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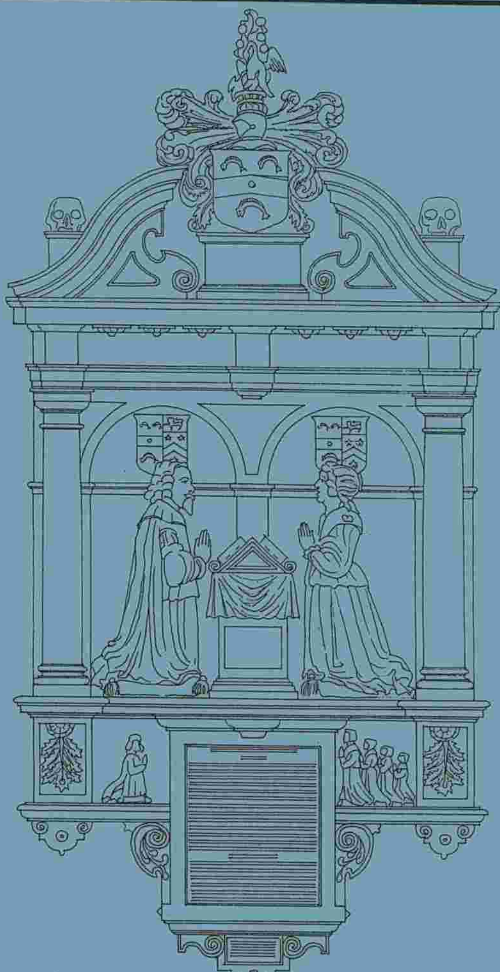

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Pen and ink drawing by Birkin Haward, 1984, of the monument to Robert Leman and his wife Mary (both d. 1637), by John and Matthias Christmas, in St Stephen's Church, Ipswich (see 'The Leman Monument' in this Part).

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RECORD OF A STRUCK FLAKE AND THE LITHOLOGICAL COMPOSITION OF 'PRE-GLACIAL' RIVER DEPOSITS AT HENGRAVE, SUFFOLK, U.K.

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INTRODUCTION

DURING FIELDWORK in May 1986, as part of a regional study of the 'pre-glacial' Baginton/Bytham/Ingham sands and gravels of Midland England and East Anglia (Fig.26C) (Rose 1987, 1989, 1991), a small sand and gravel pit was studied at Stanchil's Farm, 1.5km south-west of Hengrave (TL 816 679) and samples were collected for appropriate lithological analyses. These analyses have indicated that the site contains evidence for important changes in the history of the 'pre-glacial' rivers that once flowed across the region, and for human activity in the region in the form of an *in situ* artifact found within the 'pre-glacial' sediments. By the time these laboratory analyses had been completed and these discoveries had been made the pit had been closed and the exposures graded and vegetated, so restricting further investigation. This paper is a record of the field and laboratory observations made at Hengrave. Small sample sizes reflect the preliminary nature of the original study, but in view of the inability to obtain larger samples at a later date, they are recorded here. Results include stratigraphic sequence and sedimentary structure, direction and dip of depositional cross-bedding, clast lithology and Munsell Color (Table I, Figs 26 and 27). A brief statement is given of the wider archaeological and geological importance of the results.

SITE DESCRIPTION

Stanchil's Farm pit is located on the south side of the Lark Valley with a surface elevation of 42m O.D.. The site had previously been worked by Tarmac Ltd, across a wide area (shown on BGS 1:50,000 Sheet 189, Bury St Edmunds). At the time of fieldwork, exposures were limited to a small area just east of the farm (TL 816 679; Fig. 26). Chalk was observed throughout the base of the working area, and the overlying Quaternary sediments reached a maximum thickness of about 14m (Fig. 26), consisting of the following lithological units:

Lowestoft Till (up to 3.5m; surface elevation *c.*42m O.D.)
Sandy Lane Sands and Gravels (up to 0.9m)
Kesgrave and Ingham sands and gravels (up to 9.5m; surface elevation 37.5m)
Chalk (surface elevation *c.*28m O.D.)

Chalk Surface

Throughout most of the working area the chalk surface is relatively level, but in the north east corner it falls sharply to a lower altitude, and the overlying sands and gravels are faulted, and indurated with iron and clay residue. These structures and sedimentary characteristics suggest dislocation caused by chalk solution and associated concentrated groundwater flow.

Ingham sand and gravel and Kesgrave Sands and Gravels

These units together reach a maximum observed thickness of about 9.5m. They were not differentiated in the field, as their colours and sedimentary characteristics are similar. The existence of two units was only recognized following clast lithological analysis.

TABLE I: LITHOLOGICAL COMPOSITION OF THE SAND AND GRAVEL UNITS REPRESENTED AT STANCHIL'S FARM PIT, HENGRAVE. (8–16 MM SIZE FRACTION) (ALL VALUES EXPRESSED AS A PERCENTAGE OF n).

Sample no	n	**Carb. Chert**	**Trias** Qzite	V.Qzt	Schorl	**Total Trias**	**Jurassic** Sst	Lst + shell	Ist	**Total** Juras	**Cretaceous** Chalk	Black Flint	White Flint	Brown Flint	Spilsby Sst	Chert	Sst + Ist	**Total Cret**	**Tertiary Chatter marked Flints**	**Unk.**
Sandy Lane Sands and Gravels																				
5	170	**0.6**	0.6	0.0	0.0	**0.6**	1.2	7.7	0.6	**9.4**	65.9	17.1	2.4	2.9	0.5	0.0	0.0	**88.8**	**0.0**	0.6
Kesgrave Sands and Gravels																				
2	95	**0.0**	21.1	26.3	2.1	**49.5**	0.0	0.0	0.0	**0.0**	0.0	19.0	6.3	19.0	0.0	3.2	2.1	**49.4**	**1.1**	0.0
Ingham sand and gravel																				
4	188	**2.1**	15.4	28.7	0.0	**44.2**	0.0	7.4	0.0	**7.5**	3.7	9.0	8.0	22.9	0.5	0.0	1.1	**46.8**	**0.5**	0.5
3	160	**4.4**	19.4	23.2	1.9	**44.4**	0.0	0.6	0.0	**0.6**	0.0	9.4	14.4	21.9	0.0	0.0	4.4	**50.6**	**0.0**	0.0

The Ingham sand and gravel (Clarke and Auton 1982) form the lower and uppermost part of this sand and gravel unit. They consist of a brownish yellow (10YR6/6) sand with gravel, with well developed planar and trough cross set structures. Many of the trough cross sets show a thin gravel lag at their base. Lithological analysis of the 8–16mm fraction shows that this material has nearly 45% Triassic quartz and quartzite and the presence of Carboniferous chert, Jurassic limestone and shell fragments, and Spilsby sandstone (Table 1), all of which outcrop to the west and north-west. The lithological assemblage is typical of the Baginton/Bytham/Ingham sands and gravels that extend across midland England and the area of the Fen Basin (Fig. 26) (Rose 1987, 1989). Materials derived from the region of the Thames catchment, such as Greensand chert are absent. Others, such as a single chatter-marked flint, and the brown flint and white flint are likely to be derived from the Kesgrave gravels which provide a supply of these lithologies in the area. The Ingham sand and gravel represents sediment transported to Hengrave by a river that drained much of midland England.

The Kesgrave Sands and Gravels are a similar colour (10YR6/6), with similar sedimentary structures, and a similar bulk lithology (Table 1). Lithological analysis of the 8–16mm fraction at Hengrave shows that this material is dominated by Triassic quartz and quartzite and Cretaceous flint typical of the Kesgrave Sands and Gravels elsewhere in eastern England (Rose and Allen 1977, Hey 1980, Whiteman and Rose 1992). Specific lithologies such as Greensand chert from the Weald and chatter-marked flints from the Tertiary pebble beds of the London Basin indicate that the deposits were transported to the area by the ancestral river Thames (Whiteman and Rose 1992). This interpretation was supported by an observation by J. Rose and S.G. Lewis of a block (*c.*20cm long) of Hertfordshire puddingstone (Tertiary conglomerate) found *in situ* in a degraded quarry face at about 33m O.D. at TL 816 682. There is an absence of materials from the Midlands and Wash. The high proportion of black flint suggests erosion of the Cretaceous bedrock, although a similar proportion of brown flint indicates transport of flint gravel eroded from terrace sediments higher up the catchment.

The palaeocurrent measurements were recorded according to their position in the section, rather than with reference to the different Kesgrave and Ingham lithologies, which had not, at that stage, been recognised. The small sample shows a trend to the east-north-east and south-east (Fig.28) which may reflect either variance of bedform trends associated with multiple-thread channel-flow or, two flow directions: east-north-east for the ancestral Thames, and south-east for the ancestral Ingham river.

These results indicate that the sands and gravels at Hengrave were deposited by a now-abandoned river that once drained most of midland England, and an ancestral river Thames, and that while deposition was taking place in the area around Hengrave the two rivers were

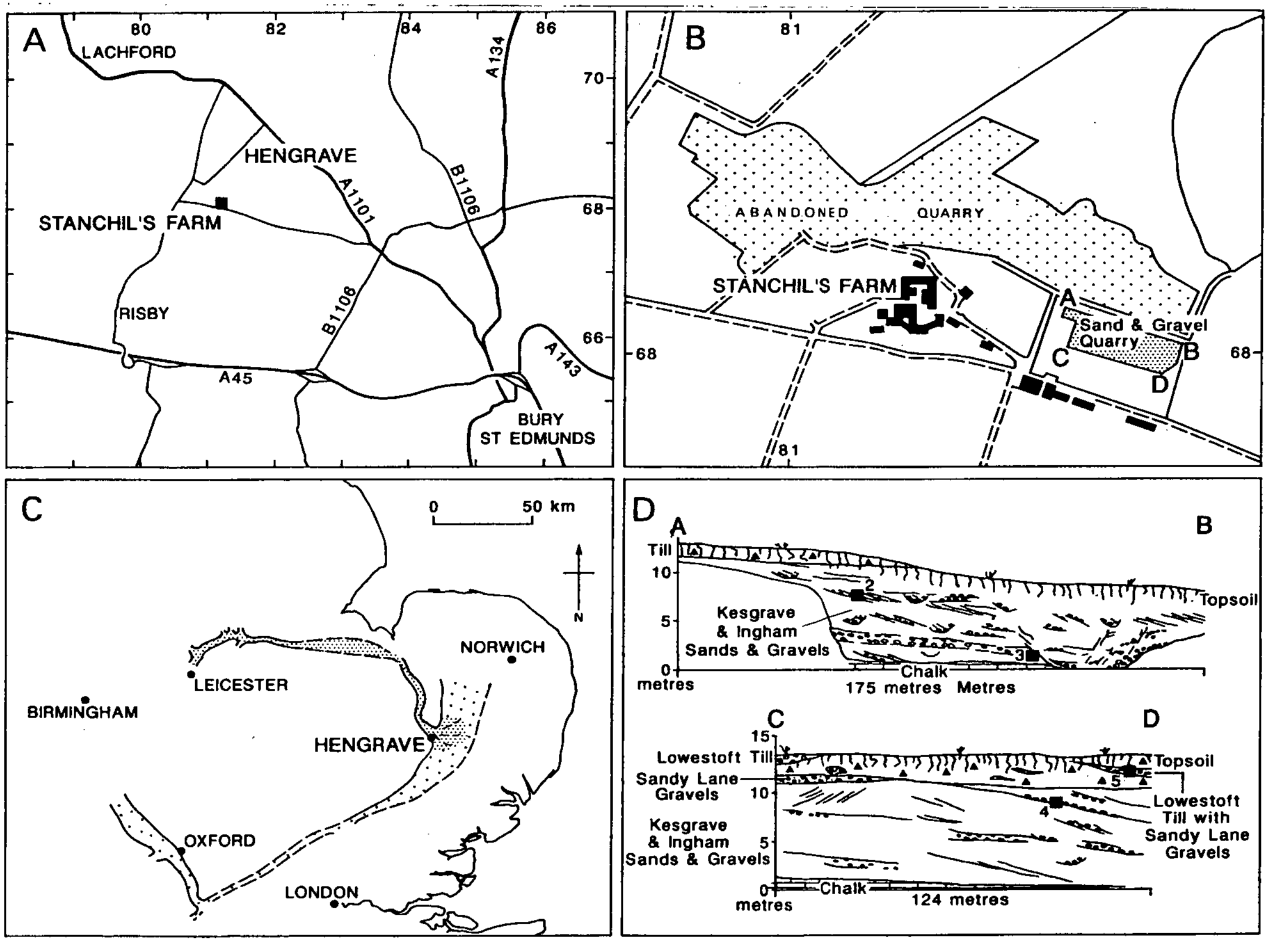

FIG. 26 – (A) and (B) Location of Hengrave. Scale and orientation are shown by National Grid co-ordinates. (C) Relation of site to the 'pre-glacial' Baginton/Bytham/Ingham, and Thames (Kesgrave) river deposits. (D) Stratigraphic relationships at the site and location of sample points.

confluent and presumably contemporaneous (Fig. 26C). The units of Ingham sand and gravel comprise part of a high level terrace of this deposit (Lewis and Bridgland 1991), and the units of Kesgrave Sands and Gravels comprise a member of the Sudbury Formation of the Kesgrave Group (Whiteman and Rose 1992). By definition, these deposits are 'pre-glacial' in eastern England and by reference to the stratigraphic position of the Sudbury Formation deposition can be attributed to the latter part of the early Pleistocene (Gibbard *et al.* 1991, Whiteman and Rose 1992).

Sandy Lane Gravels and Lowestoft Till

The Sandy Lane Gravels form beds at the base of, and lenses within the Lowestoft Till, reaching a maximum observed thickness of 0.9m. Typically, they are a yellowish brown colour (10YR5/8) with a clast lithological assemblage dominated by chalk with subsidiary amounts of black flint (Table 1). Other lithologies include white and brown flint, Jurassic limestones, shell fragments and ironstone and Spilsby sandstone. Triassic material comprises less than 1% of the total. This stratigraphic arrangement and lithological assemblage is characteristic of glaciofluvial gravels eroded from the Lowestoft Till during glaciation and subject to minimum transport distances (Bridgland and Lewis 1991). Specifically, this sediment is equivalent to the ice-proximal Sandy Lane Gravels of Suffolk (Rose *et al* 1978, Allen 1983). Palaeocurrent measurements from sand lenses within this unit indicate a west–east current flow direction (Fig. 27).

The Lowestoft Till forms a bed, up to 3.5m thick, of light olive brown (2.5Y5/5) chalky diamicton, with a dark brown decalcified base and frequent interbeds of sand and gravel. Included among the matrix are clasts of reddish brown clayey gravel, which are typical of the Valley Farm palaeosol (Kemp 1985), suggesting that local glacial erosion has removed this material from its normal position at the top of the 'pre-glacial' sands and gravel. In places, calcrete layers up to 5cm thick are found in the sand and gravel directly beneath the till. In all respects, including the inferred hydrostatic meltwater gradient revealed by the palaeocurrents in the Sandy Lane Gravel, this deposit is typical of the lower diamicton of eastern England that was associated in this part of the country with a southwest–northeast flow direction (Ehlers *et al.* 1987, Rose 1992). This reflects the earliest ice movement across the region during the Anglian Glaciation, and is associated with an ice source in the north-west and north of Britain (Rose 1992 Fig. 1.7B). It is this glaciation which was responsible for tectonising the artifact-rich clayey silts at High Lodge (Ashton *et al.* 1992b).

ARCHAEOLOGY

During the analysis of Sample 2 for the identification of clast lithologies, a small flake was observed and abstracted (Fig. 28). This sample was taken from the Kesgrave unit of the sands and gravels, about 3.5m below the present land surface which has a well developed topsoil formed in Lowestoft Till (Fig. 26). The unit sampled showed well defined gravel cross beds with no sign of disturbance at the sample point or in the overlying sediments.

The flake is formed of black flint, 1.5cm in width, with a striking platform, cone of percussion and three reverse facets that appear to be intentional removals from the same direction as the final striking (Fig. 28). There is no crushing. Being so small and just a flake it is, of course, not diagnostic of any particular flint industry. The position and associated sedimentary structures suggest that it has not been intruded into the site – cracking is not typical of sands and gravels, and there are no structures to indicate disturbance. Such small flakes can occasionally be produced by natural percussive agencies, but rarely exhibit a combination of features (bulb of percussion, striking platform and reverse facets) or are devoid of some evidence of crushing or battering. It cannot be regarded as conclusive evidence for human activity but, if it is, others, or finished forms will be found eventually. Its discovery emphasises the necessity for flint-minded

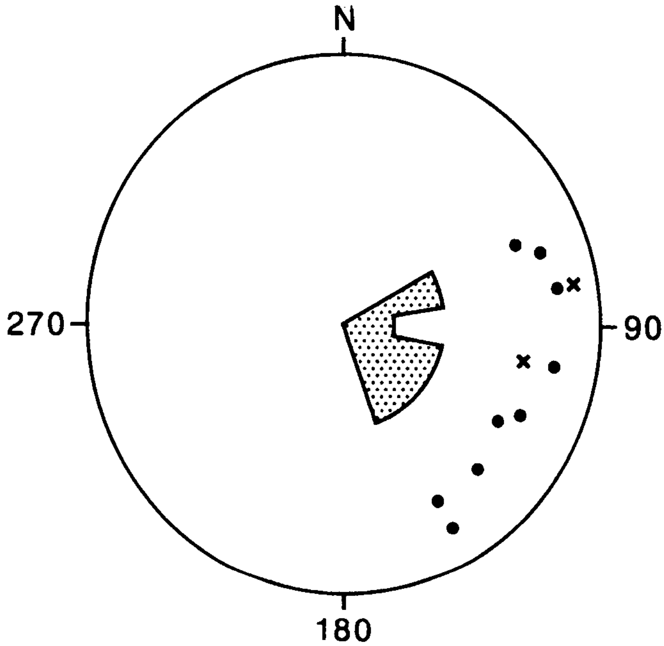

FIG. 27 – Orientation and dip of palaeocurrent measurements taken on the Kesgrave and Ingham sands and gravels. Individual measurements are shown with dots. Frequencies are shown with a circular histogram at 20° class intervals. Two palaeocurrent readings for the Sandy Lane Gravel are shown by crosses, although these measurements do not contribute to the circular histogram.

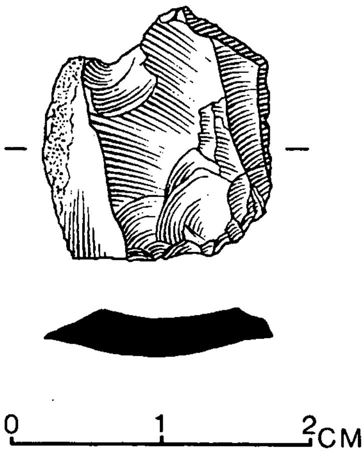

FIG. 28 – Struck flake from 'pre-glacial' river deposits, Hengrave.

archaeologists to examine these early pre-Lowestoft Till sediments whenever the opportunity is available.

In these circumstances this small artifact may represent a struck flake formed by human action prior to the Anglian Glaciation. Indeed, by reference to the stratigraphic position of the gravels from which it was collected, it may be attributed to late, Early Pleistocene age (Whiteman and Rose 1992).

WIDER SIGNIFICANCE

Quaternary Geology

The interdigitation of the Ingham and Kesgrave sands and gravels demonstrates that these two sedimentary units are contemporaneous in age, which is of significance in demonstrating the antiquity of the older parts of the envelope of sediment known as the Baginton/Bytham/Ingham sands and gravels. As far as can be determined at present, the river that deposited these sediments began to flow across this region in the latter part of the Early Pleistocene (Gibbard *et al.* 1991, Whiteman and Rose 1992).

Archaeology

This single flake, discovered at Hengrave, is just one of many recorded in the area around Lakenheath, Mildenhall and Bury St Edmunds associated with the 'pre-glacial'/'pre-Anglian' Ingham sand and gravel. Other sites include Lakenheath (Wymer 1985), High Lodge (Cook *et al.* 1991, Ashton *et al.* 1992a), Warren Hill (Wymer *et al.* 1991), Rampart Field (Wymer 1985) and Timworth (Lewis and Bridgland 1991, Bridgland pers comm). Some of these sites include rich collections of finds with hand axes and faunal remains. Geomorphological analysis of the sites (Lewis and Bridgland 1991) indicates that the sands and gravels at Hengrave are older than the sands and gravels at the other sites mentioned. Thus, if the interpretation given above is correct, the struck flake from Hengrave could be the earliest evidence for human activity in the British Isles.

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