International Study Group on the Relations Between HISTORY and PEDAGOGY of MATHEMATICS NEWSLETTER

The Newsletter is the communication of the International Study Group on the Relations Between History and Pedagogy of Mathematics, an affiliate of the International Commission on Mathematical Instruction. It is edited and produced in the Department of Mathematics, College of Physical Science, Engineering and Technology, University of the District of Columbia, Washington, D.C. 20008, USA. The Newsletter is available free of charge upon request. Distributors: US: Editorial Office; Canada: M. A. Malik (Concordia University, Montreal, Qué H4B 1R6); Mexico: Alejandro Garciadiego (UNAM - contact at José M. Velasco 71, Del. Benito Juárez, 03900 Mexico, D.F.); South America: Ubiratan D'Ambrosio (Universidade Estadual de Campinas, CP 6063, 13081 Campinas SP Brazil); Australia: Robert L Hayes (Mathematics Department, Hawthorn Institute of Education, Private Bag 12, Hawthorn, Victoria 3122); New Zealand: Andy Begg (SMER Centre, University of Waikato, Private Bag 3105, Hamilton); United Kingdom: John Fauvel (Mathematics Faculty, Open University, Milton Keynes MK7 6AA); France: Evelyne Barbin (IREM Université du Maine, Route de Laval, 72017 Le Mans Cedex); Germany and Eastern Europe: Roland Stowasser (Technische Universität Berlin, Straße des 17. Juni 136, 1000 Berlin 12, Germany); Belgium and the Netherlands: Jan van Maanen (Rijksuniversiteit Utrecht, Mathematisch Instituut, Budapestlaan 6, Postbus 80.010, 3508 TA Utrecht, Netherlands) Scandinavia: Bengt Johansson (Institutionen för ämnesdidaktik, Frölundagatan 118, Box 1010, S-431 26 Mölndal, Sweden); Spain and Portugal: Joao Pedro Ponte (Departmenta de Educacao, Faculdade de Ciencias, Universidade de Lisboa, Av 24 de Julho, Lisboa, Portugal); Italy: Luciana Bazzini (Department of Mathematics, University of Pavia, Strada Nuova 65, 27100 Pavia); Greece, Turkey and the Balkans: Nikos Kastanis (Department of Mathematics, Faculty of Sciences, Aristotle University of Thessaloniki, 54006 Thessaloniki, Greece); Israel:

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Calendar

Meetings with HPM components are highlighted.

- 1990 December 1–3 .... Algiers
Third Maghrebian Symposium on the History of Arabic Mathematics, sponsored by the Algerian Society for the History of Mathematics. Contact Professor Y. Atik, Département de Mathématiques, Ens de Kouba, 16050 Vieux Kouba, Algiers, ALGERIA. (Tel: 213.2.58.35.11; Telex: 62367)

- 1991 January 16–19 .... San Francisco
Annual Meeting of the American Mathematical Society and the Mathematical Association of America. Contact AMS, P.O. Box 6248, Providence, RI 02940, U.S.A. There will be a special AMS session in the History of Mathematics and an MAA contributed paper session on Using History in Teaching Mathematics. (See inside for more information.)

- 1991 April 8–12 .... Berlin
International Berlin Conference on the Teaching of Mathematics, co-sponsored

by Humboldt-Universität zu Berlin. Sektion Mathematik; Freie Universität Berlin. Zentralinstitut für Fachdidaktiken; Technische Universität Berlin. Fachbereich Mathematik; and Brandenburgische Landeshochschule Potsdam, Sektion Mathematik. Contact Professor Roland Stowasser at the address on the first page.

- 1991 April 17–20 .... New Orleans
Annual Meeting of the National Council of Teachers of Mathematics and the Americas Section of HPM. Contact NCTM. 1906 Association Drive, Reston, VA 22091, U.S.A. (See inside for more details.)

- 1991 April 22–24 .... Istanbul
Symposium on Science Institutions in Islamic Civilization, sponsored by the Turkish Society for History of Science. Contact the Symposium Secretariat, P.O. Box 24. 80692 Besiktas, Istanbul, TURKEY. (Tel: 160 5988; Telex: 26484 isam tr; Fax (01) 158 4365).

- 1991 May 9–11 .... Orlando
Conference on History, Geometry, and Pedagogy at the University of Central Florida, Orlando in honor of the 80th birthday of Howard Eves. Contact Professor Joby Anthony, Department of Mathematics. University of Central Florida, Orlando, FL 32816-6990, U.S.A. (Tel: (407) 823-2700; Fax: (407) 281-5156) (See inside for more details.)

- 1991 May 27–29 .... Kingston
Annual meeting of the Canadian Society for History and Philosophy of Mathematics. Contact Professor M. Malik, Department of Mathematics, Concordia University, 7141 Sherbrooke St. Ouest, Montreal, Quebec, H4B-1R6, CANADA (See inside for more details.)

- 1991 July 1–3 .... London
The Bicentennial Conference on Computing, organized by the Institute of Electrical

Engineers in collaboration with the National Museum of Science and Industry. The conference will mark the 200th anniversary of the birth of Charles Babbage and will be held at Imperial College, South Kensington, London. Contact IEE Conference Services, Savoy Place, London WC2R 0BL, U.K.

- 1991 August 3-7 .... Coral Gables
Eighth Interamerican Conference on Mathematics Education. Contact Patrick Scott, Programas Latinoamericanos de Educación, Faculty of Education, University of New Mexico, Albuquerque, NM 87131, U.S.A.

- 1992 January 12-16 .... Mexico City
Third Latin American Congress on the History of Science and Technology (III CLAHCT). The general theme of this meeting will be America in the formation of a new world: 500 years of scientific exchanges. Contact Comité Organizador III CLAHCT, Apartado postal 21-873, 04000 México, D.F., MEXICO.

- 1992 August 9-13 .... Toronto
International meeting of HPM preceding ICME-7. (See inside for more details.)

- 1992 August 16-23 .... Quebec
Seventh International Congress on Mathematical Education (ICME-7). Contact Congrès ICME-7 Congress, Université Laval, Québec, QC, G1K 7P4, CANADA or via fax to (418) 656-2000.) (See inside for more details on HPM's participation.)

Interdisciplinary Summer School on the History of Mathematics

Evelyne Barbin

La Commission nationale inter-I.R.E.M "Epistémologie et Histoire des Mathématiques" a organisé, du 7 au 13 Juillet 1990 à Lille, la 4ème université d'été consacrée a l'histoire des mathématiques. Elle a accueilli environ 160 participants, dont 28 collègues étrangers

venant d'Europe (Belgique, Danemark, Espagne, Grande-Bretagne, Italie, R.F.A., Suisse), d'Afrique (Algérie, Mali, Sénégal Tunisie) et du Brésil. Les participants étaient des enseignants, de tous les niveaux d'enseignement et des universitaires, des disciplines mathématiques, philosophiques, historiques et de sciences physiques, ainsi que des chercheurs en histoire des sciences.

Les objectifs de l'université d'été étaient de donner une formation en épistémologie et en histoire des mathématiques, de présenter les apports didactiques de la recherche en épistémologie, d'élaborer des outils pédagogiques qui permettent à un plus grand nombre d'élèves d'accéder à une culture mathématique, et de diffuser les innovations menées dans les I.R.E.M. en vue d'introduire une perspective historique dans l'enseignement des mathématiques.

Les contenus de l'université d'été visaient à la fois des connaissances épistémologiques, historiques et pédagogiques:

- la construction historique de savoir mathématique;

- le contexte scientifique, philosophique, technique, culturel et social de la production des concepts et des théories mathématiques;

- les rapports entre sciences, cultures, techniques et sociétés;

- les apports didactiques de la recherche en épistémologie: obstacles épistémologiques, rôle et significations de la démonstration, rôle des problèmes, de la conjecture, de la déduction, de l'évidence, de l'erreur, de la rigueur;

- l'introduction d'une perspective historique dans l'enseignement des mathématiques;

- l'histoire des mathématiques dans la formation des enseignants.

L'organisation de l'université d'été comprenait des conférences et des exposés, mais la majeure partie des travaux se sont effectués en ateliers fonctionnant en parallèle et regroupant une

douzaine de participants. Un moment fort de l'université d'été a été la table ronde consacrée a l'histoire des mathématiques dan la formation des enseignants où avaient été conviées plusieurs personnalités.

Les thèmes des conférences et des exposés ont été les mathématiques babyloniennes (J. Ritter), la dualité dans les mathématiques (K. Chemia), l'enseignement de l'analyse (M. Schneider), le principe de relativité de Galilée à Newton (C. Vilain), Leibniz et le calcul infinitésimal (M. Parmentier), les algébristes parisiens avant Viète (G. Cifoletti), le temps circulaire d'Aristote (G. Fraysse), l'uniforme et le local de Cauchy au constructivisme (H. Lombardi), l'Etimologiae d'Isidore de Séville (H. Plane), la notion de progrès (C. Charlier), le problème du déterminisme de Laplace aux questions sur le chaos (A. Dahan), le théorème de Gödel (G. Ferreol), l'origine des fonctions ch et sh (N. Bibby).

En tout, 35 ateliers ont fonctionné pendant l'université d'été, et ils seraient trop long de donner ici les thèmes et les noms des animateurs. Dans les ateliers à thèmes épistémologiques et historiques, les participants ont travaillé à partir de la lecture de textes anciens. Les ateliers pédagogiques étaient consacrés aux comptes rendus d'expériences pédagogiques visant à introduire une perspective historique dans l'enseignement des mathématiques. Enfin, des ateliers ont traité de l'histoire des mathématiques dans la formation initiale et continue des enseignants de mathématiques. Par ailleurs, presque toute une journée a été consacrée à des ateliers-projets, où les participants ont travaillé en petites équipes dans les différentes bibliothèques de l'université et de la ville de Lille.

Les participants de l'université ont apprécié la richesse des échanges entre personnes ayant des expériences et des formations très diverses, l'intérêt des travaux en ateliers qui leur ont permis d'aborder les problèmes de lecture et d'interprétation des textes anciens et l'accent mis sur la formation des enseignants. Ils sont

partis avec des projets - démarche pédagogique, activités interdisciplinaires, stages de formation, équipes de recherche, réseaux thématiques - et avec de nouveaux questionnements.

Les interventions et les travaux en ateliers seront repris dans des articles qui constitueront les actes de l'université d'été. Les personnes intéressées par ces actes doivent s'adresser a l'I.R.E.M. de Lille, Bâtiment de mathématiques, Université des Sciences et des Techniques de Lille, 59655 Villeneuve d'Ascq Cedex, France. Les personnes souhaitant recevoir des informations sur les universités d'été interdisciplinaires sur l'histoire des mathématiques peuvent s'adresser à l'I.R.E.M. du Mans, Université du Maine, Route de Laval, 72017 Le Mans Cedex, France.

ICM-90, Kyoto

Jack Carter

The section of the 1990 International Congress of Mathematicians concerned with History, Teaching, and the Nature of Mathematics consisted of four section lectures, five ICMI lectures, and 25 scheduled Short Communications. The section lectures included Jesper Lutzen's talk on *The Birth of Spectral Theory - Joseph Liouville's Contribution*; A. Horiuchi speaking on *Mathematics in Japan in the Edo Period (1600–1868)*; Y. I. Manin's lecture on *Mathematics as Metaphor* (which was read, due to Manin's illness, by B. C. Mazur); and H. Murakami's talk on *Teaching Mathematics to Students not Majoring in Mathematics - Present Situation and Future Prospects*.

J.-P. Kahane introduced the ICMI lecture series and noted that this ICM was the first to incorporate the ICMI lectures within the general program of the Congress. M. de Guzman, speaking on games and their role in popularizing mathematics, emphasized that games often transmit mathematical attitudes, and that games and mathematics are many-sided activities having similar characteristics - both are

deeply intertwined in history (and still are to-day). H. Fujita spoke on *Mathematical Literacy and Japanese New Mathematics Curriculum*, and provided an account of the current curriculum revision process, particularly at the senior secondary school level. Y. W. Kim's lecture, *National Mentality and Mathematical Education*, traced the development of Chinese, Korean, and Japanese mathematics from their common Chinese origins to their distinctive national emphases. The last two ICMI lectures were *Structuring Discrete Mathematics* by J. H. van Lint, and *The ICMI Studies: Some Personal Views*, by B. Hodgson.

Nearly half of this section's Short Communications dealt with historical topics. These included K. K. Anand on *Canadian Women in Mathematics*; L. Beaulieu on *A Debate on Modules in Bourbaki's Linear Algebra (1941-1946)*; K. R. Chemla on *The Equations of Several Approaches to Equations (Babylonian, Chinese, ...)*; S. C. Bhatnager on *The Nature of Mathematics in the Vedas*; O. Takenouchi on *Works of Seki-Takakasu Concerning the Circle Number*; C. S. Roero on *Leibniz and the Temple of Vivian*; L. Giacardi on *Indivisible Methods and Leibnizian Calculus in Guido Grandi*; H. Haruyo on *Fourier's Mathematization of the Theory of Heat Conduction and his Experimental Study*; M. Nakane on *The Role of the Three-Body Problem in Constructing W. R. Hamilton's Mechanical System*; and M. A. B. Deakin on *The Dissemination of Laplace Transform Theory*.

M.A.A. Meeting in San Francisco

David Zitarelli

There will be two sessions of contributed papers at the annual M.A.A. meeting in San Francisco on January 18 and 19, 1991 on the theme "Using History in the Teaching of Mathematics."

The session on Friday, January 18, runs from 8:00 a.m. to 11:00 a.m. and contains 10 talks on various types of history of mathematics courses. Six of the talks are devoted to

undergraduate courses for mathematics majors: David J. Pangelley, *Great problems of mathematics: a course based on original sources*; Gary L. McGrath, *A three-part history of mathematics course for math majors and education majors*; James W. Petticrew, *The role of mathematics in epistemology and cosmology*; John F. Berglund, *A writing-intensive history of mathematics course*; David E. Kullman, *The problem of points as a case study in problem solving*; and David Graves, *History of mathematics: A time-hopping, problem-solving approach using Maple flavoring* (now there's a clever title).

Two talks are concerned with graduate courses: David Knee, *A graduate course in the history of mathematics as the cornerstone of a teacher-training program*, and John Dawson, *The history of mathematics: A graduate survey course at Penn State*.

The remaining talks on Friday address courses centered around Hilbert's problems: Sharon Kunoff, *Hilbert's problems in a history of mathematics course for education majors*, and Marjorie Senechal, *Hilbert's problems, and a play based on them*. The title of the play that Professor Senechal's students wrote at Smith College carries the fetching title "All my problems" and the captivating sub-title "As Göttingen turns."

Saturday's session begins at 9:00 with a bell-ringing talk by Angela B. Shiflet entitled *Mathematics of the bells*. The session contains four talks whose titles define their content: Joseph F. Conrad, *A history of mathematics course for liberal arts and education majors*; Stuart Anderson, *Undergraduate history of mathematics: Success from team teaching*; Herbert E. Kasube, *The history of mathematics as taught in a seminar*; and Mark E. Huibregtse, *Parallel universes: The rise and fall of Euclidean geometry*.

The remaining two talks feature the role of women in the history of mathematics: Regina Baron Brunner, *A women's history month project: Famous women in mathematics*, and Claudia Henrion, *An alternative approach to the history of mathematics*. The latter talk discusses the appropriate symbolism of a mathematical

quilt replacing the traditional time line for representing the history of mathematics.

A.M.S. Meeting in San Francisco

There will be a special session in the History of Mathematics at the annual meeting of the American Mathematical Society in San Francisco in January, 1991. This session, to be held on Wednesday afternoon, January 16 and Thursday morning, January 17, is organized by Victor Katz, David Rowe, and Florence Fasanelli. The Wednesday speakers are Abdulalim Shabazz, *African origins of the mathematical sciences*; Barnabas Hughes, *Genesis of the equation*; V. Frederick Rickey, *Euler's contributions to calculus*; Thomas Hawkins, *Sophus Lie and the geometrical origins of the symplectic group*; Gregory H. Moore, *The contributions of Hausdorff and Sierpinski to Cantor's continuum problem*; Joseph Dauben, *Abraham Robinson and World War II: The making of a mathematical logician*; and Ubiratan D'Ambrosio, *Hassler Whitney's lecture in Campinas on the history of topology.*

On Thursday, the speakers are James J. Tattersall, *Women and mathematics at Cambridge in the late nineteenth century*; Karen Parshall, *The American mathematical community: 1891-1906*; David Kullman, *Trends and traditions in collegiate mathematics, 1915-1990*; David Rowe, *The philosophical views of Klein and Hilbert*; Sanford Segal, *Mathematics and Nazi politics - three examples*; and Liliane Beaulieu, *Bourbaki for physicists? A glance at some unrealized projects, 1934-54.*

While it is hoped that many of you will be able to attend, there will be a report on some of the M.A.A. and the A.M.S. talks in the next newsletter.

Annual Meeting of HPM Americas Section in New Orleans

The Americas Section of HPM will meet in conjunction with the annual meeting of the National Council of Teachers of Mathematics in New Orleans from April 17 to 20, 1991. In contrast to previous years, however, this years HPM meeting will be during the NCTM meeting, instead of before. Sessions are tentatively scheduled for Thursday evening, April 18 and Saturday afternoon, April 20. In any case, please plan to attend, contribute a paper, and participate in the lively discussions. Send abstracts for contributed papers on any aspect of the relationship of history and pedagogy of mathematics to Erica Voolich, 244 Summer St., Somerville, MA 02143, U.S.A. by February 1. The complete schedule will be published in the next newsletter.

Conference on History, Geometry, and Pedagogy in Orlando

The Department of Mathematics of the University of Central Florida in Orlando is hosting a conference May 9-11, 1991 to honor the 80th birthday of Howard Eves, the eminent teacher, geometer, and historian of mathematics. Eves' career has spanned a broad spectrum of mathematics, from that of the junior high teacher to that of the research professor in the university. His book on the history of mathematics has been a leading text for that subject for over thirty years. He has published more than 15 books and more than 100 papers in journals that range from *The Mathematics Teacher* to *The American Journal of Physics*. He was the editor of the "Elementary Problems" section of *The American Mathematical Monthly* for 25 years, and for several years was the editor of the "Historically Speaking" section of *The Mathematics Teacher*. Howard Eves' career interests in teaching, history, and geometry provide an ideal setting within which mathematics teachers and university professors can discuss their experiences and research. It is a fitting tribute in the year which marks the 80th anniversary of Howard Eves' birth that a conference be organized which brings together representatives of these diverse groups to discuss their common interest so that each can learn from the perspectives of the others.

This international conference is open to all

members of the mathematics community. It is designed to appeal to a wide audience from the secondary school mathematics teacher to the university research mathematician. Keynote speakers will include Professors Clayton Dodge, Peter Hilton, Murray Klamkin, Bruce Meserve, Fred Rickey, Marjorie Senechal, and, of course, Howard Eves. There will also be parallel sessions for workshops and contributed papers of shorter duration.

Abstracts of contributed papers must be received by March 1, 1991 and registration should be completed by April 5. For more information, including a registration form, please contact Professor Joby Anthony at the address given in the calendar section.

Canadian Society for History and Philosophy of Mathematics

The 1991 meeting of the C.S.H.P.M. will be held May 27 to 29 at Queen's University in Kingston, Ontario. There will be a special session on the theme of Women in Mathematics, for which participants will be invited. The program chair for the general session is Professor Erwin Kreyszig, Department of Mathematics and Statistics, Carleton University, Ottawa, Ontario, K1S 5B6, Canada. (Phone: (613) 788-2145). Abstracts for contributed papers should be sent to him before the end of February.

HPM and ICME-7

HPM has been allocated four 90 minute sessions at ICME-7 in Quebec. In addition, HPM will hold its quadrennial international meeting in Toronto during the week preceding ICME. The intention for both meetings is to have full international participation. We therefore solicit the recommendations of all readers for excellent speakers for the sessions both in Toronto and Quebec. We need suggestions not only for long talks (30–50 minutes), but also for briefer ones. Naturally, there will also be time for contributed papers. Please send your recommendations to

either Florence Fasanelli or Victor Katz. The chosen speakers can then be officially invited.

Proceedings of the First Italian-German Bilateral Symposium on Didactics of Mathematics

Review by John Fauvel

What must have been a most instructive symposium was held in Pavia, Italy in October 1988, at which mathematics educationists from Germany and Italy exchanged views on four major themes, one of which was, gratifyingly, *The role of history in mathematics education*. The proceedings of this symposium contain the text of the eight contributions on this theme, which constituted the first day of the symposium. The variety of these different contributions and contributors – from Italy, Lucia Grugnetti, Marta Menghini, Paolo Boero, and Francesco Speranza; from Germany, Hans-Georg Steiner, Horst Struve, Hans-Niels Jahnke, and Hans Schupp – is remarkable and interesting, not least for the contrast between Italian and German styles which it affords.

Lucia Grugnetti, in *The role of the history of mathematics in an interdisciplinary approach to mathematics teaching*, discusses a teaching programme at junior high school level, in which teachers of different subjects – here, of history and geography, and of technology, as well as mathematics – teach complementary aspects of a broad fruitful topic. In this instance *the importance of Mesopotamia* was one such overall theme, and pupils in other classes do projects concerned with the historical, geographical, technological, and mathematical aspects of Islam, or of the Middle Ages, etc.

Marta Menghini is also concerned with the interdisciplinary potential of history of mathematics, in her case with upper secondary school classes (17-18-year-olds). In brief accounts of three of her school experiences – conic sections, perspective, and non-Euclidean geometry– she sketches how the interaction of mathematics and socio-cultural aspects can be explored in such a

way as to enrich the mathematics lesson and lead to greater understanding among pupils.

Paolo Boero discusses the role of history of mathematics as a source of ideas for the teacher. When history is used to guide certain aspects of teaching strategies, the pupils need not become explicitly aware of this input to the teacher's preparation, and Boero gives several examples drawn from programmes developed in primary (6-11) and intermediate (11-14) schools. The fourth Italian contributor to this session, Francesco Speranza, was more concerned with the explicit use of history in the classroom, and drew attention to the different school levels at which certain themes - topics within the history of astronomy, non-Euclidean geometry, history of notation, etc. - can suitably be presented.

Horst Struve turns to the history of geometry to try to help pupils with the familiar problem of being unable to grasp the concept of mapping the whole plane (as opposed to figures within the plane). His analysis of the history of the concept of straight line is a promising start to understanding this problem.

Hans Niels Jahnke's fascinating account of systematic thinking as a concept within 19th century mathematics education in Germany, and Hans Schupp's discussion *On the history of conic sections as a school subject*, are both contributions to the history of education, in the main, with hints at possible implications for contemporary practice.

The German contributions to the symposium were characterised by being more theoretical than the Italian ones, especially the talk by Hans-Georg Steiner on *Relations between historico-epistemological studies and research in mathematics education*. Except for Horst Struve's talk, they were less directly concerned with practice in schools today, nor with material which teachers can use in schools. This tendency must have permeated the verbal interactions at the symposium also, to judge from an evocative remark in the editors' introduction to the section:

"Each talk was followed by lively discussion in which the German participants often profited from their Italian colleagues' tendency to argue about the practised instruction which could be improved, and the Italians profited by the German inclination to treat problems in a more general manner."

It must indeed have been a lively and worthwhile symposium. The editors of this volume, Luciana Bazzini and Hans-Georg Steiner, who also initiated and coordinated the meeting, are to be congratulated on their enterprise. An added bonus for English-speaking readers is that these proceedings are in English. (A copy may be requested, while supplies last, from Luciana Bazzini at the address given on the first page.) It is to be hoped that not only will there be future Italian-German symposia building on the success of this one, but that other countries will see the value of such joint meetings and try to develop during the 1990s this mode of sharing across nations the experiences of teachers, mathematics educationists, and historians.

La Démonstration Mathématique Dans L'Histoire: Actes du 7ème Colloque inter-I.R.E.M.

Evelyne Barbin

Cet ouvrage présente de grands moments historiques, des débats et des réflexions à travers lesquels nous voyons les mathématiciens aux prises avec leur activité de prédilection: démontrer. Il propose aux lecteurs de penser la démonstration mathématique dans ses aspects à la fois historiques, épistémologiques, philosophiques et didactiques.

La colloque inter-I.R.E.M. de Besançon (12 et 13 Mai, 1989) portait sur l'histoire de la démonstration mathématique. Pourquoi interroger cette histoire? Parce que situer la démonstration mathématique dans l'histoire est un excellent moyen de réfléchir à la place de la démonstration dans l'enseignement des mathématiques. En général, dans l'enseignement des mathématiques, on assimile la démonstration

au raisonnement déductif. Mais, élaborer une démonstration ce n'est pas suelement déduire, c'est aussi, et dans le même mouvement, construire des objets mathématiques, construire la rationalité mathématique elle-même. Démontrer ce n'est pas seulement savoir, mais aussi ancrer ce savoir dans une certitude parce que l'on sait comment et pourquoi on sait. Réduire la démonstration au raisonnement déductif, efface toute trace des questionnements, des zones d'instabilités, des tensions qui sont les préludes au désir et au besoin de démontrer.

On comprend, dès lors, que la démonstration ne soit pas une voie royale tracée de toute éternité. Situer la démonstration dans l'histoire, c'est aussi se garantir de la "méprise" qui consiste à croire que la démonstration est univoquement définie, c'est être obligé de penser sa diversité. Les fondements de la démonstration se transforment, la signification de la démonstration se modifie, les formes de la démonstration changent, le sentiment d'évidence varie avec l'histoire.

Les aspects historiques, épistémologiques, philosophiques et didactiques de la démonstration sont souvent abordés de front dans les 26 articles qui composent cet ouvrage. Ces articles sont regroupés autour de quatre grands thèmes qui croisent les problèmes évoqués dans cette présentation:

1. Objet de la démonstration mathématique: 7 articles

2. Formes de la démonstration mathématique: 7 articles

3. Variations et controverses autour de démonstrations: 8 articles

4. Histoire de la démonstration et enseignement des mathématiques: 4 articles.

Cet ouvrage de 496 pages (format 15cm × 21cm), relié avec couverture glacée et couleurs, est en vente au prix de 125 FF a l'I.R.E.M. de Lyon, Université Claude Bernard, 43 bld du 11 Novembre 1918, 69622 Villeurbanne Cedex, France.

Philosophy of Mathematics Education

In mathematics education there is an increasing awareness of the significance of epistemological and philosophical issues. Theories of learning, such as constructivism, are becoming epistemologically oriented. A growing number of areas of inquiry are drawing on the philosophy of mathematics and philosopical perspectives. These include problem solving and investigational pedagogies, curriculum theories, teacher education and development, teacher beliefs, ethnomathematics, gender-fair and multicultural mathematics, and the sociology and the politics of mathematics education. In addition, researchers are becoming increasingly aware of the epistemological foundations of their methodologies and inquiries, and referring to them explicitly.

A Philosophy of Mathematics Education group has been formed to explore these and related issues. It is proposed to offer a Topic Group ICME-7 and a group at the British Congress of Mathematics Education, Loughborough, July 13-16, 1991. An international network with a newsletter has been established, and interested persons are invited to write in and to join the mailing list. Contact Dr. Paul Ernest, University of Exeter, School of Education, Exeter EX1 2LU, U.K.

Gaṇita Bhāratī

Gaṇita Bhāratī, the quarterly Bulletin of the Indian Society for History of Mathematics, has now completed ten years of publication. It has taken the form of a world journal which covers all periods, all countries, and all aspects of history of mathematics. Working under the guidance of an international editorial board, it welcomes research papers, articles, books for review, news, etc. in the field of history of mathematics. Members of the Indian Society for History of Mathematics receive the magazine as part of their membership. Dues are Rs. 2500 or U.S. $ 25. For membership, write to Dr. Man Mohan, Dept. of Mathematics, Ramjas College, Delhi University, Delhi - 110 007, India. For editorial matters,

write to Dr. R. C. Gupta at the address on page 2.

Mathematics through History

Have you ever read information about a book on the history of mathematics and then could not find it in your local book store? Have you ever forgotten the name of a history of mathematics book which you thought you might be interested in? If you answered yes to either of these questions, you should get a copy of *Mathematics through History*, a Resource Guide, edited by John Fauvel. This 48-page booklet contains a listing and description of virtually every book on the history of mathematics which is currently in print. It also includes videos and posters. In particular, mathematics teachers at all levels from primary to tertiary will find materials useful for developing a historical approach in their classrooms. The booklet is available for U.S.$ 10, including postage, from QED Books, 1 Straylands Grove, York, YO3 0EB, U.K. QED Books can also supply every one of the books listed. John Bibby, the owner of QED Books, is an ex-teacher, formerly at the Open University, who set up the business "largely in response to an awareness of the frustrations which mathematics teachers can experience in being unable to obtain reliable and credible advice from members of the publishing profession."

Have You Read?

Ronald Calinger, ed.

This column welcomes references from across the history or pedagogy of mathematics, as well as other works with sections that have potential for encouraging and motivating students to learn mathematics better or that enrich courses. Please send citations with complete bibliographic information to the section editor c/o Department of History, Catholic University of America, Washington, D.C. 20064.

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