# Section 3: The assemblage.

### i. General observations

The Ford Bridge Assemblage comprises 1153 fragments of clay coin mould, ranging in size from 90.38 mm. to 5 mm., and the data from them is listed on 684 pre-printed record cards. There are 89 bulk bags containing more than one fragment, and 595 bags containing single fragments.

The total number of fragments in bulk bags, 558, represents 48.8% of the total number of fragments, compared with 33.7% in the Puckeridge Assemblage. This disparity could be attributed to poorer preservation at Ford Bridge, but in view of the demonstrably higher standards of excavation at Ford Bridge, it seems more likely that it results from more efficient retrieval.

The average size of an individually listed fragment is 27.19 mm. (Length 1) x 25.15 (Length 2).

Of the 595 individually listed fragments, there are 202 middle fragments; 248 straight edge fragments; no curved edge fragments; 26 $90^{o}$ corners; 35 oblique corners and 13 unquantifiable corners. There are 71 fragments with an unquantifiable position type.

Of the 2219 mould holes noted, 2049 are incomplete and 170 are complete.

The standard of preservation of the retrieved portion of the assemblage is good, better than either the Henderson Collection material or the Turners Hall Farm coin mould, although not as good as the Puckeridge Assemblage. Some fragments retain vitrified surfaces unabraded; many fragments retain traces of chalk wash in holes, fewer retain traces on surfaces.

The proportion of very large fragments of coin mould is lower in the Ford Bridge Assemblage than in the Puckeridge Assemblage, and there are far fewer conjoining fragments (three, or 0.26%, in the Ford Bridge material against 58, or 2.12%, in the Puckeridge Assemblage). These disparities could be explained by the limited scope of the Ford Bridge excavation, which dealt only with the edge of the coin mould deposit, where the greatest disturbance might be expected to occur.

### ii. Tray forms

There is strong evidence for one tray form in the assemblage, and reasonable circumstantial evidence for a second.

That there are 42 fragments, or 10% of the total number of edge fragments, with the distinctive features of the pediment always associated with the Verulamium tray form suggests strongly that this form is the most common in the assemblage.

The fact that no fragment exhibiting such features has holes with a base diameter larger than 14 mm. would seem to suggest that this form is to be associated with smaller diameter holes, as was noted of the Puckeridge Assemblage.


**Plate 8: Verulamium form pediment with horizontal incised guideline. Note the deformation of the apex hole.**

Conversely, all edge and corner fragments with holes with a base diameter of 15 mm. or greater were consonant with a rectangular or sub rectangular tray form. This is also the case in the Puckeridge Assemblage, in which the presence of two larger fragments enabled the demonstration of the 5 x 5 hole Puckeridge tray form. Although the Ford Bridge Assemblage contains no such diagnostic fragments, the very close stylistic parallels between the two assemblages would seem to suggest that – as is surmised of the Puckeridge Assemblage – the larger hole diameters are to be associated with trays of the Puckeridge form. It has been suggested that the 5 x 5 arrangement was adopted because a tray with the usual 7 x 7 + 1 format and holes of 15 mm. or greater would have been impracticably large and fragile.

The proportion of holes with a base diameter greater than or equal to 15 mm. to holes with a base diameter of less than or equal to 14.5 mm. in the Ford Bridge Assemblage is 23 out of 595 individually listed fragments, or 3.9%, compared with a ratio in the Puckeridge Assemblage of 143 out of 1815 individually listed fragments, or 7.9%. Although both figures are low, the fact remains that these larger hole sizes are less than half as common in the Ford Bridge Assemblage than in the Puckeridge mould.

## iii. Edge profiles

Of the 595 individually listed fragments, 322 have edge profiles. 248 of these have one edge profile only; 74 have two edge profiles. No fragment in the assemblage has more than two edge profiles.

Six edge profile forms and one associated edge marking have been noted in the assemblage:

| Code | Profile Type | Frequency | % of Profile total |
|---|---|---|---|
| 1 | I-Section | 10 | 2.6 |
| 2 | Lazy S | 163 | 41.6 |
| 3 | Straight section | 36 | 9.2 |
| 4 | Angled section | 3 | 0.8 |
| 5 | Rolled edge | 12 | 3.0 |
| 6 | Overhang | 31 | 7.9 |
| 7 | Cut & tear | 4 | 1.2 |

**Table 1: Edge profile distribution.**

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137, or 34.9%, of the edge profiles are unquantifiable.

Experimental tray manufacture suggests very strongly that not all of these profiles result from the same manufacturing process. This could be taken as circumstantial evidence for the presence of more than one 'hand' at work in the assemblage.

Of the 36 'straight section' profiles, only 4 exhibit the 'cut and tear banding' which is diagnostic of an edge that has been cut rather than moulded This is good evidence that very few of the Ford Bridge trays were made by cutting to shape from a larger slab of clay. This is a point of resemblance with the Puckeridge Assemblage, and a clear point of difference from the Henderson Collection coin mould, a large part of which seems to have been made by cutting to shape.

The largest fraction (47.2%) of the edge fragments – and, by implication, of the original trays from which they derive – would seem to have been made in moulds, the majority of these (92%) in 'bowl moulds'. This is also true of the Puckeridge Assemblage.

## iv. Edge markings

Although grooves are a very occasional edge marking in the Ford Bridge Assemblage, these are far too shallow to have acted as 'cleavage grooves', as suggested by Elsdon[1] of the edge markings she observed on the Old Sleaford mould. Instead, they should perhaps be understood as an unintended consequence of removing a tray from an open-ended mould[2]. The barely more frequent diagonal and horizontal striations should almost certainly be attributed to the same cause.

The frequency of occurrence in the Ford Bridge material of the edge marking termed ‘band and lines’ (4.1% of all edge profiles) is very similar to that observed in the Puckeridge Assemblage (5.8% of all edge profiles), and the fact that this edge marking has never been observed on any other coin mould has been taken as very strong evidence that these two assemblages are very closely related, to the extent that it is not unreasonable to suggest that the same hands may have worked on both.


**Plate 9: Band and lines edge marking**

However, the import of this edge marking remains unclear. Given that it is not placed for prominent display and that it is often very faint, and given the inherent ephemerality of coin mould, almost certainly destined to be broken after a single use[3], and the often low standards of care in manufacture, it seems highly unlikely that ‘band and lines’ edge markings were intended as decoration. As noted in Section 2, p., the most plausible explanation is that this is the signature of some sort of lining used to facilitate the release of a tray from a bowl-mould, and the fact that most edge-fragments in the assemblage do not possess it would seem to indicate that it was not the most common method used to achieve this end. The diagonal termination of some examples of band and line marking has all the appearance of a cut end, so it seems likely that whatever made the marking was deliberately shaped, and then applied to the inside of the tray-mould before the clay was pushed in. As intimated above, the marking most resembles the ribbing and veining on a pennate leaf, such as bulrush or Iris pseudocorus.

The idea is reinforced by the existence of other edge markings, some apparently made by bast strips, others not readily identifiable, but all clearly the marks of material used to line a tray-mould.

**Plate 10: Mould lining mark, possibly made by bast or bark.**

The absence in the assemblage of any exceptionally well-preserved examples of 'band and lines' is a reflection of the slightly poorer standard of preservation of the Ford Bridge material compared with the Puckeridge Assemblage.

**v. Evidence of elaboration**

As adumbrated above, there is no sign of the 'cleavage grooves' noted by Elsdon on some of the Old Sleaford coin mould.

'Incised guidelines' are not uncommon in the Ford Bridge material, occurring at a frequency comparable with that observed in the Puckeridge coin mould. Of a total of 392 edge fragments of all types found at Ford Bridge, 38 (or 9.7%) have an incised guideline of some type; in the Puckeridge Assemblage, fragments with incised guidelines form 11.8% of the total number of edge fragments. This further strengthens the idea that these two assemblages are very closely related: none of the other coin mould so far found in the Braughing/Puckeridge complex possesses this feature – indeed, only one other possible occurrence has been noted to date, in the Turners Hall assemblage, from the environs of Verulamium.

However, the Ford Bridge 'incised guidelines' show none of the variety of arrangement noted in the Puckeridge material[4]. Instead, we find only single lateral and horizontal lines; and none of the Ford Bridge fragments carries both. This may be a function of the smaller average size of Ford Bridge fragments, but it may equally reflect a slightly different basis on which minting took place. If the interpretation of these lines as 'ownership markings' or 'quota marks' is correct, this restricted variation in their arrangement could be seen as indicating that fewer people had commissioned the making of coin, or contributed to the making of trays, in this minting episode. However, the very similar proportion of fragments bearing incised guidelines in both assemblages, which averages out to 10.75% of edge fragments of all types, might suggest that trays thus marked represent the tithe due to the owner of the mint.

The fact that, while no fragment in the Puckeridge Assemblage consistent with a Puckeridge form tray exhibited any incised guidelines at all, a single Ford Bridge fragment consistent with this form possessed a lateral guideline could also be construed as suggesting a slightly different basis for manufacture: perhaps more than one person had commissioned or supplied Puckeridge form trays for the Ford Bridge minting episode.


**Plate 11: Possible Puckeridge form fragment with 17 mm. diameter holes and an incised guideline.**

### v. Methods of hole manufacture

There are 35 fragments, or approximately 6%, exhibiting hole slighting out of a total of 595 measurable fragments, and 5 fragments exhibit clear signs of boustrophedon dibbing. The hole slighting percentage agrees remarkably closely with the 6.4% for hole slighting in the Puckeridge Assemblage. The two fragments with enough holes to enable meaningful examination of inter-hole spacings exhibit no repeated patterns of spacings. All the evidence is, therefore, that the mould holes of the Ford Bridge assemblage were made individually using a single-pronged dibber. This is a point of similarity with the Puckeridge

Assemblage, and every other fragment of coin mould from the Braughing/Puckeridge complex.

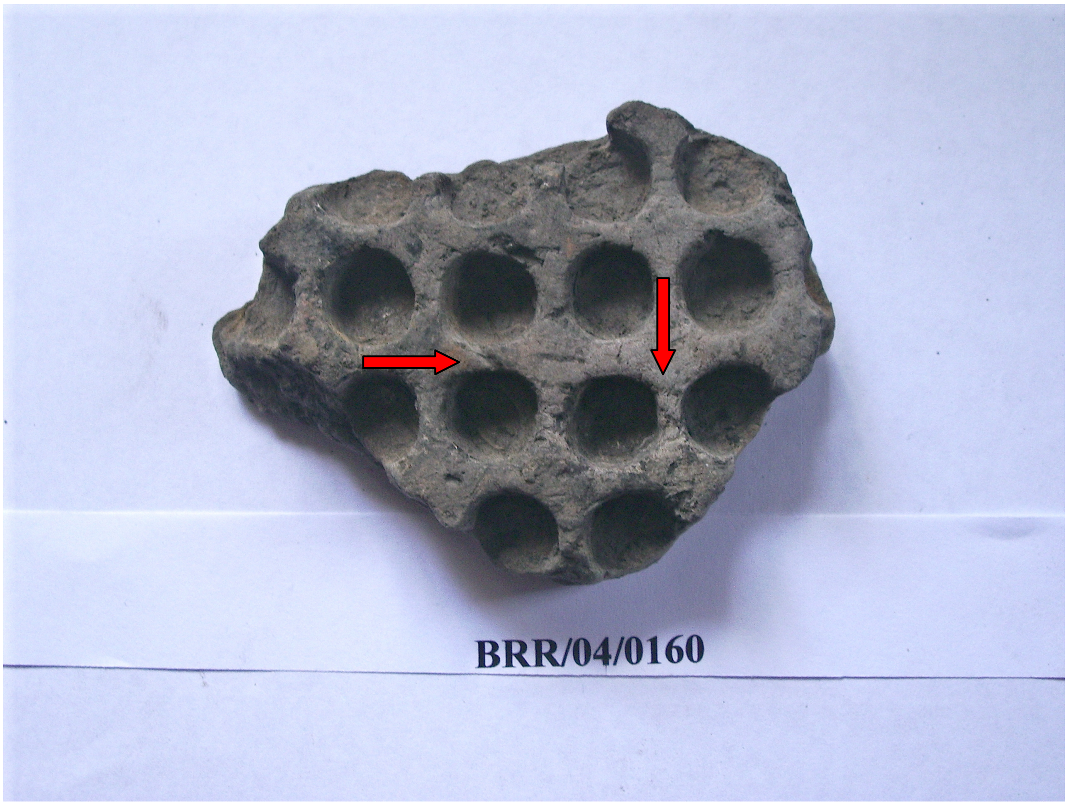


**Plate 12: Hole slighting – red arrows show the characteristic flattening.**

In fact, as far as can be discovered, only one example has ever been discovered of which it can be said with certainty that the holes were not made individually, and that is the near-complete specimen from Saintes. The near-complete Verulamium form tray from Verulamium itself and the substantial tray-fragment from Old Sleaford[5] exhibit such clear irregularities in alignment in both axes that it is obvious that their holes could not have been made using a multi-pronged dibber of the type used on the Saintes tray. The undeniable existence of hole-slighting on the Old Sleaford fragment also rules out the use of a peg-board.

In fact, if it was not thought that the creation of very large quantities of coin mould such as the Ford Bridge and Puckeridge deposits required the use of multi-pronged dibbers or peg-boards, it is hard to see why they might ever be thought necessary.

The wide variation in hole-profile across fragments with many holes reinforced the position that there is little relation between dibber-profile and hole-profile.

There were no instances in the assemblage of 'circle + swirl' markings on the base of holes, which means that none of the dibbers used to make the holes had a pithy or indented core. There were instead very many occurrences of the superficially similar 'annulus' marking, which experiment has shown to result from double-dibbing a hole.

## vii. Predictable relationship between base and top hole diameters

Because the metal of a coin pellet would have been cast at the bottom of a mould hole, and not at the top, if it is claimed[6] that there is a predictable relationship between top diameter and 'coin module', a corollary of this is that there must be a predictable relationship between base and top hole diameters, and that therefore it must, of necessity, be possible to infer top diameter from base diameter, and vice versa. Certainly it would be unreasonable to expect absolute precision, but it is not unreasonable to define limits to acceptable variability in the relationship which, if exceeded, would invalidate the claim. Since Elsdon follows Tournaire in assuming that top diameter alone is the measure of 'coin module', it has been decided to use the 2 mm. total range she has chosen for two of her hypothetical groups of hole diameters[7], which equates to a ± 1.0 mm. variation.

Seven holes have been examined from six fragments picked from a list of 30 continuously numbered fragments[8] picked at random. These holes have been chosen because they have either similar base or top diameters. If there is a predictable relationship, similarity in one dimension from fragment to fragment will extend to similarity in the other dimension. If variation of less than ± 1.0 mm. in one dimension across two fragments is accompanied by variation in the other dimension greater than ± 1.0 mm., it will be difficult to avoid the conclusion that there is no meaningful relationship in this assemblage between hole base and hole top diameters, and that therefore it would be incorrect to assume either that measurement of hole top diameter alone is sufficient, or that 'coin module can be determined from top diameter.

| Frag. ID | Hole no. | Hor. dia. | Vert. dia. | Mean base dia. | Top dia. |
|---|---|---|---|---|---|
| BRR/04/0105 | 2 | 10.7 | 0 | 10.7 | 12.5 |
| BRR/04/0124 | 1 | 0 | 11.7 | 11.7 | 15.0 |
| BRR/04/0127 | 4 | 10.6 | 12.1 | 11.35 | 13.4 |
| BRR/04/0128 | 2 | 9.1 | 10.3 | 9.7 | 13.0 |
| BRR/04/0131 | 1 | 8.1 | 9.1 | 8.6 | 12.1 |
| BRR/04/0131 | 3 | 9.5 | 9.0 | 9.25 | 12.8 |
| BRR/04/0133 | 3 | 12.3 | 11.2 | 11.75 | 12.3 |

**Table 2: Base and top diameters compared.**

In this very small sample, which is in no way untypical, we can see that BRR/04/0105 and BRR/04/0124 have mean base diameters differing by 1.0 mm., yet their top diameters differ by 2.5 mm.; BRR/04/0124 and BRR/04/0127 also have mean base diameters that differ by less than 1.0 mm., yet their top diameters differ by 1.6 mm.; BRR/04/124 and BRR/0133 have mean base diameters differing by less than 1.0 mm., while their top diameters differ by 2.7 mm.

Variation in excess of the limit set also operates in the other direction: holes with similar top diameters (differing by less than 1 mm.) have base diameters which differ by far more than the 1.0 mm. standard. BRR/04/0105 and BRR/04/0131, Hole 1 have base diameters differing by 2.1 mm.; BRR/04/0127 and BRR/0128 have base diameters differing by 1.65 mm.; both Holes 1 and 2 on BRR/04/0131 have base diameters differing from BRR/04/0133 by, respectively, 3.15 mm. and 2.5 mm.

It would seem safe to conclude that it is impossible in the Ford Bridge Assemblage to infer top diameter from base diameter or base diameter from top diameter, and that in consequence there is no predictable relationship between the two, and hence no obvious link between top diameter and ‘coin module’

The chart below, showing the frequency with which various top diameters occur, provides evidence that top diameter is inherently more variable than base diameter. Whereas base diameter distribution exhibits a continuous series of 6 mm. and a clear break of 3 mm. between the series of smaller hole diameters and the series of larger hole diameters, for top diameter the comparable figures are 8 mm. and 1 mm. – demonstrating a ‘blurring’, the result of greater inherent difficulty of mechanical control.

It would seem highly unlikely that a single denomination of coin could have had a diameter range of 8 mm. In the Ford Bridge assemblage, therefore, it is fairly certain that there is no link between top diameter and denomination,

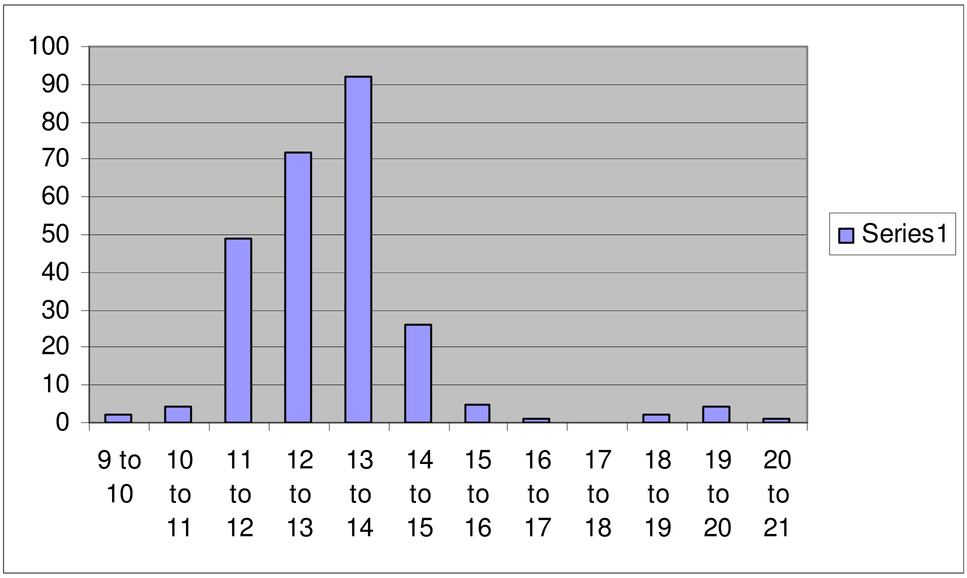


**Chart 3: Top diameter distribution**

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**viii. Predictable relationship between base diameter and pellet module**

Although, as has been shown in Section 2 viii above, it is highly unlikely that there could be a predictable relationship between base diameter and pellet module under the conditions that prevail in the Braughing/Puckeridge assemblages (and in all the coin mould examined using the same methodology as this study), it is nonetheless useful to confirm this by analysis of the variability in base diameter shown by a particular assemblage.

Furthermore, comparison of the results of this analysis with the results of similar analysis carried out on experimental trays on which the holes were made in wet clay using a single-pronged dibber should make it possible to conclude whether or not the same method of hole-making was used on both samples.

On the basis of the evidence, it would not seem unreasonable to conclude that there are two clear groups of hole diameter in the Ford Bridge Assemblage, that these groups are broadly similar to those observed in the Puckeridge Assemblage, and that they coincide with the two tray forms which seem to be present in both assemblages. Holes with a base diameter less than or equal to 13 mm. never appear on the same fragment as holes with a base diameter greater than or equal to 16 mm. – while there is a continuous spectrum of diameters on fragments with holes up to 13 mm., there is a clear chiasmus at this point. Although, as noted in Section 2 viii, there is no lower limit on the size of pellet that could be cast in a hole of a given diameter, and only an upper limit, and that therefore there can be no certainty as to the size of pellet actually cast in that hole, it can be suggested with some force that, since this chiasmus coincides with the distribution of the two tray forms that probably comprise the assemblage, the distinction between the two hole diameter groups was both recognized by, and significant to, the makers (and probably the owners as well) of the mould trays in the Ford Bridge Assemblage.

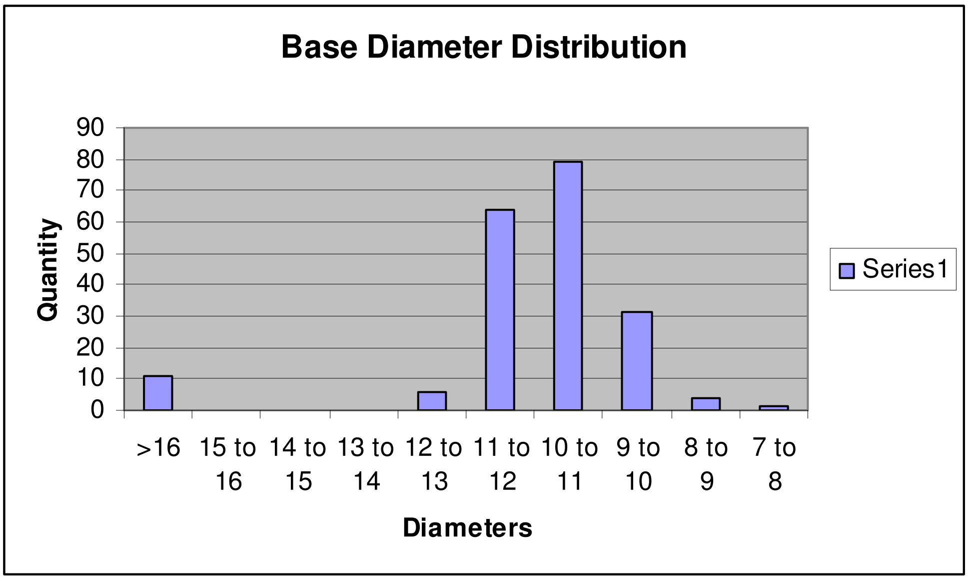


**Chart 4: Base diameter distribution**

The graph above, compiled from data derived from the 196 fragments with measurable base diameters, demonstrates very clearly the existence of the two base diameter groups, and also shows the very broad parameters of the smaller base diameter group, from 7 mm. to 13 mm. While it might be possible to argue – but not to prove - that the larger base-diameter group was intended for the manufacture of a larger coin, such as a Tasciovanus double-unit bronze, it would be very difficult to infer the intention to manufacture any single denomination from a diameter group with a range of variation of 6 mm. Furthermore, given that the distribution pattern of this group forms a reasonable bell-curve, there is no reason to believe that it is anything other than homogenous.

The scatter-chart below, in which base diameters are plotted against individual fragment ID numbers, demonstrates that the composition of the assemblage is homogenous throughout the various contexts in which the coin mould was found.

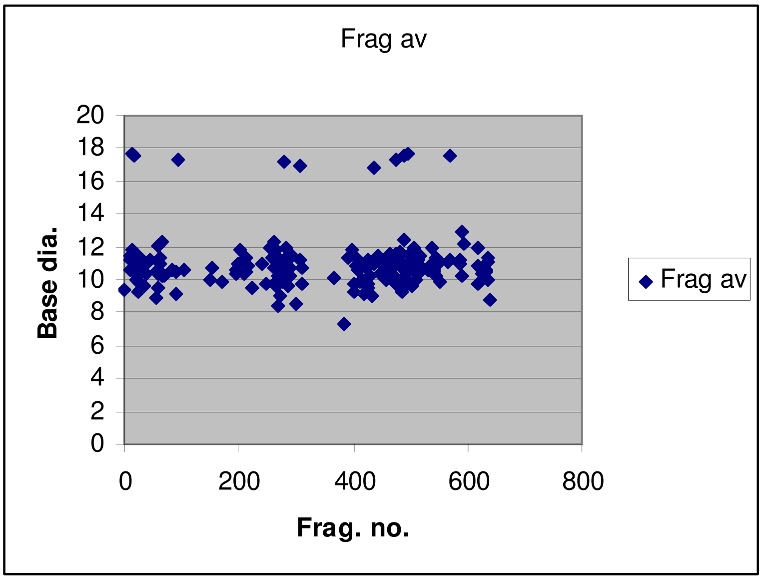


**Chart 5: Base diameter distribution. Context 00 forms the first cluster, context 03 the second, and the extended third cluster is formed from contexts 04; 06; 09 and VH.**

### ix. Control of hole volume

As demonstrated in Section 2 ix, very precise control of the volume of a hole is a necessary precondition of the credibility of two theories concerning the purpose and method of use of coin mould[9], that this precision requires particularly the control of the depth of a hole, and that the larger the diameter of the hole, the more stringently the depth must be controlled.

Experimental work suggests that it is impossible to control the depth of a hole made with a single-pronged dibber to an average accuracy[10] of better than ± 0.86 mm., which equates, assuming an 11 mm. diameter pellet, to a weight in silver of approximately ± 0.3 g., or very nearly 25% the weight of an Icenian silver unit, and a maximum deviation of 1.82 mm. from a target depth of 5 mm.. There are two conclusions which may be drawn from this: first, that variability of this order could not be acceptable in either coin production or the accurate measurement of metal for alloying; second, that mould fragments exhibiting variability significantly less than this could not have been made using the single-pronged dibber method.

Average intra-fragment variation in depth in the Ford Bridge Assemblage for fragments with two or more measurable depths is ± 0.84 mm., agreeing with the experimentally derived figure to within two hundredths of a millimetre. The maximum deviation observed was 2.9 mm.. It would be hard to argue from these figures first, that the Ford Bridge mould was suitable for use as a measuring device; and second, that the holes in it were made with anything other than a single-pronged dibber. Hole depth was not 'carefully regulated'[11], because *it could not be carefully regulated.*

### x. Calcium carbonate traces

Altogether 162 fragments in the Ford Bridge Assemblage, or more than 27%, of the 595 individually recorded fragments show traces of chalk wash in holes. This is comparable with the nearly 37% of individually recorded fragments of the Puckeridge Assemblage.


**Plate 13: Chalk wash in mould holes, approximately 1.5 mm. thick at the base.**

It is a useful measure of the standard of preservation of the Ford Bridge material, compared with the Puckeridge Assemblage, that no example from Ford Bridge is sufficiently intact to show traces of 'dribbling' or brush marks. It is quite possibly the poorer state of preservation of the Ford Bridge mould fragments that accounts for the 10% disparity, although the fact that the Ford Bridge percentage with traces of chalk wash on the top surface – which one might have expected to be more susceptible to mechanical and chemical damage – is 11%, while the Puckeridge percentage is only 7%, does not support this interpretation.

Longden[12] sees the function of the chalk wash purely in terms of a non-porous barrier preventing molten metal from leaching into the matrix of the non-refractory clay from which the moulds are made. However, the fact that calcium carbonate gives off significant amounts of carbon dioxide when heated means that the chalk wash was contributing to the creation and maintenance of reducing conditions at precisely the point at which this was required: the interface between the molten metal and the mould to which it would fuse were it allowed to oxidize.

She also fails to note either the observable fragility of the chalk wash, or the implications of this for coin mould from other sites, and concentrates instead on the idea that this technique is a tradition local to the Braughing – Verulamium enclave. She does not note the possibility that its presence on coin mould from this area might simply result from the better standard of preservation of coin mould from these find sites. It should be noted that chalk wash is not present on any finds of coin mould from Braughing/Puckeridge bar the Ford Bridge and Puckeridge Assemblages.

Finally, it should be noted that the application of chalk wash to a mould hole alters both the diameter and the profile. This adds another dimension of uncertainty to the problem of deducing pellet module from hole diameter: not only is the thickness of the wash variable, but it means that if its presence in an assemblage is suspected, but not present in all holes, than the retrievable hole diameter cannot be taken as an indicator of diameter during use. Given the relatively poor state of preservation of chalk wash in this assemblage, this observation must surely apply to the Ford Bridge coin mould.

### xi. Proportions of used and unused mould fragments

As pointed out in Section 2 xiii above, it is not always possible to gauge with absolute certainty whether a fragment of mould has been used by means of supra-microscopic examination alone. However, it is both possible to observe and useful to note patterns of coincidence in the various signs and degrees of heating exhibited by the individually noted fragments in the assemblage.

The location of signs of heating upon a fragment is of particular importance, given the observation of Gebhard et al.[13] that it is possible to achieve pellet fusion, which requires a temperature in excess of 900°C, without raising the hole base temperature above 700°C, and the suggestion by Gebhard[14] that the more extensive vitrification he claims has been noted on British material might indicate a longer heating process than used on the Continent.

Of 595 individually noted fragments, 202 exhibit vitrification of some type, and 283 exhibit vesiculation of some type.

171 fragments exhibit vitrification in some degree on the upper surface, while only 11 have vitrification on the base.

234 fragments have vesiculation on the upper surface, while 34 have vesiculation on the base.

Of a total of 163 fragments exhibiting both vitrification and vesiculation, 133 exhibit this on the top surface.

This is clear proof that, in the vast majority of cases, greater heat was applied to the top of the tray than to the bottom. The same is true of all the British material of which the signs of heating have been noted

In both the Ford Bridge and the Puckeridge material, examples of extreme heating have been noted, sufficient to affect the functionality of the tray. Significantly, while in the Ford Bridge Assemblage the proportion of material thus classified is 7.2%[15], the proportion for the Puckeridge Assemblage using the same criteria is 6.0%. This would seem to imply first, that the process used for both was almost identical; second, that the amount of material subjected to a longer period of heating or to greater temperatures is small enough to be considered as resulting from accident or extraordinary treatment rather than an inherent feature of the procedure used.

The single fragment from Ford Bridge exhibiting breaks sealed by melting represents 0.2% of the individually listed fragments, while the ten from Puckeridge comprise 0.6%. Taking the Ford Bridge figure together with those for extreme heating, it is possible to surmise that, as at Puckeridge, we may have evidence for a second episode of heating following use (although Clifford[16] suggests that broken moulds may have been trimmed up and reused).

### xii. Grass marks, chaff marks and matting marks

We know from Tylecote's experiments[17] that castings made in wet clay are of a much poorer standard than those made in dry clay, and it is an observable fact that unfired clay is much more fragile than fired clay. Before clay can be fired, it must first be dried, and although the majority of fragments have no markings on the base, in some cases the fragments of the Ford Bridge Assemblage show undeniable traces of having been laid out to dry. Often it is possible to say precisely on what they rested while drying took place.

**Plate 14: Grass marks on tray base.**

The most common seems to have been grass. Forty-six fragments, 7.7% of the individually recorded fragments, have grass-marks on the base. This is scarcely surprising, in view of the abundance of the resource, but in two cases the presence of grass-stalk casts tells us that it is less likely that the trays were made in the winter, for hay would have been a valuable commodity at this time of year, or in the spring or early summer, before the grass has begun to flower or seed. This impression is reinforced by the single fragment carrying the distinctive short, thick, veined imprints of chaff, a material which is associated with late summer and autumn.

Another 28 fragments, 4.7% of the individually recorded fragments, have markings that suggest that they were placed on cloth or matting to dry. However, it would require microscopic examination to put the matter beyond question.

**xiii. Grain casts**

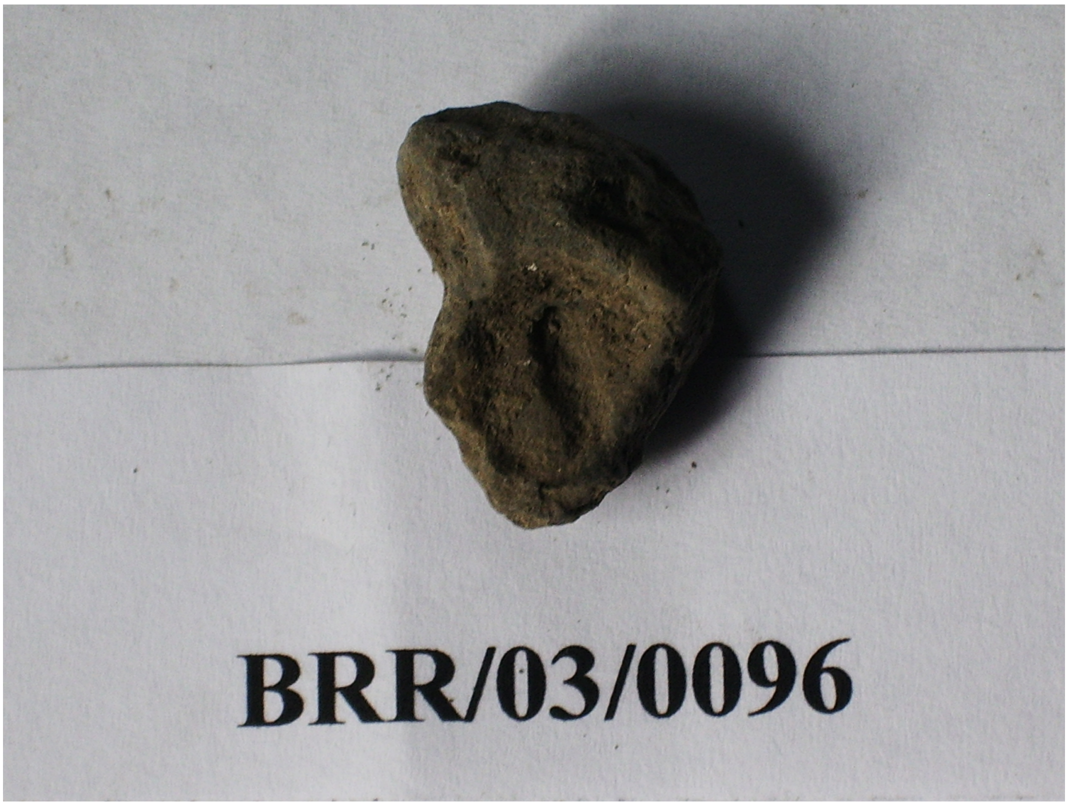


**Plate 15: Grain cast in hole base.**

The 11 grain casts noted in the Ford Bridge Assemblage would also seem to suggest that at least some of the mould trays from which it derives were made in the late summer or autumn. Grain casts have also been noted in the Puckeridge Assemblage and the Old Sleaford coin mould, which raises the possibility that the three largest finds of Iron Age coin mould in Europe were all produced in the same season of the year. If one accepts that coin in Iron Age Britain was used as a medium of exchange as well as a constituent of votive offerings, then it is possible to see minting at these three sites as being linked to seasonal fairs, held shortly after harvest, timed in order to capitalize on any surplus.

### xiv. Inclusions and tempers

Inclusions and, to a greater extent, tempers are a common feature in locally made pottery of the Late Iron Age, and therefore their presence in coin mould from the Braughing/Puckeridge complex is not surprising. However, it has proved difficult to discriminate between crushed chalk (which is not commonly found as a temper in local fabrics) and crushed shell (which is a common temper in contemporary pottery). Grog, which is the most commonly observed ceramic temper of all, is surprisingly uncommon in both assemblages.

This is a clear and undeniable point of difference between the Ford Bridge and Puckeridge assemblages. Inclusions and tempers are much less common in the Ford Bridge material than in the Puckeridge. At Ford Bridge, the total for all categories of inclusion or temper is 17, or 2.9% of individually noted fragments; at Puckeridge, the total is 175, or 9.6%. Furthermore, as the bar chart below demonstrates, the distribution of the various types of inclusion and temper is significantly different in the two assemblages.

| Abbreviation | Inclusion or temper type |
|---|---|
| icas | Inclusion cast (organic, burned out) |
| ic | Inclusions, chalk |
| if | Inclusions, flint |
| io | Inclusion, large, organic, burned out |
| ilp | Inclusion, large, pebble |
| im | Inclusions, massive, unspecified |
| ims | Inclusion, massive, shell |
| iq | Inclusion, quartzite |
| ir | Inclusion, soft, dark, red |
| ilf | Inclusion, large, flint |
| st/ts | Shell temper |
| sts | Sparse shell temper |
| tcc | Temper, crushed chalk |
| tcf | Temper, crushed flint |
| tgr | Temper, grog |
| twc | Temper. waterworn grit, coarse |

**Table 3: Key to Charts 6 & 7.**

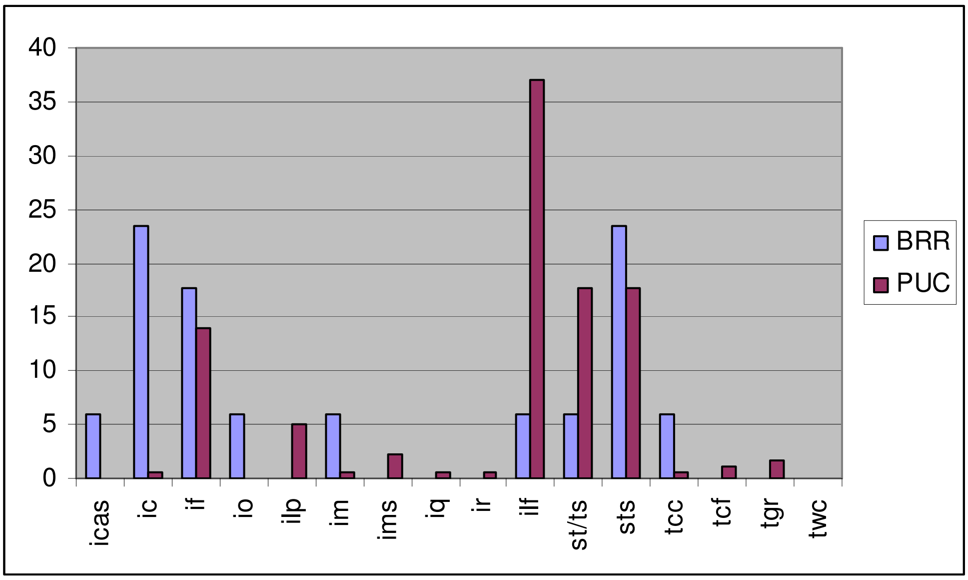


**Chart 6: Inclusions and tempers from Ford Bridge (BRR) & Puckeridge (PUC) expressed as % of total inclusions + tempers for each site.**

The massive flint inclusions which are sufficiently common in the Puckeridge material to warrant comment (3.6% of individually recorded fragments), and which would have posed a genuine threat of catastrophic tray failure during use, are very rare in the Ford Bridge Assemblage (<0.2% of individually recorded fragments). The fact that these inclusions are so large – anything up to 1.5 cm. across – would seem to suggest that their presence could not have passed unnoticed by the makers of the trays, and that therefore their retention must have been deliberate. If this so, then the low frequency of occurrence in the Ford Bridge material must also result from deliberate choice.

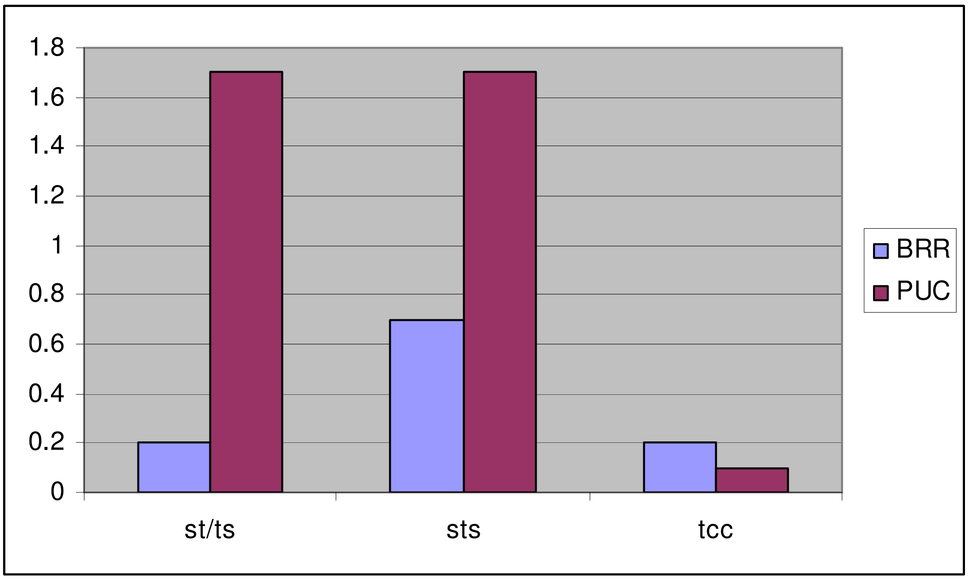


**Chart 7: Chalk and shell tempers from Ford Bridge (BRR) & Puckeridge (PUC) expressed as % of individually recorded fragments.**

Although the proportion of fragments with chalk/shell tempers in the Puckeridge mould is not high, it is nonetheless far higher than the proportion seen in the Ford Bridge mould. It had been suggested of chalk/shell tempers in the Puckeridge Assemblage that they might represent an additional refinement of the chalk wash method of creating reducing conditions within each mould hole, following on from Tylecote's[18] suggestion that crushed charcoal had been added to some coin mould to achieve the same end. However, the fact that, even when added together, all fragments from Ford Bridge with some form of chalk/shell temper amount to little more than 1% of the material allows for the very real possibility that its occurrence here is accidental, and at the least calls into question its proposed role in enhancing the functionality of coin mould.

### xiv. Clay caps and luting

Although it now seems virtually certain that the clay caps noted as a very occasional feature in the Puckeridge Assemblage have nothing to do with excluding oxygen from mould holes, and should probably be considered – as suggested by Dave Parker of ULAS[19] – as a form of luting, the blocking of holes on a tray which were not to be used for casting pellets, thus raising the possibility that not all holes on a tray were necessarily used, and hence that the number of holes in an assemblage might not be an accurate reflection of the number of pellets actually minted.

However, there is not a single example of either a luted hole or a clay cap in the retrieved portion of the Ford Bridge Assemblage. The proportion noted in the Puckeridge material is 0.8%, and if this figure is applied to the Ford Bridge mould, one might expect between four and five examples of either clay cap or luting. While their absence could still be the result of accidents of preservation or retrieval, given the cross-contextual homogeneity of the Ford Bridge material in other respects, it seems likely that this is another genuine point of difference between the two collections.

### xv. 'Raised platform' mould

One of the least common features of either the Puckeridge or the Ford Bridge material is also that best evidence we have that these two assemblages are close in both space and time.


**Plate 16: Moulded platform fragment. Note also vesiculation and purple staining.**

In each assemblage there is a single fragment which exhibits a moulded platform on the upper surface into which the main grouping of holes has been impressed. Both fragments show characteristic signs of having been produced in a bowl-mould, and the dimensions of the raised platform on each are so similar that the suspicion must be that the same mould was used to produce both fragments.

If this is the case, then it follows that at least one of the 'hands', whether of an individual or of a workshop, involved in the making of the Puckeridge Assemblage was also involved in the Ford Bridge Assemblage.

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[1] Op. cit.
[2] *Vide sup. Section 2, Plates III & IV.*
[3] Although Cottam (pers. comm.) doubts this, arguing that, since pellets cast under reducing conditions would not have adhered to the tray, breakage was not the necessary corollary of use.
[4] Landon, M.R.J.; 2009: '*The Puckeridge Coin Mould Assemblage: An interim report.*'; Unpubl.; pp. 9 – 11.
[5] Elsdon, op. cit., Plate 13.
[6] Tournaire, op. cit.; Elsdon, op. cit.
[7] 4 – 6 mm. and 7 – 9 mm.
[8] The 30 fragments are BRR/04/0105 – BRR/04/134
[9] The first theory is the Casey/Sellwood hypothesis that the mould was not part of a minting process, but was instead used as a means of ready-reckoning for the production of alloys; the second is the suggestion that metal was introduced into mould holes by pouring in the molten state. Many writers cite this theory only to dismiss it, but it has not proved possible to trace a single wholehearted proponent. Van Arsdell (op. cit.) comes close, contenting himself with pointing out the inherent difficulties of the method, rather than ruling it out altogether, while Frere (1983; '*The Belgic Mint*'; Excavations at Verulamium Vol. II; pp. 30 – 32), comes closer, declaring the pans evenly balanced.

[10] In other words, standard deviation.
[11] Elsdon, op. cit., p. 54.
[12] Op. cit.; pp. 26 – 27.
[13] Op. cit.
[14] Noted in Longden, op. cit. ; p. 9.
[15] Thirty-four fragments out of 595 classified as 'heated beyond use' or 'holes occluded' or 'slumping in holes' or 'deformed top' or 'deformed base'. The total for Puckeridge is 109 fragments out of 1815.
[16] Op. cit., p. 144.
[17] Op. cit.
[18] Op. cit.; p. 102
[19] Pers. comm.