

ON THE KNOSSOS Mc TABLETS*

§ 1. The Knossos Mc tablets, recorded by scribe 132, who seems to have written nothing else, are for the most part a homogeneous group of similar-sized documents (*ca.* 15 × 2,5 × 1,2 cm.), whose surface is divided into two identical spaces by a central rule. Only two items (5107 and 5820) differ from the remaining tablets of the series in that both of them have no central rule and 5107 is of smaller size (12? × 2,4 × 0,9 cm.). This group was found in the Arsenal, though two tablets are alleged to be from the East Wing (East-West Corridor) and they present some differences in the recording pattern (§ 7). The whole group is written only on one side, though 1508 and 4461 have an inscribed *verso* consisting only of some figures (§§ 6, 7)¹.

§ 2. The Mc tablets coming from the Arsenal make up as a whole two separate types of document: *a*) documents including entries of four commodities, and *b*) documents recording some kind of totals of *a*).

§ 3. The former are written following a regular pattern which may be exemplified by Mc 4455:

.A		' <i>a-pa-sa-ki-jo</i> '	*150	28	CAP ^f	17	
.B	<i>ku-ta-to</i> /		*142	M	12	CORN	18

The commodities are recorded in a fixed order: *150 appears along with CAP^f on the first line of the tablet, where a personal name is written, usually in somewhat smaller-sized signs, on the left of the commodities; and *142 along with CORN on the second line, where scribe 132 writes invariably a place-name in majuscule

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¹ J.-P. Olivier, *Les scribes de Cnossos*, Rome 1967, p. 80.

signs at the beginning of the tablet. Only four tablets (4454, 4459, 4461 and 4462) contain additional entries (§ 6).

§ 4. Scribe 132 emphasizes the initial word by writing it in majuscule signs in the same way as scribe 117 does on the Da-Dg tablets. Although we should expect eighteen place-names, only ten have survived, and most of these are fragmentary: *da-*22-to* (4456), *ku-ta-to* (4455, 4459), *se-to-i[-]ja* (4464) and an (uncertain) *ti-]ri-to* (4462) are widely attested at Knossos. There are, however, place-names unknown to us from elsewhere: *u-qa-mo* (4454) raises some difficulties: first, we should expect to find there a dorsal stop, because the labio-velar is preceded by *u* (cf. *go-u-ko-ro* contrasting with *a-pi-go-ro*), though some forms at Knossos do show a labio-velar stop after *u*²; on the other hand, the hapax *u-qa-mo* reminds us of the well-known place-name *qa-mo*, which is widely attested at Knossos in the D-series, but is certainly difficult to connect with *u-qa-mo*.

ja-go (4461) is only attested here³. There is too little to say about those place-names of which only the last syllabogram is preserved. On Mc 4460]-*so* is perhaps to be restored as *e-ko]-so*, *pu-na]-so*, *tu-ri]-so*, but *pu]-so* is a probable restoration too, if there is room for only one syllabogram. It is tempting to suppose that]*jo* (4463) is the ending of an ethnic (cf. *da-*22-ti-jo* on Mc 1508.B) but it might equally be an unknown place-name ending in *-jo*.]*i* (8452) seems to be the locative ending of a place-name, perhaps *ka-ta-ra-]i* or more likely **56-ko-we-]i*⁴. On the remaining

² M. Lejeune, *Mémoires de philologie mycénienne* I, Paris 1958, p. 296 n. 54; cf. p. 304 and n. 88.

³ On KN U 655 we find a form *ja-po*, which is a hapax. It is probably a place-name, cf. J. T. Killen and J.-P. Olivier, «155 raccords de fragments dans les tablettes de Cnossos», *BCH* 92, 1968, p. 123. Orthographic alternations between *q* and *p* in Mycenaean texts may be accounted for as assimilations or dissimilations, cf. M. Lejeune, *Mémoires* I, pp. 301 ff. If *ja-po* and *ja-po* are alternative spellings of the same place-name, they should show a tendency of the labio-velars to develop into labials. Thus *ja-go* and *ja-po* should be respectively a conservative and a more recent phonetic spelling.

⁴ *ka-ta-ra-i* is recorded in the Co series, which covered an outer administrative area of the island, to be distinguished from an inner area that included among other places those which appear in the Mc series, cf. L. Godart, «Les tablettes de la série Co de Cnossos», *Acta Mycenaea* II, Salamanca 1971, pp. 423 f. A probable restoration, therefore, is **56-ko-we-]i*.

tablets (5118, 5809, 5818, 8447, 8448, 8705 and 8708) no place-names have been preserved.

It would seem, therefore, that the Mc tablets record commodities relating to a widespread area. On As 40 *da-*22-to* occurs with *se-to-i-ja*; *da-*22-to* and *ku-ta-to* are written together on Ga 4464; *da-*22-to* and *ti-ri-to* are also found together on Dv 1239. These place-names appear to be related in the Mc series and we would think that the places in question were somehow connected with one another, but the lack of evidence from the remaining tablets prevents us from indulging in conjectures about geography and the area over which the responsibilities of scribe 132 extended.

§ 5. A personal name, written in small-sized signs (except for 4460 and 4461, where the signs are normal size), occurs before the ideograms on the first line of the tablets (but 5118, 5809, 8447, 8448 are broken off and lack that line). Eight complete personal names (and two more very uncertain ones) are attested, among which *si-nu-mo-ro* (4450), *a-pa-sa-ki-jo* (4455), *a-pa-u-ro* (4463) and]*ja-*18* (4453) are hapax; *a-ko-ro-ta* (4459) is also a hapax at Knossos, but recurs at Pylos (Fn 837.4) and Mycenae (Go 610.2; Oe 115.3); *da-wa-no*, who is related to two different places *u-ga-mo* (4454) and *ja-qa* (4461), occurs on the list As 1517.4 and on Ga 423.v, though we have no reason to suppose that it is the same person; *ra-wo-qa-no* (4462) is recorded on a collectors' list (B 798.7) among *a-no-qa-ta*, *ko-ma-we-ta*, etc., and recurs on D1 928.A and D 1650.a, both of which concern the place-name *da-wo*, in the same position of the tablet where collectors are recorded on the Da-Dg tablets; *te-ru-ro* (4464) is a shepherd at *da-*22-to* (Dd 1380), and *a-wa-so* (4460) is also a shepherd at *qa-mo* (Db 1099) and at *tu-ni-ja* (Db 1246) obviously not the same person, cf. C 912.7; the uncertain form *e[.]-da[* (8452) reminds us of the only personal(?) name attested at Knossos, which can be fitted in, i.e. *e-ne-si-da-o-ne* on M 719.1;]*te[* (5818) is too short a fragment to suggest any comment.

The question arises: what is the function of the men recorded in the Mc documents? As J.-P. Olivier has already pointed out⁵,

⁵ «91 raccords de fragments dans les tablettes de Cnossos», *ABSA* 62, 1967, p. 331.

they are likely to be collectors. The evidence may be briefly stated as follows:

a) the position on the tablet where the names are written: since both scribes 117 and 132 follow the same pattern in their records (central rule, emphasis on the name —whether personal or place-name— by means of majuscule signs, regular drawing and fixed order of the ideograms, etc.), from the fact that in the tablets in hand 117 the space in question is reserved for collectors' names we may infer that in the tablets in hand 132 too the names written in that space also belong to collectors;

b) the evidence of B 798 listing *ra-wo-qa-no* among collectors, cf. also C 912.7;

c) *da-wa-no* in the Mc series and *ra-wo-qa-no* in the Knossos tablets occur at several places, as collectors do, cf. e.g. the collector *u-ta-jo* in the Da-Dg tablets relating to *qa-mo* (Da 1317), *tu-ni-ja* (Da 1415), *da-*22-to* (Da 1127) *da-wo* (Da 8228), *e-ko-so* (Da 1137), etc.

It might be objected that some Mc personal names are attested at other places as the names of shepherds, but that might be merely a coincidence of names, as is known for *a-no-qa-ta* that is the name of a collector in the Da-Dg series and the name of a shepherd at *ru-ki-to* (Da 1289) —certainly another person.

§ 6. Let us examine briefly the additional entries written immediately after the place-names. They appear only in three tablets, as shown below:

Tablets	Entries
Mc 4459	<i>qe-wa-ra</i>
4454	<i>da</i> *150 1
4462	<i>a-re</i> *150 1

qe-wa-ra, a hapax, may be a personal name. J.-P. Olivier has suggested the syllabogram *da* might be an abbreviation of

da-wa-no and moreover has shown that *a-re* might be either an anthroponym or a theonym⁶.

Further difficulties arise from the two entries which are followed by one unit of *150. The assumption that on Mc 4454 *da-wa-no* is a collector would provide a tentative explanation of this additional entry as a personal supply from the collector himself intended to round out the amount of *150 (i.e. $29 + 1 = 30$). The parallel entry, however, occurs on Mc 4462, where *ra-wo-go-no* appears as collector and the amount of *150 is not rounded out (i.e. $61 + 1 = 62$) and there is no evidence in the whole set for a tendency towards even numbers.

We feel unable to suggest any interpretation of these additional entries, even if we succeed in interpreting the Mc ideograms and the purpose of the Mc series itself.

Finally, let us point out that Mc 4461 contains an inscribed *verso* consisting of the quantity 160[, for which it is too dangerous to suggest anything, since the *recto* only shows the place and the collector's names without any ideograms.

§ 7. There are a few tablets (classified as Mc in *KT*⁴, but found in a different part of the palace) among which two are alleged to have been found in the East Wing and one in an unknown find-spot. All these three tablets are doubtfully assigned to hand 132:

a) Mc 5820 Find-spot unknown
]ri-na-jø[

There is no central rule. Moreover, the lack of this feature of the Mc group seems to indicate that this document does not belong with the Mc set.

b) Mc 5187 East-West Corridor
.A]5 ø *150 17[
.B] CAP^f 8 *142 M 20[

⁶ *Loc. cit.* On *a-re* as theonym see C. Gallavotti, «Appunti sul lessico miceneo», *Paideia* 12, 1957, p. 329, and «Ares e Areios prima di Omero», *RFIC* 3, 1957, pp. 229 ff; cf. also A. Heubeck, «Amphiaraos», *Die Sprache* 17, 1971, p. 15.

The regular pattern of scribe 132 in recording the commodities (*150 registered along with CAP^f on line A, and *142 along with CORN on line 8) is not followed in this tablet. Moreover, the figures at the left end (]5 on line A, and]1 perhaps on line B) might suggest that other entries too were recorded there. The syllabogram ϱ , as in Mc 1508, seems to be the abbreviation for *o-pe-ro* widely attested in the Da-Dg series, but whether ϱ only applies to *150 or to the whole entry, is uncertain.

c)	Mc 1508			East-West Corridor
	.A	*150	16	CAP ^f 10[
	.B	da-*22-ti-jo	CORN 12	*142 M 6[
	.v	OVIS ^f 50	ϱ o-pi	CORN[

This record contrasts with the Mc group from the Arsenal, although its pattern and appearance are quite similar. There are, however, two striking differences:

— the inversion in the order of the commodities on line B: CORN before *142 instead of the regular pattern *142 followed by CORN, while the proportion between both commodities is the same as in the Mc set;

— the occurrence of an inscribed *verso*, which presents many difficulties. Fifty (?) ovis^f are recorded and then an uncertain ϱ , perhaps an abbreviation of *o-pe-ro*. A form *o-pi* is written near the broken end, followed by an obscure ideogram.

As J. T. Killen has pointed out⁷, such a *verso* does not contain any coherent record, but is likely to be a group of single entries. Since *o-pi* is usually found in the tablets dealing with LANA and TELA, and, as has been suggested by J. T. Killen, seems to mean «chez» (and in this context «at the workshop of»)⁸, one would think that Mc 1508 does not record animals but animal skins stored in or bound for leather-workshops. If so, we should have to understand ovis^f instead of CAP^f as a *lapsus scribae*, and that we can hardly credit.

J. Chadwick points out that this tablet may be in some sense a duplicate of Mc 4456, whose place-name is *da-*22-to*, though

⁷ «The Knossos *o-pi* Tablets, *Atti Roma* II, p. 636 n. 6.

⁸ Cf. J. T. Killen, «*o-pi* Tablets», *passim*.

the figures do not exactly agree (the difference is only one M unit of *142 answering to a pair of CORN), or it could be the remains of another annual series dealing with the same commodities⁹. However, the tablet in question might be the remains of another series dealing with the same commodities but without indication of collector, since the activities of collectors tend to be recorded separately¹⁰.

§ 8. The quantities of commodities as recorded in the Mc tablets follow a fixed proportion 5:3:2:4, which can be deduced from the tablets whose figures have been preserved to us complete (4453-4456, 4459, 4460, 4462). This proportion has been already noticed¹¹. It contains, however, two different parts, since the ratio between the commodities *142 and CORN is a fixed 2:4, but the ratio 5:3 between *150 and CAP^f is roughly the arithmetical mean of the quantities actually recorded.

Such a proportion 5:3:2:4 leads us to restore approximately the lost figures. We do not reach certainty as far as the two first commodities are concerned. Probable restorations are followed by ?, while a lesser degree of probability is indicated by ?? in all the following tabulations.

First, let us determine the totals of the commodities in the Mc tablets:

Tablets	Place-name	Collector	*150	CAP ^f	*142	CORN	Additional entries
Mc 4453	————	]ja-*18	24[	17	M 12	24	
4454	u-qa-mo	da-wa-no	29	16	M 13	26	da *150 1
4455	ku-ta-to	a-pa-sa-ki-jo	28	16	M 12	24	
4456	da-*22-to	si-nu-mo-ro	16	10	M 7	14	
4459	ku-]ta-to	a-ko-ro-ta	23	15	M 10	20	qe-wa-ra
4460	]so	a-wa-so	14	7[	M 6	12	
4461	ja-go	da-wa-no	—	—	—	—	v. 160[
4462	ti-]ri-to	ra-wo-go-no	61	30	M 26	52	a-re *150 1

⁹ «The Classification of the Knossos Tablets», *Acta Mycenaea* I, p. 26.

¹⁰ Cf. the failure of collectors' animals to be recorded in the area totals of sheep on the Dn tablets; see J.-P. Olivier, «La série Dn de Cnossos», *SMEA* 2, 1967, p. 79.

¹¹ E. L. Bennett *apud Documents*, p. 301; J.-P. Olivier, «155 raccords», pp. 128 f.

4463	]jo	a-pa-u-ro	10[	6??	M 5	10?
4464	se-to-i[-]ja	te-ru-ro	12	7??	— 5	10?
5118	_____	_____	23??	15	— 10?	20
5809	_____	_____	29??	16	— 13?	26
5818	_____	]te[	15[	9??	M 3	6?
8447	_____	_____	16??	10	— 5?	10
8448	_____	_____	22??	14	— 10	20?
8452	]i	e-[-.] -da[—	—	—	—
TOTALS			322	188	M 137	274

The fragmentary tablets Mc 8705 and 8708 are not tabulated above, since they only contain one figure each. The commodity that this figure relates to, is not preserved. In *KT*⁴ these figures appear below the mention *sup. mut.*, which suggests that both figures belong either to *142 or to CORN, since these are the commodities recorded on the second line. Furthermore, the figure]10 of Mc 8705 is likely to refer to CORN, because the drawing of this tablet¹² clearly shows that this figure is the last written on line B. Therefore, we should probably restore all the quantities of Mc 8705 as 12???:7???:5?:10 (cf. Mc 4464).

Whether the figure]6[on Mc 8708 belongs to *142 or to CORN, is doubtful. Thus, it is possible to restore two entries (A and B) in accordance with the proportion 5:3:2:4, as may be seen below:

	*150 CAP ^f	*142 M	CORN	Added to those of Mc 8705				
A	15???	9???	3?	6	27???	16???	8?	16
B	14???	8???	6	12?	26???	15???	11?	22?

We obtain two possibilities for the total of the whole Mc tablets coming from the Arsenal:

¹² J.-P. Olivier, «Nouvelles tablettes en linéaire B de Cnossos», *ABSA* 62, 1967, p. 314.

	*150	CAP ^f	*142 M	CORN
TOTALS + A	349	204	145	290
TOTALS + B	348	203	148	296

Whatever the true total may be, we can see that it is very close to the quantities recorded on the totalling tablets (§ 9). Such an equivalence between the total of the single records and the total amount on Mc 5107 and 4457, would invite us (since we must allow for some quantities lacking in 4461 and 8452) to regard the fragments 8708 and 8705 as part of some of the extant tablets which are not complete (4461, 4463, 4464, 5818 and 8452).

§ 9. Two documents obviously record some kind of totals of the single tablets, as may be seen both from the large quantities and, in Mc 4457, from the formulaic *to-sa*:

a) Mc 5107

*150 354 CAP^f 200[

b) Mc 4457

.A *to-sa* *150 345 CAP^f 208[

.B *ke*[]*142 L 5 M 4 CORN 345[

On Mc 4457 the numerals on the right are probably complete. J.-P. Olivier has pointed out that on B *ke*[] is perhaps to be restored as *ke*[-ro or *ke*[-ro₂¹³. On this tablet the commodities are recorded following the same pattern as on the single records. However, the proportion between them is not 5:3:2:4 but 5:3:2:5. Thus, the fixed ratio 2:4 (one M unit of *142 answering to a pair of CORN) is not observed there, a fact that has not thus far been accounted for satisfactorily and seems very difficult¹⁴.

¹³ «155 raccords», p. 128.

¹⁴ J.-P. Olivier, «155 raccords», pp. 128 f., suggests that Mc 4457 is a totalling tablet which records the total of the commodities predicted. He explains the difference between the total of CORN from the single records and the quantities

The fragmentary tablet Mc 5107 preserves only the totalling quantities of the first two ideograms (*155 and CAP^f). Whether the amount of commodities keeps the proportion 5:3:2:4, like the single records, or 5:3:2:5, as on Mc 4457, is quite impossible to say. There are, therefore, two possibilities for restoration:

- 354:200:[133:266, in accordance with 5:3:2:4;
- 354:200:[133:332, in accordance with 5:3:2:5.

In any case we assume that the total of CAP^f is complete¹⁵.

The difference between the totals of Mc 5107 and 4457 is not proportional: the quantities recorded on 4457 are bigger than those on 5107, except for the quantities of *150, as is shown below:

Tablets	*150	CAP ^f	*142 M	CORN	Proportion
Mc 4457	345	208	154	345	5:3:2:5
5107	354	200	133?	266?? 332??	5:3:2:4 5:3:2:5
DIFFERENCE	—9	8	21?	79?? 13??	5:3:2:4 5:3:2:5

There is a very striking similarity between the difference and some figures as recorded on Mc 5187.B (CAP^f 8 *142 M 20). If it is not merely a coincidence, Mc 5187 would somehow record a difference between the two totalling tablets. One might think of Mc 5187 as being a *deficit* tablet that would have been stored in another part of the palace, but the rather strange arrangement of this tablet makes it difficult to advance any reliable interpretation. If Mc 5187 is actually a document listing *deficits*, then Mc 4457 would record, as J.-P. Olivier has pointed out¹⁶, the

on Mc 4457 as a 20 % discount on the amount predicted. However, it is far from certain that Mc 4457 records the total predicted for the four commodities. Dr Chadwick suggests that the number of CORN is probably wrong, since we would expect an even number, and that we should correct it to 308.

¹⁵ We should expect ± 212 CAP^f in accordance with the proportion 5:3.

¹⁶ See n. 14.

«prévision globale» of the four commodities listed on the single records. This tentative explanation, however, does not account for the total obtained from the single records —if our restorations are correct—, which is closer to the amount recorded on Mc 4457, but exceeds the quantities written on Mc 5107. On close examination neither tablet yields anything to connect one with the other. Only a happy join could restore the lost figures on Mc 5107, —or else a more exact identification of the four commodities might bring us nearer to a solution (§ 16).

§ 10. The Mc commodities are described by the ideograms *150, CAP^f, *142 and CORN, which only occur on the Mc tablets (except for CAP^f which recurs in tablets belonging to other series)¹⁷.

Let us discuss now (§§ 11-14) the interpretations which have been so far proposed for those ideograms —or which are merely possibilities suggested by the texts themselves.

§ 11. The ideogram *150 (= ) is included by E. L. Bennett among those about which we cannot tell whether they are syllabic monograms or modified ideograms of the type of BOS+SI (thus *150 would be explained as *22RA/RA*22)¹⁸. We know that the syllabogram *22 is only attested at Knossos in place- and personal names, which are probably non-Greek¹⁹. Whether the monogram *22RA/RA*22 belongs to a pre-Linear B repertory —as MARU = LANA, though we cannot find any evidence of a combination such as *22-ra/ra-*22 in the Linear A texts—, is a purely speculative question. Such a combination is not found in the Linear B texts either²⁰.

On the other hand, the identification of the ideogram *150 as *22RA/RA*22 remains doubtful. On the basis of the epigraphical evidence available to us, scribe 132, who is the only one

¹⁷ A. Sacconi, «Ideogrammata Mycenaea», *Atti Roma* II, pp. 544, 548 f.

¹⁸ «Linear B Sematographic Signs», *Acta Mycenaea* I, p. 57.

¹⁹ M. Lejeune, «Les syllabogrammes B et leur translittération», *Acta Mycenaea* I, pp. 79 f. There are some forms found on the inscribed jars from the Mainland (*da-*22-to* at Eleusis, *ta-*22-de-so* at Thebes) and associated by the analysis of their clay with Cretan products, cf. H. W. Catling - A. Millett, «A Study of the Inscribed Stirrup-jars from Thebes», *Archaeometry* 8, 1965, pp. 3-85.

²⁰ It is only found *22-ri-ta-ro on KN Dv 1216 (hand 117).

using this ideogram, does not seem to interpret *150 as *22RA/RA*22. The drawing of the syllabogram *ra* in hand 132 (= ) shows the curved stroke as , while the curved one of *150 appears as , consisting of two opposite strokes making up an ogive²¹. Moreover, we may also point out that there is nothing in the extant drawings of the syllabogram *22 in hand 132 (= ) suggesting the identification of *22 as a component of *150, since the vertical line, which one would expect to find just below the point where the two curved strokes meet, always starts downwards from the right end.

Ventris-Chadwick suggested that this second sign of the monogram be identified as *so* (thus *150 = RASO)²², but we need only see the drawing of the syllabogram *so* in hand 132 (= ) to reject such a suggestion²³. At least scribe 132 did not see a sign *so* as a part of the ideogram *150.

At any rate, if *150 is a modified ideogram like *22RA/RA*22, one would take it as CAP+RA, since *22 was used as ideogram for CAP. This interpretation, which has been already advanced²⁴, raises the question what difference there is between CAP^f and CAP+RA in this series.

Evans had suggested the identification of *150 as the *agrími*, the Cretan wild goat still living to-day in the island²⁵. The ideogram CAP^f had been identified by him as also a wild goat, but somewhat domesticated in order to ensure the supply of horns, which are recorded by means of the ideogram CORN on the same tablets²⁶.

If Evans was right in identifying *150 as the *agrími*, this animal

²¹ J.-P. Olivier, *Scribes*, tab. XXXIII; but  occurs on Mc 5107, cf. tab. XLIII.

²² *Documents*, p. 302.

²³ J.-P. Olivier, *Scribes*, tab. *cit.*

²⁴ Å. Furumark, «Agäische Texte in griechischer Sprache», *Eranos* 52, 1954, p. 50; L. R. Palmer, «The Find-Places of the Knossos Tablets», in L. R. Palmer - J. Boardman, *On the Knossos Tablets*, Oxford 1963, p. 162.

²⁵ J. D. S. Pendlebury, *The Archaeology of Crete*, London 1967 (reprint), p. 4.

²⁶ A. Evans, *The Palace of Minos* V, London 1935, p. 833. But Evans' explanation is a mere hypothesis suggested by the occurrence of the ideograms CORN and CAP^f.

should by opposition to CAP^f be a male *agrími*, since there is no need further to show its masculinity, cf. *ta* BOS / BOS^f on C 901, where *ta* might be an abbreviation of *tauros*²⁷. This parallel would lead us to take *150 as a modified ideogram CAP+RA, where RA might stand for the Cretan name of the male *agrími*, but that is mere speculation.

Having interpreted *150 as CAP+RA, L. A. Stella explains additional RA as an abbreviation of the Homeric word λαισήϊον, «scutum»²⁸. In so doing, she was probably misled by the misreading *ra-so* (cf. λαισήϊον??) in *Documents*. Thus *150 would be a «caprinum scutum», the Mycenaean little shield made of just one skin of *agrími* or goat. However, *150 is more likely to mean not a goat-shield but the (wild-)goatskin itself out of which shields of this type and other things were made.

§ 12. If we are not wrong, this interpretation of *150 paves the way for explaining the ideogram CAP^f in the Mc series, which would represent in a similar way not a goat but a goatskin. Such an assumption would involve assigning two (related) meanings to the same ideograms, which reminds us of the use of LANA for «wool» and also, on the Dp series, for «fleece».

The evidence from the tablet 5669, which is classified as C in *KT*⁴ but as Mc in *KT*³, would lend support to this view. Its text, of which both scribal hand and find-spot are unknown, reads as follows:

.0		<i>sup. mut.</i>	
.1	]	*150	12 CAP ^f 1[
.2	]	*150	12 CAP ^f [
.3		<i>inf. mut.</i>	

The reading of the two *150 is very uncertain. On line 1 it is possible to read the ideogram *258 instead of *150, and it should be pointed out that the drawing of this ideogram is quite similar to the one of *152, which presumably represents an ox-hide. It would be, therefore, safer to expect to find there CAP^f meaning something like «goatskin». This new explanation of

²⁷ We owe this suggestion to Dr Chadwick.

²⁸ *La civiltà micenea*, Rome 1965, p. 80.

CAP^f, in spite of its hypothetical character, brings us nearer to an interpretation of the Mc tablets as a whole.

On the other hand, the normal value of the animal ideograms is the live animal; but in the case of wild animals we must allow them also to stand for the carcasses of dead animals, and understand likewise CERV as the product of a hunt²⁹. But we know that these carcasses are not integral, because at least their horns have been taken off and recorded separately. We can hardly imagine that a half thousand of carcasses from different places were stored at Knossos to provide meat (*pace Od.* 5.154 s.). Further, it is difficult to assume that the Mycenaeans at Knossos did eat any meat from male carcasses, since those goats are wild ones and therefore had not been castrated. Thus, it is tempting to think that the flesh of the goats had been also taken off, as well as horns, to avoid putrefaction and make their storage possible.

If we accept that explanation, we might interpret *150 and CAP^f as raw goatskins.

§ 13. At first sight, the ideogram *142 seems to be a monogram. Its drawing (= ) shows clearly a syllabogram QE supplemented with an additional shape like *o* on the upper left. Such a supplement has been interpreted by L. Deroy as a simplified form of HORDEUM (*142 = HORDEUM + QE)³⁰. Whether it is actually HORDEUM (= ) or, for instance, a simplified form of the ideogram *181 (= )³¹, we are unable to decide, and we cannot suggest any more precise identification. However, if *142 is a modified ideogram, the transcription should obviously be QE+x, not x+QE.

Moreover, let us recall that the ideogram *142 has been confused with the ideogram *172, which presents a similar outline. *KT*⁴ does confuse both of them, deletes the ideogram *142, and

²⁹ We owe this suggestion to Dr Chadwick.

³⁰ *Apud* Bennett, «Linear B-Abel», *Minos* 8, 1967, p. 78. Dr Chadwick has drawn our attention to the fact that on Mc 4459 *qe* is a little smaller than the corresponding element of *142 and has four short bars, while *142 has four dots. However, to our unpractised eye, *142 has four dots on Mc 4457, but four short bars on Mc 4454, 4456, 4453, cf. J.-P. Olivier, *Scribes*, tab. LVII.

³¹ The ideogram *181 is only attested on KN U 736.2 (= *181 10): this is a more probable reading than 110.

takes its drawing as belonging with the ideogram *172 in the end-list³². We wonder if we are in the presence of a mere lapsus.

The ideogram *172, as J. P. Olivier has pointed out³³, is «un cercle au-dessus duquel sont inscrits deux syllabogrammes». These two signs are *ke* and *ro/ro₂*. If the surcharged form is *ke-ro*, the ideogram should be , but it should be merely a circle , if *ke-ro₂* is the word written above. In any case, compare these drawings with the ideogram *142.

Since this confusion has conditioned the restoration of *ke*[] made by J.-P. Olivier on the totalling tablet Mc 4457 as *ke*[-*ro* or *ke*[-*ro₂*], those readings should be rejected.

On the other hand, *142, taken as a combination *QE*+*x*, recalls the ideogram *162, transliterated as TUN+*QE*. Here *QE* was interpreted as an abbreviation for *qe-ro₂*, describing some part of the Mycenaean cuirass³⁴. There is no reason to relate this surcharged *QE* to the additional *QE* of *142, and to interpret it likewise, since it is obvious that *142 is something measured by weight.

Apart from the Mc series, there are three tablets coming from the Arsenal which deal with commodities measured by weight: M 8170, on which 58 m units perhaps of *146² are recorded; Dg 4467 and 8150, which contain 30/15 and 12/9 m units respectively of an unspecified commodity.

We know of the following commodities weighed on the Knossos tablets:

- a commodity named *po-ni-ki-jo* in the Ga series³⁵, whose quantities range from m 3 to m 14;
- flax (*ri-no*) in the Nc series³⁶, cf. also Np 7423 and Og 5778;
- saffron (CROC) in the Np series;

³² J. Chadwick, J. T. Killen and J.-P. Olivier, *The Knossos Tablets IV*, Cambridge 1971, p. 472.

³³ «Idéogrammes archéologiques non-identifiés du linéaire B», *BCH* 94, 1970, pp. 303, 308, ill. 31.

³⁴ *Documents*, pp. 380 f, but TUN+*QE* is probably to be arranged along with TUN+*KI*, TUN+*RI* as varieties of cloth, cf. TELA+*PA*, +*TE*, +*KU*, etc.

³⁵ Probably a spice, but cf. G. Maddoli, «*Ko-no* e *po-ni-ki-jo* micenei in un'iscrizione cretese arcaica», *Atti Roma* II, pp. 643-648, esp. 647 f.

³⁶ Cf. J. T. Killen, «The Knossos Nc Tablets», *Cambridge Colloquium*, pp. 33 ff.

- metals in the Oa series;
- wool in the Od series;
- several commodities in the Og series: lead (1527) at the rate of 3 M units for each entry; ivory (7504), whose total appears as L M 30, and an unidentified *ka-te-ro*, whose amount occurs as L 4 M[(5515, cf. perhaps 7504)³⁷.
- unspecified commodities, because no ideogram is written along with the weight-units, are recorded in the Og series as well.

The question arises whether *142 is one of the above commodities or a new one unknown to us. On the other hand, it is tempting to take into account that there is a fixed ratio between *142 and CORN (namely, one M unit of *142 answers to a pair of CORN).

If the ideogram CORN is to be identified as a wild-goat horn to make composite-bows, as is the *communis opinio*, the commodity represented by *142 should be a single component of the bow:

- the central *regula* of the bow made of wood or metal, usually bronze³⁸;
- or else, tendons to make the bow-string³⁹.

The second possibility is nearer to a satisfactory interpretation of the ideogram. In that case, the Mc tablets would list deliveries or requisitions of animal products for making weapons. Assuming *142 to represent metal would leave unexplained the absence of the bronze ideogram (*140). This is why we much prefer to understand *142 as «tendons», another animal product like the horns recorded on the same tablets, and likewise measured by weight.

§ 14. The ideogram *151, transliterated as CORNU, had been interpreted by Evans as a wild-goat horn, since its drawing is

³⁷ J.-P. Olivier, «155 raccords», p. 131.

³⁸ Cf. H. L. Lorimer, *Homer and the Monuments*, London 1950, pp. 277 ff., but she says on p. 290 that Pandaros' bow had presumably as main components, apart from horn, wood and sinew.

³⁹ Since *181 has been interpreted as «thongs» in *Documents*, p. 51, such an explanation would reinforce the identification of *142 as a monogram QE+*181, but every interpretation is purely speculative.

readily recognizable (= ). He suggested that these horns were the raw material to make bows of Asiatic type, i.e. composite-bows as Pandaros' one in the *Iliad*⁴⁰. This interpretation has been accepted in *Documents* and by L. A. Stella⁴¹, who believes that the Cretan name of the Asiatic bow can be read in a restored form *ke-]ra* κέρας on M 4452. The mention of the Mc series as materials for weapons by J. T. Killen undoubtedly derives from this widespread belief⁴².

Now, however, we know that the items of CORN were confused with those of a different ideogram *253 not yet interpreted (= ). The ideogram *253 is likely to represent some part of the Mycenaean chariot, named *wo-ra-e* on Sp 4451⁴³. The tablet 4452, classified as Sp in *KT*⁴ but as M in *KT*³, contains a fragmentary form *]ra*, which Ventris-Chadwick and L. A. Stella have restored as *ke-]ra*. Since it is followed by the ideogram *253, the most probable restoration is *wo-]ra* as in *KT*⁴, whereby the evidence for a hypothetical κέρας as the Cretan name of the composite-bow at Knossos is disposed of.

On the other hand, J.-P. Olivier has emphasized the existence of an ideogram —*249— representing the bow both at Knossos and Pylos⁴⁴. Its drawing () shows obviously that it is the European self-bow and not the Asiatic composite-bow made of wild-goat horns. Moreover, the evidence available to us from contemporary monuments in Crete and the Mainland strengthens the view that the Mycenaeans did use the self-bow in hunting and war⁴⁵.

⁴⁰ *Loc. cit.*, cf. *Il.* 4.105 τόξον εὔξοον ἰξάλου αἰγὸς ἀγρίου. On Pandaros' bow see H. L. Lorimer, *loc. cit.*

⁴¹ *Documents*, p. 302; L. A. Stella, *op. cit.*, p. 88 and n. 68.

⁴² J. T. Killen, «Nc Tablets», p. 33. The identification of CORN as horns of consecration having a mushroom-like symbol stuck in their midst, proposed by K. Hadjioannou, «The Cellarka Burial Offerings. An Analysis and Interpretation». *Salamis IV*, Nicosia 1970, pp. 312 f., is difficult to accept.

⁴³ C. Gallavotti, «Note sul lessico miceneo», *RFIC* 39, 1961, pp. 171-179.

⁴⁴ «L'idéogramme *249 du Linéaire B», *Kadmos* 4, 1965, pp. 58 ff.

⁴⁵ H. L. Lorimer, *op. cit.*, pp. 277 ff. But A. Snodgrass, *Arms and Armour of the Greeks*, London 1967, pp. 23 f., accepts the Mc tablets as evidence for the Cretan composite bow, while the self-bow only would have been used in the Mainland.

The existence of a type of composite-bow, therefore, is to be rejected, at least on the Knossos tablets. Thus there is no reason to interpret the amount of CORN in the Mc series as raw material bound for workshops of composite-bows. If we abandon this usual explanation of CORN, we must also rule out the interpretations of the remaining ideograms in the series, because they are dependent on the meaning assigned to CORN.

§ 15. Thus far, no interpretation of the Mc tablets as a whole has proved to be satisfactory. Now, there is another approach which may yield positive results for our knowledge of the subject of the Mc series. It suggests itself on close examination of the tablets coming from the Arsenal as a whole, when we try to find a more complete understanding of this Archive and the subjects it covered.

The Arsenal contains, as we know, records written by four scribes (128, 129, 130, 131) dealing with similar subjects. There are also documents belonging to other scribes (132, 133, 202, 206). Whether the latter were somehow related to the former or they belong to another office, is a difficult problem to solve. J.-P. Olivier has suggested another possibility, namely that the records in hand 132, 133, 202 and 206 had been sent to the Arsenal along with the commodities they refer to, to be stored there. Those scribes, therefore, would not belong to the office of the Archive itself⁴⁶, but such an interpretation makes it necessary to account for some details.

Olivier's suggestion is sound as far as R 4482 is concerned, for it deals with arrows and was found along with arrowheads and some remains of wood boxes and clay sealings (Ws 1704, 1705 and 8459)⁴⁷. It is also possible that some tablets from the Arsenal were stored along with the commodities, since we find other records in the same hand in a different part of the palace. That would encourage us to think that the occurrence of documents in that hand in the Arsenal is fortuitous. Thus, the isolated tablets E 4466, dealing with GRA, and M 8170 are likely to have been stored along with the commodities —and perhaps

⁴⁶ J.-P. Olivier, *Scribes*, pp. 127 f.

⁴⁷ L. R. Palmer, «Find-Places», p. 159.

the two Og tablets and those in hand 133 belonging to the Nc series⁴⁸ as well. All those tablets would seem to deal with commodities stored in the Arsenal, but not covered by the office itself. Such an explanation would not of course necessarily apply either to the Sk records⁴⁹ or to some unclassifiable fragments found in the Arsenal⁵⁰.

However, there is nothing to suggest that the records written by a scribe who appears to be active only in the Arsenal, belong to the store and not to the Archive itself (though the Archive might have included more than one office).

Therefore all the scribes 128, 129, 130, 131, 132, 202 and the writer of the Sp series would be the Archive team working in the Arsenal, since they only are attested there. Their subjects are largely known to us, and may be briefly arranged as follows⁵¹:

- scribe 128 lists CUR *a-ra-ro-mo-te-me-na*, namely with their wheels⁵²;
- scribe 129 records CAPS, namely chariot-frames without wheels or harness or other components⁵³;
- scribes 130 and 131 list ROTA, whose total is close to the number of chariots without wheels⁵⁴;
- the writer of the Sp series («132»?) lists some uncertain part of the chariot named *wo-ra*⁵⁵;
- scribes 132 and 202 record some unidentified items.

⁴⁸ Cf. J. T. Killen, «Nc Tablets», p. 33; J.-P. Olivier, *Scribes*, pp. 80 f.

⁴⁹ Though the Sk records appear to be a coherent set, their provenance is still obscure. The appearance of these tablets indicates that most of them in the Arsenal, cf. J.-P. Olivier, *Scribes*, pp. 89, 113 f. However their find-spots, as far as we know them, show a distribution somewhat similar to that of the chariot records, cf. J. Chadwick, «Classification», p. 27.

⁵⁰ Possibly the «lost» fragments X 4472 and 8171 are So 4442 and M 8170. X 4486 can be related by their appearance and arrangement to the Nc tablets. X 4487 contains a form *e-ri-ko* which invites us to relate this fragment to the So records (cf. *e-]ri-ko* ROTA So 8251).

⁵¹ The following descriptions are based upon the close analysis of the chariot records made by M. Lejeune, «Chars et roues à Cnossos. Structure d'un inventaire», *Minos* 9, 1968, pp. 9-61.

⁵² «Chars», pp. 27 ff.

⁵³ «Chars», pp. 31 f.

⁵⁴ «Chars», pp. 33 ff., 47.

⁵⁵ See n. 46.

For our purposes the chariot-parts may be analysed as follows (I and II are not attested as independent ideograms, but are obtained from the analysis of CUR):

I			
II			Sf
			So
<i>a-ra-ro-mo-te-me-na</i>			Sd

In the Archive of the Arsenal scribes appear to try to make up complete chariots, but even so they succeed in getting only a small number of fully equipped ones (= Sd tablets), whereas the largest entries correspond to chariots in process of completion (= Sf tablets); their wheels are listed alone (= So tablets), though there is neither any mention of harness nor of other components of the full assemblage (= I and II).

Thus the equipment of a lot of chariots is still unfinished: some components of the assemblage are missing (harness, side-extensions, pole-stays, etc.). How and whence the Mycenaean rulers of Knossos managed to obtain the materials for this purpose, is obscure. There are indications pointing to a system of annual contribution⁵⁶ and perhaps several of the recorded raw materials

⁵⁶ «Chars», p. 24.

were at the workshops and some parts of the chariots as well⁵⁷. It would be tempting to take the commodities listed on Og 4467 and 8150 as a supply of materials to the workshops outside Knossos.

The question arises why these chariots are still incomplete. It is not probable that they were stored for no purpose. We may expect, therefore, the missing parts to be found somewhere, as at Pylos⁵⁸. We have seen that some part of the chariot named *wo-ra* is recorded in the Sp series. It is made of metal (*pa-ra-ku-we-jo?* 4451, *ka-za* 4452) and its appearance may be seen from the drawing of *253, which recalls the peculiar side-extensions of the chariot-body and whose small number (only 3) is striking⁵⁹. On the other hand, the tablet U 4478 in hand 202 could be a list of some kind of component connected with the chariot assemblage. Some details about it may be observed from the drawing or the ideogram *177 (= )⁶⁰ found on this tablet in company with a pair of syllabic signs *e/ma*, which are presumably abbreviations, interpreted by Ventris-Chawdick as ἔλαχύς / μακρός⁶¹. L. R. Palmer has pointed out⁶² that *177 might represent some element of the chariot equipment, since some personal names recorded on U 4478 seem to be *a-ni-o-ko* (e.g. *ka-pa-ri-jo*, see V 60). Since *177 is quite similar to a Hieroglyphic Hittite ideogram, which represents the yoke and the reins, he identified

⁵⁷ Wheels are recorded as «under construction» (*wo-zo-me-no/a* So 4433, 4438), in contrast to those «having been delivered» (*de-do-me-na* So 4429, 4441). The explanation of a form *o-pa* as «workshop» is problematical.

⁵⁸ PY Sb 1315; cf. M. Lejeune, «Chars», p. 53.

⁵⁹ J.-P. Olivier, «Idéogrammes archéologiques», p. 307 ill. 24-25. On this peculiar side-extension of the Mycenaean chariot body, see H. L. Lorimer, *op. cit.*, p. 316.

⁶⁰ J.-P. Olivier, «Idéogrammes archéologiques», p. 305 ill. 13-16; cf. his *Scribes*, p. 88.

⁶¹ *Documents*, p. 53. Palmer's interpretation of adjuncts *e/ma*, «Find-Places», p. 161, is attractive (2 *e* = 2 *e-ge*, cf. *i-go-e-ge*, i.e. «harness-saddles», and 1 *ma* = 1 *ma-ti*, cf. *ma-ti-ko* V 295, i.e. μάστιξ), but the proportion 2 *e* : 1 *ma*, on which he bases his assumption, is not sure, since in line 2 one can read *me-wo-ni-jo e*177 2 ma*177 2*.

⁶² *Loc. cit.* C. Sourvinou Inwood in her «Bibliography on the Archaeological Background of the Linear B Tablets with Special Reference to Ideograms of Archaeological Interest», published in this volume of *Minos*, interprets (pp. 96 ε.) *245, which appears in Sf 4465, as the yoke with the rein-guides and the beginning of the shaft.

*177 as a schematic drawing of those elements of the chariot. Though its drawing differs from the yoke and the reins(?) as drawn in the ideograms BIG and CUR, the Homeric evidence reinforces the suggestion that the yoke and its complements were stored separately (cf. *Il.* 24.268), and then recorded separately as wheels on the tablets. Thus we could identify the drawing of *177 as a combination of three parts: the ring (κρίκος) to anchor the yoke to the pole, the yoke itself (represented by the horizontal stroke) and a third component (represented by the four vertical strokes) which may be interpreted either as the reins, or the thongs attaching the horses to the yoke, or the harness-saddles or the breast-straps (λεπάδνα).

Those components mentioned, however, would certainly not be sufficient for the full assemblage of chariots, but this difficulty may be overcome by suggesting that the missing components were still at the workshops. There is a second possibility, namely that only the raw materials for them were recorded in the tablets, because they were already stored in the Arsenal before they were sent to the workshops. For instance, we might think that this is why some quantities of flax were stored in the Arsenal (= Nc tablets)⁶³.

On checking the records with the chariot-parts that we know, we miss records of harness, reins, pole-stays, etc., described on the tablets as *a-ni-ja*, *o-po-go* (always conjoined with *o-pi-i-ja-pi*) and *i-go-e-ge*. About three hundred of these components are needed to complete the assemblage of the chariots stored in the Arsenal. Whether they are at the workshops or only the raw materials necessary to make them are recorded, is uncertain. However, if they were already at the workshops, we would expect to find mention of their having been sent there, an expectation which is not confirmed, at least by the extant tablets.

We propose, therefore, briefly to examine the raw materials that these components are made of:

⁶³ To make breast-straps, for instance. The existence of cloth breast-straps as well as leather ones in Mycenaean times can be inferred from the monuments, cf. J. Wiesner, *Fahren und Reiten*, Göttingen 1968, p. 54 ill. 12 *d*. However, J. T. Killen, «Nc Tablets», p. 37, has suggested that the amounts of flax recorded on the Nc tablets were delivered for the making of warriors' protective equipment.

- the *a-ni-ja* are obviously of leather;
- the *o-po-go* are usually of leather (*wi-ri-ne-jo* Sd 4404, etc.), occasionally of ivory (*e-re-pa-te-jo* Sd 4403);
- the *i-go-e-ge* is described as «wooden» (*do-we-jo* Sd 4413, etc.) and this implies that it may also be made of another material (bronze?).

Thus, there is need of the following raw materials: skins (*a-ni-ja*, *o-po-go*), ivory (*o-po-go*), horn (*o-pi-i-ja-*), bronze (*o-pi-i-ja-*, *i-go-e-ge?*), and wood (*i-go-e-ge*).

It is tempting to suppose that, as at Pylos, the wood needed for chariot-building was sent by the *du-ru-to-mo* and was recorded separately⁶⁴. We know too little about metalworking at Knossos, but it is obvious that metals must have been the subject of independent records⁶⁵. As for the remaining materials we may suppose that, if we set apart ivory, they were animal products and may be expected to be recorded together. Thus it is tempting to assume that the commodities listed on the Mc tablets, all of which are animal products, are precisely the raw materials for the building of chariots we find missing on the chariot tablets proper.

This suggestion receives support from a consideration of the total of CORN. We may safely assume that only one horn is sufficient to make the *o-pi-i-ja-* needed to equip one chariot. Thus about three hundred *o-pi-i-ja-* would be needed and roughly the same number of horns, for these components are usually made of horn. The number of CORN stored, according to the Mc documents, is 290-296 in the single records and 345 on the totalling tablet Mc 4453. Both these numbers are too close to the number of *o-pi-i-ja-* needed to be a mere coincidence.

On the other hand, L. R. Palmer has already suggested that the two first commodities recorded on the Mc tablets (*150 and CAP^f) were intended to be used by the Arsenal itself⁶⁶. As we have pointed out above, those commodities can only be interpreted

⁶⁴ Cf. PY Vn 10.1 *o-di-do-si*, *du-ru-to-mo* .2 *a-mo-te-jo-na-de*, *e-pi-pu-ta* 50 .3 *a-ko-so-ne* [[100]] 50 etc.

⁶⁵ The two Og tablets found in the Arsenal might record metal deliveries to make those metal components.

⁶⁶ «Find-Places», p. 162.

as *agrími* skins, since none of the previous suggestions leads to an understanding of both ideograms. Skin is usually employed in chariot-building. The *o-po-go* and the *a-ni-ja* are made of leather. The floor of the chariot consisted of a mesh of raw-hide strips, and the wooden frame-work of the body was fitted out with leather⁶⁷, and the tyres of the wheels were presumably of leather too⁶⁸. On the other hand, goatskins were highly valued by leather-workers for those purposes⁶⁹. Therefore the skins recorded on the Mc tablets fit well into the interpretation we suggest.

However, the commodity referred to by *124, on the evidence available to us, cannot be interpreted as easily. It was previously pointed out by L. R. Palmer⁷⁰ that each animal yielded a pair of horns and one m unit of *142 (ca. 1 kg.). Since the Mc records deal with three animal products (strictly derivatives of goats), it is probable that the commodity concealed under *142 is also an animal product (strictly a derivative of goats). This unknown product might be used for some purpose in chariot-building. On that assumption, we are reminded of the form *a₃-ki-no-o* on the KN tablets Se 879 and 1006. The identity of *a₃-ki-no-o* with the form *35-*ki-no-o* at Pylos is probable: in any case *35-*ki-no-o* admits of the same interpretation⁷¹. Ventris-Chadwick's suggestion «goat tendons», although purely etymological, is the likeliest one⁷², for we can see that:

⁶⁷ In the same way as thin leather thongs were used in carpentry by contemporary chariot-makers in Egypt, cf. R. J. Forbes, *Studies in Ancient Technology* V, Leiden 1957, pp. 31 ff.; cf. H. L. Lorimer, *op. cit.*, p. 311.

⁶⁸ Cf. *te-mi-dwe-ta* So 894, etc. «with leather tyres» as opposed to *ka-ko-de-ta* So 894 «with bronze tyres»; cf. M. Lejeune, «Chars», p. 45 and n. 85.

⁶⁹ Leather for war-chariots was obtained in Ancient Mesopotamia largely from sheep and goats, cf. R. J. Forbes, *op. cit.*, p. 41.

⁷⁰ «Find-Places», p. 162.

⁷¹ L. Baumbach, «Further Thoughts on PY Vn 46», *Acta Mycenaea*, p. 388, suggests that the identification of both forms is a strong possibility. If, as she suggests, PY Vn 46 is a list of materials for building repairs, one would explain *35-*ki-no-o* as goat thongs used in fitting out wooden elements of construction, since we know that leather was used in carpentry, cf. R. J. Forbes, *op. cit.*, pp. 32 f. It implies a semantic change of *-no-o* from «tendon» at Knossos to «thong» at Pylos, which is not difficult to assume. This explanation fits well with the large numbers of *35-*ki-no-o* recorded.

⁷² *Documents*, p. 369.

- pieces of leather were closely joined by very narrow leather thongs or tendons. Thus tendons were used for sewing in chariot-building⁷³;
- they were measured by weight;
- full use was thus made of sacrificed goats for the Arsenal's purposes.

There remains, however, a difficulty to overcome: the fixed proportion 1:2 between *142 and CORN might support the notion that each animal yielded one M unit of *142, i.e. about 1 kg. of tendons, which seems too high a quantity. Ventris-Chadwick have noticed that the horns are considerably fewer than would have been provided by the number of goats listed and —we agree too— that only a proportion of horns were of acceptable quality⁷⁴.

⁷³ Cf. Hes. *Op.* 544 δέρματα συρράπτειν νεύρω βοός.

⁷⁴ *Documents*, p. 302. Dr Chadwick emphasizes the close relation between the number of *150 and that of CORN. He points out that the number of CORN is usually a little less than and never more than that of *150. This in turn implies that only the male *agrími* may have (suitable) horns —as he writes us. Now, we know that the female *agrími* is horned. A Minoan gold signet-ring (1700-1550 B.C.) shows an intaglio design of two *agrími* mating, cf. R. Higgins' *Minoan and Mycenaean Art*, London 1967, p. 52 fig. 50, and here the female goat has also horns, but smaller than those of the male. The evidence of the Mc tablets might suggest that only the horn of the male was suitable because of its length (the horns of the grown-up male *agrími* can measure nowadays to 80 cms. in length, cf. P. G eroulet, «World Wildlife Fund» in F. R. de la Fuente's *Fauna* 116). That is puzzling, since we have advanced that horn was used for making bits and horns of the female *agrími* would be suitable as well. If for the purpose required the horn had to be whole —as Dr Chadwick suggests—, it can hardly have been used in chariot-building, unless we assume that it was an element of the harnessing or of the yoke. Contemporary Egyptian chariots show horn-like elements in the harness, which may suggest that the older elements were horns themselves. This reminds us of the interpretation of *e-wi-su-*79-ko*, PY Va 482, as «pieces (tusks?) of ivory *ewisu-zugo*», whose alternative spelling *e-wi-su-zo-ko* occurs at Knossos, Se 965, 1007, cf. *Documents*, pp. 369, 394. But every interpretation is mere speculation and the chief obscurity concerns Mycenaean yoke and harness. On the other hand, the little difference existing between the number of *150 and that of CORN would make sense if some carcasses —as Dr Chadwick suggests— proved to have the horns damaged. But, since each goat has two horns, should we understand CORN as a pair, not as a single horn? If that is so, the error CORN 345 suggested by J. Chadwick would be forgivable, since one would expect that each *150 provided a pair of horns.

Thus the total of tendons (all of which were of course fit to use) would answer not to CORN but to the total of sacrificed goats. If so, each goat would have yielded about 1/4 kg. of sinew, which is more likely.

§ 16. To sum up, what we should like to suggest is that the subject of the Mc series belongs with the general one covered by the Archive in the Arsenal as well as the S- tablets. The Mc documents seem to be records of raw material needed in chariot-building and temporarily stored in the Arsenal. Whether they are fixed annual contributions or emergency requisitions, is quite impossible to say. Deliveries of these materials (or goats for that purpose) were obtained in different localities by collectors, but no evidence can be found to determine the goats' grazing area in the island.

Since the tablets classified as Mc in *KT*⁴ fit into the pattern of the Arsenal, we would suggest that they be reclassified as S- (for instance, S1).

Finally, let us draw our attention to a problem we left unsolved, that is, the fact that the totals of *150 and CAP^f on the two totalling tablets do not correspond to each other. Since both *150 and CAP^f describe skins, it is likely to assume that a mistake can easily be made when counting skins of similar animals (*agrími* and goat): scribe 132, or his assistant, might have taken a *150 skin as a CAP^f one or *viceversa*. In any case the total of both types of skins must have been unaffected by such a mistake:

Mc 4457	*150	345	Mc 5107	*150	354
	CAP ^f	208		CAP ^f	200
Total of skins			553		
			554		

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