AFRICAN MATHEMATICAL UNION

COMMISSION ON THE HISTORY OF MATHEMATICS IN AFRICA

AMUCHMA-NEWSLETTER-4

Instituto Superior Pedagógico, Maputo, Mozambique, 22.10.1989

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1. OBJECTIVES OF AMUCHMA

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 an 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 eurocentristic bias in the historiography of mathematics;
d. to cooperate with any and all organisations pursuing similar objectives.

The main forms of activity 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

2.1 2ND MAGHREBIAN COLLOQUIUM ON THE HISTORY OF ARABIC MATHEMATICS   Report by A.Djebbar

The second Maghrebian Colloquium on the History of Arabic Mathematics was held in Tunis (Tunisia), December 1-3, 1988. It was organized by the 'Institut Supérieur de l'Education et de la Formation Continue de Tunis', the Studygroup on the History of Arabic Mathematics and by the Tunisian Association of

Mathematical Sciences. Twenty-four papers (11 in Arabic, 3 in English and 10 in French) were presented. They dealt with the following themes:

1. Arabic Mathematics of the East [Y.Atik, R.Bebbouchi, Y.Benrebia, A.Laib (Algeria), K.Jaouiche (France), A.Abdellatif (Jordania), Y.Dold-Samplonius (FRG), J.Sesiano (Switserland), S.Chelhoub (Syria), M.Souissi, H.Hadfi (Tunisia);
2. Arabic mathematical terminology [M.Zemmouli (Algeria), R.Hamzaoui (Tunisia)];
3. Problems of transmission of mathematics [J.C.Martzloff, J.Borowczyk, M.Guillemot (France), R.Lorch (U.K.), E.M.Bruins (Netherlands), A.S.Saidan (Jordania), M.Folkers (FRG), E.A.Kane (Senegal)];
4. Mathematics and Astronomy in the Maghreb [A.Djebbar, M.Zerrouki (Algeria), D.A.King (FRG)].

The following were contributed papers concerning the history of mathematics in Africa:
1. A.Djebbar: Some new elements on the Arabaic mathematical activity in the east Maghreb (9th-16th century);
2. M.Guillemot: From Egyptian arithmetics to Arabic-Islamic arihtmetics;
3. A.Kane: Arabic alphabetic numeration and the decimalisation of the Mandé-numeration systems;
4. D.King: An overview of the sources for the history of astronomy in medieval Maghreb;
5. M.Zerrouki: Fractions in the Maghrebian mathematical tradition of the 12th to 15th centuries.
During the Colloquium, the French version of the Proceedings of the First Colloquium (Alger, 1986, see AMUCHMA 1: 2.2) was distributed to all participants as well as AMUCHMA 2.

2.2 NATIONAL SEMINAR OF ORAN ON THE HISTORY OF GEOMETRY
        Report by A.Djebbar

A national seminar on "The geometry of figures during the ages" was held in Oran (Algeria), July 1-3, 1989. It was organised by the

Mathematical Research Unit at the University of Oran-Es-Senia. During the seminar 12 papers (all in French) were presented on the following subjects:

1. Geometry in China: J.C.Martzloff (France);
2. Geometry in Ancient Egypt: M.Guillemot (France);
3. Greek geometry and its continuation in the Arabic tradition: A.Bouzari, A.Djebbar, M.D.Sadji, B.Sellak (Algeria), K.Jaouchi (France);
4. The Greek-Arabic Euclidean tradition in medieval Europe: J.Cassinet, R.Cassinet (France);
5. New approaches to Geometry in Europe: R.Bebbouchi (Algeria), F.Apery, R.Bkouche, Reeb (France).

Two communications concerned the history of mathematics in Africa:

M.Guillemot: On the Egyptian geometry of figures;
M.D.Sadji: The teaching of geometry in medieval Maghreb through a chapter of Ibn al-Banna (1256-1321).

2.3 COLLOQUIUM ON 'THE MAGHREBIAN ASTROLABE'

In order to commemorate the anniversary of the death of the Maghrebian mathematician and astronomer al-Habbak (26.09.1462), a Colloquium on Maghrebian astronomical instruments was held at Tlemcen (Algeria), september 26 - september 28, 1989. The Colloquium was organized by M.Baghli and the Wilaye of Tlemcen. About 50 teachers, lecturers and researchers from various Algerian cities took part in the event. Twelve papers were presented, 7 on astronomy and 5 on mathematics. The following were the contributed papers related to mathematical and astronomical activities in medieval Maghreb:

1. M.Baghli: Evocation of al-Habbak and of his astronomical poem "What students desire to 'know' about the science of the astrolabe";
2. M.Bakhouche: Presentation of the astrolabe of the Cirta museum of Constantine;
3. M.A.Benhoucine: The sun-dials drawn at the back of the astrolabe;
4. H.Cherrid: The Maghrebian astrolabes: description and functioning;

5. A.Djebbar: Mathematics in Tlemcen, from the 12th century to the time of al-Habbak;
6. Y.Guergour: The mathematical writings of Ibn Qunfudh;
7. Z.Kouar: Presentation of three astronomical instruments of Tlemcen;
8. M.D.Sadji: al-cUqbani, his life and mathematical writings.

In parallel to the Colloquium, the organizers held an exposition with mathematical and astronomical manuscripts on loan from the National Library in Alger and with four astronomical instruments: 2 astrolabes, a sun-dial and a compass. During the event, a national association for the preservation and study of Maghrebian astronomical instruments was created.

2.4 PAPERS PRESENTED AT RECENT MEETINGS

* At the 2nd East African Symposium on Current Research Trends in Mathematics, Computer Science and Mathematics Education (Arusha, Tanzania, September 11-16, 1989), a paper by Paulus Gerdes "On Mathematical Elements in the Tchokwe 'Sona' Tradition" (Cf. AMUCHMA2: 5, AMUCHMA 3: 6 #34, #37, #39, #44, AMUCHMA 4: 3, 7 #46) was read by Abdulcarimo Ismael.

3.CURRENT RESEARCH INTERESTS

* Yazuha Bello (Bayero University, Nigeria) is doing research on pre-Islamic Hausa ways of counting.
* Mfika Mukumbila, Chabunda Mwanza and Ilunga Nsenda are organizing a Research- and Study Group on Ancient Bantu Science (Groupe de Recherche et d'Étude de la Science Ancienne Bantu, GRESAB) at the Louis-Pasteur-University (Strassbourg, France).
* John Fauvel and Paulus Gerdes concluded a study on Thomas Fuller, entitled "African Slave and Calculating Prodigy: Bicentenary of the Death of Thomas Fuller" (Cf. AMUCHMA2: 7.2 #33 and AMUCHMA3: 4.2), accepted for publication in 'Historia Mathematica' (New York, USA).
* Paulus Gerdes concluded a study entitled "Reconstruction and Analysis of Mathematical Elements in the Tchokwe-sanddrawing-tradition" (75 p.), that has been included in his book

"Ethnomathematische Studien" [ISP, Maputo (Mozambique) & KMU, Leipzig (GDR), 1989, 360 p. (in German)].

4.EDUCATION

*   Pierre Lapousterie is preparing a study week on the history of mathematics for 5th year students (DEA) of mathematics and mathematical education to take place in Bamako (Mali).

*   For the second time (Cf. AMUCHMA 2:6) a seminar and a 1 week course on the history of mathematics for the 4th year students of the National School of Statistics and Applied Economics took place in Rabat (Morocco), February 6 - February 11, 1989. The course, attended by 22 students, was given by A.Djebbar (Algeria) and treated the following themes:
1. the history of algebra;
2. the history of combinatorics;
3. the development of the real number concept.
Some of the themes have also been exposed during two lectures at the Departments of Philosophy and Mathematics of the University of Fez (Morocco). A.Djebbar presented the activities of AMUCHMA to the departments and a project to organise a workshop on 'Mathematics and Philosophy in the Muslim West' were discussed with the responsibles of both departments.

*   For the second time (Cf. AMUCHMA 2:6) a 1 semester course on the history of mathematics was lectured in 1988 for the 1st year students of the Faculty of Mathematical Sciences at the Eduardo Mondlane University (Maputo, Mozambique). At the end of the course, the students were required to write a paper of about 10 pages. Four students chose topics related to the history of mathematics in Africa:
1. Lourino Nhalivilo: The Four Arithmetical Operations in Ancient Egypt;
2. Henrique Pondeca: On Numeration in Bantu Languages in Mozambique;
3. Samuel Mahanjane: On Geometrical Knowledge applied in the Construction of Traditional Graneries for Maize and Beans in the South of Mozambique;

4. Paulo Maculuve: On the Geometry of some Traditional Plaiting Patterns.

5.HAVE YOU READ?

#45 Kubik, Gerhard: Tusona-Luchazi ideographs, a graphic tradition as practised by a people of West-Central Africa, Verlag Stiglmayr, Fohrenau, Austria, 1988, 311 p.
#46 Kubik, Gerhard: African graphic systems, in: Muntu, revue scientifique et culturelle du Centre International   des Civilisations Bantu (CICIBA),   Libreville (Gabon),   1986, Vol.4-5, 71-135.

"In pre-colonial times, a varied range of graphic systems existed in Sub-Saharan Africa.   The author presents the results of his own investigations made in Tanzania, Malawi, Gabon, Xameroun, Angola and Zambia between 1962 and 1984". The author analyses also tusona- luchazi-ideographs (Cf. AMUCHMA2: 5; AMUCHMA3: 6 #34, #37, #39, #44; AMUCHMA4: 2.3, 3).
"The forefathers of the Eastern Angolan   peoples discovered higher mathematics and a non-Euclidian geometry on an empirical basis applying their insights to the invention of these [tusona] unique configurations" (p.108).

 #47 Lagercrantz, Sture: African tally-strings, in: Anthropos (FRG), Vol.63, 1968, 115-128.

Gives an overview of the ethnographic literature on mnemonic aids in counting in Sub-Saharan Africa. Map on p.126 shows the distribution of tally-strings over the continent. The most important tallies of higher age are the "memorial cairns (i.e. the custom that every one passing a place where someone for instance has suffered a violent death throws down a stone or a stick)".

#48 Obenga, Théophile: Notes sur les connaissances astronomiques bantu, in: MUNTU, revue scientifique et culturelle du CICIBA, Libreville (Gabon), Vol.6, 1987, 63-78.

Reviews the literature on astronomical knowledge in ancient Egypt, among the Borana (Ethiopia), Dogon, Lobi,Bambara (West

Africa), Vili (Congo), Fang (Cameroon, Equatorial Guinee, Gabon), and Mbochi (Congo).

#49 Schmidl, Marianne: Zahl und Zählen in Afrika, in: Mitteilungen der Anthropologischen Gesellschaft in Wien, Vienna (Austria), Vol.45, 1915, 165-209.

In the first part an overview and comparative analysis of counting systems in Sub-Saharan Africa is given. The second part deals with psychological and historical factors that influence the development of counting (systems).

#50 Vellard, Dominique: Counting Practices of Illiterate Country People in West-Africa, paper presented at the 4th International Congress on Mathematical Education, Adelaide (Australia), 4 p.

Describes the use of the traditional 'bamane' counting system by illiterate Bambara (Mali). It is a mixed counting system with bases 10. 80 and 800.

#51 Washburn, Dorothy & Crowe, Donald: Symmetries of Culture, Theory and Practice of Plane Pattern Analysis, University of Washington Press, Washington (USA), 1988, 312 p.

This book shows how patterns from cultures from all over the world, can be classified according to the symmetries which generate them. It examines a number of patterns from African contexts.

6. ANNOUNCEMENTS

6.1 The 3rd Maghrebian Colloquium on the History of Arabic Mathematics will be held in Alger (Algeria) from 1 to 3 December 1990. The 4th Colloquium (1992) will be held at the Faculty of Arts and Human Sciences at the University of Fez (Morocco).

6.2 Maghrebian Commission on the History of Science

On December 3, 1988 is was decided in Tunis (Tunisia) to create a Maghrebian Commission on the History of Science. Its statutes (actually in preparation) will be those of a non- profit, N.G.O.

(Non-Government-Organisation) with scientific character. Its task will be to coordinate all efforts that envisage at the level of the Maghreb the promotion and development of different activities concerning the History of Science (publications; national, regional or international colloquia; education, etc.).

6.3 Algerian Association for the History of Mathematics

The Algerian Association for the History of Mathematics (A.A.H.M.) was created in Alger, November 7, 1988. Its first Chairman is Y.Atik of the 'Ecole Normal Supérieur' in Alger. The Association has the following aims:
* to promote the research, the study and the diffusion of the Arabic mathematical heritage;
* to encourage the research of manuscripts, as well as their analysis and publication;
* to organise conferences, workshops, expositions, national and international meetings on the History of Mathematics;
* to constitute a library and microtec with publications and scientific manuscripts.
The activities of the Association for 1989 are the following:
* to support the preparation of the National Seminar of Oran on the geometry of Figures (cf. AMUCHMA4: 2.2);
* to create a western section of the Association, whose Chairman is Ould Ali (Algeria);
* to prepare the 3th Maghrebian Colloquium on Arabic Mathematics to take place in Alger (Algeria), December 1990.

6.4 World Historical Congress

Paulus Gerdes (Mozambique) will present an invited paper entitled "On Ethnomathematics and the History of Mathematics in Africa" at the 17th World Historical Congress to be held in Madrid (Spain), August 26 - September 2, 1990.

7. DEATHS

The author of #26, #27 and #28, Prof. Abraham Seidenberg (born 2.6.1916) died 3.5.1988 (University of California, Berkeley, USA).

8. ADRESSES

1. AAHM, Association Algérienne d'Histoire des Mathématiques, Département de Mathématiques, E.N.S. de Kouba, 16050 Vieux Kouba, Alger, Algeria

2. Atik, Y.: Département de Mathématiques, E.N.S. de Kouba, 16050 Vieux Kouba, Alger, Algeria

3. Bello, Yahuza: Department of Mathematics, Bayero University, Kano, P.M.B. 3011, Nigeria

4. CICIBA, Centre International des Civilisations Bantu, B.P.770, Libreville, Gabon

5. Crowe, Donald: Department of Mathematics, University of Wisconsin, 480 Lincoln Drive, Madison, Wisconsin 53706, USA

6. Djebbar, Ahmed: Département de Mathématiques, Université Paris-Sud, 91405 Orsay Cedex, France

7. Fauvel, John: Faculty of Mathematics, The Open University, Milton Keynes MK7 6AA

8. Gerdes, Paulus: C.P.915, Maputo, Mozambique

9. Groupe de Recherche et d'Etude de la Science Ancienne Bantu (GRESAB), Université Louis Pasteur, Strassbourg, France

10. Guillemot, M.: 10 impasse de la Pélude, 31400 Toulouse, France

11. Ismael, Abdulcarimo: Department of Mathematics, Higher Pedagogical Institute, C.P.3276, Maputo, Mozambique

12. Kane, A.E.: Département de Philosophie, Université de Dakar, Senegal

13. King, D.A.: Institut für Geschichte der Naturwissenschaften, Goethe Universität, Bettinastrasse 64, 6000 Frankfurt, F.R. of Germany

14. Kubik, Gerhard: Burghardtgasse 6/9, A-1200 Wien, Austria

15. Lapousterie, Pierre: Mission Française de Coopération, B.P.84, Bamako, Mali

16. Obenga, Théophile: CICIBA, B.P.770, Libreville, Gabon

17. Ould Ali: Département de Mathématiques, Université d'Oran-Es-Senia, Es-Senia (Oran), Algeria

18. Sadji, M.D.: 3 Castor, 16300 Bir Mourad Rais, Alger, Algeria

19. Shirley, Lawrence: Department of Mathematics, Towson State University, Towson MD 21204-7079, USA

20. Vellard, Dominique: U.E.R. de Didactique, 46-45 1er étage, 2 place Jussieu, 75005 Paris, France

21. Wasburn, Dorothy: Department of Anthropology, University of Rochester, Rochester, New York 14627, USA

22. Zerrouki, M.: Cité Hassein Mahiouz, Bt. B 11, no. 98, Ben Aknoun, Alger, Algeria

9. 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.

10. DO YOU WANT TO RECEIVE THE NEXT AMUCHMA NEWSLETTER?

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Ahmed Djebbar,
Départment de Mathématiques, Université Paris-Sud, 91405 Orsay Cedex, France 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.