AFRICAN MATHEMATICAL UNION

Commission on the History of Mathematics in Africa

(AMUCHMA)

AMUCHMA-NEWSLETTER-29

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Maputo (Mozambique), 30.07.2004

AMUCHMA

Chairman:	Paulus Gerdes (Mozambique)
Secretary:	Ahmed Djebbar (Algeria)
Members:	Cyprien Gnanvo (Benin), Salimata Doumbia (Côte d'Ivoire), Nefertiti Megahed (Egypt), Mohamed Aballagh (Morocco), Abdoulaye Kane (Senegal), David Mosimege (South Africa), Mohamed Souissi (Tunisia), David Mtwetwa (Zimbabwe)
Associate Members:	José Barrios (Canary Islands, Spain), Scott Williams (USA)

1. OBJECTIVES

The A.M.U. Commission on the History of Mathematics in Africa (AMUCHMA), formed in 1986, has the following objectives:

a. To improve communication among those interested in the history of mathematics in Africa;
b. To promote active cooperation between historians, mathematicians, archaeologists, ethnographers, sociologists, etc., doing research in, or related to, the history of mathematics in Africa;
c. To promote research in the history of mathematics in Africa, and the publication of its results, in order to contribute to the demystification of the still-dominant Eurocentric bias in the historiography of mathematics;
d. To cooperate with any and all organizations pursuing similar objectives.

The main activities of AMUCHMA are as follows:

a. Publication of a newsletter;
b. Setting up of a documentation centre;
c. Organisation of lectures on the history of mathematics at national, regional, continental and international congresses and conferences.

2. MEETINGS, EXHIBITIONS, EVENTS

2.1 Exploring mathematical concepts in indigenous activities

A workshop on "Exploring mathematical concepts in indigenous activities," organised by Queeneth Mkabela-Castiano, took place at the University of Zululand in Epamgeni (South Africa) on June 22-23, 2004. The following papers were presented:

* David Mtetwa (Zimbabwe): Framework for classroom practice involving indigenous knowledge systems.

* Paulus Gerdes (Mozambique): The ethnomathematics research programme and geometry in Africa.
* Sabelo Nxumalo & Herbert Khuzwayo (South Africa), Exploring KwaZulu-Natal games.
* Abdulcarimo Ismael (Mozambique): Exploring indigenous games: the case of tchadji.
* Mogege Mosimege (South Africa): Some traditional South Afrcan games and school mathematics.
* Marcos Cherinda (Mozambique): Developing mathematical ideas in the classroom by exploring a weaving board.

2.2 Papers presented at recent meetings

* Ahmed Djebbar (Algeria) presented on May 8, 2004, at the Institute for the History of Science of the University of Teheran (Iran) an invited paper on "*Mathematical activities in the Maghreb and in Andalus (9th – 15th century)*."

* Ahmed Djebbar (Algeria) gave on May 22 and 23, 2004, two lectures at the universities of Annaba and Tébessa (Algeria), entitled "*Contribution of the mathematicians of the Maghreb to the development of combinatorial analysis*" and "*Mathematical activities in the Maghreb and in Andalus (9th – 15th century)*."

* At the fifth International Interdisciplinary NEXUS conference on the Relationships Between Architecture and Mathematics, held in Mexico City (June 19 - 23, 2004), Moussa Muhammad Guizar Haider presented the paper "*Explicit and Inplicit Geometric Orders in Mamluk Floors: Secrets of the Sultan Hassan Floor in Cairo*" (Egypt).

3. CURRENT RESEARCH INTERESTS

Paulus Gerdes (Mozambique) is concluding a book on Geometry, Symmetry and Basketry in various cultures from Africa and the Americas, including several comparative studies. The book will be published in September 2004 as a special issue of the journal *Visual Mathematics* (http://members.tripod.com/vismath).

4. NOTES AND QUERIES

This section is reserved for questions that readers would like to have answered; these are the 'queries'. The answers will be the 'notes'. If you have questions or answers about sources, dates, names, titles, facts, or other such matters related to the history of mathematics in Africa, frame them in clear

and concise language and send them to the editors. If you are answering a question, make clear reference to that question. All readers may send both questions and answers. Each will be published with the name of the sender.

* Query from Michael Morelli (USA) [AMUCHMA 23]:

"What do you know about math books in the 14th century university library of Timbuktu that was uncovered by Henry Louis Gates of Harvard University?"

Answer by Ahmed Djebbar:

The answer to the question may be found widely in the following websites. The information that is on these websites is given by Mr. Haidara, the responsible for one of the most important libraries of manuscripts of Mali, the one that Henry Louis Gates visited and that benefited from his support and from a grant from Harvard University.
It is necessary to add that the libraries of Mali contain scientific manuscripts but the majority of them have not yet been studied.

www.ebad.ucad.sn/.../les%20communications/A.aa.AKhaidara.colloqueBNdk.communicationenfrançais.04052003.doc

www.ebad.ucad.sn/sites_heberges/manifestations/colloque_BN_2003/Akhaïdara.htm

* Query from Muhammad Bello (Kano, Nigeria) [AMUCHMA 25]:

"Inconsistency in Arabic Writing? It is very common knowledge that Arabic writing is from right to left, as against Western writing that is left to right. When it comes to writing numbers, however, Arabic writing seems to be inconsistent –writing from left to write. Thus, two thousand, eight hundred and seventy-five would be written left to right just as in the Western way: Is Arabic inconsistent when it comes to writing numbers, or is there an explanation for this?"

Answer by Ahmed Djebbar:

There is no contradiction between the writing of Arabic from left to right and the writing of the numbers in the western way. The reason is the following: In a text written in classic Arabic the number 1475 is read as "five and seventy and four hundred and one thousand," that is from right to left, just as the writing. But, it is true that in the current oral practice (maybe because of the contacts between various languages), there is a mixture of two readings. For example, when one speaks in popular Arabic, to pronounce the number 45, one says "five and forty." One never says "forty five." But if I want to pronounce, for instance, 1475, I say "one thousand and four hundred and five

and seventy." In other words, the reading of the thousands and hundreds is done in the western way, from left to right (first the thousands and then the hundreds), whereas the reading of the tens and units continues to be done from the right to the left (first the units and then the tens).

* Query from Mohamed El Tom (Sudan) [AMUCHMA 25]:

"A colleague asked me about the origin of Arabic numerals. India appears to be the origin of Arabic numerals: 1, 2, etc., and interestingly enough these are used only in the Arab Maghreb and I have no idea about the origin of the numerals used in the Arab Mashriq. Any idea?
A second less difficult question is why this difference between the numerals used between the two sets of Arab countries? Is it the Andalus connection on the one hand, and the Indian proximity, on the other?"

Answer by Ahmed Djebbar:

The historians of mathematics agree to say that the Arabic numerals of the East and the Arabic numerals of West (the Maghreb and Andalus) have the same origin: they are Indian figures that were adopted by the mathematicians of the countries of Islam since the 8th century.
But, since at least the 11th century, the Indian figures used in Moslem Spain (Andalus) and in the Maghreb were transformed (for reasons which we do not know) and distinguished themselves gradually from Indian figures of the East. The manuscripts which reached us show that in the 12th century, the figures of West are very different from those of the East (at least some of them).
It is necessary finally to indicate that it is the European translators of the 12th century who made the figures of the West known. As they had found them in mathematics books written in Arabic, they called them "Arabic numerals."
Today, the same distinction exists: in the countries of the Maghreb one uses the figures called "Arabic," that is those that were used in the Moslem West since at least the 12th century. Whereas in the East (from Egypt onwards), one has kept the figures which were used there since the 8th century.

5. THESES

None were reported.

6. SOURCES

6.1 Examples of Books published by African Mathematicians (2)

To give the readers of the AMUCHMA Newsletter an impression of books and booklets published by African mathematicians, we continue in this issue to

present examples. Any reader who has information on books not yet referred to in the AMUCHMA Newsletter, please contact the editors.

Adler, Jill (South Africa):
* *Teaching mathematics in multilingual classrooms*, Kluwer, Dordrecht (Netherlands), 2001, 169 p.

Ahmad, Khalil (Morocco):
* (together with Pamy Manchanda & A.H. Siddiqi) (Eds.): *Current trends in industrial and applied mathematics*, Anamaya Publishers, New Delhi (India), 2002, 263 p.

Alvarinho, Ida (Mozambique):
* (together with Serguei Vodopianov): *Geometria Euclidiana* [Euclidian Geometry], textbook, Universidade Eduardo Mondlane, Maputo (Mozambique), 1982, 103 p.

Animalu, A. O. E.; Iyahen, Sunday O. & Tejumola, Haroon O. (Nigeria) (Eds.):
* *Contributions to the development of mathematics in Nigeria*, National Mathematical Centre, Abuja (Nigeria), 2000, 302 p.

Assani, Idris (Benin):
* (together with Wiener Wintner): *Ergodic Theorems*, World Scientific, River Edge NJ (USA), 2003, 216 p.

Banyaga, Augustin (Rwanda):
* *The structure of classical diffeomorphism groups*, Kluwer, Boston (USA); Boston, 1997, 197 p.
* (Ed. together with H. Movahedi-Lankarani & R. Wells) *Topics in Low-Dimensional Topology*, World Scientific, Singapore, 1999.
* (Ed. together with J. Leslie, T. Robart) *Infinite Dimensional Lie groups in Geometry and Representation Theory*, World Scientific, Singapore, 2002.

Beirão, João Carlos (Mozambique)
* (together with Rodeon Alexandrov) *Problemas de análise matemática: Funções reais de várias variáveis* [Problems of mathematical analysis: Real functions of various variables], Textbook, Universidade Eduardo Mondlane, Maputo (Mozambique), 1982, 163 p.
* (together with Rodeon Alexandrov) *Problemas de análise matemática: Séries* [Problems of mathematical analysis: Series], Textbook, Universidade Eduardo Mondlane, Maputo (Mozambique), 1982, 134 p.
* (together with Rodeon Alexandrov) *Problemas de análise matemática: Integrais múltiplas* [Problems of mathematical analysis: Multiple

integrals], Textbook, Universidade Eduardo Mondlane, Maputo (Mozambique),1983, 263 p.

* *Análise Matemática* [Mathematical Analysis], Textbook,, Instituto Superior Pedagógico, Maputo (Mozambique), 1992, Vol. 1, 194 p.; Vol. 2, 230 p.
* *Funções de variável complexa* [Functions of complex variable], Textbook, Instituto Superior Pedagógico, Maputo (Mozambique), 1993, 175 p.

Cadete, Manuel D. O. (Angola):

* *Mathematical models for the management of education in countries with an economy in transition*, Ph.D. thesis, Tula State Pedagogical University, Tula (Russia), 1999, 115 p. (in Russian).

Chidami, Mohamed (Morocco):

* (together with Curto, R., Mbekhta, M., Vasilescu, F.-H., Zemánek, J. (Eds.)): *Operator theory and Banach algebras. Proceedings of the international conference in analysis held in Rabat, Morocco, April 12--14, 1999*, Theta, Bucharest (Hungary), 2003, 161 p.

Chukwu, Ethelbert Nwakuche (Nigeria):

* *Stability and time-optimal control of hereditary systems. With application to the economic dynamics of the U.S.*, Academic Press, Boston MA (USA), 1992, 508 p. [2nd edition: Series on Advances in Mathematics for Applied Sciences, Vol. 60. World Scientific Publishing, River Edge NJ (USA), 2001, 495 p.]
* *Differential models and neutral systems for controlling the wealth of nations*, Series on Advances in Mathematics for Applied Sciences, Vol. 54. World Scientific, River Edge NJ (USA), 2001, 513 p.
* *Optimal control of the growth of wealth of nations. Stability and Control: Theory, Methods and Applications*, Taylor & Francis, London (UK), 2003, 384 p.

Esogbue, Augustine O. (Nigeria):

* (together with R. Bellman & I. Nabeshima) *Mathematical aspects of scheduling and applications*, Pergamon, Oxford (UK), 1982, 329 p.
* *Dynamic programming for optimal water resources systems analysis*, Prentice Hall, Englewood Cliffs NJ (USA), 1989, 435 p.
* (together with Liu, Baoding) *Decision criteria and optimal inventory processes*, Kluwer, Boston (USA), 1999, 210 p.

Fatunla, Simeon Ola (Nigeria):

* (Ed.): *Computational mathematics I* [Proceedings of the first international conference on numerical analysis and its applications held in Benin City (Nigeria), November 2-4, 1983], Boole Press Conference Series, Vol. 8,. Boole Press, Dún Laoghaire (Ireland), 1985, 141 p.

* (Ed.): *Computational mathematics II* [Proceedings of the Second International Conference on Numerical Analysis and its Applications held in Benin City (Nigeria), January 27-31, 1986], Boole Press Conference Series, Vol. 11. Boole Press, Dún Laoghaire (Ireland), 1987, 221 p.
* *Numerical methods for initial value problems in ordinary differential equations*, Computer Science and Scientific Computing, Academic Press, Boston MA (USA), 1988, 295 p.

Guidy Wandja, Joséphine & Sah Bi, Jess (Côte d'Ivoire):
* *Yao crack en math* [Yao crack in mathematics], Nouvelles Editions Africaines, Abidjan (Côte d'Ivoire), 1985, 28 p. (in French)

Hounkonnou, Mahouton Norbert (Benin):
* (together with Jan Govaerts & William Lester Jr.) (Eds.): *Contemporary Problems in Mathematical Physics*, World Scientific, River Edge NJ (USA), 2000, 377 p.

Jenda, Overtoun M. G. (Malawi):
* (together with Edgar Enochs): *Relative Homological Algebra*, De Gruyter Expositions in Mathematics, Vol. 30, Walter de Gruyter, Berlin (Germany), 2000.

Kuku, Aderemi O. (Nigeria) (continuation):
* *Abstract Algebra*, Ibadan University Press, Ibadan (Nigeria), 1980.
* *Axiomatic Theory of Induced Representation of Finite Groups*, CIMPA, Nice (France), 1986.
* *Basic Computative Algebra*, Lecture Notes Series, National Mathematical Centre, Abuja (Nigeria), 1994.
* *Topics in Algebraic K-Theory*, Lecture Notes Series, National Mathematical Centre, Abuja (Nigeria), 1997.

Makinda, Olewole D. (Nigeria) & Sibanda, Precious (Zimbabwe):
* *A mathematical introduction to incompressible flow*, Textbook, University of Zimbabwe Press, Harare (Zimbabwe), 2000.

Nguiffo Boyom, Michel (Cameroon)
* (edited together with J.-M. Morvan & L. Verstraelen): *Geometry and topology of submanifolds*, World Scientific, Teaneck NJ (USA), 1990, 412 p.

Okikiolu, George Olatokunbo (Nigeria):
* *Aspects of the theory of bounded integral operators in L^p-spaces*, Academic Press, London (UK), 1971, 522 p.

* *Special integral operators. Vol. I. Weierstrass operators and related integrals*, Okikiolu Scientific and Industrial Organization, London (UK), 1980, 306 p.
* *Special integral operators. Vol. II. Poisson operators, conjugate operators, and related integrals*, Okikiolu Scientific and Industrial Organization, London (UK), 1981, 507 p.

Olayi, Gabriel Atah (Nigeria):
* *Introductory Numerical Methods*, ABU Press, Zaria (Nigeria), 2000, 185 p.
* *Mathematicall Methods*, Bachudo Publ., Calabar (Nigeria), 2001, 135 p.
* *Complex Analysis, A Computational Approach*, Bachudo Science Comp., Calabar (Nigeria), 2000, 164 p.

Seydi, Hamet (Senegal):
* *La théorie des anneaux japonais* [The Theory of Japanese Rings], Colloque d'Algèbre Commutative, Université de Rennes, Rennes (France), Vol. 12, 1972, 82 p.

Shonhiwa, Temba (Zimbabwe):
* *Introduction to Vector Analysis*, Textbook, University of Zimbabwe Publications, Harare (Zimbabwe), 2000.

Vithal, Renuka (South Africa):
* *In Search of a Pedagogy of Conflict and Dialogue for Mathematics Education*, Kluwer, Dordrecht (Netherlands), 2003, 416 p.

Uko, Livinus Ugochukwu (Nigeria):
* *Matematicas Amenas* [Mathematics for Leisure], Editorial Universidad de Antioquía, Medellin (Colombia), 2000, 125 p. (in Spanish).

Vithal, Renuka & Adler, Jill (South Africa):
* (editors together with Christine Keitel) *Mathematics Education Research in South Africa: Perspectives, Practices and Possibilities*, Human Sciences Research Council, Pretoria (South Africa), 2004.

7. REVIEWS

None were received.

8. HAVE YOU READ?

8.1 Publications on the History of Mathematics in Africa

#432 Abdeljaouad, Mahdi: ***Ibn al-Hâ'im, Sharh al-Uujûza al-Yâsamîniyya***, Association Tunisienne des Sciences Mathématiques, Tunis (Tunisie), 427 p.

Edition, accompanied by commentaries in Arabic and in French, of a work by the Egyptian mathematician Ibn al-Hâ'im (1352-1412). This work is entirely dedicated to a detailed commentary of the algebraic poem *al-Yâsamîniyya* of the Maghrebian mathematician Ibn al-Yâsamîn (d. 1204).

#433 Barrios García, José: **Investigaciones sobre matemáticas y astronomía Guanche. Parte I: Señales para recuerdo** [Research on Guanche mathematics and astronomy. Part 1: Signs for recording], in: Morales Padrón, F. (Ed.), *XIV Coloquio de Historia Canario-Americana* (Las Palmas 2000), Cabildo, Las Palmas de Gran Canaria (Canary Islands, Spain), 2002, 508-517 (in Spanish) (CD-ROM).

"The first part of this paper opens with a very brief summary of what is known about the Guanches (ancient Berber inhabitants of Tenerife island) in the 14^{th} - 15^{th} centuries, and goes on analyzing the archaeological and ethnographical evidence documenting their use of marks on the mummies, strings of clay beads, as well as marks and pictures on wood planks and stones for recording several kind of data, mainly calendrical and numerical ones."

#434 Barrios García, José: **Investigaciones sobre matemáticas y astronomía Guanche. Parte II: Sistemas de numeración** [Research on Guanche mathematics and astronomy. Part 2: Numeration systems], in: Morales Padrón, F. (Ed.), *XV Coloquio de Historia Canario Americana (Las Palmas 2002)*, Cabildo, Las Palmas de Gran Canaria (Canary Islands, Spain), 2002 (in Spanish) (CD-ROM).

"The second part of this paper studies the numeral systems used by the ancient inhabitants of Tenerife Island to perform several economical and socio-cultural practices as mentioned in the written ethnographic sources. On this ground an hypothesis is formulated about the numeral systems used, the name of the numbers and the scope of the system."

#435 Furlong, David: ***Sekeds and the Geometry of the Egyptian Pyramids*** (Available on-line at: www.kch42.dial.pipex.com/articles_frame_earth_sekeds.htm)

#436 Imhausen, Annette: **The Algorithmic Structure of the Egyptian Mathematical Problem Texts**, in: John Steele & Annette Imhausen (Eds.), *Under One Sky: Astronomy and Mathematics in the Ancient Near East, Proceedings of the Conference held in the British Museum,*

London, June 25–27, 2001, Alter Orient und Altes Testament Vol. 297, Ugarit Verlag, Münster (Germany), 2002, 147-166.

#437 Imhausen, Annette: **Ägyptische Algorithmen. Eine Untersuchung zu den mittelägyptischen mathematischen Aufgabentexten** [Egyptian Algorithms. A Study of Middle Egyptian Mathematical Problem Texts], Verlag J. B. Metzler, Wiesbaden (Germany), 2003, 388 p. (in German).

> "This technical analysis of ancient Egyptian mathematical algorithms is based on a catalogue of Middle Egyptian mathematical texts. The study considers the presentation of Egyptian mathematics as collections of algorithms, and the application of mathematical texts in everyday life and business. The catalogue presents the texts in hieroglyphs with a transcription and commentary."

#438 Imhausen, Annette: **Egyptian Mathematical Texts and Their Contexts**, *Science in Context*, Cambridge (UK), 2003, Vol. 16, 367-389..

> "The extant sources for ancient Egyptian mathematics are extremely limited. It is therefore necessary to read the few sources carefully and use additional information from further Egyptian sources in order to achieve the most detailed picture possible. Traditional approaches to Egyptian mathematics have provided only a superficial account of mathematical practices and almost no information about the role of mathematics within Egyptian culture. To enlarge our knowledge it is crucial to use a different methodological approach in the analysis of ancient mathematical techniques. In addition, it is indispensable to contextualize the mathematical problems with sources that are not specifically mathematical per se. In this article I discuss several possibilities for these additional sources, such as administrative texts, reliefs found in tombs, and other archaeological evidence. I exemplify the use of these sources with two problems from the Moscow mathematical papyrus."

#439 Imhausen, Annette: **Calculating the Daily Bread: Rations in Theory and Practice**, *Historia Mathematica*, New York (USA), 2003, Vol. 30, No. 1, 3-16.

> "This article discusses the handling of rations in Middle Kingdom Egypt (2119-1794/93 BC) as it is displayed in three types of texts: mathematical problem texts, administrative ration texts ("real" ration texts), and literary texts. The example of handling rations is used to examine the relation between mathematical problem texts-which served according to the opinio communis to educate scribes-and administrative texts. the actual documents from the

professional life of scribes. Using one specific example, the use of a mathematical technique from the problem texts within a ration text is demonstrated. The presentation is complemented by passages from literary texts referring to rations."

#440 Imhausen, Annette: **Zahl, II. Ägypten** [Number, II, Egypt], in: Hubertus Cancik & Helmuth Schneider (Eds.), *Der Neue Pauly. Enzyklopädie der Antike*, Vol. 12/2 Ven-Z, Stuttgart (Germany), 2003, 668-669 (in German).

#441 Imhausen, Annette: ***Mathematical Fragments from Lahun***, University College of London, London (UK) (online available at: www.petrie.ucl.ac.uk/digital_egypt/lahun/mathintro.html)

"Among the Lahun papyri a small number of fragments can be identified as mathematical texts, i.e. texts that have been written to record a mathematical procedure or used to carry out a mathematical procedure. Very few sources of ancient Egyptian mathematical texts are still extant. Of these, the mathematical fragments of the Lahun papyri hold a significant place. They contain both table texts and problem texts. While they are in many respects like the two major sources, the Rhind (mathematical) papyrus and the Moscow (mathematical) papyrus, they also show a number of significant details that are not seen in any other text."

#442 Imhausen, Annette & Ritter, James: **Mathematical fragments: UC 32114, UC 32118, UC 32134, UC 32159 - UC32162**, in: Mark Collier & Stephen Quirke (Eds.), *The UCL Lahun Papyri*, Archaeopress, Oxford (UK), 2004, Vol. 2, 71-96.

#443 Lumpkin, Beatrice: **Ancient Egyptian Mathematics and Forerunners: Some Hints from Work Sites**, in: A. K. Eyma & C. Bennett (Eds.), *A Delta-man in Yebu*, Occasional Volume of the Egyptologists' Electronic Forum, Universal Publishers / uPublish.com, 2003, No.1, 210-214.

#444 Omotunde, Jean-Philippe: ***Les nègres : inventeurs du zéro en mathématique*** [The Blacks: inventors of the zero in mathematics], 2003 (Available on-line at: www.africamaat.com/article.php3?id_article=105)

#445 Omotunde, Jean-Philippe: ***L'Afrique reste le berceau des sciences mathématiques*** [Africa remains the cradle of the mathematical sciences], 2003 (www.africamaat.com/article.php3?id_article=117).

Discusses the Blombos stone (80 000 BC, South Africa), the Lebombo (35 000 BC, Swaziland) and Ishango (20 000 BC, Congo) bones, and the ancient Nile civilisations Nubia and Egypt.

#446 Rossi, Corinna: **Dimensions and Slope in the Nineteenth and Twentieth Dynasty Royal Tombs**, *Journal of Egyptian Archaeology*, London (UK), 2001, Vol. 87, 73-80.

8.2 Publications on the History of Mathematics in Africa, Ethnomathematics and / or Mathematics Education

#447 Abdeljaouad, Mahdi: *Introduction à l'arithmétique* [Introduction to arithmetic], Centre des Publications Universitaires, Tunis (Tunisie) (in French).

In this handbook for first year university students the author presents a chronology of arithmetic that gives its place back to the contribution of the Arabs. Each chapter concludes with an historical appendix that shows how each civilisation contributed to the development of the concerned concepts.

#448 Akkar, Mohamed: **L'enseignement des mathématiques dans l'enseignement secondaire maghrébin** [Mathematics teaching in secondary schools of the Maghreb region], *Zentralblatt für Didaktik der Mathematik - International Reviews on Mathematical Education*, Karlsruhe (Germany), 2002, Vol. 34, No. 4, 179-185 (in French).

Analyses "the following questions. Does the mathematics teaching in the secondary schools in the Maghreb prepare to University studies and more specifically does it initiate students to modern science and technology? Is anyone able to understand mathematics or is mathematics only accessible to the happy few. Is it a means of selection? Is mathematics omnipresent in our modern society? What relationships can one hope to find between mathematics and other disciplines? Has mathematics evolved to such an abstract and formal state that it seems difficult to relate it to any other topic? All these questions are discussed in relationship with the particular problems in the Maghreb, namely the mathematics program as taught today in these countries."

#449 Brenner, Klaus-Peter: ***Die kombinatorisch strukturierten Harfen- und Xylophonpattern der Nzakara (Zentralafrikanische Republik) als klingende Geometrie – eine Alternative zu Marc Chemilliers Kanonhypothese*** [The Combinatorically Structured Harp and Xylophone Patterns of the Nzakara (Central African Republic) as Sounding Geometry – an Alternative to Marc Chemillier's Canon-Hypothesis], Holos-Verlag, Bonn (Germany), 2004, 209 p. and Audio-CD (in German with English summary).

#450 Gerdes, Paulus: **Interweaving Art and Mathematics in African Design**, *International Review of African American Artists*, Hampton VI (USA), Spring 2004, Vol. 19, No. 3, 44-47.

#451 Gerdes, Paulus: **Vinte cinco Anos de Estudos Histórico-Etnomatemáticos em África ao Sul da Sahara** [Twenty five Years of Historical-Ethnomathematical Studies in Africa South of the Sahara], *LLULL, Revista Española de História de las Ciencias y de las Técnicas*, Zaragoza (Spain), Vol. 26, No. 56, 2004, 491-520 (in Portuguese).

Presents the development of historical and ethno-mathematical studies in Africa South of the Sahara throughout the last quarter of the 20th century by geographic region, from West Africa to Southern Africa.

#452 Patel, Ramila: **Symmetry in Patterns on Swazi grass mats**, *Symmetry: Culture and Science*, Vol. 12, No. 1-2, Budapest (Hungary), 2003, 127-157.

Explores "the presence of symmetry in patterns on Swazi grass mats made by women in Swaziland. The fundamental aim is to elucidate and present basic explanations of the presence of symmetry in the patterns on the Swazi grass mats. … Symmetry in patterns on other parallel Swazi material culture that admits patterning in clay beer pots, beaded necklaces, grinding mats and more recently baskets…" are illustrated.

#453 Touré, Saliou: **L'enseignement des mathématiques dans les pays francophones d'Afrique et de l'Ocean Indien** [Mathematics teaching in the French-speaking countries of Africa and the Indian Ocean], *Zentralblatt für Didaktik der Mathematik - International Reviews on Mathematical Education*, Karlsruhe (Germany), 2002, Vol. 34, No. 4, 175-178 (in French).

"Mathematics teaching in the French-speaking countries of Africa and the Indian Ocean. We examine Mathematics teaching in the French-speaking countries of Africa and the Indian Ocean, starting from the consequences of the Colonial Period. At that time, education was mainly aimed at preparing the civil servants, and there was no organised structure for teaching. When they became independent, these countries started with the French system and methods, but they progressively realised that it was not totally adapted to the aims and specificities of such countries. So progressively new systems and curricula were designed. In this paper, we describe some examples, and give some trends in the development of Mathematics education in Africa and Indian Ocean, and perspectives for the future."

8.3 Other publications on the History of Mathematics by African mathematicians

#454 Djebbar, Ahmed: **Scientific Activities and Inter-Cultural Relations in al-Andalus**, in: S. Osseiran (Ed.): *Cultural Symbiosis in al-Andalus*, Regional Office for Education in the Arab States, Beyrouth (Liban), 2004, 147-164.

8.4 Publications on the History of Mathematics and the African Diaspora

#455 Agwu, Nkechi; Smith, Luell & Barry, Aissatou: **Dr. David Blackwell, African American Pioneer**, *Mathematics Magazine*, Vol. 76, No.1, February 2003, 3-14.

#456 Camara, Abdoulaye: Thomas Fuller (1710-1790) – Le grand calculateur [Thomas Fuller (1710-1790) – The great calculator], 2004 (http://www.africamaat.com/article.php3?id_article=92) (in French).
Short article based on #83.

#457 Spangenburg, Ray *et al*.: **African Americans in Science, Math, and Invention**, Facts on File Inc., New York (USA), 2003, 254 p.

8.5 Reviews

#458 Darvas, György: Paulus Gerdes' 'Awakening of Geometrical Thought in Early Culture', *Symmetry: Culture and Science*, Vol. 12, No. 1-2, Budapest (Hungary), 2003, 229-230 (cf. #388)

#459 Fleming, Steven: Paulus Gerdes' 'Awakening of Geometrical Thought in Early Culture', *Nexus Network Journal*, Vol. 6 No. 1 (Spring 2004), http://www.nexusjournal.com/reviews_v6n1-Fleming.html (cf. #388)

8.6 Mathematical books and documents published in Africa

None were reported (other than referred to in 6.1).

8.7 Mathematical books published by Africans outside Africa

See 6.1.

9. ANNOUNCEMENTS

9.1 Southern African Ethnomathematics Study Group (SAEMSG

On June 22, 2004 in Richard Bay (South Africa) the Southern African Ethnomathematics Study Group (SAEMSG), affiliated to the International Study Group on Ethnomathematics (ISGEm), was created. As first tasks for SAEMSG were formulated:

* Establish links with somehow regional associations or regional branches of African or international organisations, so that at their conferences, seminar and sub-conferences on ethnomathematics may be held. The following organisations were identified: SAARMSTE, SAMSA, AMU / AMUCHMA, AMESA, IKS, UNESCO-Harare, ICME-SA.
* Identify colleagues in the region who are interested in ethnomathematics and circulate the information.
* Organise a scheme for joint supervision of masters and doctoral theses in the field of ethnomathematics.
* Elaborate a regional ethnomathematics research agenda.

For more information, contact:

Abdulcarimo Ismael, Universidade Pedagógica, Maputo, Mozambique (abdulcarimoismael@hotmail.com)

9.2 Web pages

* An extensive webpage on Ancient Egyptian mathematics has been organised **by** John O'Connor and Edmund Robertson:

www-history.mcs.st-andrews.ac.uk/Indexes/Egyptians.html

* Webpage on 'Sacred Geometry' in Ancient Egypt:

www.egypt-tehuti.org/articles/sacred-geometry.html

9.3 Mathematics in African History and Culture: An Annotated Bibliography

Paulus Gerdes and Ahmed Djebbar concluded an annotated bibliography on Mathematics in African History and Cultures, to be published in English, French, and Arabic. The first English and French language versions will be launched at the 6th Pan-African Congress of Mathematicians (PACOM 2004), to take place from September 1 to September 6, 2004, in Tunis, Tunisia. The English version published by the African Mathematical Union (AMU) contains 371 pages and is entitled ***Mathematics in African History and Culture: An Annotated Bibliography***. Prof. Jan Persens, President of the AMU, wrote the preface the book. The bibliography is organised in alphabetical order and includes the following appendices: (1) On mathematicians of African descent /

Diaspora, (2) Publications by Africans on the History of Mathematics outside Africa, (3) On Time-reckoning and Astronomy in African History and Cultures, (4) String figures in Africa, (5) Examples of other Mathematical Books and Booklets published by African Mathematicians, (6) Board Games in Africa, (7) Some African mathematical pioneers in the 20th century, (8) Note on Research Inspired by the Historical Reconstruction of Mathematical Ideas in the 'Sona' Geometric Tradition Of Southern-Central Africa. Included are indices by subject, country, region, language and ethnic group, journal, author and mathematician.

9.4 One semester course on the History of Mathematics in Tunis

The UNESCO chair for "Mathematics and Development" in Tunis organises a one-semester course on the history of mathematics co-ordinated by Roshdi Rashed (CNRS, Paris). The aim of the course at a masters level is to inform mathematicians about the history of mathematics and to introduce the historiography of mathematics as a field of research and of teaching. The following themes and topics will be presented:

A. History of algebra and of number theory

* History of diophantine analysis and the number theory from Diophant to Lagrange (Rosdi Rashed);
* History of algebra: al-Khwârizmî and his Arab and Latin successors (Marouane Ben Miled, Tunis);
* History of algebra since Galois. (Massimo Galuzzi, Milan, Italy)
* History of algebraic geometry, 20th century (Christian Houzel, Paris, France)

B. History of calculus

* The Arab Archimedians (Pascal Crozet, Paris, France);
* The beginning of differential calculus (Daniele Napolitani, Pisa, Italy);
* History of differential calculus, 18th – 19th century (Serge Demidov, Moscow, Russia);
* History of differential geometry (Erhard Scholz, Wuppertal, Germany);
* History of measure and integration theory (Alain Michel, Marseille, France).

C. History of some applications of mathematics

* History of applications of mathematics: mechanics, optics (Michel Blay, Paris, France);
* History of astronomy of Plotemy to Kepler (Régis Morelon, Paris, France);
* History of Greek and Arab statics (Fayza Bancel, Paris, France).

For more information, see the webpage:
http://www.tn.refer.org/unesco/semestre2/semestre2-fr.htm
or contact: Marouane Ben Miled (marouane.benmiled@fss.rnu.tn)

9.5 Colloquia in Alexandria

Two international colloquia will take place in September 2004 at the Library of Alexandria (Alexandria, Egypt):

* International Colloquium on the Arab manuscripts in Alexandria (26-28.09.04);
* International Colloquium on the Unknown Aspects of the History of Arab Science (29-30.09.04).

For more information, contact:
Yousef Zaydan, Director of the Centre of Manuscripts and of the Museum of Manuscripts, Library of Alexandria, Alexandria, Egypt (Fax: +203 48 30 329).

9.6 University of Blida (Algeria)

Ahmed Djebbar visited in May 2004 the University of Blida within the context of an agreement between the University of Lille 1 and the University of Blida. His mission was prepare the introduction of history of science courses in the scientific teaching of the University of Blida, within the framework of the new LMD system (License, Master, Doctorate) which will start in the next academic year.
The mission also allowed preparing the launch of a postgraduate programme for the training of scientific journalists for Algeria. In this training, programmes of history of mathematics, physics, chemistry and biology are foreseen. This programme will start at the beginning of the 2005-2006 academic year. But, the next year will be one year of training for already exercising journalists who would be interested in this training.

10. ADDRESSES OF SCHOLARS, INSTITUTIONS AND PUBLISHERS MENTIONED IN THIS NEWSLETTER

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11. SUGGESTIONS

What are your suggestions for improving the AMUCHMA Newsletter?
What are your suggestions for other activities of AMUCHMA?
Send your suggestions, comments, information, questions and any other contributions to the chairman or secretary of AMUCHMA.
Send articles, books and manuscripts for the AMUCHMA Documentation Centre to the Chairman or Secretary.

12. DO YOU WANT TO RECEIVE THE NEXT AMUCHMA-NEWSLETTER?

The AMUCHMA Newsletter, published in Arabic, English and French, is available free of charge upon request.

Send requests to the Chairman

Paulus Gerdes: Centro de Investigação Etnomatemática, C.P. 915, Maputo, Mozambique (E-mail: pgerdes@virconn.com)

for the **English** version:

or to the Secretary

Ahmed Djebbar: Département de mathématiques, Bt. M 2, Université de Lille 1, 59655 Villeneuve D'Ascq Cedex, France
(Fax: 33-1-45 33 77 12; E-mail: ahmed.djebbar@math.univ-lille1.fr, Ahmed.Djebbar@wanadoo.fr)

for the **French** and **Arabic** versions.

13. AMUCHMA-NEWSLETTER website

Thanks to Scott Williams, the English language edition of all issues of the **AMUCHMA Newsletter** is also accessible on the following website:

http://www.math.buffalo.edu/mad/AMU/amuchma_online.html