COMMISSION INTERNATIONALE DE L'ENSEIGNEMENT MATHÉMATIQUE (INTERNATIONAL COMMISSION ON MATHEMATICAL INSTRUCTION)

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ICMI NOTES

1. NEW MEMBERS. ICMI is pleased to welcome into membership Costa Rica and Mozambique.

2. REGIONAL MEETINGS. We regret that the Sixth Inter-American Conference on Mathematics Education announced for November, 1983 has had to be postponed because of financial problems.

The ICMI-sponsored meeting of the Southeast Asian Mathematical Society will be held at Prince of Songkla University, Haad Yai, Thailand in May 1984. The principal theme is "Mathematical Education in the Computer Age". ICMI is represented on the planning committee by Professor Nebres and our President, Professor Kahane, will be one of plenary speakers. The Conference Secretary is Dr. S. Nualtaranee, Department of Mathematics, Chulalongkorn University, Bangkok 10500, Thailand.

3. NATIONAL REPRESENTATIVES. We give below some amendments to the list of National Representatives printed in the last issue of *L'Enseignement Mathématique*.

ARGENTINA: Professor N.D. Patetta, CAECE, Ave. de Mayo 1396, 1085 — Capital Federal, República Argentina.

COSTA RICA: Professor B. Montero, Asociación Matemática Costarricense, Apartado 5186, San José, Costa Rica.

GERMAN DEMOCRATIC REPUBLIC: Professor K. Weber, Akademie der Pädagogischen Wissenschaften, Otto Grotewohl-Str., 1080 Berlin, German Democratic Republic.

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

USA: Professor D.M. Hill, Department of Mathematics, Florida A and M University, Tallahassee, FL 32307, USA.

4. ICMI 4. The Proceedings of ICME IV held at Berkeley in 1980 have now been published by Birkhäuser. This large volume contains some two hundred papers on all aspects and levels of mathematics education and is clearly a must for any library. (ISBN 3-7643-3082-1).

5. ICMI 5. Adelaide, Australia, 24-30 August 1984.

The second and final announcement concerning the Fifth International Congress on Mathematical Education has now been published. Copies may be obtained from

ICME 5, GPO Box 1729, Adelaide 5001, South Australia, Australia.

The announcement includes forms for registration, accommodation, and submission of abstracts of short communications.

Early submission of these forms (by airmail) is requested. As an encouragement to 'early birds', the registration fee for those registering and paying on or before 29 February 1984 will be $(Austr)140. The regular registration fee will be $175 and for those paying on or after 1 July 1984 the fee will rise to 195 Australian dollars.

THE INTERNATIONAL COMMISSION ON MATHEMATICAL INSTRUCTION PAST, PRESENT AND FUTURE

by A. G. Howson (Secretary, ICMI)

This year ICMI celebrates its 75th birthday, for it was at the 1908 International Congress of Mathematicians that it was agreed to establish a commission to study programmes and methods of teaching to be found in secondary schools. Over thirty nations expressed an interest in the commission's work and under the Presidency of Felix Klein it soon set vigorously to work.

One of the Commission's first decisions was to reject the remit given to it at the Rome ICM. To study secondary schools in isolation was thought impossible — ICMI had to consider the teaching of mathematics in all types of schools, and also in universities and other institutions of higher education.

A great survey of practice in the member countries was carried out (five volumes from France, eleven from the USA...). Meetings were held to discuss particular topics — questions which are as relevant now as in pre-First-World-War days (although changing mathematical, social and economic contexts mean that 'solutions' rapidly become out-of-date). For example, in Milan in 1911 attention was concentrated on "What mathematics should be taught to those students studying the physical and natural sciences?", "What is the place of rigour in mathematics teaching?" and "How can the teaching of the different branches of mathematics best be integrated?"

The 1914-18 War brought ICMI activities effectively to a standstill and, in fact, there was relatively little activity in the inter-war years before once again, in 1939, ICMI relapsed into a coma.

When ICMI was reconstituted, in 1952, it was as a sub-commission of the newly-established International Mathematical Union.*

Since that time mathematics education has grown enormously in importance; mathematics is now taught to a vastly greater percentage of the world's population and technological and social changes have combined to present mathematics educators, curriculum developers and administrators with a variety of new challenges.

ICMI, which now has fifty-four member countries drawn from every continent, still seeks through mutual cooperation to study and improve all aspects of mathematics education. It does this in a variety of ways: notably

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* A longer account of the history of ICMI and of its connections with *L'Enseignement Mathématique* will appear in Part 1, vol. 15 (1984) of *Educational Studies in Mathematics.*

(a) by holding four-yearly international congresses — that held in 1980 at Berkeley, USA was attended by over 2000 members drawn from 100 different countries; the next ICME will be held in Adelaide in August 1984;

(b) by sponsoring regional meetings — for example, in Japan in October, 1983 and in Thailand in May, 1984;

(c) by mounting symposia devoted to special topics — for example, a symposium on "What should be the goals and content of general mathematical education?" was held in Poland in August, 1983;

(d) through the work of affiliated groups — for example, the International Group for the Psychology of Mathematics Education holds annual meetings, its seventh being held in Israel in August, 1983;

(e) through cooperation with other scientific unions — for example, ICMI has recently cooperated with the Committee on the Teaching of Science of the International Council of Scientific Unions to produce a series of booklets intended to promote cooperation between science and mathematics teachers;

(f) through the production of a six-monthly *Bulletin*;

(g) through cooperation with UNESCO to provide volumes in the series *New Trends in Mathematics Teaching*.

ICMI is able to mount these activities because of the funds it receives from the IMU and from various educational and other foundations, in particular, UNESCO. Many of its member countries contribute indirectly through IMU. It does, however, have members which are not affiliated to IMU, mainly developing countries such as Bangladesh, Botswana and Costa Rica, and these pay no dues.

Notwithstanding the great value of these activities, there would still appear to be a major gap in ICMI's work. Large-scale congresses and symposia over which ICMI does not always exercise complete control do not as a rule permit detailed, analytical and well-planned study of specific questions of particular relevance and interest. For this reason ICMI is currently proposing to establish a series of studies designed so as to attain high professional standards. Each study will be built around an international seminar and will be directed towards the preparation of a published volume intended to promote and assist discussion and action at regional, national or institutional level through:

The identification of key problems within the subject area and the provision of a framework which will facilitate further study, research, development and/or decision-taking;

the provision of up-to-date accounts of relevant thought, research and practice.

The titles of the first four studies together with brief indications of their content are given below:

Mathematics, computers and computation. To what extent has the coming of computers changed conceptions of what constitutes mathematics (e.g. notions of proof and of a 'solution' to an equation)? What is desirable knowledge for today's graduates to possess? Changing views on mathematics and implications for undergraduate curricula will be considered, along with the role which computers can play in the teaching and learning of 'traditional' mathematics such as analysis, geometry, probability and mechanics. (This study will be mainly concerned with higher-level education but the implications for students in their last two years at school will also be considered.)

Mathematics and Cognition. Recent developments and theories concerning how mathematics is learned will be reviewed. Attention will be paid to such aspects as visual perception, problem solving, reasoning, mental imagery, remembering, language and the role of activity. Priorities for further research will be identified and the implications for teaching of recent findings will be set out.

School mathematics in the 1990s. What are the major problems likely to occur in school mathematics in the 1990s? What place will the subject hold in a general education and how is its teaching and learning likely to be affected by changes in society and in technology? What decisions will face mathematics educators (and others) and what actions should we now be taking to ensure that the needs of the 1990s are met?

Mathematics as a service subject. As more and more disciplines employ quantitative methods and mathematical models, the demand for 'mathematics as a service subject' grows. What kind of mathematics is now most appropriate for the various groups of users (physical scientists, engineers, natural scientists, social scientists...) and how should it be taught/learned? Who should teach it? How will students most successfully acquire concepts, necessary techniques and the skills of mathematical modelling (This study, which will be undertaken with the cooperation of ICSU-CTS, will be directed at the last two years of schooling and at undergraduate level.)

In order to mount these studies, ICMI is appealing for financial assistance to foundations and associations in many countries.

Support we have already received, plus a generous guarantee from IMU, has enabled the EC to make firm plans for the computer study. The following programme committee has been appointed: J.-P. Kahane (France) Chairman; R. F. Churchhouse (UK); A. P. Ershov (USSR); J. van Lint (Netherlands); A. Ralston (USA); M. Yamaguti (Japan); F. Pluvinage (France) Secretary and administrator.

Four members of the committee were able to hold a preliminary discussion at the recent ICM in Warsaw and a planning meeting will be held in late 1983 or early 1984. The seminar will take place in Strasbourg in April, 1985 and it is hoped that the report will be published in April, 1986 so that it can be presented and discussed at the Berkeley ICM in August that year.