

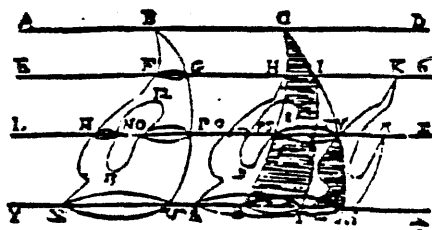
BULLETIN

CSHPM/SCHPM



An ancient Mayan mathematics lecture (c. +800), courtesy of Michael Closs. See the description on page 3.

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Canadian Society for History
and Philosophy of Mathematics
Société canadienne d'histoire et
de philosophie des mathématiques

The Bulletin is an informal medium whose aim is to inform members of the CSHPM\SCHPM, and others interested in the history and philosophy of mathematics, of happenings, meetings, current research work, publications etc. and to provide a place where one can present tidbits, historical problems, quotations etc. which do not find a place in more formal media.

Material should be sent to either of people below:

Roger Herz-Fischler, Department of Mathematics and Statistics, Carleton University, Ottawa, Ontario, K1S-5B6. The preferred method is via electronic mail (available at many universities) because it a) renders retyping unnecessary, and b) it avoids mail delays of up to plus infinity. Electronic mail address: ROGERH-F@CARLETON.NETNORTH. The second best method - because of a) - is to send an IBM compatible diskette, via the mail. The mention of these methods should not however discourage those writing with quill and ink or other methods.

Marshall Walker, Department of Computer Science and Mathematics, Atkinson College, York University, North York, Ontario, M3J-2R7.

CSHPM/SCHPM

The purpose of the society is to unite scholars within and outside of Canada who are interested in the history and philosophy of mathematics.

Annual dues are \$15 (\$US 11).

If a subscription to Historia Mathematica (the official journal of the society) is desired the additional cost is \$29.50 (\$US 22) i.e. a total of \$44.50 (\$US 33).

Remittances should be sent to: Louis Charboneau, Département de mathématiques et d'informatique, Université du Québec à Montréal, C.P. 8888, Succ. A, Montréal, Québec, H3C-3P8.

ANNUAL MEETING/REUNION ANNUEL

Anyone wishing to speak at the annual meeting to be held at McMaster University in May should contact:

Tom Archibald, Department of Mathematics, Acadia University, Wolfville, Nova Scotia, BOP-1X0.

SPECIAL SESSION ON BERTRAND RUSSELL

As part of the annual meeting there will be a special session on Bertrand Russell. For details please contact:

Albert Lewis, Bertrand Russell Editorial Project, MacMaster University, Hamilton, Ontario, L8S 4M2

The drawing on the cover represents an ancient Mayan mathematics lecture (c. +800) as depicted on a Classic Maya ceramic vase. It was drawn by Michael Closs following the reproduction of vessel 56 in The Maya Book of the Dead by Francis Robicsek and Donald Hales, Charlottesville, University of Virginia Art Museum, 1981. The figure on the left can be recognized by the large square eye and the netted headdress as an old Maya deity known as God N. A speech scroll emanates from his mouth and contains bar and dot numerals for 11 and 13 (bars have values 5 and dots have value 1). The teacher is holding a paintbrush in his left hand which is pointed towards a codex (an ancient Maya screen-fold book). Behind his head are bar and dot numerals for 7, 8, 9 and 12. In front of the master are seated two young male apprentices. The glyphic caption above the middle figure appears to be the name of the first student.

HISTORICAL PROBLEM\PROBLEMES HISTORIQUES

Readers are invited to send problems based on historical texts. Full references should be supplied. Answers will be published in the same issue.

Problem 2. (Submitted by Gerolamo Cardano 1501- 1576)

"Find the number which when its cube root is subtracted from it and when the square root of the remainder is added to the remainder, yields the first number."

The following request for information was received from Professor John Loase of SUNY (Westchester Community College).

Dear Russell Devotees:

I have been trying (unsuccessfully) to find a reference or for the following quote (which I remember from reading Russell in the early 70's).

"Do the irrationals truly exist or are they merely convenient fictions that ease certain algebraic or geometrical arguments?"

I have perused several editions of Russell's Principles and see approximations to the above in section 267 Chapter XXXIV (Limits and Irrational Numbers) in which Russell discusses the diagonal of the unit square, $x^2 - 2 = 0$, and his later objection to the implicit assumptions related to the irrationals developed as limits of continued fractions.

If you have any suggestions please write to me at the following address:

Dr. John Loase, 151 Primrose Ave., Mt. Vernon, N.Y., U.S.A., 10552.

CURRENT RESEARCH WORK

Michael P. Closs

Department of Mathematics, University of Ottawa

I received my Ph.D. in mathematics in 1968 from the University of Windsor. My dissertation was on a topic in differential geometry and my first five research publications were in that area.

In 1973, I began a study of the mathematical development found among the indigenous peoples of North and South America. This was to fulfill a longstanding curiosity of mine about a subject for which little data was available in publications on the history of mathematics. I soon became fascinated with the mathematical notation employed by the ancient Maya and with the existence of numerous hieroglyphic texts which exhibited its usage in a historical context. What had started as a side interest soon became my main preoccupation.

In 1974, I received a Canada Council fellowship to work on a book on Maya mathematics. Although my book was never completed, I did manage to study most of the significant material which had been published on Maya chronology, astronomy, and hieroglyphic writing prior to 1971. My work led me to participate in conferences on the ancient Maya and to become more deeply involved in research in this area.

Since 1974, I have received several research grants from the Social Sciences and Humanities Research Council and also grants from the Humanities Research Fund of the University of Ottawa to continue my research. My papers have appeared in published conference proceedings, as chapters in books, and in journals such as American Antiquity, mexicon, Archaeoastronomy, and Estudios de Cultura Maya. About one third of my papers have been in Maya astronomy, one third in Maya chronology, and one third in Maya epigraphy. The first two areas are those in which one finds the main usage of Maya mathematics. My work in the last area is a direct consequence of my need to study original sources and a concomitant interest in glyph decipherment.

Recently, I have edited a book entitled Native American Mathematics (University of Texas Press, Austin, 1986). My contributions to the book include a comparative study of Native American number systems, a study of tallies and the ritual use of number in Ojibway pictography, and a study of the mathematical notation of the Maya. I have also coauthored a contribution on Aztec numbers and their uses. This book fills the need I felt more than ten years ago for a source in the history of mathematics which would discuss developments among the native peoples of the Americas.

QUOTATIONS

Readers are invited to send in suitably documented quotations for this section.

"As Hilbert once expressed it, the importance of a scientific work can be measured by the number of previous publications it makes superfluous to read." - O. Neugebauer, The Exact Sciences in Antiquity, 2nd edition, Providence, Brown University Press, 1957, p.145.

(The following two quotations from The Autobiography of Bertrand Russell, vol.1, Atlantic, Little, Brown, 1951, p. 37 & 50, are intended to serve as reminders of the special Russell session to be held at the annual meeting; see page 2.)

"At the age of eleven, I began Euclid, with my brother as my tutor. This was one of the great events of my life, as dazzling as first love. I had not imagined that there was anything so delicious in the world."

"There was a footpath leading across fields to New Southgate, and I used to go there alone to watch the sunset and contemplate suicide. I did not, however commit suicide, because I wished to know more of mathematics."

"To use the base and height of a right triangle to measure the heavens, one inch equals a thousand miles." - Chou Pei (-200), from the first page of F. Swetz and T. Kao, Was Pythagoras Chinese?, University Park, Penn., Pennsylvania State Univ. Press, 1977.

(the "good old days" of mathematics)

"I don't think mathematics needs to be supported. I think the phrase is almost offensive. Mathematics gets along fine, thank you, without money, and I look back with nostalgia to the good old days, three or four hundred years ago, when only those did mathematics who were willing to do it on their own time." - Paul Halmos in D. Albers, Mathematical People; Profiles and Interviews, Boston, Birkhäuser, 1985, p. 127.

L'extrait suivant est tiré du livre Essay des merveilles de nature, et des plus nobles artifices publié en 1621 par Etienne Binet (1596-1639) qui fut prédicateur du Roi (Ah! Quand les mathématiciens étaient bien appréciés par les gens au gouvernement!). Le livre sera reproduit en 1987 par L'Association du Théâtre de la ville d'Evreux (France); prix de souscription 180FF.

MERVEILLES
DES
MATHEMATIQUES
CHAPITRE LI

L'
Esprit de
l'homme trenche
du petit Dieu, et se
mesle de faire des mondes de
cristal et contrefait les miracles de
l'Univers. Dieu a créé mille choses qui
n'estonnent gueres nos esprits, l'artifice fait
profession de n'œuvrer que des miracles. Les Mathematiciens
forcent les natures, et changent les Elemens, et nous font
voir ce qu'on ne peut voir, ny croire quand mesme on le void
du bout des doigts. Ils vous font jaillir des eaux qui se lancent

ANSWER/REPONSE

Problem 2. (source: The Great Art or the Rules of Algebra, R. Witmer ed., Cambridge, Mass., MIT Press, 1968, Chapter V, problem 5, p.43; original 1545).

Let x^2 be the remainder after the cube root is subtracted from the number, Now since when we add x (the square root of the remainder) to the remainder we obtain the original number again it must be that what we have added, i.e. x , was equal to what we subtracted viz. the cube root. Thus the original number was x^3 . This gives $x^2 + x = x^3$ which reduces to $x^2 = x + 1$ so that $x = (1 + R(5))/2$. [Thus $x^2 = (3 + R(5))/2$ and the original number x^3 is $2 + R(5)$]

PUBLICATIONS

Abeles, Francine. "Determinants and Linear Systems: Charles L. Dodgson's View", British Journal of the History of Science, 19(1986), 331-335.

Barbeau, Ed. "Incommensurability Proofs: A Pattern That Peters Out", Mathematics Magazine, 56(1983), 82-90.

Berggren, Len. "The Correspondence of Abu Sahl al-Kuhi and Abu Ishaq al-Sabi", Journal for the History of Arabic Sciences, 7(1983), 39-124.

Closs, Michael. "A Truncated Initial Series from Xcalumkin", American Antiquity, 48(1983), 115-122.

Closs, Michael. "Were the Ancient Maya Aware of the Precession of the Equinoxes?", Archaeoastronomy, 6(1983), 164-171.

Fraser, Craig. "J. L. Lagrange's early Contributions to the Principles and Methods of Mechanics", Archive for History of Exact Sciences, 28(1983), 197-241.

Herz-Fischler, Roger. "Le Corbusier's 'Regulating Lines' for the Villa at Garches (1927) and Other Early Works", Journal of the Society of Architectural Historians, 43(1984), 53-59.

PRISMA

PRISMA, which grouped the History of Medicine, History and Philosophy of Science and CSHPM\SCHPM, has ceased to exist for reasons which are not clear at the time of writing. Monies formerly allocated to this organization will now revert to CSHPM\SCHPM. Unfortunately the secretariat of PRISMA at the University of Ottawa School of Medicine kept the first issue of the NOTICES, even though PRISMA no longer existed, and this caused a delay of over a month and a half.

NOUVELLES/PERSONAL NOTES

Francine Abeles (Kean College of New Jersey) is currently editing the mathematical pamphlets of Charles L. Dodgson (Lewis Carroll). This will appear as volume 2 in a series of six volumes on various aspects of Dodgson's work to be published by the University of Virginia Press. In addition to teaching various new advanced courses in logic and computer science and a graduate-liberal studies course dealing with the contemporary mathematical scene (involving topics from the history of mathematics) Professor Abeles is also collaborating with Morton Cohen for the latter's biography of Dodgson.

FAUSSE DEMONSTRATION HISTORIQUE DU MOIS

(translation: how to become famous with an incredibly incorrect proof!)

Dans n'importe quel livre au sujet de la probabilité élémentaire on trouve une démonstration plus ou moins rigoureuse de la fameuse "Loi de Poisson". Voici une reproduction de l'originale tirée de S. Poisson, Recherches sur la probabilité des jugements en matière civile précédées des règles générales du calcul des probabilités, Paris, Bachelier, 1837 (un exemplaire se trouve à la bibliothèque de Lehigh University, côte 519.1 / P555r). Un "etc." bien rempli!!

Par la formule du binôme, on a

$$(1-p)^n = 1 + np + \frac{n \cdot n-1}{1 \cdot 2} p^2 + \frac{n \cdot n-1 \cdot n-2}{1 \cdot 2 \cdot 3} p^3 + \text{etc.};$$

si n est un très grand nombre, et qu'on remplace $n-1$, $n-2$, etc., par n , on aura, à très peu près,

$$(1-p)^n = 1 + np + \frac{n^2 p^2}{1 \cdot 2} + \frac{n^3 p^3}{1 \cdot 2 \cdot 3} + \text{etc.};$$

série qui est le développement de e^{-np} , en désignant par e la base des logarithmes népériens; il en résultera donc

$$r = 1 - e^{-np},$$

pour la valeur approchée de r . Dans le cas de $p = \frac{1}{n}$, cette valeur sera le rapport de $e-1$ à e . Par conséquent, si la chance d'un événement E est l'unité divisée par un très grand nombre n , il suffira d'un pareil nombre n d'épreuves pour qu'il y ait une probabilité $\frac{e-1}{e}$, ou à peu près égale à $\frac{2}{3}$, que E arrivera au moins une fois.

NOMINATION - JOHN BERRY

John Berry, formerly associate dean of science at the University of Manitoba, has been appointed director of the new international division of the Association of Universities and Colleges of Canada (AUCC), effective January 1. Dr Berry will be responsible for overseeing AUCC programs involving universities in developed and Third World countries. These programs were previously administered by AUCC's international development office and the international relations and scholarship administration division. Dr Berry has held visiting positions at universities in Botswana, India and United Kingdom. He has also served on the board of directors of the World University Service of Canada (WUSC) and the Manitoba Association for World Development. He was a Council member of our Society from 1984 to 1986, and Programme Chairman in 1984.

CAHIERS D'HISTOIRE ET DE PHILOSOPHIE DES SCIENCES NOUVELLE SERIE

Les cahiers sont édités par la Société française d'histoire des sciences et des techniques et diffusées par la Librairie BELIN, 8 rue Férou, 75278 Paris Cedex 06. Voici les numéros portant sur l'histoire des mathématiques.

N° 2 - 1982 - Marie-Françoise Biarnais, Les Principes de Newton. Genèse et structure de chapitres fondamentaux avec traduction nouvelle.

Cette étude est la révision d'une partie de la thèse de 3ième cycle, soutenue en 1981, par Mme Biarnais. Une nouvelle traduction du texte s'imposait du fait des traductions incomplètes dont on disposait. Les thèmes retenus ont été choisis en tenant compte des centres d'intérêt communs aux savants entre 1687 et 1760, des conseils de lecture donnés par Newton au début du Livre III, de la longueur des textes eux-mêmes et de la proportion calcul-explication de leur contenu.

N° 11 - 1985 - François Rostand, Procédés de la pensée mathématique.

Le raisonnement mathématique ne se réduit pas à une application mécanique de règles formelles, il suppose une stratégie démonstrative, où interviennent des valorisations esthétiques et des schèmes intuitivement prégnants. Un premier recensement de ces valorisations et de ces schèmes a été tenté à partir d'ouvrages classiques de mathématiques, examinés du point de vue de la psychologie, qui, si elle n'a pas qualité pour définir les conditions de la rigueur, est tout à fait dans son rôle quand il s'agit de décrire une conduite intelligente.

N° 14 - 1986 - Pierre Costabel et Monette Martinet, Quelques savants et amateurs de science au XVII^{ème} siècle (Marsenne, Roberval, Huygens, Pardiès, Du Hamel, Morin, Rohault).

Le but du présent cahier est de fournir des indications biographiques et scientifiques sur quelques personnages du XVII^{ème} siècle que les grandes encyclopédies, les dictionnaires et même les histoires des sciences générales négligent le plus souvent. Des données bibliographiques précises complètent une information de qualité.

N° 18 - 1987 - Essai en vue de résoudre un problème de la Doctrine des chances, par Thomas Bayes, communiqué par Price à la Royal Society, traduction et postface par Jean-Pierre Clero, préface de Bernard Bru.

Le problème résolu par Bayes consiste, « étant donné le nombre de fois qu'un événement connu s'est réalisé ou a fait défaut » à calculer « la chance que la probabilité de sa réalisation lors d'une seule épreuve soit comprise entre deux degrés que l'on puisse assigner ». Les notes du traducteur qui accompagnent le texte de Bayes ne s'adressent pas au seul spécialiste du calcul des

probabilités, mais sont aussi destinées à faciliter la lecture de l'Essai par des non-spécialistes des mathématiques qui pourraient être sensibles au type de rationalité qu'il engage (philosophes, médecins, économistes, chercheurs en matière politique et sociale et aux étudiants). La postface met plus philosophiquement en perspective les grands thèmes qui trament l'Essai bayésien.

N° 20 - 1987 - Faire de l'histoire des mathématiques: documents de travail. Textes du colloque de Marseille (juin 1983) sur l'histoire des mathématiques. Jean Dhombres (éditeur).

De plus en plus de mathématiciens, chercheurs ou enseignants s'intéressent à l'histoire des mathématiques. Le but de ce Cahier est de leur présenter quelques problématiques de cette histoire, à titre de questions, en indiquant à chaque fois des références bibliographiques précises. Ainsi passe-t-on des mathématiques développées en Extrême-Orient, à l'étude de communautés mathématiques, à la physique mathématiques, aux probabilités et aux éditions critiques des oeuvres de mathématiciens (Euler, Leibniz, etc.). Ces contributions sont faites par des spécialistes français ou étrangers.

N° 21 - 1987 - L'histoire dans l'enseignement mathématique (en anglais), I. Grattan-Guinness (éditeur).

Ce cahier poursuit dans la voie du Cahier précédent, à partir d'un atelier tenu à l'Université de Toronto, en juillet et août 1983, comment utiliser l'histoire des mathématiques dans l'enseignement mathématique ? Les thèmes traités vont de l'Antiquité au XVIème siècle: chaque thème donnant lieu à des références précises. Les auteurs sont des spécialistes américains, anglais et allemands (Berggren, Drake, Hugues, Scriba, Grattan-Guinness, Pycior, Arcavi). L'ouvrage se termine par une bibliographie.

N° 23 - 1987 - La philosophie des Sciences de Henri Poincaré, Colloque du Luxembourg (mai 1986), J.-P. Pier (éditeur).

Ce cahier contient sept exposés concernant Poincaré. Entre autres J. Dieudonné « La conception des objets mathématiques », E. Zahar « Les paradoxes de la philosophie », R. Thom « Le continu ».

**From the CANADIAN SCIENCE AND TECHNOLOGY HISTORICAL ASSOCIATION
CALL FOR PAPERS**

The biennial meeting of the CSHA and the Fifth Kingston Conference will be held at the Chimo Inn, Ottawa, 23-25 October 1987. All members are invited to propose papers (full papers of 20 minutes or work-in-progress papers of 10 minutes) on topics related to the history of Canadian science, technology or medicine. Please provide a title and abstract of up to 150 words. The deadline is 1 April 1987. Proposals should be sent to Prof. R.A. Jarrell, Dept Natural Science Arkinson College, York University, North York, Ont. M3J 1P3.

HISTORIA MATHEMATICA

Please note that to take advantage of the special rate the members of the Society get and to prevent mixing up the computer of Academic Press, all correspondence related to your subscription to Historia Mathematica should be sent to the Secretary-treasurer of the Society Louis Charbonneau, Dept. Math. et Info., U.Q.A.M., C.P. 8888, Succ. A, Montréal, Qué., H3C 3P8.