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

NEWSLETTER

AN AFFILIATE OF THE INTERNATIONAL COMMISSION ON MATHEMATICAL INSTRUCTION

No. 14 March 1987

HPM Advisory Board

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. Edited and produced in the Dept of Mathematical Sciences, Ball State Univ, Muncie, Ind. 47306 U.S.A. The *Newsletter* is available free of charge upon request. Distributors: U.S., Editorial Office; Canada, David Wheeler (Concordia Univ, Montréal, 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 (address above); Australia, George Booker (Brisbane Coll Adv Educ, 130 Victoria Park Rd, Kelvin Grove, Queensland 4059); New Zealand, Andy Begg (Math Curr Off, Dept Educ, Private Bag, Wellington); elsewhere, Edw. Jacobsen (Div Sci Tech & Envrmtl Educ, UNESCO, B.P. 3.07 Paris). Send requests and address changes to the Editor.

Calendar

Meetings with HPM components are highlighted.

1987 April 8-11 . . . . . Anaheim HPM Americas Section in conjunction with National Council of Teachers of Mathematics. [Details in Americas Supplement]

1987 April 23-25 . . . . . Washington, D.C. A tercentenary symposium celebrating the publication of Newton's Principia. Contact: Stephen G. Brush, Center Renaissance & Baroque Studies, Univ Maryland, College Park, MD 20742, USA. [See No 13]

1987 June 9-12 . . . . . Toernooiveld, Nthrld "Newton's Philosophical and Scientific Legacy", celebrating the tercentenary of the Principia. Contact: Department of Philosophy, Faculty of Science, University of Nijmegen, Toernooiveld, Nijmegen, The Netherlands. [See No 13]

1987 July . . . . . Dominican Republic VII Inter-American conference on mathematics education. Contact: Eduardo Luna, Chairman, VII IACME, Universidad Católica Madre y Maestra, Santiago de los Caballeros, Dominican Republic

1987 August 7-10 . . . . . Gunma, Japan International Symposium for History of Mathematics and Mathematical Education Using Chinese Characters. Contact: Prof Y. Michiwaki, Fac Technology, Gunma Univ, Tenjin-chō, Kiryu 376, Japan. [See No 12]

1987 September 8-11 . . . . . Kassel, Germany 3rd International Conference on Teaching Mathematical Modelling and Application. Contact: W. Blum, Universität Kassel (GHS), Fachbereich Mathematik, Heinrich-Plett-Str. 40, D-3500 Kassel, GDR. [See No 13]

1988 April 6-9 . . . . . Chicago HPM Americas Section in conjunction with annual meeting of National Council of Teachers of Mathematics.

1988 June 30-July 4. . . . . São Paulo HPM Americas Section in conjunction with 2.o Congresso Latinoamericano de História da Ciência e Tecnologia. Contact: Comissão Organizadora, 2.o CLA/HCT, Caixa Postal 6063, 13.081 Campinas SP Brasil [See inside.]

1988 July 27-Aug 3 . . . . . Budapest International Commission on Mathematics Education (ICME 6). Contact: ICMI-6, János Bolyai Mathematical Society, H-1061 Budapest, Anker köz 1-3, Hungary. [See No 13 and inside]

Editorial...

Taking Charge

Lynn Arthur Steen

Mathematicians are fond of pointing out that mathematics is not a spectator sport. Neither is learning. Passive learning is both short sighted and short term. Only when a person (child or adult) becomes engaged in the subject and makes it part of her or his own agenda will education—"leading out"—be possible. One must take charge of one's own learning.

From grade school through graduate school, today's mathematics curriculum is dominated by other people's concerns: Euclid's interest in geometry; Newton's insight into falling bodies; Weierstrass' concern for rigor. The only students who see these matters as fitting their agenda are those who are well along the way to careers in physics and engineering.

The majority of students—and indeed most educational institutions— have their priorities set on other issues. Some focus on global issues such as disarmament, starvation, or political repression; others worry more about preparing for careers in law or business. Error bounds for Taylor series are not part of the agenda of such students: for them, the vast majority, mathematics is just a passive ritual of book learning with no apparent value.

The total separation of mathematics from "real" student concerns is revealed by the schism between mathematics curricula and the blossoming interdisciplineary programs in area studies such as minority history, third world culture, ethnic traditions, and women's studies. Mathematics prides itself on universality, so it remains in the stratosphere, safely above the turbulent storms of undergraduate issues that stir student passions.

What's needed for good teaching of mathematics is a commitment to connect mathematics to daily life, to cultural issues, to common sense, to the arts as well as the sciences. To learn mathematics, students must own it: they must see it as growing naturally out of their own lives and concerns. In this sense, good teaching should stress "ethnomathematics" in the broadest sense: the mathematics of culture, of ethnicity, of the people.

Unfortunately, the etymology of "ethnomathematics" suggests only the study of the mathematics of primitive cultures. So to suggest that good teaching should reflect ethnomathematics is both misleading and unhelpful. What is needed is a new term to encompass the legitimate narrow meaning of ethnomathematics as well as the broader interpretation so necessary to contemporary study. Perhaps one should speak of "cultural mathematics" or of "mathematics and society".

Regardless of what term is used, links between mathematics and culture at all levels will be increasingly important to insure effective transmission of mathematical ideas from one generation to the next.

Lynn Arthur Steen is Professor of Mathematics at St Olaf College in Northfield, Minnesota and Past President of the Mathematical Association of America. □

ICME 6 Policy for Project Presentations

The Sixth International Congress on Mathematics Instruction (ICME-6) will meet in Budapest in July and August of 1988 [see previous issues for more details]. The International Program Committee (IPC) of ICME-6 has formulated guidelines and procedures for the presentation of projects.

Individuals wishing to present projects are asked to submit a full (1-2 pages of A4) description indicating (a) the project's relevance to the scientific work of the Congress (e.g. to which Action and Theme groups its work is relevant) and (b) the project's activities and aims, including such features as its contributions to research and development, the form in which materials —if any— will appear (e.g. textual material, software, films...), its involvement in teacher training, procedures for student assessment, and the like.

A project presentation will take one of the following three forms: (1) one short oral communication which might possibly be accompanied by a temporary (i.e.~2 hour) display and exhibition; (b) one or two poster presentations; (c) one larger-scale exhibition in either individual (or perhaps shared) rooms or corridors which will be open throughout the Congress, except on the opening-, closing- and excursion- days.

The policy adopted for projects with standing exhibitions is as follows. (a) Standing exhibition projects will be expected to have personnel on duty at all times when the Congress exhibition is formally open in order to explain the project's work to visitors and to answer their questions. (b) It is not intended to allocate any time for oral presentations. Individuals associated with such projects will be expected to make contributions to the Congress' scientific work, particularly Action, Theme and Topic groups. (It should not, however, be assumed that Chief Organisers will automatically set aside time for presentations from such individuals.) (c) It is expected that all standing exhibitions will have to be charged a nominal rental fee based on the space used.

Applications to have a project included should indicate clearly which type of presentation is desired. Applications for a standing exhibition should supply the following additional information: (a) the amount of rented room or corridor space desired; (b) the apparatus, such as display boards, micros, videos, desired and also which of these the applicant would bring. Information on rental possibilities and fees will be supplied later.

On the basis of the applications received, the IPC will determine which projects will be invited to give short oral communications, to make poster presentations, or to mount standing exhibitions. Standing exhibitions will also be informed of the amount and nature of space allocated.

Decisions will be made by December, 1987. For that reason it is essential that all requests for project presentations, accompanied by the requested data, should be submitted to the IPC not later than July 31, 1987. [The chair of the IPC is Ákos Császár, Math Inst Eötvös Univ, Budapest, Múzeum krt. 608, H-1083, Hungary.]

Taken in part from ICMI *Bulletin of the International Commission on Mathematical Instruction, No. 21 (December 1986).* □

Description Of ICME-6 Action And Theme Groups

Action and Theme groups are a way of involving all participants of ICME-6. These groups represent two important aspects of participants' professional work. Each group would require four 90-minute sessions, which would consume about a fourth of the formal program.

In Action groups the participants will consider their work from the point of view of the age group of the students they are principally interested in. There are seven Action groups, essentially the same division as for ICME-5. In Theme groups the participants will consider their work from a thematic point of view. Here also there are seven divisions. Both division schemes are described in *Newsletter* No. 13.

The emphasis in these groups is an active involvement in the work of the Congress by all participants. Thus the program for each group should include significant time for discussion in groups of reasonable size. ICME-5 demonstrated that such groups are essential if participants from different countries with different institutional backgrounds are to be able to assimilate the ideas, proposals and experiences of others and to respond to them in terms of their own experiences. In the learning and teaching of mathematics, ideas and activities that prove useful or even wonderful in one cultural environment may not

have a similar appeal in another. Thus new ideas or experiences in mathematics education need discussion —as well as presentation— before a proper appreciation of them can be formed. Moreover, variants often emerge in the process of discussion which give added scope to the original stimulus.

Thus each group must choose a series of subthemes the breadth of which is such that a participant interested in that particular Action or Theme group should be able to choose a subtheme which is of direct interest. The group's subthemes should not omit an area which would be preferred by a significant proportion of its clients.

The panel must then agree on a structure for the work of the group. This should provide for each group a serious starting point and emphasize that the level of discussion (and that of the presented papers) will assume some experience and knowledge of the area. To this end each panel is asked to prepare and distribute about ten pages of written material which describe the structure of the group and provide a description of the background. To further stimulate discussion, it may be desirable to select some people to present brief position papers with the aim of raising issues. (These papers should not suppress discussion by attempting to present something for everyone.)

Panels may (in certain cases should) cooperate on some subthemes. Panels will also be required to prepare a brief statement of about 100 words for the second announcement.

Taken in part from ICMI *Bulletin of the International Commission on Mathematical Instruction, No. 21 (December 1986).* □

HPM Plans Session Prior to ICME-6

Planning is underway to organize a 'pre-session' for HPM, prior to the ICME-6 meeting in Budapest (July 27 to August 3, 1988). Preliminary discussions have focused on holding the meeting in Vienna during July 1988, although no definite decision has been made.

At this session, there would be both a scientific program and a business program. The scientific program would be structured independently of HPM participation in the ICME-6 program. The business portion would deal with a number of issues on the future of the organization which remain unsettled. As planning progresses, reports will appear in the *Newsletter.* □

HPM Program For ICME-6

HPM will have four one-hour sessions during the Sixth International Congress On Mathematical Education (ICME-6), to be held 27 July to 3 August 1988 in Budapest. Two of the one-hour sessions will consist of three invited speakers each. The themes of these sessions are "Non-euclidean geometries and their adoption in the school systems" and "The evolution of algorithms for use in schools". A third one-hour session will be a panel discussion on "History of mathematics in the teaching of mathematics". The remaining one-hour session is for contributed papers.

Contributed papers are to be ten minute presentations and must treat some aspect of the relation between history and pedagogy of mathematics. There are severe limitations on the number of contributed papers. Poster sessions will be organized to provide additional opportunities to communicate with Congress participants. Due to limitations of time and space, some papers may be accepted for presentation by title only.

Proposals for contributed papers should be sent to Professor Ubiratan D'Ambrosio, UNICAMP, Caixa Postal 6063, 13.081 Campinas SP, Brazil. □

Using History In Teaching Mathematics In the Soviet Union

С.С. Демидову
(Sergei Demidov)

In 1984 pedagogical institutions in the U.S.S.R. adopted history as an obligatory subject for future teachers of mathematics. The courses in the pedagogical institutions rely on "Source Book in the History of Mathematics", edited by A.P. Youshkevitch in two little volumes, 1976 and 1977 ("Хрестоматия по истории математики. Арифметика и алгебра. Теория чисел. Геометрия." Под ред. А.П. Юшкевича. Москва: Просвещение, 1976. "Хрестоматия по истории математики. Математическии анализ. Теория вероятностеи". Под

редакциеи А.П. Юшкевича. Москва: Просвещение, 1977). The original texts in these books are commented on in detail. Also used is the university textbook of K.A. Rybnikov, "History of Mathematics" (Рыбников К.А., "История математики". Москва: Издательство Московского Университета, 1974), the books of I. Ya. Depman, "History of Arithmetic" (Депман И.Я., "История арифметики", Москва: Учпедгиз, 1965), of B.V. Bolgarsky, "Essays About the History of Mathematics" (Болгарскии Б.В., "Очерки по истории математики". Минск: Бышэишая школа. 1979), and more special books, such as the three volumes of "History of Mathematics from Antiquity to the Beginning of the XX Century", edited by A.P. Youshkevitch (История математики с древнеиших времён до начала XX столетия. т. 1-3. Под редакциеи А.П. Юшкевича. Москва: Наука, 1970-1972) or his "History of Mathematics In Russia" (Юшкевич А.П., "История математики в России до 1917 года. Москва: Наука, 1968).

In the new mathematical textbooks used in the schools, there is historical information. Also widely used by the teachers are the books of I. Ya. Depman, "Measures and Metric System" (Депман И.Я., "Меры и метрическая система. Москва: 1953), "Stories about Solutions of the Problems" ("Рассказы о решении задач. Москва: 1964), the above mentioned "History of arithmetic", "Stories about Old and New Algebra" (Рассказы о старои и новои алгебре. Ленинград, 1967), the books of G.I. Glaiser, "History of Mathemtics in the Schools" (Глеизер Г.И., "История математики в школе. Москва: 1964) and "History of Mathematics in the Secondary School" ("История математики в цреднеи школе. Москва: 1971); both books are republished in three volumes; today we have only two volumes: "History of Mathematics. IV-VI Classes" (История математики в школе. IV-VI классы. Москва: Просвещение. 1981) and "History of Mathematics, VII-VIII Classes" ("История математики в школе, VII—VIII классы. Москва: Просвещение, 1983).

The journal, "Matematika v shkole (Mathematics In the Schools, "Математика в школе") plays an important role in the propaganda of the history of mathematics in teaching. You can find in it articles about the history of different mathematical problems, the biographies of famous mathematicians, and the calendar of the significant dates in the history of mathematics. For example, the recent volume of the journal (No 4, 1986) contains the articles of K.A. Rybnikov, "From history of arithmetic" ("Из истории арифметики"), an anonymous article on D.S. Anichkov (Д.С. Аничков, 1733-1788), a professor at Moscow University and author of mathematics textbooks, an article by B.V. Gnedeko and R.S. Cherkasov, "About the research of a Japanese scholar on the history of mathematical education in our country" (tells about the work of a professor of pedagogy at Osaka Sadzuko Khazami, "Об исследовании по истории школьного математического образования в нашеицтране, проводимом в Японим"). In the same volume you can also find the article about the 80th anniversary of A.P. Youschkevitch and the obituary of the Soviet historian of mathematics, V.N. Molodshy (1906-1986).

In 1987 the publishing house Prosveshchenie (Education) will publish the books of K.A. Rybnikov, "The rise and Development of Mathematics" (about the history of the problems from school programs; "Возникновение и развитие математическои науки") and the book of I.Ya. Depman for the pupils of IV-V classes, "Under the cover of School Textbooks" ("За страницами школьного учедника"), a collection of stories about the history of mathematics by the famous Soviet pedagogue, I.Ya. Depman (1885-1970).

Professor Demidov of the Institute for the History Science and Technology, USSR Academy Science (Институт истории естествознания и техники, АН СССР*), is a member of the HPM Advisory Board.* □

History of Mathematics In Greece

The Group for the History of Mathematics has been formed in Greece and has an active and ongoing program. Among its main interests is investigating the relations between the history and teaching of mathematics. The Group publishes a pamphlet three times a year (in Greek), as well as a series of occasional papers under the theme of "Questions of the History of Mathematics". Six of these

occasional papers have appeared, most in Greek. No. 1: N. Kastanis, "Platon and Mathematics. A Bibliography"; No. 2: N. Kastanis, "Euclid must go! — We are not going to betray our country!" (an historico-didactic examination of the contradictions within school geometry in Greece); No. 3: A. Poulos, "Problems in the research of the historical evolution of the mathematical department of the National University of Athens"; No. 4: J. Thomaïdis, "The emergence and evolution of the logarithmic notions"; No. 5: M. Panteki, "William Wallace and the introduction of continental calculus in Britain: a letter to George Peacock" (in English); No. 6: N. Kastanis & J. Thomaïdis, "A diachronic examination of the relation of history with the didactics of mathematics".

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Further information on the Group may be obtained from Professor Nikos Kastanis, Department of Mathematics, Aristotle University of Thessaloniki, Thessaloniki, Greece. □

Latin American Congress in 1988

The 2nd Latinamerican Congress of the History of Science and Technology (2.o Congresso Latinoamericano de História da Ciência e Tecnologia) will be held in São Paulo, 30 June to 4 July 1988. Plenary talks, symposia, panel discussions, communications, exhibitions and the like are planned. A second announcement containing the program structure along with housing and registration information will be available in September 1987. To receive it send your name and mailing address to Comissão Organizadora, 2.o CLA/HCT, Caixa Postal 6063, 13.081 Campinas SP, Brazil. □

Have You Read?

Readers are asked to submit contributions. 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, articles and journals; 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.

Althoen, Steven C., and Renate McLaughlin 1987 "Gauss-Jordan reduction: a brief history" *American Mathematical Monthly* 94:2 (Feb) 130-42.

Recounts Gauss's and Wilhelm (not Camille!) Jordan's work, and other claimants to the method.

Berggren, J.L. 1986 *Episodes In the Mathematics of Medieval Islam* NY: Springer-Verlag.

General history text with technical explanations, diagrams, photographs, problems for students and bibliographies.

Bottazzini, Umberto 1986 *The Higher Calculus: A History of Real and Complex Analysis from Euler to Weierstrass* Translated by W. Van Egmond. NY: Springer-Verlag.

Detailed history appropriate for advanced undergraduate level.

Broadbent, Frank W. 1987 "Lattice multiplication and division" *Arithmetic Teacher* 34:5 (Jan) 28-31.

Multiplication and division algorithms, including placing of decimal point, based on techniques used in Renaissance Europe.

Dauben, Joseph W. 1987 "Historical notes: Counting to infinity . . . and beyond" *Consortium* 21 (Feb) 9-10.

Short biography of Georg Cantor and description of his seminal work on infinite sets.

Dunham, William 1987 "Euclid and the infinitude of primes" *Mathematics Teacher* 80:1 (Jan) 16-17.

Euclid's formulation of IX.20 is very different from what is purported to be his in contemporary texts.

Evesham, H.A. 1986 "Origins and development of nomography" *Annals of the History of Computing* 8 (Oct) 324-33.

Nomography applies geometric results to computational problems. It is used in civil and military engineering and navigation, among others.

Henry, Boyd 1987 "Student Math Notes: polygonal numbers" NCTM News Bulletin (March) center pull-out.

Reproducible worksheets for secondary (grades 9–12) classroom; not historical but easily related to historical approach. (National Council of Teachers of Mathematics, USA.)

Homann, Frederick A. 1987 "David Rittenhouse: logarithms and leisure" *Mathematics Magazine* 60:1 (Feb) 15–20.
Description of some mathematical work of a Colonial American natural philosopher.

Jones, Charles V. 1987 "Historical Notes: Common Fractions: what is their future?" *Indiana Mathematics Teacher* 1:2, 21–22.
History of fractional notation suggests that common fractions are suitable for counting parts and decimal fractions for measuring.

Katz, Victor J. 1986 "Using history in teaching mathematics" *For the Learning Of Mathematics* 6:3 (Nov) 13–19.
Several historical problems which motivated further mathematical development, modified for classroom use.

Kleiner, Israel 1986 "Famous problems in mathematics: an outline of a course" *For the Learning Of Mathematics* 6:1 (Feb) 31–38.
Description of 3rd year undergraduate course, with extensive bibliography.

Kula, Witold 1986 *Measures and Men* Translated from Polish by Richard Szreter. Princeton, NJ: Princeton University Press.
The social significance of weights and measures throughout history. [CZ]

Ogilvie, Marilyn Bailey 1986 *Women In Science: Antiquity Through the Nineteenth Century.* Cambridge, Mass: The MIT Press.
A biographical dictionary with an annotated bibliography.

Smithies, F. 1986 "Cauchy's conception of rigour in analysis" *Archive for History of Exact Sciences* 36:1.
Focuses on what Cauchy apparently thought he was doing, rather than on what he did.

Stigler, Stephen M. 1986 "John Craig and the probability of history: From the death of Christ to the birth of Laplace" *Journal of the American Statistical Association* 81:396 (Dec) 879–87.
Craig's 1699 work is analyzed, showing its incipient modern concepts, and then his method for judging historical evidence is applied to trying to determine Laplace's birth and death dates.

——— 1986 "Laplace's 1774 memoir on inverse probability" *Statistical Science* 1:3, 359–78.
Translation of Laplace's "Memoir on the probability of the causes of events", which contains Bayes's theorem, as it later became known.

CZ= Claudia Zaslavsky.

Have You Seen?

Sources of portraits, pictures, diagrams, formulae, and the like from the history of mathematics, reasonably accessible and suitable as enrichment for the mathematics classroom. If no annotation, the illustration is a portrait of the person. Non-portraits historically associated with a person are listed by the person's name, with an annotation. Illustrations not associated with an individual are listed by title or a descriptive term. Color illustrations noted. Repetitions of the same picture in different sources are not avoided in order to maximize the chances of an item being obtainable. As a rule, portraits of living persons are not included. Send items to the Editor, including information on where to find it or how to get more information about it. Contributor's name is in square brackets.

ARCHIMEDES, death scene (photo of mosaic) Boyer p 135.

ARCHIMEDES, death scene (photo of mosaic) Burton p 217.

ARISTOTLE (photo, Raphael's "School of Athens", detail) Boyer p 92.

'Algorist and abacist' (from Riese's Rechenbücher) Boyer p 303.

'Arithmetic, algorist, abacist' (from Reisch's Margarita) Boyer p 279.

'Arithmetic, algorist, abacist' (from Reisch's Margarita) Burton p 255.

'Arithmetic, among the seven liberal arts' (from Reisch's Margarita) Boyer p 300.

BARROW Burton p 363.

BERNOULLI, D. Burton p 463.

BERNOULLI, Jacob Burton p 445.

BERNOULLI, Jacob (title page) Burton p 447.

BERNOULLI, Johann Burton p 449.

'Bills of Mortality' Burton p 413.

BOETHIUS (photo ms illustration) Boyer p 199.

CANTOR Burton p 590.

CARDANO Boyer p 313.

CARDANO Burton p 309.

CARDANO (title page) Burton p 317.

COPERNICUS Burton p 331.

D'ALEMBERT Burton p 495.

DESCARTES Boyer p 368.

DESCARTES Burton p 343.

DESCARTES (page from la Géométrie) Burton p 349.

DÜRER ("Melancholia") Boyer p 325.

EUCLID Burton p 154.

'Euclid's Elements' (photo, title page of first English edition) Boyer p 298.

EULER Burton p 501.

FERMAT Burton p 485.

FIBONACCI Burton p 271.

FREGE Burton p 619.

'Galley division' (photo ms illustration) Boyer p 240.

GALILEO Boyer p 359.

GALILEO Burton p 328.

GAUSS Burton p 511.

GAUSS Boyer p 546.

GAUSS (page from diary) Boyer p 545.

'Geometry, among the seven liberal arts' (from Reisch's Margarita) Burton p 237.

HALLEY Burton p 375.

HILBERT Burton p 623.

HUYGENS Burton p 443.

HUYGENS Boyer p 411.

HUYGENS (cycloidal pendulum) Boyer p 413.

KEPLER Boyer p 355.

KEPLER Burton p 337.

KEPLER (diagram) Burton p 341.

KLEIN Burton p 568.

KOVALEVSKAYA Burton p 575.

KRONECKER Burton p 595.

LAGRANGE Burton p 508.

LAPLACE Burton p 451.

LAPLACE (title page) Burton p 453.

LAPLACE (title page) Burton p 457.

Boyer=C.B. Boyer, *A History of Mathematics* (Wiley, 1968); Burton=D.M. Burton, *The History of Mathematics. An Introduction* (Allyn & Bacon, 1985).

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NEWSLETTER SUPPLEMENT

AMERICAS EDITION

No. 14, Supplement — February 1987

HPM Americas Section Executive Board

Annual Meeting
April 7, 1987
Americas Section HPM

Program for 1987 Meeting

The Americas Section of HPM will meet on Tuesday, 1987 April 7, at the Jolly Roger Hotel, located near the Anaheim Convention Center. Leland Webb (Mathematics Department, California State College, Bakersfield, California 93309; office telephone: 805/833-2150) is in charge of local arrangements.

The program will begin at 9:00 am in the Jolly Roger Motel. Morning and afternoon sessions of papers and discussion and a buffet lunch are planned. A short business meeting will be conducted at the end of the afternoon session.

A registration fee of $15 (US) covers the costs of facilities and the lunch. If you plan to attend, please notify Leland Webb (see telephone numbers, above) so an accurate count can be made for the buffet. For room accommodations, consult either the NCTM announcement or a travel agency, such as affiliates of the American Automobile Association. A map of the general area around the Anaheim Convention Center appears elsewhere in this Supplement.

PROGRAM: April 7, 1987

Morning Session
8:30 . . . . . Get Acquainted
9:00 . . . . . Talks

Gregory D. Foley — Ohio State University

The Role of Infinitesimals In 20th Century U.S. Calculus Textbooks

Early in the 20th century, an infinitesimal was treated as a variable which approaches zero as its limit. This treatment fell into disrepute and was eclipsed by the epsilon-delta approach by mid-century. Nonstandard analysis may provide the impetus that will return the infinitesimal to textbooks and hence to the classroom.

Sherry L. Cox — Kingsport, Tenn.

Including History of Mathematics In the Middle School Classroom

The history of mathematics can prove to be a useful tool in the teaching of mathematics. In the teaching of particular mathematics concepts, historic topics of intrinsic interest to students can be interwoven into the curriculum so as to (1) stimulate students' interest in the mathematical concept, (2) enrich and enliven their understanding of and appreciation for the concept, and (3) extend their awareness of the evolving nature of given mathematical concepts. Certain historical events and characterizations are used to develop particular mathematical concepts and are set within the framework of the middle school mathematics curriculum.

Arthur V. Johnson, II Nashua (NH) Senior High School

History Opens Minds In History Classes

In my presentation I will explain how I use the history of mathematics in my classes, including the following: (1) individual written and oral biographies by students; (2) birthday celebrations to honor a mathematician; (3) historical trivia in typé-written notes which make up our classroom discussions (e.g., Recorde and '=' sign); (4) definitions or origins of various terms such as Π or sine; (5) class or group projects to replicate discoveries such as Buffon's Needle Problem or Eratosthenes determination of the circumference of the earth.

Claudia Zaslavsky Marymount College

Mathematical Aspect of Cultural Traditions: How to Integrate Them Into the Elementary and Middle School Curriculum

All societies have developed mathematical practices appropriate to their daily lives and their cultures, an area of mathematics now known as "ethnomathematics". I will discuss the necessity to expand the mathematics curriculum to include this area of mathematics, and the possibilities for doing so in grades three to eight.

My focus will be on art and architecture. Through the use of color slides I will illustrate such topics as: the disappearance of the traditional round house in parts of Africa; geometric aspects of the contrast between the historical buildings of Moscow and of St. Petersburg (Leningrad); geometry of patterns in traditional Navajo (Diné) and Uzbek rugs, and in Hopi baskets; geometry and history of Islamic decorative art; and traditional geometric decoration of Ndebele (South Africa) homes, and the effects of apartheid on this parctice.

Lunch. . . . . .

Afternoon Session

1:30 . . . . . Talks

Florence Fasanelli National Science Foundation

Learning Elementary Mathematics Through Its History

Mathematics manipulatives—games, knots, polyhedra, calendars, loaves, tiles—are a natural way to expose children to mathematical concepts without using paper and pencil. The history of mathematics contains many illustrations that underscore these concepts. I will demonstrate how I have used the history of mathematics in the classroom, for children in grades 1-8, to teach mathematics without paper and pencil. In each case, the mathematics lesson is related to other subject matter the student is studying such as the travels of Marco Polo, the Aztec sacrifices, or the Viking invasions.

Marjorie M. Enneking Portland (OR) State Univ

A History of Mathematics Course For Middle School Teachers

Outline of a course in the history of mathematics designed for the particular needs of the middle school curriculum, together with a description of some of the materials that are under development.

Frank J. Swetz Pennsylvania St Univ Harrisburg

Using Problems From the History of Mathematics In Classroom Instruction

This talk will discuss the rationale of using historical problems in classroom presentations. Examples of research problems will be given and some of their implications discussed. Sources for such problems will also be given.

V. Frederick Rickey Chair, HPM Americas Section

Business Meeting

(The program committee consisted of V. Frederick Rickey, Bowling Green State University, Bowling Green, Ohio, and Charles V. Jones, Ball State Unversity, Muncie, Indiana.)

Canadian Society To Meet In May

The Canadian Society for History and Philosophy of Mathematics/Société canadienne d'histoire et de philosophie des mathématiques will meet 24-27 May 1987 at McMaster University. A Call For Papers has been issued; send a title and short summary to Dr. Tom Archibald, Acadia University, Wolfville, Nova Scotia B0P 1X0, Canada. For registration and housing information, write to The Secretariat, Learned Societies Conferences 1987, Divinity College 144, McMaster University, Hamilton, Ontario L8S 4K1, Canada (telephone: 416/525-9140, ask for extension 2577).

Membership in the Canadian Society is open to scholars interested in the history and philosophy of mathematics. Dues are US$11. Dues with a subscription to *Historia Mathematica*, the Society's official journal, are US$33. To obtain further information, or to join the Society, write to Professor Louis Charboneau, Département de mathématiques et d'informatique, Université du Québec à Montréal, C.P. 8888, Succ. A, Montréal, Québec H3C 3P8, Canada.

HPM NEWSLETTER

An Organization For Spanish Speaking Teachers of Mathematics

Asociación Nacional de Profesores de Matemáticas (ANPM, National Association of Teachers of Mathematics) will hold its 9th annual meeting 11-14 November 1987 in Jalapa Enríquez, Veracruz. Membership information (US$10 a year) may be obtained by writing to Apartado Postal 1-2610, Guadalajara, Jalisco, Mexico. Conference registration information may be obtained by writing to IX Congreso Nacional de Profesores de Matemáticas, Calle D No. 16 Manzana XIII, México D.F., C.P. 04400, Mexico.

HPM NEWSLETTER

A History Of English Mathematics

Paul Wolfson

This summer the course "On the Shoulders of Giants: A History of English Mathematics" will be offered at Oxford University. Lectures, aimed at a general audience, will discuss the lives and contributions of some giants of English mathematics, taking a broad view of the scientific and cultural contexts of their achievements. To supplement the lectures, visits are planned to some places where these men and women lived and worked. Three undergraduate or graduate credits are available for completing this three week course, August 4-24. Mathematics instructors and other professionals taking the course for credit may find that the costs of the program qualify for tax purposes as a professional expense.

This course is offered as part of the 1987 summer Program at Oxford University sponsored by the Pennsylvania Consortium for International Education. The program is designed to provide an opportunity to study at England's oldest university, founded in 1167. Classes as well as room and board will be scheduled at Mansfield, one of Oxford's colleges. Room, board, and one-day trips in conjunction with the course are all covered by the program fee of $740. Tuition ($204 for 3 undergraduate credits and $267 for 3 graduate credits), airfare, and weekend meals are not included. For further information, write to the instructor: Professor Paul Wolfson, Department of Mathematical Sciences, West Chester University, West Chester, PA 19383.

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