THE NEW ZEALAND MATHEMATICAL SOCIETY

NEWSLETTER

NUMBER 9 AUGUST, 1977

ANNUAL REPORT 1976/77

(presented at the Annual General Meeting, 11 May, 1977)

On behalf of the Council, I hereby present the third Annual Report of the Society.

As in the previous year the Society has continued to widen its activities and to seek further ways in which to serve the mathematical community. We have our means of communication in the NEWSLETTER, we have begun to take an active part in the affairs of the Royal Society and we have continued to seek a close co-operation with the different Mathematical Associations. As a Member Body of the Royal Society we have been represented by Dr Davies on the Member Bodies Committee. We also have the privilege of nominating the Member Bodies Councillor who represents the member bodies on the governing council of the Royal Society. We have nominated Professor Vere-Jones for this. Our Society is now consulted about nominations to the National Committee for Mathematics by the Royal Society. Our nominations were Professors Kalman and Petersen, and Dr Schroder. Now we have a good chance of interesting the Royal Society in mathematical activities and of establishing good relationships with other scientific organizations in New Zealand. In some ways we have not developed this relationship with the Royal Society as rapidly as might otherwise have been possible because the Royal Society has been re-organizing itself and its committees. Now it would seem that there will be no meeting of the National Committee this year because the members of that committee will not be known until after the Colloquium.

The editors of the NEWSLETTER have started to receive airmail copies of the Notices of the American Mathematical Society on an exchange basis so that the information contained in these Notices can be circulated via the NEWSLETTER much earlier than would otherwise be possible.

By these means New Zealand Mathematicians have available to them up-to-date information on many of the mathematical meetings and activities abroad. Last August we brought out a list of Post-Graduate Topics and in subsequent years it is hoped that this will be brought out in August so that intending post-graduate students will have it available for consultation in September. The Employment Brochure has proved a considerable success and has attracted interest both within and without the Society. It is planned to have further issues in the future.

The cost of travel becomes increasingly high so that it is difficult to arrange meetings between the delegates of the Society and the

Associations to further our co-operation. Nevertheless, we hope to have a useful meeting this June. Already the Canterbury Mathematical Association contest covers the South Island and there is hope that soon we shall have a National Mathematical Olympiad. The Mathematical Associations have taken a bigger part in the last two colloquia than hitherto and we have members of the Canterbury Association and others taking part in our Committee Meetings for organizing the 1978 Convention. We expect that in this Convention the Associations will play their full part.

Professor Vere-Jones has spent his study leave first in Japan and now in Australia. He has made a most useful contact for us with the different Japanese Scientific Societies and we hope to have a closer relationship with these societies in the future. We are taking the matter up with the Royal Society to urge closer co-operation at that level as well as taking up the direct communication with the Japanese Mathematical Societies established by Professor Vere-Jones. We hope as a first fruit of this relationship to have delegates of the Japanese Mathematical Society at the next colloquium.

Your Society continues to seek reciprocal arrangements with other National Mathematical Societies in addition to those which have been listed in the NEWSLETTER and previous reports. We have now established reciprocal relationships with the Canadian Mathematical Congress and the Edinburgh Mathematical Society.

The membership now stands at 134, including three honorary, nine student and six reciprocal members. Although we have had a steady growth in our membership roll we are potentially a much larger society than this and I urge all of you to become missionaries.

I must now report on the first Australasian Mathematical Convention which includes the 13th N.Z. Mathematics Colloquium. The organization of the colloquium is in the first instance the business of the Head of the Department of the University in which it is held, however, in this case much of my communication with Australia and other places is conducted as the President of the New Zealand Mathematical Society and so it is only right that I report to you on the progress so far achieved. Actually, following this meeting, I am to go to the Annual General Meeting of the Australian Mathematical Society. At that time I hope to make considerable progress in completing some of the necessary arrangements for next year's meetings. We hope to have a good list of distinguished speakers including Professor A.H. Stone and Mrs Stone, and others from the United States and the United Kingdom. The Japanese Mathematical Society has also promised to make every effort to send a representative. It has been very encouraging to have the agreement of the distinguished research workers I have mentioned to come to speak to us. At the moment however, our principle problem is that of finding the finance to bring them here. In most cases the finance has not yet been found though we have hopes that we shall find it in time. I shall of course be most grateful for any ideas you have to offer as to where I can find such finance. We have had many letters from Hong Kong, the United States, Japan and other places, for instance we even have one from Brazil expressing an interest in our meeting. This is also an occasion for the Associations both in Australia and in New Zealand to take a full and active part. It is hoped to get at least one distinguished speaker from abroad to enliven their part of the proceedings, though most of the talks given by the above-mentioned scholars will also be of a wide general interest. I feel that one of the most important things that this Society can do is to bring together those whose main interest is in teaching mathematics or similar activities and those interested in tertiary education or research. This need not be done by all of us belonging to the same Society, but until the colloquium attracts people from all of the

sectors I have mentioned, I do not feel that we shall have established a true mathematical community.

I have been asked by the Council to announce that our sub-committee on publications has been meeting and has determined that the Society is now in a position to begin in this difficult and expensive field in a modest way. We hope to produce some publications in the non-hard covered field, including lecture notes and the occasional memoir. The format of these publications will at first most likely be like those reports issued by the different universities, but somewhat lengthier and more extensive in content.

We wish also to call to your attention the possibility of holding regional meetings of the Society, either in conjunction with other organizations or as a separate convention. In this respect the Council hopes to organize the occasional tour around New Zealand by distinguished speakers. We hope to be able to either finance the travel by such speakers or at least give substantial financial aid to those local Societies or Departments who might like to take advantage of the possibility. Those interested should be urged to contact Dr Kevin Broughan of Waikato University. We also hope to have an essay contest at some time in the near future and the organization of this activity is in the hands of Professor W. Malcolm of Victoria University.

Finally, I wish to express my thanks for the great support that I have had from all members of the council this year, and particularly the very necessary support of Dr Wilson, without whose aid I would have not been able to cope with the necessary business.

G.M. Petersen
President

EXTRACTS FROM THE MINUTES OF THE SIXTH COUNCIL MEETING

The sixth Council Meeting was held in Room RB 701 of the Rankine-Brown building of Victoria University of Wellington on Sunday 8th May 1977, beginning at 1.30 p.m., breaking at 5.00 p.m., resuming at 6.00 p.m. and ending at 9.50 p.m.

Professor B.H. Neumann had been expected to be present as an official observer for the Australian Mathematical Society but was stranded in Australia by a strike. Dr J. Gani of the CSIRO was welcomed in his stead.

Avoidance of Mid-Term Meeting

This was presaged at the last meeting. It was agreed that some form of mid-term postal meeting be held to reduce Council travel costs, and that every effort would be made to finalize business during the Colloquium.

Visiting Lecturer *(see p.5, Newsletter No. 7)*

The wording of the first resolution of VIII (c) of the 5th Council Meeting minutes was altered to facilitate implementation.

AMENDMENT: That each year two members appointed by the President appoint a visiting lecturer, arrange his/her itinerary, and take responsibility for all other matters incidental to the proposal.

RESOLVED: That Dr Broughan and Mr French, be appointed to be responsible for the visiting lecturer scheme, with the Society providing the internal air fares of the lecturer and the Universities the local hospitality.

Mathematics Education

RESOLVED: That Dr Broughan and Prof Butcher be appointed as a Standing Sub-Committee of Council on Mathematics Education and be empowered to draw up a programme for submission to Council and to seek contributions from Society members for publication in the Newsletter.

Relations with Foreign Societies

(a) AMERICAN MATHEMATICAL SOCIETY

As reported in Newsletter No. 8 they are in the process of rethinking reciprocal membership and little can be done until this is settled.

(b) CANADIAN MATHEMATICAL CONGRESS

We are receiving their *Notes* regularly. The Secretary may be visiting Canada in August.

RESOLVED: That Dr Wilson be formally asked to make contact with the Canadian Mathematical Congress and that a letter be sent to the Congress informing them of Dr Wilson's visit.

(c) JAPANESE SOCIETIES

Dr Gani reported that the Australian Academy of Science has just established contact with the Japan Society for Promotion of Science. They may be prepared to send representatives to the 1978 Convention. It was suggested that we ask them, either directly or better, through the Royal Society. Prof Petersen reported that the Japan Foundation had been approached but that they only concerned themselves with speakers on Japan.

(d) SOUTH EAST ASIAN MATHEMATICAL SOCIETY

They should also be asked to send delegates to the 1978 Convention.

(e) INSTITUTE OF MATHEMATICS AND ITS APPLICATION

Dr Joyce has contacted the secretary of the Institute, Mr Norman Clarke.

(f) EDINBURGH MATHEMATICAL SOCIETY

RESOLVED: That the N.Z.M.S. Council accept, with gratitude, the reciprocity arrangement with the Edinburgh Mathematical Society.

The details appear in the Newsletter. Members of the Edinburgh Mathematical Society may join us for half fees. They will receive our publications and have full rights excepting for voting.

(g) INTERNATIONAL UNION FOR THEORETICAL AND APPLIED MECHANICS

The Royal Society is affiliated to The International Council of Scientific Unions but has to have a case presented to it before it will pay dues to member unions (other than the IMU to which they already do).

1978 Australasian Mathematical Convention

The meeting is to be May 15-19, 1978 at the University of Canterbury, Department of Mathematics. Prof Petersen reported on progress. A digest of the minutes of the organizing committee's meetings had been prepared by Prof Woods.

Briefly, the organizing committee comprises representatives from the Canterbury Mathematical Association and a Senior Inspector of Schools as well as University staff. The Convention is to have a broad scope with interest for school teachers. A preliminary notice has been sent to all tertiary institutions in N.Z. and Australia and about 80 other universities in the Pacific Basin and to all the N.Z. Mathematical Associations. A number of distinguished mathematicians and educators have accepted invitations subject to support, which is being actively sought from all over. The expected attendance is 500.

RESOLVED: That the report be received and that we advise the Organizing Committee of our continuing interest in and support of the Convention.

RESOLVED: A $200 donation be made towards Convention expenses in consideration for staging the Mathematical Society Lecture.

Dr Gani offered to support a lecturer from CSIRO. This generous action and some useful observations he made on Australian conferences will be communicated to the Canterbury organizers.

Relations with the Royal Society of New Zealand

(a) NATIONAL COMMITTEE FOR MATHEMATICS

The Society forwarded the nominations of Professor J.A. Kalman, Professor G.M. Petersen and Dr M. Schroder. The appointments have not yet been made.

(b) OTHER NATIONAL COMMITTEES

The secretary of the National Committee for Astronomy had written that under the new rules the N.Z. Mathematical Society may wish to declare an interest in the composition of the NCANZ. Our feeling is that we have no wish to make Society nominations.

(c) MEMBER BODIES

The secretary wrote to Prof Vere-Jones urging him to accept nomination as Member Bodies' Councillor which he graciously did and his name was forwarded. The Statistics Association forgot to forward its own nomination but is happy to support ours. Dr Davies reported that the elections had just been held - we were not successful.

(d) FELLOWSHIP AND HONORARY MEMBERSHIP NOMINATIONS

The Royal Society of N.Z. is still deficient in mathematicians. The stumbling block lies in the division of the Fellowship Selection Committee Advisory Panels into 6 groups, each of which hardly gets 1 new fellow appointed per year and in which the Mathematical, Physical and Engineering Sciences are lumped together as one. (The other 5 panels are Plant, Animal, Chemical, Solid Earth (sic) and Human Sciences.) Dr Davies favours an initiative, together with the Statistical Society (who have indicated support), the Operations Research Society, the Computer Society, the Demographic Society and other Social Science societies, to present a case to the Royal Society to have the imbalance of representation redressed.

RESOLVED: That we seek the views of other Societies represented by the Mathematical, Physical and Engineering Sciences Advisory Panel towards pressing for a more equitable share of Fellowship appointments.

The value of a well-documented case and full Society support for any nomination was stressed.

RESOLVED: That the President and our Member Bodies Representative liase to coordinate efforts to submit nominations to the Royal Society of N.Z. on behalf of the Society.

It was accepted that the Society should each year submit nominations to all vacancies in Royal Society positions.

(e) AUSTRALIAN AND NEW ZEALAND ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, 1979 CONFERENCE

Now to be at Auckland, January 22-26, 1979. Prof Butcher communicated a letter from the Secretary of the Organizing Committee at Auckland (Prof T.N.M. Waters) seeking our support and suggestions. It points out that the ANZAAS meeting comes to N.Z. infrequently (the last being in Christchurch in 1968) and that its success would benefit the scientific community and the country as a whole.

Although there has been a lack of technical mathematics at recent A.N.Z.A.A.S meetings there was a general feeling that they constituted a useful public relations exercise and therefore the Society should express interest. Dr Davies mentioned the interest aroused in the sessions of Mathematical Biology following the Colloquium as an example of a suitable activity for ANZAAS.

RESOLVED: That Professors Petersen, Butcher and Malcolm consult with Professor Seber to raise the matter at the Annual General Meeting as a Society concern.

(f) ROYAL SOCIETY AWARDS AND PRIZES AND MEDALS

RESOLVED: That those relevant to us be advertised in the Newsletter and that the President may forward nominations in the name of the Society.

(g) SCIENTIFIC CALENDAR

Despite efforts, the entry for the colloquium has been omitted.

(h) ANNUAL REPORT

The Annual Report to the Royal Society of N.Z. which will appear in the "Proceedings" was circulated.

(i) SCIENCE FAIRS

On April 1, the Royal Society asked Member Body secretaries "whether they will be requesting financial assistance and the amount they will ask for." The secretary replied, mentioning the figure of $1500 for the Australasian Mathematical Convention. Subsequent enquiries have revealed that the Royal Society considers itself the interface between us and international bodies to which it is affiliated. Were the Convention an IMU regional meeting then the Royal Society would approach Government on our behalf for funds and provide administrative assistance. This not being so, our only chance for money is by a direct approach to Government. The matter was left in the secretary's hands (lap?).

RESOLVED: This meeting suggests that an approach be made to the Minister of Science for $1500 to support speakers at the 1978 Mathematical Convention.

(j) SCIENCE CENTRE

No immediate use was foreseen.

(k) SUBSIDY TOWARDS PUBLICATION COSTS

Dr Davies reported that the case prepared by the N.Z. Ecological Society for subsidy of publication costs had no chance of finding acceptance and so was irrelevant to us. However, a meeting of Science Editors had been initiated which may be of value.

Publications

(a) NEWSLETTER

Michael Carter (the acting Editor) gave a financial report.

RESOLVED: That $41.04 be remitted to Massey University to cover printing costs for Newsletter No. 7 and the associated Education Supplement.

It was decided that the question of publishing digests of Colloquium talks in the Newsletter should be raised at the A.G.M.

(b) EDUCATIONAL SUPPLEMENT

RESOLVED: That we continue the policy of publishing supplements to the Newsletter such as the Employment and the Educational Brochures.

(c) SUB-COMMITTEE REPORT

Prof Sawyer circulated a report.
The committee was unanimously of the view that the Society should try to extend its range of publications. It noted that there was little chance of breaking into the hard-back market but was confident that offset printing would be suitable. The report and its recommendations were adopted.

RESOLVED: That an Editorial Committee of the Society be set up, to consist of three members, one of whom shall be the Editor of the Newsletter. The Committee is empowered to seek suitable material for publication.

RESOLVED: That two series of publications be launched:

Lecture Notes in Mathematics. To be a series suitable for undergraduate use, consisting of material supplementary to, or alternative to, textbooks.

Research Notes in Mathematics. To be at a more advanced level and to allow for both the extended research paper and the expository monograph.

On the question of royalties it was

RESOLVED: That Council recognizes the desirability of giving authors some recompense, at least comparable to that of overseas publishing houses.

Dr Gani offered to have the Editor visit CSIRO to familiarize himself with their publishing practice. Council expressed its gratitude to Dr Gani.

RESOLVED: To invite Professor Vere-Jones to be convenor of the Editorial Committee and Dr Broughan to be a member.

(This, with the Editor of the Newsletter *ex officio* is the full complement.)

(d) EMPLOYMENT BROCHURE

Great satisfaction was expressed over the response, from both within and without the Society, afforded the first Brochure.

RESOLVED: That Drs Davies and Wake be asked to consider a revised edition of the Employment Brochure.

(e) POST-GRADUATE TOPICS

A venture which would be of value to the N.Z. mathematical community and for which the time is opportune is the accumulation of historical information on theses done here.

RESOLVED: That the Newsletter Editor be asked to collect from university departments as full lists as possible of all students who have graduated over the years with masters degrees by thesis and doctoral degrees (together with the titles of the theses), to be published in the Newsletter, and thereafter an annual list of people graduating with masters or doctoral degrees and the titles of their theses to be published in the Newsletter.

Relations with New Zealand Societies

(a) THE MATHEMATICAL ASSOCIATIONS

Professors Petersen and Malcolm reported that no meeting had occurred this year (because no suitable Department of Education course had brought people together) but things were moving ahead, for instance the Associations are joining the Convention and are involved in its planning.

RESOLVED: That Professors Petersen and Malcolm continue their liaison with the Mathematical Associations.

(b) OPERATIONAL RESEARCH SOCIETY

Dr Joyce also negotiating. They are to join in the 1978 Convention.

Activities

ESSAY COMPETITION

Prof Malcolm reported plans for the next competition.

RESOLVED: That two competitions be held, one for students in the divers Honours programmes and the other at Masters or Doctorate level, that $100 be available for prizes, Prof Malcolm and Prof Petersen to determine the process of judging.

REGIONAL MEETINGS

Members are reminded that small amounts of money (defrayment of tea expenses, say) are available for such meetings.

Financial

(a) TREASURER'S REPORT

Budget 1977-78

		1977-78	Actual 1976-77	Budget 1976-77
1.	Chronicle	$ 20	$ -	$ 20
2.	News-Sheet	5	5	5
3.	Employment Brochure	80	61.60	100
4.	Newsletter/Education Supplement	100	-	150
5.	Travel - Royal Society levy	20	15.40	20
	Society/Association	50		42
	Council Meeting	100	246	150
6.	Secretary's Expenses	25	{ 53.99	90
7.	Treasurer's Expenses	25		
8.	Royal Society membership fee	20	20	20
9.	N.Z.M.S. Colloquium lecture	100	80	80
10.	I.C.M.E. representative	-	20	20
11.	Essay competition	100	110	-
12.	Visiting Lecturer Scheme	200	-	-
		$845	$611.99	$697

RESOLVED: That the Treasurer is authorized to open a term deposit account at the Bank of N.Z. and to deposit up to $500.

(b) MEMBERSHIP

It stands at 134, including 3 Honorary, 9 student and 6 Reciprocal. A publicity sheet has been prepared and widely circulated.

(c) INSTITUTIONAL MEMBERSHIP

The Treasurer reported on possibilities. The Waikato Mathematical Association and the Statistical Society have such schemes.

(d) TRAVEL

$100 has been budgeted in case Council travel is needed for the 1978 Convention.

Jose Luis Massera

Dr Alex McNabb forwarded material on the above mathematician, who is allegedly a political prisoner. It was decided to follow the same procedure as was adopted by Prof Vere-Jones for Leonid Plyushch, if necessary checking with Foreign Affairs and the Australian Mathematical Society.

General

It seems that the British Royal Society funds British delegates to the I.M.U. International Congress. The next is to be in Helsinki in 1978. Our own Royal Society should be tapped.

W. Brent Wilson
Secretary

NUMERICAL ANALYSIS NEWSLETTER

During the May Colloquium several numerical analysts met together to discuss matters of common interest. As a means of exchanging information on an occasional basis it was decided to circulate from time to time a brief newsletter. Anyone wishing to be placed on a mailing list for this newsletter should write to John Butcher, Department of Mathematics, University of Auckland, Private Bag, Auckland.

NEW ZEALAND MATHEMATICAL SOCIETY

Minutes of the Third Annual General Meeting, 1977
4.00 p.m. Wednesday 11 May at Victoria University
of Wellington.

PRESENT: Prof G.M. Petersen in the chair and 42 members.

1. APOLOGIES: Profs Neumann and Woods, Drs Joyce, Hendy and Gould.

2. MINUTES OF THE SECOND ANNUAL GENERAL MEETING, MAY 1976.

These were adopted. No matters arose.

3. PRESIDENT'S ANNUAL REPORT (OF COUNCIL), 1976/77.

(This appears on pp. 1-3 of this number of the Newsletter)

Mr Tee suggested a special postage stamp for the Convention. Dr Ansell was perturbed that no intermediate Council meeting was planned. Prof Malcolm replied that Council was aware of the need for personal contact but that the last meeting cost about $250. A postal meeting, formally convened, suited our resources better, at least for this occasion. Mr Tee suggested a joint telephone link.

RESOLVED: That the Annual Report be adopted. (Butcher)

4. TREASURER'S REPORT AND FINANCIAL STATEMENT.

This was circulated. The item "Mathematical Newsheet" was queried. Prof Malcolm explained that it arose out of a meeting with the Associations (who have no national coordinating body) – each contribute to Southland who circulate the "Newsheet" periodically. Despite pleas that we needn't confirm the existing subscription, it was

RESOLVED: That the ordinary subscription stay at $7. (Ansell)

Dr Ansell mentioned the balance with the B.N.Z. The treasurer replied that this was to be invested. Prof Petersen voiced his familiar warning that it is prudent to embark on publication and other activities with money in the bank.

RESOLVED: That the treasurer's report be adopted. (Reilly)

5. REPORT OF PUBLICATIONS SUB-COMMITTEE.

Prof Sawyer reported that the sub-committee had been set up last year with power to go ahead. They conclude that the time is not good for a periodical and that the weakening links between universities and publishing houses shows that the hard-back book situation is weak. They had recommended that an Editorial Committee should be set up, which Council had done, with Prof Vere-Jones as convenor, Dr Joyce (ex-officio as Editor of NEWSLETTER) and Dr Broughan as members. Two series of publications will be launched.

(a) Lecture Notes in Mathematics. Aimed at under-graduates or top school level as substitutes or supplements for text-books. They might make a little bit of money for both the Society and the author.

(b) Research Notes in Mathematics. Like the "Memoirs of the American Mathematical Society". They would be individual

items and might lose a bit of money but have prestige and sell overseas.

The NEWSLETTER and supplements are to continue. (One project is a complete list of New Zealand theses, Masters and Doctorates, on mathematics before it is too late, brought up to date each year.) The matter of printing is left to the Editorial Committee.

Dr Carter sought guidance on the publication of material from the Colloquium. It was proposed that we publish extracts of the education papers as last year but with these becoming a larger part of the Colloquium, how far should we go? The Chronicle already publishes abstracts of the talks and with its wider circulation may be appropriate. Also, should NEWSLETTER supplements be available to anyone for a fee? A general discussion ensued. The points made were that the Editor ruled on quality and not all contributions need be approved; the material was pertinent to New Zealand and so the circulation of the NEWSLETTER is more appropriate than overseas journals; the Chronicle would not want such ephemeral material; also, should it be refereed? Prof Malcolm regarded the NEWSLETTER as our house organ. Occasional supplements of interest to members were to be encouraged - not merely the education contributions to the Colloquium. Dr Pledger said that the Mathematics Magazine might be more appropriate but the beneficial effect on membership was mentioned. Dr Broughan referred to the particular responsibility for next year's convention, perhaps warranting a more permanent record. Prof Malcolm agreed that the "Convention Proceedings" might be our first publication.

6. ELECTION OF OFFICERS.

6.1. PRESIDENT.

Prof Butcher assumed the chair. Prof Malcolm apologized for relinquishing the Vice Presidency prematurely, explaining that his university responsibilities had multiplied since accepting the post. He expressed gratitude to Prof Petersen for being prepared to carry the responsibility of President for another year but felt it appropriate for the Convention year. In the absence of other nominations, Prof Petersen was declared President and recalled to the chair with acclamation.

6.2 INCOMING VICE-PRESIDENT.

Prof Malcolm moved a vote of appreciation to the Outgoing Vice-President, Prof Butcher, who has served the Society since its birth. The motion was carried with acclamation.

Three nominations had been received for Incoming Vice-President:

D.C. Joyce	(D.B. Sawyer/W.B. Wilson)
J.C. Turner	(K.A. Broughan/R.A. Littler)
G.C. Wake	(W.G. Malcolm/I.L. Reilly)

Because the secretary was unhappy that Dr Joyce, being overseas, was not aware of other nominations, short nominating speeches were given to restore symmetry. General satisfaction was expressed at having 3 able candidates. Mr Tee and Dr Bryant were appointed scrutineers. The winner of the ballot was Dr Wake who was then declared Incoming Vice-President.

6.3 COUNCIL MEMBER.

To make up the complement to 9 and in accordance with the A.G.M. notice, nominations were called for.

D.G. Smith (Butcher/Dixit)
J.C. Turner (Broughan/Littler)

Dr Turner won the ballot and was declared elected.

6.4 APPOINTMENT OF AUDITOR.

Mr Tony Fairfield was appointed as Auditor.

7. GENERAL

RESOLVED: That this society transmit to the Royal Society of New Zealand the motion passed at the Colloquium meeting on the desirability of the New Zealand universities having a week in the May break in common with the Australian universities.

(Harper/Davies)

RESOLVED: The N.Z.M.S. expresses its support for the A.N.Z.A.A.S. meeting to be held in Auckland in 1979, and urges the council to give tangible expression to this support.

(Butcher/Ansell)

Prof Petersen expressed disappointment that Prof Neumann had been unable to attend and appreciation of his role in the formative years of the Society.

Mr Tee raised the inefficiency of having separate business meetings each year for the Colloquium and Society and

MOVED: That after the 1978 Convention, responsibility for the continuation of the Colloquia be assumed by the Society, which may delegate its responsibility for each Colloquium to the host university.

(Tee/Pledger)

Prof Petersen (interpreting the motion as calling for negotiation) said that there was merit in the idea but we must go carefully for many non-members of the Society take part in the Colloquia. Moreover, the Associations should not feel that in joint activities they are not equal partners. The day may come but has not yet. Prof Butcher agreed, saying that we can abide Colloquium meetings but perhaps some Society interest should be expressed at them.

AMENDMENT: "That this meeting recommends" to precede the motion.

(Ansell/Tee) CARRIED.

Dr Broughan was against the motion, making the point that the Colloquium was an intricate operation to organize, needing full local control and taking the intermediate years to recover from. Dr Pledger envisaged an arrangement similar to the present with the organizing department named as a committee of the Society. Drs Harper, Turner and Davies opposed the motion but the last did concede the present difficulty in explaining the position to the Royal Society. Prof Malcolm thought that our growing presence would eventually make it inevitable but was not yet persuaded. Dr Ansell pointed out that the decision was for the Colloquium to take but that the discussion should be forwarded to their meeting. Dr Reilly thought it better that individuals should raise the matter, thus avoiding "bad vibes" for the Society. The discussion was neatly ended in

a way that lets matters take due course:

PROCEDURAL MOTION: That the motion lie on the table.
(Malcolm/Harper). CARRIED.

Prof Kalman then proposed a vote of thanks to Prof Malcolm. As an illustration of the contribution the retiring Vice-President had made to the Society he cited a visit Prof Malcolm made to Auckland which had eased the tension between the Chronicle and the Society. The vote was carried by acclamation.

The meeting ended at 5.45 p.m.

W. Brent Wilson,
Secretary.

FIRST AUSTRALASIAN MATHEMATICS CONVENTION

Readers of the Newsletter will already be aware of the plans for the 1978 Australasian Mathematical Convention (see p.7 of Newsletter No. 7). We are now able to give some more detailed information:

The dates are now confirmed as May 15 - 19, at the University of Canterbury, Christchurch, New Zealand.

The Convention programme will include three distinct styles of address. Firstly, there will be talks of interest to all attending the Convention. Distinguished speakers have been invited from the United States and Great Britain to give these addresses. Secondly, there will be invited talks of a more specialised nature given by prominent mathematicians and educators. For these talks the Convention will divide into two or three sections, one of which will be on education. Thirdly the Convention will split into a large number of specialist groups. Some of these will be organised beforehand; details will be asked for in the Second Notice, and intending speakers will then be able to indicate their topic or title. It will also be possible to arrange further groups during the Convention itself. There will be a full programme of workshops and talks on mathematics in schools. The day will typically begin with the invited specialist talks. Then all members will assemble for one of the main invited addresses. In the afternoon the Convention will divide into splinter groups. On Thursday and Friday some of these talks and groups will simultaneously be part of the Annual Conference of the Operational Research Society of New Zealand.

The registration fee for the Convention is:

(a) $Aust.16, if paid before 1 April 1978 to the Treasurer of the Australian Mathematical Society:

Dr V.G. Hart,
Department of Mathematics,
University of Queensland,
St Lucia, Qld. 4067. *or,*

(b) $NZ18, if paid before 1 April 1978 to:

1978 Convention Treasurer,
Department of Mathematics,
University of Canterbury,
Private Bag, Christchurch 1., *or,*

(c) $NZ23, payable at the Convention.

Student rates are half the above.

All cheques should be made out to "Australasian Mathematical Convention".

Registration forms and further information may be obtained from the Convention Secretary, Mathematics Department, University of Canterbury, Christchurch, New Zealand.

STOP PRESS

We have just received news that arrangements for some of the invited speakers to the Convention have been completed, as follows:

Professor J.M. Hammersley FRS, of Oxford University will be coming to the Convention under the Erskine Scheme of Canterbury University.

Mr C.P. Ormell of the Schools Council 6th form mathematics project, will be attending under the sponsorship of the Department of Education and the British Council.

Dr D. Griffiths of the CSIRO will be coming under the sponsorship of the CSIRO.

Professor A.H. Stone of the University of Rochester and Professor Dorothy Maharam (Mrs Stone) of the University of Rochester will both be coming after their Australian tour under funds arranged by the Convention. They are supplying their own passage to Australia.

We are grateful to all of these speakers and sponsors and are sure that they will make the occasion a memorable one. Professor Paul Halmos may also come under the sponsorship of the New Zealand United States Educational Foundation (Fulbright Award) but this will not be decided until next October.

ICMI SYMPOSIUM, AUGUST 1978

The International Commission on Mathematical Instruction (ICMI) has announced that a symposium will be held at the International Congress of Mathematicians, Helsinki, August 1978, on the following theme:

The Education of Mathematics Teachers (Pre- and In-service):
What Knowledge, Experience and Understanding of Mathematics should a Mathematics Teacher have?

Many mathematicians are professionally involved in the pre- and in-service education of mathematics teachers. This involvement includes

preparation and teaching of courses, evaluation of students and programmes, planning and holding of seminars, work on committees and in conferences related to education of mathematics teachers.

There is universal agreement that the teacher of mathematics should have mathematical competence. In particular he should have adequate background knowledge and experience with respect to the mathematics taught at school. This implies that specific parts of applied mathematics and problem-solving activities should be indispensable components of the educational programme in addition to basic instruction in pure mathematics.

It is expected that through his education the mathematics teacher has developed the ability to analyse elementary mathematics from an advanced point of view and has gained the flexibility necessary for representing mathematics at various levels and by a variety of approaches. It is a matter of debate whether special courses are needed to further this expected competence and how such courses should be related to methods courses and other training components in the area of pedagogy and psychology of mathematics teaching and learning.

Also there is an increasing consensus that the teacher of mathematics should have a balanced view of philosophical problems related to mathematics, and of the role of mathematics in culture and society. Curriculum decisions and even teaching methods are highly influenced by preoccupations and attitudes linked to these themes, and corresponding misconceptions on the part of teachers are often unintended side effects of the standard mathematical training. This calls for an integration of foundational, historical and sociological aspects of mathematics into the educational programme.

It is an important task for all those who are involved in the mathematical education of mathematics teachers to clarify - for the various teaching levels - what knowledge, experience and understanding of mathematics a mathematics teacher should have. An International Congress of Mathematicians brings together experts from all countries who are most competent to discuss this problem. This is why the International Commission on Mathematical Instruction, a body established by the International Mathematical Union, has chosen the Mathematical Education of Mathematics Teachers as the theme of a symposium during the next ICM to be held at Helsinki, August 1978. An International Programme Committee is being established chaired by the two Vice-Presidents of ICMI, Professor Christiansen and Professor Steiner. Anyone interested in participating in the Symposium is kindly asked to contact either of the co-chairmen, who will also appreciate receiving suggestions regarding the programme of the Symposium.

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FEDERAL REPUBLIC OF GERMANY

INTERNATIONAL PROJECT ON COOPERATION BETWEEN SCIENCE TEACHERS AND MATHEMATICS TEACHERS

Last year New Zealand became a member of the International Commission on Mathematical Instruction (ICMI). As a consequence of this we have been invited to participate in a collaborative programme between CTS (the Committee on the Teaching of Science of the International Council of Scientific Unions), ICMI and UNESCO, aimed at a study of the problem of cooperation between science teachers and mathematics teachers.

A Steering Committee with membership from the three groups has been formed with the ultimate aim of producing a publication which could be used directly by teachers as well as by those engaged in teacher training.

As an initial step, individuals, or groups of individuals in as many countries as possible, are being asked to act as a focus for the preparation of written reports describing opinion, experience and plans in this field within their countries. I have been asked to collate any material which might be produced in New Zealand. This material will be edited and presented to a meeting which it is hoped will be held in September 1978.

Among the topics to be covered in preparatory reports and in the final publication are:-

(a) 'Mathematics in the science lesson': much can be done to help science teachers, when they are using mathematics, to express themselves in such a way that present-day pupils who are taking present-day mathematics courses can understand what is being said as well as possible. In some countries, booklets to help in this have been prepared; are they useful, or is any other particular approach more useful?

Conversely, what has been done or should be done to give mathematics teachers information helping them, if possible, to relate the timing of particular mathematical material to the needs of the science lesson?

(b) 'Philosophical background and educational theory': what are the educational goals to be cooperatively sought (attitudes regarding mathematics in relation to the sciences, skills in 'mathematical modelling' of scientific problems, etc.) and what are the relative merits of different methods (various types of separate, but coordinated, activity in science teaching and mathematics teaching; or different kinds of project work, organised cooperatively by science teachers and mathematics teachers)?

(c) 'Implications for teacher education': is there a need to prepare secondary-school teachers in the skills needed to cooperate with teachers of other subjects; for example, to prepare mathematics teachers to be able to seek out from science teachers material suitable for use as concrete illustrations of mathematical concepts; or to be able to make known to science teachers matters of notation and methodology used in current mathematical courses so as to avoid confusion in the science classroom?

(d) 'Case studies by geographical and subject areas': it may be important to distinguish problems arising in a highly mathematicized science like physics from those arising in a science like biology whose mathematical content has in the past been less although it is now rapidly growing; and, similarly, with problems in different countries (countries with a traditionally abstract approach to mathematical education, or countries whose approach has traditionally been more concrete, or developing countries with a strong emphasis on practical utility in educational curricula). For these reasons, we ask: what has been done or is currently planned in cooperation between mathematics and particular sciences in particular countries?

(e) 'Guidelines for cooperation including practical examples': from the information on educational aims, or experience from the past, and on future plans, what can we conclude about particular approaches that can be strongly recommended in particular situations?

The area seems to me to be an important one and I feel that New Zealand teachers should take the opportunity to contribute to the project. I would very much welcome, then, any comments or suggestions, of any sort, on this topic from individuals or from groups. Perhaps meetings could be arranged, in the third term, between maths and science teachers in particular areas or in individual schools, teachers colleges or technical institutes.

If a brief summary of the discussion at such meetings were forwarded to me I could prepare a summary document to present to the steering committee early in the new year.

Gordon Knight
Mathematics Department
Massey University
Palmerston North

REQUEST FOR ABSTRACTS OF THESES

Professor B.H. Neumann has requested that abstracts of all Ph.D. theses in New Zealand be submitted for publication in the Bulletin of the Australian Mathematical Society. Abstracts must be sent within one month of the approval of the degree by the University Council, otherwise they will not be published. Heads of Mathematics Departments in New Zealand universities are particularly asked if they would bring this request to the attention of Ph.D. candidates in their Departments. Abstracts should be sent to:

The Editor,
Bulletin of the Australian Mathematical Society,
Department of Mathematics,
Institute of Advanced Studies,
Australian National University,
POB 4, Canberra, ACT 2600,
AUSTRALIA.

ADDRESS BY THE HON. L.W. GANDAR, MINISTER OF EDUCATION

(given at the 12th N.Z. Mathematics Colloquium, 11 May, 1977)

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There is no doubt that mathematics is pervading every subject, study and technique in our modern world. This widespread influence is bringing ever more sharply into focus the responsibility laid upon those whose task it is to teach mathematics, but teachers of mathematics in schools, universities and technical institutes have a further obligation - that is to keep in touch with the practitioners of mathematics in the community to ensure that theoretical courses are designed with the needs of the practitioners in mind.

This is just one of the reasons why this type of gathering of mathematicians and mathematical scientists from secondary schools, tertiary institutions and government departments is so very valuable. It is also valuable, of course, in that it contributes to the individual professional growth of all participants. This is achieved both from the formal sessions of your Colloquium and from the informal sharing of experiences and ideas over the few days you are together.

I have noted with interest and pleasure, the formation, three years ago, of a New Zealand Mathematical Society and in particular that there is to be a close relationship between the Society and the existing Mathematical Associations. It is well known that within the framework of the associations good relations between the universities and the secondary schools have been cemented over a period of many years. I am sure that this spirit of cooperation between schools and universities in the mathematics field will continue and that the Society will provide opportunities for ventures which will enhance the quality of mathematics education generally. I know, too, that some technical institute people have been active in this field and in view of the current rapid growth in technical education I am sure that an even greater contribution can be expected from this quarter in the future. A regular and continuing exchange of ideas and knowledge between all of the institutions is invaluable, both to promote mathematical knowledge within New Zealand and co-operation with other countries.

I have been asked the question - what do most teachers of mathematics in secondary schools, universities and polytechnics have in common? I suggest that it is something more than mathematics. In recent years great changes have taken place in educational institutions throughout the world. Old courses have been replaced by new ones and what is taught today in many subjects is almost totally different from that taught 25 years ago. Mathematics courses, especially, have changed rapidly. Among these changes have been reappraisals of the content and purposes of mathematics teaching. The changes have arisen in part from the tendency of mathematics to grow, reorganise and renew itself, and in part from changes in society and in the needs of society. To plan and effect the changes requires knowledge and skill, and not just mathematical skills. The resulting specialism has given rise to the new 'trade' of 'mathematics education' and to talk of the 'discipline' of 'mathematics education'. So the answer to my earlier question, what do teachers in secondary schools, universities and polytechnics have in common is that it is their involvement in 'mathematics education' which links them through a common purpose.

Until recently I think it is true to say that few people would have considered describing themselves as 'mathematics educators' - they were either teachers, teacher trainees or mathematicians *interested* in education. But the new courses in mathematics have been produced by co-operation among various kinds of specialists - mathematicians, teachers and administrators. When these specialists unite to form a curriculum in mathematics at any level they must consider four factors. These factors are the nature of the society, the nature of the students, the nature of the teachers and the nature of mathematics. Neglect of any of these four factors is likely to lead to a course which is ill-balanced, irrelevant or impossible to implement. Mathematical education then, is far from being merely a matter of mathematics, because it must draw upon the knowledge and results of other disciplines. Above all it is a *practical activity* and not merely a theoretical study. Yet it would be dangerous for anyone to try to practice it who was unaware of the factors involved.

Why teach mathematics? To a group such as this, with many who have been immersed in mathematics and the communication of its power and insights for many years, the question itself may seem unworthy of an answer. To others, in our modern technological society, the answers may seem self-evident. It is appropriate, however, in a society where change will be the keynote, to question and confirm from time to time, the underlying motives for our activities, and through our questioning to illuminate our goals and clear the way for purposeful progress toward these goals. The question is one that has been often asked and the answers have generally depended on the type of educational institution concerned and on the future envisaged for its students.

Let us go back to the beginning of this century. As far as mathematical education was concerned this century opened with a bang. At a meeting of the British Association for the Advancement of Science held at Glasgow in 1901 a great deal of time was allocated to a discussion of the aims of teaching mathematics in schools. In a report we are told that several speakers urged that mathematics should be introduced through experiment and intuition, and that if this were done, the more logical aspects of the course would gain rather than suffer. There were opponents to these views but by 1912 or so mathematical education in the English speaking world had jelled and was hardly to be radically disturbed until the 1950s and 1960s.

A number of committees and conferences throughout the world over the past 20 years debated and discussed the place of mathematics in a general education. They have discussed the amount of time it should be allocated and the *type* of mathematics that should be taught. At the present time, when our entire secondary school curriculum is under close scrutiny, it is *essential* that all mathematics teachers should be able to advance the claims of mathematical education with clarity and conviction.

Mathematics has come to be regarded as a language, a training ground, a tool and as a subject. As a language it is a means of communication and description, increasingly used by economists, geographers, businessmen and others. As a training ground it is a field in which extra-mathematical objectives can be attained. As a tool the value of mathematics has increased rapidly over the years, as evidenced by the growth in the computer industry. Mathematics is still and will always be a subject worthy of study for its own sake, capable of giving pleasure and creating interest. When designing courses, whether at primary, secondary or tertiary level what weight should be given to each of these objectives is one of the most important considerations.

What of standards? Major changes have occurred in mathematics courses in all of our educational institutions over the past 15 years or so, and this has been a reflection of what has been happening internationally. Frequently the question is asked: "Have the changes in school mathematics resulted in improved student *performance* in mathematics, in better student *attitudes* to mathematics, in improved student *understanding* of mathematical structure and principles?" A lack of base-line data has made the provision of convincing answers to this question difficult. Subjective impressions of teachers suggest that attitudes are more positive, and that in performance there have been some gains and some losses.

Certainly we hope within a few years to have some firmer evidence upon which further curriculum decisions can be made. As part of New Zealand's contribution to the work of the International Association for the Evaluation of Education Achievement (IEA) the New Zealand National Centre within the curriculum unit in my Department is undertaking the co-ordination and administration of the second mathematics survey. You will be well aware that IEA is an international education research organisation which conducted the first mathematics survey some 12 years ago. New Zealand did not take part in this survey but we did participate in a six subject survey conducted in 1967. Results of this survey indicated that standards in New Zealand secondary schools were high on an international scale and the findings of the survey which related some 700 variables to student performance are now influencing curriculum development and teaching practice in our schools. It is likely that about 20 countries will take part in the second mathematics survey. The present objectives of the proposal are:

- to describe the changes in mathematics curricula between the first IEA mathematics survey, and the present.

- to assess what changes have occurred in the achievements of 13 year old and pre-university mathematics students on the previously tested topics.

- to evaluate what changes in attitude to mathematics have occurred among students and teachers.

- to provide an opportunity for countries, which did not participate in the previous project, to evaluate the current achievements of their students and to relate them to independent variables found to be useful in the previous project.

- to provide training for research workers in the techniques of curriculum analysis, item construction and survey research.

It will be the task of The International Mathematics Committee to match these objectives to the final research design. In the meantime the participating countries are at work preparing a national working paper describing the contents and objectives of their national programme of mathematics instruction while noting any shift of emphasis since the first mathematics survey.

Collectively IEA has amassed a great deal of experience with data analysis and the underlying statistical models.

In this survey it is hoped to reduce the number of independent variables to less than 100 - only those variables which have proven national variability and significance will be retained. New models of multivariate analysis are also being discussed in the hope that the lessons of earlier surveys will accrue as benefits to the new project. The present schedule for the project calls for a two year development phase of curriculum analysis and instrument construction with the field collection of data to be undertaken during 1978.

The Education Development Conference reports and the Committee on Secondary Education called for more research on secondary education. I welcome this opportunity for us to be able to make a contribution to that research. This can only lead to improved teaching and learning in mathematics both in New Zealand and in other participating countries.

Within New Zealand longitudinal surveys designed to investigate standards and identify appropriate levels for the introduction of subtopics within the broad categories of computation and algebraic manipulation have been under way for some time. This year an investigation into the effects of the availability of calculators on pupils' pencil and paper computation performance has been undertaken as well as some very worthwhile research in mathematics education which has been initiated and carried out by Teachers College mathematics lecturers. In addition an investigation of the entry characteristics and performance of first year mathematics students along with related lecturer expectations has been done in at least one university. This sort of gathering serves as an excellent vehicle for the dissemination of the findings of investigations such as these.

I was pleased to learn that a Hogben House Conference of secondary mathematics teachers, university and technical institute teachers and officers of my Department had tackled the problem of providing a smooth transition from secondary mathematics to tertiary mathematics. I believe that this is important for two reasons. First, no individual should be prevented from succeeding in his chosen field by factors which it is in our power to correct. Second, in the interests of the nation we must strive to keep academic "wastage", i.e. the loss of potential graduates, as low as possible.

Clearly, with our policy of relatively open entry to the universities we must expect some student failure. What we must ensure is that no one who has the ability and will to succeed, fails because of transition barriers which could be removed, or at worst made more easily surmountable for students. There seem to me to be a number of ways in which we can ensure that the transition from secondary to tertiary institutions is as smooth as possible.

Firstly school mathematics courses taken by students intending to proceed to a higher level of mathematics must provide a suitable basis for the mathematics they will encounter later. We attempt to meet this criterion by involving university, and more recently technical institute personnel in the formulation of prescriptions and syllabuses. Clearly, there is a need for periodic review of these syllabuses.

Secondly there must be continuing liaison between the institutions. There is a limit to what university and technical institute liaison officers can accomplish but we must take every possible step to ensure that their liaison roles with schools are given high priority. Just as important is the opportunity for informal liaison provided by groups such as the mathematical associations, and I commend them for the work they are already doing in this field.

Thirdly it is important to remember and make allowance for the fact that many first year students will have problems of social adjustment - some to living away from home for the first time, some to urban living, most to the impersonal nature of large first year classes and to the changed learning styles demanded by university organisation. Of course the difficulties encountered by first year students because of the large size of first year classes can be ameliorated by the tutorial system. I understand that this system has been refined to a greater extent in some universities than in others and it would seem that this is another area in which a sharing of ideas between universities could be beneficial to both students and mathematics departments.

I am aware that there have been moves within the universities to review more systematically their academic objectives, the suitability of their courses, their teaching and assessment, the demands made upon students, and the causes of student failure. This is commendable but I hope that it will be possible, within the university system, to establish machinery to encourage co-operation and co-ordination of the universities' work in these programmes. In fact I believe it is the *duty* of university teachers, to ensure that within the limits of available resources, their teaching methods and techniques are in line with the best of modern practice. I know that in some universities, opportunity for training in and discussion of teaching method for lecturers is now being made available in the form of short courses. I am certain that further experimentation with instructional techniques which take account of individual differences such as those with the Keller plan in two of our universities should be encouraged. The schools, of course, have a vital part to play in preparing students adequately - not just for the mathematical content of courses they will encounter, but for the individual study habits which must be acquired and for the wise use of non-lecture time.

At this point I would like to briefly consider the findings of a workshop held in Germany in 1970 by the Centre for Educational Research and Innovation (CERI) under the auspices of the Organisation for Economic Co-operation and Development (OECD). Fifty-two participants from 14 countries discussed "The Curriculum for the Eighties and Onwards" and after discussing current trends in mathematics reported that:

> "Present trends suggest that mathematics will increasingly be seen, for the majority of students, as comprising a useful set of techniques to be applied in practical contexts, rather than as an abstract study in its own right. Accompanying this shift in emphasis from "pure" to "applied" mathematics, efforts will probably be made to strengthen the ties between mathematics and other subject matter areas. Basic mathematics will tend to be introduced through simple ideas in set theory, linking up with teaching of logic; statistics and probability are likely to be emphasised for their contributions to the biological and social sciences; and computer technology is likely to bring an increasing need for people with skills in numerical analysis and programming".

This was written in 1970 of course, and an examination of the new courses introduced into New Zealand universities in recent years reflects that we have gone a considerable way towards meeting this need.

In conclusion I would like to say that New Zealand has a good deal to be proud of in the *extent* to which higher education is available to its citizens, and in the *quality* of that education. It is therefore, very encouraging that groups such as yours continue to

strive to improve your expertise as individuals and your contribution as a group.

With the spirit of co-operation and enterprise which exists within the mathematics community in New Zealand I am confident that the mathematics education we offer our students will continue to be of the highest order.

Dr F.M. HARDING

Former colleagues and students of Dr F.M. Harding will have been saddened to learn of her death on May 28, 1977. Dr Harding was for a long time lecturer and senior lecturer in the Mathematics Department until her retirement in January 1972.

Dr Harding, who is better known to generations of students, many of them now staff members, as Mary, was educated at St Hilda's Collegiate School, Dunedin, and entered Canterbury College in 1928. She graduated M.A. with first-class honours in mathematics in 1932 and was awarded a Sir William Hartley scholarship to Edinburgh. She gained a Ph.D. in Statistics in 1934 under the supervision of another New Zealander, Dr A.C. Aitken.

A teacher at Cheltenham Ladies' College from 1935 to 1942, Dr Harding joined the staff of the School of St Mary and St Anne, Abbots Bromley, in 1942 and was head of the mathematics department. She was appointed principal of St Ann's College, University of Adelaide, when it was opened in 1947 and also lectured in mathematics.

Dr Harding returned to Canterbury in 1953 as warden of Helen Connon Hall and a part-time lecturer in mathematics. On leaving Helen Connon Hall in 1957 she was appointed a full-time lecturer and subsequently a senior lecturer.

Dr Harding was well liked in the department and from time to time told many interesting reminiscences about her past career. Not all of her contacts with students had been about mathematics. At the time of her retirement she recalled some of these occasions. In Australia an engineering student had remained behind after a lecture to seek her assistance. Asked what the trouble was the young man, an Australian representative player, answered: 'I'm worried about my football.' And at Helen Connon Hall she had had occasion to ask a young woman the reason for her late return one evening. 'Well, you see,' came the answer, 'he proposed on the way home and I couldn't very well tell him it would have to wait till the morning, could I?'

When she arrived at Canterbury as a student there were two full-time members of the Mathematics Department and one part-time member. The Rector was also part-time. Women students always sat in the front rows at lectures, she said. All students wore gowns and were very much of a family.

Some years ago when the Mathematics Department was very much understaffed Dr Harding undertook a particularly heavy burden of teaching to Stage I and Engineering students. She also organized the Pure Mathematics I course giving her counsel and help to the many teaching fellows and part-time assistants who taught the course at that time. She was most meticulous in her work and was not satisfied until all lists of names,

list of marks and so forth had been checked and found exact. I am thinking particularly of that time when she spent a week tracking down a certain Mr Wong who appeared on the 600-name list of the computer printout under all three of his names.

She was well-known to many students, Kiwi and overseas. I have often met students long after their university career had concluded who remembered her lectures with a pleasant nostalgia.

G.M.P.

1978 AUSTRALIAN APPLIED MATHEMATICS CONFERENCE

This annual conference is always well attended by a wide spectrum of scientists, engineers and mathematicians who use and apply mathematics. The 1978 conference will be held at the Broadbeach Hotel, Gold Coast, Queensland, from Sunday 5th February to Wednesday 8th February 1978. It is sponsored by the Division of Applied Mathematics of the Australian Mathematical Society.

Research and review lectures in all aspects of applied mathematics will be invited. Particular emphasis will be placed on the application of mathematics to modelling real-life situations. A session dealing with aspects of teaching applied mathematics at all levels is also being planned. Research students are encouraged to present their work at the Conference. The T.M. Cherry Prize will be awarded to the student presenting the best lecture on his research.

A call for papers will be circulated in September to all members of the Division of Applied Mathematics, and the Australian Universities and Colleges of Advanced Education. This circular will also contain further information regarding registration, the Conference programme and, in particular, the visiting speakers.

All enquiries should be directed to the Secretary of the Organising Committee:

Dr R.D. Braddock,
Department of Mathematics,
University of Queensland,
St. Lucia, 4067,
Queensland,
AUSTRALIA.

LOCAL NEWS

Auckland: Department of Mathematics

Increased Enrolments: In February 1977 there were 1723 students enrolling for undergraduate courses in mathematics, an increase of 198 from 1976 enrolment. The increase occurred mainly at Stage 1 level, especially in the courses on computing (up from 258 to 429) and statistics (up from 244 to 428).

Visitor: Professor M.L. Puri, from Indiana University, was a Visiting Professor for 6 weeks, during which period he gave part of a post-graduate course in statistics.

Leave: Dr Joel Schiff has returned from Washington State University.

Seminars: Professor M.L. Puri (Indiana University) spoke on:
"Distribution free procedures in general linear methods".
Dr M. Chambers (University of Lancaster) spoke on:
"Some experience in developing sales forecasting systems".
Dr I.D. Seth (University of Lagos) spoke on:
"Viscous flow around a liquid sphere".
Professor G.A.F. Seber (University of Auckland) spoke on:
"Recent advances in linear regression".
Professor J.G. Herriot (Stanford University, and ETH, Zürich) spoke on:
"Algorithms for interpolating splines".
Professor R.L. Wilson (Ohio Wesleyan University) spoke on:
"The Employment situation in the U.S.A.", and "Trends in Mathematics Programs".
Dr R. Zahar (Sydney) spoke on:
"Recurrence Algorithms for series solutions to a differential multiple-eigenvalue problem".

G.J.T.

Biometrics Section, Ministry of Agriculture and Fisheries

The Section has collaborated with AMD and the N.Z. Statistical Association in mounting a course on the statistical computing package/language GENSTAT. The course was led by Dr Ron Baxter of CSIRO and several tutors were provided by Biometrics. We expect to continue making extensive use of GENSTAT and would be glad to answer any questions other users or prospective users might have.

Mrs Margaret Choi has been appointed a Biometrician. She is a graduate of Otago and Victoria.

Dr Murray Jorgensen leaves in July on two years leave of absence. He will be lecturing in Mathematics at the University of Botswana and Swaziland, Gaberone, Botswana.

M.A.J.

Canterbury

The present statistics courses being offered by the Mathematics Department are being reorganized, with effect from 1978. Statistics will then be a separate subject for the B.Sc. degree, there will be an Honours school in statistics for the B.Sc.(Hons) degree, and Statistics will be a subject for the M.Sc. degree. There will also

be some restructuring of the first year courses to provide user courses in statistics, one of which will also include computer programming and will form part of the Engineering Intermediate.

The organizing committee moved quickly to produce a first notice of the Mathematics Convention in May 1978 so that it could be included with the next issue of the Australian Mathematical Society Gazette. The convention will incorporate the annual meetings of the Australian and N.Z. Mathematical Societies.

P.J.B.

Massey

John Reynolds left in July for North Carolina State University. He has a half-time research assistantship there, and will be working towards a Ph.D. in population genetics under the supervision of Bruce Weir and C. Clark Cockerham.

Greg Arnold begins an eight-month period of sabbatical leave in September. He will be spending the time at Edinburgh and Reading Universities.

Our regular seminar program continued to cover a good variety of topics: "Prime generating formulae" (Mike Hendy), "Estimating group delay" (Peter Thomson), "The layout problem and deltahedra" (Les Foulds), "Applications of mathematics in biology" (Dr J. Gani, CSIRO), "Some first steps towards a unified theory of biased estimation in linear models" (John Reynolds), "Computing techniques for the construction and analysis of block designs" (Peter Gibbons), "A high level job control language for computer networks" (Phil Jenkins), "Data base management systems" (Peter Melhuish) and "Notions in geometry" (Dr L.W. Szczerba, University of Warsaw).

Massey has now decided to follow the trend and start a series of "Occasional Publications in Mathematics". Three titles have appeared so far:

No. 1: "Numerical Analysis - Mathematics or Computer Science?" by D.C. Joyce

No. 2: "Personalized Instruction for Introductory Statistics" by B.S. Weir and R.J. Brook

No. 3: "Comparison of some derivative free methods for numerical computation of real zeros of a function of a single variable" by Adrian Swift.

Otago

Professor David Vere-Jones of Victoria University gave a talk on "A Branching Model for Rock Fracture" in June; and Dr P.K. Smrz of the University of Newcastle, N.S.W., spoke on "Fibre Bundles, Lie Groups and Relativity" in July.

Thanks to the initiative of various staff members - especially Dr John Shanks - we are having weekly Department Seminars which are independent and of general interest. The first three of these have been:

Dr J.A. Shanks on:
"Estimating Limits By Extrapolation Methods"
Dr D.J. McCaughan on:
"Calculating Group Orders From Presentations"

Mr J.C.W. Rayner on:
"Univariate Hypothesis Testing"

G.O.

Victoria

The last 12-credit courses in Mathematics are to be split into 6-credit (half-unit) pairs from 1978: Pure Mathematics I (MATH 111 or 112) and General Mathematics I (MATH 191). A new 6-credit course on Stage II computational mathematics is also to be introduced.

Professor Norman Bazley of the University of Köln, West Germany, is to be a Visiting Fellow for a month from September 9. He will be working on bifurcation theory of nonlinear eigenvalue problems with Dr Wake, returning the latter's visit to Köln during his recent sabbatical.

Dr Lindsay Johnston will be returning from his sabbatical leave in August.

J.F.H.

Waikato

The department's move into the old library block (mentioned in the last issue) will not now take place: there is not enough room for us all.

Applying the calculus of variations to a constant library grant caused us some problems this year: although we shall probably get through 1978 without having to "kill" journals, we may be unable to avoid this in 1979. Our state would have been worse, but for a special grant to the School of Humanities, to allow it to buy (re-issues of) 'primary resources'.

What happened to the list of maths journals held in our libraries? It could be useful to those forced to cancel ...

Ever since its foundation, this university has supported the idea of small group teaching. However, the usual arithmetic forced it to commission a block of large lecture theatres. Now complete, they seem to be well designed, as you may see in 1979 if the 'Petersen Cycle' continues.

Minor changes only are planned for our courses next year, though more extensive ones may be needed for 1979, as things have been quiet since 1974.

Visitors: Prof. J.G. Herriot (Stanford) dealt with 'Algorithms for Interpolating Splines'; Dr J. Gani (Head of the A.M.D., CSIRO), on a flying visit, spoke on two topics, the organization of his Division, and on biomathematical models; Prof. Madan Puri (Indiana) came down from Auckland to see Rotorua and discuss 'Distribution-free Procedures in General Linear Models'; finally, Dr I. Reilly asked 'When is a Quasi-metric Space Metrizable?'. Our last visitor was inanimate; one of our graduate students arranged a showing of the film "Turning a Sphere Inside Out", which attracted a large and varied audience.

Notes: Dr Urch has just returned from leave, Dr Littler is to go on leave in September, spending two months at Monash, and Marston

Conder, another of our students, is to go to Brasenose College, on a Hulme Scholarship.

M.S.

THE DEREIDACTYL

Theoretical and experimental work is progressing on the Dereidactyl flying sail wing. Thin aerofoil theory predicts that a two-dimensional sail wing is neutrally stable in pitch -- a unique feature for any aerofoil with positive camber. A computer model has been made of a wing consisting of fabric wrapped around a tubular main spar (which forms the leading edge) and held under tension by a wire passing through the trailing edge. Computer experiments show that if this wing is swept forward the deformability of the trailing edge can produce the right amount of positive pitch stability. The flexibility of the spar can be included in the model and initial indications are that this effect too contributes slightly to stability.

This computer model has been used to design a 12.8m span man-carrying experimental glider which is now being built and will be tried on short straight flights.

A.D. Sneyd

CORRECTION

In Newsletter No. 8 (April 1977) it was wrongly reported that the Asian-South Pacific Regional Meeting in Astronomy would be held at Wellington in December 1977; in fact this meeting will be held in December 1978. We regret the error, and apologise for any inconvenience it may have caused. Further details of this meeting are given in the list of conferences, on page 32 of this number of the Newsletter; it should also be pointed out that this is a regional meeting of the International Astronomical Union.

CONFERENCES 1977-78

* * 1977 * *

August 15-19 (Enschede)
Seventh Conference on Stochastic Processes and their Applications
Details from J.H.A. de Smit, Department of Mathematics, T.H. Twente, P.O. Box 217, Enschede, The Netherlands.

August 16-27 (Canberra)
International Conference on Combinatorial Theory
Details from J.R.S. Wallis, Applied Mathematics Department, University of Sydney, Sydney, NSW 2006, Australia.

August 17-19 (Lubbock, Texas)
Second International Symposium on the Operator Theory of Networks and Systems
Details from R. Saeks, Department of Electrical Engineering, Texas Tech. University, Lubbock, Texas, USA 79409.

August 22-26 (Wellington)
N.Z. Operational Research Society Conference
Details from B. Benseman, O.R. Society Conference, Applied Mathematics Division, DSIR, Box 1335, Wellington, New Zealand.

August 22-26 (Leuven)
Tenth European Meeting of Statisticians
Details from Organizing and Program Committee, EMS 1977, Department of Mathematics, Katholieke Universiteit te Leuven, Celestijnenlaan 200B, 3030 Heverlee, Belgium.

August 28-31 (Adelaide)
3rd National Conference of Australian Society for Operational Research
Details from R.A. Stevens, P.O. Box 143, Rundle Street, Adelaide, South Australia 5000.

Aug. 29-Sept. 2 (Beograd)
Third International Symposium on Topology and its Applications
Details from Topoloski Simposj, Beograd, Yugoslavia, POB 781.

Aug. 29-Sept. 1 (St. Louis)
International Conference on Mathematical Modelling
Details from B. Kratzer, Extension Divison, University of Missouri at Rolla, Rolla, Missouri, USA 65401.

Aug. 29-Sept. 2 (Beograd)
International Symposium on the Theory of Sets and Foundations of Mathematics
Details from Mathematicki Institut, Symposium: Sets, Foundations, 1100 Beograd, Knez Mihaelova 35, Yugoslavia.

Aug. 29-Sept. 2 (Melbourne)
48th ANZAAS Congress, Section 8 (Math. Sciences)
Details from J.K. Strachan, Department of Mathematics, University of Melbourne, Parkville, Victoria 3052, Australia.

Sept. 5-10 (Wurzburg)
8th IFIP Conference on Optimization Techniques
Details from 8th IFIP Conference, Am Hubland, D-8700 Wurzburg, Germany.

Sept. 6-16 (Durham)
LMS Durham Symposium on Homological and Combinatorial Techniques in Group Theory
Details from C.T.C. Wall, Department of Mathematics, The University, Liverpool L69 3BX, U.K.

Sept. 8-9 (London)
Mechanics of Granular Materials
Details from Secretary and Registrar, Institute of Mathematics and its Applications, Maitland House, Warrior Square, Southend-on-Sea, Essex SS1 2JY, U.K.

Sept. 11-21 (Leipzig)
International Conference on Operator Algebras, Ideals and their Applications in Theoretical Physics
Details from Department of Mathematics, Karl Marx University, Leipzig, German Democratic Republic.

Sept. 12-15 (Swansea)
Numerical Analysis of Dynamic Interaction of Structures with Fluids
Details from O.C. Zienkiewicz, Civil Engineering Department, University College of Swansea, Swansea, U.K.

Sept. 15-16 (London)
Mathematical Aspects of Marine Traffic
Details from Secretary and Registrar, Institute of Mathematics and its Applications, Maitland House, Warrior Square, Southend-on-Sea, Essex SS1 2JY, U.K.

Sept. 19-22 (Brighton)
Applications of Numerical Software: Needs and Availability
Details from Secretary and Registrar, Institute of Mathematics and its Applications, Maitland House, Warrior Square, Southend-on-Sea, Essex SS1 2JY, U.K.

Sept. 19-23 (Poznan-Kormik, Poland)
International Conference on Fundamentals of Computation Theory
Details from Mathematical Institute of the Polish Academy of Sciences, FCT 77, 61-725 Poznan, ul. Mielzynskiego 27/29, Poland.

Sept. 26-28 (Gatlinburg, Tennessee)
Symposium-Workshop on Moving Boundary Problems
Details from R.C. Ward, Mathematics and Statistics Research Department, Union Carbide Corporation, Nuclear Division, P.O. Box Y, Building 9704-1, Oak Ridge, Tennessee 37830, U.S.A.

October 17-19 (Madison)
International Symposium on Nonlinear Evolution Equations
Details from M.G. Crandall, Mathematics Research Center, University of Wisconsin, 610 Walnut Str., Madison, Wisconsin 53706, U.S.A.

Oct. 31-Nov. 4 (New York)

Conference on Bifurcation Theory and Applications in Scientific Disciplines

Details from Conference Department, The New York Academy of Sciences, 2 East 63rd Street, New York, New York 10021, U.S.A.

Dec. 12-17 (Sydney)

Australian Number Theory Conference

Details from A.J. van der Poorten, School of Mathematics, University of New South Wales, P.O. Box 1, Kensington, New South Wales 2033, Australia.

Dec. 16-17 (Cambridge)

Hardy Centenary

Details from J.W.S. Cassels, University of Cambridge, 16 Mill Lane, Cambridge CB2 1SB, U.K.

* * 1978 * *

Feb. 5-8 (Gold Coast, Queensland)

1978 Australian Applied Mathematics Conference

Details from R.D. Braddock, Department of Mathematics, University of Queensland, St. Lucia, 4067, Queensland, Australia.

May 15-19 (Christchurch)

1978 Australasian Mathematical Convention

Details from 1978 Convention Secretary, Department of Mathematics, University of Canterbury, Private Bag, Christchurch, New Zealand.

June 25-July 2 (Weimar)

Eighth International Congress on the Application of Mathematics in Engineering

Details from H. Matzke, President of the VIII IKM, Karl-Marx-Platz 2, 53 Weimar, German Democratic Republic.

June 26-30 (Los Angeles)

8th U.S. National Congress of Applied Mechanics

Details from J.D. Cole, Mechanics and Structures Department, School of Engineering and Applied Science, University of California, Los Angeles, California 90024, U.S.A.

August 15-23 (Helsinki)

1978 International Congress of Mathematicians

Details from International Congress of Mathematicians, ICM 78, Department of Mathematics, University of Helsinki, Hallituskatu 15, SF 00100 Helsinki 10, Finland.

December 5-8 (Wellington)

Asian-South Pacific Regional Meeting in Astronomy

Details from Dr B.M. Lewis, Director, Carter Observatory, Wellington, New Zealand.

(This meeting was wrongly reported in Newsletter No. 8 as being scheduled for December 1977; it is in fact scheduled for December 1978).

RECIPROCITY AGREEMENTS

Australian Mathematical Society

The terms of the agreement provide for individuals who are members of one Society to join the other for half the usual fee and thereby enjoy all the privileges of that Society, other than the right to vote. This applies, of course, provided you are not resident in the country of the second Society. Current subscriptions and prices are as follows:

(1) Membership subscription (including the Gazette): $15
(with a remission of $2 for early payment)

(2) Journal - Series A: $10

(3) Journal - Series B: $2.50

(4) Bulletin: $10

Thus members of the NZMS may join the AMS for $6.50 a year. They should obtain a note of authentication and an application form from our Treasurer and send both to the AMS Secretary (Mr W. Pye, Melbourne State College, 757 Swanston St, Carlton, Vic 3053, AUSTRALIA).

Canadian Mathematical Congress

The same terms apply as for the AMS (see above). Current subscriptions and prices are as follows:

(1) Membership subscription (including newsletter): $15
(2) Canadian Journal of Mathematics: $14
(3) Canadian Mathematical Bulletin: $10

Thus members of the NZMS may join for $7.50.

Edinburgh Mathematical Society

Members of the New Zealand Mathematical Society may join the Edinburgh Mathematical Society on payment of the reciprocity member's subscription. This is £5.00 for the current session (against £7.50 for a full member). A reciprocity member receives the Proceedings of the Edinburgh Mathematical Society, but does not have voting rights. Anyone wishing to become a reciprocity member should write to the Secretary, Edinburgh Mathematical Society, James Clerk Maxwell Building, Mayfield Road, Edinburgh EH9 3JZ, Scotland.

London Mathematical Society

The same terms apply as for the AMS (see above). Current subscriptions and prices are as follows (for the year beginning November 1, 1975):

(1) Membership subscription: £3.00

(2) Journal: £6.00

(3) Proceedings: £6.00

(4) Bulletin: £3.00

Thus members of the NZMS may join the LMS for £1.50 a year. Application forms may be obtained from our Secretary.

Southeast Asian Mathematical Society

The same terms apply as for the AMS (see above). The current subscription is US$5.00, and privileges of membership include a quarterly newsletter and members' rates for conferences, meetings and occasional publications. Thus NZMS members may join the SEAMS for US$2.50. Application forms may be obtained from our Secretary.

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OTHER N.Z. MATHEMATICAL PUBLICATIONS

Mathematical Chronicle

is published by the Mathematical Chronicle Committee, Department of Mathematics, University of Auckland, Private Bag, Auckland. The editors are Professor J.A. Kalman, Dr D.B. Gauld and Dr M.K. Vamanamurthy. The subscription is $7.00 per volume of three issues, with a reduced rate of $3.50 for individual subscribers, and a further reduction to $2.50 for members of the NZ Mathematical Society.

Mathematics Magazine

is published by the Auckland Mathematical Assocation, P.O. Box 6855, Auckland, 1. , The annual subscription for individuals is $5.00 and three issues are published each year. A reduced rate is available for students.

Network

is published by the Mathematics Education Department of Christchurch Teachers' College (Secondary Division), Dovedale Avenue, Ilam, Christchurch 4. It exists to help provide an exchange of ideas among all those concerned with Mathematics Education in secondary schools.

N.Z. Operational Research

is published by the Operational Research Society of N.Z., P.O. Box 904, Wellington. The editor is Dr H.G. Daellenbach. The annual subscription for individuals is $6.00 and two issues are published each year.

N.Z. Statistician

is published by the N.Z. Statistical Association, P.O. Box 1731, Wellington. The editor is Dr R.B. Davies. The annual subscription for individuals is $2.00 and two or three issues are published each year. A reduced rate is available for students.

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Far better an approximate answer to the *right* question, which is often vague, than an exact answer to the wrong question, which can always be made precise.

J.W. Tukey, Ann.Math.Stat. 33, p.13-14.

THE NEW ZEALAND MATHEMATICAL SOCIETY

Official Address: Mathematics Department,
Victoria University of Wellington,
Private Bag,
WELLINGTON, New Zealand.

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THE NEWSLETTER

This Newsletter was compiled for the Council of the New Zealand Mathematical Society by Michael Carter, typed by Maryanne Collins and Lyn Boniface, and printed by the Massey University Printery. The Editor is particularly grateful to the people who contributed articles and quotations, and to the Honorary Correspondents: Garry Tee (Auckland, Maths.), Cecil Segedin (Auckland, TAM), Mark Schroder (Waikato), John Harper (Victoria), Robert Davies (AMD), Ian Donaldson (PEL), Murray Jorgenson (Min.Ag.Fish, Biometrics Section), H. Offenberger (Wellington Polytech), Peter Bryant (Canterbury) and Gloria Olive (Otago).

Contributions are invited from any one who has anything to say of interest to the N.Z. mathematics community. Local News items may be sent to one of the Honorary Correspondents or direct to the Editor (c/- Mathematics Department, Massey University, Palmerston North, NEW ZEALAND).