Report 3907

MOLLUSCA FROM A PALAEOCHANNEL BESIDE THE STAINES CAUSEWAYED CAMP, SURREY

by

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The causewayed camp at Staines was excavated by Mr. R. Robertson-Mackay between 1961 and 1963. The site lies just north of the present confluence of the Colne and Thames on an island of gravel which is surrounded and partly overlain by Post-glacial riverine deposits. Such deposits are clearly of relevance to the site's archaeological history and it is fortunate that they were studied during the excavation by Mr. Bernard Conway. Some 30m from the causewayed camp's outer ditch a cable trench cut across a palaeochannel and associated alluvial sediments. Mr. Conway made a record of the section (Figure 1) and took samples some of which have now been analysed for Mollusca.

The samples were placed in water, floating shells were decanted onto a 63 μm sieve, some samples were dissaggregated using H_2O_2 and the sediment was washed on a nest of sieves down to 63 μm. Sieve fractions down to 500 μm were then sorted for Mollusca. The remaining sediment down to 63 μm was submitted to Dr. Robinson for ostracod analysis.

Table 1 gives the results of mollusc analysis, the nomenclature follows the recent lists of Waldén (1976) for land species and Kerney (1976a) for freshwater species. Totals given for bivalves are the numbers of individual valves. As an aid to interpretation the freshwater species have been assigned to ecological groups as defined by Sparks (1961), the table indicates to which group each species is assigned, viz. 1 = slum; 2 = catholic; 3 = ditch; 4 = moving water. In calculating the percentage importance of each group among the freshwater assemblage and in calculating the land assemblage as a percentage of the freshwater total the number of bivalve values has been halved. The results of these calculations are presented diagramatically as Figure 2.

At the base of the sequence were gravels and cut into these was a deeper channel. Its base was not reached by the trench but probing

showed it was 5'9" deep. The basal channel fill was grey/brown organic rich clay which was not sampled. Overlying this was a lens of white shell marl sampled in column 30, 30-36". This contained a remarkably rich and diverse mollusc assemblage, 2,681 individuals of 39 species in just 281 gms. of sediment, thus suggesting an environment highly favourable to mollusc life. In fact 59% of the assemblage belonged to the moving water group and there were very few species (0.7%) of the slum group, i.e. these tolerent of stagnant conditions and drying out. The most abundant species, Valvata piscinalis, Boycott (1936) describes as 'sometimes extremely abundant in running ditches' and he also records that many of the other predominant species (e.g. Valvata cristata, Bithynia tentaculata, Bithynia leachii and Gyraulus albus) are often particularly abundant in thickly weeded and vegetated stream courses. Also abundant are the bivalves Pisidium nitidum, which lives in ponds, rivers and streams, and Pisidium subtruncatum which prefers flowing water. Terrestrial molluscs only represent 6% of the freshwater total and many of these, such as Carychium minimum, Oxyloma/Succinea, Vertigo antivertigo, Vallonia pulchella, Zonitoides nitidus, Vitrea crystallina and Euconulus sp. probably lived in swamp/marsh areas around the stream. Despite the small number of terrestrial species it seems to be significant that there were no members of Evan's (1972, ch.6) open country ecological group but several shade-loving species, e.g. Carychium tridentatum, Discus rotundatus, Nesovitrea hammonis, Aegopinella spp. and Clausilia bidentata. The total mollusc assemblage suggests therefore that the shell marl was laid down at a time when the surrounding area had not been drained or cleared. A radiocarbon date for this layer is awaited.

One hundred and seventeen feet to the west was a layer of grey/white shell sand which directly overlay the gravel and was sampled in column 33, 29-32". Superficially this resembled the previous sample but it differed in containing large numbers of Chara oogonia (only examples larger than 0.5mm were extracted and counted) so it can be described as a Chara marl, a calcareous deposit formed by the stonewort, a large green algae. Only a single Chara oogonia was recovered from the column 30 sample and the precise mode of formation of that marl

remains uncertain. Despite the probability of a slightly different origin for the two marls they were evidently laid down under similar water conditions (Figure 2). The same moving water species predominated in the column 33 sample and again formed 59% of the assemblage. There are, however, some subtle differences confirming that the two marl bands are not part of one contemporaneous deposit. For instance Planorbis planorbis, Anisus vortex and Sphaerium corneum are only present in the column 33 sample which also contains a larger number of species of Pisidium (including Pisidium amnicum) and two species of clean well-oxygenated water. These are Theodoxus fluviatilis (fragment) and Myxas glutinosa, a rare calciphile species today extinct in this area and with a very restricted distribution (Kerney 1976b, 36). Other differences are larger proportions of slum and land species in column 33. Among the terrestrial assemblage the same marsh species predominate and are accompanied by the same species of woodland conditions and those of intermediate ecological preferences. Unlike the column 30 marl there are a few individuals of Evans' open country group i.e. Pupilla muscorum; Vallonia costata and also Vertigo pygmaea. There is just a hint therefore that the Chara marl could have been laid down under marginally more open conditions than the column 30 marl.

In general the archaeological evidence seems to post date the calcareous marls although a preliminary report of 27.12.62 by Mr. Conway records the finding of a single worked flake from calcareous marl in 'Section 5'. Archaeological material is, however, reported from near columns 30 and 30A. in the lens of 'peat' immediately overlying the marl and from an associated layer of brown/grey clay and stones on the edge of the channel. Provisionally it is assumed that these finds correlate with the life of the causewayed camp and a radiocarbon date on wood from the peat is awaited. Unfortunately a sample of the brown/grey clay with stones (column 30, 20-24") was devoid of Mollusca. We can, however, come to certain tentative conclusions on the basis of the sediments themselves. At the time of the prehistoric occupation it seems probable that the river/stream channel had been abandoned and contained standing water in which organic material accumulated. The lens of clay containing stones, pottery and

potboilers at the edge of the channel is difficult to interpret. It could simply be dumped refuse from the occupation site or it might, just possibly, represent a deliberate dump of material for some waterside activity. This is suggested because of the recent (1982) discovery of a Bronze Age 'platform' of calcined fli..ts in a palaeochannel of the Iwerne river below Hambledon Hill and in the light of comparable prehistoric features reported by Murphy (1979 a and b) from Mildenhall, Suffolk.

Overlying the Chara marl in column 33, 13-19" was a grey clay with shells, its exact chronological relationship to the channel deposits is uncertain. The sample was a small one and not as rich and diverse as those from the calcareous marls. The predominant ecological group was the ditch group (Figure 2) thus suggesting a small body of moving water. Interestingly two valves of Sphaerium lacustre, a species 'more commonly found in ponds and drains than in running water' (Ellis, 1978, 47), were present but as a whole the assemblage contains a similar proportion of slum species to the Chara marl (column 33, 29-32"). However, few land molluscs were present they formed a smaller proportion of the freshwater total and were represented only by the marsh species Carychium minimum and Oxyloma/Succinea.

This sediment was overlain by yellow/brown silty clay which was sampled in column 30A 16-20" and contained an assemblage dramatically different from the underlying deposits (Figure 2). Most numerous of the species was Lymnaea truncatula which Boycott (1936) describes as 'living mostly out of water, on the mud at the edge of rivers, streams and ditches, sometimes in damp hollows'. Also numerous is Anisus leucostoma, a species of stagnant ponds, marshes and ditches which resists drought. With these are a small number of species normally found in running water but there was a complete absence of bivalves. Land molluscs form a much higher percentage of the freshwater total and are predominantly species of swamp and marsh e.g. Oxyloma/Succinea, Vallonia pulchella and Carychium minimum. There is a complete absence of shade-loving species but the open country species Vallonia costata and Vallonia excentrica are present. It seems therefore that the

yellow/brown silty clay was laid down in an area of shallow standing water which resulted from occasional overbank flooding events at a time when the stream itself had adopted a different course and probably after the landscape had been cleared. In fact the stratigraphic change from basal organic clays and calcareous marls to overlying mineral-rich floodplain alluvium is one which is paralleled in many river valleys and which was, in part, probably brought about by man's clearing and draining of the landscape (Bell 1982, 132-4). The top of this layer was sampled in column 30, 10-14" but was found to be devoid of Mollusca.

Comparison with neighbouring sites

This is one of a series of Holocene mollusc bearing deposits around Staines and Chertsey. Most important among these is Mixnam's Ferry recently discussed by Preece and Robinson (1982) who also reference a number of the earlier exposures. Their site is 3miles SE of Staines causewayed camp and consisted of channel deposits dated between 6655±55 bp (Q-2043) and 8360±100 bp (Q-2042). The molluscan assemblage they report is remarkably similar to the site in question. Differences in terms of species presence largely concern those of minor numerical importance: 10 are found at Mixnam's and not in the causewayed camp channel and 11 vice versa. The only really noteworthy difference concerns Gyraulus acronicus which has an interesting present-day and sub-fossil distribution confined to the Thames and its tributaries. It is present at Mixnam's but has not been positively identified in the causewayed camp channel and I am grateful to Dr. M.P. Kerney for confirming it is not present among those identified as Gyraulus albus. Immature individuals of the two species cannot, in fact, be separated and most Gyraulus from the shell marl were immature. Though Mixnam's and the causewayed camp channel produced broadly similar assemblages the sediments themselves differ, those at Mixnam's being sands and silts. More comparable to the sediments on the present site is a section described by Kennard and Woodward (1906) about a mile west of Staines on the Thames Floodplain, thus about 1m south of the present site. They describe calcareous marls and calcareous loams which have many species in common with the causewayed camp palaeochannel.

In the context of the archaeology of the area it is unfortunate that we do not have molluscan evidence which is certainly contemporaneous with the causewayed camp. The awaited radiocarbon dates should, however, help to clarify the chronology. It will be particularly interesting to see whether the calcareous marl is a pre-Neolithic deposit as one suspects. Even if this proves to be the case, it is highly probable that something of the rich riverine and marsh environment persisted into Neolithic times and may well have formed a significant aspect of the resources exploited from the site.

Acknowledgements

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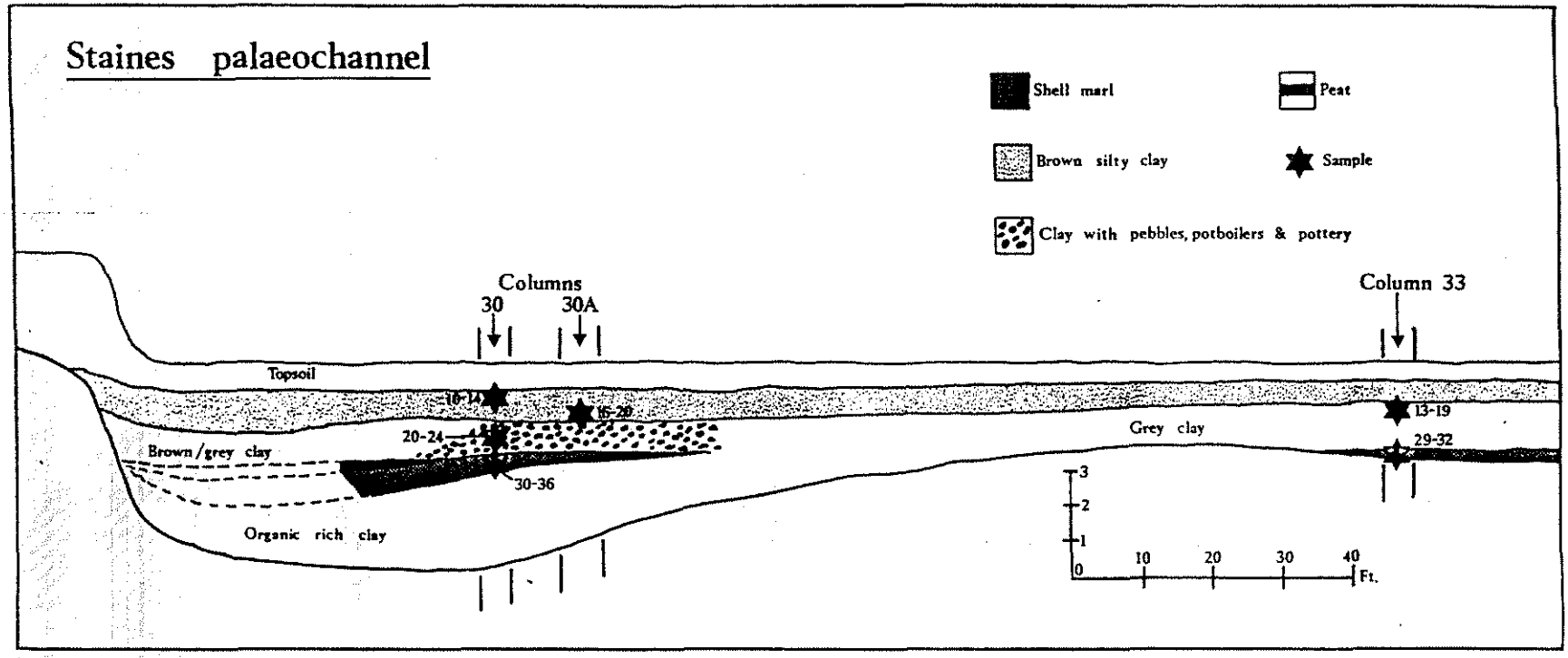
Staines palaeochannel
Shell marl
Peat
Brown silty clay
Sample
Clay with pebbles, potboilers & pottery
Columns
30
30A
Column 33
Topsoil
16-24
16-20
20-24
13-19
29-32
Brown/grey clay
Grey clay
30-36
Organic rich clay
3
2
1
0
10
20
30
40
Ft.

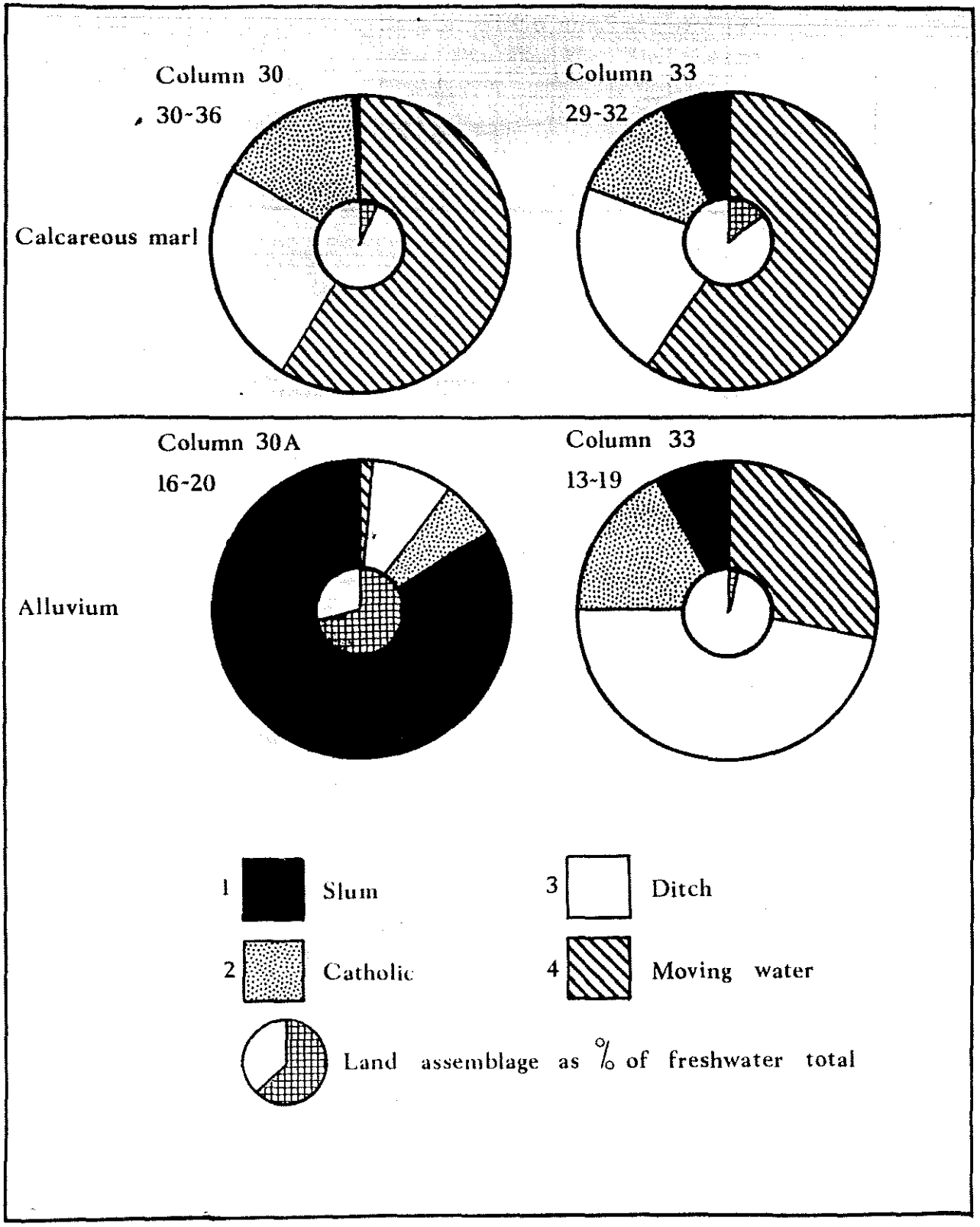
Column 30
30-36
Calcareous marl
Column 33
29-32
Column 30A
16-20
Alluvium
Column 33
13-19
1 Slum
2 Catholic
3 Ditch
4 Moving water
Land assemblage as % of freshwater total

Table 1

Ecological index	Staines	30 30-36"	30 20-24"	30A 16-20"	30 10-14"	33 28-32"	33 13-17"
	Weight of sediment	281 gm	230 gm	335 gm	319 gm	315 gm	42 gm
4	Theodoxus fluviatilis (L)					+	
3	Velvata cristata Müller	317		5		187	31
4	Valvata piscinalis (Müller)	844				179	7
4	Bithynia tentaculata (L)	152		2		194	1
4	Bithynia leachii (sheppard)	401				406	19
4	Physa fontinalis (L)	13					
1	Lymnaea truncatula (Müller)	9		121		40	2
2	Lymnaea palustris (Müller)	1				11	
4	Lymnaea stagnalis (L)	4					
4	Lymnaea auricularia (L)	1				1	
2	Lymnaea peregra (Müller)	156		2		48	1
3	Myxas glutinosa (Müller)					9	
3	Planorbis planorbis (L)			1		15	5
2	Planorbis carinatus Müller					4	
1	Anisus leucostoma (Millet)	4		60		48	5
3	Anisus vortex (L)					4	
2	Bathyomphalus contortus (L)	50		6		22	10
3	Gyraulus albus (Müller)	199		14		37	8
2	Armiger crista (L)	15		6		19	
3	Ancylus fluviatilis Müller	34				42	1
3	Acroloxus lacustris (L)	26				1	1
	Carychium minimum Müller	31		9		12	2
	Carychium tridentatum (Risso)	7				4	
	cf. Oxyloma pfeiffери (Rossmässler) / Succinea putris (L)	21		18		49	1
	Cochlicopa lubrica (Müller)	11		5		11	
	Vertigo pygmaea (Draparnaud)					3	
	Vertigo moulinsiana (Dupuy)	4					
	Pupilla muscorum (L)					7	
	Vallonia costata (Müller)			18		7	
	Vallonia pulchella (Müller)	10		41		49	
	Vallonia excentrica Sterki			11			
	Punctum pygmaeum (Draparnaud)	1				2	
	Discus rotundatus (Müller)	8					
	Vitrina pellucida (Müller)					1	
	Vitrea crystallina (Müller)	4					
	Nesovitrea hammonis (Ström)	6				3	
	Aegopinella nura (Alder)	1					