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Carbonised cereals and crop weeds from Tasburgh (2258)

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Eight samples containing carbonised fruits and seeds were recovered by Andrew Jones during the course of the excavations. The plant remains were extracted from 4.5 litre soil samples in a simple flotation machine similar to that described by Williams (1973). The flot was collected in a 1 mm. mesh sieve and consequently seeds smaller than 1 mm. were not recovered. The dried flot proved to contain large amounts of cereals and other seeds and in several cases it was not necessary to sort through all the material recovered; the proportion of the flot examined is recorded in Table 1.

Caption to Fig. 1.

Fig. 1. Carbonised cereals from Tasburgh

a, b. *Hordeum* sp. caryopses

c, d. *Secale cereale* caryopses

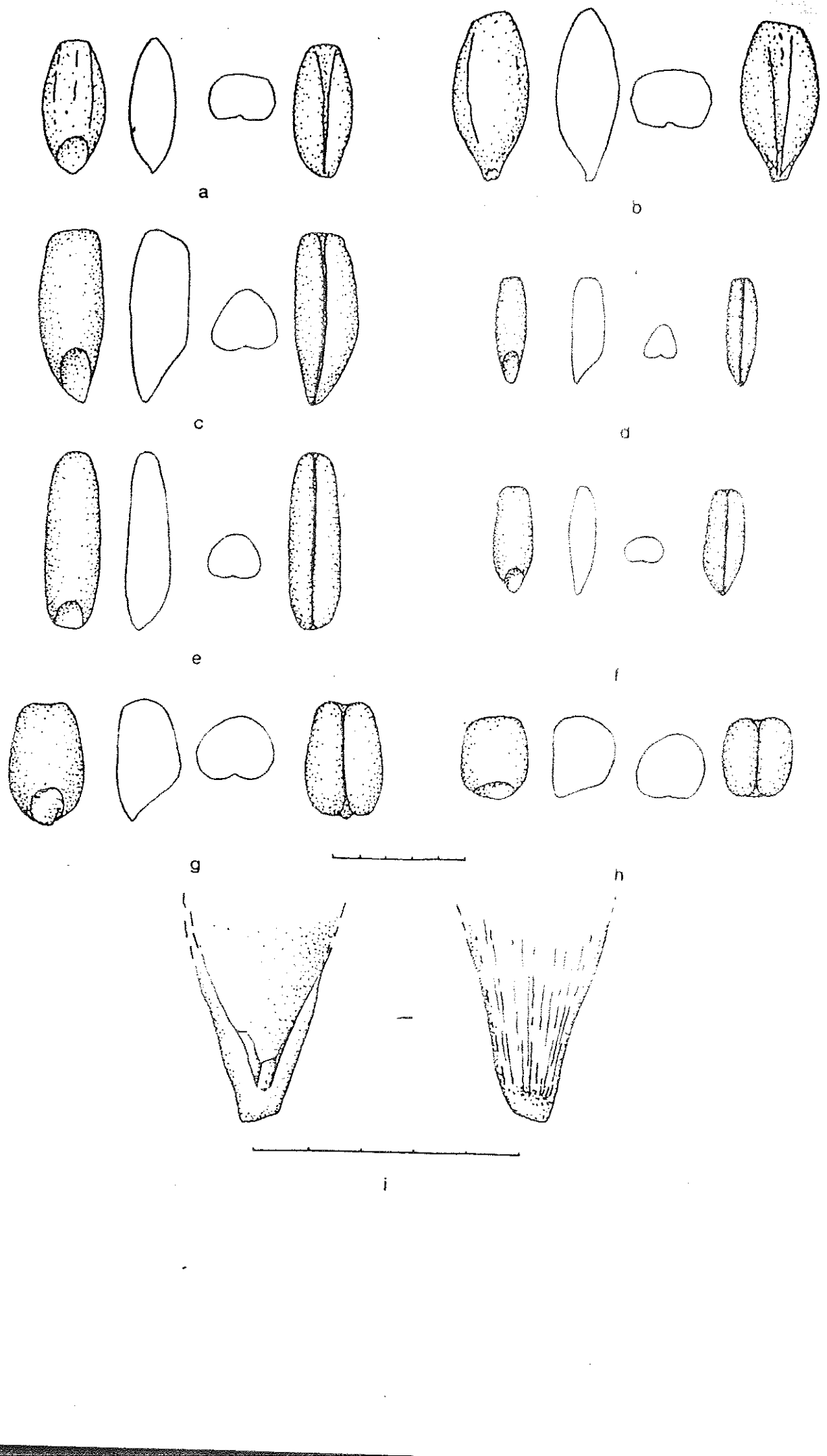
e, f. *Avena* sp. caryopses

g, h. *Triticum aestivum* s.l. caryopses

i. *Avena sativa* Floret bases

All from sample 35, except b, from sample 27 (upper)

Scales graduated in mm


a
b
c
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i

Table 1. Carbonised fruits, seeds etc. from Tasburgh

Abbreviations:
cn: culmnode indet: indeterminate sj: s
cy: cypsela nu: nutlet

Sample number		10	10	18	27	27	28	33	35
Feature number		? (upper)	? (lower)	?	14 (upper)	14 (lower)	16	30	5
Feature-type		post-hole	post-hole	post-hole	pit	pit	pit	pit	pit
% Flot examined		50%	25%	100%	50%	100%	100%	100%	125%
Cereal indet. (approx)	ca	98	160	20	122	63	15	76	240
Secale cereale L.	ca	62	102	1	60	32	-	154	653
Hordeum sp.	ca	96	170	1	153	81	4	50	94
Avena sp.	ca	50	94	1	50	25	2	39	145
Triticum aestivum s.l.	ca	5	7	3	6	2	2	2	7
Avena sativa L.	fb	1	1	-	-	-	-	1	1
Cereal indet.	cn	-	-	-	-	1	-	1	-
Brassica/Sinapis sp.	s	2	-	-	2	-	-	1	1
Raphanus raphanistrum L.	sj	-	2	-	2	-	-	-	2
Agrostemma githago L.	s	9	11	-	11	6	-	23	128
Spergula arvensis L.	s	1	1	-	-	1	-	-	1
Chenopodium album L.	s	-	1	-	-	1	-	-	-
Vicia hirsuta (L)S.F.Gray	s	-	-	-	-	-	-	1	5
Vicia sativa L.	s	-	1	-	-	-	-	-	-
Lathyrus sp.	s	-	-	-	-	-	-	1	-
Leguminosae indet.	s	4	-	-	9	-	1	2	19
Polygonum aviculare agg.	nu	1	11	-	-	-	-	-	1
Polygonum c.f. persicaria L.	nu	1	-	-	-	-	-	-	-
Rumex sp.	nu	2	1	-	-	-	-	-	-
Anthemis cotula L.	cy	-	2	-	1	-	-	-	-
Centaurea c.f. cyanus L	cy	4	7	-	4	-	-	5	17
Lapsana communis L.	cy	-	1	-	2	1	-	1	2
Bromus mollis/secalinus	ca	2	5	-	4	2	-	4	11
Gramineae indet.	ca	18	13	...	...	...	...	...	...

Descriptions of crop plants

1. Barley (Hordeum sp.)

The barley caryopses in the samples are distorted, and it is not clear whether a two-or six-row variety is represented. However, the grains are certainly all hulled, (Fig 1a) and a few specimens retain their lemma bases (Fig 1, b). These are unfortunately eroded, and the precise form of lemma base remains uncertain. 23 relatively well-preserved grains from sample 35 were measured and their dimensions and indices are given below. Even these specimens are 'puffed' to some extent.

	Length(mm)	Breadth(mm)	Thickness(mm)	L/Bx100	T/Bx100
min.	4.5	2.4	2.0	160	73
mean	5.55	2.95	2.46	189	83
max.	6.7	3.5	3.0	231	94

2. Rye (Secale cereale)

The Rye caryopses are, as usual, very variable in size and form but all have characteristically triangular cross-sections, and large T/B ratios and blunt apices, and many of the grains are asymmetrical (Fig 1 c, d). 30 grains from sample 35 have the following dimensions and indices:

	Length(mm)	Breadth(mm)	Thickness(mm)	L/Bx100	T/Bx100
min.	3.7	1.1	1.0	200	83
mean	4.93	1.93	1.81	259	95
max.	6.4	2.6	2.3	360	111

3. Oats (Avena sp)

The hairy surfaces, rounded apices and small T/B ratios of these grains (Fig 1, e,f.) served to distinguish them from slender rye grains, although poorly-preserved specimens of the two cereals could not be separated with confidence. It is possible that some of the oat grains are of wild oats, but the floret bases recovered are all of the cultivated species Avena sativa L. (Fig 1, i). The dimensions and indices of 30 oat grains from sample 35 are as follows:

	Length(mm)	Breadth(mm)	Thickness(mm)	L/Bx100	T/Bx100
min.	3.6	1.2	1.0	240	73
mean	4.79	1.69	1.42	293	87
max.	6.7	2.1	2.0	344	100

4. Wheat (Triticum aestivum s.l.)

Both aestivum-type (Fig 1,g) and compactum-type (Fig 1,h) grains are present in small numbers. There are too few well-preserved specimens to make measurement worthwhile.

Discussion

Pollen analysis of sediments from Old Buckenham Mere, some 15 km. from Tasburgh, has indicated that there was widespread arable farming in this area of Norfolk during the Saxon and early Medieval periods. Pollen of cereals including Secale (rye), of fibre crops such as Linum (flax) and Cannabis (hemp), and of arable weeds in the families Compositae, Chenopodiaceae, and Cruciferae occurs at high levels in lake deposits of this date, and the common weeds Spergula arvensis (cornspurrey), Urtica (nettles), Convolvulus arvensis (bindweed) Agrostemma githago (corncockle), Centaurea cyanus (cornflower), Vicia (vetch) Knautia (Scabious) and Valerianella (lamb's lettuce) are also represented (Godwin 1968).

Clearly the carbonised deposits from Tasburgh fit in well with this picture. The two fibre crops are not present in these particular samples, but rye is an important component and the species of cereal weeds represented by carbonised seeds also appear in the pollen record. Overall, rye, barley, and oats are the most important cereals in the Tasburgh samples with small quantities of wheat. The single 12th-13th century sample (35) is similar in all essentials to the remaining 10th century sample.

The Tasburgh samples appear to represent 'cleaned' fully-processed crops, since they contain very little cereal chaff and straw. Seeds smaller than 1 mm were not recovered, so it is impossible to assess just how efficient the crop-cleaning methods of the period were, but obviously many larger weed seeds were not extracted. In sample 35, for example, there is a large number of seeds of Agrostemma githago, which when fresh contain toxins known as saponins, having haemolytic properties. (Forsyth 1968, 47 and 87). Weed seed contamination of cereals may well have had an important effect upon the health of the population, besides its detrimental effects upon flour quality.

The deposits as listed in Table 1 contain cereals which are unlikely to have been grown together, and which probably became mixed after harvesting and 'cleaning'. Such very large deposits of carbonised cereals probably reflect an accidental fire in a grain store, rather than small-scale losses during cooking or drying. However, it is possible, particularly in the case of sample 35, that the cereals were so badly contaminated with Agrostemma seeds that they were deliberately burnt.

References:

Godwin, H. (1968). Studies of the post-glacial history of British vegetation XV. Organic deposits of Old Buckenham Mere, Norfolk. New Phytologist 67, 95.

Forsyth, A.A. (1968) British Poisonous Plants Min.Ag. Fish and Food Bulletin 161. London.

Williams, D. (1973) Flotation at Siraf. Antiquity 47, 288.