

DRAFT REPORT

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Lydford, Devon : Grain Deposits from the 12th century Granary

The chance to examine extensive deposits of carbonised grain from a medieval granary at Lydford provided a rare insight into the condition of a stored crop in this part of Britain.

The botanical material from the Lydford granary was entirely preserved ^{by} carbonisation. The deposits had survived due to an earthen bank having been constructed over the destroyed granary sealing part of it from post destructional disturbance (Addyman : Pers. Comm.). The granary consisted of three or possibly four buildings, see Figure 1. It must be assumed that the grain recovered had undergone some mixing as a result of the destruction of the buildings. This would be of especial significance if the buildings had been more than one storey high with cereals stored on the first floor.

The quantity of material available for examination from this site was daunting to say the least. Over 200 bags of grain varying in contents from 500 ml - 1000 ml had been removed from the excavation. The site had originally been planned on the basis of a two foot grid, so that each sample could be located only to within a single two foot grid square. It was theoretically possible that at least 120 two foot squares could have been sampled. However, it was discovered that some squares had anything up to 11 individual bags removed from them, whereas other grid squares had only one bag removed from them. As a result 75 individual grid squares could be examined. From this it was possible to establish the presence and dominance of one

Table 1

Lydford Granary: analysis of deposits containing over 100 seeds
per 100 ml of soil examined

Site code	Total seed	Weeds as % of total seeds	Oats as a % of the total cereal/legume	Rye as a % of the total cereal/legume	Wheat as a % of the total cereal/legume	Vicia as a % of the total cereal/legume
F3	308	0.32	100	0	0	0
G5	120	4.16	100	0	0	0
H4	448	3.79	100	0	0	0
J3	858	8.39	100	0	0	0
J5	196	0.51	98.97	1.03	0	0
K2	789	0	100	0	0	0
K4	511	4.50	100	0	0	0
K6	101	2.97	97.95	2.05	0	0
K7	196	2.55	99.47	0.53	0	0
K8	241	0.41	98.33	1.67	0	0
L3	166	3.61	100	0	0	0
L9	442	3.16	95.32	4.68	0	0
M8	897	2.56	99.31	0.69	0	0
M9	798	1.37	98.09	1.78	0.13	0
M10	412	1.70	51.85	46.67	0	1.481
P9	693	0.86	16.45	83.55	0	0
P11	906	0.77	2.56	95.22	0	2.22
P11	100	0	0	0	0	100*
P12	395	0.50	2.87	95.56	0	1.57
P13	199	2.00	27.18	72.31	0	0.51
P14	174	1.15	2.70	97.30	0	0
Q4	241	0.83	98.74	1.26	0	0
Q8	144	2.78	17.14	82.85	0	0
Q9	415	2.40	2.47	97.53	0	0
Q10	1070	1.59	3.80	96.20	0	0
Q11	268	1.12	1.51	98.11	0	0.38
Q14	410	0.73	4.17	95.34	0	0.49

* Possibly this sample was hand sorted during excavation

Table 1 continued

Q16	374	1.87	7.90	91.28	0	0.82
R3	192	0.52	100	0	0	0
R9	448	0.45	85.20	14.80	0	0
R10	212	3.77	98.69	1.31	0	0
R11	846	0.59	1.31	98.69	0	0
R12	149	2.01	9.59	90.41	0	0
R13	217	0.92	18.60	81.40	0	0
R15	166	5.42	44.59	52.86	2.55	0
S12	109	2.01	21.50	78.50	0	0
T16	741	1.08	11.50	75.68	12.82	0
U15	529	0.19	73.67	23.49	2.84	0
U16	424	1.89	38.92	54.83	6.25	0
V14	386	0	90.67	8.82	0.51	0
V16	687	0.44	79.82	17.69	2.49	0
W15	831	1.08	92.82	6.46	0.72	0
W16	362	0.83	80.22	15.05	4.73	0

cereal type over another in different part of the granary complex (Figure 1).

The main problem of analysis was of course the sheer quantity of carbonised grain from each context. This clearly could not be examined in detail unless sub-sampled. It was therefore decided to implement the sampling strategy discussed by Green (1979: 45-46), which had been specifically developed for examining such deposits. This particular work was only undertaken after preliminary analysis had revealed no basic differences between the species composition of the different bags of material recovered from the same grid square. As a result one bag from each square was selected rather on the basis described by Torrence (1978: 374-378). Once this had taken place the strategy of removing a smaller sub-sample was employed (Green 1979: 45-46). This strategy itself was tested using student labour over a number of years, which indicated that no significant variations occurred between the original and subsequent sub-samples. In this particular case sub-sample variation was insignificant once thorough mixing of the initial sample had taken place. As a result information about the distribution and composition of the crops stored within the granary was deduced in a matter of weeks rather than months.

The distribution of the botanical evidence within the Lydford Granary:
the cultivated plants

As can be seen from Figure 1 and Table 1, the major cereals

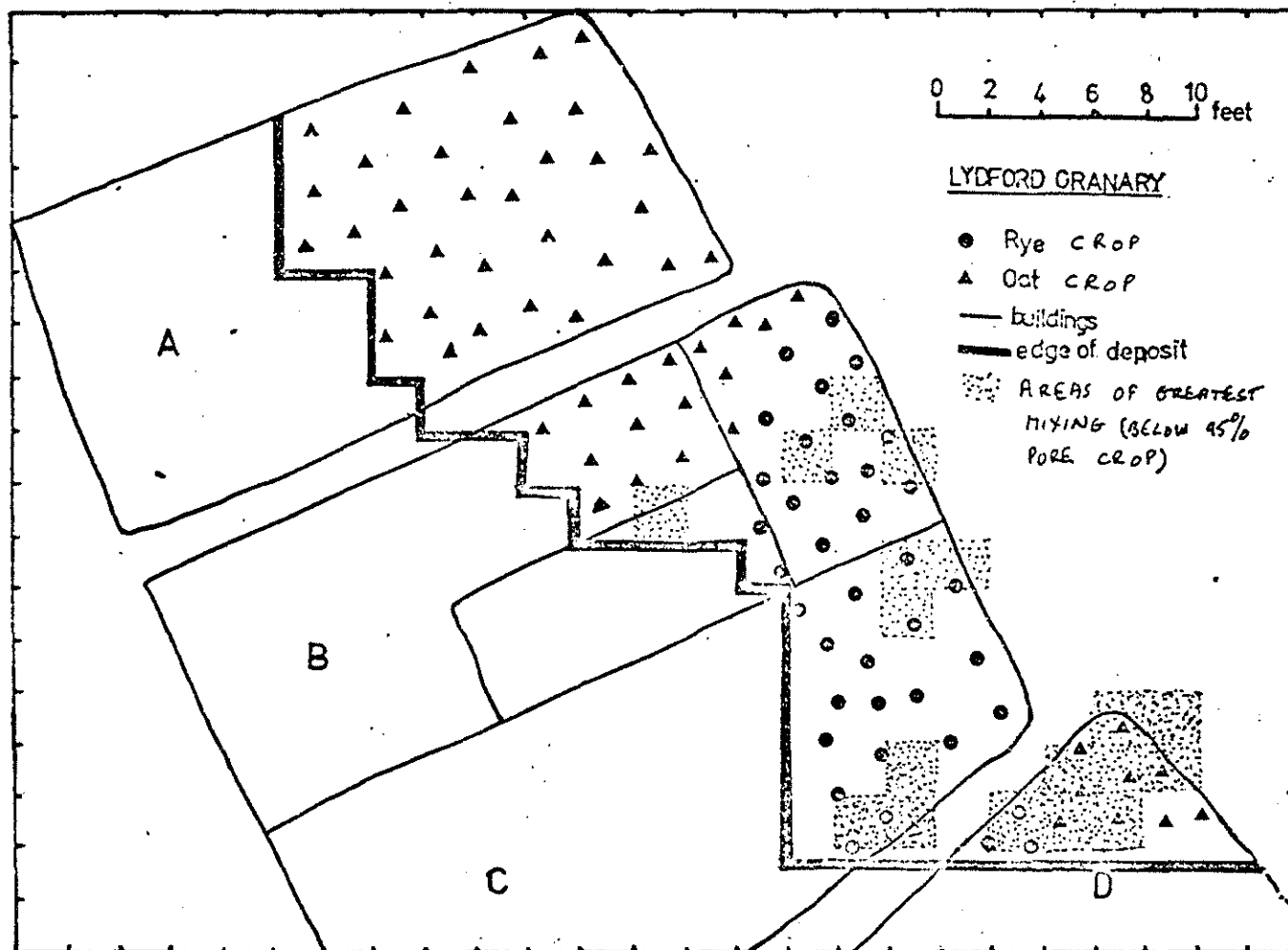


Figure 1 Distribution of the rye and oat crops within the Lydford granary

recovered were rye (Secale cereale) and oats (Avena cf. sativa) (see Figure 4). Even though the samples were not processed by water flotation or by wet or dry sieving (which might have caused the loss of oat lemma bases and rachilla attachments) few of these fragments were actually recovered. However, those fragments that were recovered indicated that the oats were of a cultivated form, even though the size of the seed was in many cases small and more consistent with Avena strigosa rather than Avena sativa, see Table 2.

The two major crops (Oat and Rye) were essentially located in different parts of the granary. Oats were recovered more frequently than any other cereal and were confined to building A, part of building B and were also recovered from building D. The rye crop seems to have been stored in buildings B and C and also in part of building D. It should be noted that rye was confined to the rear partitioned area of building B. In general the mixing of the oat with the rye crop and vice versa is insignificant, usually accounting for less than 5% of the total contamination. However, the rye deposits within buildings B, C and D were quite heavily contaminated with oat, in some cases accounting for up to 30% of the contamination of the rye crop.

Other cereal and crops plants were recovered and included bread wheat/club wheat (Triticum aestivum/compactum) and celtic/broad bean (Vicia faba). These species were rarely recovered in

any quantity with the exception of one small sample of broad beans recovered from square P 11, which may have been hand sorted during the course of the excavation. This species was mainly encountered in building B and C, whereas wheat seemed to be confined to building D.. The presence of these species possibly indicates one or more of the following : weeds of cultivation, remnants of previous crops grown on the harvest field, weeds of crop seed or even quantities of these species stored separately in the granary. However, the concentrations argue in favour of the former suggestion of crop weeds and impurities in the crops.

Distribution of ruderal and wild plants within the Lydford granary

Agrostemma githago (Corn Cockle was specifically associated with the rye crop stored in buildings B and C, Figure 3). Chrysanthemum segetum (Corn Marigold) was also recovered in small quantities from these buildings (Figure 2) and was also specifically associated with the rye crop. Small quantities of Raphanus raphanistrum (Wild Radish) and unidentified weed species were also recovered (Figure 2). These seeds were, however, not associated with any specific crop or confined within a single building. The quantity of wild plant seeds contained within the samples was on average less than 2% of the total seed. The average weed (wild plant seed) content for all samples that produced over 300 seeds per 100 ml of deposit examined was 1.54%, see Table 1. The weed contamination of the grain stored

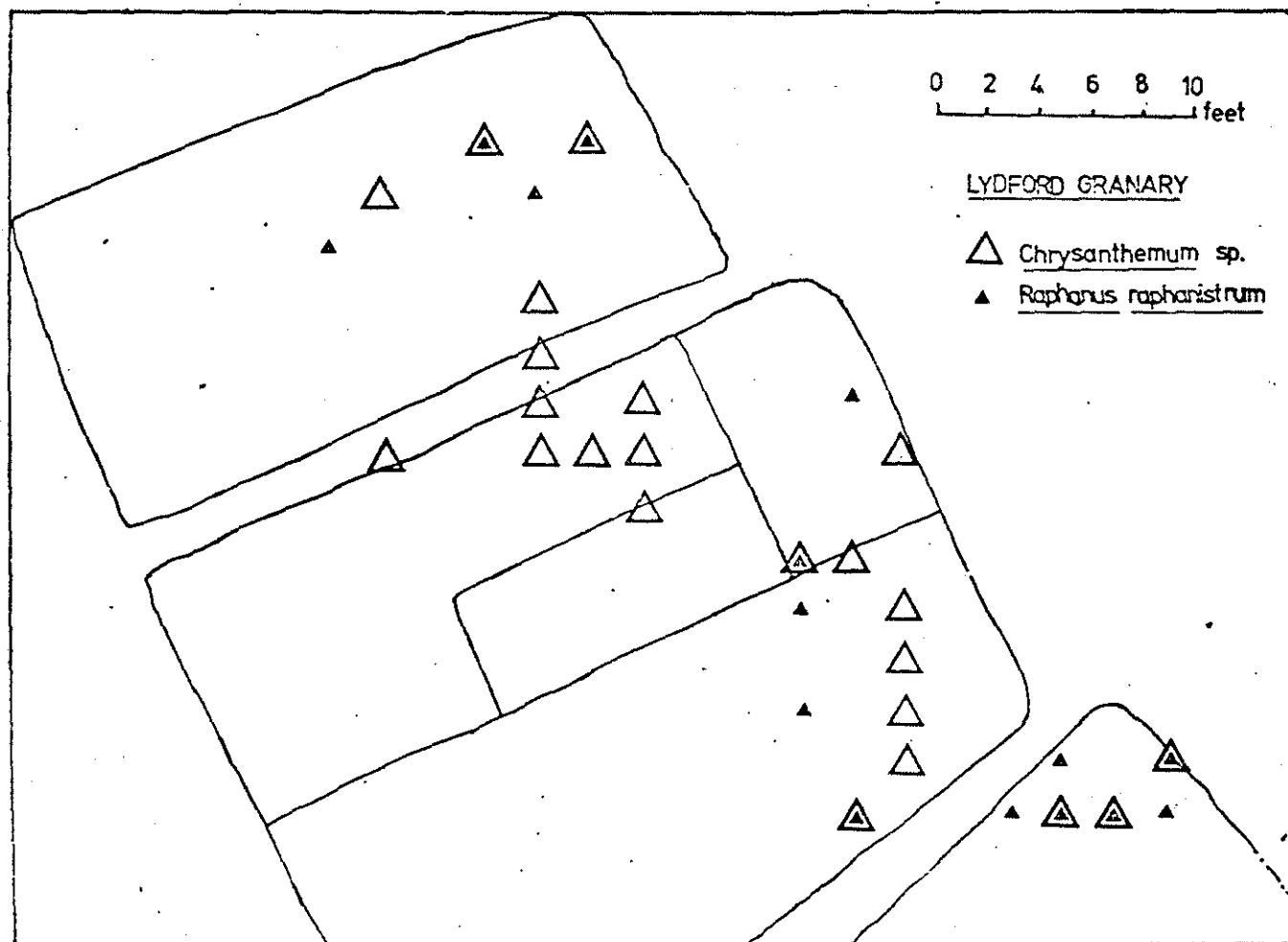


Figure 2 Distribution of some major weed elements within
the Lydford granary

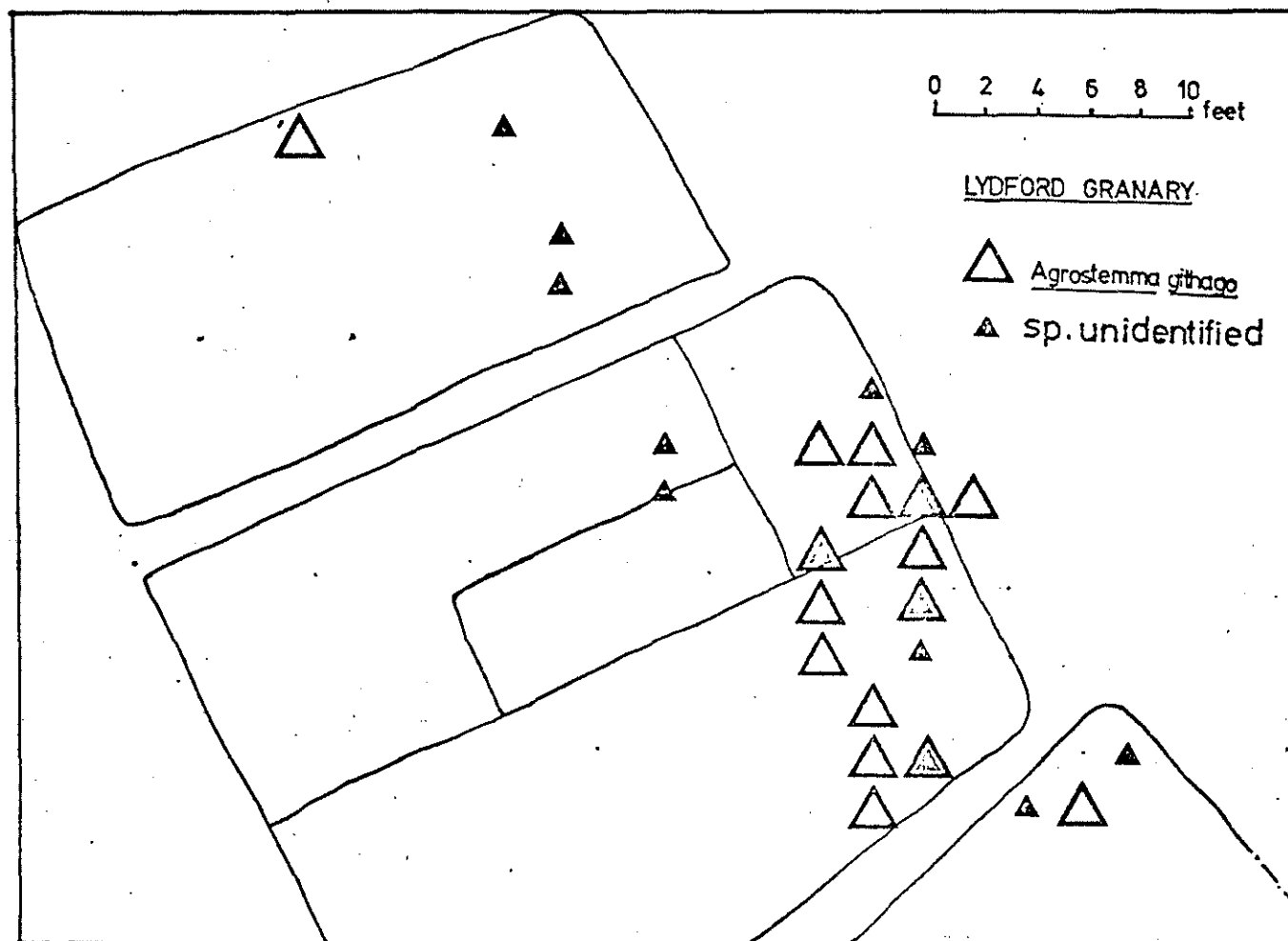


Figure 3 Distribution of some major weed elements within the Lydford granary

In the Lydford granary is therefore exceptionally low. Many of the weed seeds recovered were large in size and could only have been removed from the crops with extreme difficulty, if a large part of the crop itself were not to have been sieved out. Small weed seeds were generally lacking and no chaff elements (other than oat lemma bases and rachilla attachments) were present. It is reasonable to assume that either these crops had been well processed and cleaned, probably having been winnowed or sieved, or the fields the crops had been grown on were remarkably weed free. It is also possible that the lack of weeds indicates a spring rather than an autumn sown crop, since cultivation of the soil prior to a spring sowing destroys most of the weeds that would have germinated in the preceding autumn. Alternatively it is possible that the lack of weed seeds from the deposits within the granary represents sophisticated husbandry techniques, possibly necessary in an area of poor soils where there is less cope for inefficiency and waste due to competition from weeds in the harvest field. Crop yields may have been poor enough in this region without competition from weeds.

The occurrence of the rye and oat crops in the Lydford granary is important, since these species are rarely recovered in large quantities from urban sites in southern England. It is possible that these crops were more widely grown in the south-west of the country (Vancouver 1808: 170) on poor soils associated with a

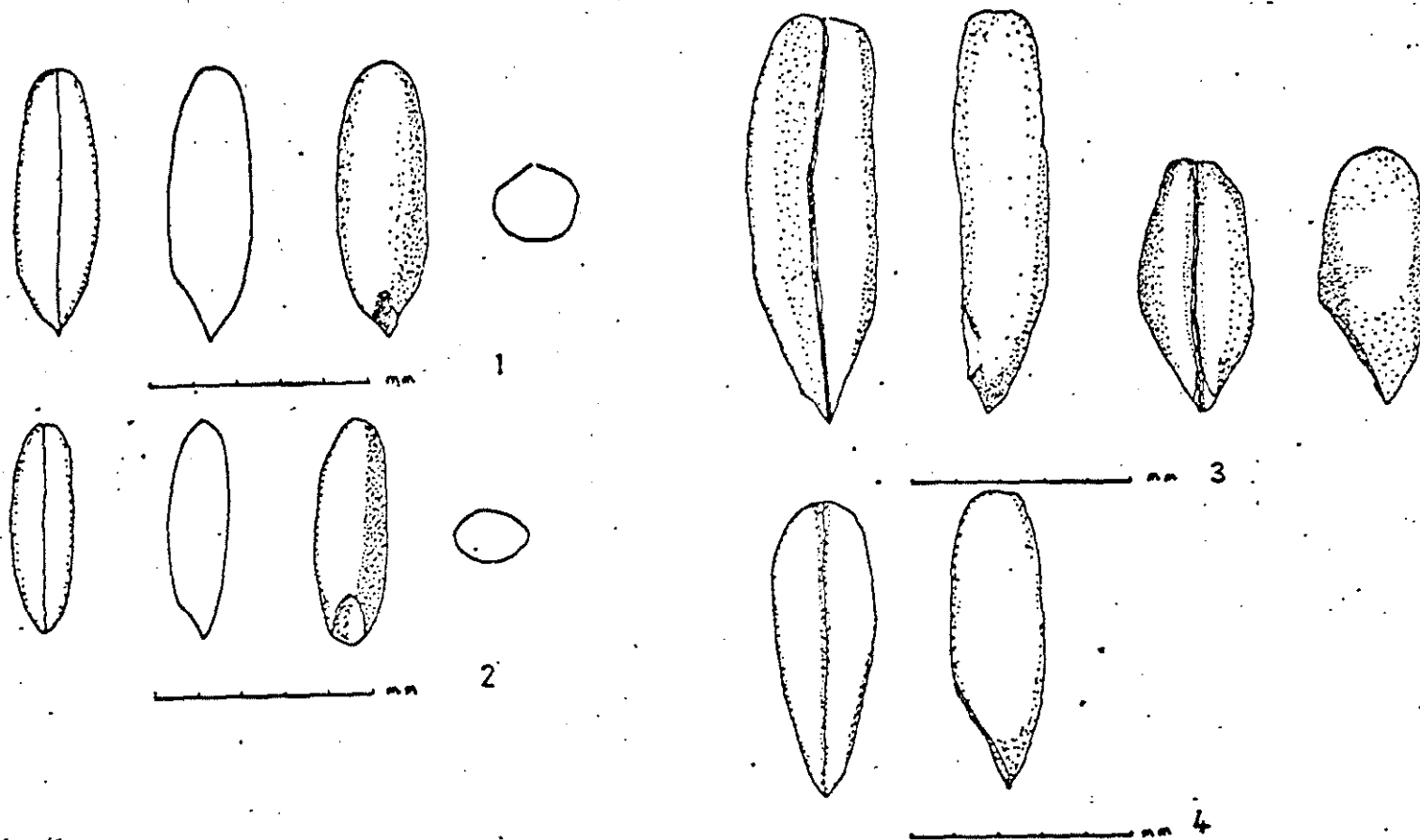


Figure 4

1,2 Avena sp. from the Lydford granary

3..... Secale cereale from Trafalgar House, Winchester
for comparison with Secale cereale from Lydford
granary

4..... Secale cereale from Lydford granary

heavier than average rainfall (assuming that climatic conditions have not changed). Certainly oats were widely grown in the 18th century on high and uncompromising land (Stanes 1969: 54) in this region. However, to answer broader problems than those outlined above is impossible from a single large grain deposit. This is simply because such deposits are atypical both in what has been preserved and the method of preservation. Such deposits are of limited value towards the understanding of overall economy. Examination of rural and urban domestic areas of habitation within this region will be the only way of reconstructing the economy of this part of southern England.

LYDFORD GRANARY	(12th CENTURY)			CARBONISED	
<u>Avena cf. sativa</u>					
Population 30					
	L.	B.	T.	L/B	T/B
Maximum	7.3	2.6	2.2		
Minimum	4.5	1.5	1.1		
Mean	5.7	1.9	1.6	300	84
Standard deviation	0.92	0.33	0.29		
Coefficient of variation %	16.0	17.0	18.0		

LYDFORD GRANARY	(12th CENTURY)			CARBONISED	
<u>Secale cereale L.</u>					
Population 30					
	L.	B.	T.	L/B	T/B
Maximum	6.5	3.2	2.6		
Minimum	4.5	2.0	1.6		
Mean	5.3	2.4	2.1	221	88
Standard deviation	0.63	0.28	0.21		
Coefficient of variation %	12.0	12.0	10.0		

Table 2 Measurements of oat and rye grains from the Lydford granary

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