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An examination of deposits from
excavations at Holgate Cattle Dock, York
(YAT/Yorkshire Museum site code 1992.16)

by

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Summary

A series of twelve samples of sediment were submitted for comment on their mode of formation. Of these, five were selected for analysis. Biological remains were extremely sparse but there were hints that one had formed in an aquatic environment and that two of the others had perhaps been part of a living soil.

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An examination of deposits from
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Twelve samples of sediment from excavations at Holgate Cattle Dock were submitted for examination; their mode of formation was not clear and it was hoped that investigation in the laboratory might shed light on their origin. The samples were described in the laboratory, their lithology being recorded on a standard *pro forma*. Five were selected for further analysis, and, for each of these, 2 kg subsamples were disaggregated following methods of Kenward *et al.* (1980). The resultant residues (and, where appropriate washovers) were checked for plant and insect remains and other components.

The samples are considered here in context number order; archaeological interpretation and dating supplied by the excavator for each context are given in brackets.

Context 1000 [how was it formed? is it redeposited?]

Sample 4: mid grey, moist, crumbly to plastic, sandy silty clay with traces of stones 6-20 mm and occasional patches of red to orange to yellow ?rotted sandstone or iron concretions. This seems likely to have been a natural deposit exposed to water movements post-depositionally.

The washover from the 2 kg subsample processed gave a few very fragmentary and poorly preserved plant and insect remains, of which the most abundant were elderberry (*Sambucus nigra*) seeds. There was a little charcoal to 2 mm, cola to 3 mm and brick/tile to 2 mm, with a few concreted root channel/worm burrow casts. The few insect remains, insofar as they could be interpreted, indicated natural or semi-natural terrestrial vegetation. The small residue consisted mostly of white quartz sand with a few angular stones to 30 mm.

The overall impression from this sample is that the deposit formed as part of the natural drift and was at some stage part of an active soil, though it does not appear to have included the uppermost part of a buried soil *per se*.

Context 1004 [nature of deposit? 'dump' beneath 'road']

Sample 7: mid/dark grey to grey-brown to orange-brown, moist, plastic to crumbly, somewhat heterogeneous sandy silty clay to clay sand, with large (to 100 mm) lumps of ?iron slag or iron concretions. The heterogeneous nature of this deposit is consistent with an origin as a dump.

There was a small washover with a small component of herbaceous detritus, mostly very decayed root/rootlet fragments, a little unidentifiable insect cuticle and a trace of charcoal to 2 mm. The modest residue consisted of iron-rich concretions (described in more detail for sample 1, below) and quartz sand, with a rounded stone to 25 mm; a single large lump of iron-rich concretion was present, measuring 100 mm in maximum dimension.

Context 1005 [?natural; how was it formed?]

Sample 1: light/mid grey to somewhat gingery brown, moist, crumbly sand with a major component of dark purplish to gingery brown clay silt in a sand matrix. The sand is surely waterlain, the clay silt perhaps representing periods with a less vigorous water flow. Internal stratification could not be identified, perhaps suggesting the material had been re-worked, perhaps dumped. An origin as a riverine deposit seems most likely. The dark coloration is perhaps a result of movement of mineral salts, probably iron; this might have occurred after the deposit was originally laid down or, more probably, secondarily after redeposition at the present site.

The 2 kg subsample gave a small washover with traces of herbaceous detritus and very poorly preserved and unidentifiable insect cuticle; there was a single fragment of an achene of hemp agrimony (*Eupatorium cannabinum*), most typical of fens and river banks, and an abundance of oospores of the aquatic green algae in the family Characeae (stoneworts). The latter certainly indicate deposition in a body of water, probably static or at most slow-flowing.

The small residue consisted of quartz sand with a few angular stones to 25 mm, but the bulk of it comprised iron-rich concretions, essentially dark orange-brown, crumbly, amorphous and sometimes vesicular material (the interior walls of the vesicles being varnished dark purplish-brown in colour); there were a few small tubular fragments of iron-concreted root channel/worm burrow casts.

This deposit appears to have formed in water, and to have been subjected to movements of water and iron salts post-depositionally.

Context 1006 [how was it formed?]

Sample 2: varicoloured (mid grey-brown to orange-brown to yellow-brown to purplish-brown), moist, crumbly, sandy clay silt. The very variable colour of this deposit probably results from the movement of (?mainly iron) salts; it might have formed naturally in a river or stream.

Almost all the large residue from the 2 kg subsample processed consisted of iron-rich concretions as described for sample 1; there was also a little quartz sand. Biological remains were not observed.

Context 1007 [how was it formed? is it redeposited?]

Sample 3: very dark grey (with some patches of lighter grey, orange-brown, and dark purplish-brown), moist, crumbly, sandy silty clay with a little rotted ferruginous sandstone, and fine root channels/invertebrate burrows. Again, the movement of (?iron) salts through this deposit no doubt accounts for the distinct coloration. The channels/burrows would have offered a route for this; their presence perhaps indicates a deposit which has been 'active' as part of a (sub)soil at some stage in its life.

There was a small washover from the 2 kg subsample examined. It consisted mainly of herbaceous detritus, mostly root/rootlet fragments, with a small amount of charcoal to 4 mm. Identifiable plant remains present were seeds of elder (one whole and several fragments), a few fragmentary fumitory (*Fumaria*)

seeds, one toad-rush (*Juncus bufonius*) seed and one blackberry (*Rubus fruticosus*) seed; there was also a single earthworm egg capsule. The small plant assemblage does not provide a ready interpretation: these are some of the more durable kinds of remains and may be the vestiges of a once much larger assemblage. *Fumaria* is commonly recorded from disturbed ground, especially cultivated land and it is not impossible that the other taxa also indicate some kind of disturbance. Perhaps they originated in a topsoil above which has since been removed, finding their way down into the deposit examined through the action of worms.

The residue was modest in size and comprised quartz sand with a few angular stones to 25 mm; there were modest amounts of the same kind of iron-rich concretion as that recorded from sample 1.

Context 1008 [how was it formed? is it redeposited?]

Sample 5: mid orange-grey-brown, moist, crumbly sandy clay to clay sand, with traces of stones 6-20 mm, and occasional patches of orange-brown to yellow rotted sandstone or iron concretions. The implications are that this was a natural deposit exposed to fluctuations of water content during the post-depositional period.

Context 1009 [is it redeposited?]

Sample 6: mid orange-brown (very rich in ferric salts), dry, indurated to crumbly, sandy silt with traces of stones 2-60 mm. This appears to be a natural fluvial or perhaps fluvio-glacial deposit and there is no evidence from the sediment itself for re-working.

Context 1010 [is this a buried soil (beneath 'road')]

Sample 8: varicoloured (mid grey to red-brown to grey-brown to dark more or less purplish brown), moist, plastic to crumbly (soft when handled), somewhat heterogeneous slightly sandy clay silt to slightly sandy silty clay, with tubular iron concretions, presumably formed round root traces/worm burrows; the whole deposit very rich in iron. From the heterogeneous nature of the deposit, and in particular the coloration, it seems likely that it was subjected to changing water content at some stage after deposition. This is consistent with gleying in a waterlogged subsoil and the tubular concretions perhaps also point to this having been part of an active soil.

Context 2000 [is it natural? is it redeposited?]

Sample 12: light/mid grey-brown to yellow-brown to olive-grey, moist, indurated to crumbly, somewhat heterogeneous clay sand to clay with traces of stones 2-6 mm. This has the distinctive fabric of a sandy clay till, though the stones are rather small. The colour variation probably relates to states of oxidation/reduction resulting from water movements through the deposit. It is presumably part of the natural drift.

Context 2001 [is this redeposited?]

Sample 9: mid brown, moist, plastic to stiff, sandy clay with traces of stones 2-60 mm and a trace of charcoal <3 mm; some parts much more crumbly (sand-rich). This has the appearance of a sandy till ('boulder clay') or a deposit derived from one; the charcoal presumably indicated that there has been some reworking and that the deposit is dumped.

Context 2002 [how was it formed?]

Sample 10: sediment as sample 9, but perhaps more sandy and with perhaps a little more charcoal (up to 5 mm); there was also a trace of ?brick/tile and many root channels/invertebrate burrows through the matrix, suggesting it had been part of an active soil at some stage.

Context 2003 [how was it formed?]

Sample 11: mid orange-grey-brown, moist, stiff (becoming plastic when worked), sandy clay with traces of stones 2-6 mm and tiny traces of charcoal <2 mm. The remarks made for sample 9 are pertinent here, too.

Implications

Further biological analysis of these deposits does not appear to be warranted. However, consideration of the sedimentological aspects, in particular of the origin and nature of the iron-rich concretions within some of the layers, might be sought if further opportunities arise to study the stratigraphy of this part of York.

Reference

Kenward H. K., Hall A. R. and Jones A. K. G. (1980). A tested set of techniques for the extraction of plant and animal microfossils from waterlogged archaeological deposits. *Science and Archaeology* 22, 3-15.

Please note: Information concerning the archaeological context and dating of the deposits and biota considered in this report have been provided by York Archaeological Trust; the Environmental Archaeology Unit takes no responsibility for changes in archaeological interpretation or re-phasing which may have occurred since this report was compiled.