

Proposal to encode the Khwarezmian script in Unicode

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1 Introduction

This proposal is a revision and expansion of “Preliminary proposal to encode the Khwarezmian script in Unicode” (L2/17-054). This version contains additional background details, an expansion of the character repertoire, and several new specimens of usage.

2 Background

The proposed script was used in the region known as Khwarezm between the 2nd century CE and 9th century CE for writing the Khwarezmian language (ISO 639: xco). It was replaced by the Arabic script in the 11th century, and the language was eventually superseded by Turkish around the 14th century. Khwarezm was located in Central Asia, at the delta of the river Amu Darya, and now lies divided between present-day Uzbekistan, Kazakhstan, and Turkmenistan

The script is referred to in English scholarly literature as ‘Khwarazmian’, ‘Khwarazmian’, as well as the alternate forms ‘Chorasmian’ and ‘Choresmian’. It is known in Russian as ‘Хорезм’. The English identifier ‘Khwarezmian’ is used for the Unicode script block.

Khwarezmian is a right-to-left *abjad*, derived from Imperial Aramaic. It is related to other Aramaic scripts of Central Asia that were used for writing Iranian languages, such as Parthian and Sogdian. Khwarezmian underwent considerably less change than these scripts and retained older features in terms of structure and letterforms (Tolstov and Livshitz 1964: 234). A comparison of related scripts is shown in table 1.

The earliest attested records in the script are coin inscriptions (see figures 2–14) and documents on wood and parchment from the end of the 2nd century CE, and the latest records are inscriptions on silver vessels (see figures 15–17) and ossuaries (see figures 18–26) from the late 7th century. The script types used in these records have common features and may be considered historical and material styles of a ‘Khwarezmian’ writing system. They may be appropriately unified within a single ‘Khwarezmian’ encoding in Unicode.

3 Script details

3.1 Character repertoire

The proposed repertoire contains 28 characters: 21 letters and 7 numbers, 1 heterogram. The encoded set may differ from traditional and scholarly inventories of script varieties that occur in written and inscriptional sources. Such differences naturally arise from the requirements for digitally representing a script in plain text and for preserving the semantics of characters.

Traditional names for Khwarezmian letters are not attested. For this reason, the proposed Unicode character names are based upon analogues in the ‘Imperial Aramaic’ block. These names also correspond to Unicode names for characters of Iranian script such as ‘Inscriptional Parthian’, ‘Inscriptional Pahlavi’, ‘Old Sogdian’. In this document, names in italics refer to scholarly names for graphemes while names in small capitals refer to proposed Unicode characters, eg. **𐭀** is *aleph* and KHWAREZMIAN LETTER ALEPH. For sake of brevity, the descriptor ‘KHWAREZMIAN LETTER’ is dropped when referring to Khwarezmian characters, eg. KHWAREZMIAN LETTER ALEPH is referred to as ALEPH. Characters of other scripts are designated by their full Unicode names. Latin transliteration of Khwarezmian letters follows the current scholarly convention.

The representative glyphs are based upon the letterforms of the 7th century, such as those found in ossuaries at Tok Kala. These forms reflect the distinctiveness of the script substantially more than the archaic forms of numismatic inscriptions.

The repertoire is based upon the twenty-two letters of the Aramaic *abjad*. Of these the letters *teth*, *sadhe*, and *qoph* do not have analogues in Khwarezmian. The letters *aleph* and *nun* have special forms when used at the end of a word.

3.1.1 Letters

Glyph	Character name	Latin
𐭀	KHWAREZMIAN LETTER ALEPH	ʾ
𐭁	KHWAREZMIAN LETTER FINAL ALEPH	ʾ
𐭂	KHWAREZMIAN LETTER BETH	β ; B
𐭃	KHWAREZMIAN LETTER GIMEL	γ ; G
𐭄	KHWAREZMIAN LETTER DALETH	d
𐭅	KHWAREZMIAN LETTER HE	h
𐭆	KHWAREZMIAN LETTER WAW	w
𐭇	KHWAREZMIAN LETTER ZAYIN	z
𐭈	KHWAREZMIAN LETTER HETH	x ; Ḥ
𐭉	KHWAREZMIAN LETTER YODH	y

𐭅	KHWAREZMIAN LETTER KAPH	k
𐭆	KHWAREZMIAN LETTER LAMEDH	δ ; L
𐭇	KHWAREZMIAN LETTER MEM	m
𐭈	KHWAREZMIAN LETTER NUN	n
𐭉	KHWAREZMIAN LETTER FINAL NUN	n
𐭊	KHWAREZMIAN LETTER SAMEKH	s
𐭋	KHWAREZMIAN LETTER AYIN	ʿ
𐭌	KHWAREZMIAN LETTER PE	p
𐭍	KHWAREZMIAN LETTER RESH	r
𐭎	KHWAREZMIAN LETTER SHIN	š ; Š
𐭏	KHWAREZMIAN LETTER TAW	t

Variant forms are attested for some letters, eg. 𐭎 for 𐭎 *mem*; 𐭎 for 𐭎 *shin*. In some inscriptions the letters *waw*, *zayin*, *yodh* are represented using a highly similar if not identical form, in others they are distinguished.

3.1.2 Numbers

Glyph	Character name	Numeric value
𐭐	KHWAREZMIAN NUMBER ONE	1
𐭑	KHWAREZMIAN NUMBER TWO	2
𐭒	KHWAREZMIAN NUMBER THREE	3
𐭓	KHWAREZMIAN NUMBER FOUR	4
𐭔	KHWAREZMIAN NUMBER TEN	10
𐭕	KHWAREZMIAN NUMBER TWENTY	20
𐭖	KHWAREZMIAN NUMBER ONE HUNDRED	100

Primary units The primary units are expressed using repetitions of the sign 𐭐 that are generally grouped in sets of three or four and separated by spaces, eg. 𐭐𐭐 for 2, 𐭐𐭐𐭐 for 3, 𐭐𐭐𐭐 𐭐𐭐𐭐 for 8. As the script is non-conjoining, no simple method exists for representing the ligated repetitions of 𐭐. For that reason, the numbers 𐭐 ONE .. 𐭐𐭐𐭐 FOUR are encoded atomically. This model for ONE .. FOUR follows the Unicode encoding for

Inscriptional Parthian, eg. **𐭪** U+10B58 INSCRIPTIONAL PARTHIAN NUMBER ONE .. **𐭪𐭪𐭪𐭪** U+10B5B INSCRIPTIONAL PARTHIAN NUMBER FOUR. The numbers 5–9 are written using sequences of ONE .. FOUR arranged in groups separated by spaces.

Tens The **𐭮** TEN resembles a vertically compressed **𐭪** LAMEDH. The shapes for **𐭮𐭮** TWENTY is formed from vertical stacks of **𐭮** TEN. Multiples of 10 greater than 20 are produced using appropriate repetitions and groupings of TEN and TWENTY.

Hundreds The number 100 is written using **𐭮𐭮𐭮** ONE HUNDRED. It is a stylized form of the Aramaic form. The ONE HUNDRED also functions as a unit mark for the hundreds. Multiples of hundred are represented by prefixing the appropriate groupings of ONE .. FOUR before ONE HUNDRED.

3.2 Punctuation

Spaces are commonly used for separating words in the ossuary inscriptions. There are no special signs for punctuation.

3.3 Line-breaking

There are no formal rules for the breaking of words at end of line. In digital layouts, line-breaks may occur after any character.

3.4 Cursive writing

In the majority of inscriptions letters are freestanding. In some sources, the strokes of adjacent letters of a word may connect or overlap. While the script does not have intrinsic cursive properties, the sources indicate a tendency to join *aleph*, *lamedh*, *samekh*, with the following letter. In order to represent such ligatures, the Unicode control character **𐤀** U+200D ZERO WIDTH JOINER (abbreviated as ZWJ) may be used:

	regular	ligature	ligature sequence
<i>aw</i>	𐭪	𐭪𐭮	ALEPH, ZWJ, WAW
<i>ay</i>	𐭪	𐭪𐭮𐭤	ALEPH, ZWJ, YODH
<i>ar</i>	𐭪	𐭪𐭮𐭣	ALEPH, ZWJ, RESH
<i>lk</i>	𐭪𐭮	𐭪𐭮𐭪𐭫	LAMEDH, ZWJ, KAPH
<i>sy</i>	𐭪𐭮	𐭪𐭮𐭪𐭮𐭤	SAMEKH, ZWJ, YODH

These ligatures are attested in numismatic and ossuary inscriptions, and may be considered a common feature of the orthography.

3.5 Collation

The sort order of the letters follows the encoded order:

Ⲁ ALEPH << Ⲁ FINAL ALEPH < Ⲃ BETH < Ⲅ GIMEL < Ⲇ DALETH < Ⲉ HE < Ⲋ WAW <
 Ⲍ ZAYIN < Ⲏ HETH < Ⲑ YODH < Ⲓ KAPH < Ⲕ LAMEDH < Ⲗ MEM < Ⲙ NUN <<
 Ⲛ FINAL NUN < Ⲝ SAMEKH < Ⲟ AYIN < Ⲡ PE < ⲡ RESH < ⲣ SHIN < ⲥ TAW

3.6 Character Properties

3.6.1 UnicodeData.txt

```
10F00;KHWAREZMIAN LETTER ALEPH;Lo;0;R;;;;N;;;;;
10F01;KHWAREZMIAN LETTER FINAL ALEPH;Lo;0;R;;;;N;;;;;
10F02;KHWAREZMIAN LETTER BETH;Lo;0;R;;;;N;;;;;
10F03;KHWAREZMIAN LETTER GIMEL;Lo;0;R;;;;N;;;;;
10F04;KHWAREZMIAN LETTER DALETH;Lo;0;R;;;;N;;;;;
10F05;KHWAREZMIAN LETTER HE;Lo;0;R;;;;N;;;;;
10F06;KHWAREZMIAN LETTER WAW;Lo;0;R;;;;N;;;;;
10F07;KHWAREZMIAN LETTER ZAYIN;Lo;0;R;;;;N;;;;;
10F08;KHWAREZMIAN LETTER HETH;Lo;0;R;;;;N;;;;;
10F09;<reserved>
10F0A;KHWAREZMIAN LETTER YODH;Lo;0;R;;;;N;;;;;
10F0B;KHWAREZMIAN LETTER KAPH;Lo;0;R;;;;N;;;;;
10F0C;KHWAREZMIAN LETTER LAMEDH;Lo;0;R;;;;N;;;;;
10F0D;KHWAREZMIAN LETTER MEM;Lo;0;R;;;;N;;;;;
10F0E;KHWAREZMIAN LETTER NUN;Lo;0;R;;;;N;;;;;
10F0F;KHWAREZMIAN LETTER FINAL NUN;Lo;0;R;;;;N;;;;;
10F10;KHWAREZMIAN LETTER SAMEKH;Lo;0;R;;;;N;;;;;
10F11;KHWAREZMIAN LETTER AYIN;Lo;0;R;;;;N;;;;;
10F12;KHWAREZMIAN LETTER PE;Lo;0;R;;;;N;;;;;
10F13;<reserved>
10F14;<reserved>
10F15;KHWAREZMIAN LETTER RESH;Lo;0;R;;;;N;;;;;
10F16;KHWAREZMIAN LETTER SHIN;Lo;0;R;;;;N;;;;;
10F17;KHWAREZMIAN LETTER TAW;Lo;0;R;;;;N;;;;;
10F18;KHWAREZMIAN NUMBER ONE;No;0;R;;;1;N;;;;;
10F19;KHWAREZMIAN NUMBER TWO;No;0;R;;;2;N;;;;;
10F1A;KHWAREZMIAN NUMBER THREE;No;0;R;;;3;N;;;;;
10F1B;KHWAREZMIAN NUMBER FOUR;No;0;R;;;4;N;;;;;
10F1C;KHWAREZMIAN NUMBER TEN;No;0;R;;;10;N;;;;;
10F1D;KHWAREZMIAN NUMBER TWENTY;No;0;R;;;20;N;;;;;
10F1E;KHWAREZMIAN NUMBER ONE HUNDRED;No;0;R;;;100;N;;;;;
```

3.6.2 LineBreak.txt

```
10F00..10F17;AL # Lo [21] KHWAREZMIAN LETTER ALEPH..KHWAREZMIAN LETTER TAW
10F18..10F1E;AL # No [7] KHWAREZMIAN NUMBER ONE..KHWAREZMIAN NUMBER ONE HUNDRED
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	10F0	10F1
0	𐭀 10F00	𐭁 10F10
1	𐭂 10F01	𐭃 10F11
2	𐭄 10F02	𐭅 10F12
3	𐭆 10F03	
4	𐭇 10F04	
5	𐭈 10F05	𐭉 10F15
6	𐭊 10F06	𐭋 10F16
7	𐭌 10F07	𐭍 10F17
8	𐭎 10F08	𐭏 10F18
9		𐭑 10F19
A	𐭒 10F0A	𐭓 10F1A
B	𐭔 10F0B	𐭕 10F1B
C	𐭖 10F0C	𐭗 10F1C
D	𐭙 10F0D	𐭚 10F1D
E	𐭛 10F0E	𐭜 10F1E
F	𐭝 10F0F	

Letters

10F00	𐭀	KHWAREZMIAN LETTER ALEPH
10F01	𐭂	KHWAREZMIAN LETTER FINAL ALEPH
10F02	𐭄	KHWAREZMIAN LETTER BETH
10F03	𐭆	KHWAREZMIAN LETTER GIMEL
10F04	𐭇	KHWAREZMIAN LETTER DALETH
10F05	𐭈	KHWAREZMIAN LETTER HE
10F06	𐭊	KHWAREZMIAN LETTER WAW
10F07	𐭌	KHWAREZMIAN LETTER ZAYIN
10F08	𐭎	KHWAREZMIAN LETTER HETH
10F09	𐭏	<reserved>
10F0A	𐭒	KHWAREZMIAN LETTER YODH
10F0B	𐭔	KHWAREZMIAN LETTER KAPH
10F0C	𐭖	KHWAREZMIAN LETTER LAMEDH
10F0D	𐭙	KHWAREZMIAN LETTER MEM
10F0E	𐭛	KHWAREZMIAN LETTER NUN
10F0F	𐭝	KHWAREZMIAN LETTER FINAL NUN
10F10	𐭁	KHWAREZMIAN LETTER SAMEKH
10F11	𐭃	KHWAREZMIAN LETTER AYIN
10F12	𐭅	KHWAREZMIAN LETTER PE
10F13	𐭇	<reserved>
10F14	𐭉	<reserved>
10F15	𐭉	KHWAREZMIAN LETTER RESH
10F16	𐭋	KHWAREZMIAN LETTER SHIN
10F17	𐭍	KHWAREZMIAN LETTER TAW

Numbers

10F18	𐭏	KHWAREZMIAN NUMBER ONE
10F19	𐭑	KHWAREZMIAN NUMBER TWO
10F1A	𐭓	KHWAREZMIAN NUMBER THREE
10F1B	𐭕	KHWAREZMIAN NUMBER FOUR
10F1C	𐭗	KHWAREZMIAN NUMBER TEN
10F1D	𐭚	KHWAREZMIAN NUMBER TWENTY
10F1E	𐭜	KHWAREZMIAN NUMBER ONE HUNDRED

	Khwarezmian	Old Sogdian	Inscriptional Pahlavi	Inscriptional Parthian	Imperial Aramaic
<i>aleph</i>	ا	𐰀	𐭀	𐭁	א
<i>beth</i>	ב	𐰁	𐭁	𐭂	ב
<i>gimel</i>	ג	𐰂	𐭂	𐭃	ג
<i>daleth</i>	ד	(𐰃)	𐭃	𐭄	ד
<i>he</i>	ה	𐰄, 𐰅	𐭄	𐭅	ה
<i>waw</i>	ו	𐰆	𐭅	𐭆	ו
<i>zayin</i>	ז	𐰇	𐭆	𐭇	ז
<i>heth</i>	ח	𐰈	𐭇	𐭈	ח
<i>teth</i>	—	—	𐭈	𐭉	ט
<i>yodh</i>	י	𐰉	𐭉	𐭊	י
<i>kaph</i>	כ	𐰊	𐭊	𐭋	כ
<i>lamedh</i>	ל	𐰋	𐭋	𐭌	ל
<i>mem</i>	מ	𐰌	𐭌	𐭍	מ
<i>nun</i>	נ	𐰍	𐭍	𐭎	נ
<i>samekh</i>	ס	𐰎	𐭎	𐭏	ס
<i>ayin</i>	ע	𐰏, (𐰃)	(𐭏)	𐭐	ע
<i>pe</i>	פ	𐰐	𐭏	𐭑	פ
<i>sadhe</i>	—	𐰑	𐭐	𐭒	ץ
<i>qoph</i>	—	—	(𐭐)	𐭑	ק
<i>resh</i>	ר	𐰒	(𐭏)	𐭑	ר
<i>shin</i>	ש	𐰓	𐭑	𐭒	ש
<i>taw</i>	ת	𐰔	𐭒	𐭓	ת

Table 1: Comparison of Khwarezmian letters with those in Unicode blocks for related Iranian scripts and Aramaic. Parenthesis indicate that a letter has been unified with another in the respective encoding. In Inscriptional Pahlavi, *ayin* and *resh* are unified with *waw*, and *qoph* with *mem*. For Old Sogdian, *daleth* and regular *ayin* are unified with *resh*.

	Khwarezmian	Old Sogdian	Inscriptional Pahlavi	Inscriptional Parthian	Imperial Aramaic
ONE	𐭠	𐭡	𐭢	𐭣	𐭤
TWO	𐭠𐭠	𐭡𐭡	𐭢𐭢	𐭣𐭣	𐭤𐭤
THREE	𐭠𐭠𐭠	𐭡𐭡𐭡	𐭢𐭢𐭢	𐭣𐭣𐭣	𐭤𐭤𐭤
FOUR	𐭠𐭠𐭠𐭠	𐭡𐭡𐭡𐭡	𐭢𐭢𐭢𐭢	𐭣𐭣𐭣𐭣	—
FIVE	—	𐭡𐭡𐭡𐭡𐭡	—	—	—
TEN	𐭠𐭠𐭠	𐭡𐭠	𐭢𐭠	𐭣𐭠	𐭤𐭠
TWENTY	𐭠𐭠𐭠𐭠	𐭡𐭠𐭠	𐭢𐭠𐭠	𐭣𐭠𐭠	𐭤𐭠𐭠
THIRTY	—	𐭡𐭠𐭠𐭠	—	—	—
ONE HUNDRED	𐭠𐭠𐭠𐭠𐭠	𐭡𐭠𐭠𐭠𐭠	𐭢𐭠𐭠𐭠𐭠	𐭣𐭠𐭠𐭠𐭠	𐭤𐭠𐭠𐭠𐭠
ONE THOUSAND	—	—	𐭢𐭠𐭠𐭠𐭠𐭠	𐭣𐭠𐭠𐭠𐭠𐭠	𐭤𐭠𐭠𐭠𐭠𐭠
TEN THOUSAND	—	—	—	—	𐭤𐭠𐭠𐭠𐭠𐭠𐭠
ONE HALF	—	𐭡𐭠𐭠𐭠𐭠𐭠	—	—	—

Table 2: Comparison of Khwarezmian numerical signs with those in Unicode blocks for related Iranian scripts and Aramaic.

[illegible]

Figure 1: Inventory of characters on Khwarezmian coins (from Vainberg 1977: Table 8).

№ по каталогу		№ по каталогу	
Б²V/3		Б²V	
شاهنشاهی خوارزمشاهی	130	شاهنشاهی خوارزمشاهی	209
شاهنشاهی خوارزمشاهی	134	Б²VI	
شاهنشاهی خوارزمشاهی	135	شاهنشاهی خوارزمشاهی	194
شاهنشاهی خوارزمشاهی	137	Б²VII	
شاهنشاهی خوارزمشاهی	138	شاهنشاهی خوارزمشاهی	207
شاهنشاهی خوارزمشاهی	139	Б²VIII	
شاهنشاهی خوارزمشاهی	143	شاهنشاهی خوارزمشاهی	218
شاهنشاهی خوارزمشاهی	144	Б²IX	
شاهنشاهی خوارزمشاهی	148	... شاهی	227
شاهنشاهی خوارزمشاهی	151	... شاهی	228
شاهنشاهی خوارزمشاهی	154	... شاهی	234
شاهنشاهی خوارزمشاهی	156	... شاهی	235
شاهنشاهی خوارزمشاهی	158	... شاهی	236
Б²V/4		... شاهی	237
شاهنشاهی خوارزمشاهی	164	... شاهی	249
شاهنشاهی خوارزمشاهی	174	Б²X	
Б²V		شاهنشاهی خوارزمشاهی	355
شاهنشاهی خوارزمشاهی	10	شاهنشاهی خوارزمشاهی	356
شاهنشاهی خوارزمشاهی	11	شاهنشاهی خوارزمشاهی	357
شاهنشاهی خوارزمشاهی	12	شاهنشاهی خوارزمشاهی	361
		شاهنشاهی خوارزمشاهی	362
		شاهنشاهی خوارزمشاهی	367
		شاهنشاهی خوارزمشاهی	368
		شاهنشاهی خوارزمشاهی	370
		شاهنشاهی خوارزمشاهی	378

Figure 2: Inscriptions on Khwarezmian coins (from Vainberg 1977: Table 1).

N по каталогу		N по каталогу	
B ² 13		B ² 14	
...	381	...	460
...	384	...	461
...	387	...	463
...	398	...	470
...	403	...	471
...	421	...	674
...	424	...	677
B ² 14		B ² 19	
...	427	...	678
...	428	...	684
...	429	...	769
...	430	...	770
...	431	...	771
...	435	...	777
...	440	...	791
...	441	...	794
...	443	...	919
...	444	...	920
...	445	...	
...	453	...	

Figure 3: Inscriptions on Khwarezmian coins (from Vainberg 1977: Table 2).

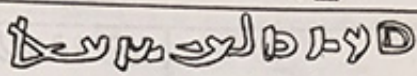
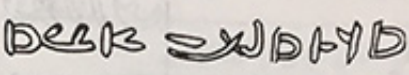
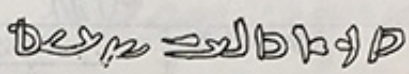
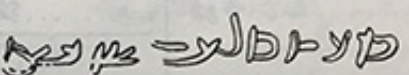
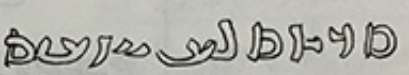
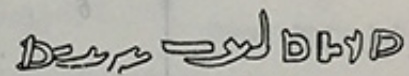
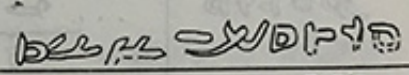
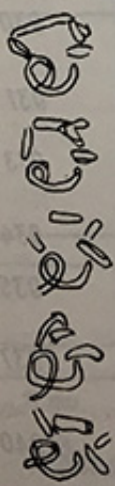
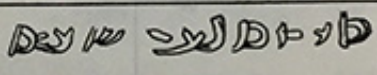
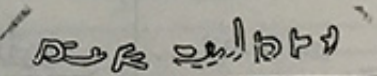
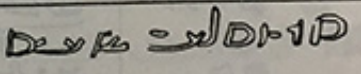
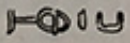
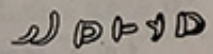
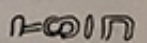
b ² 20		r III	
	734		960
	735		961
	736		962
	737		963
	738		964
	739		965
	741		966
b ² 21		r III/3	
	762		969
	763		979
	764	r III/4	
	766		997
	767		
			998
			

Figure 4: Inscriptions on Khwarezmian coins (from Vainberg 1977: Table 3).

n. cm.		ođ. cm.	
		r II	
	...	...	921
	...	...	922
	...	...	923
		r III/1	
...	...	...	945
...	...	...	924
...	...	...	946
...	...	...	947
...	...	...	948
...	...	...	949
...	...	...	925
...	...	...	926
...	...	...	930
...	...	...	931
...	...	...	933
...	...	...	934
...	...	...	935
...	...	...	937
...	...	...	940
...	...	...	942

Figure 5: Inscriptions on Khwarezmian coins (from Vainberg 1977: Table 4).

n. cm.		ob. cm.	
r II/2			
... 300 ...		959	
r III/5			
...	1000		
...	1001		
...	1002		
r IV/6			
...	1007		
...	1008		
...	1009		
...	1010		
...	1011		
...	1012		
...	1015		
r IV			
...	1004		
...	1005		
...	1006		
r IV/8			
...	1018		
r 13			
...	1365	...	1364
...	1376	...	1384
...	1371	...	1372
...	1371	...	1366

Figure 6: Inscriptions on Khwarezmian coins (from Vainberg 1977: Table 5).

rV		
.....	.....	1030
.....	.....	1031
.....	.....	1032
.....	.....	1033
.....	.....	1034
.....	.....	1035
.....	.....	1036
.....	.....	1037
.....	.....	1038
.....	.....	1039
rV/9		
.....	.....	1060
.....	.....	1061
.....	.....	1051
.....	.....	1087
.....	.....	1088
.....	.....	1089
.....	.....	1085
.....	.....	1081
rV/10		
.....	.....	1135

Figure 7: Inscriptions on Khwarezmian coins (from Vainberg 1977: Table 6).

Г VI a		
xoxoxox	شاهنشاهی خوارزمشاهی	1142
xoxoxox	شاهنشاهی خوارزمشاهی	1143
xoxoxox	شاهنشاهی خوارزمشاهی	1144
xoxoxox	شاهنشاهی خوارزمشاهی	1145
xoxoxox	شاهنشاهی خوارزمشاهی	1146
Г VII b		
xoxoxox	شاهنشاهی خوارزمشاهی	1147
xoxoxox	شاهنشاهی خوارزمشاهی	1148
xoxoxox	شاهنشاهی خوارزمشاهی	1149
xoxoxox	شاهنشاهی خوارزمشاهی	1150
xoxoxox	شاهنشاهی خوارزمشاهی	1151
xoxoxox	شاهنشاهی خوارزمشاهی	1152
xoxoxox	شاهنشاهی خوارزمشاهی	1153
xoxoxox	شاهنشاهی خوارزمشاهی	1155
Г II		
	شاهنشاهی خوارزمشاهی	1241
	شاهنشاهی خوارزمشاهی	1258
Г 12		
	شاهنشاهی خوارزمشاهی	Клад из Ток-Колы

Figure 8: Inscriptions on Khwarezmian coins (from Vainberg 1977: Table 7).

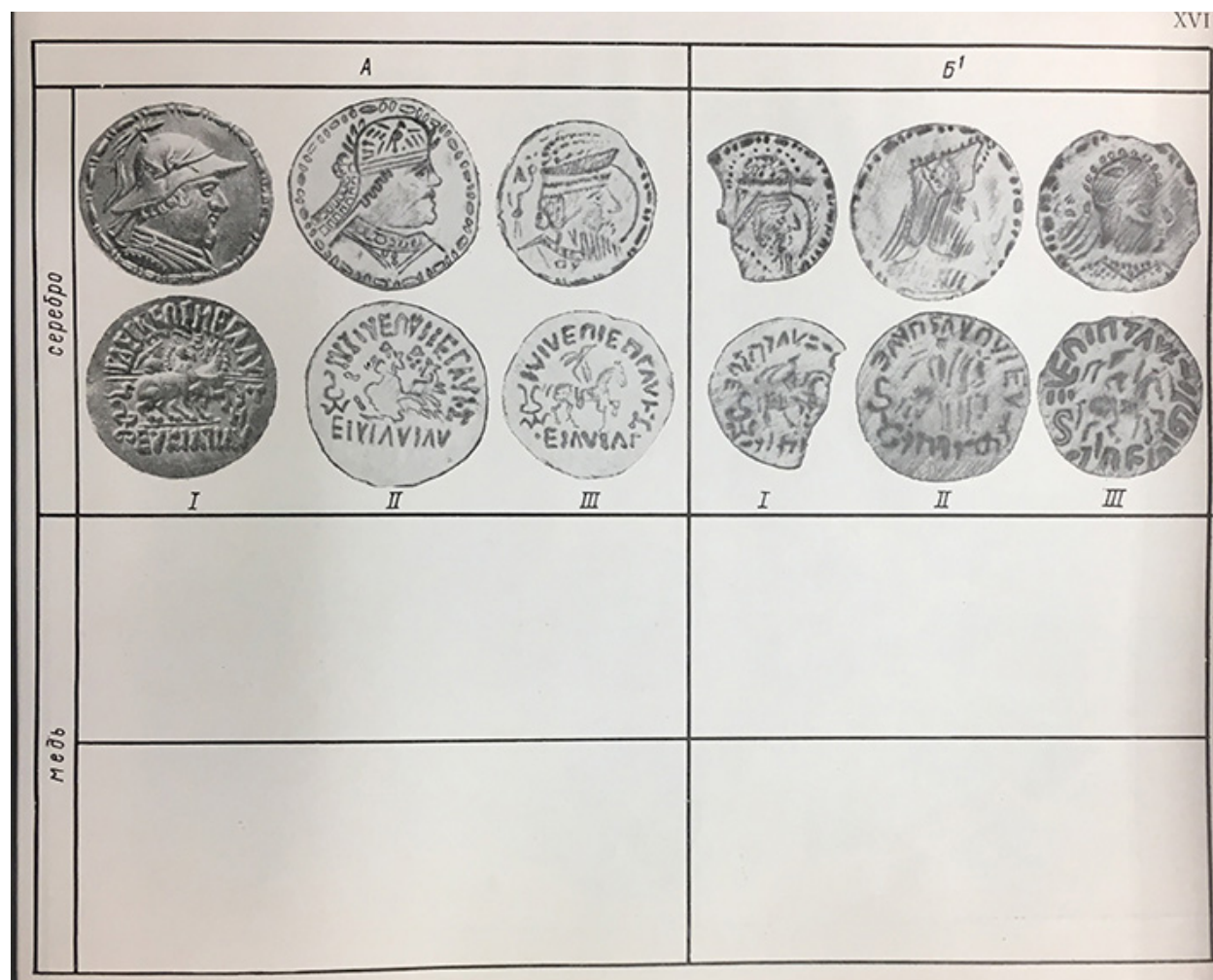


Figure 9: Khwarezmian coins (from Vainberg 1977: Table 16).

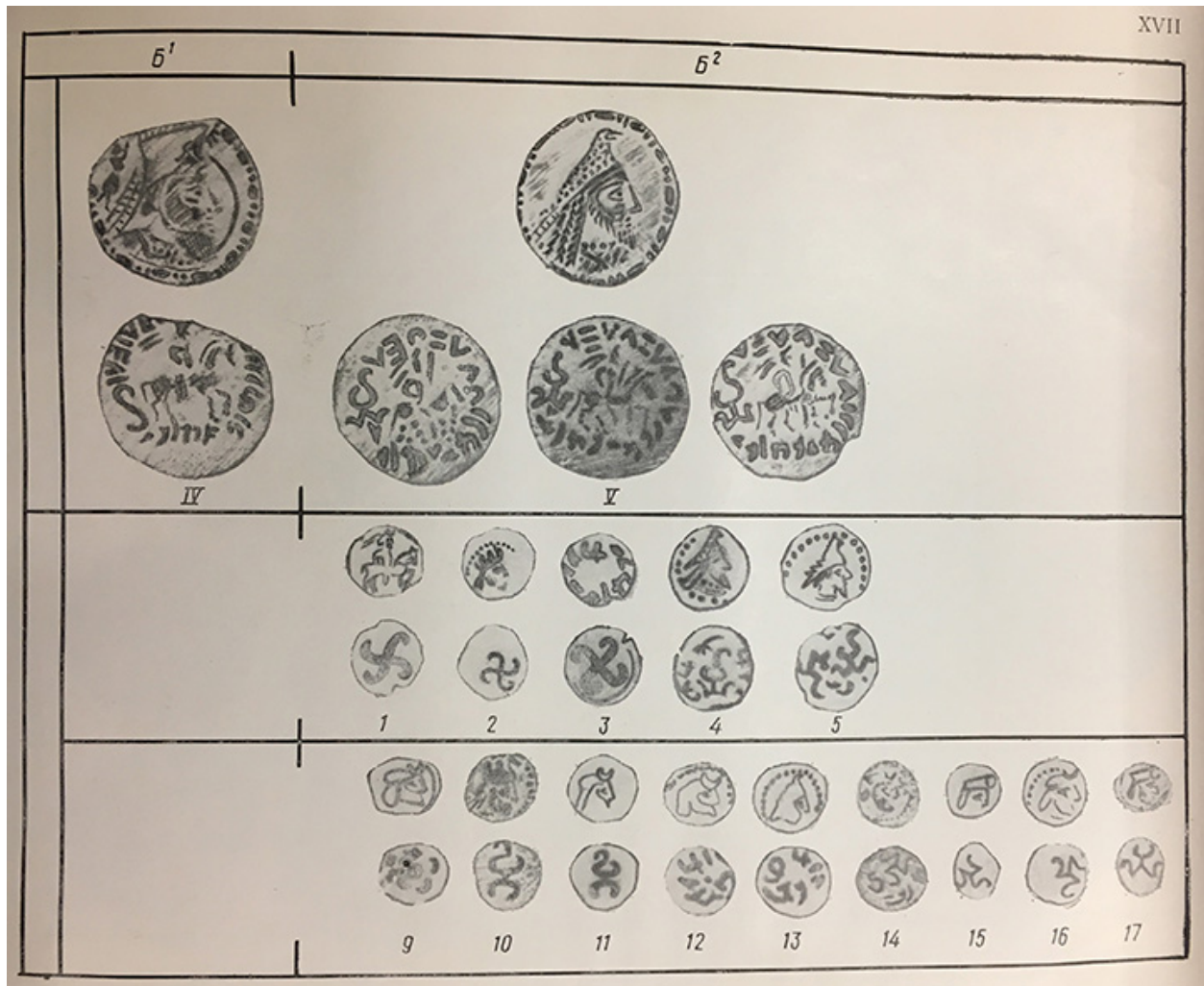


Figure 10: Khwarezmian coins (from Vainberg 1977: Table 17).

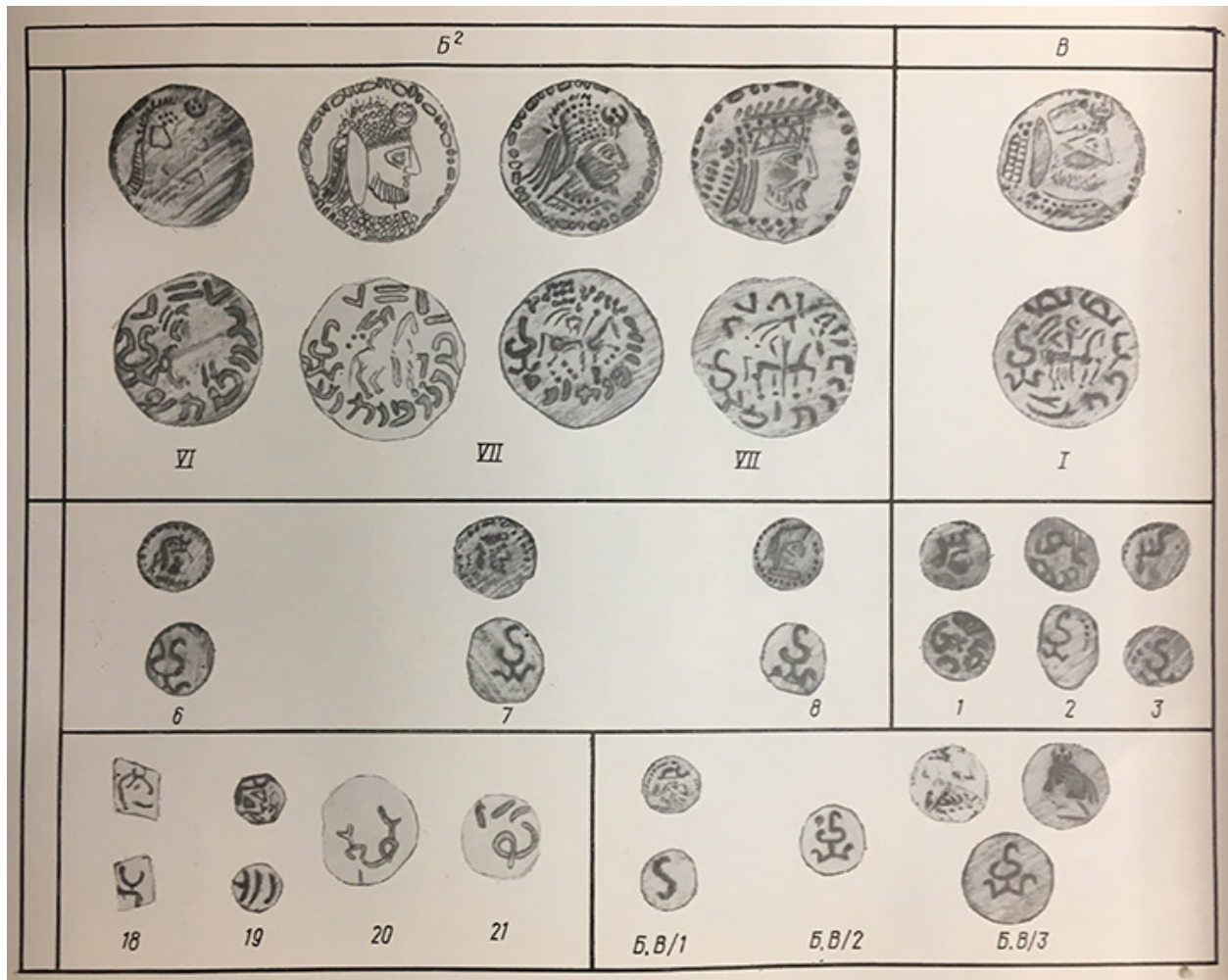


Figure 11: Khwarezmian coins (from Vainberg 1977: Table 18).

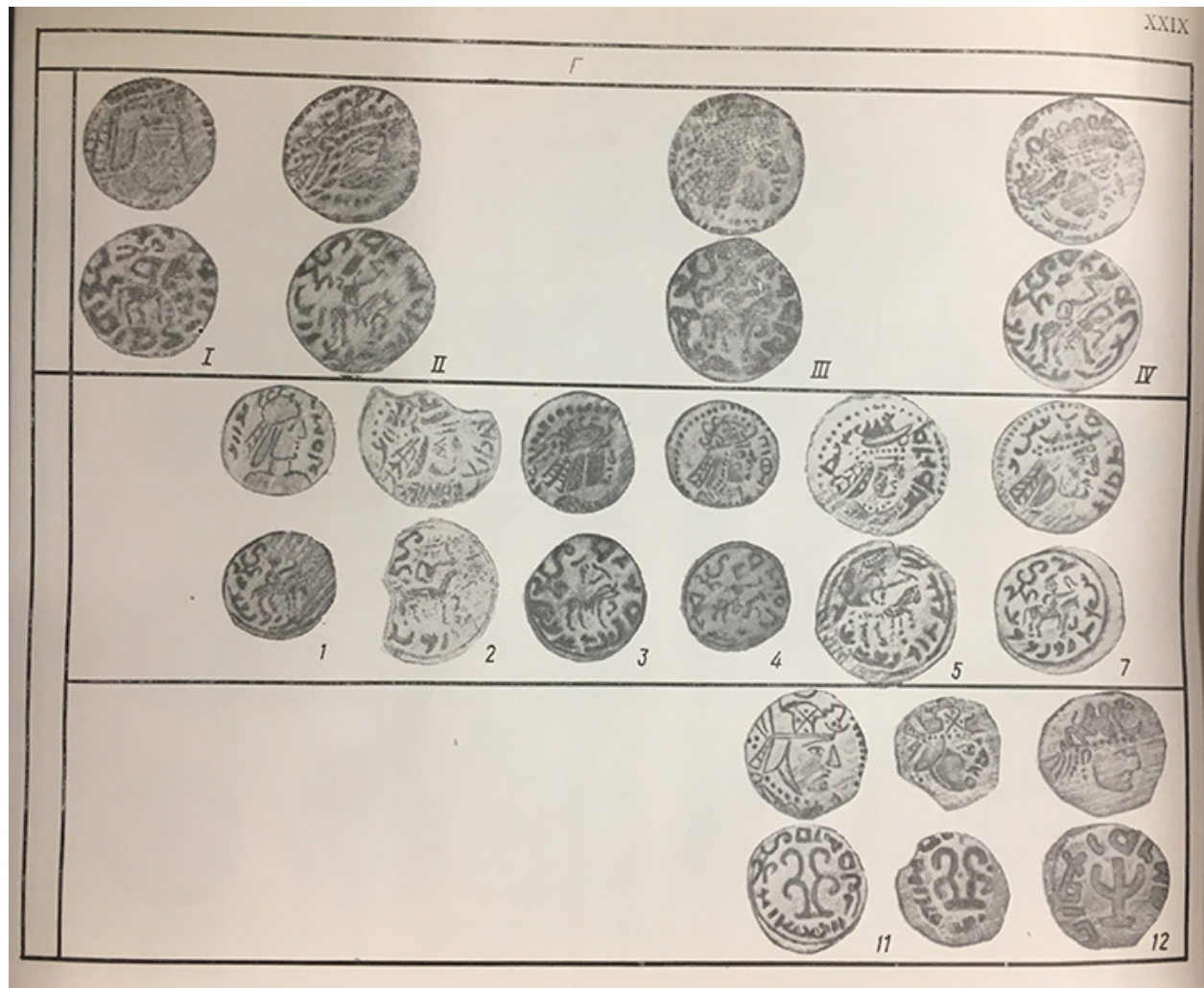


Figure 12: Khwarezmian coins (from Vainberg 1977: Table 19).

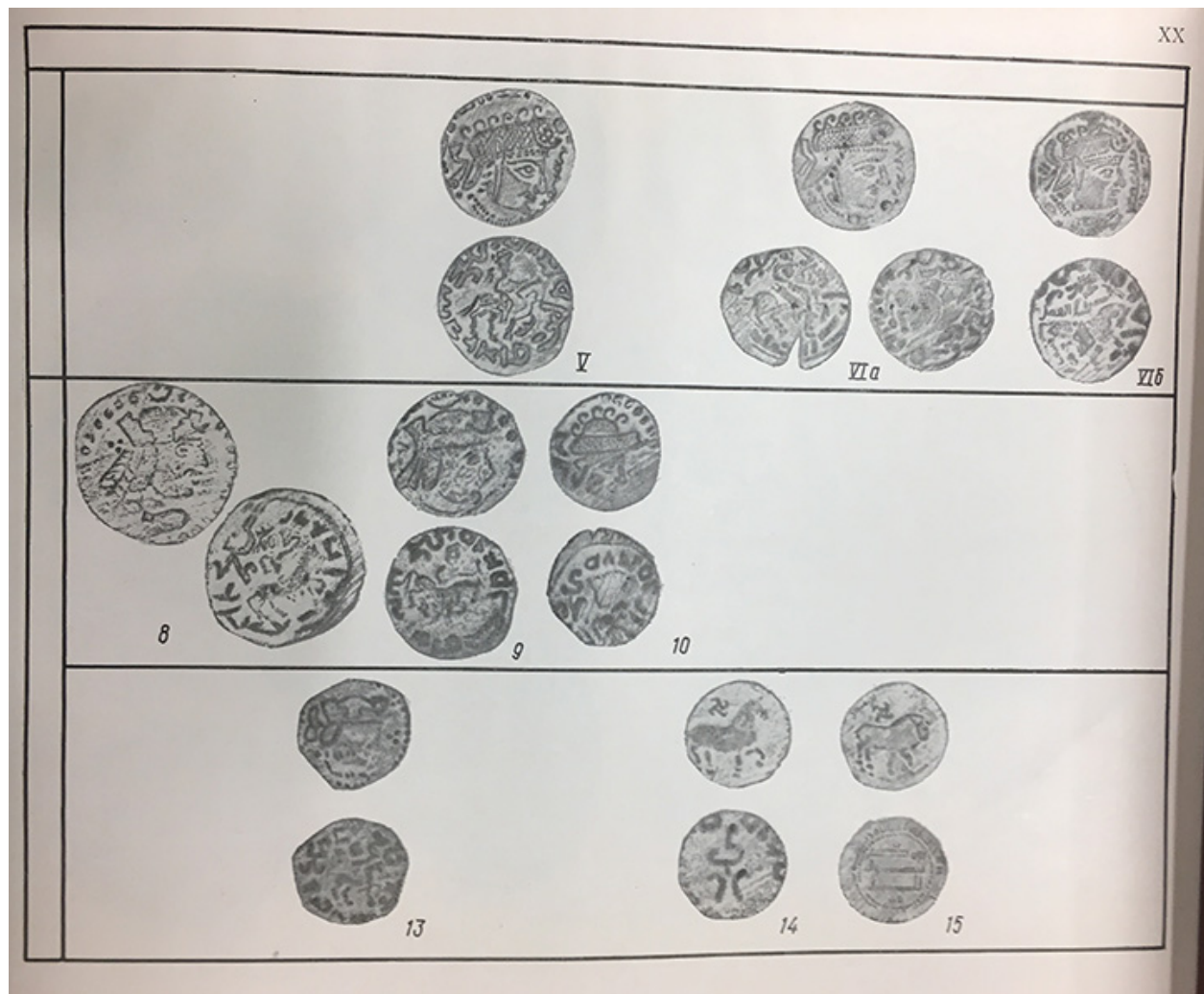


Figure 13: Khwarezmian coins (from Vainberg 1977: Table 20).



Coin of Bivarsar, first half of 4th century CE. Obverse: Crowned bust of bearded king. Reverse: Partially Greek, partial Khwarezmian **כּוּוּעַר מלכּ** *bywrsr MLK'*, with a *tamgha* at left. Class: Vainberg (1977) type B²VI.

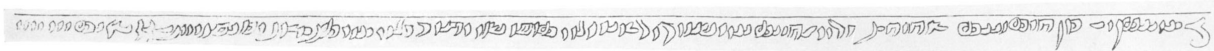


Coin of Tutukhas, late 5th or early 6th century CE. Obverse: Crowned bust of bearded king. Reverse: Khwarezmian **טוּטוּחַ מלכּ** *tutuxs / tytyxs MLK'*, with a *tamgha* at left. Class: Vainberg (1977) type BI.



Coin of Sawshafan, middle 8th century CE. Obverse: Crowned bust of bearded king. Reverse: Khwarezmian **מלכּ מר'י סאשפן** *MR'Y MLK' sy'wrsn*, with a *tamgha* at left. Class: Vainberg (1977) type ΓV.

Figure 14: Khwarezmian coins (from “Coins of Central Asia”).

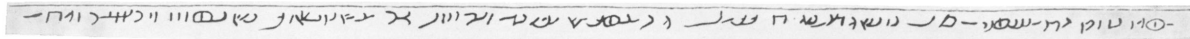


Pl. 1:a *Choresmian No. 1*: A.D. 658. Inscription from silver phiale in the British Museum, Smirnov, *VS*, pl. XIX:43.



Pl. 1:b *Choresmian No. 1*: A.D. 658. Silver phiale in the British Museum, see pl. 1:a. Diam. 12.7 cm. Photo courtesy the Trustees of the British Museum.

Figure 15: Khwarezmian inscription on a silver bowl (from Azarpay 1969: Plate 1:a, b).



Pl. 3:a *Choresmian No. 2*: A.D. 538 (probably 638). Inscription from silver phiale in the Hermitage Museum, Leningrad, Smirnov, *VŠ*, pl. XIX: 42.



Pl. 3:b *Choresmian No. 2*: A.D. 538 (probably 638). Silver phiale in the Hermitage Museum, Leningrad, see pl. 3:a. Diam. 10.6 cm.



Pl. 3:c *Choresmian No. 2*: A.D. 538 (probably 638). Silver phiale in the Hermitage Museum, Leningrad, see pl. 3:b. Smirnov, *VŠ*, pl. XVIII:42.

Figure 16: Khwarezmian inscription on a silver bowl (from Azarpay 1969: Plate 3:a, b, c).

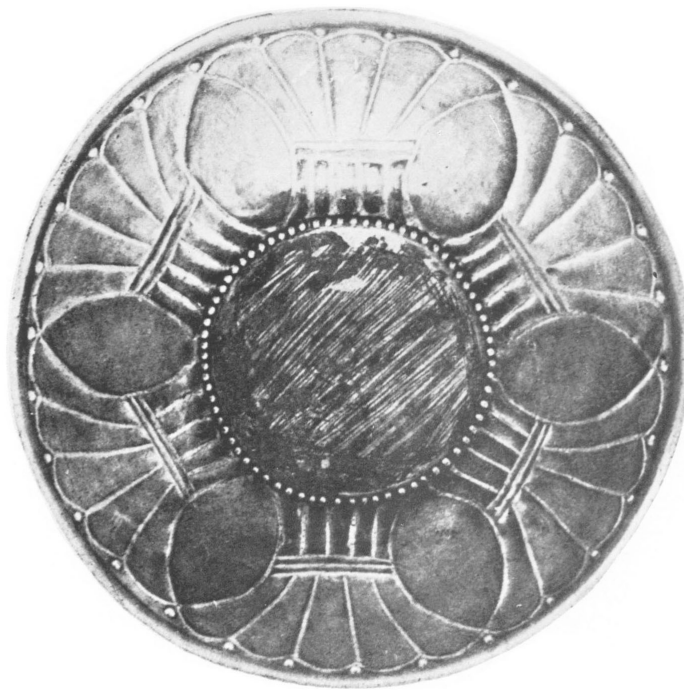


Figure 17: Khwarezmian inscription on a silver bowl (from Azarpay 1969: Plate 11:a, b, c).

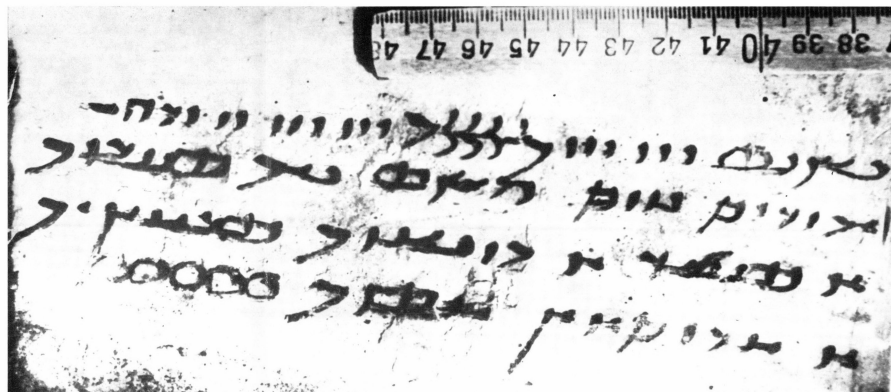


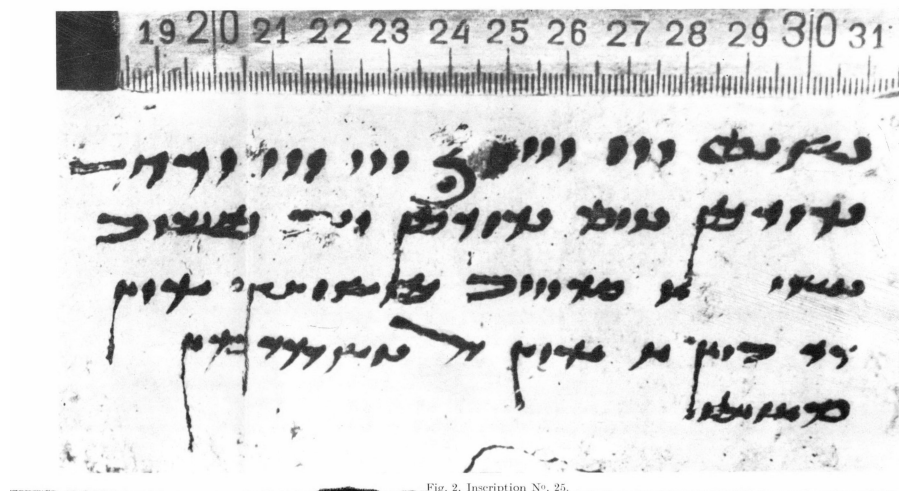
Fig. 1. Inscription No. 52.

כסנל ווו ווו זזז כ ווו וו וועה
 גהועול כוול לופל ננה שנוול
 גו שנוול גו הונל ? שגכנגנג
 גו גועולגנגן גנול

BSNT III III C XX XX XX X III III II YRH'
 'hwrym BYWM gwst ZNH tnyk
 'y tnb'r 'y hwnsk (?) t'b'n'n'k (?)
 'y 'yrw|zm'w'n 'ztyk

Year 678. Month Ahurem, day Gost. This
 ossuary contains the body of hwnsk
 t'b'n'n'k, son of 'yrw|zm'w'n

Figure 18: Ossuary inscription from Tok Kala (from Tolstov and Livshitz 1964: Figure 1).



כסנל ווו ווו ו 3 ווו וו ועה-
 כעועלן כוול כעועלן נ? שנכעור
 נוכו ? גו כעוורל שוכונגנו געון
 דר כוין גו געון ול נוכ דעללגן
 כעגנולו

BSNT III III I C III II YRH'
 brwrtn BYWM brwrtn ZN[H] tnbryk
 nwsy (?) 'y srywyk tsys'n'ny 'rw'n
 GD kw'n[y] 'y 'rw'n 'L nws grdm'n
 pr'ny'ty

Year 705. Month Rawacina, day Rawacina. This is the
 ossuary of srywyk [son] of tsys'n,
 soul [whose] [possesses] kayan farrah. Soul [his]
 may be sent to the beautiful Paradise.

Figure 19: Ossuary inscription from Tok Kala (from Tolstov and Livshitz 1964: Figure 2).

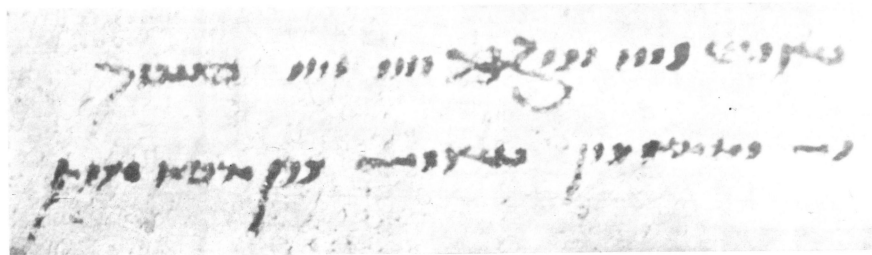


Fig. 3. Inscription No. 19.

BSNT IIII III C XX X IIII IIII tnbryk
y' w'z'sw|ydyn nwsy' ?grn 'rt'w 'rw'n

Year 738. This is the ossuary of w'z'swdyn (?)
[May] in the beautiful Paradise [be sent his] true soul.

Figure 20: Ossuary inscription from Tok Kala (from Tolstov and Livshitz 1964: Figure 3).

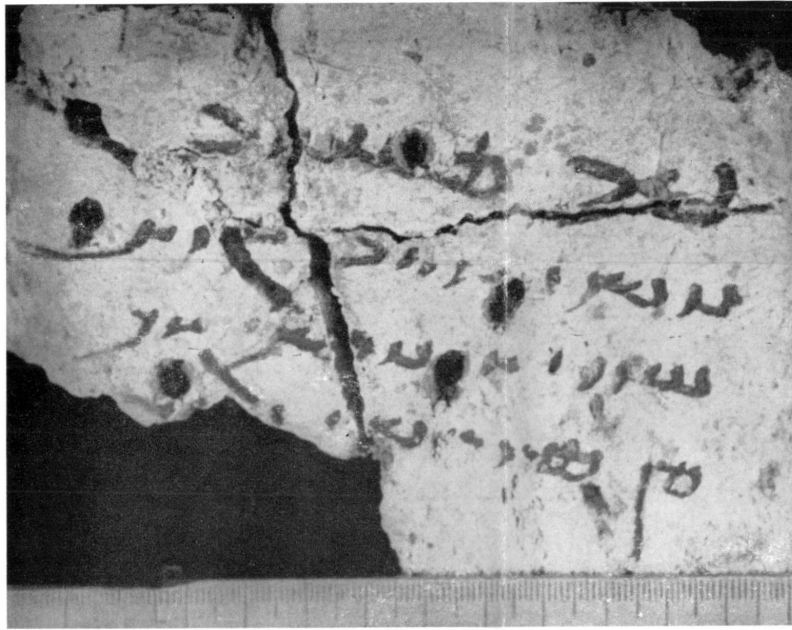


Fig. 4. Inscription N^o. 8.

ננה לנכעור
 גונקו שקהל גונו
 גו נולקשו ? גור
 לנ לוניהונדו גל ...

ZNH tn[br]yk
 '(?)ynsy [sh]k '.wn[y]
 ...'y nyksy ? 'YK
 MN ty'zhwndy 'L ...

This is the ossuary of woman (? shk, daughter of '.w ...
 May [soul her be sent] from the [world] of full danger to
 (the world of safety?).

Figure 21: Ossuary inscription from Tok Kala (from Tolstov and Livshitz 1964: Figure 4).

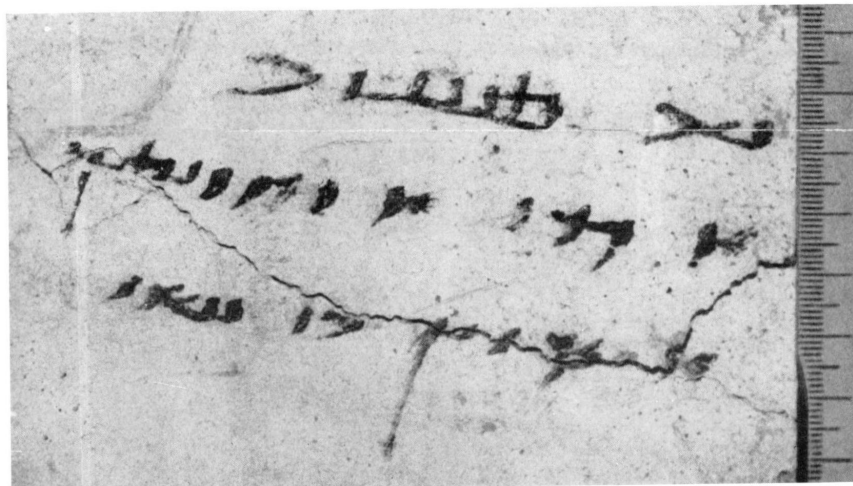


Fig. 5. Inscription No. 69.

ננה לנכעור
 גו לעז גו ורונלכ
 גו געגנ לו נושן

ZNH tnbryk
 'y gry 'y whwntk
 'y 'rw'n kw nwsy

This ossuary contains the body of wwnxk
 Soul [his may be sent] to the beautiful [Paraside].

Figure 22: Ossuary inscription from Tok Kala (from Tolstov and Livshitz 1964: Figure 5).

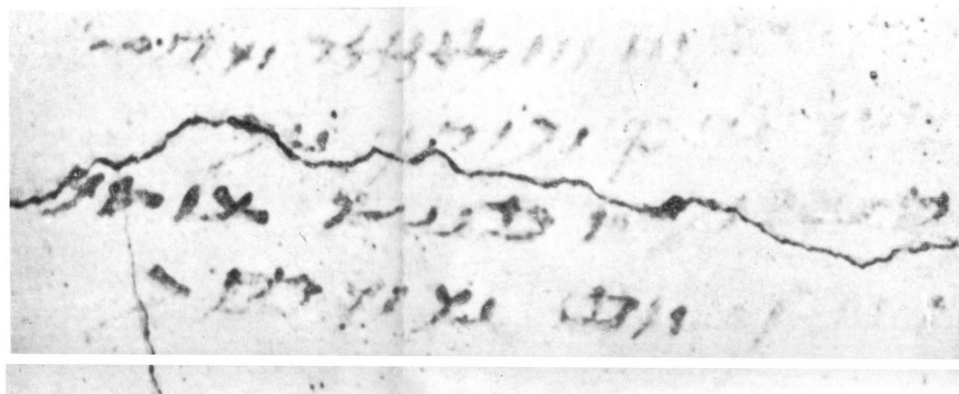


Fig. 6. Inscription No. 39.

כסננל ווו ווו ווו ווו ווו ווו ווו
 והולנ ננה
 חנ... וק גו חנכנע געווגנ

[BSNT] III III C XX XX XX X YRH'
 m[try?] [BYW]M whwmn ZNH
 tn[br]yk 'y tnb'r 'rw'zd
 w ... n[y] zyt brwrtyk

Year 690, month of Miri, day of Ahumen. This ossuary
 holds the body of 'rw'zd w...n, son of Hravardik.

Figure 23: Ossuary inscription from Tok Kala (from Tolstov and Livshitz 1964: Figure 6).

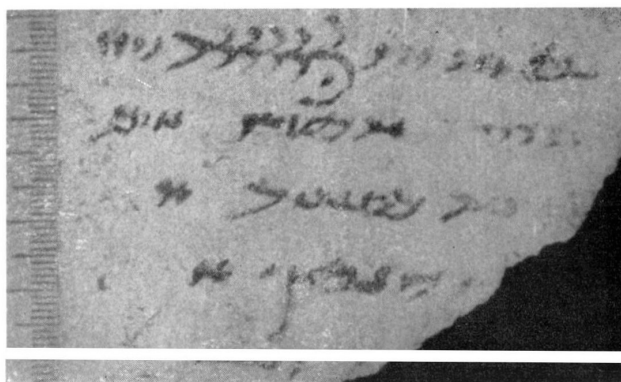


Fig. 7. Inscription No. 12

כשנל וו וו וו וו וו וו וו וו
 ועה געלשנכ כזול
 ננה שנכעול גו
 כנלגנו גו
 [...]

[BS]NT III III C XX XX XX XX X III
 YRH' 'rtwys BYWM
 [] ZNH tnbryk 'y
 [] s|hnt'ny 'y
 [] y'

Year 694, month of Ardwis, day [] This ossuary ...
 [of son] of ...s|hnt...

Figure 24: Ossuary inscription from Tok Kala (from Tolstov and Livshitz 1964: Figure 7).

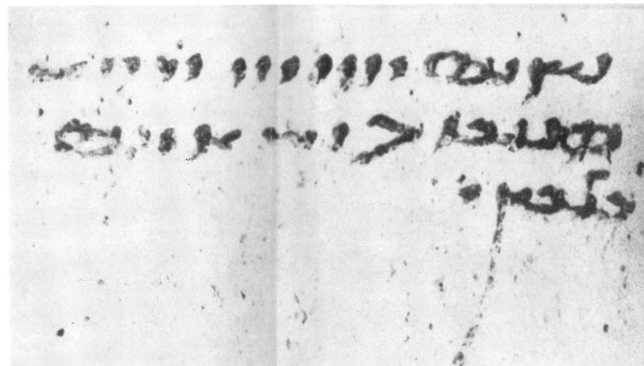


Fig. 8. Inscription No. 26.

כסנח ווו ווו ועה
 חנכחור יג יג ועה
 ריכנו

BSNT III III YRH'
 tnbyrk y' 'y wrt
 k'k'ny

Year 7[00]. Month. This is the ossuary of wrt, [of son] of k'k.

Figure 25: Ossuary inscription from Tok Kala (from Tolstov and Livshitz 1964: Figure 8).



Fig. 9. Inscription No. 21.

כסנל

ועה

והולנ

הונענ

והונ

BSNT

YRH'

whwmn' [ZHN tnbryk 'y hw'r'n

whnwy(?)

Figure 26: Ossuary inscription from Tok Kala (from Tolstov and Livshitz 1964: Figure 9).