A Note on Egyptian Units of Area in the Old Kingdom

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IT HAS already been noticed by several scholars, among them Sethe,[1] that the measures of area used in Egypt during the Old Kingdom differed from those current in the Middle Kingdom.[2] From such examples as *Urkunden*, I, 241, line 5, 244, line 14, and 245, line 2 [1], it follows that the units of area used at that period were, from largest to smallest: *sṯ3t* (aroura), *ḫ3* (thousand), *t3*, *rmn*, *ḥsb*, *z3* (reading very uncertain) and *mḥ* (cubit).[3] The various writings of these units as used in actual measurements during the Old Kingdom are given in Figure 2. The sequence of these units, with the exception of the last two, follows directly from the three examples quoted and numerous similar ones. No example with *z3* and *mḥ* in the same measurement has been preserved. However, the cubit was smaller than the *ḥsb*, and since, to my knowledge, one never finds more than one *z3* in measurements (that is: the *ḥsb* probably equals two *z3*), while up to twelve cubits are written after a *ḥsb*,[4] it follows that the cubit was in any case smaller than a *z3*. Presumably also the *z3* was larger than 12 cubits. Otherwise one would have expected to find the former unit used in the example quoted.

The following list gives the references to all the multiples of the various units, with the exception of the *sṯ3t*, from the statements of definite areas known to me from published texts of the Old Kingdom.

UNIT	MULTIPLE	REFERENCES
1. *mḥ*	4	*Urkunden*, I, 244 line 16
	10	*Urkunden*, I, 245 line 2
	12+	*Urkunden*, I, 242 line 10
2. *z3*	1	*Urkunden*, I, 240 line 13; 241 line 5; 244 line 14; 286
3. *ḥsb*	1	*Urkunden*, I, 240 line 13; 241 line 5; 242 line 10; 244 lines 14, 16, and 18(?); 245 line 2; 247 line 2
4. *rmn*	1	*Urkunden*, I, 240 line 15; 241 line 5; 242 line 10; 247 line 2; 286
5. *t3*	1	*Urkunden*, I, 164 line 7 (cf. the discussion of the will of Tjenti)
	2	*Urkunden*, I, 5 line 2; 247 line 2
	3	*Urkunden*, I, 164 (three times); 241 line 5
	4	*Urkunden*, I, 244 line 8; 245 line 17; 249 line 7(?)
	5	*Urkunden*, I, 25–26 (twelve times; cf. the discussion of the contract of Nikaᶜankh); 240 l. 15
	6	*Urkunden*, I, 244 line 16
	8	*Urkunden*, I, 240 line 13; 244 line 14; 245 line 15(?)
6. *ḫ3*	1	*Urkunden*, I, 5 line 2; 242 line 10
	2	*Urkunden*, I, 244 lines 8, 14, 16 and 18(?); 245 lines 2 and 17; 246 line 15 (cf. the following paragraph); 247 line 2
7. *sṯ3t*	1704+	*Urkunden*, I, 242 line 10 (the largest figure known to me)

FIG. 1

Urkunden, I, 246, line 15 reads with Farina 3 $st\underline{3}t$ and 3 $\underline{h}\underline{3}$. However, according to Breasted's collation, the reading 4 $st\underline{3}t$ and 2 $\underline{h}\underline{3}$ seems more probable [3], and the published photograph[5] appears to confirm it.

For the smaller units, the system here is apparently the same as that of the Middle Kingdom (1 aroura $=2$ $rmn=4$ $\underline{h}sb=8$ $z\underline{3}=100$ cubits), except that here the unit of 100 cubits is called $\underline{3}$ rather than $st\underline{3}t$, which latter term is applied to a much larger entity.[6] It also seems clear

[5] Schäfer, *Ein Bruchstück altägyptischer Annalen*, pl. ii.

[6] I am rather uncertain whether this unit of 100 cubits was read $st\underline{3}t$ in the Middle Kingdom. The writings tend to use the long, narrow $\underline{3}$-hieroglyph with rounded ends. While the hieratic equivalents are generally transcribed by a rectangular sign, they actually resemble the $\underline{3}$ much more closely. See Möller, *Hieratische Paläographie*, I, p. 65.
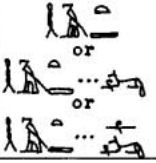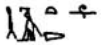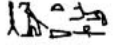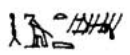
OLD KINGDOM UNITS OF AREA

	Introductory phrase	St3t	H3	T3	Rmn	Hsb	Z3	Mh
Metjen (Urk. I, 2-5)	[hieroglyphs] or / or / or	[hieroglyph]	[hieroglyph]	[hieroglyph]				
Nika'ankh (Urk. I, 24 ff.)	[hieroglyphs]	[hieroglyph]		[hieroglyph]				
Tjenti (Urk. I, 163 ff.)	[hieroglyphs] or nothing	st3t ndst(!) Cf. discussion in text	[hieroglyphs]					
Kaemhezet (Urk. I, 207)	[hieroglyphs]	[hieroglyph]						
Annals (Urk. I, 240 ff.)	[hieroglyphs] 3ht omitted once in Urk. I, 249 l. 7 (?)	[hieroglyph] omitted in Urk. I, 247 l. 2	[hieroglyph] Note that 1000 is written [sign]	[hieroglyph]	[hieroglyph]	x	[hieroglyph]	[hieroglyph]
Coptos decrees of Pepi II. (Urk. I, 286)	[hieroglyphs]	[hieroglyph]			[hieroglyph]		X	

Fig. 2

that the $h3$ was probably 1000 cubits or 10 $t3$ as in the Middle Kingdom. The main question to be decided here is the relation between the $st3t$ and the $h3$. As already mentioned above, the only suggestion known to me sets the aroura equal to 10 $h3$. I think, however, that the relation can be demonstrated to have been 1 $st3t =$ 3 $h3 = 30$ $t3$, quite apart from the dangerous *argumentum ex silentio* that no more than two $h3$ have so far been found in any measurement.

One of the contracts of Nika'ankh[7] deals with the division of the two arouras

donated by Mycerinus for the support of the priests of Ḥatḥor, the Lady of Raōnet, into twelve equal portions of five units of land each [4]. As published, the writing of the unit involved is not quite clear (the sign has rectangular ends), but the long, thin shape resembles a $t3$ much more than a $st3t$. For the introduction of measurements of area by $3ht$ $st3t$ (the bolt and coil), even where the area involved was smaller than an aroura, compare *Urkunden*, I, 244, line 8, or even better, though from an earlier period, *Urkunden*, I, 5, line 2 [5], where the word $st3t$ written after the measurement indicates quite clearly that we are dealing with part of the intro-

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[7] *Urk.*, I, 24 ff.; Fraser, "Early Tombs at Tehna," *ASAE*, III, 122 ff., pl. iv.

ductory phrase and not with a specific unit of area. That the reading must be *t₃* also follows from the consideration that each of these lots should be only a sixth of an aroura. We thus obtain: two *st̠₃t* equals sixty *t₃* or one *st̠₃t* equals thirty *t₃*.

An objection could be raised here that the land distributed by Nikaᶜankh might have included areas other than the two arouras donated by Mycerinus. I think, however, that such documents as the juridical stela from Karnak[8] show that pains were taken to establish in the deed itself the legal right of the vendor or testator to dispose of the property. This is done here for the above-mentioned two arouras; but no other land is referred to. If there had been any, one might have expected that its origin would also be stated.

The other pertinent text is the will of Tjenti.[9] Here two *st̠₃t* formerly belonging to his mother Bebi are disposed of. One of these (*ir igr sn·nw n ₃ḥt st̠₃t* [2])[10] is given to his wife and then divided among four ka-priests, with a schedule giving the area assigned to, and the amount of barley due

from, each of them [6]. The areas have not all been preserved, but we have the amounts of grain in all four cases. The first three priests each owed three measures. In the case of the fourth, Sethe saw only a 1 but emended it to 3 to agree with the others. It would seem safer, however, to leave the text as it was. It is clear from the first two cases, which are better preserved, that each unit of land owed one measure of barley. The units of land are here written with an *idb*-sign, twice facing to the right and twice to the left. Since a unit smaller than the *st̠₃t* is wanted, I think it safe to read a *t₃* here also. After the schedule, the text continues, "[The fields, etc.] which shall be delivered to them [*prr n·sn*] from the property of Tepemnefret. I have made over her property to these ka-priests, amounting to a *small aroura* [*m st̠₃t nd̠st*]." In other words, in addition to the usual *st̠₃t* of thirty *t₃*, there was a smaller unit of only ten *t₃*, usually written with a *ḫ₃*-sign and perhaps so read (at least in later times[11]), that was also called the "small aroura."

We thus obtain the following relationship of units of area for the Old Kingdom: 1 *st̠₃t* = 3 *ḫ₃* = 30 *t₃* = 60 *rmn* = 120 *ḥsb* = 240 *z₃* = 3000 *mḥ*. Assuming that the cubit of land had roughly the same value as in later times, that is 100 square cubits or 27.35 square meters, the *st̠₃t* of the Old Kingdom was about 8.205 hectares or 19.53 feddans.

In general, this seems to give somewhat better values to various quantities of land mentioned in Old Kingdom texts. Metjen states in his biography[12] that he inherited, bought, or was granted a total of 266 *st̠₃t* plus a small vineyard. Using our result, this amounts to an estate of over 5195 feddans, a very substantial figure for

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[8] Published in P. Lacau, *Une Stèle juridique de Karnak, Suppl. aux ASAE, Cahier 13* and discussed by Ibrahim Harari, "Essai sur la Terminologie Juridique du Moyen Empire Egyptien," *ASAE*, LI, 273 ff., especially pages 274–75. The will of Tjenti establishes at some length (*Urk.* I, 163–64) his right to the two arouras he is disposing of.

[9] *Urk.*, I, 163 ff.

[10] *Sn·nw . . . sn·nw* apparently means "the one . . . the other." Later on in the same text we read: *ir sn·nw n ₃ḥt st̠₃t 2 pw . . . iw·f n . . .* "As for the other of these two arouras . . . it shall belong to . . ." The *pw* shows that we are still dealing with the same two arouras. Here, as in the previous passage, the aroura involved is referred to by an ·*f*, showing that only one is being disposed of in each section. On the other hand, in p. 164 l. 1, where Tjenti refers to the origin of both the arouras, he states: *ink dbḥ sn ḫr nswt*, "It is I who requested *them* from the king," using the plural pronoun.

The masculine gender of *₃ḥt* introducing measurements is also found in one of the unpublished Hekanakht papers. Cf. also Gardiner, *The Wilbour Papyrus*, II, 79 n. 1. When used alone, however, the word *₃ḥt* was feminine, for instance in the page of the Hekanakht letter published in *Bull. Metr. Mus. Art*, XVII, suppl., p. 49, fig. 40, ll. 1 and 8 (*ntk sk₃ s(y); ₃ḥt nt rmt nb*).

[11] Spellings such as in Tylor, *The Tomb of Sebek-nekht*, Pl. 7, point to a reading of *ḫ₃-t₃* for this unit in the Second Intermediate Period.

[12] *Urk.*, I, 2, ll. 8, 9, and 13; 4, l. 2; 5, l. 2.

Egypt and one that agrees much better with the splendor of his tomb and his obvious status than the 172 feddans obtained by using the smaller value. Likewise in the case of Nikaᶜankh's contracts, 39 feddans seems a much more reasonable source of income for a priesthood than about one and a third, particularily considering that the land was divided into twelve portions.

The donation made by Userkaf to Re in the year after the third numbering is of somewhat greater historical importance.[13] It was at least 1704 arouras and 87 cubits of land, in modern terms over 33,280 feddans, an enormous and quite unparalleled gift for the Old Kingdom.

[13] *Urk.*ₐ I, 242, ll. 9–10.

The system here described did not survive into the Middle Kingdom, where the largest unit is the $ḫȝ$-$tȝ$ of 1000 cubits. At some time before the New Kingdom, the term $sṯȝt$ came to be applied to the unit of 100 cubits, the aroura of later times. The total of $ȝḥt$ $sṯȝt$ 864,168¼ given by Papyrus Harris, 11, 9 for the lands belonging to the Theban temples[14] certainly precludes any other interpretation. Even with the aroura at only 0.651 feddans, that figure becomes about 561,709 feddans, or roughly one tenth the arable land of modern Egypt.

ORIENTAL INSTITUTE
UNIVERSITY OF CHICAGO

[14] W. Erichsen, *Papyrus Harris I* (Bruxelles, 1933), p. 14.