

**Bulletins of the
International
Mathematical Union**



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IMU

B U L L E T I N

OF THE

INTERNATIONAL MATHEMATICAL UNION

No. 12

December 1977

Secretariat

COLLEGE DE FRANCE

11, Place Marcelin Berthelot
75231 PARIS CEDEX 05 FRANCE

INTERNATIONAL MATHEMATICAL UNION

EXECUTIVE COMMITTEE

(1 January 1975 - 31 December 1978)

President	Professor Deane Montgomery
Vice-Presidents :	Professor J.W.S. Cassels Professor G. Vranceanu
Secretary :	Professor J.L. Lions
Members :	Professor E. Bombieri Professor M. Kneser Professor O. Lehto Professor M. Nagata Professor L.S. Pontryagin
Psst President :	Professor K. Chandrasekharan

ANNOUNCEMENTS

Admission of the Republic of the Philippines

After agreement given by an international postal vote among all the National Adhering Organizations, and upon unanimous recommendation of the Executive Committee during its last meeting in Cambridge on June 1st and 2nd, 1977, the Republic of the Philippines becomes a member of the Union in group of adherence I, starting on January 1st, 1978.

N.A.O. : Mathematical Society of the Philippines
 c/o Ateneo de Manila University
 P.O. Box 154
 Manila

NC Prof. Bienvenido I. Nebres, President
 Mathematical Society of the Philippines
 address as above

 Professor Alfred Tong, Secretary
 S.E.A.M.S. (Southeast Asian Mathamtical Sty)
 address as above

 Professor Cristina Parel, Vice-President
 Mathematical Society of the Philippines
 address as above

Changes in addresses :

BRAZIL	NAO	Sociedade Brasileira de Matematica Rua Luiz de Camoes, 68 20000 Rio-de-Janeiro GB ZC 58
	NC	Prof. Djuiro Guedes de Figueiredo President Departamento de Matematica Universidade de Brasilia Brasilia, DF.
		Professor Said Sidki, Secretary address as above.
ITALY	NAO	Consiglio Nazionale delle Ricerche Servizio Affari Scientifiche e Tecnologici Ufficio Relazioni Internazionali Piazzale delle Scienze 7 I-00100 Roma
		Professore Carlo Pucci, President Unione Matematica Italiana Piazza Porta S. Donato 5 40127 Bologna
SOUTH AFRICA	NAO	should be read as follows : The Head International Relations Division CSIR - PO Box 395 Pretoria 0001

GENERAL ASSEMBLY OF IMU

We reproduce below the "First Communication" already printed in Bulletin No. 11 of July 1977, without changes, except in Section 1 where more detailed information is given on the place of Assembly.

1. PLACE AND DATE OF ASSEMBLY

The Eight General Assembly of the International Mathematical Union will be held at OTANIEMI, about 10 km from the centre of HELSINKI, in the Congress Centre "DIPOLI". The working days will be August 11 and 12, and if necessary, August 13. The registration will start on August 11 at 8.30 o'clock and the opening session at 10.00. The delegates are therefore advised to arrive in the Helsinki area not later than August 10, 1978.

2. DELEGATIONS AND THEIR VOTING STRENGTH

According to the Statutes of the Union, each National Adhering Organization "shall appoint and certify to the Secretary of the Union a delegation which shall have the number of votes corresponding to the Group in which it adheres as follows :

Group	I	II	III	IV	V
Number of votes	1	2	3	4	5

provided that the number of delegates shall not exceed the corresponding number of votes. Any National Adhering Organization which desires to ensure its full quota of representatives at meetings of the General Assembly by the appointment of alternates for its regularly named delegates may do so, provided that no such alternate shall be permitted to participate in the work of the General Assembly until he has been duly certified to the Secretary of the Union as assuming the powers and duties of the delegate he has been designated to replace. No person shall be a member of the delegation of more than one country. Voting by the General Assembly shall be by delegations, provided that each delegation shall be free to cast the votes to which it is entitled either as a unit or divided in such a manner as it may determine".

3. DELEGATES AND ALTERNATES AND THEIR PARTICIPATION

It follows from the above extract from the Statutes that :

- a) the number of regular delegates from a member-country cannot exceed the number of its votes (it can, of course, be smaller) ;
- b) the number of alternates cannot exceed the number of regularly named delegates (there may, of course, be no alternates at all) ;
- c) at any given session of the General Assembly, the total number of delegates either regular or alternate, representing a member-country, cannot exceed the number of votes

of that member-country ;

- d) and that the alternate delegates are permitted to participate in the work of the Assembly only after due notification to the Secretary.

4. APPOINTMENT OF DELEGATIONS

You are hereby requested to designate the delegation of your country. The names of your delegates, with alternates, if any, together with their addresses, may be please entered on the accompanying blank and returned, so as to reach the undersigned not later than March 1, 1978.

This deadline is important since some of the delegates will be proposed for election to various Committees of the Assembly at the opening session.

Further information for the stay in OTANIEMI will be given in the Second Communication.

5. PROPOSALS FOR AGENDA

As provided for in the By-Laws of the Union, National Adhering Organizations may propose business to be transacted at the General Assembly ; such proposals shall reach the undersigned at least four months before the meeting, i.e. not later than April 11, 1978.

6. ELECTION OF THE NEW EXECUTIVE COMMITTEE

The present Executive Committee of the Union is now about to prepare its recommendation to the next General Assembly regarding the composition of the new Executive Committee for the term January 1, 1979 to December 31, 1982. As in the past, the present Committee would like to receive suggestions from National Committees regarding the composition of the new Executive Committee including its officers ; in particular, regarding the representation of the member-countries in the Committee. It should be understood that, while the present Executive Committee would give such suggestions due consideration in arriving at its own recommendation, it would in no sense be bound by such suggestions. To be bound, would, in fact, amount to an abdication of its own responsibility, which no member of the Union desired.

Suggestions from National Committees should reach the undersigned not later than February 15, 1978. The Executive Committee would like it to be clearly understood that no member of the Committee is elected to represent his country ; he is elected on his own merits, and is expected to serve the whole community of mathematicians which the Union represents.

7. AGENDA

The Agenda of the meeting will be sent later.

8. I.C.M.I.

According to the terms of reference of I.C.M.I. (International Commission on Mathematical Instruction), approved by the 4th General Assembly in 1962, the General Assembly of IMU elects ten members-at-large of I.C.M.I. on the nomination of the President of IMU. It also elects the President of I.C.M.I. on the nomination of the President of IMU. On the other hand, any National Adhering Organization wishing to support or encourage the work of I.C.M.I. may create or recognize, in agreement with its National Committee, a National subcommission for ICMI to maintain liaison with the Commission in all matters pertinent to its affairs. The National Adhering Organization in question shall designate one member of the said subcommission, to serve as a delegated member of I.C.M.I.

Each National Adhering Organization is hereby requested to give the undersigned, not later than February 28, 1978 :

- 1) the name of the national delegate which it designates to serve as a member of I.C.M.I. for the term January 1, 1979 to December 31, 1982, with a copy addressed to the Secretary of I.C.M.I., Professor Y. Kawada, Department of Mathematics, University of Tokyo, Hongo, Bunkyo-ku, Tokyo 113, Japan,

and

- 2) the names of possible candidates for election as members-at-large, for the term 1979-1982.

9. COMMISSION ON EXCHANGE

According to the terms of reference of the Commission on Exchange approved by international postal ballot in 1976, the General Assembly of IMU elects nine members-at-large of the Exchange Commission on the nomination of the President of IMU (the tenth member being the Secretary of the Union, ex-officio). It also elects the President of the Commission on Exchange on the nomination of the President of IMU.

Each National National Adhering Organization is hereby requested to give the undersigned not later than February 28, 1978 :

- the names of possible candidates for election as members-at-large for the term 1979-1982.

Jacques-Louis Lions
Secretary of IMU

IMPORTANT INFORMATIONS FOR I.C.M.'78TRAVEL GRANTS FOR YOUNG MATHEMATICIANS

The International Mathematical Union, with the help of ICSU, UNESCO and COSTED, has established a fund to facilitate the participation of well-qualified young mathematicians at the International Congress to be held at Helsinki, Finland, from August 15 to 23, 1978.

The fund is primarily for young mathematicians from developing countries (not necessarily members of IMU), but deserving cases from countries where severe money regulations exist will also be considered.

The total sum available is of US Dollars 10,000. It may not be possible to help all deserving cases. Grants will not cover the full expenses of those who are selected.

You are hereby requested to nominate young mathematicians from your country who are well-qualified and need financial support. You should give the names in order of priority together with addresses, brief curriculum vitae and any supporting evidence you wish to submit.

Candidates should in no case be more than 35 years old. The names of those invited as speakers to the Congress should not be included in your list.

Would please send your nominations so as to reach the undersigned not later than February 1st, 1978 ?

Travel Grants Committee of IMU
c/o Professor J.L. Lions, secretary
Collège de France
11, Place Marcelin Berthelot
75231 Paris Cedex 05 - France

INTERNATIONAL CONGRESS OF MATHEMATICIANS 1982

On behalf of the Executive Committee of IMU, invitations from prospective host for the ICM 1982 should reach the Secretary of IMU before February 1st, 1978.

FINANCIAL REPORT

for the period January 1st to December 31st, 1976

1. INCOME

The Union had the following sources of income during the year :

- A). Dues from the member nations,
- B). UNESCO/ICSU contribution,
- C). Sales of the World Directory of Mathematicians,
- D). Interests on Bank Accounts.

A). During the financial year 1975, dues were paid at the :

i) CHASE MANHATTAN BANK, by :

Argentina	I	1976 (part)
Czechoslovakia	III	1976
Greece	I	1975 (part) (*)
India	III	1975 (part)
Mexico	I	1975 (part)
Nigeria	I	1975 (remaining part)
		1976

Total : US\$ 1,998 -

(*) balance paid in Swiss Frs.

Brought forward : US\$. 1998.-

ii) SWISS CREDIT BANK, by :

Australia	III	1976	
Austria	II	1976	
Canada	III	1975	
Cuba	I	1976	
Denmark	II	1976	
Finland	II	1976	
German Dem. Rep.	III	1976	
Greece	I	1975	(remaining part)
"		1976	
Hungary	III	1976	
Iceland	I	1975	
Iran	II	1976	
Ireland	I	1976	
Israël	II	1975	(remaining part)
"		1976	
Italy	IV	1976	
Japan	V	1976	
Netherlands (The)	III	1976	
New-Zealand	I	1976	
Norway	I	1976	
Poland	IV	1976	
"		1977	
Rumania	II	1976	
South Africa	II	1976	
Spain	II	1976	
Sweden	III	1976	
Switzerland	III	1976	
China-Taiwan	I	1975	
U.R.S.S	V	1976	
United Kingdom	V	1976	
U.S.A.	V	1976	
Yugoslavia	II	1976	

Total Sw.Frs. 68.678.- US\$ 27.258.-

US\$ 29.256.-

Brought forward : US\$. 29,256.-

iii) SOCIETE GENERALE, by :

France	V	1976	FF. 10.800.	US\$. 2,298.-
Arab Rep. of Egypt	I	1976	SF. 600.	US\$. 242.-

TOTAL INCOME FROM MEMBERSHIP DUES IN 1976 (*) US\$. 31,796.-
=====

Subscriptions were due at the end of 1976 from the following countries :

1974 : Brazil.

1975 : Brazil, India (part).

1976 : Brazil, Iceland, India, Mexico.

The following subscriptions for 1976 were paid at the beginning of 1977 :

Argentina (remaining part), Belgium, Bulgaria, Canada, Rep. of China-Taiwan, Fed. Rep. of Germany, Democratic People's Rep. of Korea, Portugal, Turkey.

1977 : Dues were paid in advance by Poland.

B) UNESCO/ICSU contribution for 1976 :

Frs.frs. 28.200.-	
US\$. 6,000.-	US\$. 12,267.- =====

C) SALES from the WORLD DIRECTORY OF MATHEMATICIANS:

Krs.S. 5.687.-	US\$ 1,293.- =====
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(*) Exchange rates at the date of bank statements following UNESCO standard rates of exchange.

D) a. INTERESTS on Bank Accounts :Swiss Credit Bank (private account)

Sw.Frs. 2.218.- = US\$. 909.-

Svenska Handelsbanken (private account)

Krs.S. 876.- = US\$. 208.-

Bank Degroof :Frs.B. 72.- = US\$. 2.-US\$. 1,119.-b. Bank charges : - US\$. 417.-US\$. 702.-

=====

c. Exchange difference : US\$. 3,791.-

=====

RECAPITULATION OF THE TOTAL INCOME RECEIVED DURING THE YEAR :

A) Membership dues : US\$ 31,796.-

B) UNESCO/ICSU : " 12,267.-

C) Sales from W.D.M. " 1,293.-

D) Interests on Bank a/c. . 702.-

E) Exchange difference: 3,791.-

T O T A L US\$. 49,849.-

2. EXPENDITURE

A. Actual expenditure in 1976 is compared with the amounts authorized by the Seventh General Assembly.

The authorized figures are shown in Swiss Frs and in US Dollars (exchange rate at December 31, 1976 : Sw. Frs 2,44 = US \$ 1).

The real expenditure is shown only in US \$ (exchange rates at the date of payment).

E X P E N D I T U R E

	<u>A u t h o r i z e d</u>		<u>A c t u a l</u>	<u>D i f f e r e n c e</u>	
	Sw. Frs	US.\$	US \$	- US \$	+ US \$
<u>SCHEDULE A.</u>					
1. a) Secretarial help (IMU Office)	9.000	3,689.-	3,406.-	283.-	
b) Secretarial help (President)	1.000	410.-	--	410.-	
c) I.C.M.I.	900	369.-	300,-	69.-	
d) C.T.S.	600	246.-	300,-		54.-
2. Office expenses	4.000	1,639.-	163.-	1,476.-	
3. Travel expenses	14.000	5,738.-	4,089,-	1,649.-	
4. President's and Secretary's expenses	1.500	615.-	--	615.-	
5. Contribution to ICSU (2 1/2% annual dues)	2.300	943.-	783.-	160.-	
6. Publication & disse- mination of the IMU Bulletin	2.000	820.-	670.-	150.-	
7. Audit fee	450	184.-	1,564.-		1,380.-
8. General Assembly	2.000	820.-		820.-	
9. World Directory of Mathematicians	10.000	4,098	168.-	3,930.-	
10. Contingencies	2.500	1,025.-		1,025.-	
	50.250	20,596.-	11,443,-	10,587.-	1,434.-

E X P E N D I T U R E

	<u>A u t h o r i z e d</u>		<u>A c t u a l</u>	<u>D i f f e r e n c e</u>	
	Sw. Frs	US \$	US \$	- US \$	+ US \$
<u>SCHEDULE B</u>					
1. Scientific Activities Symposia & Conferences IMU Lectures Exchange Commission I.C.M.I.	48.000 -	19,672.-	9,394.-	10,278.-	
2. IMU Fellowship Fund	6.000 -	2,459.-	---	2,459.-	
3. Consultative Committee for ICM 1978	3.000 -	1,230.-	4,363.-		3,133.-
4. Subvention to the ICM 78 (including travel grants to young mathematicians from developing coun- tries)	18.750.-	7,684.-	7,050.-	634.-	
	75.750.-	31,045.-	20,807.-	13,371.-	3,133.-

S U M M A R Y

<u>TOTAL OF INCOME</u>	US \$ 49,849.-
<u>TOTAL OF EXPENDITURE</u>	
. under schedule A	US \$ 11,443.-
. under schedule B	US \$ 20,807.-
	US \$ 32,250.-
<u>EXCESS OF INCOME</u> <u>OVER EXPENDITURE</u>	US \$ 17,599.-

WORLD DIRECTORY ACCOUNT
for the calendar year 1976

<u>INCOME</u>	Skr.	\$	\$
Income from sales January-May	2.813.40	4.39	640.87
" " " June-July	429.70	4.44	96.78
" " " August	880.00	4.47	196.87
" " " September	1.248.00	4.40	283.64
" " " October	153.25	4.30	35.64
" " " Nov-December	163.20	4.20	38.86
Interest on private a/c, Svenska-H. Bank	<u>875.50</u>	4.20	<u>208.33</u>
	6.563.05		1.500.99
 <u>EXPENDITURE</u>			
Postage and packing material Jan-June	331.00	4.39	75.40
Postage, June	23.00	4.44	5.23
Postage, copies, October	125.85	4.30	29.27
Postage and telegrams, November	<u>244.45</u>	4.20	<u>58.20</u>
	724.30		168.10
<u>SURPLUS</u> of income over expenditure	<u>5.838.75</u>		<u>1.332.89</u>
	6.563.05		1.500.99

STATEMENT OF ACCOUNT, SVENSKA HANDELSBANKEN, as per 31 December 1976

BALANCE 1976.01.01

In Current Account	1.052.26
In Private Account	<u>11.203.75</u>
	12.256.01
<u>Net income</u> in 1976	5.838.75

BALANCE 1976.12.31

In Current Account	515.51
In Private Account	<u>17.579.25</u>
	18.094.76

ASSETS

Orders billed but not paid as per 1976.12.31	75.00
Stock-in-trade, 820 copies	

B. Details of expenditure under UNESCO/ICSU/IMU Grants (Schedule B of the budget)

(i) under UNESCO/ICSU grant :a) Symposia and Conferences :

Bonn, July 1976	§ 1,000 -
Prague, Aug.1976	" 1,000 -
Canberra, (*)	" 3,000 -
Regional Conference Africa, Rabat 1976	" 1,000 -
	<u>§ 6,000 -</u>

b) IMU Lectures :

Professor Mumford (**) § 1,000 -

c) I.C.M.I. : Karlsruhe Meeting

	<u>§ 3,000 -</u>
	§ 9,000 -
Exchange difference	" 394 -
	<u>§ 9,394 -</u>

ICSU/UNESCO Grant : 12,000 -

Bonus on exch.rates 267 -

§ 12,267 -

Reserved for 1977

§ 2,873 -

§ 12,267 -

Paid in advance for 1977 :

Kyoto meeting, January 1977 : § 5,000 -

(ii) under IMU grant :a) Consultative Committee :

Helsinki meeting, June 1976 § 4,363 -

b) I.C.M. 1978 :

transferred to KOP Helsinki
(E.C. decision May 1976)

§ 7,050 -

§ 11,413 -

TOTAL OF EXPENDITURE UNDER SCHEDULE B :

§ 20,807.--

(*) This symposium is postponed until August 1977, but already paid.

(**) Left to be paid from 1975 budget .

3. FINANCIAL STATEMENT FOR THE PERIOD JANUARY 1, 1976 TO DECEMBER 31, 1976

1)	<u>US.\$</u>	<u>S.Frs</u>	<u>S.Frs</u>	<u>F.Frs</u>	<u>S.Frs</u> Sté G.	<u>B.Frs</u>	<u>S.Krs</u>	<u>S.Krs</u>	<u>F.Frs</u> cash
a) Bank Balance in current accounts on 1/1/1976	11,805	25.362		1.593	--	14.229	1.052		
b) Bank Balance in private accounts on 1/1/1976			73.926					11.204	
<u>Add. Receipts during 1976</u>									
1. Membership dues	1,998	68.679		10.800	600				
2. UNESCO/ICSU grant	6,000			28.200					
3. Sales of W.D.M.							5.688		
4. Exchange difference, bank charges, interests.			2.218			72		875	
5. Inter banks transfers	5,046			24.809				5.500	29.350
6. Symposia	193								
7. Profit past exercise	421								
	<u>25,463</u>	<u>94.041</u>	<u>76.144</u>	<u>65.402</u>	<u>600</u>	<u>14.301</u>	<u>6.740</u>	<u>17.579</u>	<u>29.350</u>
2) <u>Expenditure :</u>									
<u>SCHEDULE A.</u>									
1.a) Secr.help IMU office									16.450
b) Secr. help President									
c) I.C.M.I.	300								
d) C.T.S.	300								
2. Office exp.		336		159					
3 & 4 Travel exp. E.C. of the E.C.	580			3.577					12.900
5. Contribution to I.C.S.U.	783								
6. Public. of the IMU bulletin				7.000					
7. Audit fee									
8. General Assembly									
9. W.D.M.							724		
10. Contingencies (inter bank transf.)		25.312		29.350			5.500		
11. Bank charges	57	55	790			538			
<u>SCHEDULE B.</u>									
1. Scientific activ.	10,000	9.800		4.700					
2. Cons. Committee	2,058			10.947					
3. Subv. ICM 78	7,050								
	<u>21,128</u>	<u>35.503</u>	<u>790</u>	<u>55.733</u>	<u>---</u>	<u>538</u>	<u>6.224</u>	<u>--</u>	<u>29.350</u>
<u>B A L A N C E :</u>	<u>4,335</u>	<u>58.537</u>	<u>75.354</u>	<u>9.669</u>	<u>600</u>	<u>13,763</u>	<u>516</u>	<u>17.579</u>	<u>00</u>

MARSTON MORSE

Professor Marston Morse, of the Institute for Advanced Study, died on June 22 at his home in Princeton. He was universally regarded as one of the world's greatest mathematicians. His interests in mathematics were broad and spread over analysis, topology, calculus of variations, differential geometry and dynamics. Much of his work centered around analysis in the large, that is a combination of analysis and geometry. In addition to his eminence in mathematics, he was a statesman of science and was influential in shaping its development. He and Father Hesburgh represented the Vatican at the Atoms for Peace Conference at the United Nations in 1952.

He was born March 24, 1892, in Waterville, Maine. His A.B. was taken at Colby College in 1914, and his Ph.D. at Harvard, 1917. His career from 1919 to 1935 centered at Harvard but he was at Cornell from 1920 to 1925, and at Brown University, 1926-1926. In 1935 he became a professor at the newly founded Institute for Advanced Study. He was one of its great original faculty in mathematics which included Alexander Einstein, von Neumann, Veblen, and Weyl. He was a professor there until his death, having become emeritus in 1962.

His academic career was interrupted by the two world wars. In the first he served with distinction in the American Expeditionary Force and received the Croix de Guerre with silver star for bravery under fire. Other decorations came to him in World War II in which he made major contributions in applied mathematics in the Office of the Chief of Ordnance. He received the Ordnance Department Meritorious Service Award from the President of the United States in 1944, and the Army-Navy Certificate of Merit in 1948.

His mathematical achievements were widely recognized. He received twenty honorary doctorate degrees from universities around the world including Harvard, Paris, Pisa, Vienna, Yeshiva, Notre Dame, Fordham, and Maryland. He was elected to the National Academy of Sciences in 1932, to the American Philosophical Society in 1936, and the American Academy of Arts and Sciences. He was President of the American Mathematical Society, 1940-1942. He was appointed by the President of the United States to the first National Science Foundation Board, 1950-1954, and became a "Chevalier" in the French National Order of Legion of Honor in 1952. He was an associate member of the French Academy of Sciences, and a corresponding member of the Italian National Academy Lincei. He received the National Medal of Science in 1964, presented at the White House in 1965 by President Johnson. He was honored by the Polish and Romanian academies and received many other honors for his major role in international science.

He was a man of wide cultural interest with a lifelong devotion to the piano. He was also interested in sports having been a captain of the Colby Tennis Team. He was very influential with young people and associated with them freely from the beginning of his career to the very last day of his life. He enjoyed foreign contacts and took a special interest in France. His immense influence was world wide among people of all ages. He was regarded everywhere with affection and respect.

Marston Morse, with the assistance of the late J.R. Kline, was responsible for convoking an assembly of representative mathematicians from all over the world in August 1950, with a view to establishing anew the International Mathematical Union (which had come to an end in 1932). He presided over the opening session and passed the mantle on to Marshall Stone, who, in due course, became the first President of the revived Union. When the Union called on his services again, he agreed, with his wonted generosity of heart, to serve as a Vice-President for four years beginning 1959. He played an important part in steering the Union clear of both politics and patronage, and did a great deal to enhance its prestige among the research mathematicians of the world.

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