International Study Group On the Relations Between
HISTORY and PEDAGOGY of MATHEMATICS

NEWSLETTER

AN AFFILIATE OF THE INTERNATIONAL COMMISSION ON MATHEMATICAL INSTRUCTION

No. 7 October 1984

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Calendar

Meetings with HPM components are highlighted.

1984 December 27-30 . . . . . Chicago History of Science Society annual meeting. Contact: HSS, 215 S. 34th St/D6, Univ Pennsylvania, Philadelphia, Penn 19104

1985 April 15-20 . . . San Antonio, Texas National Council of Teachers of Mathematics (details inside)

1985 August. . . . . Berkeley, Calif. International Congress on the History of Science (tentative)

1986 March 31-5 . . . . . Washington, D.C. National Council of Teachers of Mathematics (details inside)

1986 August. . . . . Berkeley, Calif International Congress of Mathematicians (tentative)

1988. . . . . Budapest International Commission on Mathematics Education (ICME 6)

Editorial

What Can Be Done About It? *(Phillip S. Jones—)* The last two issues of the *Newsletter* had editorials decrying the fact that the use of the history of mathematics in teaching fails to flourish as it merits. Three concrete actions which would attack this problem and that might be stimulated or coordinated by HPM are: (1) *define in specific terms those goals* of mathematical instruction to which a historical approach seems particularly appropriate; (2) *construct sample source units* which are directed to these goals and contain both historical materials and suggestions for their pedagogical use; (3) *devise a sequence of research projects* directed toward measuring the effectiveness of historical approaches to teaching the goals defined in (1) and using the units constructed in (2) or others developed as time passes.

None of these suggested activities is new, but doing all of them in a systematic and coordinated fashion would be! It would be feasible and worthwhile to make each of these activities the subject of a meeting, a conference, or a workshop. HPM could even make each one the province of a small committee; each committee would stimulate activity and serve as a center for exchanging data, seeking helpful critiques of proposals or materials, and mediating the distribution of results.

An example of materials that deserve circulation, testing, and revision, and then the results consolidated was shown to me by Professor William Fitzgerald. It was a paper entitled "A short story about some things our future teachers don't know". He had given a test, "Historical problems in mathematics", originally designed by Shmuel Avital, to a number of students in 'methods' courses. The analysis and tabulation of the answers documented a mixture of lack of information and understanding that, at best, raised questions about both the goals and the effectiveness of the instruction which the potential teachers had received or would give. The questions tested understandings and perceptions of relationships which every mathematics teacher should have, which should be explicitly included in any history course, but which often fall between the standard courses in an undergraduate major. An example of a set of important relationships which may be omitted or less clear without a historical treatment are those involving incommensurables, the Euclidean algorithm, irrationals, algebraic and transcendental numbers along with their connections with the real numbers, the squaring of the circle, constructive and non-constructive existence proofs and transfinite numbers.

Source units are not new, especially in secondary teaching, but ones with a major historical emphasis are not common. They might include an introductory discussion of goals, a chronology, details on the original motivation for the topic and its later uses, its interconnections with arithmetic, algebra, and geometry, a bibliography for students and the teacher, suggested projects, and perhaps a reproducible facsimile of a historical source, with suggestions for various approaches to the unit via history. The recent experimentation with historical materials on negative numbers reported by Arcavi, Bruckheimer, and Ben-Zivi (*For the Learning of Mathematics* July 1982 [see Have You Read? in *Newsletter* No. 6]) is an excellent example of a research project incorporating many of these ideas.

It is a challenging task to define general goals, choose concrete examples, formulate simple but non-trivial test questions, and use these to document shortcomings in instruction, and then to devise and document improved approaches. However, our claims for history need documentation, and our materials and techniques need improvement.

What are your suggestions for improving the use of the history in teaching mathematics? *[Professor Jones, Professor Emeritus of The University of Michigan, was one of the original co-chairmen of HPM and now serves on the Executive Committee of the Americas Section. He is well-known for his publications in the history and teaching of mathematics; he edited the 24th and 32nd* (History of Mathematics Education in the United States and Canada) *NCTM Yearbooks and wrote the introductory chapter of the 31st Yearbook* (Historical Topics for the Mathematics Classroom).*]* □

From the Editor

Please note the new address for the Editor: Department of Mathematical Sciences, Ball State University, Muncie, Indiana 47306.

An Appreciation This past summer at Adelaide, changes were made in the structure and organization of the International Study Group On the Relations Between History and Pedagogy of Mathematics (HPM). One change which deserves special note is in the co-chairmanships. An organization such as HPM relies exclusively on the willingness of individuals to take charge and see that meetings are planned, agendas are set, responsibilities are delegated, and a myriad other tasks are performed. It takes active leadership with perseverence and clearness of purpose.

HPM has been fortunate in having had such leadership in Roland Stovasser and Bruce Meserve. We ove a debt of thanks to both, but I wish to single out Professor Meserve for a special note of appreciation. During the time that I have been Editor—a task which I took over from Professor Meserve—I have been particularly impressed with Bruce Meserve's unflagging energy on behalf of HPM. With his typewriter and copying machine, he has maintained a continuing flow of communications among a widely dispersed group, keeping each informed of what the other is doing or thinking, while at the same time providing direction and initiative at crucial points. He has been responsible for organizing our meetings in North America and in Adelaide and has been very persistent in getting the rest of us to do our duties. I have watched him in several gatherings of mathematicians, going from one person to the next with his pad of notes at hand, getting agreements on courses of action, making decisions about this matter or that, following up with letters and phone calls, and in general putting in motion that great inertia of collective action which often gets bogged down. The successes we might claim for HPM over the past couple of years are in great measure due to him.

Professor Meserve has retired from The University of Vermont, but has not become inactive. He and Professor Stovasser will remain in the service of HPM as members of the newly formed Advisory Board. We extend to both our gratitude and appreciation for their continuing service to HPM. □

ISGHPM Meets With ICME-5 in Adelaide

The International Study Group On the Relations Between the History and Pedagogy of Mathematics met in Adelaide, Australia, last August (1984) immediately before the International Congress on Mathematics Education (ICME-5), and sponsored four sessions during the Congress. At the session before the Congress, organized by David Wheeler (Canada), presentations were made by Otto Bekken (Norway), John Berry (Canada), Ubiratan D'Ambrosio (Brazil), Florence Fasanelli (USA), Arthur J. Gilks (Australia), Jack Gray (Australia), John McQualter (Australia), Yoshimasa Michiwaki (Japan), David Pimm (United Kingdom), and Hans-Georg Steiner (West Germany). Among the topics covered were the preparation of teaching material on historical themes, the interplay between the history of art and the history of mathematics in classroom teaching, history of mathematics for preservice elementary school teachers, John Napier and the discovery of logarithms, the place of ethno-mathematics in history courses, and relations between the history of mathematics and the teaching of pure mathematics.

George Booker (Australia) coordinated the four HPM sessions which were part of the IMCE-5 program. The first session consisted of a brief introduction to HPM by Bruce Meserve (HPM cochairman, USA) and a description of uses of history of mathematics in teaching mathematics at all levels across Australia by George Booker. At the second session, organized by Roland Stovasser (HPM cochairman, West Germany), Rina Hershkovitz (Israel) described a source book for inservice and presevice courses from the Weizmann Institute of Science and Martha Menghini (Italy) described historical miniatures for talented students prepared at the University of Rome. The third session was organized by Jean Dhombres (France), and Amy Dahan (France)

described the "Mathématique au Fil du ages" project and Jacques Barovczyk (France) discussed the vork of the IREM. The last session on preparing teachers to use history in the classroom was organized by Phillip Jones (USA) and consisted of a talk by Florence Fasanelli (USA) on using vorks of artists such as Dürer, da Vinci, and Klee to illustrate the historical interplay between art and mathematics for gifted students, and a presentation by Israel Kleiner (Canada) on "Why the teacher of mathematics should knov the history of mathematics."

[This report was taken from material furnished by Bruce Meserve. We hope to have a more detailed report in a future issue of the Newsletter.] □

New Officers, New Structure for ISGHPM

(Bruce E. Meserve and the Editor—) ISGHPM has adopted a new structure and changed its officers. There will be an administrative or executive structure known as the Advisory Board, consisting of the two cochairmen, the *Newsletter* editor, and members from several regions throughout the world. It was also decided to adopt the initials "HPM" to replace ISGHPM. The Advisory Board, listed on the masthead of the *Newsletter*, consists of Ubiratan D'Ambrosio (BRAZIL) and Christian Houzel (FRANCE) as cochairmen, Charles V. Jones (USA) as editor, and members Otto Bekken (NORWAY), George Booker (Brisbane Coll Adv Educ, 130 Victoria Pk. Rd., Kelvin Grove, Queensland 4059 AUSTRALIA), Sergei Demidov (USSR), Paulus Gerdes (Fac de Matemat, C.P. 257, Univer Eduardo Mondlane, Maputo MOZAMBIQUE), Maassouma Kazim (5, Said Bahgat St, Heliopolois, Cairo EGYPT), Bruce Meserve (P.O. Box 108, Fairfax, Vermont 05454 USA), David Pimm (Math Dept, Open Univ, Walton Hall, Milton Keynes MK7 6AA UNITED KINGDOM), Roland Stovasser (Techn Univ Berlin, Str des 17 Juni 135, D-1000 Berlin 12 WEST GERMANY), David Wheeler (Dept Math, Concordia Univ, Montréal, Gué H4B 1R6 CANADA), and Lee Peng Yee (SINGAPORE). [Addresses for all members were not available at press time.]

This broader representation in the structure of HPM is intended to encourage regional activities. A region in which interest and activity are sufficient might encourage a more formal regional organization. Such a group would be recognized by HPM and would have a representative on the Advisory Board. In this way, meetings might be organized that would be more accessible and represent the issues and problems peculiar to a particular region.

One such subgroup recognized as an HPM regional affiliate is the Americas Regional Affiliate, representing North, South, and Central America. It has been sponsoring meetings in conjunction with the National Council of Teachers of Mathematics since 1982.

Other action taken at the Adelaide meeting was to adopt the *Newsletter*, North American Edition, as the official communication of HPM. It is hoped that regional supplements will be included with future issues of the *Newsletter*, announcing and reporting on meetings and activities in the particular region. Such reports would likely be more detailed than those which appear in the *Newsletter*. To fully implement this regional supplement plan will require identifying and appointing regional editors, a task which the Advisory Board will be confronting in the near future.

If you have ideas or suggestions for this new direction of the *Newsletter*, communicate them to one of the cochairmen, or the editor, or a member of the Advisory Board, or to any combination of these. □

HPM Group Meets in San Francisco

The North American Section of HPM met in San Francisco in April, prior to the 1984 meeting of the National Council of Teachers of Mathematics. The program began on Monday afternoon, April 23, and continued through Wednesday morning, April 25. Talks were "Resources for the history of mathematics" by Charles V. Jones (Toronto), "Source material for the history of computing" by Henry S. Tropp (Humboldt State, California), "Themes from the history of algebra for teaching" by Otto Bekken (Norway: Adger College), "Illustrating the history of mathematics in the classroom" by Barnabas B. Hughes (California State, Northridge), and "Mathematics and art in the classroom" by Florence Fasanelli (Sidwell Friends School,

Washington, D.C.). Each presentation was followed by a discussion period. In addition, a book display and a selection of hand-outs were available to the participants.

The hosts for this meeting were the faculty and students of San Francisco University High School. One of the highlights was an all-school meeting which was addressed by Barnabas Hughes. (Professor Hughes' remarks were punctuated by an earthquake, a rather difficult but effective way to add interest and novelty to one's presentation.) An evening meal at a seafood restaurant proved a great success.

These meetings have shown a steady improvement in quality and interest each year. The success of the San Francisco meeting is largely due to the efforts of Craig McGarvey of San Francisco University High School, who was in charge of local arrangements, and Fred Rickey of Bowling Green State University, who organized the program and registration.

The next meeting of the group will be at San Antonio in April of 1985. [An announcement appears elsewhere in this issue.] □

A New Name?

When HPM meetings occur, frequently the talk turns to the problem of the name of the group. The name, International Study Group on the Relations Between History and Pedagogy of Mathematics, was assigned to the group by the International Commission on Mathematical Instruction at the time HPM became an affiliated interest group. Although the name is very descriptive, it is somewhat awkward and cumbersome. At the HPM meeting in San Francisco (April 1984), the question of changing the name arose and the concensus was to try once again to come up with an acceptable alternative. [Regular readers of the *Newsletter* will recall that suggestions for a new name were solicited in the May 1983 issue.]

Your editor would like to suggest a name, which almost has an acronym: 'Association for History In Mathematics Education'. Except for a final 's', the acronym is AHMES, the earliest mathematics educator the histories identify.

Do you have any suggestions? Again we ask that you send them to us, or send your comments on the name offered here. It is not necessary that the name have an acronym while being exhaustively descriptive, although this would seem to be preferable. □

Americas Regional Affiliate Organized

At the ICME-5 meetings in Adelaide this past August, HPM formally recognized what has been called the North American Section as the Americas Regional Affiliate of the International Study Group On the Relations Between the History and Pedagogy of Mathematics. Bruce Meserve, who has been serving as chairperson of this group, has retired from office. The new chairperson for 1984-1985 is Florence D. Fasanelli (The Sidwell Friends School, 3825 Wisconsin Ave. N.W., Washington, D.C. 20016), and for 1985-1986 it will be V. Frederick Rickey (Bowling Green St Univ, Bowling Green, Ohio 43403). The Executive Committee consists of Ubiratan D'Ambrosio (Brazil), Florence Fasanelli, Charles V. Jones, Phillip S. Jones, Bruce E. Meserve, and V. Frederick Rickey. The newsletter editor is Charles Jones; assistant editor is Frederick Rickey.

The next meeting of the Americas Affiliate will be in conjunction with the National Council of Teachers of Mathematics in San Antonio, Texas, in April 1984. [See the following item.] □

HPM to Meet in San Antonio in April 1985

(Florence Fasanelli-) The new Americas Regional Affiliate will meet April 15 - 17, 1985, immediately prior to the annual meeting of the National Council of Teachers of Mathematics in San Antonio, Texas. There will be a series of speakers and sessions on writing classroom modules using the history of mathematics.

Speakers will be Betty Travis, University of Texas at San Antonio and President of the Texas Teachers of Mathematics, who will talk about the history course for teachers which she teaches; Ubiratan D'Amorosio, Instituto de Matematica, Campinas, Brazil, who will speak about ICME 5; Victor Katz, University of the District of Columbia, Washington, D.C., will speak on the writing of worksheets in the history of mathematics; and Linda Dalrymple Henderson, University of Texas at Austin and author of *The Fourth Dimension and Non-euclidean Geometry in Modern Art*, will speak on the question of cubism and relativity.

One session will be devoted to the distribution of modules and worksheets which we are asking all participants to bring. These modules will then be reviewed for comment by Roland Stowasser, Technische Universität, Berlin, Hans-George Steiner, Institute for the Didactics of Mathematics, Bielefeld, Germany, and Charles V. Jones, Ball State University, Muncie, Indiana. Another session will be on the Criteria for Modules, with material prepared by V. Frederick Rickey, Bowling Green State University, Bowling Green, Ohio.

The meetings will commence at 2:00 pm on Monday and continue through 11:30 am Wednesday. Additional information may be obtained from Dr. Betty Travis, University of Texas at San Antonio, San Antonio, Texas 78282, or from Dr. Florence Fasanelli, Sidwell Friends School, Washington, D.C. 20016 (phone: 202/966-5591). □

History of Mathematics Materials for Teachers

(A. Arcavi and M. Bruckheimer—) Members of the Department of Science Teaching, The Weizmann Institute of Science, are developing materials for preservice and inservice teacher courses and workshops on the history of mathematical topics relevant to the junior high school curriculum. The materials developed so far deal with the history of negative numbers and the irrational numbers.

The materials consist of a sequence of worksheets. In general, each worksheet consists of (1) a brief historical introduction, (2) an historical source, usually a primary source, and (3) questions on the source materials. After reading the sources the student teacher is asked to answer questions related to the translation of the mathematics in the text into modern notation, to compare the approach in the text to others past and present, to extend the mathematics in the text, etc. After completing the worksheet, a collective guided discussion may take place (if the work is done in courses or workshops); then the teacher receives an answer sheet containing extensive solutions to the questions and further source material as background or enrichment.

The materials are in the process of evaluation in workshops, courses and in a correspondence course.

Additional topics related to the junior high school curriculum will be the subject of further worksheets. The negative number sequence of worksheets is available in English and is described in a paper by Arcavi et al, in *For the Learning of Mathematics* 3:1, 30-37.

The authors would welcome any report of similar experiences and would be glad to share ideas with people working or interested in the field. [They may be contacted at Department of Science Teaching, Weizmann Institute of Science, Rehovot, Israel.] □

New Journal in Mexico

(Alejandro Garciadiego Dantan—) A new journal on the history and philsophy of mathematics, *Mathesis*, will appear in February in Mexico. Its main task is to provide the sources needed to carry out research, but is not itself a research journal. It will translate into Spanish primary and secondary sources on the history and philosophy of mathematics.

Annual volumes are also planned treating a single topic, such as Greek mathematics, foundations of mathematics, origins of probability, and the like. [Further information will appear in the *Newsletter*.] □

Changing Your Address?

If you change your mailing address, and you wish to continue receiving the *Newsletter*, be sure to let us know. When we have issues returned because of incorrect addresses, we remove the name from the mailing list. To avoid this fate, simply send your new address to the appropriate distributor or to the Editor. □

Japanese Conference On Mathematics Education

(Yosimasa Nishiwaki—) The Japanese Society of Mathematics Education, an affiliate of ICMI, held a regional conference on mathematical

education, in Tokyo, October 10 - 14, 1983. The meeting was judged a great success, attracting both native and foreign scholars and teachers. The general theme of the conference was School Mathematics In and For Changing Societies. Problems addressed dealt with: (1) progress in science and technology requiring more competence in mathematics for future citizens; (2) the expansion of areas—often unexpected—in which mathematics is applied; (3) recent developments in educational aids such as calculators, computers, video recorders, television, and the like; and (4) the increasing student population which in some locations is explosive.

The five day conference consisted of plenary sessions and working group sessions, and one day for excursions to schools and other institutions. The opening ceremony was addressed by Professor J.-P. Kahane, president of ICMI. □

Conference on Art and Science

(Florence Fasanelli-) A conference on "Art and Science In Related Revolutions" was held in Williamstown, Massachusetts, October 18-20, 1984, at the Sterling and Francine Clark Art Institute. It was under the direction of Professor Sam Edgerton.

The 135 registrants heard talks by historians of science A.C. Crombie, D. deB. Beaver, T. Settle, B. Eastwood, and I.B. Cohen, historians of art S. Alpers, M. Kemp, L.D. Henderson, G.H. Hamilton, and A. Welch, plus three physicists, two historians, one artist and one MacArthur Prize Fellow. There was considerable disagreement on how to look at the same information in the Renaissance and Baroque session and in the 19th and 20th Century Art and Science session. Different characteristics are analyzed by the different disciplines. For example, one group emphasized that the chemicals in the colors helped develop the palate which was used by the pointillists and, although the history of chemicals is fascinating, another group emphasized that a painting cannot be looked at as the totality of chemicals.

The material should prove interesting to read later when the proceedings are published. The discussions had a dynamics which showed that, when we are involved in two fields of study, we have to be very careful. Linda Dalrymple Henderson gave one of the best talks, "Einstein and Modern Art", which was material different from that in her book. We have the good fortune of having her speak at HPM in San Antonio [see announcement elsewhere]. □

Latin American Society Formed In 1982

The Sociedad Latinoamericana de Historia de las Ciencias y la Tecnología (SLHCT) was formed August 25, 1982, in Puebla, México. Officers elected were Juan José Saldaña, president, Carlos Viesca, secretary, and Fis. Roberto Jiménez, treasurer. A series of meetings on the history of science were held from August 23 to 26 in which talks on all aspects of science and technology were presented. Presentations on the history of mathematics were "*In partibus Infidelium*: Rivalidades imperialistas y Ciencias Exactas a principos del Siglo XX en Argentina" by Lewis Pyenson (Canada); "Sobre el primer libro de mathemáticas en el Nuevo Mundo" by Pablo Noriega Blanco Vigil (México); "Análisis crítico de la obra de Lakatos, *Pruebas y Refutaciones*" by Tomás González de Luna (México); "Historia y enseñanza de las matemáticas" by Luis Carlos Arboleda (Colombia); "Historia das Mathemáticas Ibero-Americanas" by Ubiratan D'Ambrosio (Brasil); "Perspectivas histórico-Filosóficas en las realidades físico-matemáticas" by Ervin Marquit (United States). Correspondence should be directed to Apartado Postal 21-873, C.P. 04000, México D.F. (Mexico). *[Information taken from "Boletin Informativo" number 1, Oct. 1982.]* □

Course Outlines and Materials Available

(Dorothy Goldberg—) For over two years HPM has received syllabi, bibliographies, and other educational material in the history of mathematics from educators at colleges and universities in the United States and Canada. From time to time descriptions of them will appear in the *Newsletter*, and copies will be made available at cost. Moreover you can take advantage of this service of HPM and share your course outline, bibliography, tests, lecture notes, or materials with those teaching the history of mathematics.

Please send your request or your course materials to Dr. Dorothy Goldberg, Department of Mathematics and Computer Science, Kean College of New Jersey, Union, N.J. 07083.

•Professor Dennis Kletzing of Stetson University in Florida gives four lectures, "Crises in Mathematics", which are designed to show students that mathematics is not a "cold, austere subject" but rather is a "vibrant and living organism which is continually changing". The mathematical content is accessible to the average college freshman. The historical content of the lecture notes sent includes the discovery of incommensurability by the Greeks, the discovery of non-Euclidean geometries, the discovery of functions which are everywhere continuous and nowhere differentiable, and the discovery of paradoxes in logic and set theory. Cost $3.35

•Professor James K. Bidwell of Central Michigan University, Dr. David E. Fiesner of Gettysburg College in Pennsylvania, and Professor Man-Keung Siu of the University of Hong Kong all contributed copies of midterm and final examinations for their courses in the history of mathematics. Cost $1.00 □

History of Mathematics in British Education

(Derek Stander—) Using information from school mathematics teachers, I have been unable to find a course on the history of mathematics being taught in secondary schools in the west of England or parts of the English midlands. A limited number of British universities claimed to offer optional courses on the history of mathematics. Both secondary school teachers and most university mathematics departments said that they mentioned interesting historical developments occasionally during their mathematics teaching. But history of mathematics instruction during mathematics courses apparently was left to the discretion of individuals, there being no definite policies within mathematics departments reported. Two reasons given for the neglect of the history of mathematics were the lack of relevant expertise in the subject on the part of lecturers and a lack of suitable textbooks.

Both lecturers and students indicated that they thought the use of the history of mathematics was a valuable enrichment of mathematics teaching. The investigation indicated that there was concern among lecturers about the extra time that would be required if the history of mathematics were either introduced as a separate course or integrated into existing university mathematics courses. There was a difference of opinion between lecturers and students about whether the history should be presented as straight history or as anecdotes and biographies of mathematicians. There was no indication that use of history took any form other than ad hoc mention of interesting facts during lectures. The universities that offer separate history of mathematics courses said that they attempted to use primary source material.

The research is continuing with the thesis "Using the history of mathematics in teaching improves attitudes towards mathematics and enhances students' understanding of the concepts being studied'. A pilot experiment carried out in one university gave some support to the above thesis. More extensive experiments are planned for the next academic year.

Interested readers may wish to contact Mr. Stander at 23 Beacon Down Avenue, Beacon Park, Plymouth, Devon PL2 2RU, England.—Ed. □

Using Portraits and Historical Documents

A straightforward way to incorporate historical material into classroom lectures is to use reproductions of title pages or crucial pages of text from books or articles. Such pages and portraits can be made for overhead projectors.

The choice of illustrative material will be determined by the lecture topic and the availability of appropriate illustrations. But, more often than not, no appropriate illustration is readily accessible. So, having once decided to use historical illustrations, the problem faced by most teachers is finding them.

The *Newsletter* cannot solve completely this problem of availability, but we will try to provide some help. As space permits, illustrations suitable for producing overhead transparencies will be included. A brief description will accompany each one to indicate its historical significance and, therefore, what classroom topics it might reasonably supplement. You can help in this enterprise by sending us your suggestions or requests —better yet, send us an illustration you have used with an appropriate historical write-up (the illustration must be clean and clear as possible since it will be xerographically reproduced).

The source of most of the illustrations we will use is the Ann Arbor meeting of HPM, held in April, 1983. A selection of illustrations was put together by Fred Rickey, Duane Deal, and Phillip Jones. Not all the selections discussed at this meeting were copyable because of the delicate condition of the books containing them. This limitation no doubt will continue to be a problem.

1986 Americas Section Meeting Will Be in Washington, D.C.

(Florence Fasanelli-) Plans are already underway for the 1986 meeting of the Americas Regional Affiliate of HPM. It will be held in conjunction with the 1986 annual meeting of the National Council of Teachers of Mathematics in Washington, D.C. The meeting will convene at 2:00 pm on Monday, March 31, and adjourn at 11:30 am on Wednesday, April 2.

At present, the program consists of a talk by Uta Mersbach, Curator of Mathematics at the Smithsonian Institution, on the resources available at the Smithsonian for mathematics teachers in the history of mathematics, and on the effect of the U.S. government on pedagogy.

There will be a special display at the National Museum of American History of models dealing with the history of geometry. Information and literature will be provided and access to their excellent library will be available. An evening visit to the Naval Observatory has been arranged. In addition to being the keeper of the official time in the U.S., the observatory has an extraordinary library with many rare books, a good collection of nineteenth century texts, and over 800 books from before 1800. Special arrangements to see the library collection has been arranged with the librarian, Brenda Corbin, who will also discuss the collection. The observatory will also be open for viewing Saturn.

Visits to the rare book room of the Library of Congress and to the National Gallery have been arranged, as well.

Further information may be obtained from Dr. Florence Fasanelli, Sidwell Friends School, 3825 Wisconsin Avenue, N.W., Washington, D.C. 20016 (phone: 202/966-5591). □

Samples from Fred Rickey's Math History Calendar

A calendar of dates of interest to the mathematics teacher is being compiled by Fred Rickey. For a copy send $2 for copying and postage to V.F. Rickey, Department of Mathematics, Bowling Green State University, Bowling Green, Ohio 43402. —Ed.

Have You Read?

Readers are encouraged to submit contributions to "Have You Read?". References need not deal exclusively or explicitly with history in the mathematics classroom, but should have the potential for motivating or enriching. N.B. Supply complete bibliographic information: names of author(s); complete titles of books or of both the article and journal; for journals include both the volume and date; for books, edition, copyright date, publisher and place of publication. Accuracy in spelling and wording is critical. Please provide concise annotations whenever possible. —Ed.

Campbell, Douglas M, and Higgins, John C, Editors 1984 *Mathematics: People, Problems, Results* Wadsworth (3 vol; $27.95 ppr; $39.95 cloth)
Anthology with some historical articles.

Campbell, William L 1984 "Completing the square in algebra" MCTM *Bulletin* 9:2 (Mar) 4-5 [c/o Bob Buss, 752 Village Wood Ct, Ballwin, MO 63011]

Discusses Babylonian technique and that of al-Khwarizmi.

Dahan-Dalmedico, Amy, and Peiffer, Jeanne 1982 *Routes et dédales: histoire de mathématiques* Paris: Ed. Etudes Vivantes, collection Axes (286 pp, 94 FF)
A brief history of mathematics.

Dalton, LeRoy C, and Snyder, Henry D, Editors 1983 *Topics for Mathematics Clubs* Reston, Va: NCTM (vi + 106 pp; $4.75; ppr)
Revision of 1973 edition; historical topics; bibliography.

Dhombres, J., Editor. 1982/83. *Sciences et techniques en perspective, 3, Numéro Spécial consacré à l'option histoire et philosophie des Sciences dans les DEUG français* (Institut de Mathématiques et d'Informatique, 2 rue de la Houssinière, 44072 Nantes CEDEX, France)
History and philosophy of science syllabuses and examinations from thirteen French universities.

Dirks, Michael K 1984 "The integer abacus" *Arithmetic Teacher* 31:7 (Mar) 50-54
Teaching multiplication of integers with abacus to eighth graders.

Edwards, C H 1979 *The Historical Development of the Calculus* Springer-Verlag

Eves, Howard 1983 *Great Moments in Mathematics (After 1650)* Mathematical Association of America
Sequel to *Great Moments in Mathematics (Before 1650). Selected topics treated in more depth than author's history text. Includes problems.*

------ *1984 Review of A History of Greek Mathematics* by Sir Thomas Heath, in *American Mathematical Monthly* 91:1 (Jan) 62-64
Links Greek mathematics to modern, as well as reviews this classic general source.

Grünbaum, Branko 1984 "The emperor's new clothes: full regalia, G string, or nothing?" *Mathematical Intelligencer* 6:4, 47.
An amusing, clear and concise article announcing that Hermann Weyl's statement in his *Symmetry* about the existence of all seventeen wallpaper patterns in Egyptian decoration is not valid—nor do all seventeen patterns exist in the Alhambra.

Hodges, Andrew 1983 *Alan Turing: The Enigma* Simon & Schuster (587 pp, $22.50)

Libeskind, Shlomo, and Lott, Johnny W 1984 "The shoemaker's knife—an approach of the Polya type," *Mathematics Teacher* 77:3 (Mar) 178-82, 236
Uses historical problem to illustrate thought processes used in constructing proofs.

Mathematical Association of America 1983 "Recommendations on the Mathematical Preparation of Teachers. CUPM Panel on Teacher Training" [Washington, DC] MAA (ii + 75 pp)
Report of the Committee on the Undergraduate Program in Mathematics (CUPM), including specific recommendations on the history of mathematics.

Miel, George 1983 "Of calculations past and present: the Archimedean algorithm" *Mathematical Monthly* 90:1 (Jan) 17-35.
A historical survey of approximation techniques based on Archimedes' method of approximating π.

Missouri Council of Teachers of Mathematics Bulletin 1984 "Srinivasa Ramanujan" MCTM *Bulletin* 9:2 (Mar) 1-2 [See Campbell for address]
An 'interview' with G.H. Hardy about his recollections of Ramanujan.

——— 1984 [An interview with Archimedes, played by J. Norman Wells] MCTM *Bulletin* (April) 1-2.
Professor Wells assumes the character of Archimedes. [Presents talks complete with toga and equipped with simple beam balance and the like. Well-received at the Detroit NCTM meeting.]

Priestley, W M 1979 *Calculus: An Historical Approach* Springer-Verlag

Siekmann, Jörg, and Wrightson, Graham, Editors 1983 *Automation of Reasoning. Classical Papers on Computational Logic. Vol. 1: 1957-1966; Vol. 2: 1967-1970* Springer-Verlag (1: xii + 525 pp; $35; 2: xii + 637 pp; $39)
Reprints of seminal papers with historical essays and bibliography.

Sondheimer, Ernst, and Rogerson, Alan 1981 *Numbers and Infinity. A Historical Account of Mathematical Concepts* Cambridge U Pr (x+172 pp)
Reviewed by C H Edwards, Jr, in *Mathematical Monthly* (91:4, 270-71), emphasizing use of history in teaching.

Steinhaus, H 1983 *Mathematical Snapshots* Third American Edition, Revised and Enlarged. Oxford Univ Pr (311 pp, $7.95; ppr. First published, 1938)
Historical problems approached intuitively.

Weil, André 1984 *Number Theory. An Approach Through History: From Hammurapi to Legendre* Boston: Birkhäuser Boston Inc (xxi + 375 pp)
Historical treatment presupposing no specific knowledge.

Theses and Extended Research *This section of "Have You Read?" is a file of research on history and teaching. Send both old and new sources.* N.B. Supply complete bibliographic information. For theses, supply name of author; complete title; university; date; *Dissertation Abstracts International* abstract identifier and page number, thesis order number, or similar data for theses not in DAI.

Lichtenberg, D.R. 1966. "The evergence of structure in algebra" Ph.D. dissertation. U Wisconsin.

Lenoir, T.W. 1974. "The social and intellectual roots of discovery in 17th century mathematics" Ph.D. dissertation. Indiana U.

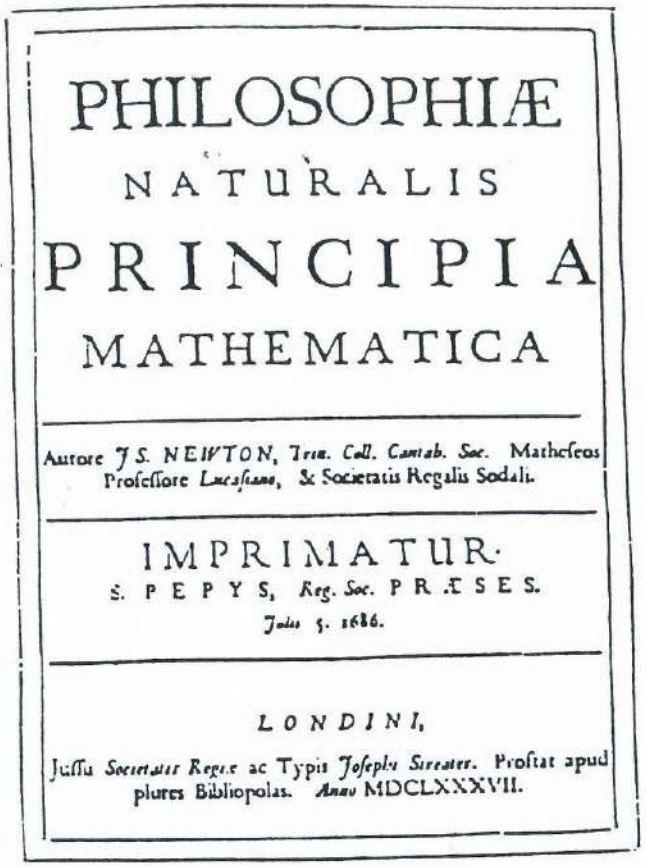
Van Egmond, W. 1976. "The commercial revolution and the beginnings of Western mathematics in Renaissance Florence, 1300-1500" Ph.D. dissertation. Indiana U.

■Thanks to F Bellot, F Fasanelli, I Kleiner, V F Rickey. □

Title Page of Newton's Principia

The first illustration for classroom enrichment is the title page of Newton's *Principia*. A calculus course is the obvious occasion to make use of this, although it would be appropriate in other contexts (e.g., in a basic physics course). The *Mathematical Principles of Natural Philosophy* went through several editions, three which Newton himself supervised. This title page identifies the author as Is. Newton, a Fellow of Trinity College, Cambridge, the Lucasian Professor of Mathematics, and a Fellow of the Royal Society. The imprimatur, or approval, was given by S. Pepys, the president of the Royal Society, on July 5, 1686. It was published in London in 1687.

Contrary to the statement made above, this illustration does not come from the collection from the HPM Ann Arbor meeting. Some of these will appear in subsequent issues of the *Newsletter*. □



PHILOSOPHIÆ
NATURALIS
PRINCIPIA
MATHEMATICA

Autore *J.S. NEWTON*, Trin. Coll. Cantab. Soc. Matheseos Professore *Lucasiano*, & Societatis Regalis Sodali.

IMPRIMATUR.
S. PEPYS, *Reg. Soc.* PRÆSES.
Julii 5. 1686.

LONDINI,

Juſſu *Societatis Regiæ* ac Typis *Joſephi Streater*. Proſtat apud plures Bibliopolas. *Anno* MDCLXXXVII.