

6A.2.2

Coptic
numerals

Coptic
Numerals

Coptic
Numbers

6A.2.2

PS
MM

Coptic Numbers



JS 26452

University of Pittsburgh
Pittsburgh, PA 15260

*Prof. S. D. Amis
284 Hamilton Ave
Pittsburgh PA 15260*



University of Pittsburgh

FACULTY OF ARTS AND SCIENCES
Jewish Studies Program

2604 CL

May 26, 1981

Dear Prof. Gostein,

Thank you for your kind note of 5/19/81. I regret that I have not seen your recent publications that you mentioned. My plans for the summer call for travel to Paris & Jerusalem & look at mass on astronomical instruments in Hebrew & I am leaving in a few days.

Concerning logic numerals: I enclose page proof from my forthcoming article with D. Berger which shows three numerals in a 14th century hand (p. 22) - the transliteration begins at the bottom of p. 22. I hope this information will prove to be helpful.

Sincerely,

Bernard R. Gostein

"More horoscopes from the Cairo Geniza"

to appear in:

22

fol. 12b

GOLDSTEIN AND PINGREE

[PROC. AMER. PHIL. SOC.]

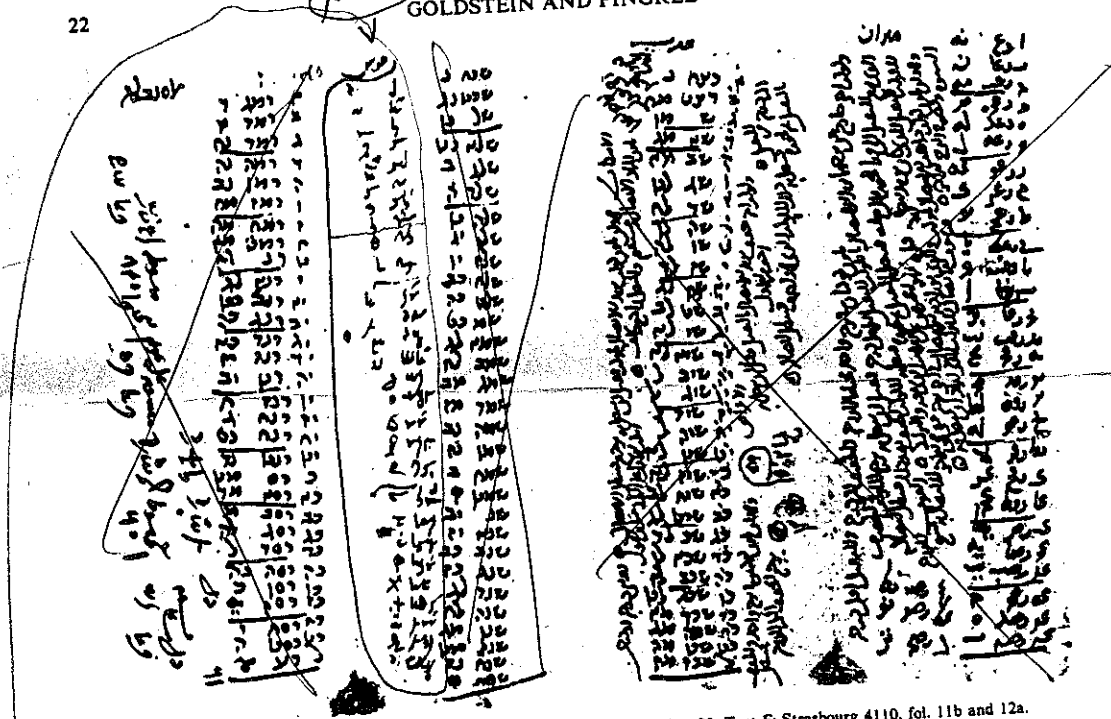


FIG. 21. Text F: Strasbourg 4110, fol. 12b and 11a.

FIG. 22. Text F: Strasbourg 4110, fol. 11b and 12a.

Folio 12a. Left margin (crosswise).

1. The breaking occurs if it is a planet intending a configuration with a planet and, before it is in configuration with it, it retrogrades, and the configuration is void. There was left a degree or two degrees;
2. the (planet) intending a configuration with it is direct (in motion) while the configured is retrograde, it lags behind. The first breaks the second

Folio 12a. Right margin (crosswise).

1. The avoidance. ☐. This is when two planets are in one sign, and the light (planet) is greater in degrees than the heavy, and another light planet intends a configuration with the heavy, but before it is configured with it,
3. less than the first,
4. ☐ the light, (which is) greater in degrees, retrogrades and is configured
5. with the heavy. Then it changes it, and this planet which is less is configured with it; and its configuration is void.

Folio 12b. Left margin.

1.	1	$\frac{1}{24}$
2.	2	$\frac{1}{12}$
3.	3	$\frac{1}{6}$
4.	4	$\frac{1}{6}$
5.	5	$\frac{1}{24}$
6.	6	$\frac{1}{6}$
7.	7	$\frac{1}{6}$
8.	8	$\frac{1}{3}$

over to next page

9.	9	$\frac{1}{4} \frac{1}{8}$
10.	10	$\frac{1}{4} \frac{1}{6}$
11.	20	$\frac{1}{2} \frac{1}{3}$
12.	30	$1 \frac{1}{4}$
13.	40	$1 \frac{2}{3}$
14.	50	$2 \frac{1}{12}$
15.	60	$2 \frac{1}{2}$
16.	70	$2 \frac{2}{3} \frac{1}{4}$
17.	80	$3 \frac{1}{3}$
18.	90	$3 \frac{1}{2} \frac{1}{4}$
19.	100	$4 \frac{1}{6}$
20.	200	$8 \frac{1}{3}$
21.	300	$12 \frac{1}{2}$
22.	400	$16 \frac{2}{3}$
23.	500	$20 \frac{2}{3} \frac{1}{6}$
24.	600	25
25.	700	$29 \frac{1}{6}$
26.	800	$33 \frac{1}{3}$
27.	900	$37 \frac{1}{2}$
28.	1000	$41 \frac{2}{3}$

Commentary.

This manuscript of twelve folia contained originally tables of the oblique ascension of each degree of each zodiacal sign beginning with Aries at the latitude of Cairo ($\phi = 30^\circ$) on ff. 1a–6b, and of the right ascension of each degree of each zodiacal sign beginning with Capricorn on ff. 7a–12b. The entries, in degrees and minutes, in the oblique ascension table, agree with those in the *Zīj al-Ḥākīmī* of Ibn Yūnus, wherein the obliquity is $23;35'$,¹ whereas the entries in the right ascension table only partially agree with Ibn Yūnus.² The numbers are normally written in Hebrew letters, though occasionally Arabic is used; when a column proved insufficient to contain the thirty entries for one sign, the extra entries were written at the bottom to the left. The columns are headed by the Arabic name of the appropriate zodiacal sign, written in Hebrew and/or Arabic characters; some of them are also numbered in sequence at the top.

In the margins of these folia have been written, usually in cursive hands and in Arabic and Hebrew with some Coptic numerals, many notes.

1. Notes relating to a horoscope; the language and script of the words are Arabic, the numbers are written with Arabic letters and with Arabic and Coptic numerals. These notes are found on ff. 1a left margin; 1b left margin; 2a left margin; 3a left margin; 3b left margin; 4a left margin; 4b left margin; 5a left margin; 5b right and left margins; 6a left margin; and 11a left margin.

2. A sequence of Coptic numerals on f. 1a right margin.

3. A fragmentary horoscope in Arabic on f. 1b right margin.

4. A fragment on the configuration of two or more planets drawn from an unidentified astrological text. This fragment is found on ff. 2b left and right margins; 5b left margin; 6b left and right margins; 10b right margin; 11b left margin; 12a left and right margins.

5. Prayers in Hebrew on ff. 7a left margin; 7b left margin; 8a left margin; 8b left margin; 9a left margin; 9b left margin; 10a left margin; and 10b left margin.

6. A table of division by 24 in Coptic numerals on f. 12b left margin.

1. The first horoscope, without the zodiacal signs being noted, is found on f. 2a left margin. The palaeography of the manuscript indicates that it was probably written in the fourteenth century; in that century the only date which the data will fit is 4 December 1350. There is independent confirmation on f. 1b that the Sun is in Sagittarius 22° ; see below.

	Text	Computation
Saturn	17;29,48,50°	Aries 19°
Jupiter	21;1,4°	Leo 21°
Mars	23;38,42°	Capricorn 25°
Sun	21;59,50°	Sagittarius 21°
Venus	7;45,24°	Scorpio 13°
Mercury	20;35,20°	Sagittarius 29°
Moon	17;51,4°	Aquarius 18°
Ascending node	18;28,42°	Gemini $18;30^\circ$

This date is confirmed by the computations on f. 1b left margin. Lines 1–6 contain the computation of the right ascension of the ascendant of an anniversary (for

¹ We have checked 21 scattered entries with the Leiden manuscript (Leiden Or. 143, p. 313) of Ibn Yūnus.
² Leiden Or. 143, p. 270.

Prof. S. D. Golden
284 Hamilton Ave.
Princeton, N. J. 08540

BM on 10 599 verso

مقدونس	فقوس	خيار
١٢٢١	١٢٢١	١٢٢١
٥١	١	١
ملونج	نخيل	نخيل
١٢٢١	١٢٢١	١٢٢١
~	~	~
Asparagus officinalis	فاليون	دجاجة
١٢٢١	١٢٢١	١٢٢١
٩١٠	١	١

١٢٢١ ١٢٢١ ١٢٢١
١١

"to cheer up" see Mod. No. III,
167, n. 45

١٢٢١ ١٢٢١ ١٢٢١

The total seems to be $4\frac{3}{4}$, the chicken $1\frac{1}{2}$, the

apples $\frac{1}{4}$, but $\frac{1}{2}$ for faggots; and regular cucumbers
appears to be high, and I am entirely at loss with regard
to the cheering-up money for the housewife.

Further Notes to Capt. Numerals

40

✓

Ar. Box 30, f. 67

✓

" " 51, f. 80, l. 2

Stem - 122 also 15 for 27 & 15, and also 15 for 27 & 15

✓ also in TS NS Box 325, f. 13
Three

13018419

[illegible]

Stern Ludwig, Koptische Grammatik, Leipzig 1880. p. 131

Jakob Georg Adler's, kurze Uebersicht seiner Bibliothek-Reisen
Reise nach Rom, Altona 1783 p. 183. Folio P = 2 1/2 Bände, 6

[illegible]

125
13713 f. 10

F. Rosenthal JAOS 75 (1955), p. 15

108
 Letter of Isaac to Abraham
 TS 13718f.19
 H.N.
 25
 21
 17,5 (top) - 17,5 (bottom)

1. יא מלך וס' ור' ארמיה קר']
2. ארמיה רמ' כרמיה יא מלך ור']
3. ור' ארמיה רמ' כרמיה יא מלך ור']
4. ארמיה רמ' כרמיה יא מלך ור']
5. ארמיה רמ' כרמיה יא מלך ור']
6. ארמיה רמ' כרמיה יא מלך ור']
7. ארמיה רמ' כרמיה יא מלך ור']
8. ארמיה רמ' כרמיה יא מלך ור']
9. ארמיה רמ' כרמיה יא מלך ור']
10. ארמיה רמ' כרמיה יא מלך ור']
11. ארמיה רמ' כרמיה יא מלך ור']
12. ארמיה רמ' כרמיה יא מלך ור']
13. ארמיה רמ' כרמיה יא מלך ור']
14. ארמיה רמ' כרמיה יא מלך ור']
15. ארמיה רמ' כרמיה יא מלך ור']
16. ארמיה רמ' כרמיה יא מלך ור']
17. ארמיה רמ' כרמיה יא מלך ור']
18. ארמיה רמ' כרמיה יא מלך ור']

- חוקים
19. ארמיה רמ' כרמיה יא מלך ור']
 20. ארמיה רמ' כרמיה יא מלך ור']
 21. ארמיה רמ' כרמיה יא מלך ור']
 22. ארמיה רמ' כרמיה יא מלך ור']
 23. ארמיה רמ' כרמיה יא מלך ור']
 24. ארמיה רמ' כרמיה יא מלך ור']
 25. ארמיה רמ' כרמיה יא מלך ור']

Ad 108

17, Lower St,
W. C. 1

3/9/55

אייס"ן הייז
הפאליאגריפיה אל וואסער
הילפטיגס הייזארייט אלס פאר אומא
הילפאליגה מאלר אומא הייזארייט
ערדיסטויגה. גא-גאט, אומא. J. Barnes
אומא לעגאל אפ. אפער מאט לעגאל אפער
2טע-3טע ערדיגס אלס (אל הייז)
2-Oxf) לעגאל הייז אלס זאסער
האל. חאפ מאללען מאלר הייז
עם 3232 הייז אל Ludwig Stern
הייז הייזארייט (ע 3 200 3212)
Jakob Georg Christian Adler, Dr
Kurze Uebersicht seiner biblischkriti-
schen Reise nach Rom (Altona 1783)
p. 183

אני שמח ושמך להספיק וס"ס
אם מאחרך. ולזה כזה.

22 כב ואחרי

י. ב. 3/3

אני חולב לרובי ולעל
כזה מה ופלא ופלא יי ונכר כזה, וכל
M. J. Plumley כלל

Aa 32.10 Stern N 53
826.4.c.90.1 Mallon NW 5
Densley Ta 24 Adler

Mallon J, L'écriture de la Chancellerie impériale
roumaine Salamanca 1918 500.01.c28.42

H. Ritter, Griechisch-Koptische
Ziffern in arabischen
Manuskripten

Rivista degli Studi Orientali
16 (1936), 212-214

M. Schab

Textes Judéo-Égyptiens

REJ 70 (1920), 44-69

careful, many dots!

M. Schwab,

Les Manuscrits du Consistoire
Israélite

REJ 64 (1912) 118-127

PHOTOGRAPHIC SECTION
UNIVERSITY of PENNSYLVANIA LIBRARY
 3420 WALNUT STREET
 PHILADELPHIA, PENNSYLVANIA 19104

Please print or type Name and Address below:

Charge Code

CLASS	DEPARTMENT	ACCOUNT	TYPE	FUND

CALL-NO.

AUTHOR (or Periodical title, vol. and year)

TITLE, EDITION, DATE (with author and pages for periodical articles)

Invoice Date: _____
Library Job No.: _____

I desire this reproduction solely for research in lieu of the publication in question or in place of manual transcription. This order is given with the understanding that the University of Pennsylvania does not sell the duplicates referred to, but merely performs the service of copying at my request, and that the fee paid is exclusively for such services. All responsibility for an infringement of copyright that may here arise in such copying and the use of such copies is assumed by me, and I hereby agree to indemnify and save harmless the University from and against all claims of copyright infringement to which I agree to obtain, before publication of any manuscripts belonging to the University, information on libel law and literary property rights at common law and permission of the University of Pennsylvania Library.

Signed: _____

FOR LIBRARY USE

Photocopy _____
 Microfilm frames _____
 Xerox copies _____
 Cost of work _____
 Service charge _____
 Mailing charge _____
 Total cost _____

Request: Microfilm ☐ Photostat ☐ Xerox ☐

Mail ☐
 Pick-up ☐
 Notify ☐ Tel. _____

PLEASE RETURN ONE COPY OF THIS BILL WITH YOUR PAYMENT

NOTES ON PHOTOGRAPHY

100-443887-100

17-11-71

THE CHINESE

717 X

Figure 1. The effect of the concentration of the polymer solution on the surface free energy of the polymer film. The surface free energy of the polymer film increases with the concentration of the polymer solution.

[illegible]

1

2000

[illegible]

2015

2000

2010-01-01

WILLIAM D. HARRIS

1904-1905

15:00:00 07.8019%

[illegible]

UNIVERSITY of PENNSYLVANIA

PHILADELPHIA 4

The Graduate School of
Arts and Sciences

ORIENTAL STUDIES

SEMITICS

February 22, 1968

Professor Raymond de Roover

645 East Parkway

Brooklyn, N.Y. 10013

Dear Professor de

1 3/4 5
10
3
3
2
3 1/2
15
15
3 2 1/4
1
2
8
2
5
55 1/4 1/3

K 15, f. 64

~~1300~~

44 ~

3 ~ 5

9 5

2 }

2 } ~

62 : 1w 3 7 ⁽¹⁾ ¹³ ~~128~~ ~ 23 1/2 6 5
7 1/2

K 15. f. 10

7

7L

7W

Σ

Box 8729 I 2 / 41)

Offleit Horrell

ff. 178 ff

Fresimile

TS Arctic Box 3067

~ 1140

Handwritten notes in Arabic script

K 15, 4 100 v

Handwritten notes in Arabic script

w w = 2

1080 7 4 2 v, l. 21 : w = w + 2, 100 v

OC 1/2 1/4

C C 1/2

l. 7 J 1/8

l. 14 J 1/4 1/8

135 18 + 16, l. 10 l. 10 G = 9

Σ Σ = 5

222 = 4

5 6

l 10

l

1040 7 2 I II 2 8 = 7 ??
6-7

Hellmut Ritter, Griechisch-koptische Ziffern

im arabischen Manuskripten RSO 16 (1936)

212-214

Xerox C¹

THE UNIVERSITY OF CHICAGO

CHICAGO · ILLINOIS 60637

THE ORIENTAL INSTITUTE

Cables: ORINST CHICAGO

1155 EAST FIFTY-EIGHTH STREET

Alexis Mallon 1926, pp 226-227

21 April 1968

Dear Professor Goitein,

A quick answer to your letter of April 18. In regard to the Coptic numerals, Till's Koptische Grammatik (3rd ed., 1966, but probably not much changed since the first edition of 1955) still refers to Mallon, Grammaire Copte (4th ed, 1956), p. 234 and the plate at the end of Stern, Koptische Grammatik (1880) as the only references for the later forms of the numerals and fractions. In addition, I could suggest Drescher, "A Coptic Calculation Manual," BSAC 13 (1948-1949) 137-60, where you will find further references (I imagine, however, that you are familiar with them; they are things like Grohman, Allgemeine Einführung in die arabischen Papyri, p. 74). I am not aware of anything more recent (but must add that a good half of Coptological research appears in journals that an Egyptologist never sees and are mostly not in our library). -- Among the examples you appended to your letter, the S-shaped 1/2 is completely normal in Coptic usage; Stern's grammar is -- as usual -- out of the library, so I cannot check the other shapes; in somewhat earlier Coptic usage, the fractions tend to be a more or less distorted Greek letter with a stroke added in the upper right corner, e.g. ∇ etc. for 1/3.

Arthur

Vööbus, I believe, is at the Lutheran School of Theology at Chicago, 1100 East 55th Street, Chicago, Illinois 60615, or almost across the street from the northern end of the University of Chicago. Typical for the extent to which we get out of our shells -- or welcome and help colleagues -- is the fact that I do not believe that I have ever seen or had the opportunity to meet him.

Sorry not to have been able to be of more help.

Sincerely yours,



P.S. I finally got an answer to a telephone call to the Lutheran School of Theology; Vööbus is on the faculty there.

Einführung p. 101
v. Gardtzen, Griechische Paläographie II
Leipzig 1913 Taf. 46 ff.

A. Mallon, Jr.

Heidelberg ZDMG 6 (1917) 78-81

Yale University *New Haven, Connecticut 06520*

DEPARTMENT OF
HISTORY OF SCIENCE AND MEDICINE

Box 2036, Yale Station

January 7, 1972

Professor S. D. Goitein
Institute for Advanced Study
Princeton, New Jersey 08540

Dear Professor Goitein,

It was a great pleasure to see you once again, and I am indeed grateful for your interest in my affairs.

I enclose a photograph of Chester Beatty MS arab. 3673, fol. 82v, which has Coptic numerals and their abjad equivalents on it. The manuscript includes Tables of Ibn Yunus, incorrectly described in Arberry's catalogue as the Hakimite Tables.

Here is a partial bibliography on Coptic numerals:

1. J. Drescher, "A Coptic Calculation Manual" Bulletin de la Société d'Archéologie Copte vol. 12 (1946-1947), 1949, pp. 137 ff.
2. José A. Sanchez Pérez, "Sobre las Cifras Rūmies," al-Andalus, 3 (1935), pp. 97 ff.
3. G. Levi Della Vida, "Appunti e quesiti di storie letteraria araba," Rivista degli Studi Orientali 14 (1934), pp. 281 ff.

I also enclose a photo of a page from B.M. Or. 5707 (discussed in item 1, above), and you may keep both photos if you wish.

Best regards,

Sincerely,



Bernard R. Goldstein
Associate Professor

BRG:ls

Claude CAHEN

UNIVERSITÉ DE PARIS
FACULTÉ DES LETTRES
ET SCIENCES HUMAINES

Paris, le 25 déc.70

SECTION DES ETUDES ARABES
ET ISLAMIQUES

Cher Professeur Goitein,

Je suis malheureusement hors d'état de vous envoyer ni l'adresse ni les renseignements que vous souhaitez à propos des chiffres coptes. Je n'ai eu à m'occuper de ceux-ci qu'au sujet du manuscrit d'al-Makhzūmī, qui est paginé en chiffres coptes et date à peu près de la période qui vous intéresse. Mais pour cela les articles classiques que vous connaissez m'ont suffi. Vous n'ignorez évidemment pas qu'il existe à la même époque (et dans l'al-Makhzūmī même) des systèmes différents d'écriture numérique utilisés selon les cas et les milieux en Egypte, pour ne pas parler des autres pays. Si vous pouvez me préciser ce qui vous embarrasse, peut-être aurai-je une idée. Pour les signes utilisés en Occident musulman, le meilleur connaisseur est, je pense, G. Colin, auquel vous pouvez écrire éventuellement aux soins de l'Institut d'Etudes Islamiques, Centre Censier, 13 rue de Santeuil, Paris 5e. Connaissiez-vous l'article de Serjeant et moi-même dans Arabica 1957? Je n'en ai malheureusement plus d'exemplaire à vous envoyer.

Avec mes "season's greetings" comme on dit je crois chez vous, et ma déférente amitié.

Claude CAHEN

Claude Cahen

Princeton (K) 12/25/70 12/25/70
12/25/70 12/25/70 12/25/70 (1)

GRIECHISCH-KOPTISCHE ZIFFERN IN ARABISCHEN MANUSKRIPTE

Die Artikel von Levi Della Vida, *Apunti e quesiti di storia letteraria araba*, RSO, XIV, S. 249 und von Georges S. Colin, *De l'origine grecque des chiffres des Fils*, JA, 1933, 193 ff. veranlassen mich zu folgender Feststellung. Griechische, bezw. koptische Ziffern erscheinen in arabischen Manuskripten häufiger, als der abendländischen Wissenschaft bekannt zu sein scheint. Mir sind solche teils als Paginierung, teils als Kapitelnummern z. B. in folgenden Handschriften begegnet:

- 1) Carullah 1508, enthaltend das *K. al-mudjal* des Abū Ma'šar (Brockelmann, I, 221) datiert 327 h. (Eine nähere Beschreibung dieses alten Codex ist von Herrn Dr. Max Krause zu erwarten).
- 2) Aya Sofya 3632. Sammelband hippokratischer Schriften. (Vergl. Ritter-Walzer, *Arabische Übersetzungen griechischer Ärzte in Stambuler Bibliotheken*, SB. Preuss. AW., Phil.-hist. Klasse 1934, XXVI, Seite 839)
- 3) Ašir Reis 668. Ša'id, *Tabaqat al-umam* (ed. Cheikho 1912), 6.-7. s. h.
- 4) Ašir Reis 1002. Sammelband vom Jahre 783 h., enthaltend a) einen Fürstenspiegel in Form einer Tierfabel unter dem Titel *K. al-asad wal-ganawā*, und b) die bekannte pseudoaristotelische Schrift *K. as-sijasa fi tadbir ar-ri'āsa*.

In den bisher genannten Handschriften dienen die griechisch-koptischen Ziffern zur Paginierung, in der folgenden werden damit die Kapitel gezählt.

5) Fatih 3608. *K. al-bailara* von Muhammad b. Muhammad b. 'Alī, erster Teil, 27 × 20 1/2 cm. 12 Zeilen mamlukisches Nashī. Kein Datum. 183 foll. Telflake:

الجو الاول من كتلي البيطرة تصنيف العبد الفقير الى الله محمد بن محمد بن علي غفر الله له برسم الخزانة الشريفة المملوكية السلطانية الملكية الناصرية المجلدية

الرابطة العادلة الناصرية امير الله سلطان.

Am Rande: 408 سنة 808.

Das Buch beginnt mit einem Fihrist der Kapitel, der anfängt: يشتمل على سبعة وخمسين بابا.

Die Kapitel sind mit griechisch-koptischen

[2] Griechisch-koptische Ziffern in arabischen Manuskripten 213

schen Ziffern gezählt, die in kleinen Kreisen stehen. Die gleichen Ziffern sind auch sonst bei Aufzählungen von Krankheiten und ähnlichem verwendet. Anfang des Textes: الحمد لله على الحمد واستخلصه لنفسه... أما بعد فاني لم ازل بعد ما وهب الله لي من المعرفة. بآلات الروسية وما وهب لي من ليف النظر شديد النقص عن ما وضعه أهل الجدة والبلى من ذوي النيات

1	2	3	4	5	6	7	8	9	10
⦿	⦿	⦿	⦿	⦿	⦿	⦿	⦿	⦿	⦿
11	12	13	14	15	16	17	18	19	
⦿	⦿	⦿	⦿	⦿	⦿	⦿	⦿	⦿	
				20	30	40	50		
				⦿	⦿	⦿	⦿		

Vier rohe Abbildungen von Pferden.

Wie der Anfang beweist, handelt es sich um das Pferdebuch, das sonst unter dem Namen des Ibn alī bekannt ist (vergl. *Der Islam*, 18, 122 zu Velledin 3174).

HELLMUT RITTER.

[Stampato nell'aprile 1936]

L'interessante nota di H. Ritter, che la Direzione della RSO ha avuto la cortesia di comunicarmi in bozza, mi induce a ritornare per un momento sulla questione delle « cifre greche », col solo intento di richiamare l'attenzione dei competenti (tra i quali non oso annoverarmi) su un aspetto di essa che finora non mi sembra sia stato sufficientemente preso in esame. Gli esempi riferiti dal Ritter sono tutti, come egli stesso ha rilevato, di cifre « copte », il che porta a credere che i manoscritti dai quali essi sono desunti siano egiziani. Certamente tale è il suo n. 5, donde sono tolte le cifre sopra riprodotte: il suo frontispizio (la cui fotografia ho potuto vedere per cortesia del Ritter), colla caratteristica « plaque » mamlucca, rivela chiaramente la propria origine. Oltre che egiziani, questi manoscritti sono poi tutti, con molta probabilità, opera di scribi cristiani. Nessuno contiene scritti di argomento religioso islamico: si riferiscono invece tutti a materie quali l'astrologia, la medicina, la veterinaria, la gnomica, che nel mondo culturale arabo sono state (specialmente la medicina) largamente coltivate da cristiani; anche un'opera storica come le *Tabaqat al-umam* per la larga parte fatta alla storia della scienza rientra nella sfera degli interessi culturali dei cristiani di lingua araba.

Das es unter Mu'tasim einen Stallmeister namens Jarum gegeben hat, wird durch Sarraf, *Magari' al-uhud*, S. 95 bestätigt. Verse von ihm, die sein Metier verraten, bei Gahliz, *Dhamm al-quwā'id*, Logat al-'Arab, 9, 27 f.

Che manoscritti copiati in Egitto da cristiani contengano frequentemente cifre copte, sia nella numerazione delle kurrāse e dei fogli, sia nell'indicazione di dati numerici contenuti nel testo, è circostanza più volte constatata. Anche in alcuni manoscritti arabi della Biblioteca Vaticana ho avuto l'occasione di riscontrare: anche qui si tratta sempre (a tacere, s'intende, di quelli di contenuto specificamente cristiano, dove le cifre copte sono addirittura di regola nella numerazione dei fascicoli o dei fogli) di opere copiate da cristiani o tali che, per il loro contenuto, potevano interessare gli ambasciatori cristiani: oltre che alle materie scientifiche, esse si riferiscono anche alla geografia economica dell'Egitto (l'amministrazione egiziana, com'è noto, era in gran parte nelle mani dei cristiani) e alla lessicografia. Cito soltanto qualche esempio.

Vat. ar. 267. Sec. IX/XV. *أصل أقلام بلدان مصر*. Altro titolo f. 2^v: *ذكر أقلام مصر وقبرها* (Paris 1810) p. 588. Il quale tuttavia non dice quasi nulla del carattere del manoscritto. Si tratta di un'abbreviazione della *al-Thulfa as-saniyya* di Ibn al-Qatān (Br. II 131^s Vat. ar. 283), consistente soltanto di una lista, all'ingrosso alfabetica, di nomi di villaggi egiziani; sotto ciascun nome è indicato ff. 6^v-11^v il rispettivo reddito, in cifre copte. Contengono analogo ha il breve scritto contenuto nel Vat. ar. 38 ff. 136^v-137^v.

Vat. ar. 343. Sec. VII/XV. *ذكر أقلام الكنائس* di 'Isā b. 'Alī (Br. I 236. 12. Enc. Isl. I 290-1 [ediz. francese]). Sono numerati da 1 a 10 i fogli delle singole kurrāse (molti numeri sono scomparsi a causa del taglio dei margini compiuto nell'ultima rilettura).

Vat. ar. 315. Miscellanea. Ff. 1-40, sec. VIII/XV. *كتاب الشراب*. *شرب* anonimo; i fogli erano in origine tutti numerati, ma essendo stati i margini tagliati nell'ultima rilettura del codice, la numerazione è quasi sempre scomparsa. Ff. 49-63, sec. IX/XV: è probabilmente un frammento di manuale a uso dei funzionari, contenente indicazioni lessicografiche sull'aspetto esterno dell'uomo (*الكلبي*) e del cavallo (*شيت الجبل*). Soltanto i primi 5 fogli sono numerati.

Vat. ar. 336. Sec. IX/XV? *كتاب الفصيح* di Ta'lab. Il manoscritto è descritto nell'edizione del Barth P. (3) ed è stato collazionato da I. Guidi. Le cifre sono usate nella numerazione dei fogli delle singole kurrāse.

Vat. ar. 1485. Sec. VII/XII. Questo manoscritto è stato ricostituito separandone la maggior parte, rilegata insieme col Vat. ar. 162 (miscellanea arabo-cristiana), e completandola con gli ultimi 24 ff., che erano dispersi entro una raccolta di frammenti segnata col n. 386. Contiene scritti di alchimia e di medicina (per maggiori particolari v. *Elenco dei manoscritti arabi islamici della Biblioteca Vaticana* [Studi e Testi 67]); la sottoscrizione di uno di questi ne dà come raccogliitore un musulmano, il faqih 'Umar al-Hanawī; ma il copista è certamente cristiano, come dimostrano alcune particolarità grafiche e ortografiche, e il manoscritto reca note di possessori cristiani. I primi 126 fogli sono numerati con cifre copte.

Fuori d'Egitto, e fuori dell'ambiente cristiano o cristianizzato, non vi è traccia, almeno per quanto mi consta, dell'uso di cifre greco-copte in manoscritti arabi. Si pone pertanto il quesito: le cifre di Fez segnalate dal Colin e dal Sinchez Pérez e quelle di Toledo segnalate dal González Palencia sono di origine copta o derivano direttamente dalle cifre greche? Nel primo caso (che sembra il più verosimile) esse dovrebbero essere arrivate in Spagna e nel Marocco dagli ambasciatori cristiani di Egitto. Quali siano stati i motivi di tale passaggio (relazioni commerciali? o religiose?) e come esso si sia concretamente svolto è tuttora oscuro, e a porre in chiaro questo punto, tutt'altro che privo d'interesse per la storia delle relazioni tra Oriente e Occidente e tra cristiani e musulmani intorno i secoli XII-XIII, dovrà tendere l'indagine futura.

(G. Levi Della Vida).

LA MISTICA DELL'AKṢARA NEL MAHĀBHĀṢYA CON UN'APPENDICE: LA KĀCIKĀ DI NANDIKĒCVARA

Alla fine del II Āhnikā del *Mahābhāṣya* vien posta la domanda, perché si studino le lettere dell'alfabeto (*akṣarasamānāyopadeśaḥ*, glossa del commentario *Uddṛyā* al semplice *upadeśaḥ* di Patanjali; cfr. anche *varṇajñānam* nella risposta), al che il varttika 91 offre la risposta:

*varṇajñānam vāgviśayo yatra ca brahma vartate |
tadartham iṣṭabuddhyartham laghvartham copadeśyate ||*

relativo *bhāṣya* suona: so 'yam akṣarasamānāyō vāksamānāyāḥ pūṣṭiṇāḥ phalīṇāṁ candrairākravat pratinanḍito veditāyo brahmarāṣiḥ, sarva-vēdāparyupahātāvopīḥ ca jñāne bhavati, matāpitaraḥ cāśya svargē lokē mahatyate.

Il Trapp¹ traduce:

« Die Kenntnis der Laute hat zum Gegenstand die Rede, wo auch das *brahma* wohnt, | Deshalb und des richtigen Verständnisses sowie der Kürze wegen wird es gelehrt.

« Diese Ueberlieferung der Laute (*akṣarasamānāyāḥ*) ist eine Ueberlieferung der Rede (*vāksamānāyāḥ*), eine blühende, fruchtbringende, mond- und sternengleich geschmückte (*candrairākravat pratinanḍitāḥ*), wissenswerte Menge *Brahma*, in ihrer Kenntnis liegt die Erreichung des Verdienstes der guten Tat, die (im Lernen) aller Veden besteht, und die Eltern eines (solchen Menschen) werden im Himmel und auf Erden erhöht ».

Nella traduzione del varttika il Trapp attribuisce *yatra a vāc-* di *vāgviśayo*: ma ciò è grammaticalmente impossibile. La più superficiale considerazione dell'emistichio:

varṇajñānam vāgviśayo yatra ca brahma vartate

¹ Die ersten fünf *Āhnikas* des *Mahābhāṣyam* ins Deutsche überetzt und erklärt von Dr. Valentin Trapp Lipsia 1933. E la prima volta che appare una così estesa traduzione del *Mahābhāṣya* in una lingua europea (finora avevano la traduzione tedesca del primo *āhnikā* ad opera di Danielsson, e quella inglese dello stesso *āhnikā* fatta da Prabhat Chandra Chakravarti), e c'è da augurarsi che questa meritoria fatica, grazie a cui l'opera di Patanjali, tradotta e illustrata da dotte note, viene resa accessibile agli studiosi non strettamente specialisti, possa avere compimento in un avvenire non lontano.

one question under a given ascendant differ in accordance with different questions (forming part of the question asked), which are referred to the letters of the chords of the *zā'irajah* and (in accordance with) the operation applied to finding out the letters from the verse of the poem.⁸⁸¹

Note: The letters of the chords and the table are composed of three basic types. (1) Arabic letters, which are taken at their face value (as numerals). (2) *Ghubār* letters.⁸⁸² They

in 1970/71. Cf. 1:xlili and 298 f., above. He mentions the question below, p. 199, and the answer is given below, p. 213.

The table constituting the *zā'irajah* is not reproduced in all MSS and printed texts. It is found in A, E, and MS. Ragib Paşa (but not in B, C, and D), in the Turkish translation (Istanbul, 1277), and in the second Bulaq edition of 1284. Since the table requires a special sheet, it can, of course, easily become detached from the copy to which it originally belonged.

The letters evolved in the procedure described by Ibn Khaldūn are marked in this translation by boldface type. However, the rationale of their determination and the relationship of the description to the table are by no means clear to me. As in the case of the *zā'irajah* poem, a translation—one might rather call it a transposition of Arabic into English words—is offered here in the hope that it may serve as a basis, however shaky, for future improvement.

⁸⁸¹ The verse is quoted above, 1:240, and below, pp. 211 and 214.

⁸⁸² *Ghubār* means "dust," or rather, in this connection, "abacus," according to S. Gandz, "The Origin of the *ghubār* Numerals, or The Arabian Abacus and the Articali," *Isis*, XVI (1931), 393-424. The *ghubār* letters are the numerals from one to nine, in a form practically identical with that in which the Arabic numerals are written in the West to this day. This is how they look in MS. B, fol. 224a:

1	2	3	4	5	6	7	8	9	10
١	٢	٣	٤	٥	٦	٧	٨	٩	١٠

The *zimām* letters are twenty-seven signs that have the numerical values from one to nine in the units, tens, and hundreds. They are supposed to be of Greek-Coptic origin. Cf. G. S. Colin, "De l'origine grecque des 'chiffres de Fās' et de nos 'chiffres arabes,'" *Journal asiatique*, CCXXII (1933), 193-216; G. Levi Della Vida, "Numerali Greci in documenti arabo-spagnoli," *Rivista degli studi orientali*, XIV (1934), 281-83; J. A. Sánchez Pérez, "Sobre las cifras Rūmies," *al-Andalus*, III (1935), 97-125.

The *zimām* letters have the following forms in MS. B, fol. 225a:

1	2	3	4	5	6	7	8	9
١	٢	٣	٤	٥	٦	٧	٨	٩
10	20	30	40	50	60	70	80	90
١٠	٢٠	٣٠	٤٠	٥٠	٦٠	٧٠	٨٠	٩٠
100	200	300	400	500	600	700	800	900
١٠٠	٢٠٠	٣٠٠	٤٠٠	٥٠٠	٦٠٠	٧٠٠	٨٠٠	٩٠٠

The sign ١٠٠٠ is apparently 1,000.

ب ت ج د ه و ز ح ط ظ ع ف ق ك ل م ن هـ و

ا م ن س ع ق ر ش ت
 خ د ض ظ غ
 ملك هذه الكنائس فضل الله
 تعالى الفقير مسمى ايام الحقيقه
 جامع سدي احمد الى ابد
 نفعنا الله

وَالْمَوَدَّةُ لِمَا كَانَ الْأَكْلَافُ
 الْقِسْمُ عَلَى كَيْفِهَا وَفَرْجُهُ
 وَالْمَوَدَّةُ لِمَا كَانَ الْأَكْلَافُ
 الْقِسْمُ عَلَى كَيْفِهَا وَفَرْجُهُ
 وَالْمَوَدَّةُ لِمَا كَانَ الْأَكْلَافُ
 الْقِسْمُ عَلَى كَيْفِهَا وَفَرْجُهُ

عظيمة السوء الذي
ارسلنا في هذه
فروع بعد السوء
مثل الزخامة

بسم الله الرحمن الرحيم
الحمد لله الذي هدانا لهذا
الذي كنا لنهتدي لولا أن هدانا الله

ما قبله من نعم
و ما بعده من نعم
و ما بعده من نعم
و ما بعده من نعم

بسم الله الرحمن الرحيم
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

الحمد لله رب العالمين
الحمد لله رب العالمين

Received from Bernard
Fockstein

Boston Beach, ms. 3673. fol. 82^v.

$\gamma \quad \Delta \quad 1$

$\omega \quad \bar{B} \quad 2$

$\sqrt{\quad} \quad \bar{f} \quad 3$

$\rho \quad \gamma \quad \delta \quad 4$

$\xi \quad \varepsilon \quad 5$

$\omega \quad \varepsilon \quad \xi \quad 6$

$\gamma \quad \bar{\xi} \quad 7$

$\gamma \quad \bar{H} \quad 8$

$\theta \quad \bar{\theta} \quad 9$

$\gamma \quad L \quad \bar{T} \quad 10$

$\gamma \quad \bar{t} \quad \bar{H} \quad 20$

$\gamma \quad \bar{\lambda} \quad 30$

$\gamma \quad \bar{\mu} \quad 40$

$\gamma \quad \bar{N} \quad 50$

$\gamma \quad \bar{\xi} \quad 60$

$\gamma \quad \bar{o} \quad 70$

$\gamma \quad \bar{\omega} \quad \pi \quad 80$

$\frac{1}{2}$
 $\frac{1}{4}$

$\gamma \quad \bar{90}$

$22 \quad 2 \quad P \quad 100$

$\bar{c} \quad 200$

$\bar{t} \quad 2 \quad \bar{T} \quad 300$

$\bar{c} \quad (\bar{r}) \quad 400$

$\bar{c} \quad \bar{\phi} \quad 500$

$\bar{c} \quad (\bar{x}) \quad 600$

$\bar{t} \quad (\bar{y}) \quad 700$

$\bar{c} \quad (\bar{\omega}) \quad 800$

$\bar{y} \quad 900$

$\bar{\pi} \quad 1000$

$\bar{\pi}$

$\bar{\pi}$

$\bar{\pi}$

L. Stern, Koptische Grammatik
Weigel, Leipzig 1880

Zu Stern, Kopt. Grammatik p. 131.

DIE KOPTISCH-ARABISCHEN ZIFFERN
NACH UNTERÄGYPTISCHEN HANDSCHRIFTEN.

1	ā	>	>	100	ṗ	2	2	BRÜCHE	
2	ḅ	ω		200	ē	⌈	⌊		
3	ṛ	⌈	⌊	300	ṛ	⌊	⌊	$\frac{1}{2}$	⌈
4	ā	/	/	400	ṽ	⌊	⌊	$\frac{1}{3}$	⌊
5	ē	⌊	⌊	500	ḥ	⌊	⌊	$\frac{1}{4}$	⌊
6	ē	ω	⌊	600	ṽ	⌊	⌊	$\frac{1}{5}$	⌊
7	ē	⌊	⌊	700	ṽ	⌊	⌊	$\frac{1}{6}$	⌊
8	ḥ(k)	⌊	⌊	800	ṽ	⌊	⌊	$\frac{1}{7}$	⌊
9	ḥ	⌊	⌊	900	ṽ	⌊	⌊	$\frac{1}{8}$	⌊
10	ī	⌊	⌊	1000	ṽ	⌊	⌊	$\frac{1}{9}$	⌊
20	ḥ	⌊	⌊	2000	ṽ	⌊	⌊	$\frac{1}{10}$	⌊
30	ā	⌊	⌊	3000	ṽ	⌊	⌊	$\frac{2}{3}$	⌊
40	ṽ	⌊	⌊	4000	ṽ	⌊	⌊	$\frac{2}{5}$	⌊
50	ṽ	⌊	⌊	5000	ṽ	⌊	⌊	$\frac{4}{5}$	⌊
60	ē	⌊	⌊	6000	ṽ	⌊	⌊	$\frac{1}{5} + \frac{1}{7}$	⌊
70	ō	⌊	⌊	7000	ṽ	⌊	⌊	$\frac{1}{5} \cdot \frac{1}{7}$	⌊
80	ṽ	⌊	⌊	8000	ṽ	⌊	⌊		
90	ṽ	⌊	⌊	9000	ṽ	⌊	⌊		

hagamma
or
stigma

gopra

Possibly to be read from
left to right

J U 400

Y O 20

V T 300

λ ✓

ρ μ

~ 5 L 80

W μ

Y O

D J 1000
1000

T X J 1000
1000

O U O

1000 1000

J L

J U

X μ

T X J

25 8

0.000 00
1000 1000
1344
Grishenfeld
P N

1000 1000

TX 7

1 13

11 5

Gottlieb Worrell p 44 no. XX ← 101 ad 108

Grammaire Copte, par Alexis Mallon, Beyrouth 1926
between pages 226-227

1 ā 2 3 7

50 ̄ ̄ ̄ ̄

2 ̄ ̄ ̄

60 ̄ ̄ ̄ ̄

3 ̄ ̄ ̄

70 ̄ ̄ ̄ ̄

4 ̄ ̄ ̄ ̄

80 ̄ ̄ ̄ ̄

5 ̄ ̄ ̄ ̄

90 ̄ ̄ ̄ ̄

6 ̄ ̄ ̄ ̄

100 ̄ ̄ ̄ ̄

7 ̄ ̄ ̄ ̄

200 ̄ ̄ ̄ ̄

8 ̄ ̄ ̄ ̄ ̄ ̄ [also 5 m.c.]

300 ̄ ̄ ̄ ̄ ̄ ̄

9 ̄ ̄ ̄ ̄ ̄ ̄

400 ̄ ̄ ̄ ̄ ̄ ̄

10 ̄ ̄ ̄ ̄ ̄ ̄

500 ̄ ̄ ̄ ̄ ̄ ̄

20 ̄ ̄ ̄ ̄ ̄ ̄

600 ̄ ̄ ̄ ̄ ̄ ̄

30 ̄ ̄ ̄ ̄ ̄ ̄

700 ̄ ̄ ̄ ̄ ̄ ̄

40 ̄ ̄ ̄ ̄ ̄ ̄

800 ̄ ̄ ̄ ̄ ̄ ̄

900 ̄ ̄ ̄ ̄ ̄ ̄ 1000 ̄ ̄ ̄ ̄ ̄ ̄