AFRICAN MATHEMATICAL UNION

COMMISSION ON THE HISTORY OF MATHEMATICS IN AFRICA

AMUCHMA-NEWSLETTER-13

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Instituto Superior Pedagógico (ISP), Maputo (Mozambique), 21.10.1994

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. organization of lectures on the history of mathematics at national, regional, continental and international congresses and conferences.

2. MEETINGS

2.1 Interregional Seminar for the Harmonisation of Mathematics Programmes of the French speaking countries in Africa and the Indian Ocean

At the *Interregional Seminar for the Harmonisation of Mathematics Programmes of the French-speaking countries in Africa and the Indian Ocean* (N'Djamena, Tchad, June 6-10, 1994), Salimata Doumbia conducted a workshop on *"Mathematics and Cultures"*. The workshop consisted of two parts. In the first, the participants had to reflect upon their expectations of the possible contributions of the study of "Mathematics and Cultures" to the elaboration of the new textbook series "Interafrican Collection of Mathematics" (Collection Inter Africaine de Mathématiques, CIAM). The second part consisted of the study of the example "The study of probabilities with cowrie games".

2.2 National Congress of the Association for Mathematics Education of South Africa

At the first National Congress of the Association for Mathematics Education of South Africa (AMESA, Johannesburg, July 4-7, 1994), the following activities related to the history of mathematics or to ethnomathematics took place:

* Keynote address *"Redress, Access, Success in Mathematics Education"* by Paulus Gerdes on the history of mathematics education in Mozambique and ethnomathematical research;
* Workshop on *"Ethnomathematics and mathematics education"*, conducted by Marcos Cherinda and Abdulcarimo Ismael (Mozambique);
* Workshop on the *"Geometry of the sona sanddrawings of Southern Africa"*, conducted by Paulus Gerdes;
* Workshop on *"Teaching mathematical concepts through story telling"* by Beniel Seka (Tanzania);
* Workshop on *"The use of indigenous games to promote insight and problem solving in early childhood"* conducted by E.Chantler;
* Workshop on *"Fractions and African folk tales"* conducted by Wendy Colyn and Nombini Ngqezza;
* *"Ethnomathematics in the South African education system"*, paper presented by Mellony Graven;
* *"The history of mathematics in mathematics teaching"*, paper presented by Charles Ncube;
* Panel discussion on *"Ethnomathematics"* with the participation of Paulus Gerdes (Mozambique), Marilyn Frankenstein (USA), and Renate Vithal (South Africa), presided by Mathume Bopape, the President of AMESA.

Before the AMESA Conference, Paulus Gerdes presented several papers at meetings organized by regional branches of AMESA:

* *"African geometries"* (Springfield College of Education, Durban, June 29);
* *"African geometries and mathematics education"* (Phoenix Teacher Centre, Durban, June 30);
* *"Geometries of Southern Africa"* (workshop conducted with the assistance of Marcos Cherinda on the special train for AMESA delegates from the Western Cape, Cape Town - Johannesburg, July 2).

3. CURRENT RESEARCH INTERESTS

Elísio R.S. Silva is concluding two papers on mathematical games of the 'mancala' type, one on Angola (based on field work conducted in the period 1965-1970) and the other on 'ouri' from the Cape Verde Islands.

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.

* Walter **Sizer** (Moorhead State University, USA) is interested in information about *tiling patterns* in African culture.

* Branko **Grünbaum** (University of Washington, USA) noted that seven weaving patterns included in the catalogue published in the book *"Sipatsi: Technology, Art and Geometry in Inhambane"* [ISP, 1994, Mozambique] (see AMUCHMA12: #131, 132; AMUCHMA13, #153) are *isonemal.* This means that the symmetries of the fabric (here understood as an infinite strip, and including the interchange of "over" and "under") act transitively on all the strands.
  Cf. B.Grünbaum & G.Shephard: A catalogue of isonemal fabrics (*Discrete Geometry and Convexity*, 1985, Vol.440, 279-298); An extension to the catalogue of isonemal fabrics (*Discrete Mathematics*, 1986, Vol.60, 155-192); Isonemal fabrics (*American Mathematical Monthly*, 1988, Vol.95, No.1, 5-30); *Tilings and Patterns*, Freeman, New York, 1987, 700 pp.

5. HAVE YOU READ?

5.1 On the History of Mathematics in Africa

#136 Aballagh, Mohamed: **Rafᶜ al-hijab ᶜan wujuh aᶜmal al-hisab li Ibn al-Banna al-Murrakushi (t. 721/1321)** [To take the veil of the methods of calculation of Ibn al-Banna al-Murrakushi (d. 721/1321)], Publications de la Faculté des Lettres et Sciences Humaines, no. 5, Université Sidi Mohamed Ben Abdallah, Dhar el-Mehres, Fès (Morocco). (in press).

Translation into Arabic (preceeded by a new Introduction) of the Doctoral thesis that M. Aballagh defended on May 5, 1988, at the University of Paris I-Panthéon-Sorbonne [cf. AMUCHMA 3: 5.2]

#137 Abdullatif, Ali I.: **Ibn al-Haytham, ᶜalim al-handasa ar-riyyadiyya** [Ibn al-Haytham, scholar of mathematical geometry], Publication de l'Université jordanienne, Amman (Jordania), 1993, 626pp. (in Arabic).

The work contains 15 chapters that deal with the life of the mathematician and his contributions to different mathematical fields, like the conics, the calculation of areas and volumes, the regular heptagon, the lunes; and to geometrical optics.

#138 Deakin, Michael: **Hypathia and her mathematics**, in: American Mathematical Monthly, no. 101, 1994, 234-243

Evaluates the sources of knowledge about Hypathia of Alexandria (. 370-415 AD), and describes what is known of her mathematical activities (cf. AMUCHMA5: 4.1)

#139 Dhombres & others: **Mathématiques au fil des âges** [Mathematics during the ages], Gauthier-Villars, Paris, 1987, 327pp.

This book is addressed to high school pupils and their teachers. It contains extracts of texts by mathematicians throughout history. The extracts are accompanied by commentaries, and are grouped into six chapters : Object and Utility of Mathematics, Arithmetic and Number Theory, Algebra, Calculus, Probability, Geometry. University lecturers and high school teachers have worked together on the conception of this book. Ahmed **Djebbar** has contributed with the topics on Arabic mathematics.

#140 Djebbar, Ahmed : **Las matematicas en al-Andalus a través de las actividades de tres sabios del siglo XI** [Mathematics in Andalusia through the activities of three scholars of the 11th century], in : El Legado Cientifico Andalusi [The Andalusian scientific heritage], Museo Arqueologico Nacional, Madrid, Avril 1992, 340pp. (in Spanish).

Two of the three mathematicians presented in this paper, al-Mu'taman (d. 1085) and Ibn Sayyid (11th-12th century), have written mathematical texts that have been used in the Maghrib during the 12th and 13th century. The third scholar, Ibn Bajja (d. 1138), has lived the last part of his life in the Maghrib.

#141 Euclid of Alexandria : **Euclide, Les Eléments, Volume 2, livres V à IX**, Presses Universitaires de France, Paris, 1994, 572pp.

This is the French translation, by Bernard **Vitrac**, of Books V to IX of the Elements of Euclid on the basis of Heiberg's edition. The translation is preceeded by an Introduction and is accompanied by a number of commentaries [cf. AMUCHMA 8 : # 94; 10 : # 107].

#142 Hogendijk, J.P. : **Ibn al-Haytham's Completion of the Conics**. (Introduction, Critical edition, translation and analysis), Springer Verlag, New York-Berlin-Heidelberg, 417 pp.

The book is an enriched and revised version of a Doctoral thesis defended at the University of Utrecht (Netherlands) in 1983. It contains a history of conics since the works of Apollonius, a biography of Ibn al-Haytham, a critical edition with translation and analysis of an important mathematical text: the tentative reconstitution, by Ibn al-Haytham, of the contents of Book VIII of the *Conics* of Apollonius, that the Arab mathematicians of the Middle Ages had not been able to find, and which is still today considered lost.

#143 Ibn al-Haytham : **Kitab al-Manazir, al-maqalat 1-2-3, al-Ibsar ᶜala al-istiqama** [The Work on Optics, Books 1-2-3, on direct vision] (Critical edition by A.I. Sabra), Koweit, 1983, 779 pp. (in Arabic).

Contains the first three books of the famous work of Ibn al-Haytham (d. 1039) on geometrical Optics: "The manner vision is realised in general" (Book I), "Census of elements that vision observes, their causes and the way to perceive them" (Book II), "The errors of direct vision and their causes" (Book III). This edition is preceeded by an Introduction that presents the life of Ibn al-Haytham, his different contributions to Optics and the influence of his work on later studies in Optics in the Arabic tradition, and in Europe.

#144 Ibn al-Haytham: **The Optics, Books I-III, On Direct Vision** (Translation by A.I. Sabra), The Warburg Institute-University of London, London, 1989, 2 vols., 613 pp.

Comprises the English translation of the first three books of The Optics of Ibn al-Haytham. This translation is complemented by an introduction with commentaries, and an Arabic-Latin glossary.

#145 Isoun, T.: **Mathematics and Africa**, in: Discovery and Innovation, African Academy of Sciences, Nairobi, 1992, Vol.4, No.1, 4-6

Editorial on the place of mathematics in the history of Africa and in contemporary Africa which expresses the "need for mathematicians in Africa to write textbooks to reflect our cultural background, and ensure that mathematics is firmly grounded within our environment" (p.6).

#146 Jaouiche, K.: **Nazariyyat al-mutawaziyyat fi l-handasa al-islamiyya** [The theory of parallels in Islamic geometry], Bayt al-Hikma, Carthage (Tunisia), 1988, 256pp.

Critical edition of texts published in 1986 in a French translation (cf. #67).

#147 Lamrabet, Driss: **Introduction à l'Histoire des Mathématiques maghrébines** [Introduction to the history of Maghribian mathematics], Imprimerie El-maârif al-Jadida, Rabat, 1994, 302pp.

This book is in three parts. In the first part the author presents a short introduction to mathematical activity in Egypt, Babylonia, India and ancient Greece (pp.2-9); followed by a chapter on "The birth of Arab mathematics: the Islamic East" (pp.10-19) and by a third chapter on "The mathematics of the Islamic West: Andalusia" (pp.20-41). The second part contains bio-bibliographical files of Maghribian mathematicians and presents the contents of some mathematical works produced in the Maghrib. The third part contains "extracts of Maghrebian mathematicians" relative to Arithmetics, Algebra and Geometry.

#148 Liebenberg, Louis: **The Art of Tracking: The origin of science**, David Philip Publ., Claremont (South Africa), 1990, 176 pp.

Studies first the evolution of hunter-gatherer subsistence in general, and thereafter the hunter-gatherers of the Kalahari in southern Africa in particular. Principles of tracking, classification of signs, and spoor interpretation are analysed. The author asserts that "it is possible that the development of tracking played a significant role in the evolution of the scientific faculty" (p.48). "The critical attitude of contemporary Kalahari Desert trackers, and the role of critical discussion in tracking suggest ... that the rationalist tradition of science may well have been practised by hunter-gatherers long before the Greek philospohic schools were founded" (p.45).

#149 Rashed, Roshdi : **Entre Arithmétique et Algèbre. Recherches sur l'Histoire des Mathématiques Arabes** [Between Arithmetic and Algebra. Studies on the history of Arabic mathematics], Les Belles Lettres, Paris, 1984, 321 pp.

Collection of papers published between 1973 et 1980. They deal with certain aspects of Algebra, of Numerical Analysis, of Combinatorics, and of Number Theory in the medieval Arabic mathematical tradition. In the paper entitled *"Nombres amiables, parties aliquotes et nombres figurés aux XIII^{e} et XIV^{e} siècles"* (pp. 259-299), the author discusses the contribution of the Maghribian mathematician Ibn al-Banna (1256-1321) to Combinatorics and Number Theory.

#150 Rebstock, Ulrich : **Rechnen im islamischen Orient** [Calculation in the Islamic East], Wissenschaftliche Buchgesellschaft, Darmstadt (Germany), 1992, 328pp.

Discusses the different methods of calculation used in the Arab mathematical tradition from the East (Calculation, Algebra, heritage, land measuring, metrology, etc.), with many references to the Arab mathematical tradition of the Maghrib.

#151 Samso, Julio: **Islamic Astronomy and Medieval Spain**, Variorum, Ashgate (UK), 335 pp.

Collection of 20 papers published by the author between 1977 and 1991. The papers are regrouped into four categories: 1. General, 2. The survival of Latin astronomy and astrology in al-Andalus, 3. Eastern influence in andalusian astronomy, 4. Mathematical astronomy and astronomical theory, 5. Alfonso X and Arabic astronomy. Two papers deal with the works of Maghribian astronomers: paper VI, entitled "*Ibn Ishaq at-Tunusi and Ibn Muᶜadh al-Jayyani on the Qibla*", records the contribution of the astronomer of Tunis in the 12th century to the determination of the direction of Mecca. Paper X, entitled "*Ibn al-Banna, Ibn Ishaq and Ibn al-Zarqallu's Solar Theory*", analyses the influence of certain astronomical ideas from the Andalusian al-Zarqallu (11th century) on the contents of the astronomical tables of the already cited Ibn Ishaq, and of the mathematician of Marrakech (Morocco), Ibn al-Banna. In paper XVIII, entitled "*El original arabe y la version alfonsi del Kitab fi hay'at al-ᶜalam de Ibn al-Haytham*", the author compares the aforementioned book of the mathematician Ibn al-Haytham (who lived in Egypt until 1039) with the version of the group of scientists organized by Alfonso X of Castilla (13th century).

#152 Toomer, G.J.: **Apollonius, Conics Books, V to VII, The Arabic Translation of the lost Greek Original in the version of the Banu Musa**, Springer-Verlag, New York-Berlin-Heidelberg, 2 vols., 888 pp.

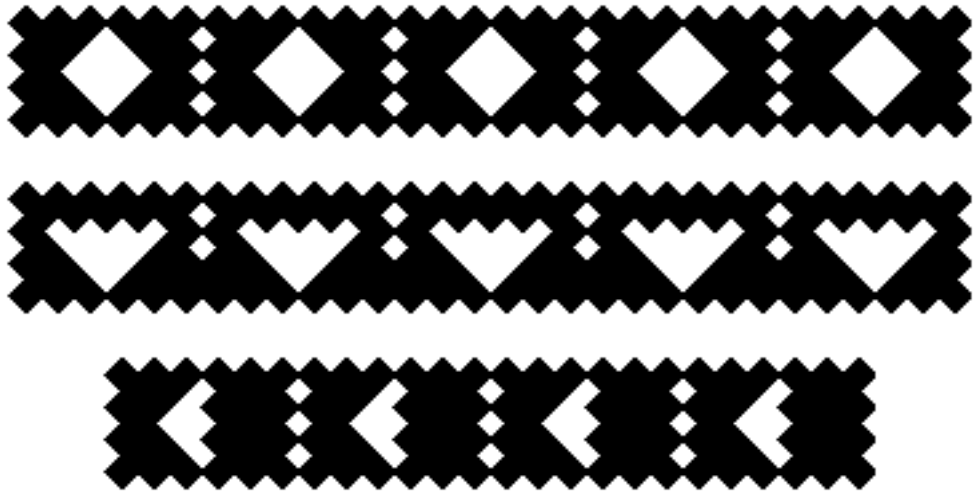
Contains the critical edition and the English translation of Books V, VI, VII of the Conics of Apollonius, on the basis of the Arabic version translated from the Greek by Thabit Ibn Qurra (d. 901) and corrected by the brothers Banu Musa (11th century).

5.2 Publications on the History of Mathematics, Ethnomathematics and Mathematics Education

#153 Gerdes, Paulus & Bulafo, Gildo: **Sipatsi: Technologie, Art et Géométrie à Inhambane**, Instituto Superior Pedagógico, Maputo, 1994, 102 pp.

French translation of #132: Sipatsi, Technology, Art and Geometry in Inhambane. Analyses the technological and

geometrical knowledge of basket weavers in Mozambique's Inhambane province. Presents a catalogue of decorative strip patterns on woven handbags (*sipatsi*) and some suggestions are made for an educational and mathematical exploration of *sipatsi*. The figure presents examples of *sipatsi* patterns.



#154 Gerdes, Paulus (ed.): **Explorations in Ethnomathematics and Ethnoscience in Mozambique**, Instituto Superior Pedagógico, Maputo, 1994, 76 pp.

The following chapters deal with ethnomathematics and / or history of mathematics:

* Abdulcarimo Ismael: *On the Origin of the Concepts of "Even" and "Odd" in Makhuwa culture*, 9-15;
* Marcos Cherinda: *Mathematical-educational exploration of traditional basket weaving techniques in a children's "Circle of Interest"*, 16-23;
* Daniel Soares & Abdulcarimo Ismael: *Popular counting methods in Mozambique*, 24-29;
* Jan Draisma: How to handle the theorem 8+5=13 in (teacher) education, 30-48;
* Abílio Mapapá: *Symmetries and metal grates in Maputo*, 49-55;
* Daniel Soares: S*ymmetric ornamentation on wooden spoons from Sofala Province*, 56-58;
* Marcos Cherinda: *Strip patterns on wooden spoons from Inhambane Province*, 59-61.

#155 Mve-Ondo, Bonaventure: **L'Owani et le Songa: Deux jeux de calculs africains. Découverts du Gabon** [Owani and Songa: two African calculation games. Discoveries from Gabon], Centre Culturel

Français Saint-Exupéry & Sépia Editions, Libbreville (Gabon) & Paris (France), 1990, 130 pp.

This book on calculation games (cf. AMUCHMA 9) is structured into five chapters: 1. Rules, 2. Tactics and strategy, 3. Formalisation of Owani and Songa, 4. Calculation games and traditional social systems, 5. Calculation games and philosophy.

#156 Seka, Beniel: **Jina Langu ni Sifuri** [My name is Zero], Diamond Publishers (S.L.P. 2522), Dar es Salaam (Tanzania), 1993, 17 pp.

#157 Seka, Beniel: **Kipeo na Kipeuo Mahakamani** [Kipeo (√) and Kipeuo (^{2}) together], Dar Es Salaam University Press, Dar es Salaam (Tanzania), 1993, 22 pp.

Two children's booklets using the traditional story telling pedagogy to introduce and discuss mathematical ideas: the introduction of 0 in the first booklet, and of squares, square roots and the Pythagorean Proposition in the second.

5.3 Publications by Africans on the History of Mathematics (outside Africa)

#158 Djebbar, Ahmed: **Deux mathémaciens peu connus de l'Espagne du XI^{e} siècle : al-Mu'taman et Ibn Sayyid**, in : Vestigia Mathematica, Studies in medieval and early modern mathematics in honour of H.L.L. Busard (edited by M. Folkerts & J. Hogendijk), Rodopi B.V., Amsterdam-Atlanta, 1993, 473pp.

This paper contains the not previously published results of research conducted between 1982 and 1984, on the life and activities of two important mathematicians of Islamic Spain who were interested in Geometry and Number Theory.

6. ANNOUNCEMENTS

6.1 Exhibition: Games, Mathematics and Societies

The Mathematical Research Institute of Abidjan (IRMA, Côte d'Ivoire) and the Science Centre of Orléans (France) are organizing a pedagogical, interactive and intercultural, travelling exhibition on *Games, Mathematics and Societies*. The exhibition is composed of two parts: traditional African games; and games from all over the world. One of the aims is to present teachers in Africa with a source of examples of learning situations that take into account the socio-cultural environment of the pupils. Another is to contribute to the conservation of African cultural and scientific heritage. The exhibition will open in Abidjan on November 16, 1994. For more information, contact:

Salimata Doumbia, Scientific Coordinator of the Exhibition, c/o IRMA, Université Nationale du Côte d'Ivoire, 08 BP 2030, Abidjan 08, Côte d'Ivoire (Fax: 225-448397)

6.2 Bulletin of the Ibn Al-Haytham Workshop on the History of Arabic Mathematics

The *École Normale Supérieure* of Kouba (Algeria) published the 3rd (38 pp.) and 4th (56 pp.) editions of its *Cahier du Séminaire Ibn al-Haytham sur l'Histoire des Mathématiques Arabes*. The publication is in Arabic with list of contents in French. The Bulletin gives information about the actividies of the Ibn al-Haytham Workshop, presents theses, book and papers; information about Colloquia and the latest publications. At the end it gives a list of all names cited in the Bulletin. Ahmed Djebbar is responsible for the Bulletin and the Secretariat is composed of Youcef Guergour and Touhami Zemouli. For more information, contact:

E.N.S. de Kouba, Département de Mathématiques, B.P. 92, 16050 Vieux Kouba, Alger, Algérie [tel. (2) 583511, Fax: (2) 583142; Telex: 62567]

6.3 International Conference on the History and Pedagogy of Mathematics

The International Study Group on the History and Pedagogy of Mathematics (HPM) is organizing an International Conference on the History and Pedagogy of Mathematics, to take place in Braga (Portugal) from 26 to 31 July 1996, as a satellite meeting to the 8th International Congress on Mathematics Education (ICME-8), which will take place in Sevilla (Spain) from 14 to 24 July 1996. For more information, contact:

Eduardo Veloso, Av.D.Rodrigo da Cunha, 11 3ºD, 1700 Lisbon, Portugal (Tel. & Fax: 351-1-8483046)

6.4 International Conference on Symmetry

The International Society for the Interdisciplinary Study of Symmetry (ISIS-Symmetry, cf. AMUCHMA7: 8.5) is organizing its third congress and exhibition *"Symmetry: natural and artificial"* from August 14-20, 1995 in Old Town Alexandria (near washington D.C., USA). The title of the congress emphasizes the presence of symmetry (dissymmetry, broken symmetry) both in nature and in the objects created by artists, scientists, and engineers. Scholars from Africa are particularly welcome. For more information, contact:

György Darvas, Executive Secretary ISIS-Symmetry, Symmetrion, P.O.Box 4, Budapest, H-1361 Hungary

6.5 Newsletters

Readers of the AMUCHMA-Newsletter may be interested in the following newsletter:

* **International History of Science Newsletter**

  In March 1994 the International Union of History and Philosophy of Science / Division of History of Science (DHS) started publication of its biannual newsletter. The aim of the newsletter is primarily to disseminate information about the structure and activities of DHS. It is hoped that the Newsletter will also come to act as a forum for discussion about matters pertinent to the international history of science. To receive the International History of Science Newsletter, write to:
    * Helge Kragh, Magnolievangen 41, DK-3450 Alleroed, Denmark.

6.6 AMUCHMA-representative in Botswana

AMUCHMA-member Hilda Lea (cf. 'Have you read?' #40, 101, 102) returned from Botswana to the U.K. in July 1994. From now on Mrs Kgomotso Garekwe will be the AMUCHMA-representative in Botswana.

7. ADDRESSES OF SCHOLARS AND INSTITUTIONS MENTIONED IN THIS NEWSLETTER

* Aballagh, Mohamed: Département de Philosophie, Faculté des Lettres et Sciences Humaines, B.P.50, Université de fès, Dhar El-Mehrez, Fès, Morocco
* Bopape, Mathume: P.O.Box 131, Seshego 0742, South Africa
* E.Chantler: Cape Town College of Education, Cape Town, South Africa
* Cherinda, Marcos: Departamento de Matemática, Instituto Superior Pedagógico, P.O.Box 2923, Maputo, Mozambique
* Colyn, Wendy: Mathematics Education Project, University of Cape Town, Private Bag, Rondebosch 7700, South Africa
* Dhombres, Jean: Département des Mathématiques, Université de nantes, 2 chemin de la Houssinière, 44072 Nantes cedex, France
* Djebbar, Ahmed: Département de Mathématiques, Bâtiment 425, Université de Paris-Sud, 91405 Orsay Cedex, France (Fax: 33-1-47015917)
* Doumbia, Salimata: IRMA, Université Nationale du Côte d'Ivoire, 08 BP 2030, Abidjan 08, Côte d'Ivoire
* Draisma, Jan: Departamento de Matemática, Instituto Superior Pedagógico, P.O.Box 2025, Beira, Mozambique
* Garekwe, Kgomotso: Department of Mathematics and Science Education, Faculty of Education, University of Botswana, Private bag 0022, Gaborone, Botswana

* Gerdes, Paulus: Instituto Superior Pedagógico, P.O.Box 3276, Maputo, Mozambique (Fax: 258-1-422113)
* Grünbaum, Branko: Department of Mathematics (GN-50), University of Washington, Seattle, Washington 98195, USA (Fax: 206-543-0397)
* Hogendijk, Jan: Mathematisch Instituut, Rijksuniversiteit Utrecht, Postbus 80.100, 3508 TA Utrecht, Netherlands
* Ismael, Abdulcarimo: Departamento de Matemática, Instituto Superior Pedagógico, P.O.Box 2923, Maputo, Mozambique
* Isoun, T.: Editor Discovery and innovation, African Academy of Sciences, P.O.Box 14798, Nairobi, Kenya
* Jaouiche, Khalil: 128 rue de la Croix Nivert, 75015 Paris, France
* Kragh, Helge: Magnolievangen 41, DK-3450 Alleroed, Denmark
* Lambaret, Driss: Département de Mathématiques, Université Mohamed V, Rabat, Morocco
* Lea, Hilda: 60 Lenham Avenue, Saltdean, Brighton, U.K.
* Liebenberg, Louis: c/o David Philip Publishers, 208 Werdmuller Centre, Claremont 7700, South Africa
* Mapapá, Abílio: Departamento de Matemática, Instituto Superior Pedagógico, P.O.Box 2923, Maputo, Mozambique
* Mve-Ondo, Bonaventure: Faculté de lettres et Sciences Humaines, Université Omar Bongo, Libreville, Gabon
* Ncube, Charles: Mathematics Education Project, University of Cape Town, Private Bag, Rondebosch 7700, South Africa
* Ngqezza, Nombini: Vuyani Public Primary School, Guguletu, South Africa
* Rashed, Rosdi: Centre d'Histoire des Sciences, 27 rue Damesme, 75013 Paris, France
* Rebstock, Ulrich: Orientalisches Seminar, Universität Tübingen, Munsgasse 30, 74000 Tübingen 1, Germany
* Samso, Julio: Dep. Arabe, Facultad Filologia, Universidad Barcelona, Gran Via 585, 08007 Barcelona, Spain
* Sabra, A.: Department of the History of Sciences, Harvard Science Center 235, Cambridge, Massachusetts 02138, USA
* Seka, Beniel: Institute of Curriculum Development, PO Box 35094, Dar es-Salaam, Tanzania
* Silva, Elísio Romariz Santos: R. João de Deus Ramos 1-1C, 8491087 Alvelade, 1700 Lisboa, Portugal
* Sizer, Walter: Department of Mathematics, Moorhead State University, Moorhead, Minnesota 56563, USA
* Soares, Daniel: Departamento de Matemática, Instituto Superior Pedagógico, P.O.Box 2025, Beira, Mozambique
* Veloso, Eduardo: Av.D.Rodrigo da Cunha, 11 3ºD, 1700 Lisbon, Portugal (Tel. & Fax: 351-1-8483046)

8. 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.

9. 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
P.O.Box 915, Maputo, Mozambique (Fax: 258-1-422113),

for the **English** version;

or to the Secretary

Ahmed Djebbar
Département de Mathématiques, Bâtiment 425, Université de Paris-Sud, 91405 Orsay Cedex, France (Fax: 33-1-47015917)

for the **French** version;

or to Professor

Mahdi Abdeljaoud,
I.S.E.F.C., 43 rue de la Liberté, 2019 Le Bardo, Tunis, Tunisia,

for the **Arabic** version.

Readers who would like to receive the **AMUCHMA Journal in Portuguese** should contact the editors, P.O.Box 915, Maputo, Mozambique.

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