IMU

BULLETIN OF THE

INTERNATIONAL MATHEMATICAL UNION

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Secretariat:

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INTERNATIONAL MATHEMATICAL UNION

Executive Committee

January 1, 2003-December 31, 2006

President:	John M. Ball
Vice-Presidents:	Jean-Michel Bismut Masaki Kashiwara
Secretary:	Phillip A. Griffiths
Members:	Andrey A. Bolibruch Martin Grötschel Zhi-Ming Ma Ragni Piene Madabusi S. Raghunathan
Past President:	Jacob Palis

January 1, 1999 – December 31, 2002

President:	Jacob Palis
Vice-Presidents:	Simon Donaldson Shigefumi Mori
Secretary:	Phillip A. Griffiths
Members:	Vladimir Arnold Jean-Michel Bismut Björn Engquist Martin Grötschel Madabusi S. Raghunathan
Past President:	David Mumford

REPORT OF THE 14TH GENERAL ASSEMBLY OF THE INTERNATIONAL MATHEMATICAL UNION
Shanghai, China

1. Opening

President Jacob Palis opened the meeting at 10:00 a.m. on August 17, 2002.

2. Address by the President

The President welcomed the delegates and observers and urged their cooperation to work together for the next two days on the IMU reports concerning the activities in the past four years and to help to formulate the plans for the next four years. Professor Palis introduced Li Tatsien (Li Daqian), the head of the General Assembly Local Organizing Committee. Professor Li expressed his welcome to all who have come from afar to attend the 14th General Assembly in Shanghai.

3. Committees

The following committees were appointed.

Credentials Committee

Christer Kiselman, *Chair* (Sweden)
S. D. Chatterji (Switzerland)
Dong Myung Chung (Republic of Korea)

Finance and Dues Committee

Jennifer Chayes, *Chair* (United States of America)
Uriel Feige (Israel)
E. C. Lance (United Kingdom)
Roberto Markarian (Uruguay)
Alf van der Poorten (Australia)
A. B. Zhizhchenko (Russia)

Nominating Committee

Jacob Palis, *Chair* (Brazil)
Michael Benedicks (Sweden)
Alberto Conte (Italy)
T. J. Lyons (United Kingdom)
Bodil Branner (Denmark)
Li Daqian (China)
José A. de la Peña (Mexico)
David Eisenbud (United States of America)
L. D. Faddeev (Russia)
Sizwe Mabizela (South Africa)
Christine Rousseau (Canada)
Kenji Ueno (Japan)

Resolutions Committee

Olavi Nevanlinna, *Chair* (Finland)
Suely Druck (Brazil)
Albert Fathi (France)
Peter Gritzmann (Germany)
Carlos Andradas Heranz (Spain)
Donald Saari (United States of America)

Tellers Committee

Olav Arnfinn Laudal, *Chair* (Norway)
Franco Brezzi (Italy)
Marcio Soares (Brazil)
Yun-Tong Siu (United States of America)
Tao Tang (Hong Kong)

4. Members

New Members

Bosnia and Herzegovina was admitted to the Union in Group I as of January 1, 2003.

Member Group Changes

Georgia changed from Group II to Group I as of January 1, 2003.
Egypt changed from Group I to Group II as of January 1, 2003.
Yugoslavia changed from Group II to Group I as of January 1, 2003.

Member moved to Observer Status

Due to non-communication with IMU, the Democratic Republic of Korea was changed to observer status as of January 1, 2003.

5. Activities of the Union

Bulletins

Bulletins produced at the end of each fiscal year report on the activities of the IMU. A special Bulletin was produced in June 2002, reporting on the activities of IMU since the prior General Assembly in 1998. A list of all colloquia supported financially or by imprimatur can be found in these Bulletins.

World Directory of Mathematicians 2002

The 12th Edition of the World Directory of Mathematicians 2002 was produced in June 2002 and is ready for purchase.

IMU Commissions and Committee

Commission on Development and Exchanges (CDE) -- Phillip Griffiths gave a brief overview of CDE including its mission of supporting mathematicians in developing countries for their research travel and projects. Typically the support is modest, but Professor Griffiths would like to see the IMU increase support for CDE. CDE wishes to encourage a wider use of its programs—presently the distribution is uneven.

International Commission on Mathematical Instruction (ICMI) – Hyman Bass, President of ICMI, made a presentation to the GA. The ICMI Executive Committee has decided at its meeting during ICME 9 in Japan to create two awards in mathematics education research: the Hans Freudenthal Award, for a major program of research on mathematics education during the past 10 years, and the Felix Klein Award, for lifelong achievement in mathematics education research.

These awards will consist of a certificate and a medal, and they will be accompanied by a citation. They should have a character similar to that of a university honorary degree, and they will be given in each odd-numbered year.

An authored (brief) paper describing the work that the award recognizes would be published, in the year of the award, in the journal *L'Enseignement Mathématique*. The citations, and a perhaps abbreviated version of the *L'Enseignement Mathématique* articles would appear in the ICMI Bulletin and Web page (where a list of all past recipients would be maintained).

At each ICME, the medals and certificates of the awards given after the previous ICME will be presented at the Opening Ceremony. Further, the awardees will be invited to present special lectures at the ICME.

An Award Committee (AC) of six persons shall select the awardees. The members of the AC should be scholars of international stature, and include mid-career as well as senior scholars. They should have a broad knowledge of work in their fields, be well networked to the research community, and be respected for balanced and well-grounded judgment.

The terms of appointment shall be for eight years and non-renewable, with three of the members being replaced each four years, at the time of the ICME's. One of the three continuing members shall then also be named as committee chair. To initiate the process, a committee of six has been appointed in 2002, three of them with eight-year terms, the other three with four-year terms. Exceptionally, the first chair of the AC, with a four-year term, has been chosen from among the current ICMI Executive but, in the future, current members of the ICMI Executive should not be selected for membership of the AC.

The AC, once appointed, is completely autonomous. Its work and records are kept internal and confidential, except for the obvious process of soliciting advice and information from the professional community, which should be done by the committee chair. The committee has full authority to select the awardees. Its decision is final. Once made, that decision is to be reported, in confidence, to the ICMI-EC, via the President of ICMI.

The active members of the AC, except for its chair, shall not be made known. Only at the time when the terms of the committee members expire shall their names be made public. Members of the AC shall be appointed by the President of ICMI, after consultation with the Executive Committee and with other scholars in the field. The Executive Committee alone shall be informed of the membership of the AC.

Michele Artigue, professor at the university Paris 7 in France, and one of the vice-presidents of ICMI has consented to chair the first AC, with a term of four ears. The first recipients of the Freudenthal and Klein awards, will be known by the end of the year 2003. These awards will be formally presented at the opening ceremonies of ICME 10 in Copenhagen.

International Commission on the History of Mathematics (ICHM) – Professor Griffiths reported that ICHM functions similarly to ICMI and supports the journal *Historia Mathematica.*

Committee on Electronic Information and Communication (CEIC) – Martin Grötschel, IMU EC representative, Peter Michor, Chair, and Alf van der Poorten reported in detail about the CEIC activities 1998-2002. The IMU Executive Committee (EC), based on an enabling resolution of the 1998 General Assembly, established the Committee on Electronic Information and Communication (CEIC) at the ICM '98 in Berlin with the following objective in mind: "Information and Communication have become increasingly important components of our research and teaching, and likewise, electronic forms of publication, distribution, and archiving have begun to play a dominant role. Progress in communication technology brings many benefits to mathematics, but there is no doubt that the mathematical community also needs an excellent organizational infrastructure to make best use of the new technologies for its own advancement. CEIC's task is to play an active role in this development in order to ensure that the new technological environment meets the needs of mathematics." The presentation included a brief review of mathematics in the Web, an introduction into Math-Net and the importance of Math-Net Pages for mathematical institutes and departments, a preview on standardized personal pages for mathematical researchers, an outline of the "Best Current Practices Recommendations" on electronic publishing including a review of mathematical preprint servers, a "Call to all Mathematicians" to make publications electronically available, an explanation of CEIC's copyright recommendations, and an outline of plans for a Digital Mathematics Library. CEIC has prepared a booklet that collects CEIC's current recommendations on various aspects of electronic information and communication. These recommendations have been drafted by CEIC members and finalized in open discussions during CEIC's 1998-2002 term. They have been endorsed by the IMU Executive Committee and by the Shanghai General Assembly. The booklet was distributed at the GA in printed form and is available electronically at CEIC's web site http://www.ceic.math.ca. CEIC was reviewed by the IMU EC in its meeting preceding the GA. The EC decided to re-establish CEIC for a second term with revised terms of reference that can also be found at CEIC's web site.

6. Finance and Dues

- The Activities of the Union for the years 1998-2001, as well as the complete audited financial reports, are published in the special Bulletin #48, June 2002.
- The financial report for the years 1998-2001 (Appendix 2) was approved by the General Assembly The budget for the years 2003-2006 was accepted by the General Assembly. It contains a 10% increase in dues (Appendix 4). It was requested that the

Secretary prepare a document explaining the dues increase that would be sent to the Adhering Organizations.

7. Site of the International Congress of Mathematicians 2006

The President announced that the Executive Committee recommends Madrid, Spain, as the site of ICM 2006. Rome, Italy, and Delhi, India, had also submitted proposals, but at the meeting, they kindly expressed their support to the bid by Spain. The GA then unanimously approved Madrid, Spain, to host the Congress in 2006.

On behalf of the Local Organizing Committee, José Luis Fernandez outlined the plans for ICM 2006.

8. Elections

The President clarified that the structure of the EC is a statutory matter. Any proposal to change the structure, e.g. the number of Members at Large, must be submitted to the Secretary at least four months before the General Assembly. For this meeting of the General Assembly, no proposal had been submitted. On the other hand, there are no such limitations concerning the present IMU Commissions ICMI, CDE and ICHM.

It was also clarified that a proposal for Procedures for Elections was sent to all National Committees in 1998 for consideration and adopted by the EC a year later. All information regarding the elections was available on the IMU homepage, and the Committees were directly informed on several occasions.

For the elections at this GA, the Nominating Committee met on the morning of August 18. It adopted the following slates:

EXECUTIVE COMMITTEE (EC)

President:	John M. Ball	(United Kingdom)
Vice-Presidents:	Jean-Michel Bismut	(France)
	Masaki Kashiwara	(Japan)
Secretary:	Phillip A. Griffiths	(USA)
Members at Large:	Andrey A. Bolibruch	(Russia)
	John Friedlander	(Canada)
	Martin Grötschel	(Germany)
	Zhi-Ming Ma	(China)
	Ragni Piene	(Norway)
	Claudio Procesi	(Italy)
	Madabusi S. Raghunathan	(India)
Members at Large From the Floor:	Vaughan Jones	(New Zealand, USA Permanent Position)
	Joram Lindenstrauss	(Israel)

EC: 5 Members at Large to be elected

INTERNATIONAL COMMISSION ON MATHEMATICAL INSTRUCTION (ICMI)

President:	Hyman Bass	(USA)
Vice Presidents:	Jill Adler	(South Africa)
	Michèle Artigue	(France)
Secretary:	Bernard R. Hodgson	(Canada)
Members at Large:	Carmen Batanero	(Spain)
	Mary Elizabeth Falk de Losada	(USA)
	Nikolai Dolbilin	(Russia)
	Peter Lawrence Galbraith	(Australia)
	Petar Stoyanov Kenderov	(Bulgaria)
	Somaskandan Kumaresan	(India)
	Frederick K.S. Leung	(Hong Kong)
Members at Large	M. Asaad	(Egypt)
From the Floor:	Yukihiko Namikawa	(Japan)
	Jian-pan Wang	(China)

ICMI: 5 Members at Large to be elected

COMMISSION ON DEVELOPMENT AND EXCHANGES (CDE)

Chair:	Paulo Domingos Cordaro	(Brazil)
Secretary:	C. Herbert Clemens	(USA)
Members at Large:	Hajer Bahouri	(Tunisia)
	Graciela L. Boente Boente	(Argentina)
	Shrikrishna G. Dani	(India)
	Gérard Gonzalez-Sprinberg	(France)
	Jean-Pierre Gossez	(Belgium)
	Fazal M. Mahomed	(South Africa)
	Toshikazu Sunada	(Japan)
	Jiping Zhang	(China)
Member at Large		
From the Floor:	Leif Abrahamsson	(Sweden)

CDE: 6 Members at Large to be elected

INTERNATIONAL COMMISSION ON THE HISTORY OF MATHEMATICS (ICHM)

Members at Large:	Ahmed Djebbar	(Algeria and France)
	Jeremy John Gray	(United Kingdom)
	Wenlin Li	(China)
	S. Balachandra Rao	(India)
Member at Large		
From the Floor:	Stan Kaijser	(Sweden)

ICHM: 2 Members at Large to be elected

The following are the Committees elected for 2003-2006.

EXECUTIVE COMMITTEE (EC)

President:	John M. Ball	(United Kingdom)
Vice-Presidents:	Jean-Michel Bismut	(France)
	Masaki Kashiwara	(Japan)
Secretary:	Phillip A. Griffiths	(USA)
Members at Large:	Andrey A. Bolibruch	(Russia)
	Martin Grötschel	(Germany)
	Zhi-Ming Ma	(China)
	Ragni Piene	(Norway)
	Madabusi S. Raghunathan	(India)
Ex-officio:	Jacob Palis (Past President)	(Brazil)

INTERNATIONAL COMMISSION ON MATHEMATICAL INSTRUCTION (ICMI)

President:	Hyman Bass	(USA)
Vice Presidents:	Jill Adler	(South Africa)
	Michèle Artigue	(France)
Secretary:	Bernard R. Hodgson	(Canada)
Members at Large:	Carmen Batanero	(Spain)
	Mary Elizabeth Falk de Losada	(Colombia)
	Nikolai Dolbilin	(Russia)
	Peter Lawrence Galbraith	(Australia)
	Petar Stoyanov Kenderov	(Bulgaria)
	Frederick K.S. Leung	(Hong Kong)

Due to a tie in the voting for Members at Large, the President proposed, and the Assembly approved, one additional Member at Large.

COMMISSION ON DEVELOPMENT AND EXCHANGES (CDE)

Chair:	Paulo Domingos Cordaro	(Brazil)
Secretary:	C. Herbert Clemens	(USA)
Members at Large:	Hajer Bahouri	(Tunisia)
	Graciela L. Boente Boente	(Argentina)
	Shrikrishna G. Dani	(India)
	Gérard Gonzalez-Sprinberg	(France)
	Fazal M. Mahomed	(South Africa)
	Toshikazu Sunada	(Japan)
	Jiping Zhang	(China)

Similarly to the case of ICMI, the President proposed, and the Assembly approved, one additional Member at Large.

INTERNATIONAL COMMISSION ON THE HISTORY OF MATHEMATICS (ICHM)

Members at Large:	Jeremy John Gray	(United Kingdom)
	Wenlin Li	(China)

7. Adoption of Resolutions

The Resolution Committee presented proposals of resolutions for approval of the General Assembly. With respect to the proposal in Resolution 8, the President clarified that for the elections at the International Council for Science – ICSU, of which IMU and all main international scientific unions are members, the Nominating Committee is designated by the Executive Committee and meets twice: four months before the GA and at the GA. After discussion, the following resolutions were approved:

Resolution 1

The General Assembly resolves that the next meeting of the General Assembly will be held at a time and place conveniently linked to the International Congress of Mathematicians in Madrid, Spain, in 2006.

Resolution 2

The General Assembly expresses its gratitude to the Organizing Committee of ICM 2002, chaired by Ma, Zhi-Ming.

The General Assembly also expresses its gratitude to Li Ta-tsien for his hospitality reception and excellent arrangements at General Assembly meeting in Shanghai.

Resolution 3

The 14th General Assembly gives warm thanks to the Executive Committee and to the President of IMU for their work during the period 1999-2002.

Resolution 4

The General Assembly gives especial thanks to Phillip Griffiths for his excellent work as Secretary to the IMU over the last four years assisted by Arlen Hastings and Linda Geraci. It also thanks the Institute for Advanced Study (IAS) for its generous support of the IMU secretariat over this period.

Resolution 5

The General Assembly recommends continuing the tradition of the 1994, 1998, 2002 ICMs, by holding an Emmy Noether lecture at the next two ICMs (2006 and 2010), with selection of the speakers to be made by an IMU appointed committee.

Resolution 6

The General Assembly of the IMU endorses the "Best Practices" document of its Committee on Electronic Information and Communication (CEIC), also endorsed by the IMU Executive Committee at its April 13, 2002, meeting. In particular the Assembly endorses the provisions designed to ensure access by mathematicians of the developing world to current mathematical literature: the posting of the articles on personal homepages and servers and the practice now beginning with several publishers of making journal articles in electronic form freely accessible five years after they have been published, or even sooner. An important part of making mathematical literature available is coming to agreement on common standards for digitization. The Assembly commends the CEIC for its work on this matter and urges further efforts in this direction.

Resolution 7

Notwithstanding these times of heightened tension and security concerns, we urge a continuation of scientific exchange and publication. The IMU opposes efforts either by governments, organizations, or individuals to restrict contacts and interactions in the world mathematical community. Specifically, we oppose holding individual mathematicians liable for the actions of their governments. The IMU endorses the principles expressed in the Article 5 of the Statutes of the International Council for Science - ICSU, as adopted at the 1998 General Assembly, that reads as follows: "In pursuing its objectives in respect of the rights and responsibilities of scientists, ICSU, as an international non-governmental body, shall observe and actively uphold the principle of the universality of science. This principle entails freedom of association and expression, access to data and information, and freedom of communication and movement in connection with international scientific activities, without any discrimination on the basis of such factors as citizenship, religion, creed, political stance, ethnic origin, race, colour, language, age or sex. ICSU shall recognize and respect independence of the internal science policies of its National Scientific Members. ICSU shall not permit any of its activities to be disturbed by statements or actions of a political nature".

Resolution 8

The General Assembly of IMU expects the Executive Committee to develop a proposed mechanism to involve members from the National Committees for Mathematics, not on the Executive Committee, to assist in the selection of slates. This proposal should be put forth to the 2006 General Assembly.

Resolution 9

The General Assembly recommends the guidelines for receiving Colloquia support from IMU be further developed and available on the IMU website. These scarce funds should go primarily to supporting mathematicians from developing countries and high quality international conferences that take place in developing countries.

8. Next Meeting of the General Assembly

In connection with Madrid ICM-2006, the next GA will take place in Santiago de Compostela on August 18-19, 2006.

9. Closing

The President thanked the Assembly for its work and declared the 14th General Assembly of IMU closed at 2:10 p.m.

Appendix 1

REPORT ON THE CREDENTIALS COMMITTTEE TO THE 14TH GENERAL ASSEMBLY OF IMU, 2002

The Committee consisted of:
Christer Kiselman, *Chair* (Sweden)
S. D. Chatterji (Switzerland)
Dong Myung Chung (Republic of Korea)

After interviews, the committee determined that the representation of the various members of IMU at this General Assembly are as follows.

a) There are 65 members of the IMU out of which 47 are listed in the Conference Guide, including Hungary, represented by delegate Vera T. Sós.
b) 18 members are not listed in the Conference Guide.
c) Out of the 47 members listed in the Conference Guide all were represented by a least one delegate except Latvia and Romania, which were not represented.

Appendix 2

REPORT OF THE FINANCE AND DUES COMMITTEE TO THE 14TH GENERAL ASSEMBLY OF IMU, 2002

The Committee consisted of:
Jennifer Chase, *Chair* (United States of America)
Uriel Feige (Israel)
E. C. Lance (United Kingdom)
Roberto Markarian (Uruguay)
Alf van der Poorten (Australia)
A. B. Zhizhchenko (Russia)

- The Committee studied the financial report for the years 1998-2001 presented by the Secretary of the IMU, and examined the budget for the period 2003-2006 prepared by the Executive Committee.

- The Committee recommended to the General Assembly the acceptance of the financial report for the years 1998-2001 and the Executive Committee budget for the 2003-2006 period.

- The budget for 2003-2006 has been prepared on the basis of increasing the dues for the different categories of the IMU Members by 10%.

- The Committee expressed its thanks to the Executive Committee and in particular to the Secretary, Professor Phillip Griffiths, for the preparation of the clearly written financial reports and proposed budget.

Appendix 3

REPORT OF THE TELLERS COMMITTEE TO THE 14TH GENERAL ASSEMBLY OF IMU, 2002

The Committee consisted of:
Olav Arnfinn Laudal, *Chair* (Norway)
Marcio Soares (Brazil)
Yun-Tong Siu (USA)
Tao Tang (Hong Kong)

During the discussion before the vote, the name of Franco Brezzi (Italy) was added to the list. The committee was then elected without opposition.

During most of the work of the General Assembly, the Tellers were not asked to function, as the decisions were largely unanimous.

In connection with the elections of the Executive Committee, the Commission on Development and Exchanges, the International Commission on Mathematical Instruction, and for the two members representing IMU in the International Commission on the History of Mathematics, the Tellers did have a role.

To ensure that the different delegations (some including regular delegates and observers) did not exceed their voting rights, the ballots for each delegation were counted before they were collected and the vote-count could begin.

The Tellers had to improvise the vote-count, via a very cumbersome system of copying each vote cast, to a computer programmed tally. This was done in the following way: one member read aloud the names, either checked or circled, on the ballot, controlled by one other member. Each name was then entered into the computer program by one of the secretaries of the IMU (Linda Geraci), again controlled by a member of the Tellers Committee. This process took a long time, but resulted in a rather easy and controllable count, that gave the following outcome:
There were cast 116 votes. At least two ballots were judged partly faulty, either by having too many names circled, or by having unclear indications. To be able to certify the results, the number of votes cast had to be compared to the number of confirmed delegations and the sum of their voting rights. This turned out to be a problem, since the official list of delegates did not reflect the real composition of the General Assembly. After some counts and recounts (and finally, basing the count on the list of delegates at the General Assembly 2002, issued by the IMU after the meeting), it became clear that the total voting rights added up to (120), well above the number of votes cast!

The chair of the Tellers had, in the process, informed the President that, for the International Commission on Mathematical Instruction (ICMI) there were two candidates with the same number of votes, and that if the number of voting rights did not add up to the number of votes cast, there would be a problem also for the results of the election of the Commission on Development and Exchanges (CDE). The President then proposed that the International Commission on Mathematical Instruction (ICMI) be extended by one member, and the General Assembly agreed.

The Chair of the Tellers Committee then proposed that the General Assembly decide whether the complete tally or just the results, i.e. just the names of those elected, should be read. The Assembly decided that it wanted to hear only the names of the elected members of the different committees.

Recommendations: I: The elections should be better prepared. First, the Credentials Committee should check the list of delegates prepared by the organizers against the delegates present at the opening of the General Assembly, and provide a list of delegations present together with the sum of the voting rights present at each election. Then two secretaries should be prepared to share the job of entering the results of the vote on computers programmed like the one used in Shanghai (proposed by Yun-Tong Siu and beautifully taken care of by Linda Geraci). One should be prepared to act in case two or more candidates obtain equal (and minimal) number of votes, either by recounting (which would be very time consuming) and deciding by lot, or by extension of the Committee in question, as was done in Shanghai.

II. Bulletin #48 of the IMU contains several errors/misprints, for example one on page 25 where Norway is put in Group I, instead of group II. This type of error may have an adverse effect on the work of the Tellers.

III. Reading through the newly distributed list of delegates and observers, I am not entirely convinced that it reflects the reality of the presence during the last day of the Assembly in Shanghai. (I was convinced that Egypt was present, and that Cameroon and Kazakhstan were not!)

Respectfully,
Olav Arnfinn Laudal

Appendix 4

INTERNATIONAL MATHEMATICAL UNION

Approved Budget for the years 2003-2006, in Swiss Francs

EXPENDITURE

Schedule A:	**1995-1998**	**1999-2002**	**2003-2006**
Secretarial help, IMU office	15,000	17,000	20,000
Secretarial help, President	3,000	5,000	5,000
Accountant	0	0	8,000
ICMI	11,000	11,000	15,000
CDE	6,000	6,000	7,000
Office expenses (including postage)	8,400	14,400	16,000
Travel expenses of the EC	27,600	30,000	30,000
President's and Secretary's expenses	2,000	4,000	4,000
Contribution to ICSU	7,000	7,000	9,500
IMU Bulletin	2,000	3,000	5,000
Audit fee	2,000	4,500	7,000
General Assembly - 2002	4,000	4,000	4,000
World Directory of Mathematicians	20,000	20,000	20,000
Contingencies	2,000	2,000	2,000
Subtotal	**110,000**	**127,900**	**152,500**

Schedule B:			
Symposia, conferences, IMU lecturers	65,000	86,000	95,000
ICMI scientific activities	22,000	22,000	27,000
CDE scientific activities	40,000	33,000	40,000
Program Committee for ICM 06	6,000	8,000	8,000
Travel grants	25,000	40,000	42,000
Subvention to ICM 02	26,000	28,000	28,000
CEIC scie			25,000
Subtotal	**184,000**	**217,000**	**265,000**
Total	**294,000**	**344,900**	**417,500**

INCOME

Membership dues (212 x 1320)	210,000	254,400	279,840
ICSU subvention	26,000	10,500	10,500
Sales of W.D.M.	10,000	12,000	14,160
Special Development Fund	25,000	45,000	72,000
Interest on bank accounts	23,000	23,000	41,000
Total	**294,000**	**344,900**	**417,500**

Appendix 5

14th General Assembly of IMU
Shanghai, China
August 17-18, 2002

LIST OF DELEGATES AND OBSERVERS

COUNTRY	GROUP	NAME
Armenia	I	Yengibaryan Norayr
Australia	III	Derek W. Robinson
		Ian H. Sloan
		Alf Van der Poorten
Austria	II	Peter Gruber
		Peter Michor
Belgium	III	J. A. Thas
		J. Schmets
		F. Dumortier
Bosnia and Herzegovina		Muharem Avdispahic (observer)
Brazil	III	Suely Druck
		Marcio G. Soares
		Daciberg Lime Gonçalves
Canada	V	Ken Davidson
		Nassif Ghoussoub
		Jacques Hurtubise
		Christiane Rousseau
		Cameron Stewart
China, Chinese Mathematical Society	V	Li Daqian (Li Tatsien)
		Ma Zhi-Ming
		Zhang Gong Qing
China, Mathematical Society Located at Taipei		Fon-Che Liu
		Kuo-Shung Cheng
Cuba	I	Mauro Garcia Pupo
Denmark	II	Ib Madsen
		Bodil Branner
Finland	II	Olli Martio
		Olavi Nevanlinna
France	V	Doina Cioranescu
		Albert Fathi
		Michéle Vergne
		Jean-Christophe Yoccoz
		Michel Thera (observer)
		Michel Waldschmidt (observer)
Republic of Georgia	II	David Natroshvili

COUNTRY	GROUP	NAME
Germany	V	Peter Gritzmann
		Ehrhard Behrends
		Helene Esnault
		Gotz Alefeld
		Andreas Brieden
		Joachim Heinze (observer)
Greece	I	Nicolas Artemiadis
Hong Kong	I	Tao Tang
Hungary	III	Vera T. Sós
India	III	P. L. Sachdev
		M. Vidyasagar
		K. B. Sinha (observer)
Iran	II	Mehdi Behzad
		Alireza Medghalchi
		Ali Iranmanesh
Ireland	II	Richard Watson
Israel	V	Uriel Feige
		Gitik Moti
		Linial Nathan
		Ofer Zeitouni
Italy	V	Alberto Conte
		Giuseppe Anichini
		Franco Brezzi
		Aljosa Volcic
Ivory Coast	I	Desquith Etienne
Japan	V	Kenji Ueno
		Toshikazu Sunada
		Yukihiko Namikawa
		Shigeo Kusuoka
		Toshiyuki Katsura
		Takao Matsumoto (observer)
Republic of Korea	II	Dong Myung Chung
		Yong Seung Cho
		Young Do Chai (observer)
Latvia	I	Andrejs Reinfelds
Mexico	II	José A. de la Peña
		Carlos Signoret Poillon
New Zealand	I	Rob Goldblatt
Norway	II	Ragni Piene
		Olav Arnfinn Laudal
		Erling Störmer (observer)
Peru	I	Roger Javier Metzger Alvan
Poland	III	B. Bojarski
Portugal	I	Carlos Coelho

COUNTRY	GROUP	NAME
Philippines	I	Jose Maria P. Balmaceda
Romania	I	Ivan Singer
Russia	V	L. D. Faddeev
		Yu. L. Ershov
		V. A. Sadovnichiy
		A. B. Zhizhchenko
		V. A. Vasiliev
Singapore	I	Eng-Chye Tan
Slovak Republic	II	Michal Zajac
South Africa	II	M. Bopape
		Sizwe Mabizela
Spain	III	Eduardo Casas
		Carlos Andradas Heranz
		Carles Casacuberta
		Jose Luis Fernandez (observer)
		Juan M. Viano Rey (observer)
Sweden	IV	Christer Kiselman
		Michael Benedicks
		Ulf Persson
		Hans Wallin
		Sten Kaijser (observer)
Switzerland	IV	Gerhard Wanner
		S. D. Chatterji
		Rolf Jeltsch
United Kingdom	V	J. M. Ball
		E. C. Lance
		T. J. Lyons
		M. J. Taylor
		D. J. H. Garling
United States	V	Donald Saari
		Salah Baouendi
		Jennifer Chayes
		David Eisenbud
		Yum-Tong Siu
Uruguay	I	Roberto Markarian
Venezuela	I	Eduardo Lima de Sa
Vietnam	I	Pham The Long
Yugoslavia	II	Miloica Jaćimović

International Congress of Mathematicians 2002
August 20-28, 2002
Beijing, China

The opening ceremony was held in the Great Hall of the people at 3:00 p.m. on August 20.

Speech by Jacob Palis
President of IMU

Dear Colleagues, Ladies and Gentleman:

I am greatly honored and pleased to welcome you all to ICM 2002, the 24th International Congress of Mathematicians.

This is in many ways a very special Congress. Indeed, it is the first in the new Millennium and, therefore, we are bringing the dreams of Cantor and Felix Klein, dreamed in the late 1900s, into the 21st Century. They realized, then, that mathematics was becoming too large and diversified a subject and that was almost impossible for one person to embrace, like probably was the case of Monge, Laplace, Lagrange and Gauss, among others, at the turn of the 19th Century. Thus, interaction among mathematicians both at a national and international level was the clear road for its development. Their dream was not only robust in time, but has grown in dimension; mathematics has become more and more international, and solidarity across countries has been increasing at a fast pace. This is occurring not only at a world basis, particularly through the activities of IMU, among which the ICM is a major event, but also in regional scenarios, as indicated by the rather recent creations of the European Mathematical Society and the Latin American and Caribbean Mathematical Union, following that of the African Mathematical Union and of the International Council for Industrial and Applied Mathematics. The first two organizations are affiliated to IMU, and we have solid relations with the last ones.

The 24th ICM is also unique because for the first time it is taking place in a developing country, and in fact in the fastest growing country in the world at present, with a population which is about a fourth of humanity. Per se this makes the ICM more inclusive and being inclusive is a basic principle of our Union, as also shown by our joint efforts with the Local Organizing Committee in providing the opportunity to more than 400 colleagues, young and senior, from less affluent parts of the world, to participate in the Congress. By having the Congress here, we are giving our trust to China for its commitment to mathematics and in particular to its young talents. But China is also paying a precious tribute to the Union, by the presence among us, for the first time in our history, of the highest authority of the host country, President Jiang Zemin. About a year and a half ago, he accepted our invitation to be in this Opening Ceremony and jointly with us award the Fields Medals. In doing so, the President is showing his appreciation for our science and its importance to the world of today. We are very confident that the Congress here in China will mark a formidable change in the level and scope of activities of mathematics in this country: a tree that was planted by S.S. Chern, L. K. Hua and K. Feng, as well as by C.H. Gu, W. T. Wu and S. Liao, and more recently S. T. Yau and G. Tian, among others.

This Congress is also a culmination of an intense period of activities in mathematics throughout the world, as well as for achieving a certain maturity concerning the perspective for its future development. In this respect, besides fundamental research, the importance of the interaction of mathematics with other areas of science, beyond the classical case of physics, is now largely accepted. Also, more emphasis in applications is to be given. Moreover, there should be no division between pure and applied mathematics in accordance with Pasteur's beautiful sentence that there is no applied science, but applications of science. In terms of activities, we had an intense celebration of the Year 2000 as the World Mathematical Year: IMU published a book "Mathematics: Frontiers and Perspectives"; co-sponsored major conferences in Europe, Latin America, Africa and Asia, one of them through its Commission on Mathematical Instruction, and promoted many mathematical exhibitions and events directed to the general public. Such a celebration was part of a Declaration made by Jacques-Louis Lions, in Rio de Janeiro, in 1992.

Unfortunately, I have to register that he, Jurgen Moser and Lion's former adviser, the Fields Medalist Laurent Schwartz passed away in the last years. Of prime importance in this period, has been the activity of the Union's Committee on Electronic Information and Communication and the work of the IMU Commissions on Development and Exchanges (CDE), Instruction (ICMI) and History (ICHM).

The present Congress is also special in other ways. For the first time, the IMU General Assembly has elected a woman to its Executive Committee and also a Chinese. Furthermore, at this occasion, the mathematical community can commemorate the creation of two new prizes. The first, called the Gauss Prize for Applications of Mathematics is to be jointly awarded once every four years by IMU and the German Mathematical Society. The second, in honor of Abel, shall be awarded every year by the Norwegian Academy of Sciences: similar to the Nobel Prize, it has the potential to change, in years to come, the landscape of mathematics in the world scenario of sciences.

Finally, on behalf of all of us, I wish to express our sincere gratitude to the Chinese Institutions that made the Congress possible and most especially to our colleagues Zhi-Ming Ma, K.C. Chang, Daqian Li, Weiyue Ding and Ya-xiang Yuan for their warm reception and excellent organization.

Thank you very much.

Speech by Zhou Guangzhao
Vice Chairman, Standing Committee of NPC
President of the China Association for Science and Technology - CAST

Ladies and gentlemen:

Today, we are particularly overjoyed at the grand opening of the 24th International Congress of Mathematicians. On behalf of the China Association for Science and Technology and the Chinese scientific community, I would like to express our warmest welcome to participants from all over the world and our sincere congratulations to the newly awarded Fields medalists and the winner of the Nevanlinna Prize.

The reason of our being particularly overjoyed lies primarily on the fact that the subject of this Congress is mathematics, which has been respected as "the queen of sciences" for its brilliant intellectual accomplishments, as suggested by the examples of the discovery of Gödel's theorem and the proof of the Fermat Last theorem in the last century.

Mathematics is also "the servant of sciences" as explained by the great German mathematician Gauss when he spoke of "the queen of sciences". In the past century the application of mathematics witnessed rapid and more exciting development. The highly abstract languages, structures, methods and ideas created by mathematicians have been repeatedly proven to be universal instruments useful to other fields of science and technology and to economic and social development. This truly reflects the marvelous and close relations between mathematical theories and the objective world. Just by mentioning Riemann geometry and the theory of Relativity, Turing machine and the real computers, Radon integral and the CT scanners, we can see that mathematics is exerting more and more important influence on the modern civilization and social progress.

China had created glorious scientific and technological achievements in ancient times before a decline set in some three or four centuries ago. In 1915, the first Chinese comprehensive scientific society -"the Chinese Society for Science" was founded. Its founders were a group of students studying abroad, including a mathematician who was the first Chinese Ph.D. in mathematics. Starting with only 180 members at the beginning, the seeds it sowed are blossoming and bearing fruits in China today. The reform and opening up policy that China has adopted since 1978 has given tremendous impetus to the country's science and education. We have built up a well-distributed system of research and a network of academic societies. Our scientists are working on many frontier projects in various fields. In the past 20 years Chinese scientists succeeded in constructing the electron-positron collider, developing large computers and strong laser light sources, breeding hybrid rice and determining genetic codes, developing sophisticated word processing systems for Chinese characters, and setting up terrestrial stations for satellite remote sensing and nation-wide network for ecology observations. In mathematics, Chinese scholars have achieved important results in fields such as number theory, theorem-proving by computer, differential geometry, topology, complex analysis, probability and mathematical statistics, PDE, functional analysis, numerical analysis and control theory and so on.

Today, we have entered a new age, in which the social development is more dependent than ever before on the advancement of knowledge. This situation has brought about both opportunities and challenges to the development of science and technology in China. We have to work hard to keep pace with science and technology development in the world and strive to make greater contributions to the progress of human society. Science is an international endeavor, and no nation could be successful in isolation. International exchanges and cooperation in mathematics is of greater significance. As a universal language of science, mathematics plays a unique role in merging diverse cultures on the Earth. A typical example is the transmission of the oriental decimal numeration and the Greek geometry in history. I hope sincerely that the first International Congress of Mathematicians in the 21st century will open a new page in the history of world cultural exchanges. We will continue our efforts to promote international cooperation in science and technology.

In conclusion, I wish the Congress a great success, and hope that you all enjoy your stay in Beijing.

Thank you very much.

Speech by Chern Shing-shen

It is my great pleasure to welcome you to this gathering. We are in an ancient country that is very different from Western Europe where modern mathematics started. In 2000, we had a mathematics year, an effort to attract more people to math. We now have a vast field and a large number of professional mathematicians whose major work is mathematics. Mathematics used to be individual work. But now we have a public. In such a situation a prime duty seems to be to make our progress available to the people. There is clearly considerable room for popular expositions. I also wonder if it is possible for research articles to be produced by a historical and popular introduction. The net phenomenon could be described as a globalization. It is more than geographical. In recent studies different fields were not only found to have contacts, but were merging. We might even foresee a unification of mathematics, including both pure and applied, and even the possibility of the emergence of a new Gauss.

China has a long way to go in modern mathematics. In recent contests of the international mathematical Olympiad China has consistently done very well. Thus China has begun from the roots and China has the advantage of "number" (of people). Hopefully this Congress will be a critical point in the development of modern math in China. The great Confucius guided China spiritually for over 2000 years. The main doctrine is "?"?pronounced "ren"?, meaning two people, i.e., human relationship. Modern science has been highly competitive. I think an injection of the human element will make our subject more healthy and enjoyable. Let us wish that this Congress will open a new era in the future development of math.

Speech by Li Lanqing
Vice-Premier of the People's Republic of China

Respected President Jiang Zemin, Respected IMU President Mr. Palis, distinguished Guests, Ladies and Gentlemen:

Today, mathematicians from all over the world are gathering here for the first International Congress of Mathematicians in the new millennium. On behalf of President Jiang Zemin and the Chinese government, I have the pleasure to extend to you our warmest welcome.

No one could have imagined the extraordinary evolution of science and technology over the past century. Space exploration, nuclear energy, computers and information technology, not to mention biological engineering, are all milestones that mark a new era of knowledge for humankind. Our social progress depends on scientific innovation, and mathematics is fundamental to science. Mathematics expressed the theory of relativity and the quantum mechanics in the early 20th century; since then mathematicians has played a vital role in inventing computers, designing space and energy programs, and investigating the structure of DNA molecules. Mathematics is the language of the universe.

Mathematical methods are used extensively in economics, medicine, agriculture, architecture, arts and all other fields of modern knowledge. As Roger Bacon pointed out, mathematics is the key to all branches of science. Today mathematics is the keystone of high technology, and, in a sense, the symbol of modern civilization. In this light, the Chinese government is especially delighted to see this congress being held in Beijing. As President Jiang Zemin clearly expressed when he met with Professor Chern Shing-shen, IMU President Palis and other mathematicians in October 2000, "the Chinese government fully supports hosting the 2002 International Congress of Mathematicians in Beijing. China wishes to take this opportunity to promote math research and education in the country, in an effort to bring them up to the world advanced level in the early 21st century and lay a solid foundation for the future progress of science and technology in China."

As a developing country, China is marching on the road toward modernization. It has been a century-long pursuit for the Chinese people to revitalize their country through development of science and education. This historical process has been even further accelerated in the last two decades by reform and opening up policies, as both young talents and accomplished experts emerge in great numbers on the international scientific scene. The Chinese government has fully supported all endeavors to pursue this development, including a series of programs launched nationwide to promote basic scientific research, especially in mathematics. For example, in the past four years, the National Science Foundation of China has doubled its funding for mathematics, and the government has allocated thousands of millions of yuan to support the Pilot Knowledge Innovation Program in the Chinese Academy of Sciences. We are aware that China still has a long way to go before reaching the advanced world levels in science and technology. Science knows no boundaries. The advancement of science requires peace, stability and cooperation. In this regard, I believe that the International Congresses of Mathematicians, with over a hundred years of tradition, sets the example. Hosting the 24th Congress in Beijing is a good opportunity for Chinese scientists to learn from and to cooperate with their colleagues abroad. I hope that this congress will mark a new starting point for the development of mathematics and science in China. As the first congress ever held in a developing country, I also hope that this congress will inspire a new era of international cooperation for global scientific community.

In about 10 minutes' time, the new Fields medalists and the winner of the Nevanlinna Prize will be announced and awarded. I would like to take this opportunity to offer them my sincere congratulations. Their achievements not only represent their distinguished contributions to mathematics, but to world cooperation and the well-being of all humankind.

In conclusion, I wish this congress a great success, and all our guests a memorable stay in China.

Thank you!

Speech by Liu Qi
Mayor of Beijing

Dear Delegates, Dear Guests, Ladies and Gentlemen:

Good afternoon! Today, I feel very honored to be present at International Congress of Mathematicians 2002. Here, on behalf of Beijing Municipal Government and the thirteen million people of the city, I would like to extend my sincere congratulations to the opening of this congress and express my warm welcome to scientists and guests participating in the conference.

ICM is committed to the research in one of the most basic disciplines of human knowledge. The intellectual fruits achieved in the field by mathematicians exert far-reaching influences on the progress of science and technology of human society and on the development of social culture and people's way of life. The fact that this conference is the first of its kind in the new century and the first session ever held in a developing country has given special significance to this meeting. The Municipal Government and myself are very pleased to be able to provide support and service to the meeting and we wish to present our highest compliments to mathematician and their exploration of reason.

The mathematic tradition in Beijing can be traced back to ancient times. Since the end of the nineteenth century, Beijing has played an important role in promoting the scientific and cultural exchanges between the east and the west. The city has nurtured numerous brilliant mathematicians, from Zhu Shijie in the thirteenth century to professor Chen Xingshen who is present here today. Now, Beijing continues to maintain its position as China's major center of mathematic education and research. Some two thousand mathematicians from the mathematic departments of tens of universities and research institutions such as Chinese Academy of Sciences are engaged in the education and high-level research of the field in an all-round way. At the same time, they keep extensive and close contacts and cooperate with their colleagues from countries and regions around the world.

Isn't it a pleasure to have friends from afar! The ancient and modern city continues its three thousand years history of civilization and composes its ode to the 2008 Olympics. We sincerely welcome you to tour around the city during your spare time. The city's historical monuments and sites will demonstrate you the charm of Chinese culture. The rapid development will bring your thoughts to the future of an international metropolis. I hope that all the guests will have a pleasant and efficient stay in Beijing and a beautiful memory in your heart.

May the conference be a complete success!

Thank you.

Speech by Ma Zhi-Ming
Chairman of the Organizing Committee of the ICM-2002
President of the Chinese Mathematical Society

Ladies and Gentlemen:

After four years of preparation, the 24th International Congress of Mathematicians is now opening. It is my great honor on behalf of the Local Organizing Committee and the Chinese Mathematical Society to welcome you all to the ICM-2002 in Beijing.

Four years is long for expecting, but short for preparing. Since the 13th General Assembly of the International Mathematical Union in Dresden in 1998, at which Beijing was chosen as the site of ICM-2002, Chinese mathematical community has been racing against time to work for today's ICM-2002. The first step was the setting up of the Local Organizing Committee in September of 1998, right after the Berlin Congress. The Committee, consisting of representatives from Taiwan, Hong Kong and overseas Chinese mathematicians, has been cooperating closely with the Executive Committee of IMU to ensure a smooth and effective preparation of this Congress. The preparation of the Congress is a symphony of international cooperation. I would like to take this opportunity to thank colleagues world-wide who have rendered all kinds of help and assistance. I am indebted in particular to IMU President Jacob Palis, Past President David Mumford, and Secretary Phillip Griffiths for their all-out support. Special thanks goes also to my German predecessor Professor Martin Groetschel, whose experiences of organizing the Berlin Congress are really helpful to us. The preparation of the Congress has won wide social and governmental support in China. The support from the government is evidenced by the presence of President Jiang Zemin and other Chinese leaders at this opening ceremony. The financial support from the Chinese government was even more than expected. The Organizing Committee of ICM-2002 is grateful to the Chinese ministries and agencies that were listed on the slide shown left, the total of their funding is 10 million Chinese yuan, which amounts to about 1.2 million US dollars.

The spirit for the ICM-2002 has been high among the Chinese public. Many Chinese scholars, teachers, industrialists, and even students were eager to contribute not only to help to prepare a successful ICM, but also to make the Congress a new start point for development of mathematics in China. Regarding the donations only, the Organizing Committee has received contributions of 3 million Chinese yuan from universities, industries and individuals. This amount is significant in view of that China is still a developing country. Please watch the slides at left, which show the major donors, and I, in the name of the Organizing Committee of ICM-2002, would like to extend to them our sincere thanks.

While the financial support is important, the scientific program is always the core of the Congress. Thanks to the Program Committee headed by Professor Y. Manin and the 19 international panels, the selected 20 plenary lectures and 174 invited lectures will, I believe, represent the latest advancement and frontier achievements in our science. The lectures given by the newly awarded Fields medalists and winner of the Nevanlinna Prize will of course highlight the scientific program of the Congress. On the other hand, more than 1200 short communications and poster presentations arranged by the local scientific committee will reflect the widespread active participation in the development of mathematics in recent years.

Up to now, the ICM-2002 has 4,270 registered participants from 101 countries and regions, among whom 1 percent are from Australia, 3 percent from Africa, 56 percent from Asia, 16 percent from America, 24 percent from Europe. As the ICM held for the first time in a developing country, we see from above statistics that the percentage of the participation of mathematicians from developing countries is above 52 percent. The success of the financial program enabled us to make good our promise by various means to support financially about 400 scholars from developing countries and Eastern Europe (here I should thank the IMU for covering international traveling expenses for approximate 200 participants who are young mathematicians from developing countries and mathematicians from Eastern Europe, Africa and Latin America). In addition, the Organizing Committee has supported a number of mathematicians from western part of China as well.

Keeping in mind that it is the first ICM of the 21st century, the Organizing Committee has paid due attention to the programs for the general public, and considered it to be important for a new information era to attract the public to modern mathematics. Public talks on a range of topics and special activities related to the Congress were arranged for that purpose. Part of them are shown on the slide, among which I would like to mention here two examples: the Juvenile Mathematics Forum and the ICM-2002 Mathematics Summer Campus, both were organized to raise the enthusiasm of young generation to mathematics that may have impact on the future of mathematics.

The 46 satellite conferences form a landscape of ICM-2002. The slides show the list of satellite conferences, which are distributed geographically over 26 cities in different parts of China as well as 6 cities in Japan, Russia, Singapore, South Korea and Viet Nam. Almost for each satellite conference there is a story of international cooperation, the participation in of a number of Fields medalists, winners of Wolf Prize and winners of Nobel Prize made the whole program even more inspiring. Though it has been a tradition of ICMs to have a series of satellite conferences, the ICM-2002 makes the satellite conference program broader in scale and more meaningful to a successful ICM. I would like therefore to express my thanks to all the local organizers of satellite conferences for their contribution.

Last but not the least, a few words about the logo of the ICM-2002. The design was based on a diagram drawn by the 3rd century Chinese mathematician Zhao Shuang to demonstrate Pythagoras theorem that appeared in ancient China first in Zhou Dynasty? 11th century B.C-3rd century B.C?. Some inspirations were put in to transform it to our logo. Let me show quickly by the video how does it make sense. First, by opening the edge of the outer square and enlarging the square inside, it will symbolize that mind of mathematicians are open, and that China is open. Next, varying colors make the diagram more like a rotating pinwheel to symbolize the hospitality of Beijing people. (Pinwheel is a folk toy which you may see children in Beijing's hutong playing with and greeting you: "Welcome, welcome!) Welcome to ICM-2002, welcome to Beijing. Let us join hands to lift the veil of a new epoch of mathematics. I wish the congress a great success, and wish you all pleasant stay in Beijing.

Speech by Wu Wen-Tsun
Chairman of the International Congress of Mathematicians 2002

Ladies and Gentleman:

Sixteen years ago I attended as an observer on behalf of the Chinese Mathematical Society the 10th General Assembly of the International Mathematical Union in Oakland, at which CMS became a member of the IMU. I am very happy to see that the cooperation between Chinese mathematicians and the international mathematical community has been developing rapidly and fruitfully since then, and the inspiring progress is demonstrated today by the opening of the 24th ICM in Beijing. It is a high privilege and an honor for me to extend to you my warmest welcome.

Our science-mathematics, is an age-old yet evergreen field of human knowledge. The vitality of mathematics is, it seems to me, from its dealing with the numerical relation and spatial form in the most general sense. Numbers and forms, in the final analysis, reflect the most essential characters of things in the actual world. It is therefore no strange that the abstract theories and methods investigated by mathematicians would pervade almost all fields of science and technology. "Each science", as pointed out by Karl Marx, "could be considered to be perfect only if it permits the successful application of mathematics".

Mathematics gives, directly or indirectly, impetus to the development of productive forces as well. I mention here only one example-the revolutions of the communication industry, which would not have been possible without the mathematical physics from Gauss to Maxwell, and more recently without Turing and von Neumann's ideas of computers. It is therefore not without reasons that Napoleon has once said "the advancement and perfection of mathematics are intimately connected with the prosperity of the State". I prefer to quote again non-mathematician's viewpoint on the value of mathematics to avoid arousing suspicion of mathematicians' boast.

We are at the beginning of a new century. The unique situation of mathematics, different from any previous century at the turn, appears to be caused by the impact of the computers. Computers provide new tools, raise new problems, and allow new applications of mathematics. All that, I believe by my own research experience, will make a genuine new century of mathematics. It might be more challenging and promising to Chinese mathematicians whose country is struggling for transition from a developing society to the information and knowledge-based society.

Modern mathematics has historical roots of diverse civilizations. Mathematical activities in ancient China can be traced back to early time. The major pursuit of the ancient Chinese mathematicians was to solve problems expressed in equation. Along this line they contributed the decimal place-value numeration, negative and irrational numbers, various techniques for solving equations… etc. It is believable that ancient Chinese mathematicians had active knowledge exchanges with middle Asia and even Europe through the Silk Road. Today we have railways, airlines and even information highway instead of the Silk Road, the spirit of Silk Road-knowledge exchanges and cultural mergence ought to be greatly carried forward. I hope that the International Congress of Mathematicians 2002, held for the first time in a

developing country, will open a glorious new page in the universal cooperation of mankind and bring with a prosperous future of our mathematical sciences.

I wish the Congress success and wish you all a nice stay in Beijing.

Presentation of the Fields Medals

Jacob Palis together with President Jiang Zemin presented the 2002 Fields Medals to Laurent Lafforgue, Institut des Hautes Ètudes Scientifiques, France, and Vladimir Voevodsky, Institute for Advanced Study, United States. Gérard Laumon of the Université de Paris-Sud presented the work of Professor Lafforgue, and Christophe Soulé of IHES presented the work of Professor Voevodsky.

Presentation of the Rolf Nevanlinna Prize

Phillip Griffiths presented the 2002 Rolf Nevanlinna Prize to Madhu Sudan, Massachusetts Institute of Technology, United States. Shafi Goldwasser of MIT presented the work of Professor Sudan.

ICM 2002-Closing Ceremony

The closing ceremony was held on Wednesday, August 28, 2002, at 4:00 p.m. in the main lecture hall of the Beijing International Conference Center.

Speech by Jacob Palis
President of IMU

Dear Colleagues, Ladies and Gentlemen,

At this moment, we are closing one more International Congress of Mathematicians, the 24^{th} of a series that started in 1897 in Zurich in a span of more than one hundred years.

Thus, it's time to try to respond to the questions: Is it worthwhile to have such a comprehensive Congress, covering an impressive array of areas of mathematics, with 20 plenary talks, 174 invited lectures and many short communications? Were the lectures well presented in trying to reach a large mathematical audience, avoiding technical details and in offering an overview of the themes discussed and the prospect for research in the future? Is it still attractive to a significant number of mathematicians from all over the world? Has it been organized in a way that led to the presence of a magical atmosphere combining friendship and inspiration for creativity in mathematics?

We have posed so many difficult questions and yet we are absolutely certain that the answers are all very positive. Indeed, the echoes from the participants are overwhelming: The Congress was one of the best ever. The lectures provided, to a large extent, a grand vision of today's mathematics and its prospect for tomorrow.

About 4,300 colleagues from 101 countries were present, among whom 2,700 are foreigners. Jointly, IMU and the Local Organizing Committee have supported the participation of about 450 foreign mathematicians from developing countries. A substantial part of the IMU support came from its Special Development Fund, to which the following institutions have contributed in the period 1998-2002: American Mathematical Society, Mathematical Society of Japan, London Mathematical Society, Brazilian National Research Council, Societé Mathematique de France and Wiskundig Genootschap Netherlands. To them we express our best thanks. Therefore, it's time to look to the future with optimism and determination in the pursuit of our dreams, in search of beauty in mathematics and its use to well serve society.

It's time also to warmly thank the Local Organizing Committee for their wonderful job. I wish I could name all 300 volunteers engaged in the organization, but I have to content myself in citing only five: Pei Zhuan, Luo Yang, Bao Ying, Li Yingjie and Hong Weizhe. As a symbol of the fine administrative support, I want to mention Ms Guo Wei. Our highest appreciation goes to President Jiang Zemin for honoring the Congress with his presence at the Opening Ceremony and for co-awarding the Fields Medals: hopefully, such a gesture by the highest dignitary of the host country may become, from now on, a tradition in the ICMs. Also we offer our sincere gratitude to the Chinese Institutions for their remarkable support in so many ways and to the Program Committee for the superb work in their choice of speakers.

Now, I want to finalize my words by presenting the main results of the 14th General Assembly that took place in Shanghai and again remarkably well prepared:

The officers of the International Mathematical Union for 2003-2006 are as follows:

EXECUTIVE COMMITTEE

President:	John M. Ball	(United Kingdom)
Vice-Presidents:	Jean-Michel Bismut	(France)
	Masaki Kashiwara	(Japan)
Secretary:	Phillip A. Griffiths	(USA)
Members at Large:	Andrey A. Bolibruch	(Russia)
	Martin Grötschel	(Germany)
	Zhi-Ming Ma	(China)
	Ragni Piene	(Norway)
	Madabusi S. Raghunathan	(India)
Ex-officio:	Jacob Palis (Past President)	(Brazil)

COMMISSION ON DEVELOPMENT AND EXCHANGES (CDE)

Chair:	Paulo Domingos Cordaro	(Brazil)
Secretary:	C. Herbert Clemens	(USA)
Members at Large:	Hajer Bahouri	(Tunisia)
	Graciela L. Boente Boente	(Argentina)
	Shrikrishna G. Dani	(India)
	Gérard Gonzalez-Sprinberg	(France)

	Fazal M. Mahomed	(South Africa)
	Toshikazu Sunada	(Japan)
	Jiping Zhang	(China)

INTERNATIONAL COMMISSION ON MATHEMATICAL INSTRUCTION (ICMI)

President:	Hyman Bass	(USA)
Vice Presidents:	Jill Adler	(South Africa)
	Michèle Artigue	(France)
Secretary:	Bernard R. Hodgson	(Canada)
Members at Large:	Carmen Batanero	(Spain)
	Mary Elizabeth Falk de Losada	(Colombia)
	Nikolai Dolbilin	(Russia)
	Peter Lawrence Galbraith	(Australia)
	Petar Stoyanov Kenderov	(Bulgaria)
	Frederick K.S. Leung	(Hong Kong)

INTERNATIONAL COMMISSION ON THE HISTORY OF MATHEMATICS (ICHM)

Members at Large:	Jeremy John Gray	(United Kingdom)
	Wenlin Li	(China)

The Executive Committee also designated the following members for its Committee on Electronic Information and Communications:
Pierre Berard (France), Jonathan Borwein--Chair (Canada), John Ewing (United States), Martin Grötschel--EC representative (Germany), Alejandro Joffre (Chile), Peter Michor (Austria), David Morrison (United States), and Alf van der Poorten (Australia).

Various resolutions were voted at the General Assembly. Particularly, I would like to mention four of them:

Resolution 1
The General Assembly resolves that the next meeting of the General Assembly will be held at a time and place conveniently linked to the International Congress of Mathematicians in Madrid, Spain, in 2006.

Resolution 2
The General Assembly expresses its gratitude to the Organizing Committee of ICM 2002, chaired by Ma, Zhi-Ming. The General Assembly also expresses its gratitude to Li Ta-tsien for his hospitality, reception and excellent arrangements at the General Assembly meeting in Shanghai.

Resolution 4
The General Assembly gives especial thanks to Phillip Griffiths for his excellent work as Secretary to the IMU over the last four years assisted by Arlen Hastings and Linda Geraci. It also thanks the Institute for Advanced Study (IAS) for its generous support of the IMU secretariat over this period.

Resolution 7
Notwithstanding these times of heightened tension and security concerns, we urge a continuation of scientific exchange and publication. The IMU opposes efforts either by governments, organizations, or individuals to restrict contacts and interactions in the world mathematical community. Specifically we oppose holding individual mathematicians liable for the actions of their governments. The IMU endorses the principles expressed in the International Council for Science (ICSU) ARTICLE 5 of STATUTES. Article 5 of the Statutes of ICSU, as adopted at the 1998 General Assembly, reads as follows:
In pursuing its objectives in respect of the rights and responsibilities of scientists, ICSU, as an international non-governmental body, shall observe and actively uphold the principle of the universality of science. This principle entails freedom of association and expression, access to data and information, and freedom of communication and movement in connection with international scientific activities, without any discrimination on the basis of such factors as citizenship, religion, creed, political stance, ethnic origin, race, colour, language, age or sex. ICSU shall recognize and respect independence of the internal science policies of its National Scientific Members. ICSU shall not permit any of its activities to be disturbed by statements or actions of a political nature.

All the resolutions will be published in the IMU Bulletin.

Thank you very much.

Abderrahman Boukricha
Speech on behalf of the grantees of the Special Development Funds

The President of the International Mathematical Union, The Chairman of the Local Organizing Committee, Dear Colleagues, Ladies and Gentleman:

On behalf of financial Grantees to the International Mathematical Congress ICM 2002, I would like to express our gratitude to the International Mathematical Union (IMU) for the Travel Support as well as The Local Organizing Committee for Local Expenses Support.

We have really enjoyed our stay in Beijing and we are particularly grateful for all the Exposure to the most recent development in various area of the Mathematical Sciences which reinforce the right way to the universal Language and the universal Knowledge.

We also happy about the pleasant atmosphere as well as the friendliness and hospitality of the Chinese People.

Being here has also afforded me the opportunity of informing members of the ICM congress about the forthcoming Pan African Congress of Mathematicians Scheduled to take place in Tunisia in September 2004.

Thank you very much.

Speech by John Ball
President of IMU, January 2003-2006

Ladies and Gentlemen, Colleagues and Friends,

It is a great privilege to be elected as the next President of IMU and thus to have the opportunity, with the new Executive Committee, of helping to influence some of the important developments that will affect the mathematical community over the next few years.

It is a particular honour to succeed Jacob Palis, who for the last 12 years has held high office in IMU, for 8 years as Secretary and since 1999 as President. All those who know him will testify to the great energy, dedication and love for the community that he has brought to these posts.

This has been a memorable Congress, and we all recognize the very large number of people whose work has contributed to its outstanding success, those who served on the various international committees, the speakers for the many inspiring lectures, and above all the local organizers from Ma Zhi-Ming through to the splendid student volunteers. However, I would like to reserve some special words for the President of the Congress Professor Chern Shiing Shen. Despite his great age he was instrumental in ensuring the strong backing of the Chinese government for the Congress, and in his speech at the Opening Ceremony, and at other occasions during the Congress, he demonstrated the wisdom, warmth and dignity which are his hallmark. Professor Chern had hoped to attend the Closing Ceremony, but could not do so. But I am sure that his colleagues will convey to him our appreciation, not only for his contributions to this Congress, but also for his remarkable influence on our subject.

In addition to its traditional tasks, the new Executive Committee has much work to do. First there are important issues identified and developed through the work of the previous Executive Committee and IMU Committees, such as the project to retro-digitize the entire mathematics literature. Second, the General Assembly in Shanghai gave strong encouragement to the new Executive Committee to examine all the procedures and activities of the Union, and to report back to National Committees. And if I can mention one area to which I am personally committed, it is to see how IMU can better serve the needs of poorer and developing countries.

I can promise you that we will work hard, and with the help of mathematicians everywhere, I hope that we will have some progress to report on when we meet again in Spain in 2006.

Thank-you.

Speech by Ma Zhi-Ming
Chairman of the Organizing Committee of the ICM-2002
President of the Chinese Mathematical Society

Ladies and Gentlemen, Dear colleagues:

You may remember the last words in my speech at the Opening Ceremony:

"Let us join hands to lift the veil of a new epoch of Mathematics. I wish the Congress a great success, and wish you all pleasant stay in Beijing."

At this moment I am very happy to say that what we expected has been achieved. As pointed out by the previous speakers at this Closing Ceremony, we have had a great success of the International Congress of Mathematicians 2002. I would therefore like to take this opportunity to thank all the institutions, organizations and individuals who have made efforts and contribution to ensure the success of the Congress.

First of all, I am grateful to all our participants coming from all over the world, your enthusiastic participation offered a major guarantee of the success of the Congress. Let me express once again, as I did at the Opening Ceremony, our gratitude to the broad social organizations and governmental ministries and to IMU for their valuable support, without such support there would have been no success of the Congress. Special thanks go also to all our invited speakers for their remarkable lectures which represented the latest advancement and frontier achievements in our science and marked really a high academic level of our Congress. The three public lectures attracted a broad social audience and were of great significance to the popularization of mathematics and its applications. Also I would like to mention that the short communications and poster presentations arranged by the local scientific committee reflected the wide and active development of mathematics in recent years.

I have a long list of Chinese organizations and colleagues whom we should appreciate for their contribution towards the success of the Congress. Because of the time limitation I could not mention all their names here, but we shall never forget their excellent work.

Let me conclude my speech with sincere thanks to you all again and with best wishes for a new golden age of our science of mathematics.

I declare the 24th International Congress of Mathematicians closed.

TRAVEL GRANTS REPORT

The Travel Grants Committee (Professors Phillip Griffiths (USA), Zhi-Ming Ma (China), Sunil Maharaj (Africa), Jacob Palis (Brazil), and M. Raghunathan (India), met in Paris, France, on April 12-13, 2002. The committee received more than 200 applications by January 31, 2002, from young mathematicians from developing countries. Seventy young mathematicians from developing countries (their names are below) traveled to Beijing, China, with their travel paid by the International Mathematical Union and local expenses paid by the Local Organizing Committee (LOC) of the International Congress of Mathematicians 2002. In addition IMU and LOC supported 101 mathematicians from Eastern Europe and Senior Mathematicians from Africa, Asia, and South America. IMU is also very grateful to LOC for providing local expenses and/or travel expenses for 248 mathematicians from Asia.

TRAVEL GRANTS SUPPORT IN US$

Last Name	First Name	Section	Country	US$ Grant
Alif	Mohssine	Africa	Morocco	$800.00
Baklouti	Ali	Africa	Tunisia	$800.00
Bouchiba	Samir	Africa	Morocco	$800.00
Bourhim	Abdellatif	Africa	Morocco	$796.00
El-Afifi	Mohamed Mohamed Abdel Mageed	Africa	Egypt	$758.00
Elettreby	Mohammed Fathy	Africa	Egypt	$759.00
Holgate	David Brendon	Africa	South Africa	$1,031.00
Kinani	El Hassan	Africa	Morocco	$800.00
Makinde	Oluwole	Africa	South Africa	$1,200.00
Mimouni	Abdeslam	Africa	Morocco	$800.00
Mphako	Eunice Gogo	Africa	Malawi	$1,200.00
Nkemzi	Boniface Belagoa	Africa	Cameroon	$1,500.00
Rabia	Sherif	Africa	Egypt	$755.00
Rajae	Ben Taher	Africa	Morocco	$800.00
Raslan	Kamal Raslan Mohamed	Africa	Egypt	$757.00
Reinecke	Carolus Johannes	Africa	South Africa	$731.00
Riahi	Hasna	Africa	Tunisia	$800.00
Sango	Mamadou	Africa	Ivory Coast	$1,200.00
Sibanda	Precious	Africa	Zimbabwe	$1,010.00
Tahri	El Hassan	Africa	Morocco	$800.00
Wilcox	Diane	Africa	South Africa	$838.00
Youssef	Maged	Africa	Egypt	$758.00
Abreu Blaya	Ricardo	America	Cuba	$1,700.00
Argerami	Martin	America	Argentina	$1,700.00
Barberis	Maria Laura	America	Argentina	$1,523.00
Barrientos	Aniura Milanes	America	Brazil/Cuba	$1,389.00
Boulton	Lyonell S.	America	Venezuela	$1,700.00
Brandao	Daniel Smania	America	Brazil	$1,000.00
Bursztyn	Henrique	America	USA/Brazil	$1,340.00
Cisneros-Molina	Jose Luis	America	Mexico	$1,300.00
de Queiroz	Marcelo Gomes	America	Brazil	$1,700.00
Ferreira	Vitor de Oliveira	America	Brazil	$1,700.00
Kiwi	Jan Beno	America	Chile	$1,700.00
Luca	Florian	America	Mexico	$1,150.00
Macarini	Leonardo Magalhaes	America	Brazil	$1,700.00

Last Name	First Name	Section	Country	US$ Grant
Metzger	Roger	America	Peru	$1,700.00
Mol	Rogerio Santos	America	Brazil	$1,700.00
Moreira	Carlos Gustavo	America	Brazil	$1,700.00
Natale	Sonia	America	Argentina	$1,000.00
Nunes de Medeiros	Nivaldo	America	Brazil	$1,000.00
Panazzolo	Daniel Cantergiani	America	Brazil	$1,600.00
Petean	Jimmy	America	Mexico/USA	$1,300.00
Rosas	Mercedes	America	Venezuela	$1,700.00
Snoussi	Jawad	America	Mexico/ Morocco	$1,090.00
Vasilieva	Olga	America	Colombia/Russia	$1,700.00
Akbari	Saieed	Asia	Iran	$1,000.00
Ashig	Muhammad	Asia	Pakistan	$900.00
Bhattacharya	Siddhartha	Asia	India	$1,000.00
Bhattacharyya	Sandip	Asia	India	$967.00
Cangul	Ismail Naci	Asia	Turkey	$962.00
Darus	Maslina	Asia	Malaysian	$462.00
del Rosario	Ricardo C.H.	Asia	Philippines	$500.00
Gachpazan	Mortaza	Asia	Iran	$1,000.00
Ghate	Eknath Prabhakar	Asia	India	$860.00
Ho Hai	Phung	Asia	Vietnam	$558.00
Kumar	Vinod	Asia	India	$1,000.00
Le	Nhan	Asia	Vietnam	$560.00
Lope	Jose Ernie C.	Asia	Philippines	$500.00
Moghaddamfar	Ali Reza	Asia	Iran	$1,000.00
Mukhamedov	Farruh	Asia	Uzbekistan	$800.00
Niamsup	Piayapong	Asia	Thailand	$500.00
Oztop	Serap	Asia	Turkey	$981.00
Prajapat	Jyotshana	Asia	India	$869.00
Raghunathan	Ravi	Asia	India	$752.00
Raghuram	A.	Asia	India	$1,000.00
Raman	Preeti	Asia	India	$1,000.00
Rozikov	Utkir	Asia	Uzbekistan	$728.00
Sakthivel	Rathinasamy	Asia	South Korea/ India	$500.00
Thangadurai	Ravindranathan	Asia	India	$883.00
Vishki	Hamid Reza Ebrahimi	Asia	Iran	$900.00

The funds for these grants were given by:

1998	
American Mathematical Society	US $30,972.63
CHPq, Brazil	US $ 4,727.65
Mathematical Society of Japan	US $14,084.50
Societé Mathematique de France	US $ 3,092.76
1999	
American Mathematical Society	US $32,081.10
Brazil	US $ 5,000.00
London Math Society	US $ 3,321.17
London Math Society	US $ 5,083.89
Mathematique France Institute	US $ 3,120.10
Wiskundig Genootschap Netherlands	US $ 5,349.80
2000	
American Mathematical Society	US $29,972.27
London Math Society	US $ 5,000.00
2001	
American Mathematical Society	US $41,048.79
London Math Society	US $ 5,000.00
2002	
American Mathematical Society	US $23,471.51
Mathematical Society of Japan	US $14,642.57
London Mathematical Society	US $ 5,000.00
Unione Matematica Italiana	US $ 675.29

On behalf of IMU, the Executive Committee expresses its deep gratitude for these donations.