

# **148<sup>th</sup> ANNUAL REPORT**

of the

## **ROYAL SOCIETY OF NZ WELLINGTON BRANCH**

Year ended 31 August 1999



**Report for the 148th year of  
ROYAL SOCIETY OF NZ WELLINGTON BRANCH**

Founded July 1851 as the New Zealand Society

Reconstituted November 1867

Renamed the Wellington Philosophical Society and  
incorporated with the New Zealand Institute 1868

Renamed in 1939 as the  
Wellington Branch of the Royal Society of New Zealand.

The Society was incorporated as  
Science Wellington Incorporated in 1995.

Reconstituted in 1999 as the  
Royal Society of New Zealand Wellington Branch.

**Report for the year ended 31 August 1999  
to be presented at the  
Annual General Meeting in  
the Royal Society Science Centre  
on Wednesday 27 October 1999 at 7:30pm.**

RSNZ Wellington Branch  
P. O. Box 3085  
Wellington  
New Zealand

## **COUNCIL OFFICE BEARERS AND MEMBERS FOR 1999**

### **PRESIDENT**

Grant Williams (George Jones - Acting President since August)

### **VICE-PRESIDENTS**

George Jones

Warren Dickinson

### **TREASURER/ MEMBERSHIP SECRETARY**

Graeme Claridge

### **SECRETARY**

Barbara Bibby (David Lillis since May)

### **NEWSLETTER EDITOR**

Bart Provo

### **FINANCIAL REVIEWER**

Otto Bauer

### **COUNCIL MEMBERS**

Phillip Alve

Mike Arnold

Helen Hughes

David Lillis

Bruce Miller

### **REPRESENTATIVES OF SECTIONS AND AFFILIATES**

Archaeology Section:

Pat Stodart

Wellington Astronomical Society:

Mike Clear

Biology Section:

Colin Bassett

NZ Institute of Chemistry - Wellington Branch:

Graham Murray

Geology Section:

James Crampton

Geophysics Section:

Mark Chadwick

Physics Section and NZIP - Wellington Branch:

Grant Williams

Wellington Science Teachers' Association:

Rosemary Hipkins

## MEMBERSHIP

Total:	219 (238)	(The numbers in brackets are last years)
Ordinary and family members	187 (197)	
Associate members	6 (9)	
Emeritus members	10 (14)	
Life members	11 (13)	
Honorary members	5 (5)	

This year the decline in membership has continued, with ordinary members being down by 10, and associate members down by 3. The number of emeritus and life members has also decreased. The life member category can not increase as this option was closed many years ago, and we have lost more emeritus members than we have gained this year. The number of ordinary members who are now retired has increased to 40. We need an influx of new and younger members, especially those willing and able to take an active role in the running of the society.

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## PRESIDENTS REPORT

### 1999 RSNZ Wellington Branch

This year has seen some major changes in the organisation of the RSNZ Wellington Branch. As you are aware, we have recently altered our constitution resulting in a name change from Science Wellington to the RSNZ Wellington Branch. We have also reached an agreement with the RSNZ to provide access for their Wellington regional members to all our talks and the Science Wellington Newsletter. Approximately seven hundred copies of the Science Wellington Newsletter are distributed to our members, RSNZ members, Wellington Astronomical Society members, NZIC Wellington Branch members and NZIP Wellington Branch members. The email notification of talks has now grown to include over 1200 people.

The RSNZ Wellington Branch has again provided a large number of interesting and diverse talks to our members and to the public. The speakers at general meetings have included Dr. David A Thom CBE, Fleming Lecturer, Dr. Warrick Couch, University of New South Wales and Dr. Jamie Shulmeister, Earth Sciences, VUW, Lester King Lecturer. Topics have included *Can Technology Save The World?*, *Faint Galaxies: A Journey Back To The Very Early Universe*,

*Are DNA Profiles Unique? and Digging Up The Past: 250,000 Years of Climate Change In New Zealand.*

This year's Hudson Lecturer was Dr. Geoff Page, CEO, Industrial Research Limited. The title of his talk was *The Advanced Technology Solution*. The Hudson lecture is the RSNZ Wellington Branch's premier annual lecture. It is awarded in recognition of the Lecturer's achievements in science or the promotion of science and technology.

We would like to thank the RSNZ for their continued support of our activities included a www home page and an email distribution list.

*Dr. Grant Williams, President, Royal Society of NZ Wellington Branch.*

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## **MINUTES OF THE 1998 ANNUAL GENERAL MEETING**

### **Annual General Meeting**

The 147<sup>th</sup> Science Wellington Annual General Meeting was held at Science House, Thorndon, on Wednesday 28 October 1998. Dr. Grant Williams presided and 35 attended. The minutes of the previous AGM of 22 October 1997 were approved. The Annual Report was received, and the Financial Statement tabled and approved. New members of Council for 1999 - 2000 and Chairpersons of Sections were elected and there was a discussion on progress with affiliations.

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### **Special General Meeting**

A Special General Meeting of Science Wellington was held on Wednesday 26 May 1999. This meeting was held in order to table the motion that the name of the organisation be changed from "Science Wellington" to "Royal Society of New Zealand Wellington Branch". This and several related proposals were tabled and passed unanimously.

The amended Rules, now Bylaws, are included toward the end of this Annual Report.

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## GENERAL MEETINGS

### **Report on:** *Can Technology Save the World?*

David A Thom CBE, **Fleming Lecturer.**

David Thom gave a well-attended public talk, Can Technology Save The World, on Wednesday 28 April 1999. David was awarded the Charles Fleming Award for Environmental Achievement and his talk was part of a national series of lectures. The award was presented before the talk by Ross Moore, CEO, RSNZ. David received his CBE in 1982 for services to the engineering profession and to the environment.

The objective of David's talk was to answer the question, Can technology save the world? He answered the question by first noting that fifty years ago it was assumed that technology would create a golden age. However, by the 1980's there was widespread criticism of its directions and benefits. He stated that the differences between the scenarios of gloom and hope for the next fifty years relate largely to the weight given to the contribution of technology. He mentioned that for the past decade, senior engineering bodies and programmes like the UNEP Cleaner Production Programme have provided the change of direction that will be needed. He noted that while technology may be able to meet the expectations put on it; it turns out that success, or otherwise, will depend on the political, educational, and social climates within which the initiatives take place.

*Dr. Grant Williams*, President, RSNZ Wellington Branch.

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### **Report on:** *Faint Galaxies: A Journey Back to the Very Early Universe*

Warrick Couch, School of Physics, University of New South Wales

Warrick Couch gave this well-attended talk on 7 July 1999. This talk was sponsored by Industrial Research Limited and organised in conjunction with the NZIP and WAS.

This talk focused on how the study of faint galaxies is allowing us to construct a detailed picture of the "life history" of galaxies, which now extends back to when the universe was only 10% of its present age. Warrick give a brief review of recent efforts to characterise the present-day galaxy population and its large-scale structure. He described the evolution that galaxies in rich clusters have undergone in the second cosmic semester - the most dramatic seen so far, in

what is the most extreme galaxy environment. Finally, Warrick outlined the very rapid progress that has been made towards the systematic detection and study of galaxies in the first cosmic semester, and the first glimpses that are starting to emerge of their large-scale structure.

*Dr. Grant Williams*, President, RSNZ Wellington Branch.

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### THE HUDSON LECTURE

The Hudson Lecture is Science Wellington's premier annual lecture. It recognises the achievements of the lecturer in the advancement or promotion of science and technology. It honours George Vernon Hudson (1867 - 1946) who was a distinguished amateur naturalist and scientist. An original Fellow of what is now the Royal Society of New Zealand, he was on its Council from 1923-46. Hudson was President of this branch (then the Wellington Philosophical Society) in 1900-01 and 1911-12. A formal obituary and photograph appear in the Transactions and Proceedings of the Royal Society of New Zealand 76: 264-266.

#### **The Hudson Lecture for 1999**, *The Advanced Technology Solution*.

The Council of RSNZ Wellington Branch invited Dr Geoff Page, CEO, Industrial Research Limited, to give the 1999 Hudson Lecture on Tuesday 18 May 1999. Dr. Geoff Page has been the CEO of Industrial Research since its inception in July 1992 and has guided the development of this Crown Research Institute so that it now focuses closely on meeting the needs of the New Zealand advanced technology sector. Over the past few years Industrial Research has worked with many hundreds of New Zealand companies, formed over 20 joint ventures, subsidiaries and spin-offs, and has developed an active patent portfolio. Dr Page is also on the Boards of the Foundation for Research, Science and Technology and of Technology New Zealand. Prior to joining Industrial Research Dr Page was CEO of the New Zealand Dairy Research Institute, and before that was with Unilever in England and Holland.

Dr. Page clearly achieved his aims to stimulate a debate on how the advanced technology sector can become a recognised reality, by suggesting that new relationships need to be forged between four key players - Government, Education Providers, Research Providers and Private Technology companies. The audience of approximately 100 people included people from FRST,

CCMAU, VUW, Central Institute of Technology, Hutt Valley and Wellington Polytechnics, Federated Farmers, patent attorney's, local R&D companies, FRI and CRI's.

Dr. Page noted that New Zealand is an anomaly in the global economy in that it has the living standards of a wealthy advanced nation with an export composition of a low-income developing country. He mentioned that New Zealand exports are still dominated by simply processed resource based commodities unlike other advanced nations that mainly export manufactured goods. As a result, New Zealand has slid from having the third highest standard of living in 1950 to twenty-fifth in 1998. He stated that it is inevitable that this slide will continue while New Zealand relies so heavily on relatively untransformed agriculturally based commodities. His message was that reversing this decline would require the development of an export sector based on advanced technologies where products are price makers and not price takers.

*Dr. Grant Williams*, President, RSNZ Wellington Branch.

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### **The 35th Wellington Science Fair**

Chairman:	<i>Mr Saty Candasamy</i>
Science Fair Consultant:	<i>Mr Phillip Alve</i>
Entries:	<i>Mr Gren Higgs</i>
Programme:	<i>Mr Michael Pallin</i>
Treasurer:	<i>Mr Mac Allcock</i>
Judging Convenor:	<i>Mr Trevor Langley</i>
Sponsors and Special Prizes:	<i>Mr Robin House</i>
Victoria University Liaison:	<i>Ms Shona de Sain</i>

The 35th Wellington Science Fair was held from Tuesday 21<sup>st</sup> August to Saturday 4<sup>th</sup> September in the Laby Building, School of Physical and Chemical Sciences, Victoria University of Wellington. This choice of venue was in recognition of the 100<sup>th</sup> Anniversary of the founding of Victoria University. The 364 entries were set up on Tuesday, judged on Wednesday and open to visitors on Thursday, Friday and Saturday.

The Chief Judge was again Mr Mike Collins, one time Director of the former Physics and Engineering Laboratory and Director of the former Department of

Scientific and Industrial Research. He was assisted by a panel of 23 judges, which included two former Science Fair Main Prize winners.

The speakers at the prizegiving ceremony were Mr Saty Candasamy; Science Fair Chairman, Professor Peter Englert, VUW Science Faculty Executive Dean; Dr Don Robertson, Regional Manager NIWA (NIWA being the major sponsors of the Science Fair); and Professor Jim Johnston, Head of the School of Physical and Chemical Sciences, VUW.

### **Main prize**

The VUW Faculty of Science Centennial Prize of \$700, for the best exhibit, was awarded to Ruvan Mendis of Newlands College for his entry *The Median Strip Alert Unit*. This entry was also selected to be exhibited at the ECNZ National Science and Technology Fair at The Museum of New Zealand, Te Papa, in December.

The RSNZ Wellington Branch prize of \$300 was awarded to Amy Holden and James Bradshaw of Newlands College for their entry *Bug Off - Natural Insecticides and Repellents*. They also gained First Prize in their class (below).

### **First prizes winners in each class were:**

- Class 1: Form I entrants: Laura Gillespie of Fergusson Intermediate School: for her entry: *How can Garlic Stop Bacteria?*
- Class 2: Form II entrants: Alice Mason of Seatoun School: for her entry: *Words, Words, Words, Words.*
- Class 3: Form III entrants: Pierce Black of Wellington College for his entry: *The "Bastard Red Cod" that Scuttled My Isopod Theory.*
- Class 4: Form IV entrants: Andrew Durant of Wellington College for his entry: *Planting by the Moon.*
- Class 5: Forms V, VI, VII: Amy Holden and James Bradshaw: of Newlands College for their entry *Bug Off - Natural Insecticides and Repellents.*

There were also 46 Special Prizes. One of which, the University of Otago's all expenses paid trip to the *1999 Hands on Science Summer School* for the entry displaying the best application of the scientific method, was awarded to Andrew Durant for his entry *Planting by the Moon*.

Any enquires about the Wellington Science Fair should be addressed to:

*Phillip Alve*, 52 Raroa Rd, Kelburn, Wellington 5, Ph: (04) 475 9496

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## NEWSLETTER

Producing the monthly newsletter and distributing to our members and affiliates is one of our prime functions, with 680 copies now being printed each month of publication. The RSNZ Wellington Branch Newsletter, *Science in Wellington*, is published eight times each year to cover meetings and notices for the months March through October. Any material relevant to November and December can be included in the October Newsletter.

In 1999 we moved to email submission of copy, format being plain text with identical layout as in the Newsletters. We will have the strict submission format requirements for 2000 Newsletter (deadline 15<sup>th</sup> of month prior) and Annual Report (deadline 10<sup>th</sup> September) copy submissions on our Net site: <http://wellington.rsnz.govt.nz> early in the new year. George Jones ( [jones.g@rsnz.govt.nz](mailto:jones.g@rsnz.govt.nz) ) has also instigated email distribution of the Newsletter. This is a significant move as it can reduce our costs (postage being now the major part) by allowing those who prefer email receipt of the newsletter to forgo postal delivery of hardcopy.

Another innovation was having the Reprographics Department of the Central Institute of Technology (CIT) print our newsletters. This has enabled us to relax the deadline for copy submission to the 15<sup>th</sup> of the month prior to publication (in spite of their priority to produce CIT in-house teaching material), and also significantly reduce printing costs. We must acknowledge their excellent and professional work!

Our thanks to those that have provided material for the Newsletter. We appreciate the Institute of Chemistry's distribution of their 200 copies and, especially, we thank Phillip Alve for labelling and distributing the other 480 copies of the Newsletter.

George Jones' critical proof reading of the copy before printing has proved extremely valuable in detecting errors in the publications, especially after re-typing or re-layout - at times needed when some copy submitters ignore the instructions!

*Bart Provo*, 12<sup>th</sup> September 1999.

Year 2000 copy to: [b.provo@ieee.org](mailto:b.provo@ieee.org)

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## TREASURER'S REPORT

Membership has continued to decline slowly as members die off or resign because they are too old to come to meetings. This trend will need to be reversed by a rigorous campaign to persuade the many people who attend our meetings to join us. We have begun an association with other groups, such as New Zealand Institute of Physics and New Zealand Institute of Chemistry, who make a contribution towards the cost of services we provide to them. Their contributions have helped in keeping our accounts in balance so that we will not need to increase our subscriptions. Council resolved last year to lower the subscription slightly, but this has not had an adverse affect on our financial status.

Every year members are asked to pay an additional \$2.00 (optional) with their subscription as a contribution to the Royal Society Award Scheme. This year, contributions amounted to \$226, which has been passed on to the Royal Society.

Interest rates have continued to decline, and this year the bank offered us a derisory 0.5% on one of our investments. We have reorganised them in order to attract a higher rate.

*Graeme Claridge*

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## THANKS

The financial statements required by the constitution are presented on the next two pages. The Council thanks those who have prepared them, and thanks the auditor for examining them.

The reports of the Sections are given after the financial pages. The Council thanks those who have contributed to the success of this year's activities, especially our speakers and the Section Chairs and their committees who have arranged monthly meetings.

A special thanks to Barbara Bibby for her helpful work as secretary over many years.

**President:** Grant Williams

**Secretaries:** Barbara Bibby, Phillip Alve, David Lillis

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## FINANCIAL REVIEWER'S REPORT

I have obtained all the books, records and information I required from The Royal Society of New Zealand Wellington Branch, and from the Wellington Science Fair. In my opinion, based on the examination of these records, and the independent verification of the bank balances and records, the books and accounts for the year ended 31st August 1999, nothing has come to the Reviewer's attention to cause him to believe that the financial information provided does not present a true account of the financial position.

*Otto Bauer, ACA*

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ROYAL SOCIETY OF NEW ZEALAND - WELLINGTON BRANCH			
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 AUGUST 1999			
EXPENDITURE		INCOME	
Meetings		Subscription	
Rent	3214.13	Ordinary	4469.00
Dinner	525.00	Associate	1096.00
Lecture Fees	200.00	Family	60.00
Meeting expenses	0.00		
	3939.13		5625.00
Grants		RSNZ Award Scheme	226.00
RSNZ sections	0.00	Interest	
Science fair	300.00	Current account	57.56
	300.00	term deposits	252.18
RSNZ			309.74
Affiliation fees	0.00	Dinner takings	500.00
Award Scheme	226.00	Affiliation fees	
Postage		WAS	85.00
Newsletter	1177.20	NZIP	213.12
Box rental	115.00	NZIC	1450.00
secretarial	42.00		
	1334.20		1748.12
Reimbursements	700.00		
Printing			
Annual Report	448.60		
Newsletter	913.08		
	1361.68		
Stationery	224.11		
Sundry			
Petty cash	93.54		
ch bk	2.50		
	96.04		
Books written off	50.00		
Income less expenditure	177.70		
	8408.86		8408.86
BALANCE SHEET AS AT 31 AUGUST 1999			
Liabilities		Assets	
General funds 31-8-98	11060.04	National Bank of NZ	
Add income less expenditure	177.70	Current account	3592.74
	11237.74	Term deposit	7645.00
			11237.74

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NIWA WELLINGTON REGIONAL SCIENCE FAIR 1997  
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 MARCH 1998

EXPENDITURE		INCOME	
Prizes	7515.60	NIWA Sponsorship	7500.00
Printing	1122.03	Other donations	7755.00
Hire of hall and equipment	3598.93	Gate Takings	241.50
Postages, secretarial, social	3851.59	Bank Interest	203.31
Excess income over expenditure	289.79	Term Deposit Interest National Bank	375.53
	<b>\$16107.84</b>	H D Gordon Memorial Fund	30.50
			<b>16107.84</b>

BALANCE SHEET AS AT 31 MARCH 1999

LIABILITIES		ASSETS	
General Fund balance 31/3/98	11228.47	Bank Account: National Bank	1793.61
Excess income over expenditure	289.79	Term deposit: BNZ Finance	500.00
Attributable from H D Gordon prize fund	9.50	Term deposit: National Bank	10000.00
	<b>11527.76</b>		
H D Gordon Memorial Prize Fund			
Balance 31-3-98	775.35		
Term deposit interest	30.50		
	<b>805.85</b>		
less prize	40.00		
	<b>765.85</b>		
	<b>12293.61</b>		<b>12293.61</b>

**ARCHAEOLOGY SECTION**

GENERAL INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 AUGUST 1999

EXPENDITURE		INCOME	
NZAA Subscription	\$45.00	Interest	\$60.42
Suppers	\$28.00	Excess Expenditure	\$12.58
	<b>\$73.00</b>		<b>\$73.00</b>

BALANCE SHEET AS AT 31 AUGUST 1999

LIABILITIES		ASSETS	
Equipment Purchase Fund		Current Account	\$2390.96
Balance as at 31.8.98	\$ 367.59		
General Fund			
Balance as at 31.8.98	\$ 698.78		
Transfers from TDs	\$1337.17		
Less Excess Expenditure	\$ 12.58		
	<b>\$2023.37</b>		<b>\$2390.96</b>
	<b>\$2390.96</b>		

A. Walton Hon. Secretary/Treasurer 31 August 1999

## ARCHAEOLOGY SECTION

Chair: *Pat Stodart* Secretary: *Tony Walton*

The 1998/9 program consisted of a series of evening meetings. Our speakers and their topics were:

October: *Assessing the archaeological values of historic places* by Tony Walton

March: *Wellington's very own urban shipwreck: the archaeological investigation of the barque Inconstant (Plimmer's or Noah's ark)* by Mary O'Keeffe

April: *Porirua's goldmines* by Pat Stodart and *The Burden of Defence in Prehistoric New Zealand* by Tony Walton

June: *From the Gulf of Mexico to Little Bighorn: reflections on the archaeological sites of the Mississippi and Missouri river valleys* by Kevin Jones

July: *Bridge or Barrier? The archaeology of the Cook Strait Region* by Janet Davidson

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## WELLINGTON ASTRONOMICAL SOCIETY

Report from the Wellington Astronomical Society

The 1998-1999 year heralded some significant changes for the society. Some new council members were elected in November and some new initiatives devised. It was apparent that the society lacked sufficient fixed assets to support the various astronomical activities members enjoyed and so with the help of a Lotto Grant of \$5000 4 excellent 150 mm dobsonian reflectors were made by a group of members. A further 9 telescopes were also part of the project. These telescopes together with some others belonging to the society now provide sufficient resource for lending to members. These telescopes are used at the neighbourhood star parties organised by the society for the interest of local communities.

Additionally members took part in occultation observing as well as the Friday night star party at Pauatahanui - weather permitting

The society has a draft strategic plan which is to be finalised by the annual meeting in November and which contains explicit plans for expanding

astronomical activities in the region. An agreement of affiliation was reached with the RSNZ Wellington Branch.

The society operates a small 200 mm fixed telescope at a small observatory in Pauatahanui but is looking for a more suitable site which can be developed and also used to house the society's fixed assets. The monthly meetings have all been well attended and the list of speakers and topics were:

- August 1998: Peter Cottrell, *Large Astronomical telescopes*
- September 1998: Glen Mackie, *Exotic Astronomical Animals*
- October 1998: Denis Sullivan, *Whole Earth telescope*
- November 1998: Grant Christie, *Observational basis of Modern Cosmological Astronomy*
- December 1998: Bevan Burgess, *Video camera astronomy*
- February 1999: Ian Cooper, *Deep Sky Astronomy*
- March 1999: Robert Persse, *The Slingshot Effect*
- April 1999: Frank Andrews/Glen Mackie, A night at the Carter Observatory Planetarium, *Alien Worlds and Astrophysical Research at the Carter Observatory*
- May 1999: Marc Bos, *Toys and Joys of Modern Amateur Astronomy*
- June 1999: Wayne Thresher, *SETI*
- July 1999: Warrick Crouch, *Evolution of Galaxies* in association with the Institute of Physics
- August 1999: Dave McClellan, *Exploration of Mars*

The society has made significant cost reductions on its outgoings, notably the monthly newsletter, and the council's intention is to reinvest this in activities and assets of benefit to the members.

The council changed the financial year to ending 31 August (rather than 31 December) for accounting purposes and introduced 6 monthly membership options. Membership is growing steadily and is somewhat in excess of 140 full members. This has been assisted by the Nature Shop in Porirua with whom the society has a strong relationship.

*Mike Clear* President

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## BIOLOGY SECTION

Chairperson/Secretary: Colin Bassett

Committee: Ruth Ainsworth, Paul Blaschke, Allen Heath, Janet Grieve,  
Rod Hitchmough, Christine Reed, Mike Rudge, Mary McEwen.

In the 1998/89 programme our speakers and their topics were:

September 1998: Anton van Helden. (Museum of New Zealand Te Papa Tongarewa), *Mass Strandings, Beaked Whales and Mystery Blobs . . . What is Out There?* Attendance 26.

October 1998: Paul Jansen (Department of Conservation), *Kakapo: Sex, Nests and Video Tapes. 1998 and Beyond.* Attendance 35.

March 1999: Dr Paul Atkinson (Agresearch), Prions, Bovine Spongiform Encephalopathy (BSE) and New Zealand. Attendance: 38.

April: Dr Christa Mulder (Victoria University of Wellington), *Pushed Beyond the Limit? The Effects of Animals on Plants in the Arctic.* Attendance: 27.

May: Dr Bob Gauldie (Institute of Geological and Nuclear Sciences), *Opening a Window onto a Sea of Confusion: Examining the Biological Basis of Orange Roughy Age Estimation Methods.* Attendance: 24.

June: Dr Dennis Gordon (National Institute of Water and Atmospheric Research), *How Many Species in the Sea? The Challenge of Marine Biodiversity Inventory in the New Zealand EEZ.* Attendance: 35

July: Dr Bruce Weir (University of North Carolina), *Are DNA Profiles Unique?* Attendance 52. This was also listed as a General Meeting.

August: Dr Jean Fleming (University of Otago) *Reproduction From the Inside Out.* Attendance 34.

General Meeting:

On 19 July, Dr Bruce Weir of the Department of Statistics, University of North Carolina gave a public talk entitled “*Are DNA Profiles Unique?*” to an audience of 52 people. In 1998 Bruce co-authored the book *Interpreting DNA Evidence*, he serves on the US Attorney General’s Commission on the Future of DNA Evidence, and appeared as an expert witness in the criminal and civil trials of O.J. Simpson in the United States. In view of recent controversy in New

Zealand concerning the reliability of the forensic use of DNA profiles, this was a timely topic that attracted an audience of interested lay people as well as those with a professional involvement.

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## **NZ INSTITUTE of CHEMISTRY WELLINGTON BRANCH**

### Summary of Activities for 1999.

This has been a very enjoyable year for NZIC. Attendances at talks and sites have always been above thirty, sometimes by a lot. This is in part due to good subjects, though perhaps the greater part is due to the excellent notification / advertising medium; email. In less than two years we have made it a valuable and powerful communicating tool.

Our first meeting was 24 Feb when Dr Owen Curnow (Uni of Canterbury) introduced Chemistry week activities as a means of promoting an interest in Chemistry. Incidentally it was nice to see Saturn Channel 18 repeating a 7 min clip this year from an illustrated 1998 lecture *Chemicals for Fun and Fascination*. Perhaps Saturn would enjoy greater involvement in the activities of our community.

24 March the School of Chemical and Physical Sciences hosted secondary teachers, showing off the new labs. This is a once in 40 years event.

Opus Consulting attracted huge numbers on April 21, presenting *Science of Roading*. in a well illustrated way. There is a lot more to concrete, gravel and paint than one might think from a few glances at SH 1.

Assoc Prof George Clark gave the President's address, 18 May. His theme was the importance of allowing the conditions that enable serendipity in science. For further reading try Royston M Roberts *Serendipity: Accidental discoveries in Science* (J Wiley, 1989).

A visit to BRANZ 23 June gave another opportunity to see the science of the materials of our homes.

In July was the biennial Chem Ed conference, and two keynote speakers from USA came on to Wellington to speak. Sister Professor Virginia Orna's topic was *The Shroud Of Turin And Other Mysteries*. David Katz presented *The Chemistry of the Toy Store*. While there was a little sleight of hand, there was a lot of excellent chemistry, shown in a form that was right ready to take to a classroom. The Tindall Effect was dressed up as a Hawaiian Sunset. This was

brehtaking elegance; as well as making the standard explanation totally convincing, it became an obvious foundation for a lesson on regions of the electromagnetic spectrum that a young audience could follow.

August 24 we were welcomed to Resene Upper Hutt. Though there were many indicators that this is a low tech operation, there were valuable lessons in the management of hazardous substances, of which Resene process a wide range in large quantities.

8 Sept, Victoria Stevens, a hazardous substances adviser at ERMA, gave a summary of what is required of this new organisation in control of bio and chemical hazards.

Our programme for 1999 will close with a talk by Prof Bill Denny (Auckland) on designer drugs for cancer treatment, on Oct 13.

*Graham Murray*, NZIC Branch Chair

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## **GEOLOGY SECTION and GEOLOGICAL SOCIETY of NZ**

President: James Crampton

Secretary: Aasha Pancha

### Meetings and Activities 1998-1999.

Monthly meetings were held from March through to November, leaving the summer field season free for the all-important task of collecting more data! Our speakers through the year included learned folk from the Institute of Geological and Nuclear Sciences, the National Institute of Water and Atmospheric Research, the Department of Conservation, and Victoria University of Wellington. The **Hochstetter Lecture** was presented by Dr Steve Weaver from the University of Canterbury. The winner of the Beanland-Thornley student talks in October was Emily Chetwin. Monthly meetings were, on the whole, well patronised.

The annual Hector Day field trip was led by Kelvin Berryman and examined the Wellington Fault in Long Gully. The trip was well attended in warm, misty but pleasant conditions and there was great debate about "the next big one". The guidebook was produced as Geological Society miscellaneous publication 103.

August saw the return of the trivia night in the form of the *Wonderful and Wacky Wellman Quiz Night*, named in honour of Harold Wellman. The aim of the night was to have fun and raise funds for the Geology Section so that we can avoid the need for subs and continue to provide wine at monthly meetings. So, just

what did Margaret Thatcher say in 1975 (and does anyone care)? And did Eyore really own the North Pole? Such were the questions to tax the brains of Wellington's finest intellects. A very successful night was had by all, especially the treasurer, with a total of \$900 being raised. Thanks to all our corporate sponsors for donation of prizes and, in particular, thanks to NIWA for the use of their fine facilities. Also, thanks to all the participants.

Winners on the night (those who purchased the most answers?) were the "Eastbourne Trivialists".

#### Meetings and activities:

#### **1998**

October 1: *Beanland-Thornley Prize Night* Attendance: 87.

November 12: *A new earthquake hazard analysis for New Zealand*, Dr Mark W. Stirling, Institute of Geological and Nuclear Sciences (IGNS). Attendance: 42.

#### **1999**

March 4: *Dinosaur extinction linked to algal bloom: cause, effect or coincidence?*, Dr Chris Hollis, IGNS. Attendance: 64.

March 21: Hector Day field trip, *The Wellington Fault in Long Gully*, Dr Kelvin Berryman, IGNS. Attendance 55.

April 8: *Intraplate buckling of the lithosphere: insights from numerical models*, Dr Muriel Gerbault, IGNS. Attendance: 34.

May 6: *Structures and evolution of transform to subduction transitions along the Pacific-Australia plate boundary in southern New Zealand*, Dr Geoffroy Lamarche, National Institute of Water and Atmospheric Research (NIWA). Attendance: 58.

June 3: *Aim! Load! Fire! Learning from the disastrous 1998 tsunami at Sissano Lagoon, Papua New Guinea*, Drs Maurie McSaveny and James Goff, IGNS and Department of Conservation. Attendance: 73.

July 27: *Growth and development of mainland continental crust*, **Hochstetter Lecture**, Dr Steve Weaver, University of Canterbury. Attendance: 84.

August 5: *The wonderful and wacky Wellman quiz*. Attendance 110.

September 9: *Quaternary rates of exhumation and mechanisms of uplift in the central Southern Alps*, Brad Ilg, Victoria University of Wellington.

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## **GEOPHYSICS SECTION**

President: Mark Chadwick

Monthly meetings were held from April to October with topics covering a wide area both geographically and within geophysics. From GPS measurements in Greece to geological hazards in Central America, New Zealand tectonics, and the interactions between ocean water and undersea volcanism. The meetings were overall well attended.

### 1999 Meetings:

April 15: *Interpreting GPS measurements of crustal deformation*, Barry Parsons, Oxford University.

May 20: *The 1990 Lake Tennyson earthquake*, Peter McGinty.

July 17: *Memory of the lithosphere: Inheritance as a primary control on faulting in New Zealand*, Rupert Sutherland, Institute of Geological & Nuclear Sciences (GNS).

August 21: *Earthquake and volcanic hazards in Central America, an overview of cultural and environment*, Dr Hugh Cowan, Institute of Geological & Nuclear Sciences (GNS).

September 18: *Submarine volcanic imprints on the ocean*, Gary Massoth, Institute of Geological & Nuclear Sciences (GNS).

*Mark Chadwick*, President.

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## JOINT COMMITTEE OF THE RSNZ WELLINGTON BRANCH PHYSICS SECTION, and the WELLINGTON BRANCH OF THE NZIP

### 1999 Chairpersons Report.

The joint committee has continued to provide talks to our members and the public. We have also assisted in the Wellington Science Fair by providing two prizes. The years talk programme is below,

- 16 March: Prof. Volker Heine FRS, Cavendish Laboratory, Cambridge, UK. *Symmetry in Art, Mathematics and Science*
- 20 April: Dr. Andy Edgar, VUW, *Optical Glasses and Glass Ceramics: Some New Developments*.
- 26 May: Dr. Rodney Vaughan, Industrial Research Limited, *Future Communications Technologies and Other Predictions of Random Numbers*.
- 23 June: Dr. Gerald Smith, IRL, Industrial Research Limited, *The Treaty of Waitangi: Sincere Intentions Or a Trojan Horse?*
- 7 July: Dr. Warrick Couch, University of New South Wales, *Faint Galaxies: A Journey Back To The Very Early Universe*
- 19 October: Dr. Bob Buckley, Industrial Research Limited, *Applied Superconductivity Research in New Zealand*.

The Wellington Branch of the NZIP was also actively involved in organising the Ninth National Physics Conference, VUW, 7th to 9th July 1999. As part of our commitment to the promotion of science and technology, we arranged an open session, *Physics for the Next Millennium*.

*Dr. G. V. M. Williams,* Chairperson, Joint Committee.

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## WELLINGTON SCIENCE TEACHERS' ASSOCIATION

### Report for 1998

After the excitement of BioLive and its aftermath, 1998 was a relatively quiet year for the Wellington Science Teachers' Association. We began the year with a successful AGM and barbecue at Wellington Zoo. Those present enjoyed a walk around the zoo - with a special focus on the then-new primate trail. Term Two saw a small but dedicated group visit Capital E to view the touring spider exhibition and to hear about the educational work now being done at the re-vamped facility.

A good contingent of Wellington science teachers crossed Cook Strait to enjoy SCICON in Nelson - again it was great to see some of our local primary teachers attend. As a follow up, we invited John Taber from Victoria University to present his workshop on the 'Quake-Trackers' programme for those who had been unable to attend in Nelson. This meeting, strategically held at the Mana Resource Center, was attended by teachers from both Wellington and Kapiti branches. This is something that we hope to repeat. It has been good to hear that the Quake-Trackers material has now been used in a number of local schools.

In Term Four we ran another successful 'Innovative Science' day. About 30 secondary teachers attended, enjoying input on topics as diverse as gifted students (Bill McIntyre, Massey University), using the 'Applications' series (Rupert Alchin from Learning Media), using the ARBs (Chris Marston from NZCER), whacky science ideas (Martin Toop, Wainuiomata College), investigations in science (Carolyn English, WCE), using Te Papa (Jane, Martin) and a follow up workshop on the Safety in Science Manual from Peter Spratt of the NZASE executive.

So far, 1999 has started quietly. We have held one meeting at Te Papa, looking behind the scenes at some of the education material available. This time, it was good to have a number of our student teachers attend. Although each of these meetings has been small, relative to our potential pool of teachers, it has been good to see new and different faces each time. We seem to operate best by providing for a variety of interests, in a fairly informal arrangement of meeting structures!

A meeting focused specifically on the draft Achievement Standards in Science was well attended. With two committee members on the writing panel, we were able to go quickly to the heart of the issues that we needed to discuss in order to provide informed feedback to the Qualifications Development Group.

*Rosemary Hipkins.*

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## OBITUARY

### **Emeritus Professor Harold Wellman (1909 -1999)**

Harold Wellman died on the 28th April 1999 at Ranui Private Hospital, Karori, Wellington, aged 90 and one month after a long illness. To those who had the privilege to know him, we mourn the loss of this unique, original, entertaining and rugged individual - a scientist unrivalled for the remarkable contribution he has made to our understanding of New Zealand earth science.

Harold joined the Geology Department at Victoria University in 1958 after a varied and colourful career as surveyor, gold miner, and since 1938, geologist with the New Zealand Geological Survey. As a relentless observer with an unparalleled knowledge of New Zealand geology, Wellman's arrival the Victoria

heralded the beginning of a new and exciting period in the Geology Department. He was a man of considerable intellectual power, and although he admitted to be nervous of teaching, he was, nevertheless a lucid lecturer and a gifted teacher in the field. A master of impromptu one-to-one teaching, he expected and encouraged students to engage in debate (something he thrived on), whether this was in class, the field or the public bar. He was famous for his often irreverent behaviour and "devilish" sense of humour that insured an instant rapport with first year and senior Geology students alike, but also instigated many well-remembered geological debates that sometimes resulted in a few bruised egos. Harold's experience and natural talent for field interpretation was invaluable for the university environment where the tendency was to turn to books. He replaced "Cook's tours" with field trips that required mapping exercises to solve problems. Possessing an uncanny ability to envisage space/time relationships, to develop geometrical solutions, graphical demonstrations and his now famous working models, Harold Wellman was always well ahead of the field. These qualities were recognised when he was appointed to a Personal Chair in 1970.

Harold's research interests were very broad and there are few fields of New Zealand geology that have not benefited from his attention. They ranged from fossils and their importance in biostratigraphy to coastal Maori occupation layers, but his overriding interest was active faulting, recent crustal movements and plate tectonics. Wellman's name is indelibly linked with the discovery of the Alpine Fault and for proposing the 450km of right-lateral displacement along it. His contribution to explaining how the World's mountains are created based on his work on the Alpine Fault and origin of the Southern Alps was highlighted in a BBC Horizon documentary entitled, *The Man that moved the Mountains*, in 1992. His 5-plate working model of New Zealand tectonics forms an important and highly visual component of the Awesome Forces section at Te Papa, the Museum of New Zealand.

Following his retirement in 1974, Harold remained as active as ever, both in field work and at home on the dining room table (and floor) writing up his many ideas. He regularly visited the School of Earth Sciences on Friday afternoons, bringing along diagrams or prototypes of his latest productions for discussion and criticism in a small, brown suitcase. Afterwards, over a glass of beer at the Staff Club, he would provoke whoever was there in a good-natured way on a range of topics that covered every aspect of geology, life and culture. For those

who accompanied him home afterwards, often to a dinner cooked by Joan and warming in the oven, the conversation would continue with a bottle or two of Harold's and/or Joan's home brew. Sadly, Harold's visits to the University ceased about two years ago but the memories are still fresh. While they remain so, I hope that we can look forward to hearing and reading many more stories of Harold's adventure on Earth.

Harold is survived by his wife, Joan, who has been an indispensable partner during summer vacation field work and student supervision, daughters Diana and Barbara and son Peter.

*Rodney Grapes*

*Associate Professor, School of Earth Sciences, Victoria University of Wellington.*

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## OBITUARY

### **A. P. (Tony) Druce**

We were very sad to learn earlier this year of the death, after a long illness, of Tony Druce, a distinguished botanist who had been a member of the Wellington Branch for more than fifty years. Arnold Dench, President of the Wellington Botanical Society, summed up the thoughts of those who knew him:

“However much we may try to live up to his legacy, it will be all but impossible to match his extraordinary energy, his skills of observation and his capacity for sheer hard work. He meticulously recorded the results of his work both in the field, and in his own large steep garden, where with the support of his wife Helen, he grew and observed so many of the plants he brought to our attention.

“From his office at the D.S.I.R. as well as from his home in Pinehaven, he dispensed to botanists professional and amateur, a seemingly endless supply of botanical knowledge. When one wished to thank him for solving or contributing to the solution of a problem, or for a contribution to a book, article or scientific article, his natural diffidence came to the fore, as he would often try to downplay his own part in the endeavour.

“Let each of us in our own way, honour his memory by intensifying our efforts to “collect and disseminate knowledge” of our native plants. Let each of us be unfailingly generous and helpful in our dissemination of that knowledge as he undoubtedly was.”

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## OBITUARY

### **Brian Shorland**

Here was a grand old man of science, who died recently just short of his ninetieth birthday. A full obituary has been printed in the NZ Science Review Vol 56 (1,2), 1999 giving considerable detail of his long life and career. This is a short more personal view.

I had heard of Brian many years ago, when he produced edible protein from wool. My cousin was involved so I got to sample some of it - is tasted terrible, like eating charcoal. Remembering the time I sampled olives straight from the tree, I considered that there was further processing required. But it gave a strong impression that here was a man who could think laterally, to stand back from a problem and see the wider picture.

More recently I invited myself to his place to talk about wind generation of electricity. His passion for the subject was evident, his knowledge very wide. His philosophical objection to paying for publicly funded airport wind information was indicative of his dislike of the direction science was heading.

He presented me with a string of technical problems that required solving - the details of propeller design, the mounting of the mechanism, the ability to withstand very high winds. He was willing to pay to the limit of his ability to get a solution. Again I realised that here was a true scientist.

It is the only time ever I have been offered 'green' tea in the city. The water was heated by an electric jug plugged into his inverter connected to his big battery, charged by his wind generator and solar panels.

He has been attending RSNZ Wellington Branch meetings for more years than anyone can remember - been a member since 1941 - reduced over the last year or two - he was starting to look old. His retort when asked how he was - still breathing - is sadly no longer true. We have lost a true friend and scientist.

*George Jones.*

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### **RSNZ Wellington Branch Bylaws**

As amended at the SGM of Wednesday 26 May 1999

Royal Society of New Zealand Wellington Branch **BYLAWS**

#### **NAME**

1. The name of the organisation shall be the Royal Society of New Zealand Wellington Branch hereinafter referred to as the Branch. The organisation was

formed in 1851 as the New Zealand Society, renamed the Wellington Philosophical Society in 1868, the Wellington Branch of the Royal Society of New Zealand in 1939, Science Wellington in 1995 and the Royal Society of New Zealand Wellington Branch in 1999.

## **OBJECT**

2. The Object of the Branch shall be the promotion and advancement of science and technology in the Wellington Region.

## **CONSTITUTION**

- 3.(1) The Branch shall be constituted as a Committee of the Council of the Royal Society of New Zealand in accordance with Section 28(3) of the Royal Society of New Zealand Act 1997.
- (2) The Branch shall be the Regional Constituent Organisation for the Wellington Region in accordance with Section 14 of the Act. As a requirement of this Section the Branch declares that:
  - (a) it is able and willing to subscribe to the Object of the Royal Society of New Zealand; and
  - (b) it agrees to represent the Royal Society of New Zealand on a regional basis; and
  - (c) its Object is consistent with the Object of the Royal Society of New Zealand.
- (3) Notwithstanding its constitution as a Regional Constituent Organisation or a Committee of the Council, the assets, liabilities and cash flow of the Branch shall be independent of, and shall not contribute to the assets, liabilities and cash flow of the Royal Society of New Zealand.
- (4) The management of the Branch shall, except as otherwise provided by these bylaws or by the Royal Society of New Zealand Act 1997, be deputed to the Council of the Branch.

## **MEMBERSHIP**

4. Membership shall be of five classes:
  - (a) Ordinary Members
  - (b) Associate Members
  - (c) Honorary Members
  - (d) Life Members
  - (e) Emeritus Members
5. Subject to payment of the appropriate subscription, any person may be accepted by the Branch Council as an Ordinary Member or an Associate Member. Every person so accepted shall be given immediate notice thereof by the Secretary and shall be provided with a copy of the bylaws. Associate Members elected prior to 1 January 1969 may continue in the Associate category if they so desire. Otherwise, Associate Membership shall only be available to bona fide students engaged in full-time secondary or tertiary study. On termination of full-time study such students must, if they wish to remain members, become Ordinary Members by payment of the full subscription.

6. Any member who has given the Branch specially meritorious service may be elected by Branch Council as an Honorary Member. No more than one Honorary Member may be elected in any one year.
7. Existing Life Members shall have all the rights and privileges of Ordinary Members for their lifetime without payment of further subscriptions.
8. The Branch Council shall elect persons who have been subscribing members for fifty years as Emeritus Members. Emeritus Members shall have all the rights and privileges of Ordinary Members, but shall not be required to pay further subscriptions.
9. All members are entitled to receive notices and to attend all general meetings of the Branch and its Sections. Ordinary, Honorary, Life and Emeritus Members shall have, in addition, the right to vote.
10. Members of the Royal Society of New Zealand and its Constituent Organisations shall be entitled to attend the meetings of the Branch.
11. The Branch shall at all times encourage the attendance of visitors with the reservation that any person may be excluded by the Branch Council on the grounds of misbehaviour.
12. Any member of the Branch may resign membership by giving written notice to the Secretary and paying all subscriptions due.
13. The Branch Council shall hear complaints about the misconduct of a member and shall, if the complaints are true and of sufficient gravity, have power to terminate his or her membership, either by inviting him or her to resign or by directing him or her to do so. The member against whom complaints have been made shall have a right to defend himself or herself before the Branch Council in person. Appeals against the decision of Branch Council in such matters may be made to a specially constituted meeting of the Branch. The Branch Council shall encourage members who work in science or technology to adhere to the Code of Professional Standards and Ethics of the Royal Society of New Zealand.
14. Every person shall upon ceasing to be a member of the Branch forfeit all right to any claim upon the Branch and its property and funds.

## **SUBSCRIPTIONS**

15. Annual subscriptions for Ordinary and Associate Members shall from time to time be fixed by the Branch Council.
16. Any person admitted to membership on or after the first day of June in any year shall pay the first subscription as an advance for the ensuing year.
17. Any member whose annual subscription is two years in arrears shall be deemed to have resigned from membership.
18. In exceptional circumstances the Branch Council may, by unanimous vote, remit the payment by any member of the annual subscription or part thereof.

19. The Branch shall pay to the Royal Society of New Zealand such membership fees as are required by the Society and furnish an Annual Report. This report shall list the activities during the year and include a statement of income and expenditure.

### **OFFICERS**

20. The Officers of the Branch shall be a President, Vice Presidents, a Secretary, a Treasurer or Secretary-Treasurer and an Auditor.

### **COUNCIL**

21. The Branch Council shall consist of the President, Vice-Presidents, Secretary, and Treasurer (or Secretary-Treasurer), and up to four other members elected by ballot at the Annual General Meeting in association with the Chairpersons of the various Sections.
22. The President and two Vice-Presidents shall be elected by ballot at the Annual General Meeting from nominations received from members by the Secretary. Such nominations shall be signed by the proposer and seconder and shall have the consent of the nominee. Offices vacant through insufficient nominations may be filled by nomination and election at the Annual General Meeting.
23. The appointment of the Secretary and the Treasurer or Secretary-Treasurer shall be an annual one made by the Branch Council before the Annual General Meeting.
24. The Secretary or Secretary-Treasurer, as the case may be, shall conduct the correspondence of the Branch, have custody of all its books and papers, keep minute books of the proceedings of all meetings, including those of the Branch Council, and keep a record of the members, bylaws, orders and regulations. The Treasurer, or Secretary-Treasurer, as the case may be, shall keep the accounts of the Branch. No expense of any description shall be incurred unless there be funds to pay the amount. All orders upon the funds, whether by cheque or otherwise, shall be signed by him or her and by the President, or in the absence of the President, by one or other of the Vice-Presidents. All such orders shall be approved by resolution of the Branch Council and recorded in the minute books. No portion of the funds of the Branch shall be paid or transferred directly or indirectly by way of bonus or dividend to members of the Branch. Members may however be reimbursed for approved expenditure.
25. The Chairperson of each Section shall be elected annually by the members of the Section before the Annual General Meeting of the Branch.
26. The entire management of the Branch shall (except as otherwise provided by these bylaws) be deputed to the Branch Council.
27. The Branch shall at each Annual General Meeting elect a representative to serve on the Committee of Regional Constituent Organisations of the Royal Society of New Zealand. If he or she is not already an elected member of the Council of the Branch, the representative shall become an ex officio member of that Council during his or her term of office.

## **POWERS AND OBLIGATIONS OF COUNCIL**

28. The Branch Council shall have the control and management of the Branch, and of all property for the time being invested in the Branch, and of the investment of the funds. Operations on the Branch's accounts shall be carried out by the Treasurer or Secretary-Treasurer, or in his or her absence by a member appointed by the Branch Council.
29. The Branch Council or the Committee of any Section, may invite non-members to address the Branch or the Section, respectively.
30. A Special General Meeting may be called at any time by the Branch Council on its own authority. The Branch Council shall within 8 weeks call a Special General Meeting on receipt of a requisition in writing signed by ten members specifying the purpose for which the meeting is intended.
31. The end of the financial year shall be on the 31st day of August in each year, to which day the accounts of the Branch shall be balanced.
32. The Council of the Royal Society of New Zealand shall be the sole authority for the interpretation of these bylaws, and of the regulations made thereunder, and the decision of the Royal Society of New Zealand Council upon any question of interpretation or upon any matter affecting the Branch and not provided for by these bylaws or by regulations made or to be made thereunder, shall be final and binding on the members.
33. On the authority of the Branch President, or in his absence, of a Vice-President, the Branch Council shall meet for the transaction of business at such time and place as may be appointed, due and sufficient notice being sent by the Secretary to each Member of the Branch Council.
34. Any vacancy in the Branch Council occurring during the course of the year shall be filled by the Branch Council.

## **REGULATIONS**

35. The Branch Council may make such regulations, not inconsistent with these bylaws, as it may deem necessary. Each such regulation shall be submitted for confirmation to the next General Meeting of members.

## **COMMON SEAL**

36. The Council shall provide a Common Seal for the Branch and shall have power from time to time to destroy the same and substitute a new seal in lieu thereof. The Common Seal shall be in the custody of and under the control of the Secretary, who shall, in pursuance of a resolution of the Branch Council to that effect, affix the same to all instruments requiring the same.

## **BORROWING POWERS**

37. The Branch Council shall not have power to borrow funds on behalf of the Branch.

## **SECTIONS**

38. Subject to the consent of the Branch Council, members, not fewer than ten in number, may form a Section for the development of any special branch of

knowledge in conformity with the object of the Branch. Each Section shall elect a Chairperson and such other officers and committee members as it may deem fit.

39. Section activities shall be available to all members of the Branch but any Committee may maintain a list of members particularly interested in its activities.
40. Each Section may, if necessary, frame regulations for its own guidance not in conflict with or repugnant to the bylaws of the Branch.
41. The portion of the expenditure of each Section provided out of the ordinary funds of the Branch shall be subject to prior approval by the Branch Council in the Section's annual budget.
42. Each Section may, subject to the approval of the Branch Council, own property and raise and hold special funds for its own purposes but no Branch member shall be required to pay any additional fee except for Section newsletters, expeditions and the like. The Branch Council may require that the accounts of any Section be audited annually by the Auditor of the Branch. All expenditure from Section funds must be approved by resolution of the Committee of the Section and all disposal of property must be approved by the Branch Council. No portion of the funds of the Section shall be paid or transferred directly or indirectly by way of bonus or dividend to members of the Section. Members may however be reimbursed for approved expenditure. In the event of a winding-up of the Section or such Section ceasing to operate, all its property and funds shall be incorporated into the assets of the Branch.

#### **AFFILIATES**

43. The Branch Council may accept, as Affiliates, or combine with, in Joint Committees, regional societies, regional branches or sections of national societies or other organisations which are able to subscribe to the Object of the Branch. Such Affiliates or Joint Committees shall receive services and pay fees as negotiated in each case. They may, if the Branch Council so decides, be represented on the Branch Council but they shall not have any call on the funds of the Branch.

#### **MEETINGS**

44. The Annual General Meeting of the Branch shall be held in the month of October upon a date and at such a time and place to be fixed by the Branch Council for the following purposes:
  - (a) To receive from the Branch Council a Report, Balance Sheet and Statement of Accounts for the preceding financial year.
  - (b) To elect the necessary Officers and the Council and to appoint an Auditor for the ensuing year.
  - (c) To decide on any motion which may be duly submitted to the meeting.
45. Six weeks at least before the Annual General Meeting the Secretary shall request from each member nominations for Branch Council or notices of motion for the Annual General Meeting. Such nominations and notices must be received by the Secretary at least four weeks before the Annual General Meeting. Two weeks before an Annual General Meeting or Special General Meeting, a notice of such

meeting shall be sent to each member. At a Special General Meeting no business other than that of which notice has been given shall be brought forward.

46. At all General Meetings, the President, or in his or her absence, a Vice-President or a Member of the Branch Council, shall take the chair. Every Ordinary, Honorary, Life and Emeritus member present shall be entitled to one vote upon every motion. The Chairperson shall have a deliberative and, in the event of an equality of votes, a casting vote.
47. The quorum at all General Meetings of the Branch shall be fifteen and at all meetings of the Branch Council, half the number of councillors if there is an even number, or half of one plus the number of councillors if there is an odd number. In no case shall the number be less than three.
48. The voting at all meetings, including meetings of the Branch Council, shall be in the first instance by voices, provided that, if any member shall so demand, voting shall be by show of hands, provided also that, if any member shall so demand, voting shall be by ballot.

#### **LIBRARY**

49. The Library of the Branch is in the custody of the Hector Library of the Museum of New Zealand. Members shall have access to the Library on application to the Librarian.

#### **AMENDMENT OF BYLAWS**

50. No alteration, addition or rescission of these bylaws shall be made except at a Special General Meeting called for the purpose or at an Annual General Meeting, provided that no such motion shall be deemed to have been passed unless it be assented to by at least two-thirds of the members present. Notice of intention to propose such alterations may be given at a General Meeting, or in writing to the Secretary, in either case not less than four weeks before the date of such Special General or Annual General Meeting. The Secretary shall send to each member, not less than two weeks before the date of such meeting, notice of the proposed alteration. No amendment shall come into effect until it has been approved by the Council of the Royal Society of New Zealand.

#### **WINDING UP**

51. In the event of a winding up, the whole of the property and funds of the Branch, with the exception of the Library, which will remain in the custody of the Museum of New Zealand, shall become the property of the Royal Society of New Zealand until such time as a Regional Constituent Organisation of the Royal Society of New Zealand shall have been formed in the Wellington Region.

#### **REGISTERED OFFICE**

52. The Registered Office of the Branch shall be at the Royal Society of New Zealand Science Centre, Wellington, or such other place as the Branch Council may from time to time determine.

## Ordinary Members

Mr D B Abel	Dr J W Dawson	Mr P King
Dr W Allan	Dr J F de Lisle	Mr W M Kissling
Mr W M Arnold	Dr R R Dibble	Mr F B Knox
Mr J J Bartlett	Dr W W Dickinson	Dr J H Latter
Mr P L Barton	Mr A W Dodson	Mr B J Lett
Ms Claire Basham	Prof R G Downey	Mr M H Lehner
Dr C M Bassett	Prof J F Duncan	Mr David Lillis
Mr R J Beavan	Dr J R Duncan	Mr D Lovatt
Cdr G M Beere	Dr B H Easton	Dr G L Lyon
Dr A G Beu	Mr A R Edwards	Mr W J P MacDonald
Dr M V Berridge	Mr D C Elliot	Mr D V Madle
Dr H M Bibby	Cmdr D P Fairfax	Dr A Malahoff
Dr B D Bibby	Ms K A Fairweather	Miss M E Malcolm
Mr M T Birks	Mr B D Field	Hon C R Marshall
Ms M Bobbett	Dr J E C Flux	Mr E A Mason
Ms C Bobbett	Dr J A Gamble	Dr V H McCann
Mr B J Bradburn	Dr J Gardner	Mr D S McDonald
Dr E Bradford	Mr A Geidelberg	Mr R J McDougall
Miss G Brown	Dr G W Gibbs	Dr W M McEwen
Mr J W Brodie	Dr M E Gordon	Mr P McGavin
Mrs L W Bruce	Mr A A K Grant	Prof Don McGregor
Dr G W Butler	Mr T Greaves	Dr A H McIlraith
Mr C Callis	Mr G J Green	Mrs B McFadgen
Mr D S Capper	Dr V R Gray	Dr W L McLea
Dr P J H Castle	Mr J G Gregory	Ms A Milburn
Miss D M Chambers	Dr G W Grindley	Mr D C Mildenhall
Ms P Chester	Dr E M Haines	Ms B Mitcalfe
Dr A B Christie	Dr A J Haines	Mr C Monigatti
Dr D A Christoffel	Prof J F Harper	Mrs P F Montgomery
Dr G G C Claridge	Dr M A Harper	Mr V R Moore
Mr A R Clarke	Ms J R Harris	Mr D F L Money
Mr M H Clear	Dr D D Heath	Mr R J Munster
Mr B M Colbourne	Dr Jim Hefford	Mr T H Murtagh
Mr O J Cole	Dr G Hewitt	Mr J C Nalder
Mr K W Cory-Wright	Dr J Hickman	Mrs S Natusch
Mr P Cotton	Ms L M Horwood	Mr M R Nicholls
Mr S Couperus	Dr J R Hulston	Mrs D Offenberger
Mr J H J Crawford	Dr D E Hurley	Mr Ned Pattle
Mrs Y M Curtis	Mr C E Ingham	Ms Suzi Penny
Ms Monica Dance	Dr M Ingham	Dr J A Phillips
Mr J Daniels	Mr D R Jackett	Dr E M Poulter
Dr D J Darby	Dr J B Jones	Dr G F Preddey
Dr C H Daugherty	Mr G L Jones	Dr C A Prior
Dr S J Davenport	Dr F M Kell	Dr I A M Prior
Dr J M Davidson	Mr I W Keyes	Mr Bart Provo
Dr E W Dawson	Dr J W Kidson	Dr I J Raine

Mr C B Rampton  
Dr S J Reid  
Dr M E Reyners  
Mr G F Risk  
Mr C J R Robertson  
Dr E I Robertson  
Dr R Robinson  
Dr M Rudge  
Dr M K Savage  
Dr T M Skerman  
Dr R I Skinner  
Mr Peter Smale  
Ms J R Smith  
Prof E G C Smith  
Dr W D Smith  
Dr M J Smith  
Mr E R Smits  
Dr I G Speden  
Mr A P Spurgeon  
Dr G R Stevens  
Dr M K Stewart  
Mr P Stodart  
Mr C K Stone  
Mr J G Suckling  
Mrs G Suckling  
Dr R P Suggate  
Mrs D Suggate  
Mrs M T Sullivan  
Dr C M Sutton  
Dr L D Swindale  
Dr J Taber  
Dr H R Thompson  
Mr K H Tocker  
Dr P Tortell  
Mr I F Turner  
Mr P G Turner  
Prof R I Walcott  
Mr J W Walmsley  
Mr A Walton  
Mr W N Watson

Dr W A Watters  
Dr R G Wear  
Mr B F Webb  
Prof J B Wells  
Miss J J White  
Cdr W R Williams  
Dr G V M Williams  
Dr G J Wilson  
Mr R Wiseman

### **Associate Members**

Mr R J Bailey  
Mr J W Hutchings  
Mr J A Liversage  
Mr D L Pidgeon  
Mr P Rees  
Mrs E Stephens

### **Emeritus Members**

Dr K R Allen  
Dr R K Dell  
Prof F F Evison  
Dr J Finch  
Dr J F Gabites  
Mr A L Poole  
Dr J J Reed  
Mr N G Robertson  
Mr N J Rumsey  
Prof C J Seelye

### **Honorary Members**

Mr P C Alve  
Dr O Bauer  
Lady M A Fleming  
Dr M Laird  
Dr R B Miller

### **Life Members**

Dr P C Bull  
Mr J D Coulter  
Mrs M M Davidson  
Mrs H R Hughes  
Dr I M Morice  
Dr H M Pantin  
Mr L J Rollo  
Dr D Spiller  
Mr C F West  
Mr V J Wilson  
Dr G W Yeates