

# IMU

BULLETIN

OF THE

INTERNATIONAL MATHEMATICAL UNION

No. 8 December 1974

Secretariat

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Box 41

S - 182 51 Djursholm

SWEDEN

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## INTERNATIONAL MATHEMATICAL UNION

### Executive Committee

(1 January 1971 - 31 December 1974)

President:	Professor K. Chandrasekharan
Vice-Presidents:	Professor Nathan Jacobson Academician L.S. Pontrjagin
Secretary:	Professor Otto Frostman
Members:	Professor M.F. Atiyah Professor Y. Kawada Professor N.H. Kuiper Academician M. Nicolescu Professor E. Vesentini
Past President:	Professor H. Cartan

## REPORT OF THE 34TH MEETING OF THE EXECUTIVE COMMITTEE

The Harrison Hotel, Harrison Hot Springs, B.C. Canada, August 16, 1974

All members of the Executive Committee were present at the meeting.

### APPROVAL OF AGENDA AND MINUTES.

The agenda that had been sent out in advance was approved. The minutes of the 33rd meeting of the EC held in Zürich on March 7-8, 1974, were formally approved and signed by the President.

### PREPARATION OF THE GENERAL ASSEMBLY

The President informed the Executive Committee that the Opening of the Assembly was to be very informal. Professor R.D. James would say a few words of welcome before his own Address.

Suggestions for the composition of various Committees and Commissions were then considered, with reference to the proposals made at the Executive Committee's meeting in Zürich in March 1974. In particular, no change of the proposal for the new EC was considered, and the President announced that all the nominees to the new EC had agreed to serve if elected.

### Encouragement of the Growth of Mathematics in Developing Countries in Cooperation with ICSU and Unesco

It was noted that COSTED had met recently in Ghana and had passed a resolution that they would like to ask IMU to help them to study the rational use of computers in Africa.

It was agreed that, as far as the encouragement of mathematics in developing countries was concerned, a "regional approach" should be adopted, but all decisions should be taken by the EC. Regional groups for Africa, Europe, Asia, Australasia, North and South America could be considered. Each group could have a Coordinator and should work by correspondence. Regional coordinators should keep in touch with one another in securing opportunities for young mathematicians.

### Exchange Commission

With the setting up of the new regional groups, the question of the constitution of the Exchange Commission arises. Exchange is not confined to young mathematicians, or to developing countries. Exchange visits are of a relatively short duration compared with the IMU Fellowships. It was agreed that the Exchange Commission should include the Coordinators of the Regional Groups mentioned above, as well as the Secretary of IMU (ex-officio), and possibly other elected members.

### Dues

It was agreed that the EC should adhere to its recommendation published in the Agenda of the General Assembly. It was also agreed that an ad hoc group be set up by the Assembly to work these questions over together with the President, after a general discussion of the subject in the Assembly.

The EC recommended the deletion of the words "and fixed in gold weight" in Statute 15, because they had become obsolete.

### Consultative Committee

It was suggested that the Consultative Committee for a future ICM should consist of 9 members, with no more than 4 and no less than 2 from the host country.

### Canberra Circulars

The President emphasized the fact that the Canberra Circulars had been printed and distributed for a long period at no cost to IMU. As Professor Neumann had now retired from his post at the University of Canberra, IMU had to find out if the Circulars could continue to be published. Professor Jacobson thought that the Canberra Circulars were very useful and expressed his thanks to Professor Neumann. This was the view of all the members of the EC.

### Travel Grants to young mathematicians

At the meeting in Zürich the EC had appointed a Sub-Committee to distribute the grants, with Professor Atiyah as Chairman, and Professor Vesentini and the Secretary as members. Professor Atiyah reported on the work of this Sub-Committee, and he hoped that at least 3/4 of the people who had been offered grants would attend the Vancouver Congress. The grantees who had already accepted came from: Chile, China-Taiwan, Colombia, Hungary (1), India (2), Kenya, Malaysia, Nigeria, Poland (2), Rumania (2), Sierra Leone, Tunisia, Uganda and Zaire. Grantees from: Mali, North Vietnam and South Korea had not accepted, and grantees from: Hungary (1), Indonesia, Jamaica, Pakistan and Syria had not yet answered. In all, about \$ 6.000 (or a little more) out of a total allocation of \$ 8.000 would be used.

The President thanked the Sub-Committee for its work and asked Professor Atiyah to make a brief report to the General Assembly. He would himself report on it to ICSU at its General Assembly in Istanbul in September.

## FINANCIAL QUESTIONS

- (a) The Secretary reported that the request of the EC to use up to \$ 10.000 of the reserves of the Union this year, for the Congress, had been approved by the members.
- (b) The Secretary reported in detail on the printing of the 5th edition of the World Directory of Mathematicians and all the troubles it involved. The EC decided that a separate account, to be called World Directory Account, showing the allocation made by the EC, and the income from sales on the one hand, and expenditures from printing, handling and postage, on the other, be prepared by Professor Frostman and circulated to the present EC for approval before December 1974. The Account will continue to be maintained by Professor Frostman until a decision on the next edition is made by the new EC. The new EC will be informed of the Account from time to time as may be necessary.
- (c) From January 1, 1975 the names of the present President and Secretary will be replaced by those of the new President and Secretary on the Bank Accounts of the Union. However, the EC decided that a period of two or three months be allowed for the present Secretary to deliver an audited statement of accounts of IMU to the new Secretary.

## BUDGETARY MATTERS FOR 1975

### IMU Lectures

Professor David Mumford had accepted, if invited, to give IMU Lectures at the Institut des Hautes Etudes Scientifiques (IHES), Bures-sur-Yvette, in 1975. The EC approved the proposal, made by Professor Kuiper, and decided that an honorarium of \$ 1.000 should be paid under the usual conditions.

### IMU Fellowship

Dr. G. Ananda Swarup, Tata Institute, Bombay, had applied for an IMU Fellowship for the academic year 1974/75. Supplementary grants had been promised by Professor Kuiper at IHES and Professor Eckman at ETH (Zürich). The EC decided to give a Fellowship of \$ 2.000 to Dr. Swarup as soon as definite letters were received by the Secretary from the two Institutes. The Secretary will then communicate the decision.

### **International Colloquium on Analysis and Topology, Paris, June 1975**

The EC unanimously agreed to give a subvention of \$ 2.000 to this Colloquium and nominated Professors G. de Rham and E. Bombieri to be the IMU representatives on the Organizing Committee. (This decision was taken after Professor Cartan had left the meeting).

#### **Exchange visit**

At its meeting in Zürich in March 1974 the EC had decided that the present Exchange Commission should handle a visit to Oxford by Professor Jankowski, Warsaw. The EC now decided that IMU should pay for the flight ticket, and make a contribution of £ 150 towards his expenses for a month's stay.

#### **CTS**

The President announced that, following the suggestion which came up at the last meeting of the EC, he had asked Professor Freudenthal to succeed Professor Lichnerowicz as the IMU representative on the CTS. Professor Freudenthal agreed. ICSU and CTS will be informed of the change. The EC expressed its thanks to Professor Lichnerowicz for his services.

#### **CHANGE OF GROUP OF ADHERENCE**

South Africa had recently applied for a change of its category of membership from Group I to Group II, referring to "the marked increase in participation in international conferences by South African mathematicians over the past number of years". The EC agreed to present the application to the General Assembly.

#### **THE SITE COMMITTEE**

The Site Committee for the ICM 1978 will meet at Vancouver on August 27.

The members are:

- Professor K. Chandrasekharan (Chairman ex officio)
- Professor A.H. Cayford
- Professor O. Frostman
- Professor B.H. Neumann
- Academician M. Nicolescu
- Professor M. Sion

## CLOSING OF THE MEETING

The President expressed his thanks individually to all members of the EC for their cooperation during the past four years. He expressed his particular pleasure that Professor Frostman, who had been unwell recently, was able to come to the General Assembly. Professor Frostman had served two full terms as Secretary-Treasurer with skill and devotion, and his sensitive political antennae had stood the Union in good stead.

Professor Jacobson expressed the thanks of the Committee to Frau E. Maier for all the secretarial work she had done for the Union (gratis), and for having come to help at these meetings in Canada without claiming any travel expenses from and to Switzerland.

The Executive Committee gave a Banquet in the evening in honour of Professor Cartan, who had attained the age of Seventy in June 1974. The President paid tribute "to a great mathematician who had done great service to the Union".

## ANNOUNCEMENTS

### Change of Group of Adherence

The members of IMU have approved, by postal ballot, the change of group of adherence of the Federal Republic of Germany from IV to V, effective on January 1, 1975.

### Salem Prize

The Salem prize for 1974 was awarded to Dr. Hugh L. Montgomery, University of Michigan, USA, for his work on number theory. The jury consisted of Professors A. Zygmund, L. Carleson, J.-P. Kahane and Ch. Pisot.

### Change of Address

From January 1, 1975 the Secretariat of IMU has the address:

Collège de France  
11, Place Marcelin-Berthelot  
75231 PARIS Cedex 05  
France

**RECORD OF THE SEVENTH GENERAL ASSEMBLY  
OF THE INTERNATIONAL MATHEMATICAL UNION**

**Harrison Hot Springs, British Columbia, Canada, August 17-19, 1974**

- S 1 The Assembly opened with a word of welcome by Professor R.D. James, Chairman of the Organizing Committee of the International Congress of Mathematicians, Vancouver, 1974.

A list of all the participants is given in Annexe 1.

- S 2 The agenda that had been printed and sent out in advance (Annexe 2) was approved. The President then addressed the Assembly. The address is printed separately. (Annexe 3).

**S 3 APPOINTMENT OF COMMITTEES OF THE ASSEMBLY**

The President nominated, and the General Assembly approved the appointment of the following committees for the transaction of business:

**Credentials Committee:** B.H. Neumann (Chairman)  
E. Hewitt  
S. Iyanaga  
Yu. A. Mitropolsky  
The Secretary (ex-officio)

**Nominating Committee:** The President (ex-officio, Chairman)  
H. Cartan  
N. Jacobson  
R.D. James  
Y. Kawada  
M.A. Lavrentiev  
B.H. Neumann  
R. Nevanlinna  
C.A. Rogers  
K. Urbanik

**Budget Committee:** W. Fenchel (Chairman)  
J.W.S. Cassels  
M.A. Lavrentiev  
W.J. LeVeque  
J.-L. Lions  
J. Novák  
The Secretary (ex-officio)



**Resolutions Committee:** R.A. Rankin (Chairman)  
J.-P. Kahane  
V.S. Vladimirov  
The Secretary (ex-officio)

**Tellers:** H. Bauer (Chairman)  
T. Ganelius  
Y. Katznelson

The Credentials Committee reported that the credentials of the attending delegations were all in order.

The Nominating Committee was to receive nominations to the new Executive Committee, from the floor as well as from the present Executive Committee, till 6 p.m. on August 17, 1974, and to present a slate for election on August 18, 1974. The election by written ballot took place on August 19, 1974. In the event, the slate presented to the Assembly by the Nominating Committee was identical with the one proposed by the present Executive Committee. (See later, under Elections.)

The Budget Committee held a preliminary meeting on August 17, and a final meeting on August 18. Its report was accepted by the Assembly without any change. (See later, under Budget.)

#### § 4 REVIEW OF THE ACTIVITIES OF THE UNION

##### A Scientific Meetings

Symposia and Conferences held under the co-sponsorship of the Union, during 1970-74, were listed in the Report of the Executive Committee to the General Assembly, published in the Special Number of the IMU Bulletin devoted to the Assembly.

In response to a query from the floor, it was made known that applications for the Union's support for scientific meetings should reach the Secretary not later than February in the year preceding the year in which the meeting was due to be held.

##### Union Lectures

Apart from the four sets of IMU Lectures listed in the report of the Executive Committee to the Assembly, (there were to be no Union Lectures during the year of the International Congress of Mathematicians), it was made known that Professor David Mumford would give IMU Lectures in 1975 at the IHES, Bures-sur-Yvette, Paris. As announced in the President's address, it was understood that arrangements for the publication of the lectures will continue as hitherto in L'Enseignement Mathématique.

## IMU Fellowship Programme

As explained in the President's address, (see also the Special Number of the IMU Bulletin), the Executive Committee decided as early as 1971, to create an IMU Fellowship Programme for mathematicians in developing countries, working at the postgraduate level. Two such Fellowships had so far been awarded by the Executive Committee, one to a young Peruvian, and another to a young Indian mathematician. ICSU's support of the idea behind the programme had proved to be crucial. A donation had been announced by the Italian National Research Council for the IMU Fellowship Programme. The Executive Committee's recommendation to create an IMU Fellowship Fund, which could serve as a basis for attracting financial support from other bodies, was unanimously approved by the Assembly.

### Exchanges; Encouragement for developing countries

A report on the work of the Exchange Commission, by the Chairman Professor F. Hirzebruch, had been printed in the Special Number of the IMU Bulletin.

The work of the Exchange Commission, was, in some sense, related to item 5 (a) of the Agenda concerning the encouragement of the growth of mathematics in developing countries, in cooperation with ICSU and Unesco. The Executive Committee had discussed the question in detail, and recommended a regional, somewhat decentralized, approach to the handling of the problem of developing countries. This was endorsed by the Assembly. It was agreed that Regional Advisory Groups be set up for different geographical areas, each such group having a Coordinator. Regional Coordinators should keep in touch with one another in helping selected young mathematicians from developing countries to continue their work in their own region, or abroad, as appropriate. The Coordinators should have easy access to the Executive Committee, which had the responsibility for the final decisions.

Exchange Visits were, on the other hand, not confined to young mathematicians or to developing countries. They were of relatively short duration.

It was agreed that proper liaison between the Regional Groups and the new Exchange Commission should be established by the requirement that the Exchange Commission should include the Coordinators of the Regional Advisory Groups, as well as specially elected members, and the Secretary of IMU (ex-officio).

The Assembly set up the Regional Groups (see § 9 under Elections), with the understanding, however, that the regional groups for Africa, Australasia, Asia, and the Americas could, with the consent of the Executive Committee, co-opt additional members to join their respective groups, in order to make them more effective. The Assembly then elected a new Exchange Commission (see § 9 under Elections).

*H. Hirzebruch*

### **ICMI (International Commission on Mathematical Instruction)**

A report on ICMI had been printed in the Special Number of the IMU Bulletin. | ?

Professor Sir James Lighthill gave a brief description of its content. The Assembly expressed its appreciation of the activities of ICMI (see Resolution 5).

The Executive Committee announced that Professor H. Freudenthal had been appointed to succeed Professor A. Lichnerowicz as the Union's representative on the ICSU Committee on the Teaching of Science. Thanks were expressed to Professor Lichnerowicz for his services to the Union over the years.

### **B IMU Bulletin**

As mentioned in the President's address, the Bulletin was started four years ago to increase the spread of information about the Union. About 500 copies were printed, and 200 distributed. It had so far been supplied gratis to all National Committees, National Adhering Organizations, ICSU, Unesco, and other interested Unions, as well as to former members of the Executive Committee of the Union. It was published twice a year. The mailing list was revised from time to time. It was agreed to make a specific provision in the Budget for its continuance.

The idea of including in it (from time to time) a list of all Mathematical Journals was put forward from the floor. Since the Reviewing Journals already carried such lists, the proposal was not pressed.

### **Canberra Circulars**

As mentioned in the President's address, these were issued for the Union by Professor B.H. Neumann four times a year. The latest issue was No. 10. The mailing list grew steadily. The mathematical community welcomed the appearance of these circulars. The Assembly expressed its thanks to the Australian National University and to Professor B.H. Neumann for their production and circulation. It was understood that the service was to continue.

### **World Directory**

The Secretary announced that 150 copies of the latest edition (the fifth) of the World Directory of Mathematicians, just published, were available for sale at the Congress Headquarters in Vancouver at the special price of \$ 10 a copy. From January 1, 1975 the price will be \$ 12.50. The Directory contained about 18.000 names, and could be obtained from Professor O. Frostman, Box 41, S- 182 51 Djursholm, Sweden.

The General Assembly resolved to continue the publication of the Directory every four years. It also resolved that one copy of the Directory be sent, free of charge, to each National Adhering Organization.

## § 5 ITEMS PROPOSED FOR DISCUSSION BY MEMBERS OF THE UNION

(a) The theme of encouraging the growth of mathematics in developing countries was discussed in broad terms. In addition to the special IMU Fellowship Fund (which only dealt with Fellowships at the post graduate level), it was considered desirable to set up other "special funds", intended to further the general objectives of the Union. One of the main purposes of such funds should be to assist in the exchange of mathematicians with developing countries.

(b) A discussion paper was presented by the UK delegation on Problems concerning mathematical publication, which dealt with the financing, proliferation, standards of publication, delays in publication, and modes of publication of mathematical journals. After some lively discussion of the paper, the Assembly referred it to a Working Group with Professor B.H. Neumann as Chairman, for a more detailed analysis and exchange of views. The Working Group discussed the issues involved, but felt unable to formulate a report to the Assembly.

(c) A suggestion was made by the Australian delegation that IMU could act as a mediator in establishing reciprocity agreements between mathematical societies. After some discussion, it was agreed that the new Executive Committee should take such steps as might be desirable.

## § 6 RELATIONS WITH ICSU AND UNESCO

As mentioned in the Presidential address, ICSU had helped the Union in many ways, especially in setting up IMU Fellowships for young mathematicians in developing countries, and in providing funds for the purpose of making grants to young mathematicians (mainly, but not exclusively from developing countries) to attend the International Congress of Mathematicians. The Assembly expressed its thanks to ICSU by an official resolution.

While expressing its appreciation of the assistance so far received from Unesco by IMU and ICMI, by way of annual ICSU—Unesco grants, and by special contract, the Assembly decided to draw the attention of Unesco to the necessity of making a far greater provision for mathematical sciences, on a continuing basis, in their future programme, and to record the desire of IMU to be involved in the planning and execution of such programmes, in association with Unesco and ICSU.

## § 7 FINANCE AND DUES

### A Reports

The audited financial reports for the years 1970-73 were formally approved.

### B Change of Statutes

(a) The agenda contained two proposals for the amendment of the Statutes (14 and 15) concerning the dues payable by members. One of the proposals came from the Executive Committee, while the other came from the USA. After a detailed discussion in the Assembly, an ad-hoc Committee was appointed, with Professor O. Lehto as Chairman, to prepare a proposal which would secure broad agreement from all delegations in the Assembly. The ad-hoc Committee recommended that the proposal made by the Executive Committee be amended, and adopted in the amended form. The Assembly accepted that recommendation. The other proposal, on the agenda, was withdrawn, by leave of the Assembly. In the result, the Assembly resolved to amend Statute 14, so as to increase the number of unit contributions payable by members in Group III, IV and V from the present scale of 3, 5, and 8 units to a new scale of 4, 7, and 10 units respectively, without changing the number of unit contributions payable by members in Groups I and II (which are units 1 and 2 respectively).

(b) The Assembly resolved to amend Statute 15 so as to delete the five words "and fixed in gold weight", since they had become obsolete.

Thus, the new Statutes 14 and 15 should read as follows:

14. Each National Adhering Organization shall pay an annual subscription in accordance with the Group in which it adheres as follows:

	Group I	II	III	IV	V
Number of Unit Contributions	1	2	4	7	10

15. The Unit Contribution shall be determined by the General Assembly.

### C Annual Dues

The Assembly resolved to fix the unit contribution at 600 Swiss Francs.

## § 8 TERMS OF OFFICE OF THE PRESIDENT AND VICE-PRESIDENTS

A proposal from the USSR to effect a change in Statute 11 was withdrawn, by leave of the Assembly.

## § 9 ELECTIONS

The Assembly elected the following:

(a) **Executive Committee:**

President:	Deane Montgomery
Vice-Presidents:	J.W.S. Cassels M. Nicolescu
Secretary:	J.-L. Lions
Members:	E. Bombieri M. Kneser O. Lehto M. Nagata L.S. Pontrjagin

The retiring President, Professor K. Chandrasekharan, will be an ex-officio member of the Executive Committee, without vote.

(b) **ICMI: (Ten Members at large)**

The President invited the delegations to suggest to him names of possible candidates for election as members at large of ICMI. He then nominated 12 candidates, from out of which the Assembly elected the following ten:

S. Iyanaga  
E. Begle  
P.L. Bhatnagar  
Emma Castelnuovo  
B. Christiansen  
L.D. Kudrjavcev  
Jacqueline Lelong-Ferrand  
B.H. Neumann  
Z. Semadeni  
J. Surányi

The Past President of ICMI, the Secretary of IMU, and the representative of the Union on the ICSU Committee on the Teaching of Science (Professor H. Freudenthal), are members ex-officio of ICMI.

The President then nominated Professor S. Iyanaga President of ICMI, and the Assembly elected him.

(c) **Exchange Commission**

A.J. Coleman (Chairman)  
J.O.C. Ezeilo  
J.-P. Kahane  
Y. Kawada  
L. Nachbin  
B.H. Neumann  
C. Olech  
E. Vesentini  
A. Zizcenko  
The Secretary of the Union (ex-officio)

**Regional Advisory Groups**

for encouraging the growth of mathematics in developing countries.

Africa	J.O.C. Ezeilo, Nigeria (Coordinator) T.T. West, Ireland
Australasia	B.H. Neumann, Australia (Coordinator)
Asia	Y. Kawada, Japan (Coordinator)
Europe	J.-P. Kahane, France (Coordinator) M.F. Atiyah, UK B. Eckmann, Switzerland N.H. Kuiper, France Å. Pleijel, Sweden B. Sz.-Nagy, Hungary A. Zizcenko, USSR
North America	A.J. Coleman, Canada (Coordinator)
South America	L. Nachbin, Brazil (Coordinator)

**§ 10 BUDGET FOR 1975-78**

The Budget Committee, appointed by the Assembly, with Professor Fenchel as Chairman, made its report taking into account the decisions reached by the Assembly on a new scale of dues. The report was unanimously adopted, and the Budget recommended therein established by the Assembly. (See Annexe 4).

## § 11 IMU AND THE INTERNATIONAL CONGRESS OF MATHEMATICIANS

- (i) The Assembly resolved that the scientific programme of the 1978 International Congress of Mathematicians be decided upon by a Consultative Committee consisting of nine members. The Executive Committee should determine the number of members to be appointed by the Organizing Committee of the Congress. That number should be at least two and at most four. The remaining members of the Consultative Committee should be appointed by the Executive Committee, except that its Chairman should be appointed by the President of the Union.
- (ii) The Assembly reiterated, that before each International Congress, the Fields Medals Committee be appointed by the Executive Committee of the Union.
- (iii) The Assembly resolved that the site of the 1982 Congress be decided upon by a Committee appointed by the Union having on it at least two representatives of the Organizing Committee of the 1978 Congress.

Professor Lipman Bers spoke about the importance and desirability of the International Congress of Mathematicians being, in fact, international. He emphasized the fact that mathematics was an individual rather than an institutional activity, and said that the present system of inviting speakers for the International Congress was a good one, though, sometimes fallible. He referred to the sad phenomenon that at every international congress of mathematicians, except the one which was held in Moscow, a large number of invited speakers did not appear. He realized that the IMU could not do much about it. But he believed that by talking about the problem in a friendly and open way, one could help create international scientific public opinion in favour of improving the situation.

The President made the remark that the International Congress of Mathematicians was the only meeting meant for all mathematicians and all branches of mathematics.

Professor R.D. James emphasized that the Congress was meant to be a gathering of mathematicians and not a Congress of delegations.

## § 12 RESOLUTIONS

The Resolutions adopted by the Assembly are listed in Annexe 5.



### § 13 NEXT MEETING

The Assembly decided that the next General Assembly would be held at about the same time and place as the next International Congress of Mathematicians.

### § 14 CHANGE OF GROUP OF ADHERENCE

By leave of the Assembly, an application from South Africa to change its group of adherence from Group I to Group II was discussed. The Assembly approved the change with effect from January 1, 1975.

## ANNEXE 1

### LIST OF PARTICIPANTS

#### (a) Executive Committee:

President:	Professor K. Chandrasekharan
Vice-Presidents:	Professor N. Jacobson Academician L.S. Pontrjagin
Secretary:	Professor O. Frostman
Members:	Professor M.F. Atiyah Professor Y. Kawada Professor N.H. Kuiper Academician M. Nicolescu Professor E. Vesentini
Past President:	Professor H. Cartan

#### (b) Delegates:

Australia (III):	Professor B.H. Neumann Professor G. Szekeres Professor G.R. Morris (alternate: Dr. M.F. Newman)
Austria (II):	Professor W. Imrich Professor H.J. Stetter
Brazil (I):	Professor M.M. Peixoto

Canada (III):	Professor A.J. Coleman Professor G.F.D. Duff Professor R.D. James
China-Taiwan (I):	Dr. Shing Meng Lee
Czechoslovakia (III):	Professor J. Novák Professor S. Schwarz
Denmark (II):	Professor W. Fenchel Professor L. Kristensen
Fed. Rep. Germany (IV):	Professor M. Barner Professor H. Bauer
Finland (II):	Professor R. Nevanlinna Professor O. Lehto
France (IV):	Professor J. Neveu Professor J.-L. Lions Professor J.-P. Kahane Professor C. Godbillon
German Dem. Rep. (III):	Professor K. Matthes Professor L. Budach Professor A. Pietsch
Greece (I):	Professor D. Kappos
Hungary (III):	Professor B. Szökefalvi-Nagy Professor J. Szendrei
Ireland (I):	Dr. T.T. West
Israel (II):	Professor B. Weiss Professor Y. Katznelson
Italy (IV):	Professor C. Pucci Professor C. Cattaneo Professor E. Magenes Professor M. Rosati
Japan (V):	Professor G. Maruyama Professor S. Iyanaga Professor Y. Kawada Professor Y. Mimura Professor H. Araki

Mexico (I):	Dr. S. Gitler
Netherlands (III):	Professor J.J. Seidel
New Zealand (I):	Professor G.M. Petersen
Norway (I):	Professor J. Årnes
Poland (IV):	Professor K. Urbanik Professor R. Sikorski Professor S. Lojasiewicz Professor Z. Semadeni
South Africa (I):	Professor H.J. Schutte
Spain (II):	Professor J.M. Aroca
Sweden (III):	Professor Å. Pleijel Professor T. Ganelius
Switzerland (III):	Professor H. Kleisli Professor F. Sigrist
United Kingdom (V):	Professor C.A. Rogers Professor J.W.S. Cassels Dr. E.A. Maxwell Professor R.A. Rankin Dr. J.H. Wilkinson
USA (V):	Professor P.J. Cohen Professor L. Bers Professor E. Hewitt Professor W.J. LeVeque Professor C.C. Lin (alternate: Professor W. Browder)
USSR (V):	Professor M.A. Lavrentiev Professor S.V. Jablonsky Professor V.S. Vladimirov Dr. A.B. Zizcenko Professor Yu. A. Mitropolsky
Yugoslavia (II):	Professor D. Kurepa Professor B. Popov
ICMI:	Professor Sir James Lighthill

## ANNEXE 2

### AGENDA

1. Opening of the Assembly
2. Address by the President
3. Appointment of Committees:  
(i) Credentials Committee, (ii) Resolutions Committee, (iii) Tellers,  
(iv) Committee on Finance and Dues, (v) Nominating Committee.
4. Review of the Activities of the Union :
  - A. (i) Symposia, Conferences, (ii) IMU Lectures, (iii) IMU Fellowship,  
(iv) Exchange Commission, (v) ICMI
  - B. (i) IMU Bulletin, (ii) Canberra Circulars, (iii) World Directory of  
Mathematicians .
  - C. Support for the Organization of the International Congress of Mathema-  
ticians; grants to young mathematicians from developing countries.
5. Items proposed for discussion by Members of the Union:
  - (a) Encouragement of the growth of mathematics in developing countries,  
in cooperation with ICSU and Unesco.
  - (b) Problems concerning mathematical publications – the question of  
financing journals; the proliferation of journals and the possible lowering  
of standards; the copyright of articles and a possible “banking” of items  
from which individual journals could select topics of particular interest to  
specialist readers.
  - (c) The question of stimulating interest in the Union among countries that  
have mathematical activities but are not yet members of the Union;  
and the question whether the Union could act as a clearing house for  
information, or possibly even initiate action, with regard to reciprocity  
agreements between mathematical societies in different countries.

Appointment of Working Groups, as may be necessary, to consider these items.
6. Relations with ICSU and UNESCO

7. Finance and Dues

A. Financial reports for the years 1970-73

B. Proposals for 1975-78:

- (i) Recommendations of the Executive Committee to increase the income from dues in order to offset increased costs and the devaluation of currency: (a) to amend Statute 14 so as to increase the number of unit contributions payable by members in Group III, IV and V, from the present scale of 3, 5, and 8 units to a new scale of 4, 7 and 12 respectively, without changing the number of unit contributions payable by members in Group I and II (which are 1 and 2 respectively); (b) to amend Statute 15 so as to delete the requirement that the unit of dues be "fixed in gold weight"; and (c) to fix the unit at 600 Swiss Francs.
- (ii) Proposal from a Member of the Union to create a new membership group, called Group VI, with 13 unit contributions and 6 votes, and to amend Statutes 6, 8, and 14 accordingly.

C Budget estimates for 1975-78.

Recommendation of the Executive Committee to create an IMU Fellowship Fund, which could serve as a basis for attracting financial support from outside.

8. Terms of office of the President and Vice-Presidents

Proposal from a member of the Union to permit the President and Vice-Presidents to hold office for not more than two terms (or eight years), and to amend Statute 11 accordingly.

9. Elections :

(i) Commissions, (ii) Executive Committee.

10. Approval of the Budget for 1975-78

11. IMU and the International Congress of Mathematicians

12. Adoption of Resolutions

13. Next Meeting of the General Assembly

14. Any other item with the permission of the President

## ANNEXE 3

### ADDRESS BY THE PRESIDENT

Ladies and Gentlemen:

It is a pleasure to welcome you all to the Seventh General Assembly of the International Mathematical Union. It is a particular pleasure to welcome as delegates Professor Rolf Nevanlinna, a former President of the Union, and Academician Lavrentiev, a former Vice-President. This is the first time that the Assembly has met outside Europe. We thank our Canadian hosts for having made that possible.

During the four years that have passed since the Assembly met at Menton, the Union has not only maintained its pace, but attempted to strike out in new directions. We have actively sought to encourage interdisciplinary activity, and taken the initiative to collaborate with other Unions belonging to ICSU

(International Council of Scientific Unions). Within our modest budget, concrete steps have been taken by the Executive Committee towards encouraging young mathematicians from developing countries. A new programme of Union Lectures has been launched. We have founded the IMU Bulletin to improve the flow of information about the Union's activities. The IMU Canberra circulars, edited and issued for the Union by Professor B.H. Neumann, disseminate information about mathematical events of international interest.

An important function of the Union is the sponsorship or support of international Symposia and Conferences. Eleven such meetings have been held since 1971, on different subjects, in different parts of the world: Moscow and Prague in 1971; Jerusalem, Moscow and Strasbourg in 1972; Bombay, Cambridge (UK), Canberra, Keszthely (Hungary), and Tokyo in 1973; and Zakopane (Poland) early in 1974. Detailed reports on most, if not all, of them have since been published. The organizers deserve to be complimented on their initiative and hard work, and on their readiness to cooperate with the Union. The International Conference on mathematical problems of quantum field theory and quantum statistics held in Moscow in 1972 marked the beginning of a new type of conference, the first of a possible series of triennial conferences, sponsored by IMU, on the mathematical problems of theoretical physics. The second of the series will be held early next year in Japan. The Conference on control theory held in Poland has attracted interest even outside the circle of mathematicians, and could form part of the longer-term ICSU – Unesco programme.

The Executive Committee of IMU and IUTAM (International Union of Theoretical and Applied Mechanics) have appointed a joint committee to make preparations for a Symposium on functional analysis and its applications to mechanics. IMU and IUPAP (International Union of Pure and Applied Physics) have agreed, in principle, to co-sponsor some Union Lectures on subjects of interest to both mathematicians and physicists. Discussions are afoot on a possible Symposium devoted to group theory and quantum chemistry.

The purpose of the newly started Union Lectures is explained in the IMU Bulletin (No. 2, Sept. 1971). Four sets of such Lectures have so far been delivered: by Professor Wolfgang Schmidt, at Princeton, in 1971; by Professor L. Hörmander, also at Princeton, in 1971; by Professor F. Hirzebruch at Tokyo in 1972; and by Professor J.-L. Lions at Moscow, also in 1972. They have set a high standard which, I hope and trust, will be maintained. The Executive Committee of IMU has arranged with the Editorial Board of *L'Enseignement Mathématique* (which is, incidentally, the official organ of ICM, the International Commission on Mathematical Instruction, from long ago) for the prompt publication of the Union Lectures, at no expense to the Union. Authors receive their quota of off-prints free of charge. The Lectures are also available as separate pamphlets, at a nominal cost, to any one interested. This arrangement will continue until, and unless, it is cancelled either by the Union or by *L'Enseignement*. The Union is represented on the advisory editorial committee of the journal by Professors H. Cartan, R.V. Gamkrelidze, N. Kuiper and I. Kaplansky.

With a view to encouraging young mathematicians from disadvantaged, or developing, countries, the Executive Committee has taken two concrete steps. It has doubled the grant to assist them to attend the International Congress of Mathematicians. This has been made possible by a special ICSU-Unesco grant. The E.C. has also tried to launch an IMU-Fellowship programme for them. Each Fellowship carries a modest stipend (\$ 2000 a year), augmented if possible, and if necessary, by support from other sources, which is induced, in part, by the fact that the candidate will receive a stipend from IMU. These Fellowships are intended to help gifted young men at the University level, to concentrate on their work, for a year or so, at a suitable research centre, either in their own country or abroad. The first award has been made to a young Peruvian mathematician to work at the IHES, Paris, and at the University of Warwick. The grant was obtained from ICSU. A second award is likely to be made soon from out of the Union's own funds. We have also taken steps to raise funds, from outside, for this purpose. The response from the Italian Research Council has been heartening. We have recently received a telegram from the President of the Council to the effect that 5 Million Lire have been set

apart for such a programme. While the details remain to be worked out, we offer our warmest thanks to the Council for this fine gesture, and to Professor Pucci and Professor Vesentini for their endeavours. We intend to approach Academies and Foundations for donations, to strengthen the Union's modest efforts. Here again ICSU has a claim on our gratitude for having encouraged us to make a start. As a member of ICSU, it is the duty of IMU to see that the efforts made by Unesco and ICSU to assist developing countries in the field of education and science are not duplicated but enhanced by us. The object of the Union is, and should be, to harness the good-will, and knowledge, of the world mathematical community in encouraging the growth of mathematics in the disadvantaged areas of the world. Our financial resources may be small; but we can help in ensuring the maintenance of high standards, independently of nationalistic or political considerations.

The Union's interest in mathematical education is concentrated in the work of ICMI. Under the Chairmanship of Professor Sir James Lighthill, ICMI has drawn up a vast programme of activities spread around the world. We very much look forward to hearing Professor Lighthill speak about ICMI.

The Union is represented on the ICSU Committee on the Teaching of Science by Professor A. Lichnerowicz, who will be succeeded by Professor H. Freudenthal. This committee of ICSU works in close cooperation with the Departments of Education, and of Science, in Unesco on the problem of integrated science teaching. The role of mathematics in the teaching of science is one of the subjects of their study.

The Commission on Exchange has arranged some important and useful visits. In this, as in many other matters, the initiative and support of the National Committees is all-important.

As you well know, one of the stated objects of the Union is to support and assist the International Congress of Mathematicians. The Organizing Committee of the Vancouver Congress, and the Executive Committee of the Union, have worked together on a friendly basis. Our particular thanks are due to Professor R.D. James, Chairman of the Organizing Committee, and to Professor M. Sion, Chairman of the Arrangements Committee. As decided by the last General Assembly, the task of preparing the scientific programme was carried out by a Consultative Committee consisting of 4 members nominated by the Organizing Committee of the Congress, 4 members nominated by the E.C. of the Union, and a Chairman appointed by the President of the Union. The Committee consisted of: Professor L. Hörmander (Chairman), and members: Professors G.A. Gratzel, H.A. Heilbronn, F. Hirzebruch, T.E. Hull, T. Husain, S.V. Jablonskii, N. Jacobson and L. Schwartz. May I take this



opportunity to express our hearty thanks to them. The Union has also made a non-trivial financial contribution in support of the Congress.

As a member of ICSU, the Union is committed to the principle of free circulation of scientists. The E.C. through its Zürich Resolution (March 1974) has appealed to all National Committees to uphold this principle, particularly in relation to the International Congress of Mathematicians. I hope and trust that no new difficulties will come to light.

The E.C. has appointed a Committee for the award of the Fields Medals, 1974. Its report will be presented at the opening session of the Vancouver Congress. The E.C. has also set up a committee to consider a site for the 1978 Congress. Its report will be presented at the closing session of the Vancouver Congress.

The Fifth edition of the World Directory of Mathematicians has just been published, as a result of the efforts put in by the Secretary, Professor Frostman. We owe him special thanks for having carried this extra load during a period of stress.

The maintenance of the Union's role in the international world of science requires adequate funds. We do not need to imitate or compete with international, inter-governmental agencies. But we do need to be self-reliant in the pursuit of our modest aims. One of the important tasks before this Assembly is to look into that question.

Our Union, I have little doubt, will be called upon, in increasing measure, not only to strengthen co-operation among the member-countries, but to co-operate with other Unions and other disciplines. In order to be able to respond to such calls, our National Committees have to play a more active role, systematically and continually. I feel that there is considerable scope for improvement in that direction. I feel that greater understanding and cohesion can be brought about within the community of mathematicians by closer contacts and better communication. May I express the hope that our deliberations at this Assembly will contribute to that end.

## ANNEXE 4

### BUDGET

The Budget Committee recommends the following budget for each of the years 1975-78, on the understanding that transfers are permitted from one item to another, and from one year to another, provided that no appropriation from Schedule B is allowed to augment the provision made in Schedule A.

Schedule A. Authorized annual expenditure for the period 1975-78.

1. a) Secretarial help, IMU office	Swiss Francs	9.000
b) Secretarial help, President		1.000
c) ICMI		900
d) CTS		600
2. Office expenses (incl. postage)		4.000
3. Travel expenses of the EC		14.000
4. President's and Secretary's expenses		1.500
5. Contribution to ICSU (2 1/2% of dues)		2.300
6. Publication and Dissemination of IMU Bulletin		2.000
7. Audit fee		450
8. General Assembly 1978		2.000
9. World Directory of Mathematicians		10.000
10. Contingencies		<u>2.500</u>
		50.250

Schedule B.

Scientific activities (including IMU Lectures, Exchange, ICMI, Symposia and Conferences)		48.000
IMU Fellowship Fund		6.000
Consultative Committee for the ICM 1978		3.000
Subvention to the ICM 1978 (including travel grants to young mathematicians from developing countries)		<u>18.750</u>
		75.750
		<u>50.250</u>

*from ICSU*  
*+20.000 => 22.000*  
*\$*

	Sum of A and B	126.000
Income		
Membership dues		85.000
ICSU subvention		36.000
Sales of the World Directory of Mathematicians		<u>5.000</u>
		126.000

## **ANNEXE 5**

### **RESOLUTIONS**

#### **Resolution 1.**

The General Assembly resolves to establish special funds, including one for the IMU Fellowship programme, to encourage and support international mathematical activities considered likely to contribute to the development of mathematical science in any of its aspects (see Statute 1 (c) ). One of the main purposes of the funds shall be to assist in the exchange of mathematicians with developing countries.

#### **Resolution 2.**

The General Assembly resolves to express its thanks to the International Council of Scientific Unions (ICSU) for providing funds for the purpose of making grants to young mathematicians in developing countries to enable them to attend the International Congress of Mathematicians.

#### **Resolution 3.**

While expressing its appreciation of the assistance so far received by IMU and ICMI, by way of annual ICSU and UNESCO grants or by special contract, the General Assembly resolves to draw the attention of UNESCO to the necessity of making a far greater provision for mathematical sciences on a continuing basis in their future programme and records the desire of IMU to be involved in the planning and execution of such programmes in association with UNESCO and ICSU.

#### **Resolution 4.**

The General Assembly approves the Executive Committee's decision to accept the generous donation of 5 million lire made by the Italian National Adhering Organization (Consiglio Nazionale delle Ricerche) in support of the IMU Fellowship programme and invites the Executive Committee to approach national academies, foundations and other bodies for further contributions.

#### **Resolution 5.**

The General Assembly received a report by Professor Sir James Lighthill on the work of the International Commission on Mathematical Instruction (ICMI). The General Assembly expresses its great appreciation of the activities of ICMI in every aspect of mathematical education, particularly in developing countries, and its hope that this work will continue to grow, and that the mathematical needs of other scientific disciplines will be taken into consideration.

#### **Resolution 6.**

The General Assembly approves the Financial Reports for the years 1970-73 as printed in the International Mathematical News and in the Bulletin of the IMU.

**Resolution 7.**

The General Assembly resolves to amend Statute 14 so as to increase the number of unit contributions payable by members in Groups III, IV and V, from the present scale of 3, 5 and 8 units to a new scale of 4, 7 and 10, respectively, without changing the number of unit contributions payable by members in Groups I and II.

**Resolution 8.**

The General Assembly resolves to amend Statute 15 by deleting the five words "and fixed in gold weight".

**Resolution 9.**

The General Assembly resolves to fix the Unit Contribution at 600 Swiss Francs.

**Resolution 10.**

The General Assembly approves the change of group of adherence of South Africa from Group I to Group II, with effect from January 1, 1975.

**Resolution 11.**

The General Assembly welcomes the suggestion that interest in the Union should be stimulated among countries having mathematical activities who are not yet members of the Union, and invites the Executive Committee to take appropriate action.

**Resolution 12.**

The General Assembly resolves that the Scientific Programme of the 1978 International Congress of Mathematicians (i.e. the invited addresses and the general arrangement of the Programme) be decided upon by a Consultative Committee consisting of nine members. The Executive Committee shall determine the number of members to be appointed by the Organizing Committee of the Congress; this number shall be at least two and at most four. The remaining members of the Consultative Committee shall be appointed by the Executive Committee, except that its Chairman shall be appointed by the President of the Union.

**Resolution 13.**

The General Assembly resolves that, before each International Congress, the Fields Medals Committee be appointed by the Executive Committee, and that the Committee's decisions be communicated to the Secretary of the Union, who shall obtain the medals from Canada, and that only arrangements for the actual presentation be made by the Organizing Committee of the Congress.

**Resolution 14.**

The General Assembly resolves that the recommendation for the location of the 1982 Congress be made by a Committee appointed by the Union and having on it at least two representatives of the Organizing Committee of the 1978 Congress.

**Resolution 15.**

The General Assembly resolves that the next General Assembly be called at about the same time and place as the next International Congress of Mathematicians.

**Resolution 16.**

The General Assembly resolves to continue the publication of the World Directory of Mathematicians every four years.

**Resolution 17.**

The General Assembly resolves that one copy of the World Directory of Mathematicians be sent free of charge to each National Adhering Organization.

**Resolution 18.**

The General Assembly expresses its thanks to Professor B.H. Neumann and to the Australian National University for their help in the production and circulation of the Canberra Circulars.

**REPORT ON THE INTERNATIONAL CONGRESS OF MATHEMATICIANS,  
Vancouver, British Columbia, Canada, August 21-29, 1974**

The Congress had about 3100 registered participants, and in all about 4500, including family members.

There were 174 invited speakers, of which 17 were invited to give one-hour addresses. Of the invited speakers 23 could not come (20 from USSR, one each from Bulgaria, the German Democratic Republic, and the USA).

Members of the Congress had the privilege of presenting 15 minute oral communications of their mathematical work.

Unscheduled mathematical activity by small groups of people, acting on their own initiative by organizing small seminars, was encouraged.

The International Mathematical Union had tried to encourage the participation in the Congress of young mathematicians, whose names had been recommended by the respective National Committees for Mathematics or corresponding organizations. The Union made contributions towards the cost of their travel and stay. 19 young mathematicians coming from Chile, China-Taiwan, Hungary, India, Kenya, Malaysia, Nigeria, Pakistan, Poland, Rumania, Sierra Leone, Tunisia, Uganda and Zaire received such contributions from the Union.

At the Opening Ceremony of the Congress, the President of IMU, Professor K. Chandrasekharan, nominated Professor H.S.M. Coxeter (University of Toronto) as President of the Congress. He was elected by acclamation. At this Ceremony, the Chairman of the Fields Committee, Professor K. Chandrasekharan, announced the decision of the Committee to award Fields Medals to Professor Enrico Bombieri (Pisa), and to Professor David Mumford (Harvard, USA). (The speech of the Chairman of the Fields Committee will be printed in the Proceedings of the Congress). The medals were then presented to Professors Bombieri and Mumford. The President of the Congress, Professor Coxeter, then gave an address (which will be printed in the Proceedings of the Congress).

The Closing Ceremony of the Congress, began with a short speech by the President, Professor Coxeter. He said "We mathematicians have had a busy but enjoyable experience at this Congress. We have listened to many stimulating lectures and have witnessed extra-curricular activities of various kinds. I apologize if some of these activities have hurt the feelings of any particular delegations.

I regret that our International Congress has not been completely world-wide. Many countries have not been represented, and among the invited speakers, 23 failed to appear, 20 of them from one country. I hope that this kind of

difficulty can be avoided in 1978". He then invited Professor Chandrasekharan to report on the Seventh General Assembly of IMU.

Professor Chandrasekharan responded by saying. "It is my pleasant duty to announce that the Seventh General Assembly of the International Mathematical Union, which met at Harrison Hot Springs, from August 17 to 19, 1974, elected the following Executive Committee for a term of four years beginning January 1, 1975.

President: Professor Deane Montgomery (Princeton, USA)  
Vice-Presidents: Professor J.W.S. Cassels (Cambridge, UK)  
Academician M. Nioholescu (Bucharest)  
Secretary: Professor J.-L. Lions (Paris)  
Members: Professor E. Bombieri (Pisa)  
Professor M. Kneser (Göttingen)  
Professor O. Lehto (Helsinki)  
Professor M. Nagata (Kyoto)  
Academician L.S. Pontrjagin (Moscow)

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I am sure you will join me in wishing the new Committee every success in the work ahead.

The main object of the International Mathematical Union is "to promote international cooperation in mathematics", and, in particular "to support and assist the International Congress of Mathematicians". May I, on behalf of the Union, express our gratitude to the Canadian Mathematical Congress for having played host to this International Congress in such a beautiful place as Vancouver. Our warmest thanks go to the members and staff of the Organizing Committee headed by Professor R.D. James, and to the members and staff of the Arrangements Committee headed by Professor M. Sion, for having ministered to our needs unobtrusively and efficiently, both at Harrison Hot Springs and at Vancouver.

The Congress has brought together mathematicians from many lands, united in a friendship which stems from a common devotion to mathematics, transcending the stresses of politics, and happily free from the strains of competitive sport. We trust that the next Congress in 1978 will be a worthy successor. May I, as Chairman of the Committee to select a site for the next Congress, request you, Mr. President, to invite Professor Rolf Nevalinna to speak on behalf of the National Committee for Mathematics in Finland."

Professor Rolf Nevalinna then extended an invitation on behalf of the Finnish Academy of Sciences and the Finnish National Committee of Mathematics to hold the next International Congress of Mathematicians at Helsinki in 1978. The invitation was accepted by acclamation.

Professor Béla Szökefalvi-Nagy, and Professor J. Tits, spoke in terms of high appreciation about the efforts of the Organizing Committee of the Congress, and expressed the thanks of all the participants. Professor James, Chairman of the Organizing Committee, and Professor M. Sion, Chairman of the Arrangements Committee, acknowledged the thanks, and transmitted them to all their colleagues who had helped in the arrangements, particularly to Professor Cayford, and to a number of young mathematicians, and technical men at the University, who had considered it all as a labour of love.

Professor Coxeter then said: "I would like to add my own word of thanks to Professor Tits and all the other speakers who have told us so eloquently about the progress made in our subject during the past four years, and the problems that remain for future research.

It seems to me that the community of mathematicians should act as a nucleus of sanity in the world — sanity based on a transcendent set of values, far removed from the greed and rivalry that sometimes seem to be impelling the rest of mankind towards insane self-destruction. It is my fervent hope that we shall all be alive to meet again in Helsinki in 1978. With these words of mingled pessimism and optimism, I declare the 1974 Congress closed, and invite you all to listen to some appropriate music outside".