A LaTeXperiment of hieroglyphic typesetting

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1 License

Sesh Nesout, a TeX package for hieroglyphic typesetting
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2 Introduction

If you use LaTeX, and want to typeset hieroglyphic texts, this package is for you. If you want to typeset hieroglyphs, and don't know LaTeX, then have a look at the file `EGypto.tex`, to get an idea of what LaTeX looks like.

You can use also use the (ugly, but getting better) fonts for your own programs. There are both a metafont and gsf (postscript type I) fonts. The fonts were made with the GNU fontutils.

3 Installation

As LaTeX works on so many machines, I can't really give you detailed informations. So I assume you know a little about it. You should copy the files `EgypUtil.sty` `egypto.sty` `hierLtx.sty` `hiero.sty`, and `OT1diacr.fd` where they belong. You might need to rename `OT1diacr` to T1diacr.fd. If you are using a Unix system, these files should be on your `TEXINPUTS` path. The directory where your own LaTeX sources are should do in most cases, anyway.

Then, put your fonts where they can be used. On Unix systems, you will need to put the `.tfm` files in one of the directories listed in the `TEXFONTS` environment variable, and the `pk` files in one of the directories listed in you `PKFONTS` environment variable. Or `TEXPKS`. Or something else. It depends on your printing program.

If you need another base resolution than 300dpi, you should get the metafont sources (HieroFonts) of the fonts and then make a 1.2, 1, $1/1.2$, $1/(1.2)^2$ magnificated version of each hieroglyphic font (A-Z and Aa.mf); you should also build the diacritic fonts diacr7,8,9,10 and 12, and a magstep 0 version of the Egyp font (parts of cartouche and others). To do this you need to have the metafont program installed. Actually, if you have the GNU font utilities, I distribute all files needed to redraw the fonts.

Then you should go to the SeshNesout directory and build the sesh program (read the README file). It is a text to latex converter, with a "*manuel de codage*"-like syntax.

4 Typesetting hieroglyphs

I provide two ways of typesetting hieroglyphs. The first one only uses the power of LaTeX, and the second use a C program as a pre-processor.

4.1 The hard way

If you want to use only LaTeX, and nothing else, you must include the option `hierLtx` in your `\documentstyle` line, like this:

```
\documentstyle[hierLtx]{article}
```

To type a hieroglyphic text directly, you can use the `\hieroglyphe` macro. You type the signs like this:

```
\hieroglyphe{A/1}
```

to get:

Beware! the numbers aren't exactly the one in Gardiner's grammar. To find which number gives you which sign, you may use the `testfont` TEX source, like this:

let's suppose you want the sign list for "man". You type (on a unix box, but the idea is the same elsewhere. Your input is *slanted,* the computer's output is in typewriter font) :

```
tex testfont
This is TeX--XeT, Version 3.1415--1.0 (C version 6.1)
TeX--XeT Copyright (C) 1992 by Dante e.V.
(/usr/TeX/lib/texmf/tex/plain/testfont.tex
Name of the font to test = A
Now type a test command (\help for help):)
*\table

*\bye
[1]
Output written on testfont.dvi (1 page, 6088 bytes).
Transcript written on testfont.log.
```

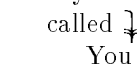
Then, you can print the table.

To type a complicated text, you can , like in the "manuel", type : '`-`' to separate two groups horizontally, and '`:`' to separate two groups vertically. Accolades allow you to group signs.

```
\hieroglyphe{{Q/3-X/1}:N/1}
```

nice, isn't it[1]?

4.2 The "Easy" Way

If you have a C compiler, you can build[2] the `sesh` program. I intended it to be called  , but it's a little hard to type on a keyboard.

You might also want the *Inventaire des signes hiéroglyphiques en vue de leur saisie informatique,* [**?**] hereafter called *manuel de codage* (in English, French, and German).

To use it, write your LATEX source with hieroglyphic texts in a `hieroglyph` environment. Then, use sesh as a filter to obtain a LATEXable result. As any polite program, sesh reads stdin and writes on stdout.

[1] Actually, I'm cheating. See the file `Ltxex.tex` for real example.

[2] see the file `BUILD.txt`

example: if your LaTeX file, called `foo.htx`, is :

```
\documentstyle[hiero]{article}
\begin{document}
\begin{hieroglyph}
A1 \end{hieroglyph}
\end{document}
```

you should proceed like this :

```
sesh < foo.htx > foo.tex
latex foo.tex
```

and you should get a dvi file containing the sign . Beware that you can't use LaTeX comments between the beginning and the end of the `hieroglyph` environment.

4.2.1 Hieroglyphs

The "alphabetic" signs can be called like shown in table ??. The Letters A, i, a, w, b, p, f, m, n, r, h, H, x, X, z, s, S, q, k, g, t, T, d, and D are used both for the hieroglyphs and their transliteration. Signs are named, either after their transliterations (for example, `xpr` is) or after their Gardiner Code. See appendix ?? for a list of codes. For a complete list, see [?], which intends to be *the* format for encoding hieroglyphic texts.

A few codes are used for signs variants; these are `pA'` and `k'` which write and .

4.2.2 Special signs

You won't type only hieroglyphs. So:

.. is a space

. is a half-space

// is

h/ is

v/ is

/ is

o is

O is

SIGN	TRANS-LITTERATION	CODE
	3	A
	i	i
	$‘$	a
	w	w
	w	W
	b	b
	p	p
	f	f
	m	m
	n	n
	n	N
	r	r
	h	h
	h	H
	$\underline{h}$	x
	$\underline{h}$	X
	z	z
	s	s
	$\check{s}$	S
	$\underline{k}$	q
	k	k
	g	g
	t	t
	$\underline{t}$	T
	d	d
	$\underline{d}$	D

Table 1: Alphabetical signs

4.2.3 Grouping Signs

You can type adjacent signs with '-' , stack signs with ':', group signs with parenthesis, and use '*' to separate signs on the same level.

A few examples:

```
\begin{hieroglyph}
p*t:pt-..-A-..-n:(x:t)*U30-A-xAst-qmA
.end{hieroglyph}
```

gives

you can type a '=' sign *after* a '-' or a ':' to indicate a grammatical ending. More important, a *space, or any number of spaces, tabulations, or newlines,* indicate a word ending[3] I strongly recommend that you type the word-separation spaces. The package will then try to cut the lines at word-separations, which is nicer and easier to read[4].

4.2.4 Sign Modifiers

\\ after a signs inverts it: `A1-A1\` writes

\s*n* where *n* is 1,2,3 or 4, diminishes the sign size:

```
A1-A1\s1-A1\s2-A1\s3-A1\s4
```

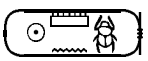
draws

R*n* rotates a figure by the angle *n*. THIS IS NOT FINISHED and uses postscript. `anx\R30`

4.2.5 Cartouches and parenthesis

`<- and ->` draw a cartouche around the embedded text :

```
<-ra-mn:n-xpr->
```

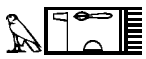


`<S and >` draw a serekh :

[3]Note that in the "manuel", a word ending is *one* space. This is extremely inconvenient for LaTeX, and, in fact, for the general purpose of directly typing the text.

[4]You can use spaces directly to separate words, if you want, without using a '-'. but this won't be conform to the manuel encoding.

```
G5 -<S-nTr-X:t->
```



`<H >` draw a *hwt*-sign.

```
<H-pA-i-i-A1-Htp:t*p>
```

The letters *b, m and e,* used after the beginning sign, allow you to draw only the beginning, middle, or ending of construction. So, for example, `<Se-nTr->` writes .

The parenthesis are:

[[...]] for [text] ;

[{...}] for {text } ;

[&...&] for ⟨text ⟩ .

4.2.6 Shading and stacking

`-#- ...-#-` shades a text[5]: `-#-A1-A2-#-` writes .

You can shade a part of a group with `#//`, `#h/`, `#v/`, and `#/` : `A1#//` is ; `A1#h/` is ; `A1#v/` is , and `A1#/` is .

`#` alone allows to stack signs: `m#a` is .

4.2.7 Text Direction

If you use a version of TeX–Xet (a patch designed to allow you to type right-to-left text as well as left-to-right, with the benefit of the line-cutting system), It is possible to reverse a whole part of the text. Simply type `+dg` right-to-left, and `+gd` for left-to-right (this is *not* part of the *manuel*).

Example: , made like that:

```
+dg G7 E1:D40 xa:a m wAs-t:niwt nbty +gd anx G7 E1:D40 xa:a m
wAs-t:niwt nbty
```

[5]The previous versions of sesh allowed one to do without the '-'. but I decided to revert to the manual, to be able to use the # to stack signs.

There is a more general right-to-left builtin, but it won't allow line-cutting: '+rl' and '+lr'. example :

```
+rl G5 -nTr-ms-w-t:Z2 +rl anx G5 -nTr-ms-w-t:Z2
```

. It will work in any case.

Finally, if your ultimate output is postscript, you can use packages like pstricks to invert left-to-right text and make it into right-to-left.

For Column-writing, the LaTeX macro `\EnColonne` can be used. Its first argument is the column width. The one given in the following example isn't bad.

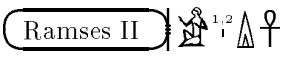
```
\EnColonne[1.2\Htm]{
\begin{hieroglyph}
#def wAt N31# sw*(t:di) -Htp -wp-wAt-wAt-wAt-!
E16-nb-tA:idb\s2*Z1-Dsr-r-xAst-!
\end{hieroglyph}
}
```

It is often necessary to use the `\s` construct to tune the sizes of the signs in column writing.

4.2.8 Some text

`+l .. +s` allows inserting of LaTeX text; `|....-` allows the insertion of superscript text:

```
<-+l Ramses II +s-> -A1-|1,2-di-anx
```



4.2.9 kerning

A non-manual feature of the present system allows to kern the signs. the sequence `\!` is a negative space that can be used both in horizontal context:

```
zA-\!\!ra:.
```

and in vertical one :

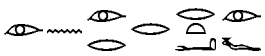
```
nD-D:\!\!Hr\s1
```

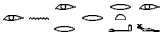
4.2.10 Size

The size of signs is controled by various LaTeX macros:

- `\DisplayHieroglyphs` write the hieroglyphic texts in its scope in a big size, with a large spacing between lines so that the reading is easy.
- `\TextHieroglyphs` does the contrary. It is better for in-text text.
- `\EnPetit{}` writes its argument in the same format as `\TextHieroglyphs` does.
- `\SmallerText` lowers the size of the signs.

`\DisplayHieroglyphs` This is an example :



looks good. `\TextHieroglyphs` is better if you are in the bulk of the text. And `\SmallerText` is smaller and `\SmallerText`  is even smaller

4.2.11 Macros

There is a limited macro facility (again, not part of the *manuel*). To define a macro, type

```
#def MACRONAME Body#
```

Note the second '`#`' sign. MACRONAME can be any unused sequence of letters, simple quote, and point.

This can be useful if a name appears often.

Example:

```
\begin{hieroglyph}
#def 'tA tA:N23*Z1#
tr-t:r-n-wn:n:n-k-tp-Z1-'tA
\end{hieroglyph}
```

Note that, once defined, these macros can be used in all subsequent `hieroglyph` environment.

A few useful definitions:

```
#def Hm' N42#
#def bdS A7#
#def bin G37#
#def arm D40#
#def knife T30#
#def copper N34#
#def di' D37#
#def hrw h-r:W*ra-Z1#
#def ink nw:k':A1#
#def inr O39#
#def iw' D54#
#def k' V31A#
#def nn M22-M22-n:n#
#def nxt A24#
#def rmn D41#
#def king A42#
#def sxA A2#
#def wnn wn:n:n#
```

4.3 LaTeX macros

If you want the small signs to be on the baseline, type `\SurLigne` out of a hieroglyph environment; the default is to center signs. To switch back to centered signs, type `\Centrer`. In a cartouche, the text is always centered. You can handle the line-cutting algorithm by changing the two TeX macros `\Hrp` and `\Hitmts`; the first rules what is inserted between signs, the second between words. The default values tend to protect you from cutting a word, at the cost of some white space.

5 Typesetting transliterations and references

The commands here described are defined in the `egypto.sty` file.

5.1 Settings

\Montitre{...} allows you to define the document's title (To be used in Cross-references)

\eg to use the transliteration font

\def\SourceTexte{Name of the text} to tell LaTeX what text you are typing

\def\EXEMPLE{example} To use this style in English

5.2 Transliteration

There are currently three ways to write some transliteration (apart from `\eg`)

1. the translit environment: it takes 3 arguments:

   - name of the text
   - page number or recto/verso (exxs `{4}` or `{recto}`
   - line number(s) (could be column number) (exxs. `{4}` `{4-9}`
   - an alternative (possibly empty) reference in free text.

   One important thing is that TeX "understands" these numbers. i.e. there are commands to change the line number and the page number. such things are useful for cross-references

   you can type a transliteration, and use "`\traduction`" to start typing the translation.

   Example:

```
\begin{translit}{O. foobar XIV}{verso}{10-15}{LES 12,2-5}
  iw.i rx.kw mdw nTr
\traduction
  I know the hieroglyphs
\end{translit}
```

   O. FOOBAR XIV, verso 10–15 LES 12,2-5

   iw.i rḫ.kw mdw nṯr

   I know the hieroglyphs

2. the exemple environment. a translit environment with the word "Exemple" in front of it, and numbered. To write "example", use `\def\EXEMPLE{Example}`

   these two environments write a line in "`*.dic`" where `*` is the name of your TeX file.

   "translit" writes:

```
\Citation{name of the source}{references}{document's title}{
                        page number in document}
```

   "exemple" writes:

```
\Exemple{name of the source}{references}{document's title}
         {example number}{page number in document}
```

(all on the same line)

3. the `\traduction{}{}` macro. It takes two arguments, the first being a transliteration, the second a translation. you have separates footnotes and, by default, the text is given in two columns which can spread over pages, which is useful to translate poetry. If you want the translation under the transliteration, you can type

```
\def\EcritTraduction{\EcritTraductionEnLigne}
```

and

```
\def\EcritTraduction{\EcritTraductionEnColonne}
```

to switch back. In the column version, the second column is a verse-like environment

5.3 Varia

\affligne shows the line number above a vertical line: $^{10}|$.

\affpage shows the page number in a cartouche: (verso)

\| increases the line number and shows it.

* increases the page number and shows it. (the line number becomes 1)

\numligne{VALUE} gives a value to the line number and shows it

\numpage{VALUE} the same for page number.

\dico{Y}{translation}{comments} Can be used to make an index of terms. ex:

```
\dico{XAa}{to free}{transitive verb}
```

writes in the .dic file :

```
\DicoIndex {XAa}{ to free }{transitive verb }{P. Leyde I 350}
{verso,13}{name of the text}{2}
```

that is, what you wrote, plus the references. It is to be used inside an environment. The first argument may contain a `hieroglyph` environment.

5.4 Grammatical signs and al.

The zero-subject (i.e. the empty set) is bound to `\zero`

There is a environment for typesetting grammatical rules: its name is gramrule. a word typed there appears in slanted font, and '`~X␣`' writes X in transliteration (the space is mandatory).

The possib environment allows to type different cases, with an accolade in front of them. (\\ to part the cases)

The pile environment allows to write some text in a column.

Example of use:

```
\begin{gramrule}
~ir + \begin{possib}
       infinitive\\
       prospective ~sDm.f \\
       ~mrr.f \\
       \end{possib}
    + \pile{this is not\\to \\be taken seriously\\}
 \end{gramrule}
```

$$\dot{i}r + \begin{cases} \textit{infinitive} & \\ \textit{prospective } s\underline{d}m.f + & \begin{array}{c}\textit{this is not}\\ \textit{to}\\ \textit{be taken seriously}\end{array} \\ \textit{mrr.f} & \end{cases}$$

6 To Do

- Capital letters for transliteration (currently, it is quite hard to type "R^{c}".
- A WYSYWIG interface, first using X.
- Improve the signs (has begun)
- fully and strictly implement the "manuel de codage". (but waiting for a possible new version.)

7 Recently Done

- A right-to-left font, and a support for tex–xet.
- Improved sesh — I now use an hash table for the signs. The *manuel* is more or less supported, and should be so very quickly.
- Hieroglyphic typesetting improved. The sizes are better choosed, the signs can be merged with text, and are now centered on the base line.
- Can use NFSS2 now. (but still support the old system.)

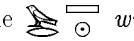
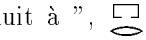
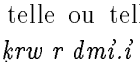
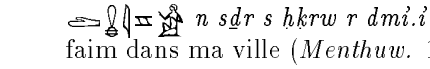
- Added hieroglyphs in `\dico....`;
- Added a possibility of reversed text in normal latex.

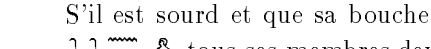
A Examples

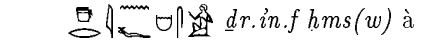
Here are a few examples, taken from various texts : Lefèbvre's *Grammaire de l'Égyptien Classique,* Gardiner's *Egyptian Grammar,* and Westcar.

Le pseudoparticipe

Il exprime particulièrement l'**état** ou la **condition** de qqn, ou de qq.ch. Deux cas sont à distinguer, selon que le substantif (ou pronom) auquel est apposé le pseudoparticipe est sujet ou objet du verbe de la phrase.

1. le pseudoparticipe peut qualifier un substantif (ou pronom) *sujet* de certains verbes, comme *wrs* " passer tout le jour à ",  *sḏr* " passer toute la nuit à ",  *pri* au sens de " devenir " ;  *ḏr* " finir " (par faire telle ou telle chose). Ex.:  *n sḏr s ḫkrw r dmi.i* jamais un homme ne passa la nuit à avoir faim dans ma ville (*Menthuw.* 11). Litt. à l'état d'avoir faim.

   S'il est sourd et que sa bouche ne puisse plus s'ouvrir,  tous ses membres deviennent faibles (*Ebers* 99, 20–21).

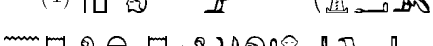
    *ḏr.in.f ḥms(w)* à la fin il s'assit (*Leb.* 75).

   Comparer l'emploi, comme auxiliaires, devant *sḏm.n.f,* de *pri, sḏr* et *ḏr,* §331.

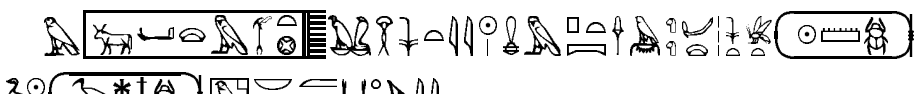
2. Il peut qualifier un substantif ...

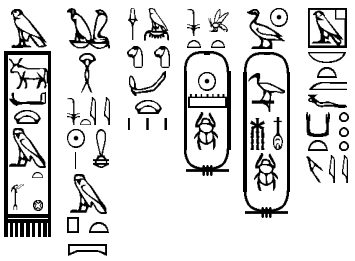
EXERCICE XXII

(*a*) *Translate into English :*

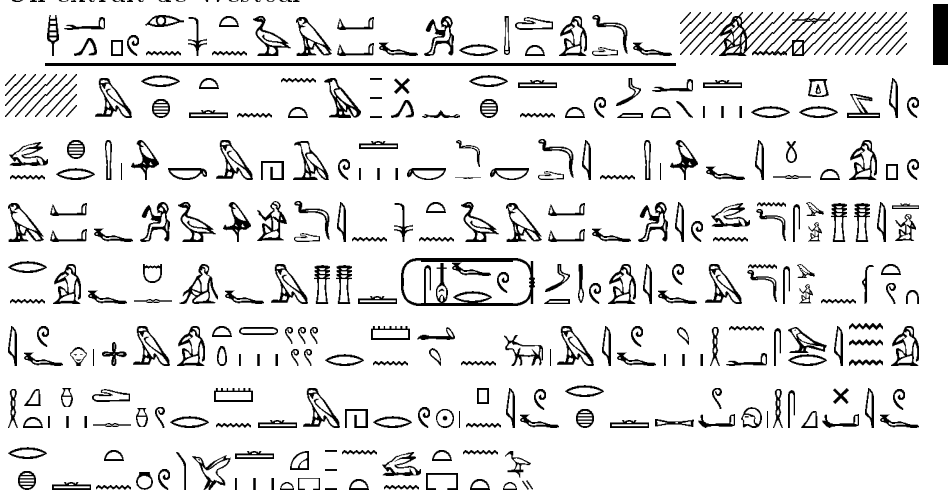
(1) (2) 

Un texte symétrique

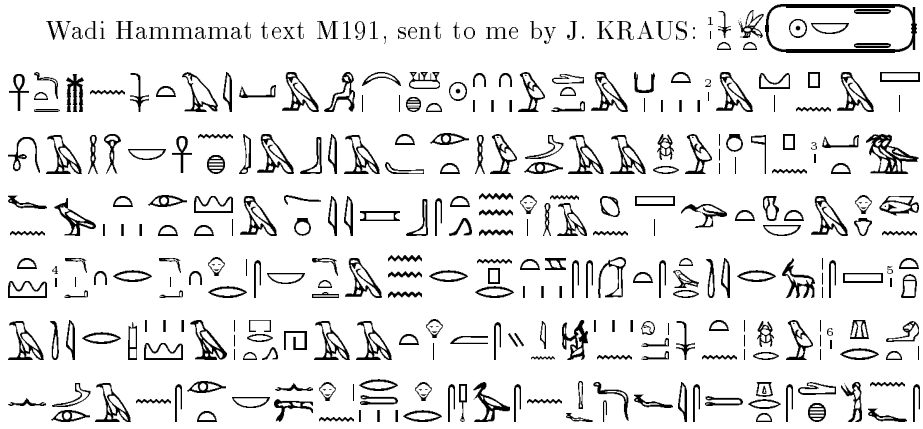




Un extrait de Westcar



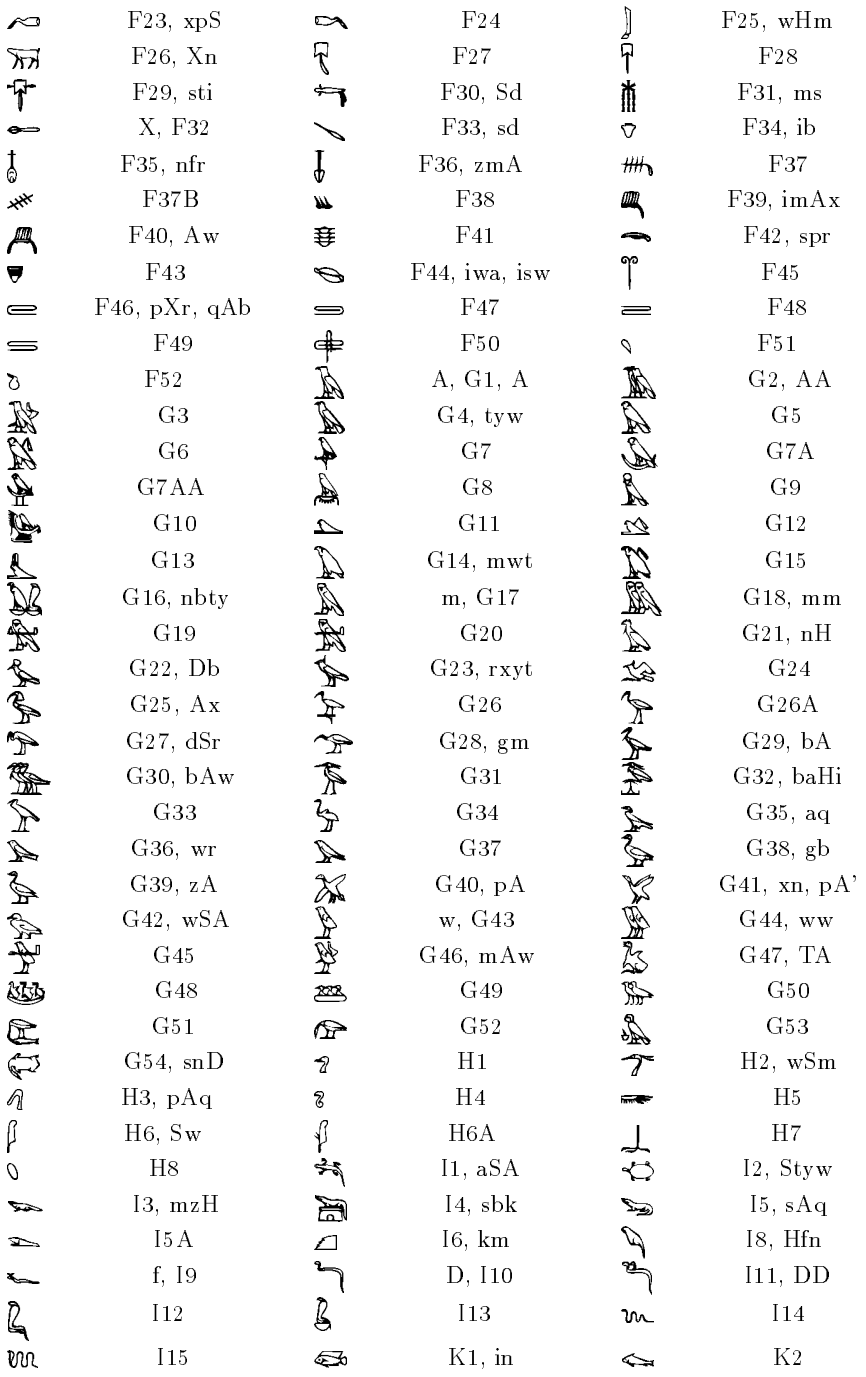
Wadi Hammamat text M191, sent to me by J. KRAUS:



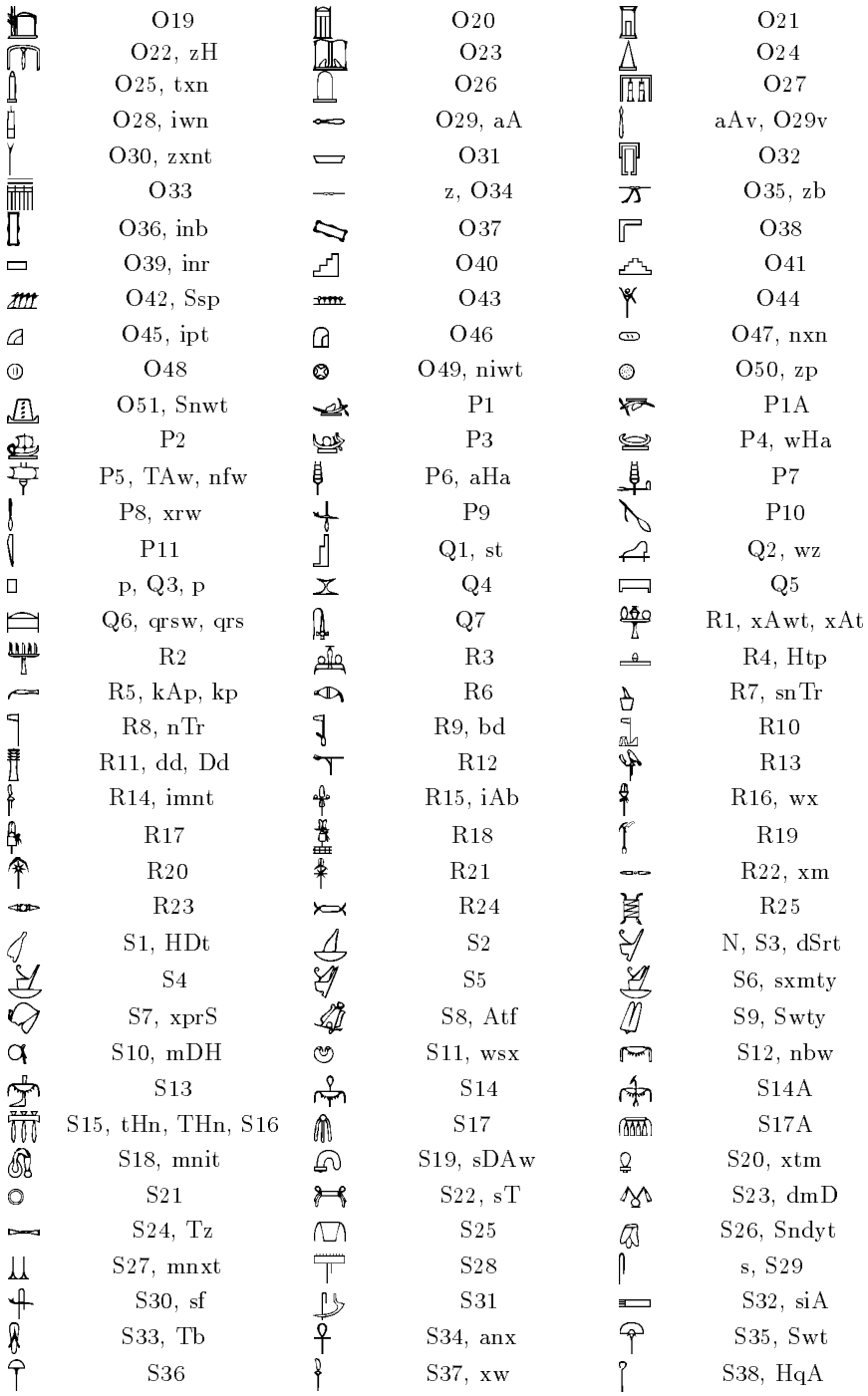
B Table of signs

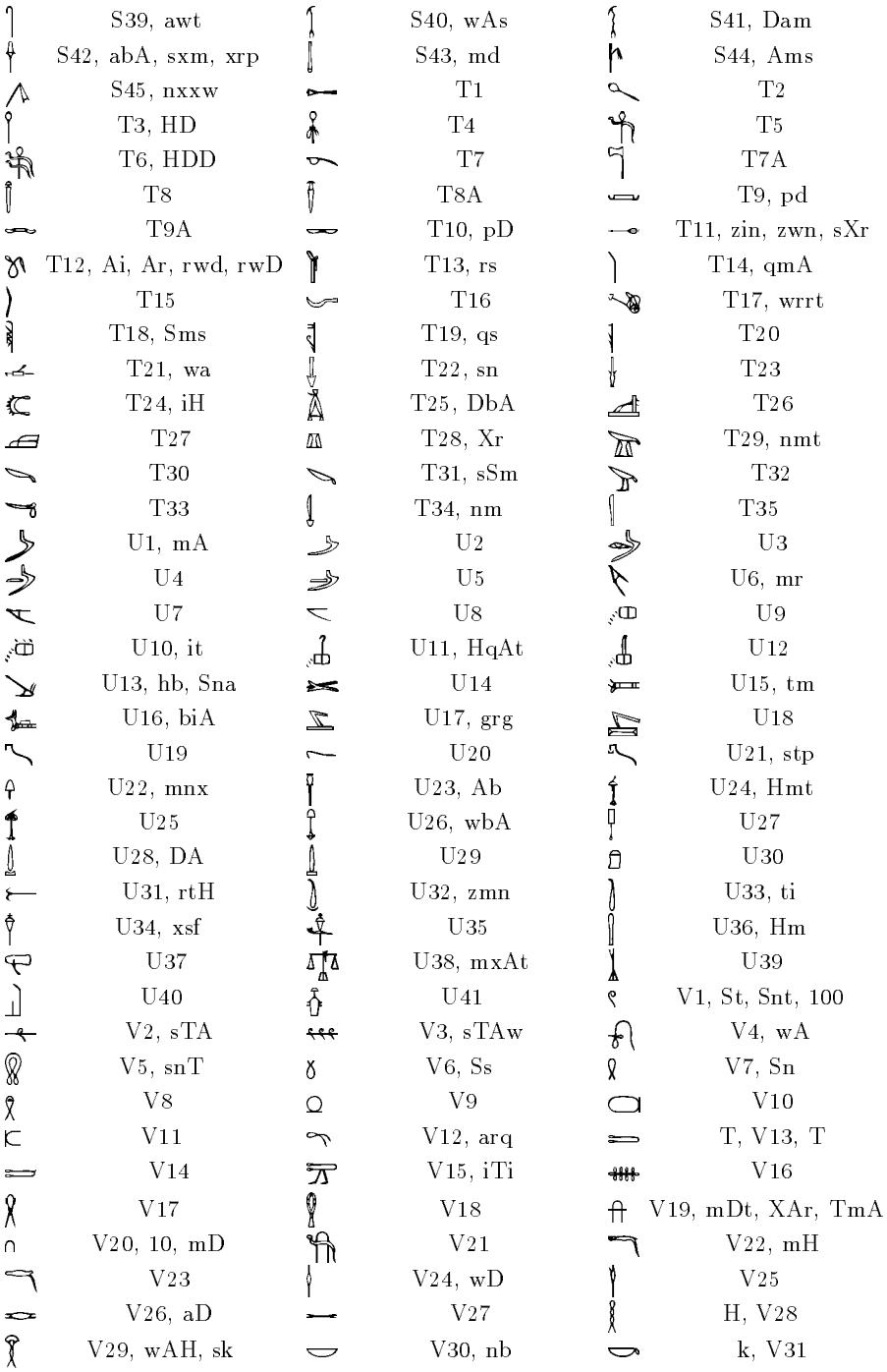
A1	A2	A3
A4	A5	A6
A7	A8	A9
A10	A11	A12, mSa
A13	A14	A14A
A15, xr	A16	A17, Xrd
A17A	A18	A19
A20	A21, sr	A22
A23	A24	A25
A26	A27	A28
A29	A30	A31
A32	A33, mniw	A34
A35	A36	A37
A38, qiz	A39	A40
A41	A42	A43
A44	A45	A46
A47, iry	A48	A49
A50, Sps	A51, Spsi	A52
A53	A54	A55
A59	B1	B2
B3, msi	B4	B5
B6	B7	C1
C2	C3, DHwty	C4, Hnmw
C5	C6, inpw	C7, stX
C8, mnw	C9	C10, mAat
C11, HH	C12	C17
C18	C19	C20
D1, tp	D2, Hr	D3, Sny
D4, ir	D5	D6

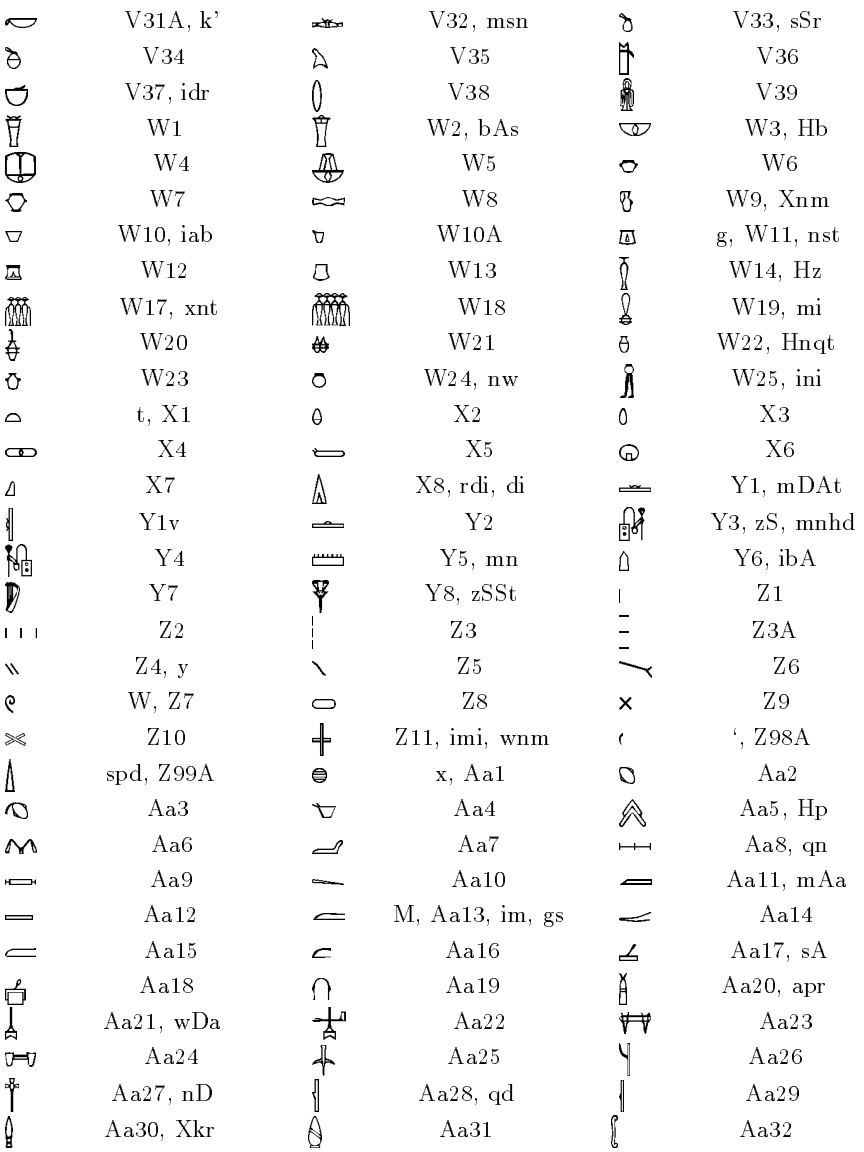
D7	D8	D9, D9, rmi
D10, wDAt	D11	D12
D13	D14	D15
D16	D17	D18
D19, fnd	D20	r, D21, rA
D22	D23	D24, spt
D25, spty	D26	D27, mnD
D27A	D28, kA	D29
D30	D31	D32
D33	D34, aHA	D34A
D35	a, D36	D37
D38	D39	D40
D41	D42	D43
D44	D45, Dsr	d, D46
D46A	D47	D48
D49	D50, Dba	D51
D52, mt	D53	D54
D55	D56, rd, sbq, gH, gHs	D57
b, D58	D59, ab	D60, wab
D61, sAH	D62	D63
E1	E2	E3
E4	E5	E6, zzmt
E7	E8	E8A
E9	E10	E11
E12	E13	E14
E15	E16	E17, zAb
E18	E19	E20
E21	E22, mAi	E23, rw, l
E24, Aby	E25	E26
E27	E28	E29
E30	E31	E32
E33	E34, wn	F1
F2	F3	F4, HAt
F5, SsA	F6	F7
F8	F9	F10
F11	F12, wsr	F13, wp
F14	F15	F16, db
F17	F18, Hw, bH	F19
F20, ns	F21, idn, msDr, sDm, DrD	F22, pH, kfA


F23, xpS
F24
F25, wHm
F26, Xn
F27
F28
F29, sti
F30, Sd
F31, ms
X, F32
F33, sd
F34, ib
F35, nfr
F36, zmA
F37
F37B
F38
F39, imAx
F40, Aw
F41
F42, spr
F43
F44, iwa, isw
F45
F46, pXr, qAb
F47
F48
F49
F50
F51
F52
A, G1, A
G2, AA
G3
G4, tyw
G5
G6
G7
G7A
G7AA
G8
G9
G10
G11
G12
G13
G14, mwt
G15
G16, nbty
m, G17
G18, mm
G19
G20
G21, nH
G22, Db
G23, rxyt
G24
G25, Ax
G26
G26A
G27, dSr
G28, gm
G29, bA
G30, bAw
G31
G32, baHi
G33
G34
G35, aq
G36, wr
G37
G38, gb
G39, zA
G40, pA
G41, xn, pA'
G42, wSA
w, G43
G44, ww
G45
G46, mAw
G47, TA
G48
G49
G50
G51
G52
G53
G54, snD
H1
H2, wSm
H3, pAq
H4
H5
H6, Sw
H6A
H7
H8
I1, aSA
I2, Styw
I3, mzH
I4, sbk
I5, sAq
I5A
I6, km
I8, Hfn
f, I9
D, I10
I11, DD
I12
I13
I14
I15
K1, in
K2

K3, ad	K4, XA	K5, bz
K6, nSmt	K7	L1, xpr
L2, bit	L3	L4
L5	L6	L7, srqt
M1, iAm	M2, Hn	M3, xt
M4, rnp	M5	M6, tr
M7	M8, SA	M9, zSn
M10	M11, wdn	M12, xA
M13, wAD	M14	M15
M16, HA	i, M17	M18, ii
M19	M20, sxt	M21, sm
M22	M23, sw	M24, rsw
M25	M26, Sma	M27
M28	M29, nDm	M30, bnr
M31	M32	M33
M34, bdt	M35	M36, Dr
M37	M38	M39
M40, iz	M41	M42
M43	M44	N1, pt
N2	N3	N4, iAdt, idt
N5, ra, zw, hrw	N6	N7
N8, Hnmmt	N9, pzD	N10
N11, Abd, iaH	N12	N13
N14, dwA, sbA	N15, dwAt	N16, tA
N17	N18, iw	N19
N20, wDb, idb	N21	N22
N23	N24, spAt	N25, xAst
N26, Dw	N27, Axt	N28, xa
q, N29	N30, iAt	N31
N32	N33	N33A
N34	n, N35	N35A, mw
N36	S, N37	N38
N39	N40, Sm	N41, id, N42
O1, pr	O2	O3
h, O4	O5	O6, Hwt
O7	O8	O9
O10	O11, aH	O12
O13	O14	O15, wsxt
O16	O17	O18, kAr


O19
O20
O21
O22, zH
O23
O24
O25, txn
O26
O27
O28, iwn
O29, aA
aAv, O29v
O30, zxnt
O31
O32
O33
z, O34
O35, zb
O36, inb
O37
O38
O39, inr
O40
O41
O42, Ssp
O43
O44
O45, ipt
O46
O47, nxn
O48
O49, niwt
O50, zp
O51, Snwt
P1
P1A
P2
P3
P4, wHa
P5, TAw, nfw
P6, aHa
P7
P8, xrw
P9
P10
P11
Q1, st
Q2, wz
p, Q3, p
Q4
Q5
Q6, qrsw, qrs
Q7
R1, xAwt, xAt
R2
R3
R4, Htp
R5, kAp, kp
R6
R7, snTr
R8, nTr
R9, bd
R10
R11, dd, Dd
R12
R13
R14, imnt
R15, iAb
R16, wx
R17
R18
R19
R20
R21
R22, xm
R23
R24
R25
S1, HDt
S2
N, S3, dSrt
S4
S5
S6, sxmty
S7, xprS
S8, Atf
S9, Swty
S10, mDH
S11, wsx
S12, nbw
S13
S14
S14A
S15, tHn, THn, S16
S17
S17A
S18, mnit
S19, sDAw
S20, xtm
S21
S22, sT
S23, dmD
S24, Tz
S25
S26, Sndyt
S27, mnxt
S28
s, S29
S30, sf
S31
S32, siA
S33, Tb
S34, anx
S35, Swt
S36
S37, xw
S38, HqA


S39, awt
S40, wAs
S41, Dam
S42, abA, sxm, xrp
S43, md
S44, Ams
S45, nxxw
T1
T2
T3, HD
T4
T5
T6, HDD
T7
T7A
T8
T8A
T9, pd
T9A
T10, pD
T11, zin, zwn, sXr
T12, Ai, Ar, rwd, rwD
T13, rs
T14, qmA
T15
T16
T17, wrrt
T18, Sms
T19, qs
T20
T21, wa
T22, sn
T23
T24, iH
T25, DbA
T26
T27
T28, Xr
T29, nmt
T30
T31, sSm
T32
T33
T34, nm
T35
U1, mA
U2
U3
U4
U5
U6, mr
U7
U8
U9
U10, it
U11, HqAt
U12
U13, hb, Sna
U14
U15, tm
U16, biA
U17, grg
U18
U19
U20
U21, stp
U22, mnx
U23, Ab
U24, Hmt
U25
U26, wbA
U27
U28, DA
U29
U30
U31, rtH
U32, zmn
U33, ti
U34, xsf
U35
U36, Hm
U37
U38, mxAt
U39
U40
U41
V1, St, Snt, 100
V2, sTA
V3, sTAw
V4, wA
V5, snT
V6, Ss
V7, Sn
V8
V9
V10
V11
V12, arq
T, V13, T
V14
V15, iTi
V16
V17
V18
V19, mDt, XAr, TmA
V20, 10, mD
V21
V22, mH
V23
V24, wD
V25
V26, aD
V27
H, V28
V29, wAH, sk
V30, nb
k, V31



C Thanks

I want to thanks a few persons, whose help definitly helped improving this package. M. Louet and Corler, students in computer science at Brest University, wrote a X program for editing the fonts, which proved very useful for touching a few signs that were really ugly before. Jürgen Kraus, egyptologist at Mainz

university, has provided me with numerous bug reports and suggestions.