

ICMI

Bulletin

of the
International Commission
on
Mathematical Instruction

No. 19

December 1985

Secretariat
Centre for Mathematics Education
University of Southampton
Southampton, SO9 5NH
England



The International Commission on Mathematical Instruction

BULLETIN NO. 19

DECEMBER 1985

**Editors: Keith Hirst and Geoffrey Howson
Centre for Mathematics Education
University of Southampton
Southampton, S09 5NH
England**

**INTERNATIONAL COMMISSION ON
MATHEMATICAL INSTRUCTION
EXECUTIVE COMMITTEE, 1983-1986**

President:

J.-P. KAHANE, Université de Paris-Sud, Centre d'Orsay,
Mathématique - Bâtiment 425, 91405 Orsay Cédex, France.

Vice-Presidents:

B. CHRISTIANSEN, Royal Danish School of Educational Studies,
Department of Mathematics, Emdrupvej 115B, DK-2400 Copenhagen NV,
Denmark.

Z. SEMADENI, Instytut Matematyczny, Polskiej Akademii Nauk,
ul. Sniadeckich 8, 00-950 Warszawa, Poland.

Secretary:

A.G. HOWSON, University of Southampton, Centre for Mathematics
Education, Southampton, SO9 5NH, United Kingdom.

Members:

B.F. NEBRES, Mathematical Society of the Philippines, c/o Ateneo de
Manila University, P.O. Box 154, Manila, Republic of the
Philippines.

M.F. NEWMAN, Department of Mathematics, Institute of Advanced
Studies, Australian National University, P.O. Box 4, Canberra,
ACT 2600, Australia.

H.O. POLLAK, Bell Communications Research, Inc., Morris Research and
Engineering Center, Room 2Q-386, 435 South Street, Morristown,
New Jersey 07960, U.S.A.

Past President:

H. WHITNEY, Institute for Advanced Study, Princeton, New Jersey
08540, U.S.A.

Ex-officio Members:

J. MOSER, President of IMU, Eidgenössische Technische Hochschule,
E.T.H. Centrum - Mathematics, CH-8092 Zurich, Switzerland.

O. LEHTO, Secretary of IMU, University of Helsinki, Department of
Mathematics, Hallituskatu 15, 00100 Helsinki 10, Finland.

H. HOGBE-NLEND, IMU Representative at CTS-ICSU, Université de
Bordeaux - 1, UER d'Informatique et de Mathématiques, 351 Cours
de la Libération, 33405 Talence, France.

ICME 6

The centre pages of this Bulletin comprise a preliminary announcement for ICME 6 to be held in Budapest, Hungary in 1988.

National Representatives and others are particularly requested to duplicate these pages and to circulate copies as widely as possible. It is especially important that we should soon be able to make estimates of likely numbers of participants and of the kinds of accommodation which should be reserved for them. Budapest in Summer attracts many foreign visitors and accommodation will have to be booked well in advance.

Already the programme for ICME 6 is beginning to take shape. The IPC met in August 1985 in Oxford, England and is planning to meet again in July 1986 in Budapest.

The Committee decided to retain the general Congress structure adopted at Adelaide, i.e. there will once again be 'Action', 'Theme' and 'Topic' groups, together with plenary and sub-plenary lectures, exhibitions, poster sessions and short communications. The titles of the 'Action' groups are those used at Adelaide. The 'Theme' groups have been given new themes. These latter are given below. However, it must be stressed that the 'Theme' groups are still only provisional in the sense that at its meeting in 1986 the IPC may possibly wish to interchange one or two 'Theme' groups with 'Topic' groups.

Each 'Action' and 'Theme' group will be asked to present a general 'survey' lecture on significant problems and developments in its particular area. The group panels are also being asked to give the IPC when it meets in July 1986 a preliminary indication of the topics they wish to consider. There is, therefore, an opportunity for all to contribute to the planning by writing to Chief Organisers or members of the IPC (see Bulletin 18) with suggestions relating to the work of the action and theme groups, with general comments concerning the arrangements for exhibitions, poster sessions and short communications, or with suggestions relating to the proposed (and other) topic areas.

Each Action and Theme group will be organised by a panel of six or seven members including one from Hungary. We give below the names of the Chief Organisers on each of these panels where they are already known. All invitations to panel members have not yet been issued.

Action groups

1. Early childhood years (ages 4-8)

L.P. Steffe, College of Education, 105 Aderhold Hall,
The University of Georgia, Athens, GEORGIA 30602. U.S.A.

2. Elementary school (ages 7-12)

Jacques Colomb, Institut National de Recherche Pédagogique,
29 rue d'Ulm, 75230 PARIS CEDEX 05. FRANCE.

3. Junior secondary school (ages 11-16)

Ichiei Hirabayashi, Nara University of Education,
Takabatake-chyo, Nara-shi, 630 JAPAN.

4. Senior secondary school (ages 15-19)

Jan de Lange Jzn. VOWO, Rijksuniversiteit Utrecht,
Tiberdreef 4, 3561 GG Utrecht. HOLLAND

5. Tertiary/post-secondary/academic institutions (age 18+)

6. Pre-service teacher education

W. Dörfler, Universität für Bildungswissenschaften Klagenfurt,
Institut für Mathematik, A-9010 Klagenfurt, Universitätsstrasse
65-67. AUSTRIA.

7. Adult, technical and vocational education

R. Straesser, IDM, Universität Bielefeld, Postfach 4680, 4800
Bielefeld 1, WEST GERMANY.

Theme groups

1. The profession of teaching. (To include the professional development and the status of teachers.)
2. Computers and the teaching of mathematics. (To include calculators and graphics.)

Rosemary Fraser, The Shell Centre for Mathematical Education,
The University of Nottingham, University Park,
Nottingham NG7 2RD.

3. Problem solving, modelling and applications.

Mogens Niss, IMPUFA, Roskilde Universitetscenter, Postbox 260,
DK4000 Roskilde, DENMARK.

4. Evaluation and assessment. (To include a full range of evaluation of students, teachers and programs.)

David F. Robitaille, Head, Department of Mathematics and Science Education, The University of British Columbia, Faculty of Education, 2125 Main Mall, Vancouver, B.C., CANADA V6T 1Z5.

5. The practice of teaching and research in didactics.

N. Balacheff, LSO, BP.68, 38042 St. Martin-d'Herès Cedex, FRANCE.

6. Mathematics and other subjects. (To include particular reference to mathematics as a service subject.)

Werner Blum, Gesamthochschule Kassel, Fachbereich 17 - Mathematik, Heinrich-Plett-Strabe 40, 3500 Kassel, WEST GERMANY.

7. Curriculum towards the year 2000.

W.C. Higginson, Queen's University, McArthur Hall, Kingston, Ontario, K7L 3N1, CANADA.

Proposed topic areas

1. Video, film, etc.
2. Visualization, visual thinking
3. Competitions
4. Problems of handicapped students
5. Comparative education
6. Probability theory and statistics
7. Proofs, justification and conviction
8. Language and mathematics
9. Distance education
10. Students of high ability
11. Mathematical games and recreations
12. School/university interface
13. Women and mathematics
14. Learning difficulties
15. Theory of mathematics education

ICME 7

Even though ICME 6 is still more than two years away, thoughts are beginning to turn to ICME 7. Already ICMI has received preliminary bids to host the Congress in 1992. Since the organisation of an ICME is such a major task and for example, involves the reservation of accommodation many years ahead, the ICMI EC is eager to make a decision about the location of ICME 7 as soon as possible.

For that reason we are asking that all countries which wish to make firm preliminary bids to act as host for ICME 7 should do so by July, 1986. Firm bids should be made by June, 1987 and it is hoped that the new ICMI EC will be able to take a decision and communicate it well before the end of 1987 to those who have submitted bids. A formal announcement would then be made in Budapest in August 1988.

A.G. Howson

INTERNATIONAL SYMPOSIUM ON INFORMATICS AND THE TEACHING OF MATHEMATICS IN DEVELOPING COUNTRIES

The meeting announced for Yamoussoukro (Ivory Coast) in August 1985 had to be postponed at a very late stage. It will now be held in Monastir (Tunisia) from February 3-7, 1986.

Information can be obtained from

Noureddine Boudriga,
ICOMIDC-IFIP Symposium
Centre de Calcul El Khawarezmi,
Campus Universitaire,
Le Belvedere, TUNIS.

ICMI STUDIES

(a) The Impact of Computers and Informatics on Mathematics and its Teaching.

The Proceedings of the Strasbourg Seminar will be published by Cambridge University Press on 1 January 1986. This volume comprises a report of the Strasbourg meeting plus selected papers submitted to that meeting or written at the request of the Editorial Board following Strasbourg. The book will appear in two versions: paperback (ISBN 0521 311896) price £6.50, \$12.95 in the USA, and hardback (ISBN 0521 324025) price £20, \$39.50 in the USA.

A collection of fifty 'Supporting Papers' has been published by the Strasbourg IREM, 10 rue du Général Zimmer, 67084 Strasbourg - Cedex, France, (price 100FF including postage). A follow-up meeting will be held in Marseilles in January, 1986 (details from Dr. F. Pluvinage at the Strasbourg IREM).

(b) School Mathematics in the 1990s.

The discussion document prepared by A.G. Howson, B. Nebres and B.J. Wilson and circulated with Bulletin 18 is still available from the ICMI Secretariat, Centre for Mathematics Education, The University, Southampton, SO9 5NH, England. Reactions should be sent to Mr. Wilson at the ICMI Secretariat.

A small international seminar on the theme will be held in Kuwait in February, 1986 under the patronage of the Kuwait Foundation for the Advancement of Science. This will be followed by an open 2-day meeting to be held in Kuwait and intended primarily for mathematics educators from Arab countries. A monograph will be published by the Cambridge University Press in late 1986.

(c) Mathematics as a Service Subject

Currently a survey of practices and problems is being carried out in several countries. A meeting of the planning committee will be held in December, 1985. That committee will prepare a discussion document on the topic which will be distributed to all ICMI representatives and made generally available through the Secretariat. It is also planned to publish the document in the first part of L'Enseignement Mathématique in 1986. An international meeting, on the pattern of that held in Strasbourg, is planned for March/April 1987.

NATIONAL REPRESENTATIVES

(Readers are asked to notify the Secretary of any errors in this list)

- ARGENTINA** Professor N.D. Patetta, CAECE, Ave. de Mayo 1396, 1085 - Capital Federal, REPUBLICA ARGENTINA.
- AUSTRALIA** Dr. M.F. Newman, Department of Mathematics, Institute of Advanced Studies, Australian National University, P.O. Box 4, Canberra, ACT 2600, AUSTRALIA.
- AUSTRIA** Professor F. Schweiger, Institut fur Didaktik, Universität Salzburg, Petersbrunnstrasse 19, A-5020 Salzburg, AUSTRIA.
- BANGLADESH** Professor S.M. Sharfuddin, 58 Lake Circus, Kalabagan, Dhaka-5, BANGLADESH.
- BELGIUM** Professor G. Noel, Centre de Didactique des Sciences, Université de l'Etat, Avenue Maistriau 15, B.7000 Mons, BELGIUM.
- BOTSWANA** Mrs. H. Lea, Faculty of Education, University of Botswana, Private Bag 22, Gaborone. BOTSWANA.
- BRAZIL** Professor U. D'Ambrosio, Universidade Estadual de Campinas, Caixa Postal 6063, 13100, Campinas, S.P., BRAZIL.
- BULGARIA** Academician Blagovest Sendov, Bulgarian Academy of Sciences, 1, 7 Noemvry, Sofia 1040, BULGARIA.
- CAMEROON** M. Léon Ngouo, Ministère de l'Education Nationale, Yaoundé, CAMEROON.
- CANADA** Professor David Wheeler, Concordia University, 7141 Sherbrooke St. West, Montreal, Quebec H4B 1R6, CANADA.
- CHINA-TAIWAN** Professor Hsi-Muh Leu, Institute of Mathematics, National Taiwan Normal University, Taipei, TAIWAN, REPUBLIC OF CHINA.
- COSTA RICA** Professor B. Montero, Asociación Matemática Costarricense, Apartado 5186, San Jose, COSTA RICA.
- CUBA** Professor M. Prieto, Facultad de Matematica, Universidad de la Habana, Habana 4, CUBA.
- CZECHOSLOVAKIA** Professor Dr. Milan Kolibiar, Komensky University, Mlynska dolina, 816 31 Bratislava, CZECHOSLOVAKIA.

DENMARK Lektor Bent Hirsberg, Merkurvej 9, DK-7100 Vejle,
DENMARK.

EGYPT Professor W. Ebeid, Faculty of Education, Einshams
University, Roxy, Heliopolis, Cairo, EGYPT.

FEDERAL
REPUBLIC OF
GERMANY Professor Dr. H. Kunle, Math. Institut II,
Englerstr. 2, D-7500 Karlsruhe, WEST GERMANY.

FINLAND Professor Ilpo Laine, University of Joensuu,
P.O. Box 111, SF-80101 Joensuu 10, FINLAND.

FRANCE Professor Jean Martinet, Institut de Mathématiques,
Université Louis Pasteur, 7, rue René Descartes,
67084 Strasbourg, FRANCE.

GERMAN
DEMOCRATIC
REPUBLIC Professor K. Weber, Akademié der Pädagogischen,
Wissenschaften, Otto Grotewohl-Str, 1080 Berlin,
GERMAN DEMOCRATIC REPUBLIC.

GHANA Dr. Sam O. Bortei-Doku, Department of Science
Education, University of Cape Coast, GHANA.

GREECE Professor Philon Vasiliou, Academy of Athens,
14 Anagnostopoulou Street, Athens 136, GREECE.

HUNGARY Professor Dr. J. Szendrei, Szeged, Aprilis 4,
Utja 6, HUNGARY.

INDIA Professor J.N. Kapur, Department of Mathematics
Indian Institute of Technology, IIT Post Office,
Kanpur-208016 U.P. INDIA.

IRAN Dr. Rahim Zaare-Nahandi, Faculty of Science, Teheran
University, Teheran, IRAN.

IRELAND Professor D. McQuillan, Royal Irish Academy,
Academy House, 19 Dawson Street, Dublin 2, IRELAND.

ISRAEL Professor J. Gillis, Department of Mathematics,
Weizmann Institute of Science, Rehovot 76100,
ISRAEL.

ITALY Professor V. Villani, Dipartimento di Matematica,
Via F. Buonarroti, 2, Università di Pisa, 56100
Pisa, ITALY.

JAPAN Professor Shigeru Mizohata Department of
Mathematics, Kyoto University, Sakyo-ku, Kyoto 606,
JAPAN.

LUXEMBOURG Professor L. Kieffer, 1 Rue Jean Jaurès, 1836
LUXEMBOURG.

MALAWI Mr. N.G.N. Ngalamila, Ministry of Education, Private
bag 328, Lilongwe 3, MALAWI.

MALAYSIA	Professor C.K. Lim, Department of Mathematics, University of Malaya, Kuala Lumpur, MALAYSIA.
MEXICO	Professor Emilio Lluis, Cincinnati 23, Cd. de los Deportes, 03710, D.F. MEXICO.
MOZAMBIQUE	Not known.
NETHERLANDS	Professor J.H. van Lint, Department of Mathematics, Eindhoven University of Technology, P.O. Box 513, 5600 MB-Eindhoven, NETHERLANDS.
NEW ZEALAND	Dr. G.H. Knight, Dept of Mathematics & Statistics, Massey University, Palmerston North, NEW ZEALAND.
NIGERIA	Dr. Sam O. Ale, Federal University of Technology, P.M.B. 656, Minna, NIGERIA.
NORWAY	Dr. Otto B. Bekken, ADH, Box 607, N-4601 Kristiansand, NORWAY.
PAKISTAN	Dr. M.R. Siddiqui, University of Islamabad, 77 E. Satellite Town, Rawalpindi, PAKISTAN.
PHILIPPINES	Professor B.F. Nebres S.J., Ateneo de Manila University, P.O. Box 154, Manila, PHILIPPINES.
POLAND	Professor Z. Semadeni, Institute of Mathematics, Polish Academy of Sciences, ul. Sniadeckich 8, Warszawa 1, POLAND.
PORTUGAL	Not known.
ROUMANIA	Acad. Dr. G. Marinescu, Academia Republicii Socialiste Romania, Calea Victoriei 125, 71102 Bucharest, ROMANIA.
SENEGAL	Professor S. Niang, Universite de Dakar, Faculté des Sciences, Dakar, SENEGAL.
SINGAPORE	Dr. Cheng Kai Nah, Department of Mathematics, University of Singapore, Kent Ridge, Singapore 0511, SINGAPORE.
SOUTH AFRICA	Professor P.G. Human, Faculty of Education, University of Stellenbosch, Stellenbosch, SOUTH AFRICA 7600.
SOUTH KOREA	Professor Han Shick Park, Faculty of Mathematics, Korea National University of Education, Chongwon-kun, Chungbuk, 320-23, SOUTH KOREA.
SPAIN	Professor P. Abellanas, Instituto Jorge Juan, Consejo Superior de Investigaciones Cientificas, Serrano 123, Madrid 6, SPAIN.
SWAZILAND	Mr. E.D. Bicknell, William Pitcher College, P.O. Box 1473, Manzini, SWAZILAND.



PRELIMINARY ANNOUNCEMENT

The ICME 6 Organising committee is pleased to announce that the Sixth International Congress on Mathematical Education will be held in Budapest from 27 July to 3 August, 1988.

You are invited to participate in this Congress. The formal program, informal meetings and social events will offer many opportunities to develop personal contacts and for the dissemination of information and ideas relevant to current problems and interests of mathematical education.

FORMAL PROGRAM

The program will cover all areas of mathematical education and the diverse needs and interests of the participants. Congress activities will include lectures, seminars, workshops, films, poster sessions and exhibitions of current projects in mathematical education. A large exhibition of aids and materials relevant to mathematical education and research is planned to be held in conjunction with the Congress.

Existing Special Interest, Working and Study Groups are invited to meet and to contribute to the Congress program.

The main language of communication of the Congress is English. Simultaneous translation into several languages is anticipated for some sessions. Some translated abstracts or summaries of presented papers will be available. A complimentary copy of the Proceedings of ICME 6 will be sent to each registered full member of the Congress.

SOCIAL EVENTS

Social activities will be included in the Congress program. In addition, a program of activities, arranged for those not participating in the formal program, will be available to visitors registering as accompanying members of the Congress.

ACCOMMODATION

A variety of accommodation will be available varying from dormitory-type to first class hotel standard. Early registrants will have the best choice. Most of the available accommodation is within easy walking distance of the Congress venue.

SECOND ANNOUNCEMENT

The Second Announcement will be available by mid-1987 and will contain

- details of the formal program
- accommodation information and reservation forms
- registration forms
- details of social events
- travel information

REQUEST FOR INFORMATION

A detailed Second Announcement will be posted to you, if you complete this form and return it by June 1987, to:
ICME6, Janos Bolyai Mathematical Society, Budapest, Anker Koz 1 - 3,
1, 111, H-1060, Hungary.

.....

Title	Family name	Given name	M	F
.....	<input type="checkbox"/>	<input type="checkbox"/>

Institution

Postal address

I require more information
on tours in Hungary

.....

.....

.....

I can read understand speak English

I expect to be accompanied by family members.

I expect to want accommodation in a student residence ,

a modest hotel , a high class hotel .

NOT A REGISTRATION FORM - SEND NO MONEY

- SWEDEN** Professor Göran Björck, Department of Mathematics, University of Stockholm, Box 6701, S-113 85 Stockholm, SWEDEN.
- SWITZERLAND** Professor A. Robert, Institut de Mathématiques, Chantemerle 20, CH-2000 Neuchatel, SWITZERLAND.
- TUNISIA** Dr. S. Aidi, 18 rue des Suffètes, Salamambo, TUNISIA.
- UNITED KINGDOM** Professor H. Burkhardt, Shell Centre for Mathematical Education, University of Nottingham, Nottingham NG7 2RD, ENGLAND.
- U.S.A.** Dr. Eileen Poiani, Saint Peter's College, Jersey City, NJ 07306, U.S.A.
- U.S.S.R.** Professor A.S. Miscenco, Faculty of Mathematics, Moscow State University, 117234 Moscow, U.S.S.R.
- YUGOSLAVIA** Dr. Milica Ilić Dajović, Gospodar Jevremova 45, 11000 Beograd, YUGOSLAVIA.
- ZAMBIA** Dr. S.M. Bayat, Secretary, Mathematical Association of Zambia, P.O. Box RW204, Ridgeway, Lusaka, ZAMBIA.

THE INTERNATIONAL GROUP FOR THE
PSYCHOLOGY OF MATHEMATICS EDUCATION

- President:** Professor K.F. Collis, Department of Educational Studies, University of Tasmania, Box 252 C, Hobart, Tasmania 7001, Australia.
- Secretary:** Klaus Hasemann, Universität Hannover, Bismarckstr. 2, 3000 Hannover 1, West Germany.

THE INTERNATIONAL STUDY GROUP FOR THE
RELATIONS BETWEEN THE HISTORY AND PEDAGOGY OF MATHEMATICS

- Cochairmen:** Professor Ubiratan D'Ambrosio, Coordenador General dos Institutos, Universidade Estadual de Campinas, Caixa Postal 1170, 13100 Campinas, SP., BRAZIL.
- Professor Christian Houzel, Université de Paris-Nord, 11 rue Montecelli, 75014 Paris, FRANCE.
- Newsletter Editor** Professor Charles V. Jones, Department of Mathematical Sciences, Ball State University, Muncie, Indiana 47306, U.S.A.

INTERNATIONAL MATHEMATICAL OLYMPIAD

The XXVI International Mathematical Olympiad was held in Finland, July 1 - 10, 1985. 209 students from 38 countries took part. China, Iran and Iceland took part for the first time.

The XXVII IMO will be held in Poland, July 4 - 15, 1986.

Invitations for future years have been received from a number of countries: 1987 Cuba; 1988 Australia; 1989 Federal Republic of Germany; 1991 Sweden.

Organisation and financing of IMOs

The growing number of countries participating in IMOs is a pleasing sign of growing international interest. However, the increasing number of competitors brings with it some difficulties; academic, administrative and financial. Some of these problems have been discussed informally by Leaders on several occasions. There have been several attempts to consider the academic questions, including a broadening of the range of topics on which problems are set, but little progress has been made. It seems to me that it is not possible to deal with any of the problems in meetings of the Jury unless some preparation has been made in advance.

At the final meeting of the Jury in Helsinki this year, Dr. Matti Lehtinen presented a paper for discussion in which he suggested a number of possible changes in IMO procedures. Once again no decisions were taken, except that the important issues raised in the discussion should be considered by the Jury when it meets in Poland in 1986. To make the Jury discussion in Poland more useful it was suggested that Leaders, Deputy Leaders and others should be invited to contribute written statements about future IMOs. These should be sent to John Hersee, Secretary, IMO Site Committee, 76 Pembroke Road, Bristol BS8 3EG, England.

Some of the questions to be considered are:

1. Should some problems be set on new topics in the IMO?
National programmes for mathematics vary and some important topics do not appear in IMO problems.
2. How should the IMO problems be selected? Is there a better method than by the Jury of all the Leaders?
Discussion is difficult in a large committee; it has been suggested that an elected small committee should make the selection.
3. What is the role of the Deputy Leader?
Is he simply someone who accompanies the team, or should he take part in the academic side of the IMO?

4. How should the IMO be financed? Should participating countries contribute to the costs each year?
Most countries secure funding for the IMO in different ways. A country which offers to act as host several years ahead may find that a much larger number of countries wish to participate than had been expected, or budgeted for.
5. What advice and assistance can be given to countries which wish to enter the IMO for the first time?

John Hersee,
Secretary IMO.

W.F.N.M.C. NEWSLETTER

The World Federation of National Mathematics Competitions has recently begun to produce a Newsletter, and the second issue was published in August 1985. The Federation, through its newsletter, acts as a means of exchanging information among those concerned with Olympiads and similar competitions. The Newsletter publishes articles concerned with the design of suitable mathematical problems, and with the variety of logistical matters which are involved with organising competitions. Further information can be obtained from the President of the Federation, Peter J. O'Halloran, or the Editor, Warren Atkins, both at

Canberra College of Advanced Education
P.O. Box 1
Belconnen, A.C.T. 2616
AUSTRALIA

JOURNALS ON MATHEMATICS EDUCATION

No. 5. Mathematics in School
Ministry of Education, The USSR.

Our scientific-methodological journal has been published since 1934. It's major tasks are:

- i) to improve the scientific level of secondary school mathematics teachers;
- ii) To help mathematics teachers in a practical way in their activity at school;
- iii) to discuss the vital problems of further development of content and methods of mathematics education in secondary schools.

The structure of our journal depends on the above general tasks and has several headings.

1. Scientific and scientific-popular articles concerning mathematical matters, history of mathematics and mathematics education. The papers give information concerning ongoing research work in the USSR and abroad. While getting acquainted with topics concerning the history of mathematics and mathematics education, the teachers acquire a better understanding of many modern problems of mathematics education; they overcome easily the difficulties appearing in connection with the mathematics education reform in our country.
2. Articles on general methods. The papers provide such information as : an analysis of school teaching process; improving children's cognitive activity; evaluation and control of knowledge; the role of textbooks in education; study-rooms' equipment, etc.
3. Articles devoted to methods of teaching mathematics: detailed instructions on teaching of some parts (mainly new ones) of the mathematics course; review of the best mathematics teachers' experience; reports on current experiments; information on new optional courses.
4. Teaching mathematics in foreign countries. The purpose of this item is to give the readers a basic idea of mathematics education in different countries, to expose the problems foreign educators are working at. Here detailed consideration is given to experience in the modernization of school mathematics education in foreign countries. The item also includes proceedings of important international congresses and conferences relating to mathematics education.

5. Problems and discussions. This item includes articles containing different approaches to solving problems both on the content of school mathematics education and the methods of teaching mathematics.
6. Pedagogic consultations. Here answers are given relating to readers' questions which are of common interest.
7. Book reviews. The item provides brief reviews of books on mathematics education, and detailed analysis of some textbooks and manuals.
8. Extra-class activity. Contents and methods of teaching in mathematics circles, attended by the pupils of different age-groups, are described, as well as mathematics parties, Olympiads.
9. Initial and continuing training of mathematics teachers. The item has appeared during the last few years. It includes articles relating professional training of mathematics teachers in universities and pedagogical institutes, and material which helps the teachers to improve their skills personally.
10. Mathematical exercises (problems). Each issue of our journal contains problems for those who take part in our problem-solving competition and those who wish to. The names of the winners and brief analysis of their solutions are published in subsequent issues.

Most of our readers are secondary school mathematics teachers, the journal has 6 issues per year, and about 400,000 subscribers.

The editorial board consists of well-known scientists, mathematicians, specialists in teaching mathematics and secondary school teachers. The editorial board includes representatives of all the united republics of our country.

R.S. Cherkasov
Editor-in-Chief

JOURNALS ON MATHEMATICS EDUCATION

No. 6 Journal for Research in Mathematics Education

The JRME was first published in January 1970. It arose out of recommendations by the Research Advisory Committee of the National Council of Teachers of Mathematics in 1965 and 1967 to the president and executive committee of the NCTM. During the late 1960s, the volume of U.S. research in mathematics education dramatically increased, owing in part to the availability of federal funds for research and evaluation. Sessions on research were organized at the NCTM annual and regional meetings, and a special interest group for researchers in mathematics education was formed within the American Education Research Association. Several conferences were held on the topic of needed research in mathematics education. In 1967 the NCTM published a booklet Research in Mathematics Education designed, in part, to illustrate the sort of contents that would be appropriate for a research journal.

The two official NCTM journals, the Arithmetic Teacher and the Mathematics Teacher, had been publishing articles on research for some years, and many NCTM officers felt that additional attention to research in council journals was unwarranted. They also felt that a journal with such a narrow focus would be a risky financial undertaking. The decision to establish the new research journal came after a close vote, and for its first decade, the journal's continued existence was never entirely certain. Occasional complaints about the journal's relevance and narrowness are still raised, but as its status and reputation have grown, its future has been more secure.

The journal attempts to serve the interests of teachers of mathematics at all levels - preschool through adult - as well as professors of mathematics education in colleges and universities. It strives to be a forum for disciplined inquiry into the learning and teaching of mathematics, regardless of the form that inquiry might take.

When the journal began, controlled experimentation was seen as the ideal research form, and complex statistical analyses were common in the articles published. In recent years, as research in mathematics education in North America has developed a broader, more eclectic outlook, the journal, too, has changed. A greater variety of research methodologies are represented in the articles accepted for publication, along with a greater variety in the backgrounds and outlooks of the authors. Although tables of statistical data can still be found in the journal's pages, interview protocols are equally common. Every editor has attempted to broaden the range of articles and to reduce the level of technical expertise needed to

read most articles. A special effort has been made in recent years to encourage the submission of articles by authors from outside North America.

The journal began as a quarterly, but when the annual listing of dissertations and articles on research - one of the journal's most popular features - grew to fill an issue by itself, a fifth issue (July) devoted to the annual listing was added. Currently the journal is published in January, March, May, July, and November. The number of pages per volume is fixed at 400. Since most issues are 80 pages, articles have to be selected to fill an issue and therefore cannot always be published in the order they are accepted. There is no restriction on the length of an article, but long articles may be delayed in publication. Occasionally, the journal publishes a special issue on one topic. The most recent special issue, in March 1984, was on "Minorities and Mathematics." The journal is also publishing a series of monographs. The first, on "Learning and Mathematical Games," will appear later this year. Monographs will be published yearly and will be about 200 pages in length. They are designed to provide a publication outlet for reports of broad interest that are too lengthy for journal publication.

Journal policy is set by a seven-member Editorial Panel - six appointed by the NCTM President for staggered 3-year terms and one appointed from the NCTM Board of Directors. The Editorial Panel nominates, and the NCTM Directors approve the appointment of, an editor to serve a 3-year term, preceded by 1 year as editor designate and followed by possible reappointment for a second term. The editor may choose an associate editor. The previous JRME editors have been David C. Johnson, J. Fred Weaver, and James W. Wilson. The current editor is Jeremy Kilpatrick, and the associate editor is Laurie Hart Reyes. Nominations for JRME editor for 1988-1991 are being solicited; they should be submitted by 1 January 1986 to Douglas A. Grouws, 301 Education Building, University of Missouri, Columbia, MO 65211, USA.

Each article submitted to the journal is reviewed by at least three reviewers, at least one of whom is an editorial board member. The pool of active reviewers numbers around 500, but additional reviewers are always welcome; names and addresses should be sent to the editor at the address below. Articles may be reports of research studies, or they may be literature reviews, syntheses of research on a topic, or theoretical analyses. Brief reports are published when a fuller report of a study is available elsewhere or when a more comprehensive follow-up study is planned. The journal publishes critiques of articles appearing in its pages or elsewhere, and it conducts a "Forum for Researchers" in which researchers offer commentaries on trends and issues in the field. Publications on research are reviewed in telegraphic reviews or in longer articles by invited reviewers. The journal publishes only in English, but it does review books published in other languages. Copies of publications for review should be sent to the editor.

The inside front cover of each issue contains brief information for prospective authors. Additional details can be found in a statement for contributors in the January 1983 issue. The journal follows the style of the Publication Manual of the American Psychological Association (Third Edition, 1983). Manuscripts not in accordance with the guidelines for manuscript preparation in the publication manual may be returned to the author unreviewed. Prospective authors whose mother tongue is not English are strongly encouraged to get advice on style and usage before submitting a manuscript. Recent issues of the journal should be consulted if an author questions the appropriateness of his or her manuscript for the journal; the editor welcomes letters of inquiry regarding the suitability of a manuscript if the author is still uncertain.

All manuscripts and other editorial correspondence should be sent to the editor. All other correspondence, including advertising and subscription requests, should be sent to the publisher. The current subscription rate for individual members of the national Council of Teachers of Mathematics is US\$12.00 a year; the rate is US\$17 for all others. Subscribers outside the United States should add US\$1.50 for mailing.

Editor

Jeremy Kilpatrick
105 Aderhold Hall
University of Georgia
Athens, GA 30602
USA

Publisher

National Council of Teachers
of Mathematics
1906 Association Drive
Reston, VA 22091
USA

STATISTICAL CALCULATORS

A report has been prepared, commissioned by the International Statistical Institute, concerned with desirable specifications for hand-held calculators in relation to their use in the teaching of statistics. An international enquiry was launched to ascertain which features were thought to be required in calculators. Three levels of usage were envisaged and questionnaires were used, with additional comments requested. Over 50 people from a variety of countries responded, and the report presents their views, both in tabular form and with specific comments from individuals. The report has been produced with the hope that it will be of guidance to manufacturers of calculators. The report was prepared by

Professor Lennart Råde
Department of Mathematics
Chalmers University of Technology
S-412 96 Gothenburg
SWEDEN

Copies of the report are obtainable from Professor Råde.

ACKNOWLEDGEMENT

This Bulletin has been prepared with the help of a grant from **UNESCO**.

NOTE

There is no copyright on any of the material in this Bulletin. Editors of journals are at liberty to reproduce anything which they wish.

