The Eggshell from the post-Roman deposits at Number One Poultry, London

Site code: ONE94

Undated

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Introduction

Eggshell was recovered from 100 samples collected from post-Roman horizons during the excavations undertaken on the site of Number One Poultry (see Table 1). These were collected from bulk samples taken for the recovery of a range of biological material, notably plant macrofossils and small vertebrate bones and come from a range of feature types, but mainly pit fills. During the assessment phase of the project and whilst the updated project design was being constructed, it became apparent that these samples had the potential to contribute to the major research issue of diet. Consequently, analysis was authorised and the results are presented here.

Methods

The samples, although cleaned through conventional wet sieving, required additional cleaning prior to microscopy. To this end, each sample was placed in a water-filled beaker within a water-filled ultrasonic tank. This process gently lifts dirt adhering to the individual pieces of shell without damaging the sample. The shells were then air-dried. Each sample was then scanned using a low-power Leica stereo microscope at magnifications of between 10 and 40 times. This was done in order to pick out superficial differences and ascribe types, based on gross morphology such as thickness and relative size of mammillae. The types were described (see below, Table 2) Sub-samples were then selected for scanning electron microscopy (SEM). These were mounted on Cambridge type aluminium stubs using conductive carbon cement and gold-coated using an Edwards sputter coater. Image analysis was undertaken using a Hitachi SEM at an accelerating voltage of 20kv and using magnification of between 25 and 4000 times. Fuller details of this methodology may be found in Sidell [Sidell, 1993 #716]. Characteristics taken from [Simons, 1971 #466] have been used to investigate whether the samples could have come from hatched rather than otherwise broken eggs.

CONTEXT	FEATURE TYPE	PERIOD	LANDUSE
2512	Occupation	36	B 123
2535	Hearth	35	B 107
2548	Pit	35	B 110
2644	Hearth	35	B 112
2720	Pit	36	B 112
2721	Pit	35	B 111
2770	Pit	36	B 112
2844	Occupation	35	B 107
2863	Pit	35	B 111
2872	Floor	35	B 105
2965	Pit	35	OA 116
2969	Occupation	35	B 114
2983	Pit	35	OA 116

CONTEXT	FEATURE TYPE	PERIOD	LANDUSE
3030	Floor	35	B 114
3061	Dump	34	OA 113
3072	Dump	34	OA 113
3095	Fill of robbing	32	OA 105
3216	Dump	34	OA113
3251	Dump	33	OA 110
3399	Dump	33	OA 110
3463	Building debris	32	OA 105
3536	Dump	33	OA 110
3544	Dump	33	OA 110
3558	Pit	32	OA 105
3821	Pit	35	B 111
6037	Pit	34	OA 142
6067	Pit	34	OA 142
6074	Pit	34	OA 142
6075	Pit	34	OA 142
6080	Pit	34	OA 142
6088	Pit	34	OA 142
6090	Pit	34	OA 142
6096	Pit	34	OA 142
6106	Pit	34	OA 142
7011	Pit	36	OA 131
7012	Pit	36	OA 131
7015	Pit	36	OA 132
7017	Pit	36	OA 131
7034	Log well	35	OA 119
7064	Pit	36	OA 131
7071	Pit	36	OA 132
7083	Pit	36	OA 131
7088	Pit	36	OA 131
7089	Pit	36	OA 131
7093	Log well	35	OA 119
7096	Drain fill	35	S 101
7097	Pit	36	OA 131
7110	Pit	36	OA 131
7120	Pit	36	OA 132
7123	Pit	36	OA 131
7136	Pit	36	OA 131
7138	Pit	36	OA 131
7143	Pit	36	OA 131
7167	Pit	36	OA 131
7169	Pit	36	OA 131
7202	Pit	36	OA 132
7206	Pit	36	OA 131
7239	Floor	35	B 115
7266	Floor	35	B 115
7281	Pit	36	OA 131
7293	Pit	36	OA 131
7301	Pit	36	OA 131
7302	Pit	36	OA 132
7346	Pit	36	OA 132
7392	Pit	35	OA 119

CONTEXT	FEATURE TYPE	PERIOD	LANDUSE
7416	Pit	36	OA 131
7463	Pit	36	OA 132
7501	Pit	36	OA 130
8089	Dump	36	Road 102/103
8094	Stakeholes	35	Road 102
8098	Stakeholes	35	Road 102
11004	Gully	35	OA 143
11236	Pit	36	OA 144
11261	Pit	37	OA 145
11496	Infill of building	33	B 160
11504	Pit	36	OA 144
11589	Pit	34	OA 142
11633	Pit	36	OA 144
11640	Pit	36	OA 144
11685	Pit	37	OA 145
11697	Pit	37	OA 145
11715	Pit	36	OA 144
11719	Pit	36	OA 144
11740	Pit	36	OA 144
11897	Pit	36	OA 144
12335	Pit	36	OA 144
12362	Pit	36	OA 144
16613	Pit	36	OA 136
16780	Drain fill	35	Road 102
16814	Posthole	35	B 116
16870	Pit	35	B 116
16927	Floor	35	B 116
16931	Occupation	36	B 168
16976	Floor	36	B 168
16992	Pit	36	OA 135
16993	Drain fill	35	Road 102
17008	Occupation	35	B 116
17072	Plank floor	36	B 168
17314	Pit	35	B 117
17356	Drain fill	35	Road 102

Table 1 Samples and context details

Results

Three types of shell were observed in the initial scan.

TYPE	INTERNAL SURFACE	EXTERNAL SURFACE
A	White, glassy, poorly defined mammillae. Some staining noted in various samples, ranging from iron staining to a dark unidentifiable type. Membrane was often preserved.	Cream, glossy, slightly undulating with poorly defined pores. In some cases, eroded with the loss of the glossy cuticle and better pore definition.
B	Cream, glassy with poor mammillae definition. Large sutures, splitting across the inner surface.	Brown, smooth, glassy with good pore definition.
C	Yellow, glassy, good mammillae definition with deep fissures.	Brown, glossy, undulating with relatively poor pore definition.

Table 2 Types identified

Period 32

This period dates to AD900-70. One sample was collected from a quarry pit on OA4.

Period 33

This falls into the late Saxon period, approximately AD900-1050. The assemblage from [11496] comes from the infill of B160, presumably subsequent to its use and may therefore be an accumulation of rubbish deposited over some time. It contained two fragments of chicken shell, from hatched material. [3399] is one of the dump deposits, from OA110 and contains 32 fragments of chicken shell, some of which is heavily eroded which may indicate a degree of re-working. The material is obviously out of primary context and serves only to indicate that chicken eggs were probably eaten nearby.

Period 34

This period dates to approximately AD900-1050. Several assemblages are derived from dumps within Open Area 113. One of these, [3216] contained 11 fragments of chicken shell and a further three of goose, all of which came from hatched material. Another, [3072] contained several fragments of chicken shell.

The remaining assemblages come from the fills of pits cut within Open Area 142. [6037] contains two fragments of chicken shell, [6067] had thirteen fragments of chicken shell with traces of the organic membranes. [6074] contains a possible fragment of goose and 115 fragments of chicken shell, [6080] contains sixty fragments of chicken shell, some of which are hatched; several fragments from this context were eroded and not identifiable. [6088] contains mainly chicken, with a fragment of goose. Organic membrane was also present on the shell of both species. [6075] contained only chicken shell, 13 fragments with extremely good membrane survival. [6090] contains a further 23 fragments of chicken shell. [6096] included a further ninety-nine fragments of chicken shell, some of which are from hatched eggs, with a further two fragments of goose shell, one of which is from a hatched egg. [11589] yielded one fragment of goose shell which seems to be from a hatched egg and a further nine fragments of chicken shell, many of which still retain their inner membranes.

Period 35

Period 35 is also dated to between approximately AD900-1050. Eggshell was recovered from twenty-nine different features, including pits, hearths and occupation horizons from Buildings 105, 107, 110, 111, 112, 114, 115, 116, 117. Structure 101 is also represented, with fill [7096] containing a few unidentifiable fragments plus a piece of goose and 17 fragments of chicken shell, with some membrane indicating continued waterlogging of this feature. Drain fills are also represented, with road 102 including 118 fragments of chicken shell and four of goose, with some attached membrane, indicating that the fills remained waterlogged. Samples collected from wells and pits in Open Areas 116, 119 and 143 also contained shell. Contexts [7034] and [7093] both come from a log well in OA119 and contain a few highly eroded fragments as well as a small group of chicken shell – two pieces of which appear to come from a hatched egg – this material is presumed to be waste dumped in a convenient location. [7392], a pitfill in OA119 contained ten fragments of chicken shell with associated organic membrane, although there was some eroded and unidentifiable material as well. [11004], the fill of a gully in OA143 contained some chicken shell, with some organic preservation, indicating that this feature also remained waterlogged.

Context [2844], an occupation horizon within B107 contained a fragment of goose shell from a hatched shell and a further 18 fragments of chicken shell, one of which came from a hatched egg. Membrane was present on several of these pieces, indicating a degree of waterlogging. It is possible that breeding of birds was undertaken close to this building. A pitfill associated with B111 yielded eight eroded and hatched fragments of chicken shell. A second fill, [2863] contained a larger assemblage of 95 chicken shell fragments, many of which were heavily stained with some form of iron deposit, presumably from artefacts contained within the fill.

A floor surface within B115 contained an assemblage ([7266]) with a fragment of apparently hatched goose shell and forty-two fragments of unhatched chicken shell. A floor within B116 contained fifty-nine fragments of chicken shell, many of which were stained with traces of iron, presumably as a result of artefactual material within the matrix. Another floor sample from this building had a piece of ?goose shell, whilst the assemblage was dominated by chicken, a piece of which came from a hatched bird. A further occupation horizon within this building only contained two fragments of chicken shell, perhaps suggesting that this part of the building was more hygienically maintained. A fill ([16870]) of a pit associated with the building contained several fragments of goose shell and an additional 40 fragments of heavily stained chicken shell, presumably from iron artefacts contained within the deposit. Posthole fill [16814] contained seven fragments of chicken shell, however, these could have come from the initial packing of the post, or from the surrounding matrix when the post decayed.

A pit associated with B117 contained 247 fragments of chicken shell, only one of which was from a hatched egg, whilst only a couple of fragments of goose shell were recovered from this context.

Period 36

This period dates from the early medieval/Saxo-Norman period, approximately AD1050-1150. Forty-seven samples containing eggshell date to this period, all but five of which

come from pit fills. The pits come from Open Areas 130, 131, 132, 135, 136 and 144. Two pitfills [2720, 2770] are associated with Building 112 and contained chicken and less goose shell, all of which retained some membrane, indicating waterlogged conditions. The remaining deposits are an occupation surface associated with Building 123 (containing a few fragments of chicken and goose shell – fairly eroded), a road dump (R102-3), a plank floor (two samples) and occupation surface of Building 168. This later assemblage ([16931]) contained 361 fragments of chicken shell and three fragments of goose and is assumed to represent waste from food eaten within this building. The plank floor [17072] contained seven fragments of goose shell and a further forty-five of chicken. Both groups contained shells that appear to come from hatched eggs, which may indicate local breeding as well as the consumption of chicken and goose eggs.

OA130 contains 13 fragments of chicken shell from [7501] - one of which comes from a hatched shell and may suggest chickens were bred locally, or possibly an accident where an egg destined for consumption was overlooked.

OA131 has 21 pit fills with assemblages dating to this period. Fill [7011] incorporated four fragments of chicken shell whilst [7012] had a fragment of goose shell and a further 60 of chicken, with some preservation of the organic membrane. [7017] contained twenty-one fragments of chicken shell, with some membrane persisting, indicating waterlogging. Fill [7064] included five fragments of goose shell with some membrane surviving and a further ninety fragments of chicken, again with membrane, showing how waterlogged conditions have persisted. [7083] contained a couple of fragments of goose shell and 115 fragments of chicken (several further pieces were unidentifiable). [7088] included 26 fragments of chicken shell, several of which appeared to be from hatched eggs – some erosion was also noted which might indicate reworking. [7089] had a further 2 fragments of chicken shell which were eroded, possibly indicating a degree of exposure or redeposition. Fill [7097] included 13 fragments of goose shell and a further 118 of chicken, four of which came from hatched shells. Assemblage [7110] included a solitary fragment of chicken shell. [7123] contained eight fragments of chicken shell. [7136] included 6 fragments of goose only, with 1 unidentifiable piece. [7138] contained six fragments (one hatched) of chicken shell and one unidentifiable piece. [7143] contained seventy-five fragments of chicken shell and twenty-two fragments of goose shell, some of which was from hatched eggs, which may indicate local breeding as well as the consumption of goose and chicken. [7167] had 148 pieces of chicken shell. [7169] contained two fragments which were too eroded to be identified and two fragments of chicken shell. The erosion suggests a degree of weathering which may indicate that the deposit was uncovered for a while, or re-deposition of the material. [7206] contained 24 fragments of chicken shell, some of which retained the organic membrane. A second sample from this context also contained chicken shell (19 fragments) but also one piece of goose shell. Much of this assemblage was quite battered which may indicate redeposition or perhaps initial weathering before finally becoming sealed. [7281] contained six fragments of chicken shell, again with some membrane persisting, showing the waterlogging must have been present for much (if not all) of the period between burial and excavation. Assemblage [7293] contained eighteen fragments of chicken and one goose fragment, with a further piece too eroded to be identified. [7301] includes one eroded piece of goose shell from a hatched egg and a further unidentifiable piece of shell. Again, the erosion could indicate exposure or

redeposition. [7416] contains 16 fragments of chicken some of which has picked up some iron staining, presumably from objects contained within the matrix.

OA132 contains seven pitfills with shell. [7015] contained three fragments of chicken shell, one from a hatched egg. Fill [7071] included an unidentifiable fragment, possibly goose on account of its thickness and 27 fragments of chicken shell, 4 of which appear to come from hatched shell. [7120] included nine fragments of chicken shell. [7202] had nine fragments of shell, several of which were too eroded to be identifiable, however, the remainders were of chicken with one of these from a ?hatched egg. [7302] included a further fifteen fragments of chicken shell with some exhibiting traits of hatched material. Fill [7346] included a further 12 fragments of chicken, some of which retained their membrane, indicating persistent waterlogging. [7463] contained one fragment of goose shell.

OA135 has one pitfill containing shell; [16992] had fifty-two fragments of chicken shell, with some traces of membrane. OA136 also included one pitfill with shell; [16613] containing four fragments of ?chicken shell – they are all eroded and indicate that the deposit was exposed or possibly redeposited and so identification cannot be certain.

OA144 has 10 shell-bearing pitfills. [11236] included one fragment of chicken shell whilst [11633] contained 26 fragments of chicken shell and a further 25 fragments of goose, some of which appear to come from hatched eggs, possibly indicating local breeding of geese. [11504] includes some goose, but the assemblage is dominated by chicken shell. Fill [11640] contains a further 29 fragments of chicken shell, with a couple of pieces of goose as well. [11715] contains eight fragments of chicken shell. [11719] contained thirty-six fragments of chicken and one piece of goose shell. [11740] includes a piece of both chicken and goose shell, the latter from a hatched egg. Fill [11897] contains only goose, with 97 pieces; one of which appears to come from a hatched egg. [12335] contains 22 fragments of chicken and a further 15 fragments of goose shell, both species included traces of the organic membrane. 12362] included 6 unidentifiable pieces, owing to membrane totally obscuring the inner surface. However, a further 28 fragments were identified as chicken shell.

Period 37

This period dates from the early medieval/Saxo-Norman period, approximately AD1050-1150. Three contexts containing eggshell date to this phase, all from pits in Open Area 145. [11261] contained two fragments of chicken and goose shell. Fill [11685] contained 10 pieces of chicken shell, one of which appears to have come from a hatched egg. [11697] contained 88 fragments of chicken shell with some attached organic membrane and also four fragments of goose shell.

Discussion

The assemblages of post-Roman eggshell from the site can contribute to the wider environmental discussion about diet and also to a limited extent, food production and waste disposal. In contrast to the assemblage from the Roman deposits here, there is much more evidence to suggest that birds were being bred locally, presumably for their eggs as well as meat. Furthermore, there are several secondary products that may be obtained from both chicken and geese. Feathers are the most obvious, potentially for stuffing but also the use of goose wings as brooms is a possibility. Some of the larger

bones may also have been useable for making artefacts from. Hatched shell is found from assemblages in all periods and therefore it would appear that this is a consistent occurrence and both chicken and geese are being kept in the area, potentially in pens/coops. It seems possible that the birds may have been less controlled but this could have led to questions of ownership and so it seems more likely that they were kept confined, perhaps in yards or open areas associated with individual properties. There does appear to be some variation in distribution of hatched material across the site, but it is difficult to be certain whether this is a 'real' trend or not. Hatched shell of both species is commonly found together in the open areas and associated with some buildings – as mentioned above, it seems likely that the birds would be kept in yards associated with buildings. However, the series of buildings found along the street frontage yield shell, but only, apparently, from unhatched eggs, perhaps indicating that this area was exclusively a consumer, rather than a producer area.

As with the question of diet, the evidence is very similar to that from the Roman deposits; geese and chicken eggs formed this aspect of the diet of the local inhabitants. Unfortunately, it is not possible to quantify how large this element of the diet was – firstly it is impossible to quantify shell other than by weight and the problems of recovery and taphonomy generally indicate that the samples recovered is a small percentage of the initial 'true' assemblage. Secondly, without information, such as can be gained from historic sources (Hammond 1995), it is very difficult to gauge how much of any one food type is consumed throughout the archaeological record. Furthermore, it is possible that eggs were not eaten continually throughout the year. With some species, this may be simply because they do not lay regularly, but also because eggs are linked in with religious issues and fasting, when eggs may not have counted as meat, but were banned at other times, such as Lent (see Hagen 1992, 99).

The balance between the two species is different to the Roman deposits, which were heavily dominated by chicken, with very little goose shell recovered. In this later period, there is much more goose in relation to the chicken, and this can be compared well with assemblages from elsewhere. A good comparison is the Royal Opera House, Covent Garden (Malcolm and Bowsher, in prep) where the Saxon eggshell assemblage also showed a high ratio of goose in comparison with the generally ubiquitous chicken shell (Sidell, in prep). Other medieval assemblages (Sidell, 1997) have also shown a higher proportion of goose than that found in the Roman deposits at Poultry. It seems possible that in this period, although geese are more difficult to keep than chicken, the secondary products such as the feathers may have been of sufficient value to increase the relative popularity of this difficult species.

With regard to waste disposal, by far the majority of individual assemblages were derived from pit fills in the various open areas. It would seem that this was the primary method of disposing of food waste, by dumping material into pits dug in these areas, away from the main living areas. Although this may appear relatively hygienic, the pits would have come close to the houses and also there is some indication of reworking and weathering suggesting that these pits may have been open for some time, presumably with rotting waste. A surprisingly small amount of shell was recovered from middens and dumps, suggesting that the pits were very much the preferred form of waste disposal and that potentially there were rules in place governing how waste was discarded.

Furthermore, there is a fair amount of shell derived from within structures. The individual assemblages are much larger than those collected from the Roman period, most notably those from B115 and B116. It would seem, therefore, that the Saxo-Norman inhabitants were less fussy than their Roman predecessors about the state of their homes, with the result that much more information is available from these buildings.

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