ICMI

BULLETIN

OF THE

INTERNATIONAL COMMISSION

ON

MATHEMATICAL INSTRUCTION

No. 5

April 1975

I C M I

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INTERNATIONAL COMMISSION ON
MATHEMATICAL INSTRUCTION

Executive Committee

(Until December 31, 1974)

President: Professor Sir James Lighthill

Vice-Presidents: Professor S. Iyanaga
                    Professor J. Surányi

Secretary: Dr. E. A. Maxwell

Members: Professor H. Freudenthal
                    Professor H. Pollak
                    Academician S. L. Sobolev

(January 1, 1975 - December 31, 1978)

President: Professor S. Iyanaga

Vice-Presidents: Professor B. Christiansen
                    Professor H. G. Steiner

Secretary: Professor Y. Kawada

Members: Professor E. G. Begle
                    Professor L. D. Kudrjavcev
                    Professor Sir James Lighthill

I   REPORT BY THE PRESIDENT

S. Iyanaga

It was a great honour to me to have been elected President of the Inter-national Commission on Mathematical Instruction (ICMI) at the General Assembly of the International Mathematical Union (IMU) held at Harrison Hotsprings in August 1974. The presidency of ICMI was first assumed by Professor A. Châtelet for the period 1952-54, who was succeeded in turn by Professor H. Behnke for 1955-58, Professor M. H. Stone for 1959-62, Professor A. Lichnerowicz for 1963-66, Professor H. Freudenthal for 1967-70, and finally by Professor Sir James Lighthill for 1971-74.

Terms of reference of ICMI as reproduced below was adopted at Paris meeting of the Executive Committee of IMU in April 1960. At the last General Assembly of IMU at Harrison Hotsprings the following Resolution 5 was adopted concerning IMU: "The General Assembly received a report by Professor Sir James Lighthill on the work of the International Commission on Mathematical Instruction (ICMI). The General Assembly expresses its great appreciation of the activities of ICMI in every aspect of mathematical education, particularly in developing countries, and it hopes that this work will continue to grow, and that the mathematical needs of other scientific disciplines will be taken into consideration."

In the past, many of the symposia supported by ICMI, have also been supported by UNESCO. This kind of cooperation between ICMI and UNESCO will be con-tinued and even developed, it is hoped, through the good offices of Professor B. Christiansen. I should like to remind also that "L'Enseignement Mathé-matique" (Genève), the official organ of ICMI since 1952, gives its early history in t.40 (1ère série, p.162), and "Educational Studies in Mathema-tics" (Reidel, Dordrecht) as well as "Zentralblatt für Didaktik der Mathematik" (Pedagogische Hochschule, Bayreuth) is in close relation with our Commission.

I have had the pleasure of sharing, together with Professor J. Surányi, the work of the Executive Committee as Vice-President under the Presidency of Professor Sir James Lighthill, and of learning, thus, how this work is to be conducted. However, as my home country, Japan, lies far from Europe and America, where the study of mathematics and of mathematical education has its longest history, I am sure that I shall have to make a greater effort to secure and develop this work. Fortunately, world communication has been greatly improved, and all the members of the newly elected Executive Commit-

tee have kindly agreed to collaborate in our work. I am anticipating the cooperation of the members-at-large elected at Harrison Hotsprings and of all other members of ICMI, whose list is given below, and hope that our effort will bear fruitful results.

As a general guide-line to our work, I am intending to follow the Terms of Reference of ICMI, the Resolution 5 at the last General Assembly of IMU and the example of the preceding Executive Committee, in particular, to continue to issue this ICMI Bulletin. It began to appear in 1972 and has been issued hitherto biannually. Professor Kawada, secretary of ICMI and myself, are now planning to issue it three times annually: in April, August and December. Professor Kawada would be happy to receive any information concerning plans of symposia etc. on mathematical education of international character, directly connected with ICMI or otherwise. Such information should, preferably, contain (1) the subjects and objects of the meeting, (2) its place and dates and (3) the address of the organizing committee. The information received up to one month before the publication is to appear in the Bulletin and to be sent out to all members of ICMI.

Any reproduction of this Bulletin is freely consented to and even recommended; I should especially like to request the national representative organs to disseminate the news contained in this Bulletin to their respective countries, and send us information to be published in this Bulletin. If there is any change of addresses or names of responsible persons, we should be grateful for prompt notification.

I know, on the other hand, that there are many who desire to know how to procure the Proceedings of international meetings which have already taken place. We would also be glad to receive an information concerning these questions.

This issue contains the news we have up to the present. The account on the third International Congress on Mathematical Education (ICME) in Karlsruhe, 1976 by Professor H. G. Steiner, President of its International Programme Committee, will deserve, I believe, the particular attention. I am anticipating subsequent issues will contain more news.

To conclude, on behalf of the new Executive Committee, I would like to express our deepest gratitude to the former Executive Committee, in particular to its President, Professor Sir James Lighthill, for all its efforts and for the splendid results obtained, and to repeat my request to all the members of ICMI for their kind cooperation in the years to come.

II TERMS OF REFERENCE OF THE INTERNATIONAL COMMISSION
ON MATHEMATICAL INSTRUCTION (ICMI)

(a) The Commission shall consist of ten members-at-large elected by the
General Assembly of IMU on nomination of the President of IMU, and of
one national delegate from each member nation, as specified below.

(b) The officers of the Commission shall consist of a President, a Secretary,
and two Vice-Presidents. The President shall be elected by the General
Assembly on the nomination of the President of IMU from the members-at-
large of the Commission.

(c) The Executive Committee of the Commission shall consist of the officers
of the Commission together with three additional members elected by the
membership of the Commission.

(d) In all other respects the Commission shall make its own decisions as to
its internal organization and rules of procedure.

(e) Any National Adhering Organization wishing to support or encourage the
work of the Commission may create, or recognize, in agreement with its
National Committee, a National Sub-Commission for ICMI to maintain
liaison with the Commission in all matters pertinent to its affairs.
The National Adhering Organization in question shall designate one
member of the said Sub-Commission, if created, to serve as a delegated
member of ICMI as mentioned in (a).

(f) The Commission shall be charged with the conduct of the activities of
IMU, bearing on mathematical or scientific education and shall take the
initiative in inaugurating appropriate programmes designed to further
the sound development of mathematical education at all levels, and to
secure public appreciation of its importance. In the pursuit of this
objective, the Commission shall cooperate, to the extent it considers
desirable with effective regional groups which may be formed spontane-
ously, within, or outside, its own structure.

(g) The Commission may, with the approval of the Executive Committee of IMU,
coopt, as members of ICMI, suitably chosen representatives of non-IMU
countries, on an individual basis.

(h) The budget of the Commission shall be submitted to the Executive
Committee of IMU and the General Assembly, for approval, at such times
as may be determined by agreement between the Commission and the
Executive Committee of IMU.

(i) The Commission shall file an annual report of its activities with the Executive Committee of IMU, and shall file a quadrennial report at each regular meeting of the General Assembly.

Memorandum on Affiliation of IACME to ICMI

The ICMI Executive Committee, meeting in Vancouver in August 1974, resolved to adopt the following arrangment for affiliation of IACME (Inter-American Committee on Mathematical Education) to ICMI in the spirit of section (f) of the Terms of Reference:

(i) IACME, as the regional body devoted to bringing about within the Americas improved international liaison on matters concerned with mathematical education, is to be described as affiliated to ICMI, the globally international body devoted to bringing about worldwide international liaison on these matters;

(ii) ICMI and IACME will continuously exchange information regarding all their proposed activities;

(iii) ICMI will advise IACME regarding activities that would coordinate well with other activities of concern to ICMI;

(iv) ICMI will propose names of possible participants in IACME Conferences' and other meetings;

(v) ICMI will give international publicity to IACME's programme of activities;

(vi) IACME will make suggestions to ICMI regarding subjects and participants for ICMI meetings and will assist in making ICMI's plans and programmes known within the Americas;

(vii) at the same time, the affiliation of IACME to ICMI implies no payments of money by either party to the other.

III   LIST OF MEMBERS OF ICMI

Ex-Officio Members:

Professor Sir James Lighthill (Past President of ICMI)
Department of Applied Mathematics and Theoretical Physics
Cambridge University
Silver Street, Cambridge, CB3 9EW
England, U.K.

Professor Deane Montgomery (President of IMU)
The Institute for Advanced Study
Princeton, New Jersey 08540
U.S.A.

Professor Jaques-Louis Lions (Secretary of IMU)
Collège de France
Chaire d'Analyse Mathématique des Systèmes et de leur Controle
11 Place Marcellin-Berthelot, 75005-Paris
France

Professor Hans Freudenthal (Representative of IMU on the ICSU
                            Committee on Science Teaching)
Institut Ontwikkeling Wiskunde Onderwijs
Tiberdreef 4, Utrecht/Overvecht
The Netherlands

Members-at-large:

Professor E. G. Begle
School of Education, Stanford University
Stanford, California 94305
U.S.A.

Dr. P. L. Bhatnagar
Dholpur House, Shahjahan Road, New Delhi 11011
India

Professoressa Emma Castelnuovo
Via S. Angela Merici 48
00162 Roma
Italy

Professor Bent Christiansen
Paradiskrogen 1, DK 2840 Holte
Denmark

Professor S. Iyanaga
12-4 Otsuka 6, Bunkyo-ku, Tokyo, 112
Japan

Professor L. D. Kudrjavcev
Mathematics Institute
Ul. Vavilova 42, Moscow 117333
USSR

Madame J. Lelong-Ferrand
Professeur à l'Université Paris VI
95 Boulevard Jourdan 75014, Paris
France

Professor B. H. Neumann
Department of Mathematics, Institute of Advanced Studies
Australian National University
POB 4, Canberra, ACT 2600
Australia

Professor Z. Semadeni
Institute of Mathematics, Polish Academy of Sciences,
Ul. Sniadeckich 8, Warszawa 1
Poland

Professor J. Surányi
Budapest VI, Zichy Jeno u. 39
Hungary

National Representatives

Argentina: Professor Luis A. Santalo
                        Cochabamba 780, Dpto 10, Buenos Aires
                        Argentina

Australia: Professor B. H. Neumann
                        Department of Mathematics, Institute of Advanced
                        Studies, Australian National University
                        Box 4, Canberra, ACT 2600
                        Australia

Austria: Professor E. Hlawka
                        Mathematisches Institut der Universität
                        Strudlhofhasse 4, Wien A-1090
                        Austria

Belgium:	Dr. G. Noel Université de l'État à Mons Avenue Maistriau 19, B.7000 Mons Belgium
Brazil:	Professor L. Nachbin Avenida Vieira Souto 144, Apto 100, Rio de Janeiro 95, Ipanema Brazil
Bulgaria:	Professor B. L. PetanČin Sofia 64, Elin-Pelin Str. 20 Bulgaria
Canada:	Professor A. L. Dulmage University of Manitoba Winnipeg 19, Manitoba Canada
China-Taiwan:	Dr. Shing-Meng Lee National Central University, College of Science Chung Li Taiwan
Czechoslovakia:	Dr. J. Vyšín Nad Kralovskou oborou, Praha 6 Czechoslovakia
Denmark:	Lektor J. Hoffmann-Jørgensen Matematisk Institut Universitetsparken - Ny Munkegade DK-8000 Aarhus Denmark
Federal Republic of Germany:	Professor H. Kunle 75 Karlsruhe, Universität West Germany Professor H. G. Steiner D-4801 Jöllenbeck, Hermann-Lons-str. 16 West Germany
Finland:	Dr. L. Kaila Bernadink 1, Helsinki 13 Finland

France:	Madame Jacqueline Lelong-Ferrand Professeur à l'Université Paris VI 95 Boulevard Jourdan - 75014 Paris France
German Democratic Republic:	Professor K. Härtig 1157 Berlin Horterweg 16 German Democratic Republic
Greece:	Professor C. Papaipoannou Jacouvidou St. 22, Athens Greece
Hungary:	Professor J. Szendrei Szeged, Aprilis 4, Utja 6 Hungary
India:	Dr. P. L. Bhatnagar Dholpur House, Shahjahan Road New Delhi 11011 India
Ireland:	Professor Cornelius Lanczos MRIA Mathematics Department University College Dublin Belfield, Dublin Ireland
Israel:	Professor M. Maschler Department of Mathematics Hebrew University Jerusalem Israel
Italy:	Professoressa Emma Castelnuovo Via S. Angela Merici 48 00162 Roma Italy
Japan:	Professor Y. Kawada Department of Mathematics University of Tokyo Hongo, Bunkyo-ku, Tokyo , 113 Japan

Luxembourg:	Professor L. Kieffer Collège d'Enseignement Moyen 1 rue Jean Jaures Luxembourg
Malawi:	Dr. Martyn Cundy Chancellor College PO Box 5200, Limbe Malawi
Netherlands:	Dr. P. G. J. Vredenduin van Wassenaerheuvel 73, Oosterbeek Netherlands
Nigeria:	Mr. S. A. Dada African Church Grammar School PO Box 729, Ibadan Nigeria
Norway:	Dr. A. Johansen Karl Flods Vei 5, Oslo 9 Norway
Pakistan:	Dr. M. Raziuddin Siddiqi University of Islamabad 77 E Satellite Town, Rawalpindi Pakistan
Poland:	Professor Z. Semadeni Institute of Mathematics Polish Academy of Sciences Ul. Sniadeckich 8, Warszawa 1 Poland
Portugal:	Professor J. Sebastião e Silva Rue Fernam Gomes 17 Restelo, Lisboa 3 Portugal
Roumania:	Dr. G. C. Moisil Inst. de Matematica Str. Mihail Eminescu 47, Bucuresti Roumania

Senegal: Professor S. Niang
                            Université de Dakar, Fac. des Sciences
                            Dakar
                            Senegal

South Africa: Professor J. H. van der Merwe
                            Department of Mathematics
                            University of South Africa.
                            Pretoria
                            South Africa

Spain: Professor Pedro Abellanas
                            Isaac Peral 3, Madrid 15
                            Spain

Swaziland: Dr. R. J. Waterston
                            Department of Mathematics
                            University of Botswana, Lesotho and Swaziland
                            PO Luyengo
                            Swaziland

Sweden: Professor Hans Wallin
                            Department of Mathematics
                            University of Umeå
                            Umeå
                            Sweden

Switzerland: Professor A. Delessert
                            1099 Servion, Vaud
                            Switzerland

Tunisia: Dr. M. Bougila
                            11 rue Duguesclin, Tunis
                            Tunisia

United Kingdom: Professor J. V. Armitage
                            The Shell Centre for Mathematical Education
                            University Park, Nottingham NG7 2RD
                            England, U.K.

USA: Professor P. J. Hilton
                            Battelle Research Center
                            4000 NE 41st Street, Seattle
                            Washington 98105
                            USA

USSR: Professor I. M. Yaglom
                               Grousinski Val. 26, Kv. 97
                               Moscow D5
                               USSR

Yugoslavia: Professor D. Kurepa
                               Matematicki Zavod PMF
                               Boite 550, Beograd
                               Yugoslavia

Zambia: Dr. S. M. Bayat
                               Secretary
                               Mathematical Association of Zambia
                               POB RW204, Ridgeway, Lusaka
                               Zambia

IV   PLANS OF FUTURE SYMPOSIA

1. Underline International Colloquium on Evolving a Mathematical Attitude in the
    Secondary Education (Age Range 14-18 Years) (Hungary)

This colloquium, organized by the Bolyai János Mathematical Society, will be
held in Nyiregyháza (Hungary) from August 18 to 23, 1975.

All aspects of this question as e.g. role of different teaching methods,
evaluation motivation, elaboration of special topics etc. belong to the
theme of the discussion.

Working languages of the Colloquium are English, French and Russian.

Further information may be obtained from
                        Professor János Surányi
                        (Chairman of the Organizing Committee)
                        Bolyai János Mathematical Society
                        H-1061 Budapest, Anker kös 1-3
                        Hungary.

2. International Symposium on Combinatorics and Probability in Primary Schools (Poland)

This Symposium, organized by the Polish National Committee on Mathematical Instruction and sponsored by the Ministry of Education and by ICMI, will be held in Warsaw from August 25 to 28, 1975.

The topics of the symposium will include combinatorics aspects of teaching various topics like sets, arithmetics, geometry etc., and introduction of statistics.

The working language of the symposium will be English, French, German and Russian.

Further information will be obtained from
        Professor Z. Semadeni
        Institute of Mathematics, Polish Academy of Sciences
        ul. Sniadeckich 8, 00-950 Warszawa
        Poland.

3. Second World Conference on Computer Education (France)

This Conference, organized by IFIP (International Federation of Information Processing) with the co-sponsorship of ICMI, is being held at Marseille, France from September 1 to 5, 1975. It aims to bring together people concerned with the many possible roles of informatics in education.

The first Conference concluded in its "Final Recommendations" that there is a necessary distinction to be made between methodology of informatics and the computer, and called special attention to the considerable advantages to be obtained by introducing the methodology of informatics into the teaching of all disciplines.

To show the progress made to date in this direction and in an attempt to gain new insight for the future, a significant part of the Conference Program will be devoted to the introduction of the methodology of informatics into the teaching of different disciplines.

Another important aspect of the Conference will be a consideration of the use of the methods of informatics and applications of computers to aid in the solution of the problems of education in developing countries.

Working languages: English, French, Russian, Spanish.

Further information may be obtained from:

Dr. J. Hebenstreit
Ecole Supérieure d'Electricité
10 Avenue Pierre-Larousse
92 - Malakoff
France

4. The Fourth Interamerican Conference on Mathematical Education

This conference will be organized by IACME (Interamerican Committee on
Mathematical Education) affiliated to ICMI in 1974 as described on p.6
in Caracas, Venezuela, on December 1-6, 1975, sponsored by the Ministry of
Education and Central University of Venezuela, Pedagogical Institute of
Caracas, National Council of Scientific and Technological Researches.
Teachers' College, Simon Bolivar University, OEA and UNESCO.

The themes will be: applications of mathematics in education and learning;
mathematics in different cycles; extra-curricular education; mathematics
and development.

Working languages will be Spanish, French, English and Portuguese.

Further information may be obtained from
Instituto Pedagógico de Caracas
Departamento de Matemática y Fisica
Avenida Páez, El Paraiso, Caracas 102
Venezuela

5. Regional Conference on Development of Integrated Curriculum in Mathematics for Developing Countries in Asia (India)

This conference will be held in Delhi at Delhi University from December 10-
20, 1975, and is sponsored by ICMI, IMU, UNESCO jointly with the Indian
National Science Academy, University Grants Commission, National Council of
Educational Research Training. The Organizing Committee consists of twelve
professors in India with Professor P. L. Bhatnagar (President of the Associa-
tion of Mathematics Teaching) as Convenor. Participation is being invited
from all the developing countries in Asia.

Objectives: With a view to improve and modernize mathematical education in
the various countries of the region, it is proposed to
(i)   Collect information about the status of mathematical education, up to
       and including the first University Degree level in the countries of
       the region, about their needs and goals, and their efforts in the

field of curriculum development;
(ii) to formulate an integrated curriculum in mathematics for the above
level relevant for the attainment of these goals; and
(iii) to formulate appropriate teachers' training programme.

Further information may be obtained from the Executive Secretary, Indian
National Science Academy, Bahadur Shah Zafar Marg, New Delhi - 1, India.

V   THE THIRD INTERNATIONAL CONGRESS ON
MATHEMATICAL EDUCATION

H. G. Steiner[†]

The third ICME will be held <u>at Karlsruhe,</u> Federal Republic of Germany (FRG)
<u>August 16 - 21, 1976.</u> Under the chairmanship of <u>Professor H. Kunle,</u> Presi-
dent of the FRG subcommission of ICMI and Pro-rector of Karlsruhe University,
the preparations for the congress are well under way.

The proposal for holding the third ICME in West-Germany including first ideas
about the structure of the congress had been worked out by the FRG subcom-
mission in 1972. Since the ICMI Executive Committee has taken its decision
in favour of this proposal the FRG-subcommission arranged several meetings
to discuss the various aspects of the programme. The <u>first communication</u>
referring to the congress is being mailed in these days. It includes the
following information about the <u>programme:</u>

<u>Plenary Sessions</u>
There will be 6 main papers by invited speakers devoted to matters of general
interest in mathematics and the didactics of mathematics.

<u>Survey Reports in the Sections</u>
Invited speakers will present survey-trend reports. The following themes
are planned:
A 1. Mathematics education at pre-school and primary level (ages 4-12)
  2. Mathematics education at upper primary and junior high school (ages
     10-16)
  3. Mathematics education at senior high school, college and university
     transition (ages 15-20)

[†] D-4801 Jöllenbeck, Hermann-Lons-str. 16, West Germany

4. Mathematics education at university level (excluding teacher training)
5. Adult- and continuing education in mathematics (with reference to correspondence studies)
6. The training and the professional life of mathematics teachers

B 1. A critical analysis of curriculum development in mathematics education
2. Methods and results of evaluation with respect to mathematics teaching
3. Overall goals and objectives for mathematics teaching (Why do we teach Mathematics?)
4. Research related to the mathematical learning process
5. A critical analysis of the use of educational technology in mathematics teaching
6. The interaction between mathematics and other school subjects (including integrated courses)
7. The role of algorithms and computers in teaching mathematics at school.

Sections and Short Communications

The survey reports in the sections will be followed by short communications and discussions.

Congress participants can present short communication. In order to cope with an expected large number of applications it is planned to organize "poster-sessions" where the papers can be displayed and discussed with the authors. Details will follow in the second announcement.

Panel Discussions

Panel discussions will take place to discuss particularly topical, or contro-versial themes, or ones of general interest.

Practical Involvement

Opportunities for practical involvement will be arranged (for example as regards teaching using computers, micro-teaching, computer study courses related to teaching etc.), during which work will take place in small groups or in association with pupils.

Projects

Selected projects and study groups working on research and development in mathematics education will be invited for presentations.

Exhibitions

Publishers and firms producing teaching aids may present their books and material.

Exeter Working Groups

The desire for continuation of work was voiced by some groups during the second International Congress in Exeter. Those working groups will be given an opportunity to meet again at Karlsruhe.

In order to work out the details of the programme and to make suggestions for topics and speakers in the plenary sessions, for reporters, projects to be invited etc. an International Programme Committee has been established. Members of this committee are:

H. -G. Steiner (FRG, Chairman), U. d'Ambrosio (Brasil),
A. Bergmann (FRG), P. L. Bhatnagar (India), B. Christiansen
(Denmark), T. Fletcher (Great Britain), H. Freudenthal (Nether-
lands), C. Gaulin (Canada), M. Glaymann (France), S. Iyanaga
(Japan), A. Z. Krygowska (Poland), J. Lighthill (Great Britain),
G. Matthews (Great Britian), B. H. Neumann (Australia),
G. Pickert (FRG), H. Pollak (USA), A. Revuz (France),
S. L. Sobolev (USSR), J. Suranyi (Hungary), C. O. Taiwo (Nigeria),
Bakary Traore (Mali).

Mailing Address for the Third ICME:

The Third International Congress on Mathematical Education
D-75 Karlsruhe (FRG)
University. Kaiserstr. 12

VI   RETROSPECT OF THE FIRST AND SECOND ICME

1. The first ICME was held in Lyon, France from August 24 to 30, 1969.
The organization was prepared by Professor H. Freudenthal and Professor M.
Glaymann (Lyon). The following is the list of addresses.
    H. Freudenthal, Allocution
    B. Christiansen, Induction and Deduction in the Learning of
            Mathematics and in Mathematical Instruction
    W. Servais, Logique et enseignement mathématique
    J. V. Armitage, The Relation between Abstract and 'Concrete'
            Mathematics at School
    R. Gauthier, Essai d'individualisation de l'enseignement
            (Enfants de dix à quatorze ans)
    G. G. Maslova, La développement des idées et des concepts
            mathématiques fondamentaux dans l'enseignement des
            enfants de 7 à 15 ans.

A. Roumanet, Une classe de mathématique: motivations et
    méthodes
E. G. Bengle, The Role of Research in the Improvement of
    Mathematics Education
A. Delessert, De quelques problèmes touchant à la formation
    des maîtres de mathématiques
A. Engel, The Relevance of Modern Fields of Applied Mathema-
    tics for Mathematical Education
A. Revuz, Les premiers pas en analyse
A. Markouchevitch, Certains problèmes de l'enseignement des
    mathématiques à l'école
E. Fischbein, Enseignement mathématique et développement
    intellectuel
E. Castelnuovo, Différentes représentations utilisant la notion
    de barycentre
F. Papy, Minicomputer
B. Thwaites, The Role of the Computer in School Mathematics
Z. Krygowska, Le texte mathématique dans l'enseignement
H. -G. Steiner, Magnitudes and Rational Numbers - A Didactical
    Analysis
H. O. Pollak, How Can we Teach Applications of Mathematics?
P. C. Rosenbloom, Vectors and Symmetry.

The proceedings of the congress is published by D. Reidel Publishing Company,
Dordrecht - Holland.

2. The second ICME was held at Exeter University in England from August 29
to September 2, 1972, and attended by some 1400 people from 73 countries all
over the world. Its organization was thoughtfully prepared by Professor
Crawforth at Exeter University under the leadership of Professor Sir James
Lighthill. The programme of the congress consisted of six invited lectures,
two invited papers, meetings of thirty-eight working groups, presentations
mounted by seventeen countries, and independent exhibitions and displays
arranged by various organizations. The following is a list of invited
lectures or papers.
    G. Polya, As I read them
    J. Piaget, Comments on Mathematical Education
    H. Freudenthal, What Groups mean in Mathematics and what they
        should mean in Mathematical Education.
    D. Hawkins, Nature, Man and Mathematics
    E. Leach, Some Anthropological Observations on Number, Time and
        Common-sense

H. Philp, Mathematical Education in Developing Countries --
    Some Problems of Teaching and Learning
S. L. Sobolev, Some Questions of Mathematical Education in the
    USSR
R. Thom, Modern Mathematics: Does it exist?

The proceedings of the congress is published as: Developments in Mathematical Education, Proceedings of the Second International Congress on Mathematical Education, Ed. by A. G. Howson, Cambridge University Press, 1973. £2.20 / $6.95.

VII   AN ANALYSIS OF PARTICIPANTS IN THE FIRST
      AND SECOND INTERNATIONAL CONGRESSES ON
      MATHEMATICAL EDUCATION (ICME)

Jerry P. Becker[†]

First ICME: August 24 - 30, 1969
            Lyon, France

Second ICME: August 29 - September 3, 1972
             Exeter, England

TABLE I

Breakdown, by Country, of Participants
In the First and Second International
Congresses on Mathematical Education*

Number of Participants

Countries	1st ICME	2nd ICME	Countries	1st ICME	2nd ICME
Algeria	6	1	Austria	2	9
Argentina	1	0	Barbados	0	2
Australia	3	17	Belguim	13	17

[†] Graduate School of Education, Rutgers University (The State University of New Jersey), 10 Seminary Place, New Brunswick, New Jersey 08903.

Countries	1st ICME	2nd ICME	Countries	1st ICME	2nd ICME
Bermuda	0	1	Lebanon	8	2
Botswana	0	1	Lesotho	0	1
Brazil	4	3	& Swaziland		
Bulgaria	6	5	Liberia	0	2
Cameroon	0	1	Luxembourg	5	3
Canada	23	52	Malawi	1	3
Chad (Tchad)	0	2	Malaysia	0	1
Chili	0	1	Malta	0	1
Columbia	0	1	Maurituis	0	1
Congo	0	5	Mexico	0	6
Cuba	4	2	Morocco	3	4
Czeckoslovakia	2	5	New Guinea	0	1
Denmark	9	13	New Zealand	0	3
East Germany**	2	(at least 1)	Nigeria	0	9
Egypt	0	8	Norway	0	2
Ethiopia	0	2	Philippines	0	1
Finland	0	1	Poland	5	3
France	202	125	Portugal	5	3
Ghana	0	4	Rumania	6	5
Great Britain	52	482	Russia	3	6
- England		(449)	Rwanda	0	1
- Northern Ireland		(3)	Senegal	3	1
- Scotland		(23)	Sierra Leone	0	1
- Wales		(7)	Singapore	0	1
Guatemala	0	1	South Africa	7	10
Holland	21	52	South Vietnam	1	1
Hong Kong	0	1	Spain	12	7
Hungary	4	4	Sudan	0	2
India	1	6	Sweden	3	16
Ireland	6	20	Switzerland	23	19
Italy	28.	27	Syria	2	0
Israel	10	9	Tunisia	17	6
Ivory Coast	1	0	Turkey	1	0
Jamaica	0	1	Uruguay	0	1
Japan	5	39	United States	93	281
Jordan	0	2	West Germany**	18	42
Kenya	0	3	Yugoslavia	29	6
Kuwait	0	1	Zaire	0	2

Countries	1st ICME	2nd ICME	Countries	1st ICME	2nd ICME
Zambia	0	2	"Unaccounted For"	5	2

TOTALS

1st ICME

655 participants
42 countries

2nd ICME

1384 participants
76 countries - counting Lesotho
and Swaziland separately

* Based on listings of participants mailed to Working Members of each Congress

**The listing for the 2nd Congress does not reflect which Germany. participants were from in many cases. Accordingly, the number of participants from West Germany includes those from East Germany, of which there is at least one and probably several.

TABLE II

Breakdown by Areas
Number of Participants
And Corresponding Percentages

Areas	1st Congress		2nd Congress	
	# of Part.	% of Part.	# of Part.	% of Part.
Africa	38	5.8%	72	5.2%
Asia (incl. Japan)	6	.9%	45	3.3%
Australia & New Zealand	3	.5%	20	1.5%
Central & South America (incl. Mexico)	9	1.4%	19	1.4%
Eastern Europe & USSR	28	4.2%	28	2.0%
Europe (Western incl. Great Britain & Ireland)	425	64.9%	826	59.7%

Subcontinent (India)	1	.1%	6	.4%
Middle East (incl. Turkey)	21	3.2%	14	1.0%
North America	116	17.7%	333	24.1%
Scandinavia	3	.5%	19	1.3%
"Unaccounted for Participants"	5	.8%	2	.1%
TOTALS	655	100 %	1384	100 %

OBSERVATIONS

• The number of participants for the 2nd Congress was a little more than double the number for the 1st Congress: 1384 to 655.

• There were 76 countries represented in the 2nd Congress, and 42 represented in the 1st Congress.

• The following countries showed increases, of at least five, in the number of participants from the 1st to the 2nd Congress: Australia (3 to 17), Austria (2 to 9), Canada (23 to 52), Congo (0 to 5), Egypt (0 to 8), Great Britain (52 to 482, host country), Holland (21 to 52), India (1 to 6), Ireland (6 to 20), Japan (5 to 39), Mexico (0 to 6), Nigeria (0 to 9), Sweden (3 to 16), USA (93 to 281), West Germany (18 to 42)**. Nineteen countries showed a decrease, in many cases small, in number of participants from the first Congress to the second.

• France, the host country, accounted for about 31% of participants for 1st Congress, followed by USA (14%) and Great Britain (8%).

• Great Britain, the host country, accounted for about 35% of participants for the 2nd Congress, followed by USA (20%), France (9%), Canada (4%), Holland (4%), Japan (3%), and West Germany (3%)**.

• There was a relatively small number of participants from the Middle East, India, Southeast Asia, Japan, and South Pacific for the 1st Congress. While the number of countries represented from these areas increased for the 2nd Congress, the number of participants remains small, except for Australia and Japan.

• In terms of number of participants, there was no large representation in either Congress from Central America, South America, Eastern Europe, USSR, the Middle East, the Indian subcontinent, Scandinavia, and none from the Peoples Republic of China.

- Looking at the "Breakdown by Areas" for the 1st Congress, Western Europe accounted for about 65% of participants, followed by North America (18%), Africa (6%), Eastern Europe (4%), and the Middle East (3%); for the 2nd Congress, Western Europe accounted for about 60% of participants, followed by North America (24%), Africa (5%), Asia (3%), and Eastern Europe (2%).

- Most "Areas" showed an increase in representation from the 1st Congress to the 2nd. Note particularly that the number of countries from Africa more than tripled (7 to 23) from the 1st Congress to the 2nd.

- The breakdown by Areas" shows that when a Congress is held in Western Europe, the majority of participants come from Western Europe - 65% for the 1st ICME and 60% for the 2nd ICME. The second largest group of participants comes from North America (Canada and USA) - 18% for the 1st ICME and 24% for the 2nd ICME. The third largest group for both ICME's is Africa, with 6% for the 1st and 5% for the 2nd. The number of participants from Africa doubled from the 1st Congress to the 2nd although the %-age dropped slightly. Representation from Eastern Europe and the USSR remained constant from the first ICME to the second.

- The increase in "Number of Countries" represented in the second Congress was probably due, in part (perhaps in large part), to more people in more countries knowing about it.

      External Affairs Committee
      National Council of Teachers of Mathematics (USA)

VIII   FINANCIAL REPORT (1971 - 1974)

Secretary Dr. E. A. Maxwell [†]

ICMI Accounts for the Period 1 Jan. 1971 to 31 Dec. 1974

RECEIPTS

		£
5 Aug. 1971	Receipt of $300 from IMU	123.71
20 Nov. 1971	Interest	1.07
25 Jul. 1972	Receipt of $300 from IMU	121.97
24 Aug. 1972	Receipt of balance of ICMI funds from former Secretary, M. Delessert	1436.22
20 Nov. 1972	Interest	19.03
13 Jul. to 22 Nov. 1972	Transfer to ICMI of net balance of funds of Organising Committee of 2nd International Congress	5652.86
20 Sept. 1973	Receipt of $300 from IMU	123.46
20 Nov. 1973	Interest	134.03
6 Mar. 1974	Receipt of $300 from IMU	130.45
13 Mar. 1974	Reimbursement of moneys unspent by organisers of Eger Symposium	247.33
20 Nov. 1974	Interest	372.86
31 Dec. 1974	Second royalty on the Proceedings of the 2nd International Congress (note: the first royalty of £250 was paid in advance to the Congress Organising Committee)	81.59
15 Jan. 1975	Interest	20.22
	Total Receipts	8464.80

PAYMENTS

		£
25 Jan. 1973	Payment of $500 to organisers of Echternach Symposium	213.20
28 Feb. 1973	Payment of $2500 to organisers of Eger Symposium	1022.13

[†] Queens' College, Cambridge, England, U.K.

20 Jun. 1974	Payment of $3500 to organisers of Nairobi Symposium	1483.09
5 Aug. 1974	Payment of $500 to organisers of Bielefeld Symposium	210.75
5 Aug. 1974	Payment of $2000 to organisers of Tokyo Symposium	843.00
4 Dec. 1974	Payment of $1000 to organisers of 2nd World Conference on Computer Education	432.77
6 Dec. 1974	Payment to University of Cambridge for postal expenses	12.89
8 Dec. 1974	Payment of $1500 to organisers of Delhi Symposium	648.23
31 Dec. 1974	Payment to Cambridge University Press for cost of supplying copies of the Proceedings to all members of the 2nd International Congress	1904.65
	Total Payments	6770.71

Net balance of ICMI funds: £1694.09 = 1,200,770Yen