Lynne Selwood
Jane Canestra	Melinda Kemp	Guang Shi
David M Churchill	Norman P Kennedy	Christopher R Simpson
Ken R Clayton	A Peter Kershaw	Oliver R B Thomas
H Trevor Clifford	Judith F Kinnear	William J Thompson
Leon F Costermans	Pauline Y Ladiges	Peter G Thorne
Ian Crane	Jeanette R Learmont	Richard Thwaites
Leslie Grey Dale	Diane Lightfoot	Timothy L Todhunter
Suzanne Daniel-Dreyfus	Elizabeth R Lightfoot	Bruce Tonge
J Keith Dempster	Richard M Lightfoot	Lyn Treadwell
Meredith Doig	John A S Link	E R Tudor
Don Dunstan	Bruce G Livett	Ben M Wadham
Carol R Ely	Marjory Martin	Pera Wells
Alan Finkel	Anwyn M Martin	Voi M Williams
Helen J Gardiner	Manju Mohandoss	Nicola H Williams
David I Gibbs	Thomas Mole	Mark Williams
Judy Gordon	Colleen Morris	Clive F Wilmot
Phillip Hamilton	Trevor C Morton	

Bequests

No bequests were received.

Donations from Non-Members

Evan Bieske	Finkel Foundation	R I Hunter
Mark Rizzacasa	Miranda Scarff	Jonathan White
Spencer Williams		

SCIENCE PROGRAMME COMMITTEE

Prof. S. Rees (Chair), Lt Col R. Lightfoot (Ret), Mrs N. H. Williams, Dr D. Lightfoot, Mr Dennis O'Neill (co-opted).

2014 Lecture Series

The twice monthly lecture program ran from 13th February to 13th November with the RSV Medal presentation concluding the year on 11th December. The lectures were very well attended with audiences of between 45 and 110 (average 70) members and the general public. The program included a special lecture celebrating the bicentenary of the death of Matthew Flinders by Dr Gillian Dooley and a lecture marking the International year of Crystallography by Professor Joel Brugger. Excellent lectures covered a wide range of scientific topics including: Optics in Medicine and Biology (A/Professor Paul Stoddart); Curing Plant Blindness and Illiteracy (Professor Tim Entwisle); Picturing Kimberley's Past (Dr June Ross); Medical Bionics: medical solutions for damaged nerves (Professor Rob Shepherd); Coeliac Disease, Gluten Sensitivity and Wheat Intolerance (Dr Jason Tye-Din); Pluto's Moons and the birth of the solar system (Dr Andrew Prentice); Towards a low carbon society (Professor Doug MacFarlane).

In response to members' requests a new initiative in 2015 will be to trial holding lunch time meetings on the fourth Thursday of the month in June, July and August. If this proves to be a popular arrangement we will continue with it in the future.

Dr Philip Law Postdoctoral Award for Physical Sciences. The Award was organized by the Committee and won by Dr M. Bhaskaran, RMIT. The award (\$2,000 prize money) attracted 15 excellent entries. We are grateful to the judging panel which included Professors Rachel Webster, Bruce McKellar, Stephen Praver and A/Professor Roger Hughes. In 2015 the Award will be increased to \$3,000 to enable the recipient to attend an international scientific meeting. A sub-committee to take on the ongoing running of this award is envisaged for the future.

Young Scientist Research Prizes were awarded as part of the Society's contribution to Science Week on 25th September and the Committee organized the judging. Judges included Professors Richard Harding, Sandra Rees, Pauline Ladiges, Lynne Selwood, Dr Peter Baines, Dr Bill Birch, Mrs Nick Williams and Mr Norman Kennedy. There were 74 entries in three categories: Physical & Earth Sciences, Biomedical & Health Sciences and Biological Sciences (Non-human). As there were only two entries in the Earth Sciences category this year they were combined for the Physical & Earth Sciences prize. The Committee recommended seven young scientists to present their work.

The prizes are supported by the E. D. Gill and Neil W. Archbold bequests and by generous donations from current Society Members; the Society supported the cost of the evening.

The Chair of Science Programs, Professor Sandra Rees, presented \$1,000, a certificate, and membership of the Society for 2014 to the winners:

Biological Sciences (Non-human) Prize: **Kylie Soanes** for her research in "Bridging the Road-gap for Wildlife"

Biomedical & Health Sciences Prize: **Bevan Main** for his work in "Targeting type-1 interferon signalling is neuroprotective in the MPTP mouse model of Parkinson's disease"

Physical & Earth Sciences Prize: **Jacqueline Delaney** for her work in "Low-cost Sensing for Everyone"

The runners up also received a certificate and prize: **Yin Ying Ho, Matthias Koenning, Alik Rasmiena and Sharmen Rajendran**

This successful function can be further supported by Members if they wish to make a donation to the Young Scientist Research Prizes Fund.

Sandra Rees, Chair

FELLOWS and RESEARCH MEDAL

Dr W. D. Birch AM (Chair), Mr N. P. Kennedy, Prof P. Y. Ladiges, Prof L. Selwood, Dr M. Williams

No Fellowships were awarded in 2014.

The Committee was pleased to recommend to Council that Professor Jane Visvader be awarded the 50th Award Royal Society of Victoria 2014 Research Medal. The presentation to Professor Visvader was made by The Hon Alex Chernov AC QC, Governor of Victoria and Patron of the Society, at the Society's meeting on 11th December, 2014.

Bill Birch, Chair

LIBRARY and ARCHIVES

Dr T. A. Darragh (Chair/Librarian), Mr M. A. C. Carkeek (Archivist)

Library Report

During the year the Foster collection of books was listed by Craig Robertson. A further collection of books and publications that were duplicates or those deemed not needed by the Society were offered for sale to members. A number of publications were presented to Museum Victoria library. I thank Mr Robertson for his assistance.

Tom Darragh, Honorary Librarian

Archives Report

After the seven year period during which all the Society's records required for legal purposes are kept in the general office, they are moved to the archives for assessment by the Archivist. The space available at the Society for storing archival material is limited and by their nature the archives grow over time. Therefore the criterion that has been adopted in deciding what is to be kept for posterity and what may be disposed of is "What is the likelihood of this document being of any interest to a future officer and/or researcher?" Council Minutes etc. are obviously a must keep, but invoices for general office consumables are not. In between there is a whole range of topics and individual documents that might be kept or discarded. We cannot keep all documents produced or received by the Society on the off-chance that someone at some time may want to access one. Therefore a rational selection process must prevail. Likely/possible topics that a person may choose to write on are:

- A general history of the Society,
- A history of the Library,
- A history of the buildings and site (including their rental and hire),
- The Membership in general or one member in particular,
- The symposium and lecture series,
- A study of funding of the Society during the twentieth and twenty-first centuries,
 - A review of the journal exchange program with other like institutions — particularly during the nineteenth century, and
- Awards given by the Society and their recipients.

Material relevant to the above is being collected and appropriately organised.

The last time the Archives was reviewed and rationalised was in the late 1970s to early 1980s. The last two years has seen this brought up to the late 1990s. This work has been challenging because it was found that, not infrequently, documents (sometimes quite important ones) were misfiled, thus requiring that all documents be quickly scanned for a few nuggets in many files of dross.

When I finish my term as Archivist at the next AGM, I expect to have completed my review, culling and organisation of the archival material for the period noted above; and to pass on to the new Archivist a functioning system.

Malcolm Carkeek, Honorary Archivist

MEMBERSHIP COMMITTEE

Mr D. Zerman (Chair), Prof G. D. Burrows, Mr M. A. C. Carkeek, Mr J. S. Link.

Retaining current members and encouraging new members has been one of the main tasks of the Membership Committee. When the Committee met during 2014 we discussed a number of options to increase the Society's membership. As well, members of the Committee participated in the Members' Forum on 9th August to obtain their views on the direction they would like the Society to undertake and particular activities they would like to be involved in.

Members of the Council have discussed membership issues at many meetings. Despite regular increases in applications to join the Society during the year there has been no significant increase in our membership numbers.

In 2015 I will be working with the Committee to look at a range of benefits for existing members and those who join the Society in the coming year. This will be a high priority of the Committee in 2015 if we are to develop and improve our financial sustainability in future years.

I would like to thank the Committee Members and the Executive Officer for their discussion and participation in our activities during the year.

David Zerman, Chair

MEMBERSHIP 2014

Changes to Membership in 2014

Elected in 2014	38
Transfer to Life Membership	0
Resignations	7
Deaths	10
Removals (failure to pay subscription)	11

Total individual Membership 2014 634

Corporate Members 2014

Australian Delphi User Group Inc.
School of Philosophy (Melb) Inc.

VALE

The deaths of the following Members are recorded with deep sympathy to their families:

Peter F. B. Alsop
Dr Ralph W Birrell
John Eric Harms
Peter R. Kenley
Dr James F. Reid
Harold C. Richards
Rolf G. Seecamp
Kenneth N. G. Simpson
Em. Prof. Thomas Frederick Smith AM
John W. Spencer

PUBLICATIONS COMMITTEE

Dr M. Williams (Chair), Prof G. D. Burrows, Dr D. M. Churchill, Dr T. A. Darragh, Dr D. Lightfoot.

The Chair of the Publications Committee, Mary Familiar, resigned from the position of chair of the Publications Committee in mid-2014. Mary made an excellent contribution to the work of the Publications in the RSV in the years leading up to this time. The Transactions from the Energy Symposium held in late 2013 were edited and were ready for distribution early in 2015.

Mark Williams took over as chair of the Publications Committee in mid-2014 and Bill Birch took on the role of Managing Editor. An editorial board was appointed and a contract with CSIRO Publishing was drafted and ready for formalisation early in 2015, with all future proceedings to be published by CSIRO

under open access. Under the agreement with CSIRO there will be two issues of the Proceedings each year. In 2015 the first will be a special issue of the Proceedings following on from the von Humboldt symposium to be published around mid-year. The second will be a normal issue to be published near the end of 2015. A number of manuscripts have been submitted for this issue and it is expected that it will be substantial in content.

With the change to publication through CSIRO it is hoped that the Proceedings will gain wider exposure and that the publication activity of the RSV will gain some momentum, some of which has been lost a little over recent years.

The list of papers included in Volume 126 Numbers 1 and 2 (single issue) follow.

VOLUME 126

Note that there are no Proceedings papers in this volume.

TRANSACTIONS

VICTORIA'S ENERGY FUTURE: PROSPECTS AND CHALLENGES PUBLIC LECTURE (23 October 2013) and SYMPOSIUM (25–26 October 2013)

PUBLIC LECTURES - Museum Victoria, 23 October 2013

TONY WOOD - Global and national energy upheavals: what's happening and what does it mean for Victoria?

MIKE SANDIFORD - Energy demand – lessons from the Victorian electricity sector

SIMON HOLMES A COURT - Opportunities for communities amidst the energy challenge: Hepburn Wind

SYMPOSIUM PRESENTATIONS - Royal Society of Victoria, 25–26 October 2013

PHIL HARRINGTON - Meeting Victoria's energy requirements in the 21st century

WILLIAM ROWLANDS - Challenges and opportunities for fossil fuels in a carbon-constrained world – an Australian perspective

KERRIE-ANNE LANIGAN - Australia's gas future: how Victoria can stay ahead of the pack

MAXWELL WATSON - CO2CRC's carbon capture and geological storage demonstration in Victoria

WALTER JEHNE - Carbon capture and storage: the biological potential

TOM KEDDIE - Wind power in Victoria

GRAEME BEARDSMORE - Geothermal energy: deep sources in Victoria

IAN JOHNSTON - Geothermal energy: shallow sources

SANDRA KENTISH & VAUGHAN BECK - Unconventional gas: shale gas and coal seam gas

JOHN THWAITES - Tracking Australia's progress to a low carbon economy

DAVID FERRARI - Solar thermal and electricity generation

JOHN SANDERSON - Waste to energy

TIMOTHY D. FINNIGAN - Wave and tidal energy: the potential for extraction of sustainable energy from the ocean

MARION CAREY - What is the evidence for potential health impacts from wind power?

HELEN REDMOND - Impact of energy generation on health: unconventional gas

LINDA SELVEY - Coal and health in Australia

WINNER OF THE 2013 ROYAL SOCIETY OF VICTORIA RESEARCH MEDAL BIOLOGICAL SCIENCES (NON-HUMAN) CATEGORY

MARK BURGMAN - Getting the best out of experts: a review

WINNER OF THE 2014 DR PHILLIP LAW AC, POST-DOCTORAL AWARD FOR THE PHYSICAL SCIENCES

MADHU BHASKARAN - Squeezing crystals and making waves: Paving the way to self-powered electronics

Mark Williams, Chair

SCIENCE POLICY & COMMUNICATIONS COMMITTEE

Dr W. D. Birch, Dr M. Williams, Prof. T. Entwisle, Prof. R. M. Gleadow, Dr P. G. Baines, Mr B. R. Mace.

SCIENCE OUTREACH COMMITTEE

Helen Gardiner (Chair), Martin Harris, Peter Hogan, Rick Tudor, Madelaine Willcock (student volunteer)

This Committee was created in 2014 to oversee and direct the following activities of the Society:

Science in My World

This program was officially launched in July 2014 with an evening workshop on the primary science curriculum led by expert, Ms Helen Trotter. Members and volunteers have since been looking for opportunities to help within their immediate networks and the Coderdojo initiative arose in that context.

Preliminary meetings were held with the Head of Junior School and Head of Science, Junior School at Trinity Grammar to talk about their teachers' needs and our vision for our program. An August meeting with staff at Thornbury Primary School had some very rapid outcomes - some science presentations were arranged for their National Science Week assembly the following week and support to attend the Australian Academy of Science's Primary Connections professional development training over two days was offered to their newly-appointed science coordinator, Ms Lucy Webb, to attend in November. Lucy has since reported back: *'There is a strong focus on developing students' everyday literacy understanding as well as the literacies of science and scientific literacies - an essential skill in today's information loaded society. I highly recommend this training.'* A very kind offer was made by the Academy to support Lucy's PD and this has meant we have been able to set aside the funds intended for that for future activities.

RSV Members Rick Tudor and Martin Harris have since spent a day cleaning out and stocktaking Thornbury Primary School's science resources and staff were pleased with the results. Rick has now agreed to act as a resource for Lucy in her work, and we expect further requests for assistance will be met by the resources of the Committee.

Coderdojo

With seed funding from Dr Alan Finkel, AO FTSE and with the sustained commitment of Martin Harris and Doug McCann (member) Melbourne's first Coderdojo started on Sunday 7 December 2014 at Wooranna Park Primary School in Dandenong North and is continuing into 2015. Regular attendances have been averaging between 20 to 26. The student ages range from 8 to 16 and they come with their equally enthusiastic parents. Approximately half the students are doing formal coding and simple program writing and others are occupied with various games. Some of these projects are: Oculus Rift, Leap Motion, Drone Technology, Java, HTML5, Python and C++ Coding and Networking Technologies. Future projects include Unity coding and Google Drive API. Some of the funds for the program have contributed to the purchase of some extra equipment for such programs both for the Coderdojo and for the school's use.

Thanks to the Principal and staff, in particular Mr Kieran Nolan, at Wooranna Park Primary School, where these classes have been hosted, for taking on this new activity.

Science Talent Search Presentation Evening

The Committee supported an entertaining local science communicator, Sean Elliott to present at this event, held on 27 November, making it a fun and lively occasion.

There has been a slow but steady start to our activities in 2014, following the terrific foundation work of Lynne Selwood. We have started to attract additional support and work out ways for us to communicate and co-ordinate activities. We look forward to making more connections and helping more teachers, students and their families in 2015.

Helen Gardiner, Chair

FINANCE and AUDIT COMMITTEE

Mr N. P. Kennedy (Chair), Dr W. D. Birch, Prof P. Y. Ladiges, Lt Col R. M. Lightfoot (Ret), Prof L. Selwood.

The Finance and Audit Committee met monthly to review finances, monitor the financial management plan and risk register and conduct a random audit of the monthly accounts from February to May 2014. To increase efficiency from June 2014 the functions of the Finance and Audit Committee were absorbed by the Executive Committee.

HONORARY TREASURER

It is my duty to report to the Royal Society's membership on the financial activities and financial performance of the Royal Society over the last year. The annual financial statements and the auditor's statement for the current year are included in the annual report.

The RSV is financially sound and has ample assets to cover its immediate and longer term requirements but needs to increase its funding sources to enable it to increase its activities. Seeking to increase those funding sources will be a major focus of the Executive Committee and the Council in the coming year.

The accounts show a deficit, which is entirely due to the inclusion of depreciation (a non-cash expense item), consistent with the Australian Accounting Standards.

We have been unsuccessful in diversifying our funding base and are still largely dependent on the income received from hiring our building. Rental makes up approximately 57% of our income in next year's budget, membership dues contribute a further 26% and franking credits 4%. On the expenditure side approximately 67% of our operational costs are salaries.

The Royal Society of Victoria Science Fund was formed from the bequest of Dr Phillip Law and other RSV funds as a perpetual fund. We retain the capital and only take a portion of the increase in value each year, therefore allowing it to grow so that in future years we will be financially sustainable. Our financial advisor, Equity Trustees, manages the fund governed by our investment mandate. The fund grew over the last year to \$1,219,873 of which 66% is attributed to the bequest of Dr Phillip Law. A transfer of \$50,000 was made from the fund to the operational budget consistent with Council's Financial Management plan so the current balance is \$1,169,873.

The healthy size of the fund means that the RSV is financially sound and will be so for many years to come but if we want to expand our activities we need further funding sources.

We continue to maintain a strong focus on fiscal prudence and our internal audit activities have included a verification of the asset register, monitoring of the risk register and a regular audit of expenditure to ensure that all accounts are correctly authorised and processed.

Lastly, I would like to thank my very helpful and active Finance and Audit Committee, and also acknowledge the support received from our Financial Administrative Officer and the Executive Officer.

Norman Kennedy, Honorary Treasurer

**The Royal Society of Victoria Inc. (A Non-reporting Association)
Financial Report for the Year Ended 31st December 2014**

Your council members submit the financial report of The Royal Society of Victoria Inc. (a Non-reporting Association) for the financial year ended 31 December 2014

PATRON The Hon Alex Chernov AC QC Governor of Victoria

COUNCIL OFFICE BEARERS

President	Dr W D Birch AM, BSc(Hons), PhD
Vice-President	Prof P Y Ladiges AO, FAA, PhD, MSc, DipEd
Immediate Past President	Prof L Selwood, MSc, PhD
Honorary Secretary	Dr M Williams, BSc, MSc, PhD
Honorary Treasurer	Mr N P Kennedy, BEng(ComEng), MSc(Comp)
Honorary Librarian	Dr T A Darragh, MSc, PhD, GradDipEd
Honorary Editor	Dr D Lightfoot, DipMedLabTech, MSc, PhD
Honorary Archivist	Mr M Carkeek, BA
Honorary Research Secretary	Prof S M Rees, BSc(Hons), MSc, MPhil, PhD, DSc

MEMBERS

Prof G D Burrows AO, CJCJ, BSc, MB, ChB, DPM, MD, GradDipMHlthSc(Clinical Hypnosis), DSc
FRANZCP, FRCPsych, MRACMA, FChAM

Dr D M Churchill, BSc, MA, IPAA, PhD

Prof T J Entwisle, BSc(Hons), PhD

Mrs H J Gardiner, BA, CertIV Workplace Training

Lt Col R M Lightfoot (Ret.), LLB, LLM, DipCivEng, DipElecEng, DipMechEng, BEMining(Hons),
RFD, FIEAust

Mr J S Link, MechEngDip

Mrs N H Williams, BSc, DipEd, MSc, FRACI

Mr D Zerman, MPH, FFIA, CFRM, FAIM

TRUSTEES

Dr D M Churchill, BSc, MA, IPPA, PhD

Dr A S Finkel AM, PhD, FTSE

Prof L Selwood, MSc, PhD

Em Prof J W Warren, MA, PhD

RETURNING OFFICER

Mr I D Endersby, BSc

Principal Activities

The principal activities of the Society during the financial year were the promotion and advancement of pure and applied science and technology.

Significant Changes

No significant change in the nature of these activities occurred during the year.

Operating Result

The Operating Surplus of the Society was \$22,913 and after charging depreciation the Net Deficit was (\$132,158)

Signed in accordance with a resolution of the Members of the Council.



Dr William D Birch AM



Mr Norman Kennedy

Dated this 12th day of March 2015

THE ROYAL SOCIETY OF VICTORIA INC (A Non-reporting Association)

STATEMENT OF INCOME & EXPENDITURE FOR THE YEAR ENDED 31st DECEMBER 2014

	Notes	2014 \$	2013 \$
INCOME			
Members' subscriptions		75,212	71,142
Rental Income		184,571	158,918
Sales - Memorabilia, Publications & Proceedings		8,837	24,566
Donations and Bequests	10	17,903	62,400
Sponsorships and Grants	11	3,000	2,409
Other Income		38,584	25,151
Dividends	17	61,282	69,086
Interest		2,306	5,127
TOTAL INCOME		391,695	418,799
EXPENDITURE			
Operating Costs			
Accommodation and Travel		154	1,810
Advertising and Promotion		917	221
Audit - Honoraria		2,000	2,000
Bank charges		1,884	1,498
Catering		22,665	16,647
Cleaning & Consumables		5,262	6,524
Donations & Science Prizes		9,447	9,192
Electricity and Gas		6,759	7,023
Equipment Repairs and Replacements		1,152	2,264
Filing Fees		253	175
Insurance		19,550	16,776
Long Service Leave		3,751	5,418
Office expenses		23,388	22,827
Proceedings		0	1,410
Professional Services		0	11,513
Provision for Stock Obsolescence		12,037	
Publications, Coins & Stamps		4,781	10,478
Repairs and Maintenance		9,550	19,114
Sundry Expenses		1,006	3,770
Superannuation		20,276	21,208
Wages		217,822	231,957
Work cover		1,128	541
SUB TOTAL OPERATING EXPENDITURE		363,782	392,366
NET RESULT FROM OPERATIONS		27,913	26,433
Non Operating Items			
Depreciation of Property Plant and Equipment		36,221	70,174
Depreciation of Buildings	15	123,850	123,850
TOTAL EXPENDITURE		556,158	586,390
NET DEFICIT	16	(132,158)	(167,591)

THE ROYAL SOCIETY OF VICTORIA INC (A Non-reporting Association)

STATEMENT OF INCOME & EXPENDITURE FOR THE YEAR ENDED 31st DECEMBER 2014

	Notes	2014 \$	2013 \$
Retained earnings at the beginning of the Financial Year		1,209,294	1,748,835
Net Deficit		(132,158)	(167,591)
Prior period adjustment for building depreciation		0	(371,950)
Retained earnings at the end of the Financial Year		1,077,136	1,209,294

THE ROYAL SOCIETY OF VICTORIA INC (A Non-reporting Association)

BALANCE SHEET FOR THE YEAR ENDED 31st DECEMBER 2014

	NOTE	2014 \$	2013 \$
CURRENT ASSETS			
Cash and cash equivalents	2	80,740	198,854
Trade and other receivables	3	34,754	34,010
Stock - Publications, Coins and Stamps	4	41,764	55,719
Prepayments and Security Deposits		150	150
TOTAL CURRENT ASSETS		157,408	288,733
NON-CURRENT ASSETS			
Financial assets	5	1,170,321	1,145,070
Building and Improvements	6	4,535,755	4,514,955
Property, plant and equipment	7	2,261,978	2,296,368
Library	8	86,805	86,805
TOTAL NON-CURRENT ASSETS		8,054,859	8,043,198
TOTAL ASSETS		8,212,267	8,331,931
CURRENT LIABILITIES			
Trade and other payables		16,800	17,551
Membership Subscriptions in Advance		16,269	32,827
Other provisions	9	29,498	25,748
TOTAL CURRENT LIABILITIES		62,567	76,126
TOTAL LIABILITIES		62,567	76,126
NET ASSETS		8,149,700	8,255,805
Retained profits		1,077,136	1,209,294
Reserves :			
Investment Revaluation Reserve	12	348,000	321,947
Library Revaluation Reserve		86,805	86,805
Burke & Wills Collection Revaluation	13	2,225,000	2,225,000
Building and Improvements Revaluation Res.	14	4,540,000	4,540,000
Write down Fixtures, Fittings		(127,241)	(127,241)
TOTAL MEMBERS FUNDS		8,149,700	8,255,805

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31st DECEMBER 2014

NOTE 1: STATEMENT OF SIGNIFICANT ACCOUNTING POLICIES

This financial report is a special purpose financial report prepared in order to satisfy the financial reporting requirements of the Associations Incorporation Act Victoria. The Council has determined that the Association is not a reporting entity.

The following significant accounting policies, which are consistent with the previous period unless otherwise stated, have been adopted in the preparation of this financial report.

- a. **Income Tax**
The Society is a tax exempt body.
- b. **Fixed Assets**
An inventory of fixed assets was undertaken during the 2011 year and values established for assets physically in existence. The values reported reflect a realisable or replacement cost. Depreciation has been applied to these assets from 1st January 2011.

The building and improvements have been paid for by the Society over its lifetime. However, it should be noted that the building is constructed on land which is not owned by the Society but which is held by Trustees pursuant to statute. In view of this, neither the building nor the land is regarded by the Society as realisable assets.

Building and improvements are being amortised over forty years, in accordance with accounting practices. This period has been deemed to commence from 1st January 2010 on the basis that at this time, the restoration works had been completed. The amortisation to be written off to the income statement.

- c. **Provisions**
Provisions are recognised when the association has a legal or constructive obligation, as a result of past events, for which it is probable that an outflow of economic benefits will result and that outflow can be reliably measured. Provisions are measured at the best estimate of the amounts required to settle the obligation at reporting date.
- d. **Cash and Cash Equivalents**
Cash and cash equivalents includes cash on hand, deposits held at call with banks, and other short-term highly liquid investments with original maturities of three months or less.
- e. **Revenue and Other Income**
Revenue is measured at the fair value of the consideration received or receivable. Interest revenue is recognised when received.
All revenue is stated net of the amount of goods and services tax (GST).
- f. **Goods and Services Tax (GST)**
Revenues, expenses and assets are recognised net of the amount of GST. Receivables and payables in the balance sheet are shown inclusive of GST.
- g. **Investments**
Investments held are originally recognised at cost which includes transaction costs. The investments are now reported at market value.

THE ROYAL SOCIETY OF VICTORIA INC (A Non-reporting Association)

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31st DECEMBER 2014

NOTE 2: CASH AND CASH EQUIVALENTS	2014	2013
	\$	\$
Cash at Bank	76,448	197,875
Petty Cash	82	274
Undeposited Cheques	4,210	705
	80,740	198,854
NOTE 3: TRADE AND OTHER RECEIVABLES		
	\$	\$
Sundry Debtors	34,754	34,010
NOTE 4: STOCK Publications, Coins and Stamps		
	\$	\$
Publications	50,846	52,764
Coins and Stamps	2,955	2,955
Less Provision for Stock Obsolescence	(12,037)	0
	41,764	55,719
NOTE 5: FINANCIAL ASSETS		
RSV Sciences Fund managed by Equity Trustees		
	\$	\$
Discretionary Share Portfolio – Equity Trustees	1,169,873	1,145,038
Direct ANZ shares	448	32
	1,170,321	1,145,070
NOTE 6: BUILDING AND IMPROVEMENTS		
	\$	\$
Building and Improvements – at Valuation	4,540,000	4,540,000
Building Restoration Costs	617,395	470,754
	5,157,395	5,010,754
Less Amortisation	(621,640)	(495,799)
	4,535,755	4,514,955

THE ROYAL SOCIETY OF VICTORIA INC (A Non-reporting Association)

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31st DECEMBER 2014

NOTE 7: PROPERTY, PLANT & EQUIPMENT	2014	2013
	\$	\$
Fixtures and Fittings, Paintings, Office Equipment	379,909	379,909
Less Accumulated Depreciation	(379,909)	(356,243)
Paintings at Valuation	19,818	19,818
Less Accumulated Depreciation	(792)	(594)
Office Equipment at Cost	54,814	54,814
Less Accumulated Depreciation	(53,088)	(43,851)
Cottage Assets at Cost	18,795	18,795
Less Accumulated Depreciation	(3,529)	(2,589)
Catering Equipment at Cost	2,322	2,322
Less Accumulated Depreciation	(1,362)	(1,013)
Burke and Wills Collection at Valuation 2011	2,225,000	2,225,000
	2,261,978	2,296,368

NOTE 8: LIBRARY

	\$	\$
	86,805	86,805

An Independent Valuation 2010 – there is no documentation to support this historical figure.

NOTE 9: OTHER PROVISIONS

	\$	\$
Long Service Leave	29,498	25,748

NOTE 10: DONATIONS

	\$	\$
Balance of bequests from the estates of Dr Phillip Law and James Howard	0	39,162
Other donations from members and fundraising	17,903	23,238
	17,903	62,400

NOTE 11: SPONSORSHIPS AND GRANTS

This item includes contributions from:

CSIRO and Aboriginal Literacy Foundation to assist with costs associated with the Launch of "The Aboriginal Story of Burke and Wills: Forgotten Narratives"

Solarcorp to assist with costs associated with "Victoria's Energy Futures Symposium"

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31st DECEMBER 2014

NOTE 12: INVESTMENT REVALUATION RESERVE

	\$
Balance as at 31 st December 2013	321,947
Increase/(Decrease) in market value of investment	26,053
Balance as at 31 December 2014	348,000

NOTE 13: BURKE AND WILLS COLLECTION REVALUATION

The Burke and Wills Collection owned by the Society and held by the State Library of Victoria was independently valued during 2011. This valuation was provided by Director Collections & Access, SLV

NOTE 14: BUILDINGS AND IMPROVEMENTS RESERVE

	2014	2013
	\$	\$
This comprises		
Revaluation Increment	4,540,000	4,168,050
Add Amortisation reversed	0	371,950
	4,540,000	4,540,000

Amortization charge has now been allocated to the income statement and prior charges were reversed in the 2013 accounts in accordance with Australian Accounting Standards.

NOTE 15: DEPRECIATION

	160,071	194,024
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Depreciation is calculated in accordance with the Australian Accounting Standard.

NOTE 16: NET DEFICIT

The net deficit of (\$132,158) is after charging as an expense depreciation of plant and equipment of \$36,221 and depreciation of buildings \$123,850. Both of these items are non-cash items. The Society had a Net Result from operations before depreciation of \$27,913.

NOTE 17: DIVIDENDS

This amount includes franking credits of \$11,282 and a transfer of \$50,000 from the Science Fund.

The Science Fund transfer was allocated to the Phillip Law Postdoctoral Prize, Research Medal and Science Talent Search sponsorship with the balance used to offset the operating deficit.

The withdrawal of \$50,000(2013 \$57,000) from the Sciences Fund is consistent with the financial management plan adopted by Council which states that between 40% and 60% of the increase in value of the fund may be withdrawn each year. Because of the loss of rental income Council approved the commencement of the withdrawals this year instead of next year as originally planned.

The increase in the fund during the 2014 year was \$83,710.62 before the transfer of the \$50,000. Actual dividends received and reinvested were \$46,248 during 2014.

THE ROYAL SOCIETY OF VICTORIA INC (A Non-reporting Association)

STATEMENT BY MEMBERS OF THE COUNCIL

The Council has determined that the association is not a reporting entity and that this special purpose financial report should be prepared in accordance with the accounting policies outlined in Note 1 to the financial statements.

In the opinion of the Council the financial report as set out on pages 1 to 9

1. Presents a true and fair view of the financial position of The Royal Society of Victoria Inc (a Non-reporting Association) as at 31 December 2014 and its performance for the year ended on that date.
2. At the date of this statement, there are reasonable grounds to believe that The Royal Society of Victoria Inc (a Non-reporting Association) will be able to pay its debts as and when they fall due.

This statement is made in accordance with a resolution of the Council and is signed for and on behalf of the Council by:



President

Dr William D Birch AM



Treasurer

Mr Norman Kennedy

Dated this 12th day of March 2015

Report on the Financial Report

We have audited the accompanying financial report, being a special purpose financial report, of The Royal Society of Victoria Inc (a Non-reporting Association) (the Society), which comprises the balance sheet as at 31st December 2014 and the income statement for the year then ended, a summary of significant accounting policies, other explanatory notes and the statement by members of the committee.

Committee's Responsibility for the Financial Report

The committee of the Society is responsible for the preparation and fair presentation of the financial report and have determined that the accounting policies described in Note 1 to the financial statements, which form part of the financial report, are consistent with the financial reporting requirements of the Associations Incorporation Act and are appropriate to meet the needs of the members. The committee's responsibilities also include designing, implementing and maintaining internal control relevant to the preparation and fair presentation of the financial report that is free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

Our responsibility is to express an opinion on the financial report based on our audit. No opinion is expressed as to whether the accounting policies used, as described in Note 1, are appropriate to meet the needs of the members. We conducted our audit in accordance with Australian Auditing Standards. These Auditing Standards require that we comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial report, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial report 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 entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the committee, as well as evaluating the overall presentation of the financial report.

The financial report has been prepared for distribution to members for the purpose of fulfilling the committee's financial reporting under the Associations Incorporation Act. We disclaim any assumption of responsibility for any reliance on this report or on the financial report to which it relates to any person other than the members, or for any purpose other than that for which it was prepared.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Independence

In conducting our audit, we have complied with the independence requirements of Australian professional ethical pronouncements.

Auditor's Opinion

In our opinion, the financial report of The Royal Society of Victoria Inc (a Non-reporting Association) presents fairly, in all material respects the financial position of the Society as of 31 December 2014 and of its financial performance for the year then ended in accordance with the accounting policies described in Note 1 to the financial statements and the Associations Incorporations Act.

Name of firm: J D Madgwick Chartered Accountant

Address: 94 Moray Street, Southbank 3006

Date: 12th March 2015

CERTIFICATE BY MEMBERS OF THE COUNCIL

I, Pauline Ladiges AO of 58 Maribyrnong Road, Moonee Ponds, Victoria 3039 and Mark Williams of 24 Oak Grove, East Malvern, Victoria 3145 certify that:

- a. We are members of the Council of The Royal Society of Victoria Inc (a Non-reporting Association).
- b. We attended the Annual General Meeting of the association held on 23rd April 2014
- c. We are authorised by the attached resolution of the Council to sign this certificate.
- d. This annual statement was submitted to the members of the Society at its Annual General Meeting.

.....
Prof Pauline Y Ladiges AO

.....
Dr Mark Williams

Dated this 23rd Day of April, 2015