

**Bulletins of the
International
Mathematical Union**



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IMU

**BULLETIN OF THE
INTERNATIONAL MATHEMATICAL UNION**

No. 51

For year ending 2004

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List of Abbreviations

CDE	Commission on Development and Exchanges
CEIC	Committee on Electronic Information and Communication
ICHM	(Joint) International Commission on the History of Mathematics
ICMI	International Commission on Mathematical Instruction
ICSU	International Council for Science
IUHPS	International Union of the History and Philosophy of Science

INTERNATIONAL MATHEMATICAL UNION

Executive Committee

January 1, 2003-December 31, 2006

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

Members of the Union

The following 65 countries were members of IMU as of January 1, 2004:

- Group I:** Armenia, Bosnia and Herzegovina, Bulgaria, Cameroon, Croatia, Cuba, Estonia, Georgia, Greece, Hong Kong, Iceland, Ivory Coast, Kazakhstan, Latvia, Lithuania, New Zealand, Nigeria, Peru, Philippines, Portugal, Romania, Saudi Arabia, Serbia and Montenegro, Singapore, Slovenia, Tunisia, Turkey, Uruguay, Venezuela, Vietnam.
- Group II:** Argentina, Austria, Chile, Czech Republic, Denmark, Egypt, Finland, Iran, Ireland, Republic of Korea, Mexico, Norway, Slovakia, South Africa, Ukraine.
- Group III:** Australia, Belgium, Brazil, Hungary, Poland
- Group IV:** India, Netherlands, Spain (moved to Group IV, January 1, 2005) Sweden, Switzerland.
- Group V:** Canada, China, France, Germany, Israel, Italy, Japan, Russia, United Kingdom, United States.

Group	I	II	III	IV	V
Number of Votes	1	2	3	4	5
Dues Unit Contributions	1	2	4	7	10

International Congress of Mathematicians 2010 (ICM2010)

The Site Committee of the International Mathematical Union (IMU) accepted bids through November 30, 2005, to host ICM2010. Two countries submitted proposals. The site committee will review both proposals and visit both sites and present their findings at the IMU Executive Committee Meeting in April 2005. The Executive Committee (EC) will present its decision to the delegates at the General Assembly in August 2006 in Spain. The delegates will have the final vote.

Conferences Supported by IMU

At the 2002 General Assembly the delegates put forth the following resolution:

“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.”

In order to examine the colloquia guidelines and to determine the use of colloquia funds, the EC appointed an Ad Hoc Sub-Committee of the Executive Committee of the International Mathematical Union on Supporting Mathematics in Developing Countries. The sub-committee comprised, M. Artigue, J. M. Ball, C. H. Clemens, J.-P. Gossez, M. Jambu, D. T. Lê and M.S. Narasimhan. The group met in September 2003 and prepared a report that can be found on the IMU website at http://users.ictp.trieste.it/~dcsg/Report_Recommendations.

Proposal 8 states:

The Ad Hoc Committee proposes that identification of CDE programs with IMU be increased. In particular, the parallel programs of conference support run by the IMU/EC and by CDE should be meshed into a single (larger) program of support for conferences in developing countries, to be administered by CDE. Support levels for individual conferences under this rubric should be capped at US\$5,000. (IMU/EC may want to maintain a separate small program of partial sponsorship of 3 - 4 premier international mathematics conferences annually, which would be judged by the highest scientific criteria and would carry the imprimatur of formal IMU co-sponsorship.)

Therefore, the IMU EC will only review colloquia requests that do not fall under the following CDE guidelines:

“The CDE supports conferences organized in developing countries and which are *a priori* open to any working mathematician whatever his or her nationality. Conferences should address a regional audience and not only a national one; they should benefit mathematicians from the neighboring countries as well. The funds awarded by the CDE are for academic use only (travel or living expenses of invited speakers or those of participants coming from developing

countries). The CDE only considers conferences at the research level and, due to lack of funds, cannot support schools or activities which are mainly concerned with professional training.”

FUNDS: The EC previously approved an amount of US \$10,000 to be given to ICME 10, with an inflationary increase of 10%, and therefore US \$11,000 will be transferred to ICMI.

Developing Countries Strategy Group

Following a recommendation of the Ad Hoc Sub-Committee, the IMU EC established the Developing Countries Strategy Group (DCSG) in early 2004 with the charge of increasing, guiding and coordinating IMU's activities in support of mathematics and mathematics education in the developing world. DCSG supported activities and information can be found at: <http://www.ictp.trieste.it/~dcsg/description.html>.

Report of the International Congress of Mathematicians 2006

The Local Organizing Committee of the International Congress of Mathematicians 2006 (ICM2006) has prepared the following report:

Report on Publications (Joan Verdera)

1. Proceedings: after considering offers from several publishers the EC decided to accept the offer of the Publishing House of the European Mathematical Society. A contract is being discussed and a plan for processing the contributions by the invited speakers is being set up.
2. In order to allow last minute modifications, the program booklet will be prepared by our own staff.
3. Madrid Intelligencer. Springer has accepted to publish a special volume of the Intelligencer on the occasion of the Congress. It will be distributed to participants on the first day of the Congress.
4. Several Posters announcing the Congress have been produced and distributed.

Local Program Committee (Marta Sanz)

The Local Program Committee (LPC) has been working on the selection of speakers for the ICM2006, with the decision made in September 2004. A ranked list of two candidates for one plenary speaker and five candidates for three section speakers has been sent and discussed with Professor Noga Alon. The list included an external assessment, together with the arguments of the committee itself.

In the same meeting, it was agreed to have three types of communications at ICM2006: Short oral communications of 20 minutes, including discussion, poster sessions and a

special session on mathematical software. The terms of the respective calls are already agreed within the committee and shall be posted at the home page of the Congress in due time. In order to promote the participation in the poster sessions, a poster competition in each scientific section of the congress will be organized. Each of the eight members of the LPC, is responsible for the evaluation of contributions to the congress in specific scientific sections. Each of these members has chosen a number of about 12 collaborators for this task. It has been decided that the name of these collaborators will appear in the books of abstracts.

The technical part concerning the submission of abstracts, posterior evaluation and communication to the author is being implemented by Unicongress, the professional congress organizer, under the direction of the Chair of the LPC.

The ICM2006 would be very pleased to host an Emmy Noether lecture. The Chair of the LPC has been in touch with the Association for Women in Mathematics in connection with this issue.

The LPC is thinking about the possibility of organising a closing panel discussion at ICM2006 on the actual trends of Mathematics.

Report for IMU on: Parallel Scientific Activities (Fernando Soria)

Our activity has been concentrated basically on the evaluation of all applications received for satellite conferences associated with the ICM2006. To that end, we have named a scientific subcommittee formed by M. Barros (U. Granada), M. Escobedo (U. Basque Country), I. Garcia-Jurado (U. Santiago), Luis Narvaez (U. Seville) and Fernando Soria (UAM). A partial list of accepted applications can be seen at the web page <http://www.icm2006.org>.

We feel that the number and the rate of applications received so far are appropriate, although a bit unbalanced, with most of them in the areas of Geometry and Algebra. This tendency is changing with some new submissions in Analysis, Variation Calculus and, more recently, in the area of Operational Research. There is also an interesting one on Mathematics and Neuroscience.

We have received a good deal of support from research groups throughout Spain. Many of these that have made the effort to present a proposal, in many cases joining forces with colleagues from several institutions. There is however only one application from outside of Spain (John Bolton, University of Durham). Of course, we would like to attract people, especially from Europe and the north of Africa, who might be interested in organizing workshops and conferences. This is our new task and we are now working in this direction.

Relations with Latin America, Eastern Europe and developing countries (Marisa Fernández)

The main points are:

We have contacted with residences in Madrid to obtain a good price for lodging of the grantees. They will be in residences of the Universidad Complutense de Madrid.

To obtain financial support, we have contacted the following:

- Spanish Departments of Mathematics,
- Societies of Mathematics of the world
- Private foundations (we are hoping the answer)
- Agencia Española de Cooperación Internacional-Minister of Exterior Relations. We must apply when it is open.

We have talked with the Agencia Española de Cooperación Internacional-Minister of Exterior Relations to organize the necessary visas for participants.

Now we are organizing the application form for grants, which will be ready in May 2005.

Cultural activities (Antonio Durán)

We are preparing an exhibition in collaboration with the Ministry of Culture (Mathematics and Art, in one important museum in Madrid). It is a very difficult project, and we waiting for the final answer from the M. of Culture.

We are also preparing an exhibition about IMU and ICM history. The plan is to exhibit it in the venue of the ICM2006 and later at the universities.

We have contacted Mireille Chaleyat to exhibit Experiencing Mathematics.

We are preparing a facsimile edition of one of the works by Archimedes (in collaboration with the RSME). The original book belongs to the Library of the Monasterio de El Escorial.

15th General Assembly, Santiago de Compostela (Juan A. Viaño)

The Honor Committee is formed by the Ministry of Education and Science, local authorities (President of the local government of Galicia), and Presidents of the three Galician universities.

Some local financial support was obtained.

There is an agreement with hotels in Santiago for the GA.

MEETING OF THE EXECUTIVE COMMITTEE (EC)

The Executive Committee met on April 23-24, 2004, at the Mathematical Institute, Oxford, England.

Among the items discussed by the EC were the following:

- After discussion on conferences/colloquia proposals, it was decided that all proposals submitted to the IMU pertaining to developing countries will be reviewed by the Commission on Development and Exchanges (CDE) and that all such grants will be made by CDE. The EC decided to set a cap of US \$5,000 per conference; if the CDE would like to exceed the cap, it will need to send a proposal to the EC for consideration. It was also decided that some funds will be reserved in the IMU symposia line until 2006, so that the EC will be able to consider special proposals for conference funding.
- The EC voted to recommend to the Adhering Organizations that Indonesia and Pakistan be admitted to IMU in Group I and that Brazil and Spain move from Group III to Group IV. (Postal ballots were sent to the Adhering Organizations in August 2004.)
- A subcommittee of the EC was formed to make recommendations on instituting a category of Associate Membership, to encourage countries to join IMU. This would require an amendment to the Statutes. The subcommittee, consisting of M. S. Raghunathan, Zhi-Ming Ma, Ragni Piene, and John Ball, considered the following EC guidelines in drafting its recommendations for the criteria for Associate Membership:
 - (a) Associate Members should pay no dues,
 - (b) They will not have voting rights and will not have to meet the present Statute requiring independent scientific activity,
 - (c) Associate Membership would expire after eight years.

Following the recommendations of the subcommittee, a Statute may be prepared by the EC to present to the 2006 General Assembly.

- The following people were appointed to serve on IMU-related committees:
Peter Gruber Foundation Cosmology Prize – John Ball
COSPAR – Alain Bensoussan
ICSU—John Ball
IUPAP – John Ball
- The death of EC member Andrey Bolibruch left a vacancy on the EC. Following Statute 16, which gives the EC the power to “fill the vacancy until the members of the Union shall have elected a successor for the unexpired term”, the EC will recommend that Victor Vassiliev be formally elected as a member of the EC. (A postal ballot was sent in August 2004.)
- On behalf of the Local Organizing Committee of 2006 (LOC), Carlos Andradas prepared a report on the progress of the Congress. The Congress site will be the Palace of Congress of Madrid. The LOC has acquired the free use of the building, which is located halfway between downtown Madrid and the airport and is accessible by the underground system. Because of other commitments, Andradas has been replaced and the new President of ICM is Manuel de Leon, with Andradas becoming Deputy President. The LOC is not concerned that the change of government will affect the GA or the Congress.
- Travel Grants applications will be available online at the IMU website and all applications will be sent to IMU.
- As per ICM 2002 Resolution 8, the EC drafted two Nominating Committee Models after reviewing the models prepared by the subcommittee of the EC, consisting of John Ball, Jean-

Michel Bismut, Martin Groetschel and Phillip Griffiths, and the revisions to the ICMI model suggested by ICMI. The first model will be used to nominate the Executive Committee of IMU, the Commission on Development and Exchanges and the International Commission on the History of Mathematics. The second model will be used to nominate the EC of the International Commission on Mathematical Instruction. The models can be found on the IMU website at <http://www.mathunion.org/Organization/NomComms.html>

- Until presented to the GA in 2006, the Nominating Committee will be operated informally as an advisory body to the EC. Experience gained can be incorporated into a formal proposal for a change in Statutes at the 15th GA in 2006. If approved, the Statute changes would be in effect for the 16th GA in 2010.
- The Fields Medal, Nevanlinna Prize and Gauss medals were discussed. The committee members' names shall be anonymous until the ICM2006 but the names of the committee chairs will be public. The chairs are as follows: 2006 Fields Medal Committee -- John Ball (Oxford University), 2006 Rolf Nevanlinna Prize -- Margaret Wright (Courant Institute), 2006 Carl Friedrich Gauss Prize -- Martin Groetschel (Zuse Institute Berlin). The Nevanlinna guidelines were altered and can be found at <http://www.mathunion.org/General/Prizes/>.
- The EC formed a Developing Countries Strategy Group (DCSG), which includes the following members: Herb Clemens, Chair, Jacob Palis, Ragni Piene, Jean-Pierre Gossez, Michele Artigue, Le Dung Trang, John Ball, *ex officio*. In order to increase contact with CDE, the EC proposed that Herb Clemens (in consultation with John Ball) nominate two additional members to the DCSG from CDE members working in developing countries. The DCSG will report to the EC.
- The Abel Fund has granted US \$50,000 for 2004, in support of IMU's activities in education and research in mathematics in developing countries, in particular, in the African countries.
- The appointment of a half-time administrative assistant based at ICTP in Trieste, Italy, will provide much needed support for CDE and DCSG.
- The EC decided to present to the GA 2006 a proposal for a change in the IMU Statutes that will expand the EC membership by one person. The proposal must be sent to the AOs at least four months in advance of the GA. The purpose of the change is to increase the geographic and mathematical diversity of the EC.
- It was reported that the new IMU Website has been launched with the webmaster located in Berlin.
- The CEIC recommended establishing the Federated World Directory of Mathematicians (FWDI), although many obstacles need to be addressed, including privacy laws. The CEIC continues to encourage mathematicians to have their own homepage. The MPHMaker (Professional Homepage Maker) is a tool to create MPHs (a tool to create the full version of the MPH was developed by ZIB, a tool for the light version is under construction by Osnabrück).
- The EC voted to inaugurate a competition for an IMU logo. The winner of the competition will receive up to US \$3,000 to cover the cost of travel to ICM2006 and for local expenses.
- To honor the 100th birthday of Cartan on July 8, 2004, the EC voted to draft a resolution.
- The 73rd meeting of the EC will take place in Rio de Janeiro, Brazil, April 22-23, 2005.

COMMISSION ON DEVELOPMENT AND EXCHANGES (CDE)

Report prepared by Sharon Laurenti, Administrative Secretary, IMU/CDE

Report on the activities of the CDE for the year 2004

During the year 2004, the CDE received 53 or more requests, inquiries and applications from mathematicians in developing countries for support for research travel, conferences and projects. After initial routine screening by the Secretary/Treasurer or the Administrative Secretary to ensure that requests fell within IMU program guidelines, 16 formal applications for individual research travel were reviewed, with support or partial support being granted in 13 cases, and 29 formal applications for conference support were reviewed with support or partial support being granted in 25 cases. One request for project support, using dedicated funds raised externally by IMU, was also processed.

In 2004 CDE took over IMU's major conference applications involving a developing country component, and received from IMU's Executive Committee US \$50,000 to support such conferences. Consequently, CDE's conference support policy was changed to accommodate support for a few major international conferences taking place in developed countries. However, support for such is granted only for the participation of mathematicians working in developing countries. Organizers must demonstrate that they will match the funds being requested from CDE with an equal amount from other sources, which is also dedicated to supporting conference participation by mathematicians from developing countries. Five formal applications for major conference support were received and reviewed, and support or partial support was granted for all five conferences, three of which took place in developed countries.

CDE is encouraging wider use of its programs by developing world mathematicians, and during the year cooperated fully with the efforts of the Executive Committee of the IMU to expand the reach of IMU support in the developing world.

Atindogbe	6/22/2004	RT Benin -> Canada	\$2,000.00	\$2,169.59	\$7,647.49	\$9,817.08
Ferrari	6/29/2004	CS Brazil	\$3,000.00	\$2,169.59	\$4,647.49	\$6,817.08
IMU Schedule B	7/21/2004		(\$50,000.00)	\$2,169.59	\$54,647.49	\$56,817.08
Of above 50000, 25000 moved to DCSG spreadsheet)			\$25,000.00	\$2,169.59	\$29,647.49	\$31,817.08
Azatassou/ICMPA	7/23/2004	CS Benin	\$3,000.00	\$2,169.59	\$26,647.49	\$28,817.08
Ezin	7/26/2004	MC Tunisia	\$5,000.00	\$2,169.59	\$21,647.49	\$23,817.08
Navas	8/18/2004	RT Chile -> France	\$1,000.00	\$2,169.59	\$20,647.49	\$22,817.08
Uludag	9/14/2004	CS Turkey	\$2,000.00	\$2,169.59	\$18,647.49	\$20,817.08
Krishnamoorthy	10/1/2004	CS India	\$1,500.00	\$2,169.59	\$17,147.49	\$19,317.08
CDE PowerBook, software & scanner	10/4/2004	(50% of Euro 3,801.25 cost)	\$2,431.66	(\$262.07)	\$17,147.49	\$16,885.42
Kengne	10/13/2004	RT Cameroon -> Germany	\$1,150.00	(\$262.07)	\$15,997.49	\$15,735.42
Roemer/Wedagedera	10/20/2004	CS Sri Lanka	\$1,500.00	(\$262.07)	\$14,497.49	\$14,235.42
Hossain/Roy	10/22/2004	CS Bangladesh	\$3,000.00	(\$262.07)	\$11,497.49	\$11,235.42
Boukhemis	11/3/2004	CS Algeria	\$1,500.00	(\$262.07)	\$9,997.49	\$9,735.42
Dickenstein	11/3/2004	CS Brazil	\$3,000.00	(\$262.07)	\$6,997.49	\$6,735.42
Ferrer Santos	11/10/2004	CS Uruguay	\$2,500.00	(\$262.07)	\$4,497.49	\$4,235.42
Asadollahi Dehaghi	11/12/2004	RT Iran -> France	\$800.00	(\$262.07)	\$3,697.49	\$3,435.42
Laine/Ruscheweyh	11/22/2004	MC Finland	\$5,000.00	(\$262.07)	(\$1,302.51)	(\$1,564.58)
Markowich	12/1/2004	CS Iran	\$3,000.00	(\$262.07)	(\$4,302.51)	(\$4,564.58)
Viana	12/9/2004	CS Costa Rica	\$2,500.00	(\$262.07)	(\$6,802.51)	(\$7,064.58)
Math. Soc. Japan	12/13/2004		(\$1,436.48)	(\$262.07)	(\$5,366.03)	(\$5,628.10)
AMS May fee	6/24/2004		\$156.00	(\$418.07)	(\$5,366.03)	(\$5,784.10)
AMS June fee	7/26/2004		\$191.80	(\$609.87)	(\$5,366.03)	(\$5,975.90)
AMS July fee	8/24/2004		\$53.64	(\$663.51)	(\$5,366.03)	(\$6,029.54)
AMS Aug. fee	9/27/2004		\$86.60	(\$750.11)	(\$5,366.03)	(\$6,116.14)
AMS Sept. fee	10/21/2004		\$51.40	(\$801.51)	(\$5,366.03)	(\$6,167.54)
AMS Oct. fee	11/23/2004		\$151.40	(\$952.91)	(\$5,366.03)	(\$6,318.94)
Sole	12/17/2004	CS Philippines	\$1,500.00	(\$952.91)	(\$6,866.03)	(\$7,818.94)
Anosov	12/21/2004	CS Russia	\$2,000.00	(\$952.91)	(\$8,866.03)	(\$9,818.94)
IMU Schedule A 2004	12/29/2004		(\$6,100.00)	\$5,147.09	(\$8,866.03)	(\$3,718.94)
Moved back from DCSG's initial 25000			(\$10,000.00)	\$5,147.09	\$1,133.97	\$6,281.06
Balance	1/1/2005			\$5,147.09	\$1,133.97	\$6,281.06

INTERNATIONAL COMMISSION ON THE HISTORY OF MATHEMATICS (ICHM)

Report prepared by Karen Hunger Parshall (Chair) and Jan P. Hogendijk (Secretary), 2004.

Report on ICHM activities in 2004

In 2004-2005, the International Commission on the History of Mathematics (ICHM) has continued to pursue its dual aims of encouraging the study of the history of mathematics and of promoting a high level of historically and mathematically sophisticated scholarship in the field internationally. It has done so in the following ways:

Meetings of the Executive Committee (EC) of the ICHM:

The EC meets at least four times yearly via e-mail to discuss matters of interest to the international history of mathematics community. It has just had its second e-meeting of 2005. Among the business discussed and the issues considered were: (in 2004) the broadening of the international representation on the EC (which resulted in a two-person increase of the EC membership) and the formation of a subcommittee to select the 2005 May Medalist; and (thus far in 2005) discussion of national ICHM representatives and the selection of new EC members.

Conferences /Symposia/ Congresses:

In 2004-2005, the ICHM has contributed to, organized, or co-sponsored numerous conferences, symposia, and congresses internationally: Special Sessions at the annual joint meetings of the American Mathematical Society and Mathematical Association of America (United States) (2004, 2005) (for full reports of these sessions, see the ICHM website at www.math.uu.nl/ichm); and a Special Session in Honor of the Retirement of Ivor Grattan-Guinness entitled "The History of Nineteenth-Century Mathematics" at the joint meeting of the British Society for the History of Mathematics and the Canadian Society for History and Philosophy of Mathematics (United Kingdom) (2004) (for a full report, see the ICHM website). The ICHM is co-sponsoring three Special Sessions at the International Congress for History of Science to be held in Beijing, China, in July of 2005: "The Ten Classics of Ancient Chinese Mathematics" (organized by Joseph Dauben (United States), GUO Shuchun (China), and Alexei Volkov (Canada); "Along the Silk Road" (organized by LI Wenlin (China), YANO Michio (Japan), QU Anjing (China), and Benno van Dalen (The Netherlands/Germany); and "Multicultural Transmission of Mathematical Knowledge" (organized by SASAKI Chikara (Japan), Roshdi Rashed (France), Karine Chemla (France), and FENG Lisheng (China).

Projects:

The ICHM has mounted and is maintaining a webpage of its activities and of matters of interest to historians of mathematics internationally. See www.math.uu.nl/ichm

The ICHM is presently compiling a database of information on historians of mathematics around the world. Relative to this World Directory effort, the ICHM has published "calls" to the international community of historians of mathematics to alert them to the existence of both the website and the questionnaire. These have appeared in journals *Historia Mathematica*, the Newsletter of the British Society for the History of Mathematics, the Newsletter of the

Canadian Society for the History and Philosophy of Mathematics, and the Newsletter of the Chinese History of Mathematics Society (in Chinese), among others. It is the ICHM's hope that these efforts will result in due course in a reasonably complete database of historians of mathematics.

Publications:

Historia Mathematica is the official journal of the ICHM. It appears four times annually and publishes roughly 525 pages of original research in the history of mathematics from all times and cultures. From 2003 to the present, it has been edited by Craig Fraser (Canada) and Benno van Dalen (Germany). It is published by Elsevier Science and is available electronically to subscribers of IDEAL.

Medals:

The Kenneth O. May Medal is awarded every four years to the historian or historians of mathematics whose work best exemplifies the high scholarly and intellectual contributions to the field that May worked so hard to achieve. It was awarded for the fifth time at a special ceremony in Utrecht, The Netherlands, on 30 June, 2005 to Henk Bos (The Netherlands) for his ground-breaking work on the history of seventeenth-century mathematics.

The members of the EC of the ICHM:

The EC's current (through 2005) members are: Karen Hunger Parshall (United States), Chair; Craig Fraser (Canada), Vice Chair; Jan P. Hogendijk (The Netherlands), Secretary; Menso Folkerts (Germany), Treasurer; Natalja Ermolaeva (Russia); Alejandro Garciadiego (Mexico); Niccolo Guicciardini (Italy); Sergio Nobre (Brazil); QU Anjing (China); Luis Saraiva (Portugal); SASAKI Chikara (Japan). Ex officio members are: Kirsti Andersen (Denmark); Joseph W. Dauben (United States); Eberhard Knobloch (Germany); and Christoph Scriba (Germany). The two IMU members are: Jeremy Gray (United Kingdom) and LI Wenlin (China).

INTERNATIONAL COMMISSION ON MATHEMATICAL INSTRUCTION (ICMI)

Report prepared by Bernard R. Hodgson, Secretary, 2004.

Report on ICMI activities in 2004

1. Organisation

The 2003-2006 Executive Committee (EC) of ICMI had its second and third meetings in 2004. The first of these two meetings took place on February 11-12 in Dortmund, Germany, on the occasion of the Study Conference for ICMI Study 14. The other meeting was held in Copenhagen, Denmark, during the ICME-10 congress. The Committee then met prior to the congress on July 2-4, with the participation of John Ball, President of the International Mathematical Union, as well as on July 11, the closing day of ICME-10. Beside these two meetings, the work of the EC in 2004 was conducted by electronic communication under the direction of the President and the Secretary-General.

The General Assembly of ICMI was held at the Technical University of Denmark (DTU), on the occasion of ICME-10, on Friday July 9, 2004, from 19:45 to 22:05.

The Executive Committee of IMU appointed in 2004 one of its members, Victor A. Vassiliev, to act as an IMU liaison with the ICMI EC. Following the sudden passing in November 2003 of Andrey A. Bolibruch, who had been elected as a member-at-large of the IMU EC during the 2002 General Assembly of IMU, Vassiliev had been co-opted as a member of the IMU EC, and then elected through a postal ballot held in August 2004. Considering the difficulty for the President and Secretary of IMU, who are *ex officio* members of the ICMI EC, to regularly attend the ICMI EC meetings, such a direct contact between the Executive Committees of the two organizations is a highly welcome addition.

There were no new member countries of IMU or ICMI during 2004, nor new ICMI Sub-Commissions. Among the 82 members of ICMI, 18 had in 2004 no appointed Representatives to ICMI (Armenia, Bosnia and Herzegovina, Brunei Darussalam, Estonia, Greece, Kazakhstan, Kuwait, Pakistan, Peru, Romania, Russia, Saudi Arabia, Senegal, Slovenia, Tunisia, Turkey, Ukraine, Uruguay) and one country had an observer status to the IMU. Among the remaining 63 member countries, 10 could still not be reached by e-mail. During 2004, a total of 13 collective e-mail messages were sent by the Secretary-General to the ICMI Representatives. Most of these messages provided general information on ICMI and its activities and were intended for further dissemination within each country. But others were giving information more specific to the ICMI representatives (vg in preparation for the ICMI General Assembly held during ICME-10) or asking for input from the representatives.

As reported in the 2000-2004 Report of Activities (see ICMI Bulletin No. 54, June 2004, pp. 32-48), the IMU Executive Committee had received from the 2002 General Assembly the mandate to make more transparent the whole election procedures for the various elected committees of IMU and to avoid the potential for conflicts of interest in the procedure of selection of slates. In response to the resolution adopted to that effect by the IMU GA, proposals for new rules of appointment of the Nominating Committee for the ICMI election were drafted

by the IMU EC and sent to the ICMI EC during 2003. The ICMI EC concluded that these proposals of IMU did not pay sufficient attention to the specificity of ICMI and were *de facto* moving away from a context where the ICMI community could play a significant role in the selection of its governing body. Discussions on this issue were pursued in 2003 and early 2004, and finalized during the meeting of the ICMI Executive Committee held just prior to ICME-10 — this allowed for an announcement to be made at the General Assembly of ICMI, held during ICME-10 in Copenhagen, about the procedure agreed by the IMU and ICMI ECs. A major effect of this change, which is quite historic for ICMI, is that the actual election of the ICMI EC will be in the hands of the ICMI GA, starting with the GA to be held in 2008 during ICME-11. However any future amendments to the proposed procedure will still be under the jurisdiction of the GA of IMU. A report on the new election procedure for ICMI, which still needs to be approved by the IMU General Assembly to be held in Spain prior to ICM2006, can be found in the *ICMI Bulletin* No. 55, December 2004, pp. 18-22.

It was decided that the new election process on which the Executive Committees of IMU and ICMI agreed would be used for the 2006 election, but necessarily on an informal basis (pending approval of the new proposed procedures and structures at the 2006 IMU General Assembly). Consequently a Nominating Committee of ICMI was set up for the 2006 election, with a mandate to prepare the selection of the slate of candidates for the ICMI Executive Committee, but operating informally as an advisory body to the IMU Executive Committee. A call for nomination of candidates to the ICMI Nominating Committee was made in October 2004, to the IMU Adhering Organizations and Committees for Mathematics as well as to the ICMI Representatives.

During 2004, the ICMI community was saddened by the sudden death on April 14 of Miguel de Guzmán, former President of ICMI (1991-1998). Also former Executive Committee members Igor Sharygin (1999-2002), Hans-Georg Steiner (1975-78) and Jacobus H. van Lint (1987-1994) passed away in 2004. *In memoriam* testimonies were respectively published in the *ICMI Bulletin* No. 54, June 2004, pp. 70-81, and No. 55, December 2004, pp. 67-84.

2. ICMEs

The 10th International Congress on Mathematical Education, ICME-10, was held at the Technical University of Denmark (DTU) in Copenhagen, Denmark, from July 4 to 11, 2004. This congress was organized through a collaboration of neighboring countries (the Nordic countries Denmark, Finland, Iceland, Norway, Sweden), a first in the life of ICMI. The congress ICME-10 was attended by 2324 participants from 93 different countries. There were also 389 accompanying persons or exhibitors. The International Program Committee, chaired by Professor Mogens Niss, Roskilde University, had proposed a rich and intensive scientific program, some components of which — such as the Plenary Interview Session or the five so-called Survey Teams — were highly innovative and very well received. The infrastructure and logistic support offered by the organizers were of excellent quality. The tradition instigated at ICME-8 of imposing a “Solidarity Tax” on all registrations was repeated at ICME-10. It had been announced in the Second Announcement of the congress that an ICME-10 Solidarity Fund would be established to provide support to participants from non-affluent countries by setting aside 10% all the registrations fees. The organizers of ICME-10 finally distributed more than 11% of the registrations fees, thus allowing them to provide support to 175 participants coming from 55 different countries. The distribution of the money generated for the Fund was made by a Grants Committee, jointly appointed by the congress organizers and the ICMI Executive

Committee, which worked autonomously and anonymously, as is customary, in order to minimize potential problems of pressure.

The 11th International Congress on Mathematical Education, ICME-11, will be held in Monterrey, México, from July 6 to 13, 2008. The International Program Committee is chaired by Professor Marcela Santillán, Rectora at the Universidad Pedagógica Nacional in México. The composition of the IPC was finalized early in 2005 and is announced in the June 2005, No. 56, issue of the *ICMI Bulletin*.

An official call for bids to host ICME-12 in 2012 was made by the Secretary-General of ICMI during the closing session of ICME-10. This call also appears in the *ICMI Bulletin* (No. 55, December 2004, pp. 11-12).

The book of Proceedings of **ICME-9** has appeared in 2004. The data for the book are:

Hiroshi Fujita, Yoshihiko Hashimoto, Bernard R. Hodgson, Peng Yee Lee, Stephen Lerman and Toshio Sawada, editors, *Proceedings of the Ninth International Congress on Mathematical Education*. Kluwer Academic Publishers, 2004. ISBN (HB) 1-4020-8093-X; ISBN (PB) 1-4020-7902-8; ISBN (e-book) 1-4020-7910-9.

The book is accompanied by a CD. However a problem occurred in the production of the CD. It is stated in the Preface of the book (p. xii) that “the CD part of these Proceedings contains, in addition to files for the whole content of the book part, vivid scenes of the ceremonies and the IRT, full texts of regular lectures if available, and some scientific animation etc.” As it turns out the “whole content of the book part” is absent from the accompanying CD, as are the “full texts of the regular lectures if available”. The congress organizers have decided to issue a revised and complete version of the CD that will be sent to all ICME-9 participants during 2005.

3. ICMI Studies

The ICMI Executive Committee initiated no new ICMI Study during 2004. There were six on-going Studies, at different stages of organization.

ICMI Study 12 (*The Future of the Teaching and Learning of Algebra*): Publication in 2004 of the Study volume resulting from this Study. The book has appeared in the New ICMI Study Series published by Kluwer Academic Publishers (NISS 8) and is entitled *The Future of the Teaching and Learning of Algebra: The 12th ICMI Study*. The editors are Kaye Stacey, Helen Chick and Margaret Kendal (University of Melbourne).

ICMI Study 13 (*Mathematics Education in Different Cultural Traditions: A Comparative Study of East-Asia and the West*): Preparation of the ICMI Study volume (NISS 9), under the editorship of Klaus-Dieter Graf (Freie Universität Berlin), Frederick K.S. Leung and Francis Lopez-Real (University of Hong Kong).

ICMI Study 14 (*Applications and Modelling in Mathematics Education*): Holding of the Study Conference at the University of Dortmund, Germany, on February 13-17, 2004. This conference was attended by 90 participants coming from 26 different countries.

ICMI Study 15 (*The Professional Education and Development of Teachers of Mathematics*): Dissemination of the Discussion Document and review of the submitted contributions by the International Programme Committee (IPC), co-chaired by Deborah Ball (University of Michigan) and Ruhama Even (Weizmann Institute of Science), in preparation for the Study Conference to be held on May 15-21, 2005, in Aguas de Lindóia, São Paulo, Brazil.

ICMI Study 16 (*Challenging Mathematics in and beyond the Classroom*): Preparation and dissemination of the Discussion Document by the IPC, co-chaired by Peter J. Taylor (University of Canberra) and Edward J. Barbeau (University of Toronto). The Study Conference is planned to take place in Trondheim, Norway, on June 27 to July 3, 2006.

ICMI Study 17 (*Digital technologies and mathematics teaching and learning: Rethinking the terrain*): Meeting of the IPC in April 2004 at the Institute of Education of the University of London (UK). The co-chairs of the Study are Celia Hoyles (University of London) and Jean-Baptiste Lagrange (IUFM of Reims). The costs incurred by ICMI for this meeting were substantially reduced by a generous grant of 2000 £ from the Royal Society.

Topics currently being considered for further ICMI Studies include:

- Proof and proving in mathematics education;
- The teaching of statistics;
- Linking undergraduate disciplines, for example mathematics & biology;
- History of mathematics education.

As a result of the merger in 2004 of Kluwer Academic Publishers with BertelsmannSpringer, the Study Volumes published in the New ICMI Study Series (NISS) are now to appear under the label of Springer.

4. Regional Conferences

No ICMI Regional Conference was held in 2004, but the ICMI EC has granted the status of an ICMI Regional Conference to three conferences:

- **ICMI-EARCOME-3** (Third ICMI East Asia Regional Conference on Mathematics Education), to be held in Shanghai, Nanjing and Hangzhou, China, on August 7-12, 2005
- **EMF 2006** (Espace mathématique francophone 2006), to be held in Sherbrooke, Canada, on May 27-31, 2006, and
- **ICMI-EARCOME-4** (Fourth ICMI East Asia Regional Conference on Mathematics Education), which will take place in Penang, Malaysia, in 2007.

Frederick Leung, member of the ICMI EC, sits on the International Programme Committee for EARCOME-3, while Vice-President Michèle Artigue and the Secretary-General are members of the EMF 2006 IPC.

5. Other activities

Preparation for the **centennial of the Commission**, to be celebrated in 2008, was pursued during 2004. Ferdinando Arzarello, of the Università degli Studi di Torino, has been appointed as the Chair of the International Programme Committee and the current plans are for a symposium to be organized in (or near) Rome around May 2008, just prior to ICME-11. The aims of the symposium are to reflect on the evolution of mathematics education during the last 100 years and identify emerging trends in the field. The composition of the IPC was finalized early in 2005 and is announced in the June 2005, No. 56, issue of the *ICMI Bulletin*.

Over the last years, ICMI has been sponsoring, jointly with UNESCO and other bodies, the development of a mathematical exhibition entitled “Experiencing mathematics” (formerly called “Why mathematics”), whose aim is to improve the image of mathematics among the general public. This exhibition results from the work of colleagues in France and Japan and ICMI supports it substantially, both in its organization (Vice-President Michèle Artigue represents ICMI on the core committee in charge of the exhibition) and financially (through a grant of 10 000 USD). IMU is also supporting the exhibition with a grant of 1000 USD. The exhibition was officially launched in Copenhagen in July 2004 on the occasion of ICME-10, and was later shown in October 2004 in Orléans during a congress of a French association of mathematics teachers (APMEP). But its first appearance accessible to the public at large, and in particular to pupils and students, was in December 2004 in Paris. It was then on display at the Maison des Métallos, in partnership with the Mairie of the Cité de Paris, from December 9 to 31 and was visited by more than 4000 people, mainly pupils. Two sets of the exhibit are now available and are being circulated internationally under ICMI auspices. The short-term program of travel includes Greece, China, South Africa and India. The exhibition is devised so to be evolutionary, for instance by organizing a regional and coherent pedagogical design around the exhibition.

Following a recommendation of the Ad Hoc Sub-Committee on “Supporting Mathematics in Developing Countries” appointed in 2003 (see the Report on ICMI Activities in 2000-2004, *ICMI Bulletin* No. 54, December 2004, pp. 32-48), the IMU Executive Committee established in early 2004 the Developing Countries Strategy Group (DCSG) with the charge of increasing, guiding and coordinating IMU’s activities in support of mathematics and mathematics education in the developing world. ICMI is represented in the DCSG by Vice-President Michèle Artigue. The first meeting of the DCSG was held at the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste, Italy, on 16-17 October 2004. Among the actions considered by the DCSG is the creation of a web-based Clearinghouse for African Mathematics, which will be housed at ICTP. ICMI offered to contribute to this project by collecting information about activities linked to mathematics education in Africa, in particular as regards existing associations, projects, master and doctorate programs in education, and mathematics competitions. The DCSG also approved a grant to support the circulation in Africa of the international mathematics exhibition “Experiencing Mathematics”.

It has been mentioned in previous reports that ICMI has co-sponsored an International Seminar on Policy and Practice in Mathematics Education organized since 2001 in Utah, USA, in the context of the annual Park City Mathematics Institute (PCMI) hosted by the Institute for Advanced Study (Princeton, USA). This program has engaged each year mathematics educators from a diverse set of countries in a stimulating five-day discussion about common issues and concerns in the teaching and learning of mathematics, with a particular focus on teacher preparation and development. The 2004 session took place during ICME-10, where many participants from the first three years shared with the larger mathematics education community the outcome of the first seminars and considered with this larger group how to continue the dialogue at future Institutes.

ICMI was invited to join with organizers of the PCMI International Seminar (Gail Burrill, Herb Clemens, Joan Ferrini-Mundy and Johnny Lott) for a meeting with World Bank officials. This meeting took place in Washington in September 2004 and ICMI was represented by the Secretary-

General. The purpose of this meeting was to examine how the PCMI International Seminar model could be used in approaching issues of mathematics education in developing countries. Interest was expressed by the World Bank about the preparation of a “policy brief” on the education of teachers which could be based on research done for instance in the countries having taken part in the PCMI International Seminar and could also encourage other countries to be involved in research of their own. The World Bank also expressed interest for the ICMI networking capacity with the leadership in mathematics education around the world, as it is connected to scientific societies and individuals in academic institutions, and is thus complementary to the links that the Bank has with governments and ministries of education.

In a similar vein, ICMI has been invited by the Director of Education at OECD (Organisation for Economic Co-operation and Development) to participate in a Forum on education and social cohesion organized by OECD on the occasion of a meeting of Education Ministers held in Dublin on March 18-19, 2004. This meeting, where ICMI was represented by the Secretary-General, was a first opportunity for a direct link of ICMI with the OECD Directorate for Education. These contacts were pursued later in the year when the Secretary-General and Vice-President Michèle Artigue met at OECD headquarters in Paris with more people of the OECD Directorate for Education. Interest was then expressed by OECD for the “Pipeline Issue” project (see item 6 below), as well as for the themes of teacher education and development (the topic of ICMI Study 15) and mathematics for the workplace (which has been mentioned in the past as a possible topic for a future ICMI Study).

ICMI has accepted to endorse the candidacy of Mariolina Bartolini Bussi to the 2004 Altran Award for the promotion of science. The project is based on the work done at the Laboratory of Mathematical Machines at the Department of Mathematics of the Università degli studi di Modena e Reggio Emilia, in Italy (see <http://www.museo.unimo.it/theatrum/>), and concerns the industrial design and construction at reasonable cost and in large number of a small selection of robust mathematical machines. These models would be of two classes: curve drawing devices and instruments for perspective drawing. The objectives are to sell these mathematical instruments at low prices all over the world to schools, institutions and museums, together with pedagogical support (working sheets, didactical analysis, etc.). This project is of particular interest to ICMI as it directly connects to initiatives of the Commission towards the needs of non-affluent countries in mathematics education.

The President and Secretary-General of ICMI were pleased to receive an invitation from the Editor of the *Notices of the American Mathematical Society* to contribute, on the occasion of ICME-10, a paper providing basic information about the Commission — its aims, history, activities, etc. —, keeping in mind the usual readership of the *Notices*. The resulting article, “The International Commission on Mathematical Instruction — What? Why? For Whom?” appeared in the *Notices of the AMS* vol. 51 (6) (June/July 2004) pp. 639-644, and was reproduced with permission in the *ICMI Bulletin* No. 55 (December 2004), pp. 23-31.

6. IMU Concerns about Mathematics Students

The IMU Executive Committee has expressed in recent years concerns about the case of students of mathematics at the university level. Questions raised were related to the quality of teaching and the motivation of students, about how this reflects on the statistics on the number of students choosing to do mathematics at the university level in various countries, and how this has changed over the last 10 or 20 years. The difficulties of enlisting mathematics majors

appear to be an internationally widespread phenomenon. Pertinent statistics and their analysis may be of interest to all mathematicians and could be the subject of a report that could be issued and used by individual countries in interaction with their governments.

Discussions between ICMI and IMU has given more emphasis to the theme, which has come to be called the “Pipeline issue” and may be seen as related to various aspects of the teaching and learning of mathematics at the higher level. At the ICMI EC meeting held in Copenhagen during ICME-10, it was agreed with IMU President John Ball that ICMI would initiate, in cooperation with IMU, a “Pipeline Issue” project to investigate such matters. A task group, chaired by ICMI EC member Frederick Leung, has been appointed with the mandate to explore the feasibility of implementing such a project and identify potential sources of funding.

7. Affiliated Study Groups

ICMI currently has five Affiliated Study Groups, namely (in the chronological order of their affiliation to ICMI) *HPM* (The International Study Group on the Relations Between the History and Pedagogy of Mathematics) and *PME* (The International Group for the Psychology of Mathematics Education) — 1976, *IOWME* (The International Organization of Women and Mathematics Education) — 1987, *WFNMC* (The World Federation of National Mathematics Competitions) — 1994 and *ICTMA* (The International Study Group for Mathematical Modelling and Applications) — 2003. The quadrennial reports of the Affiliated Study Groups have appeared in the *ICMI Bulletin* No. 54, June 2004, pp. 53-69, while updated information on PME, HPM and IOWME was given in issue No. 55, December 2004, pp. 47-57.

On the occasion of ICME-10, the President and Secretary-General of ICMI were invited to participate in the ceremony of the Paul Erdős Awards. These awards were established by the WFNMC to recognize contributions of mathematicians which have played a significant role in the development of mathematical challenges and which have been a stimulus for the enrichment of mathematics learning. In 2004, the recipients were Warren Atkins (Australia), André Deledicq (France) and Patricia Fauring (Argentina), and the awards were presented by ICMI President Hyman Bass.

8. The Solidarity Program

A new Ad Hoc Committee has been appointed in 2003 to review the functioning of the Solidarity Programme and make recommendations to the Executive Committee concerning its orientation and development. The Chair of this Committee, Alan Bishop (Monash University, Australia), is playing in this connection the role of an ICMI Commissioner with a responsibility for solidarity and equity. A preliminary report of the Ad Hoc Committee was received by the EC in June 2004 and presented by the Chair of the Committee at the General Assembly of ICMI held during ICME-10. The report is proposing a series of possible directions that the ICMI Executive Committee is examining. Peter Galbraith, member of the EC, is responsible for the follow up on this dossier.

9. The ICMI Awards and ICMI Logo

The two recipients of the **ICMI Awards in mathematics education research** selected by the ICMI Award Committee for the year 2003 were announced in a press release issued on April 4, 2004 (see *ICMI Bulletin* No. 54, June 2004, pp. 7-11). The first awardees are Guy Brousseau for the 2003 Felix Klein Medal, and Celia Hoyles for the 2003 Hand Freudenthal

Medal. The ICMI Awards were presented at the opening ceremony of ICME-10. Lectures by each of the awardees were on the program of ICME-10. As a sign of recognition, each recipient was given a certificate and a medal. The medals have been designed and produced by students of École Boulle, in Paris, while the certificates were designed by students of the Studio École of the School of visual arts of Université Laval, in Québec. More information on these tangible tokens can be found in the *ICMI Bulletin* No. 55, December 2004, pp. 14-15.

Both the medals and the certificate are adorned with the recently adopted **ICMI logo**. The choice of the logo was made by the ICMI Executive Committee at its February 2004 meeting and resulted from a review of more than 35 proposals received. The logo selected was designed by students of the Studio École of the School of visual arts of Université Laval, in Québec. More information on the ICMI logo appears in the *ICMI Bulletin* No. 55, December 2004, pp. 16-17.

10. Information and Communication

ICMI maintains a website located on the IMU server (www.mathunion.org/ICMI/). During 2004, issues Nos. 54 and 55 (June and December) of the *ICMI Bulletin* were published. The cover of issue No. 55 incorporates the newly adopted ICMI logo.

Bernard R. Hodgson, Secretary-General
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bhodgson@mat.ulaval.ca
 9 June 2005

ICMI Accounts 2004 1 January – 31 December

BALANCE AS OF JANUARY 1:

ICMI	• Canadian Dollars	48 661,22
	• US Dollars	67 894,85
Solidarity Fund (US Dollars)		36 478,82

Canadian Dollars Account:

Income:

balance 2003	48 661,22
IMU (Schedule A: Administration — 15 000,00 CHF) ¹⁾	15 731,79
IMU (Schedule B: Scientific Activities — 27 000,00 CHF) ¹⁾	28 317,21
interest	561,11
Total	<u>93 271,33</u>

Expenditure:

ICMI Study 14: Study Conf. (Feb. 2004), Dortmund, travel and local expenses of IPC	3 893,62
ICMI Study 15: IPC meeting, Copenhagen, local expenses of IPC	270,46
ICMI Study 17: IPC meeting, London, travel & local expenses of IPC ²⁾	4 979,13
ICMI EC meeting, Dortmund	5 798,96
ICMI EC meeting, Copenhagen	19 303,04
OECD meeting, travel and local expenses of Secretary-General ³⁾	1 558,07
EMF 2006: IPC meeting, Paris, travel and local expenses of Secretary-General	2 921,40
UNESCO/ICMI math exhibition, Paris, local expenses of Secretary-General ⁴⁾	198,86
completion of the artwork on ICMI logo	1 200,00
Klein and Freudenthal ICMI Awards: certificates and medals	883,37
bank charges (checks and foreign transfers)	54,00

ICMI balance 2004 52 210,42

Total 93 271,33

US Dollars Account:**Income:**

ICMI balance 2003	67 894,85
IMU Grant for ICME-10	11 000,00
IMU Grant for the UNESCO/ICMI math exhibition	1 000,00
ICMI interest	701,05

Solidarity Fund balance 2003⁵⁾ 36 478,82

Solidarity Fund interest 348,31

Total 117 423,03

Expenditure:

ICMI Study 15: IPC meeting, Copenhagen, local expenses of IPC	120,00
ICMI Study 17: IPC meeting, London, travel of IPC members ²⁾	2 970,00
ICMI EC meeting, Dortmund	2 835,00
ICMI EC meeting, Copenhagen	660,00
EMF 2006: IPC meeting, Paris, travel of an IPC member	500,00
grant to 1st African Regional Congress on Math education (ICMI Regional Conference)	3 000,00
grant to UNESCO/ICMI math exhibition	10 000,00
transfer to UNESCO/ICMI math exhibition of IMU grant	1 000,00
transfer to ICME-10 of IMU grant	11 000,00

ICMI balance 2004 48 510,90

Solidarity Fund balance 2004 36 827,13

Total 117 423,03

Average exchange rate, 2004 1 USD = 1,30 CAD

Notes:

1. Considering the fact that the value of the US dollar has in recent years substantially diminished with respect to many currencies, it was decided in 2004 that the annual grant of IMU would be given to ICMI in Canadian dollars, as this is the currency through which a majority of ICMI expenses are paid.
2. The International Programme Committee for the seventeenth ICMI Study on *Digital technologies and mathematics teaching and learning: Rethinking the terrain* met at the Institute of Education of the University of London in April 2004. The costs of this meeting were substantially reduced by a generous grant of 2000 £ from the Royal Society.
3. At the invitation of the Organisation for Economic Co-operation and Development (OECD), ICMI has taken part in the Meeting of OECD Education Ministers held in Dublin on March 18-19, 2004. The Secretary-General then represented the Commission.
4. On the occasion of a trip already planned to Paris, the Secretary-General expanded his stay in order to attend the official opening at the Maison des métaux (Mairie de Paris) of the mathematics exhibition "Experiencing Mathematics", jointly sponsored by UNESCO and ICMI.
5. As a consequence of the ICMI General Assembly and Executive Committee meetings held in Québec, August 1992, an **ICMI Solidarity Fund** has been established. This Solidarity Fund, which is based on private contributions, was mounted to assist mathematics education and mathematics educators in less affluent countries. Its money can only be spent to serve such purposes and is therefore **not** part of ICMI's general resources. However, the appearance of the Solidarity Fund on the ICMI accounts is due to the wish to keep ICMI's number of different bank accounts low. The accounts exhibit the ICMI balance and the Solidarity Fund balance separately.
6. In addition to the amounts displayed directly in the accounts, considerable extra sums should appear but do not and cannot. In particular Université Laval, the Secretary-General's home institution, has contributed in 2004 a substantial support to ICMI's work (e.g. telephone and fax, e-mail facilities, postage, the printing and distribution costs of the ICMI Bulletin, secretarial help of various sorts, plus a partially reduced teaching load for the Secretary-General). It is estimated that the total contribution of Université Laval is equivalent to more than 8 000 USD. The ICMI Executive Committee expresses its gratitude for this generous support.

The Executive Committee's thanks also go to the institutions of its other members, as well as to those of some of the individuals involved in the preparation of ICMI activities. These institutions have given substantial support to ICMI's work in a variety of ways, for instance by covering travel and other expenses related to participation in meetings (Executive Committee, International Programme Committees). This was the case in particular for the expenses of the IPC members for the conference of Study 14, held in Dortmund, as well as the meeting of the IPC of ICMI Study 17 held in London. However this type of "invisible" support has become in recent years more and more problematic, due to the financial situation of several higher education institutions around the world, thus putting a severe constraint on ICMI finances.

Bernard R. Hodgson, Secretary-General
Université Laval, Québec, Canada
26 April 2005

COMMITTEE ON ELECTRONIC INFORMATION AND COMMUNICATION (CEIC)

Report prepared by Jonathan Borwein, Secretary, 2004.

Report on CEIC activities in 2004

1. Summary. The CEIC had its seventh annual meeting at Duke University, March 19-21, 2004, hosted by David Morrison. In addition to its annual review of events and of CEIC activities (especially the notion of a *World Digital Mathematics Library*), it was decided to launch two new initiatives:

- A *Federated World Directory of Mathematics* (FWDM) as described in Section 2
- A regular submission to *IMU on the Web* as described in Section 3.

Members of the CEIC participated in various other meetings and made presentations on or about the activities of the CEIC. Thus, Alf van der Poorten, John Ewing and Martin Groetschel participated in a session at the European Mathematical Society on New Developments in Electronic Publishing of Mathematics, a workshop integrating mathematicians, libraries, editors and publishers was held in conjunction with the 5th EMANI workshop and the 3rd WDMML workshop on June 25 to 27, 2004 in Stockholm, Sweden; and Jonathan Borwein made a presentation to ICMI council at its meeting in Copenhagen during ICME10 (July 4-11). He also reported at an IMA workshop (Minneapolis, April 25-29) on *Enhanced Mathematical Searching on the Web* (www.ima.umn.edu/complex/spring/searching.html).

(The full minutes of this meeting may be found at:
http://www.ceic.math.ca/Publications/Minutes/7th_Minutes.pdf.)

2. FWDM (www.fwdm.math.ca) and EWDM (www.mathunion.org/ewdm). **The Federated World Directory of Mathematicians web page commences:**

Federated searching connotes any system that provides a common user interface for searching and retrieving information across heterogeneous datasets over the Internet.

- A prototype federated search engine is below. It is intended, by August 2006, to enhance this tool and to make it generally available to mathematical organizations. Feedback is very welcome.
- Detailed project description, overview, and extensive discussion (February 2005) (PDF).
- Demonstration from SIAM Computing Science and Engineering 2005 (CSE'05)
- A detailed project timeline is below.

Preamble In 1998 the CEIC was asked to explore the feasibility of an electronic World Directory of Mathematicians to replace the traditional hard copy. The CEIC concluded that, while desirable, intellectual property and privacy issues in different countries made this impossible for the 2002 edition of the WDM. With the emergence of better Internet

search tools, we now believe it is realistic to build a federated directory, as defined above. What this provides is a rapid and simple search over existing online databases with no additional work for the user.

The current search is over six data bases (including the IMU's individual *Electronic World Directory of Mathematicians* maintained at ZIB in Berlin) with several more about to be added. The project is overseen by Jonathan Borwein at Dalhousie University.

3. IMU on the Web (www.ceic.math.ca/News/IMUonWeb.shtml)

The web site commences:

Also known as **IMU on the Web**, these columns will appear in each **IMU-Net** newsletter and will be accompanied by additional commentary and links. Some will be invited signed opinions and some will come from the CEIC itself. They intend to stimulate interest in and debate about electronic matters. Our first piece, written by the CEIC, is on the vexing problem of Journal pricing.

Under the editorship of Alf van der Poorten (Macquarie University) there had been five columns by the end of 2004.

4. The Eighth Meeting of the Committee on Electronic Information and Communication (CEIC) of the International Mathematical Union was scheduled for the Université Joseph Fourier, March 11-13, 2005, hosted by Pierre Berard.

IMU APPROVED BUDGET FOR THE YEARS 2003 – 2006
IN SWISS FRANCS

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 scientific activities			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

International Mathematical Union

Independent Auditors' Report

Financial Statements (Modified Cash Basis) and Additional Information

Year Ended December 31, 2004

INTERNATIONAL MATHEMATICAL UNION

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INDEPENDENT AUDITORS' REPORT

We have audited the statement of assets and liabilities – modified cash basis of International Mathematical Union (the “IMU”) as of December 31, 2004, and the related statement of income and expenditures – modified cash basis for the year then ended. These financial statements are the responsibility of the IMU's management. Our responsibility is to express an opinion on these financial statements based on our audit. The prior year summarized comparative information has been derived from the IMU's December 31, 2003 financial statements, and in our report dated March 16, 2004, we expressed an unqualified opinion on those financial statements.

We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the organization's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

As described more fully in Note 1 to the financial statements, these financial statements were prepared in conformity with the accounting practices prescribed or permitted by the International Council of Scientific Unions (“ICSU”), which is a comprehensive basis of accounting other than accounting principles generally accepted in the United States of America.

In our opinion, such financial statements present fairly, in all material respects, the assets and liabilities (modified cash basis) of IMU at December 31, 2004, and the income and expenditures (modified cash basis) for the year then ended, on the basis of accounting described in Note 1.

This report is intended solely for the information and use of the board of directors and the members of IMU and for ICSU to whose jurisdiction the IMU is subject and is not intended to be and should not be used by anyone other than these specified parties.

Our audit was conducted for the purposes of forming an opinion on the basic financial statements taken as a whole. The additional information listed in the table of contents is presented for the purposes for additional analysis and is not a required part of the basic financial statements. This additional information is the responsibility of IMU's management. Such information has been subjected to the auditing procedures applied in our audit of the basic financial statements and, in our opinion, is fairly stated in all material respects when considered in relation to the basic financial statements taken as a whole.

March 25, 2005

INTERNATIONAL MATHEMATICAL UNION

Statement of Income and Expenditure For The Year Ended December 31, 2004

I - INCOME	US DOLLARS
Grant from ICSU Fund and US National Academy of Sciences	
Allocation from UNESCO to ICSU Grants Program	
UNESCO Contracts	
Contributions from National Members	\$210,271
Contributions from Other Members	
Special Contributions	\$24,372
Contracts	
Sales of Publications, Royalties	\$3,438
Sales of Scientific Materials	
Bank Interest	\$5,730
Gain on Exchange	
Other Income	\$74,579
TOTAL INCOME	\$318,390
II - EXPENDITURES AND TRANSFERS	
A) SCIENTIFIC ACTIVITIES	
General Assembly or equivalent	\$3,200
Scientific Meetings: Symposia/ Colloquia/ Working Groups/ Training Courses, etc.	\$70,084
Representation at Scientific Meetings	
Data Gathering/ Processing	
Research Projects	
Grants to Individuals/Organizations	\$134,265
Other	
Less covered by UNESCO Contracts	
Routine Meetings	
Bureau/ Executive Committee	\$15,178
Other	
Publications	\$0
B) OTHER ACTIVITIES	
Contribution to ICSU	\$6,002
Contribution to other ICSU bodies	\$6,100
Activities covered by UNESCO Contracts	
C) ADMINISTRATIVE EXPENSES	
Salaries and Related Expenses	\$26,431

CDE Admin Assistant	\$13,541
General Office Expenses	\$271
Office Equipment	
Audit Fees	\$5,725
Bank Charges	\$1,536
Loss on Exchange	
TOTAL EXPENDITURES AND TRANSFERS	\$282,333
EXCESS OF INCOME OVER EXPENDITURES AND TRANSFERS	\$36,057
ACCUMULATED BALANCE AT JANUARY 1, 2004	\$422,511
ACCUMULATED BALANCE AT DECEMBER 31, 2004	\$458,568

See notes to financial statements.

INTERNATIONAL MATHEMATICAL UNION**ASSETS and LIABILITIES in US\$ Dollars****DECEMBER 31, 2004 (WITH COMPARATIVE TOTALS FOR 2003)**

	<u>2004</u>		<u>2003</u>	
ASSETS				
BANK ACCOUNTS and CASH (Note 2)				
Cash				
Current Accounts	\$11,453		\$12,409	
Deposit Accounts	<u>\$575,214</u>	\$586,667	<u>\$471,468</u>	\$483,877
Prepayments				
Receivables		<u>\$1,016</u>		<u>\$8,549</u>
TOTAL ASSETS		<u>\$587,683</u>		<u>\$492,426</u>
LIABILITIES				
Creditors and Accruals		\$5,500		\$5,500
ACCUMULATED FUNDS (Note 3)				
General Fund				
Beginning of Year Balance	\$422,511		\$425,645	
Excess Income over Expenditure	<u>\$36,057</u>	\$458,568	<u>(\$3,134)</u>	\$422,511
Special Development Fund				
Beginning of Year Balance	\$31,111		\$0	
Provision to ICM 06	\$33,600		\$31,111	
Expenses	<u>\$0</u>	\$64,711	<u>\$0</u>	\$31,111
General Assembly Fund				
Beginning of Year Balance	\$6,526		\$3,563	
Provision to General Assembly 06	\$3,200		\$2,963	
Expenses	<u>\$0</u>	\$9,726	<u>\$0</u>	\$6,526
World Directory of Mathematicians Fund				
Beginning of Year Balance	\$6,038		\$34,891	

Provision to W.D.M.	\$0		\$0	
Expenses	<u>\$0</u>	\$6,038	<u>(\$28,853)</u>	\$6,038

Fund to ICM 06

Beginning of Year Balance	\$20,740		\$0	
Provision to ICM 06	\$22,400		\$20,740	
Expenses	<u>\$0</u>	\$43,140	<u>\$0</u>	\$20,740
		<u>\$587,683</u>		<u>\$492,426</u>

See notes to financial statements.

INTERNATIONAL MATHEMATICAL UNION

NOTES TO FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2004

1. BASIS OF ACCOUNTING

The accompanying financial statements were prepared on the basis of cash receipts and disbursements modified for scheduled and contractual transactions, i.e., sales of publications receivable and audit fees payable, in a manner consistent with prior year financial statements. In addition, IMU transfers certain amounts from the General Fund to the other funds, to set aside amounts budgeted for the expenses of future conferences and meetings. See Note 3. Further, these financial statements exclude a statement of cash flow.

2. BANK ACCOUNTS and CASH

	2004	2003
The amount held with banks is as follows:	<u>US\$</u>	<u>US\$</u>
PNC Bank USA		
- Current Account	\$11,453	\$12,409
- Money Market	<u>\$575,214</u>	<u>\$471,468</u>
	<u>\$586,667</u>	<u>\$483,877</u>

3. ACCUMULATED FUNDS

These funds represent the amounts set aside to cover the following:

Provided in Year Ended	2004 General <u>Fund</u>	2004 General <u>Assembly</u>	2004 World <u>Directory</u>	2004 Special <u>Development</u>	2004 Fund <u>to ICM 06</u>
General Fund					
Balance December 31, 2003	\$422,511				
Transfer excess income over expenditure	\$36,057				
Special Development					
Balance December 31, 2003				\$31,111	
Transfer from the General Fund Expenses				\$33,600	
General Assembly Fund					
Balance December 31, 2003		\$6,526			
Transfer from the General Fund Expenses		\$3,200			
World Directory of Mathematicians Fund					
Balance December 31, 2003			\$6,038		
Provision to W.D.M. Expenses					
Fund to ICM 06					
Balance December 31, 2003					\$20,740
Transfer from the General Fund Expenses					\$22,400
	<u>\$458,568</u>	<u>\$9,726</u>	<u>\$6,038</u>	<u>\$64,711</u>	<u>\$43,140</u>

INTERNATIONAL MATHEMATICAL UNION
STATEMENT OF INCOME and EXPENDITURES
FINANCIAL YEARS 2004 and 2003 COMPARED, IN US\$ DOLLARS

	<u>2004</u>		<u>2003</u>	
INCOME				
Allocation from UNESCO grant to ICSU	\$0		\$10,000	
Contributions from National Members	\$210,271		\$210,838	
Special Contributions	\$24,372		\$26,160	
Sale of Publications	\$3,438		\$9,321	
Bank Interest	\$5,730		\$5,427	
Gain on Exchange	\$0		\$0	
Other Income	<u>\$74,579</u>	\$318,390	<u>\$0</u>	\$261,746
EXPENDITURES AND TRANSFERS				
A. MEETINGS				
Executive Committee	\$14,715		\$14,145	
Other	\$0		\$0	
Program Committee	\$463		\$16,575	
General Assembly	<u>\$3,200</u>	\$18,379	<u>\$2,963</u>	\$33,683
B. PUBLICATIONS				
		\$0		\$0
C. SCIENTIFIC ACTIVITIES				
ICMI	\$22,130		\$29,822	
CDE	\$80,000		\$29,412	
CEIC	\$19,841		\$9,379	
Travel Grants	\$33,600		\$31,111	
Conferences	\$36,484		\$70,223	
Other	<u>\$0</u>	\$192,055	<u>\$0</u>	\$169,947
D. ADMINISTRATIVE EXPENSES				
Contribution to ISCU	\$6,002		\$6,002	
Grant to CTS	\$0		\$0	
Grant to ICMI	\$12,294		\$11,012	
Grant to CDE	\$6,100		\$5,147	
Audit Fees	\$5,725		\$5,700	
Salaries and related charges	\$26,431		\$27,903	
Salary CDE Admin Assistant	\$13,541		\$0	

General office expense	\$271		\$3,543	
Office Equipment	\$0		\$0	
Bank charges	\$1,536		\$1,943	
Loss on exchange	<u>\$0</u>	\$71,900	<u>\$0</u>	\$61,250
		<u>\$282,333</u>		<u>\$264,880</u>
EXCESS (DEFICIT) OF INCOME OVER EXPENDITURE AND TRANSFERS		\$36,057		(\$3,134)
Allocated to General Fund		(\$36,057)		\$3,134

INTERNATIONAL MATHEMATICAL UNION

Statement of Contributions received from members
in the year ended December 31, 2004, in US\$ Dollars

MEMBER	PRE 2004	2004
Argentina		\$4,233.00*
Australia		\$3,961.41
Austria		\$3,987.34*
Bulgaria	\$1,012.96	
Canada		\$10,360.56
Chile	\$1,875.00	
Chinese Math Society, PRC		\$4,012.83
Math Society, Taipei		\$1,994.49
Croatia	\$1,125.90	
Czech Republic		\$4,267.93*
Denmark		\$2,087.00
Finland		\$2,040.34
France		\$11,446.41
Georgia		\$700.00
Germany		\$9,852.22
Greece		\$1,111.32
Hong Kong		\$1,000.92
Hungary		\$4,404.40
Iceland	\$1,163.57	\$1,163.56
India		\$7,814.00
Iran	\$2,081.71	\$2,081.71
Ireland		\$2,012.11
Israel		\$9,768.17
Italy		\$9,717.31
Ivory Coast	\$1,041.00	\$1,041.00
Japan		\$9,960.01
Kazakhstan	\$1,106.00	
Korea, Republic of South		\$2,025.16
Latvia		\$1,020.17
Lithuania	\$1,062.19	
Mexico		\$2,111.00
Netherlands		\$7,506.85
New Zealand		\$991.61
Norway		\$2,081.50
Poland		\$4,083.21
Portugal	\$1,035.50	

Romania		\$1,016.32
Russia		\$9,771.99
Saudi Arabia		\$997.41
Serbia & Montenegro		\$976.76
Singapore		\$1,041.00
Slovakia	\$2,212.35	
Slovenia		\$1,034.00
South Africa		\$2,112.00
Spain		\$4,041.33
Sweden		\$7,200.75
Switzerland		\$7,300.13
Turkey	\$528.93	\$839.00
Ukraine	\$3,636.00	
United Kingdom		\$10,560.00
United States		\$10,746.00
Uruguay	\$960.00	
Venezuela	\$978.00	\$978.00
Vietnam	\$1,000.00	\$2,000.00*
TOTAL	\$20,819.11	\$189,452.23

TOTAL CONTRIBUTIONS RECEIVED	\$210,271.34
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* Paid 2005 dues in 2004

INTERNATIONAL MATHEMATICAL UNION

DUES ARREARS AS OF DECEMBER 31, 2004

MEMBER	Dues Swiss Francs	YEARS	US\$ Dollars
Armenia	2,640.00	2003-04	\$2,336.28
Belgium	5,280.00	2004	\$4,672.57
Bosnia & Herzegovina	1,320.00	2004	\$1,168.14
Brazil	5,280.00	2004	\$4,672.57
Bulgaria	2,640.00	2003-04	\$2,336.28
Cameroon	1,320.00	2004	\$1,168.14
Chile	7,680.00	2002-04	\$6,796.46
Croatia	1,320.00	2004	\$1,168.14
Cuba	11,724.33	1993 part; 94-99, 2002-04	\$10,375.51
Egypt	5,280.00	2003-04	\$4,672.57
Georgia	488.00	part 2004	\$431.86
Ivory Coast	1,200.00	2002	\$1,061.95
Kazakhstan	1,320.00	2004	\$1,168.14
Nigeria	16,440.00	1990-1997; 1999-2004	\$14,548.67
Peru	2,640.00	2003-04	\$2,336.28
Philippines	13,452.00	1991, 94, 96-04; part 95	\$11,904.42
Portugal	1,320.00	2004	\$1,168.14
Slovakia	2,640.00	2004	\$2,336.28
Tunisia	8,640.00	1998-2004	\$7,646.02
Turkey	660.00	part 2004	\$584.07
Ukraine	5,280.00	2003-04	\$4,672.57
Uruguay	2,640.00	2003-04	\$2,336.28
TOTAL	101,204.33		\$89,561.35

1 US Dollar = 1.13 Swiss Francs at December 31, 2004

The following countries have paid their previous dues in early 2005:

Brazil, Cameroon

INTERNATIONAL MATHEMATICAL UNION
STATEMENT OF INCOME AND EXPENDITURE IN SWISS FRANCS - 2004

EXPENDITURE

SCHEDULE A:	Budget	Actual
Secretarial help, IMU Office	20,000	22,075
Secretarial help, President	5,000	0
Accountant	8,000	8,771
CDE Admin Assistant	0	16,926
ICMI	15,000	15,368
CDE	7,000	7,625
Office expenses (including postage)	16,000	2,259
Travel expenses of E.C.	30,000	18,394
President's and Secretary's expense	4,000	2,193
Contribution to ICSU	9,500	7,503
IMU Bulletin	5,000	0
Audit Fee	7,000	7,156
General Assembly - 2006	4,000	4,000
World Directory of Mathematicians	20,000	0
Contingencies	2,000	0
Subtotal	152,500	112,269
Schedule B:	BUDGET	ACTUAL
Symposia, Conferences, IMU Lectures	95,000	17,605
ICMI scientific activities	27,000	27,663
CDE scientific activities	40,000	100,000
Program Committee for ICM 06	8,000	579
Travel Grants	42,000	42,000
Subvention to ICM 06	28,000	28,000
CEIC scientific activities	25,000	24,801
Subtotal	265,000	240,648
TOTAL	417,500	352,916
INCOME		
Membership dues (212 x 1320)	279,840	262,839
ICSU subvention	10,500	0
Sales of W.D.M.	14,160	1,270
Sales of Publications	0	3,028
Other Income	0	93,224
Special Development Fund	72,000	30,465
Interest on bank accounts	41,000	7,163
TOTAL	417,500	397,988

INTERNATIONAL MATHEMATICAL UNION
SPECIAL DEVELOPMENT FUND
Contributions Received for 2004-in US\$ Dollars

<u>Date</u>	<u>Description</u>
02/04/04	18,636.50 American Mathematical Society
07/09/04	763.49 Unione Matematica Italiana
08/27/04	4,972.00 London Mathematical Society
 Total	 24,371.99

World Directory of Mathematicians
12th Edition
For The Year Ended December 31, 2004

Revenue:

4 Units @ \$70.00	\$ 280.00
2 Units @ \$56.00	112.00
1 Units @ \$53.00	53.00
2 Units @ \$42.00	84.00
18 Units @ \$35.00 (sold @ 50% off list)	630.00
3 Units @ \$00.00 (no charge copies)	-

Total Revenue	\$1,159.00
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Less: AMS Service Fee	
24 Units @ \$15.00	<u>360.00</u>

Subtotal	799.00
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Plus: 18cps sold @ 50% off: per agreement -- AMS fee waived	
18 Units @ \$15.00	<u>270.00</u>

Balance Due IMU	<u>1,069.00</u>
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Total Units Shipped	27
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Less: Free Copies	<u>3</u>
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Copies Subject to Service Fee	<u>24</u>
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World Directory of Mathematicians
11th Edition
For The Year Ended December 31, 2004

Revenue:

-1 Units @ \$65.00

\$ (65.00)

Total Revenue

(\$65.00)

Less: AMS Service Fee

-1 Units @ \$12.00

(12.00)

Balance Due IMU

(\$53.00)

Total Units Shipped

(1)

Less: Free Copies

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Copies Subject to Service Fee

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