Imported Grave Goods and the Early Anglo-Saxon Economy

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A CLEAR DISTINCTION between imported artefacts found in Kent and those occurring elsewhere is demonstrated, and it is suggested that the patterning is related to the modes of exchange which both brought the artefacts into England and circulated the items within the country. A number of different mechanisms by which goods may be exchanged over long distances are examined and, although in spatial terms these different models may be difficult to distinguish, with the additional documentary dimension of Anglo-Saxon studies it is possible to recognize elements of the models and modify some aspects of them.

The study of artefacts which are clearly not native to a region has the potential to provide information about economic processes and social formations through the examination both of the distribution of imported items and of the people who had access to them. A variety of economic models of exchange has been proposed and their spatial correlates predicted,[1] and the early Anglo-Saxon period with its archaeological and historical sources presents the opportunity to quantify the movement of items and to test the hypothetical models.

For the purposes of this paper, a number of classes of artefact from early Anglo-Saxon graves were selected on the basis of their identification as imports, although in two instances this initial identification was to prove doubtful, or at least could not be confirmed. The artefacts presented here are amber beads, amethyst beads, ivory rings, crystal beads, crystal balls, cowrie shells, glass vessels and wheel-thrown pottery. Other artefacts such as 'Coptic' bowls, gold coins and garnets may also be identified as imports but were not brought within the scope of this study, in particular because the distributions of gold coins and garnets are considerably more complex than those, for instance, of amber or amethyst beads. Most of the gold coins are found as casual finds rather than as deliberate depositions in burials, and appear to have provided a convenient source of material for the manufacture of jewellery. The distribution of garnets is complicated by the fact that it is largely dependent upon the distribution of the jewellery in which it is mounted.

The data have been derived from a variety of sources,[2] but the quantities for beads are in some cases estimates since there is often no indication of the actual number accompanying a particular burial. Terms such as 'several' may imply any number from two upwards, but have been counted as two in any totals. Terms such

as 'many' were taken to indicate the presence of at least ten beads. Consequently, it is likely that quantities of beads at some cemeteries have been considerably underestimated.

THE ARTEFACTS

1. AMBER BEADS

The largest natural deposits of amber are found on the shores of the Baltic but it also occurs in Sicily, Portugal and Romania, and there are localized deposits on the E. coast of Britain, from Cromer as far north as Aberdeen. Consequently, it cannot be assumed that the amber found in Anglo-Saxon graves was necessarily imported into the country. Scientific characterization techniques could be applied to both the amber beads and the sources of amber, although a wide-ranging sample would be needed to allow for the possibility that different sources were exploited at different times. Even then, it is unlikely that characterization studies could determine whether Anglo-Saxon amber is of Baltic or local origin since at present techniques can only distinguish between Baltic and non-Baltic amber.[3] Baltic amber is distinguished by its richness in succinic acid and has a characteristic spectral pattern[4] but natural English amber sources are on the western edge of the Baltic deposits which in fact occur throughout much of northern Europe. However, it is generally assumed that the amber accompanying Anglo-Saxon burials is imported, and from the Baltic.

Amber beads are deposited in early 6th-century burials but are found in great quantities only in middle to late 6th-century graves.[5] The relative scarcity of amber beads in the early 6th-century graves at Holywell Row and their increasing frequency in later burials has been commented upon, and it has been suggested that the amber of early date was of Baltic origin brought in by settlers, while the rapid increase in quantity reflected a growing exploitation of local sources.[6] However, the argument that increasing consumption necessarily implies a switch to local supplies would ignore alternative social and economic explanations. For instance, an identical pattern of disposal might arise if amber beads were not as a rule deposited with early burials but were passed on as heirlooms. The larger, later deposits would then indicate a modification of social practice rather than reflect a change in availability.

In general terms, amber beads in early Anglo-Saxon graves are widespread throughout eastern and central England, with a separate and lesser concentration in Kent (Fig. 1). The main distribution extends from Lincolnshire and Norfolk down to Wiltshire and Hampshire, with amber being comparatively rare in counties such as Essex and Surrey. The greatest quantity of amber in a single cemetery is approximately 981 beads at Sleaford (Lincs.), followed by Bergh Apton (Norf.) with 517, Linton (Cambs.) with around 404, Abingdon (Berks.) with 386, Collingbourne Ducis (Wilts.) with 340 and Long Wittenham (Berks.) with 339.

Within cemeteries, quantities of amber beads per grave vary between one and 20 on average, but a few graves have very large quantities of amber beads. For example, Long Wittenham I grave 71 has 280 amber beads, compared with an average of five per person amongst those burials with amber beads. Similarly,

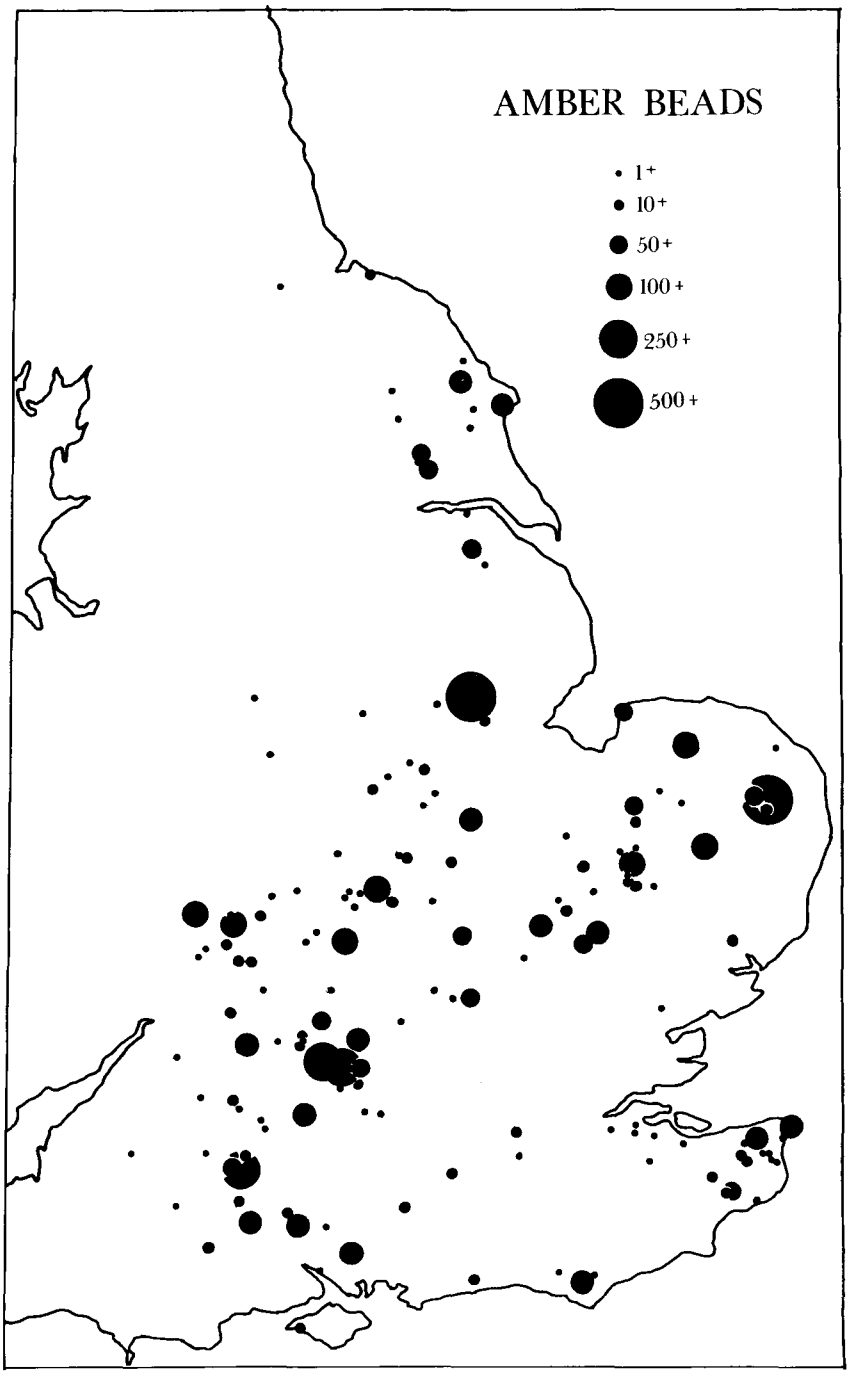

FIG. 1
Distribution of Amber Beads in early Anglo-Saxon cemeteries

Sleaford grave 143 contained around 250 amber beads in a cemetery with an average of around sixteen per person. This pattern is continued elsewhere: Linton has an average of fifteen beads per person, while grave 40 contains 147 beads, and Abingdon grave 60 has 114 beads with an average of around 23 beads. In each case, there is one grave containing a large number, one or two with around 50, while the remainder contain around the average for that cemetery, a pattern which suggests a degree of differential access to the supply of amber beads. This may be either in the chronological sense, with amber becoming more common in the later burials, although fewer people were actually buried with it, or in the sense of one or two individuals controlling its supply and distribution. These interpretations are not mutually exclusive. Alternatively, the pattern may simply represent differences in fashion or personal preference.

2. AMETHYST BEADS

Amethyst is generally considered to originate from the eastern Mediterranean. During the Roman period amethyst beads from Egypt reached the northern Rhine valley where they were generally used as single pendants or ear drops.[7] In early Anglo-Saxon graves their occasional association with 'Coptic' bowls and cowrie shells is used to support the argument for a Mediterranean supply.[8] Dr A. L. Meaney suggested that the ultimate source for the amethyst was India and saw these three classes of imports as having been brought into the country by the same traders.[9] On the other hand, it has been suggested that the Frankish tribes were in fact utilizing amethyst beads looted from Roman graves.[10] Even if this were the case, it would not fundamentally alter the interpretation of them in this country as imported items, as the ultimate source of the amethyst is the same, and the beads were still supplied via the Continent.

The earliest example is considered to be the amethyst bead from grave 1, Gilton, Ash (Kent) which is dated to just before the end of the 6th century, while Sibertswold (Kent) grave 172 is the latest known context, dated to the third quarter of the 7th century.[11] Many beads are found in cemeteries which are seen as Christian in character, such as Breach Down and Kingston (Kent), and Burwell and Shudy Camps (Cambs.), and as such are clearly found in 7th-century contexts. The appearance of amethyst beads on the Continent is also a 7th-century phenomenon.[12]

The distribution of amethyst beads is concentrated particularly in Kent, with a scattered distribution from Wiltshire north-eastwards to Cambridgeshire, and a small group in E. Yorkshire (Fig. 2). There are at least 383 amethyst beads from burials, and 60% of these (231) are from one cemetery alone, Faversham (Kent), although they are without associations. By comparison, the next largest concentration of amethysts in a single cemetery is at Sarre, with at least 23 beads, followed by Breach Down with nineteen, Sibertswold with fourteen, Kingston with twelve and Broadstairs with seven, all in Kent. In terms of individual burials, there are rarely more than one or two amethysts in a grave, although there are a number of exceptions, again all in Kent. For example, from Faversham there are two strings

FIG. 2
Distribution of Amethyst Beads in early Anglo-Saxon cemeteries

with 24 and seventeen beads respectively, although these are unassociated and may have been restrung. Breach Down grave 1 contained seventeen amethyst beads, the next largest numbers being Sibertswold grave 18 with fourteen beads, Kingston grave 142 with twelve, and both Gilton grave 13 and a burial at Broadstairs with seven beads. No known burial outside Kent contains more than two amethyst beads.

3. IVORY RINGS

During the Roman period both African and Indian elephant ivory was exploited, but it is usually thought that with the collapse of the Roman empire in the West and the subsequent Islamic expansion, the commercial trade in ivory to Europe died. Elephant ivory was used again in quantity only after the 12th century, and then primarily for ecclesiastical objects.[13] It is assumed that until then walrus ivory was used instead. Another alternative to elephant ivory is fossil mammoth ivory which can be hard enough to allow working, and the identification of the ring material as mammoth could be easily confirmed or denied by a radiocarbon assay were it not for the large sample size required. Whilst the exploitation of local sources of fossil ivory cannot be proved, the possibility should not be ruled out for the present.[14]

Nevertheless, it has been suggested that the rings in early Anglo-Saxon burials were constructed from elephant ivory.[15] This identification is on the basis of surface examination only and is difficult because the characteristic organization of dentinal tubules is only clearly seen in the centre of the solid portion of a tusk; this is missing in the case of ivory rings, and the surviving surfaces are often extremely eroded.[16] Elephant ivory is considered to be particularly suitable for making rings because of its tendency to split naturally in a 'cone within cone' fashion,[17] rather like the rings of an onion. Each ring consists of a single transverse section cut across the widest end of a tusk.

The distribution (Fig. 3) seems to favour a northern origin for the ivory by analogy with, for example, amber, and thereby strengthens the case for the use of walrus ivory. This would ignore the possibility of alternative exchange mechanisms which could result in a similar pattern of distribution. If the ivory is indeed elephant, either it continued to be exported from the Mediterranean region during the 5th, 6th and 7th centuries, or the rings were subject to the heirloom factor and thus were imported, into Europe if not into England, considerably earlier than their date of deposition would suggest.

The dates assigned to ivory rings range throughout the 5th, 6th and 7th centuries. The example from Glen Parva (Leics.) is dated to the late 5th/early 6th century, that from Little Eriswell (Suff.) grave 28 is late 6th century while Barrington B (Cambs.) grave 75 is late 6th to 7th century.[18]

There are at least 112 ivory rings known from Anglo-Saxon burials in 62 cemeteries across the country. The highest concentration is found at Lackford (Suff.) with thirteen rings, followed by Illington (Norf.) with seven rings, and Caistor-by-Norwich (Norf.), Sleaford (Lincs.), Spong Hill (Norf.), and Dover (Kent) each with five rings (Fig. 3). There is never more than one ring per burial.

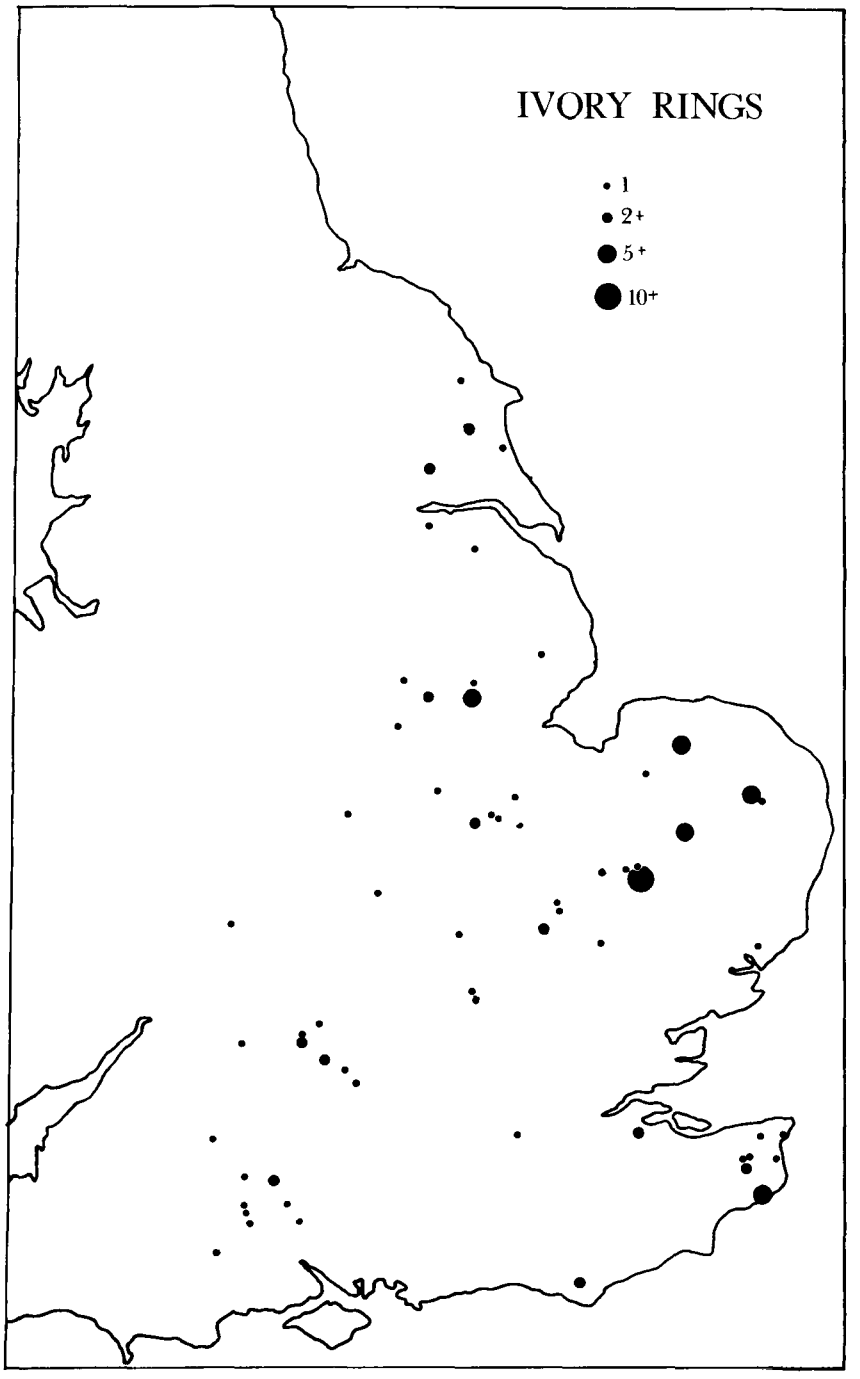

FIG. 3
Distribution of Ivory Rings in early Anglo-Saxon cemeteries

4. CRYSTAL BEADS

The crystal beads found in early Anglo-Saxon graves are made from naturally occurring quartz crystal and have a central, often large, perforation. They are shaped and faceted, although the natural form of the crystal is never utilized.[19] Instead, shapes vary and include hexagonal, octagonal, sub-rectangular, barrel-shaped, and globular, with pentagonal examples being the most common.

The natural origin of the crystal used is unknown. Quartz crystal is commonly found throughout England and so the material for the smaller beads at least would not have needed to be imported. Meaney, however, believes all crystal beads to be imports.[20] Imported or not, their distribution is of interest particularly when viewed juxtaposed with that of imported crystal balls (see below).

On the whole, crystal beads are dated to the 6th century. The earliest known example is that from Mucking grave 843 whch is dated to the 5th and there are also some early 7th-century examples, at Marina Drive, Dunstable (Beds.), Prittlewell (Essex), and Breach Down (Kent), for instance.[21]

At least 186 crystal beads are known from some 70 Anglo-Saxon burials (Fig. 4). The highest concentration is at Sleaford (Lincs.) with around 25 examples, followed by Chatham Lines (Kent) with twelve beads and Spong Hill (Norf.) with ten. The largest number of crystal beads in a single grave is at Chatham Lines, where twelve were found in barrow II.

The overall distribution of crystal beads has very strong similarities to those of amber beads and ivory rings: a particular concentration in central and eastern England, and relatively few in Kent and the south-east (Fig. 4). There is a marked contrast between this distribution and that of crystal balls (Fig. 5) which are confined largely to Kent. Indeed, the overlap in terms of the distribution of crystal beads and crystal balls is very small. Very few cemeteries contain both items: only Kempston (Beds.), Fairford (Gloucs.) and Bifrons, Chatham Lines and Faversham (Kent) fall into this category, and only one grave — Chatham Lines mound II — contains both crystal beads and a crystal ball. Thus, in terms of their relative distributions, there would appear to be very little relationship between crystal beads and crystal balls apart from a common raw material.

5. CRYSTAL BALLS

The origin of the crystal used is unknown, but, unlike crystal beads, the size of crystal required to fashion a ball greatly restricts the number of possible sources. It can be said with some certainty that there could be no English source; possible areas of origin include Scotland, Germany and Switzerland. The crystals themselves are usually flawed and vary in colour from dark smoky crystals to bright clear examples. They are normally mounted in gold, silver, or copper-alloy bands which are wrapped around the crystal and secured at the top by a cylindrical collar and pin with a suspension ring.

The dates suggested for these crystal balls vary widely, with examples dated to the late 5th (Bifrons, Chatham Lines), mid 6th (Chessell Down, Sarre), late 6th (Lyminge) and early 7th centuries (Cherry Hinton, Burwell, Kingston and

FIG. 4
Distribution of Crystal Beads in early Anglo-Saxon cemeteries

Milton).[22] In general, early examples are confined to Kent, with a more widespread distribution in the late 6th and 7th centuries.

Some 35 examples of crystal balls are known from early Anglo-Saxon graves, of which only eight are found in cemeteries outside Kent (Fig. 5). The largest concentration in a Kentish cemetery is at Bifrons, with seven crystal balls, followed by Chatham Lines with four. Outside Kent, the largest number of crystal balls in a single cemetery is two at Chessell Down (I.o.W.). Crystal balls are not restricted to Anglo-Saxon contexts, with perhaps the best-known continental example being the unmounted crystal ball found in Childeric's tomb, and there are at least 50 crystal balls known from Germany, France, Italy, Hungary, Belgium, Holland and Austria.[23]

6. COWRIE SHELLS

Several different varieties of cowrie shell have been included here under one heading, largely because no firm identification is made in most reports. The five cowries from Driffield (Yorks.) and the three cowries from Dunstable (Beds.) are all examples of *Cypraea europa* and therefore unlikely to have travelled any great distance, although they could still have been imported. The majority of the remaining large cowries are variously identified as *Cypraea panterina*, *Cypraea vinosa* and tiger cowrie with examples known at Staxton (Yorks.), Shudy Camps (Cambs.), and Haslingfield (Cambs.). The nearest habitat of these varieties is the Red Sea, but they may come from as far afield as India. One other type is known — the *Cypraea arabica* of Near Eastern origin, an example of which was found at Sarre (Kent) in grave 238.

Most cowries are found in 7th-century burials, although the example from Alfriston (Sussex) in grave 43 is assigned to the 5th.[24] Other examples are considered to be late 6th century, including that in grave 73 at Linton B (Cambs.) and those from Cheesecake Hill, Driffield (Yorks.).

At least 34 cowrie shells are known from 23 Anglo-Saxon cemeteries. Their distribution is sparse but widespread (Fig. 6), with marked concentrations in Cambridgeshire and Kent, but a cemetery in Yorkshire, Driffield, has the largest number of cowries in a single cemetery: five, all accompanying a single burial. Elsewhere, there are only four cemeteries with more than one cowrie: Dunstable (Beds.) with three, and Wingham (Kent), Kingston (Kent), and Shudy Camps (Cambs.), each with two.

7. GLASS VESSELS

The centres of glass production in Merovingian Gaul are uncertain, but it appears that in some cases at least Roman glass houses were replaced by Merovingian counterparts. For instance, while the Roman glass houses at Cologne went out of production in the early 5th century, Roman factories in the Reims/Dinant region continued production into the Merovingian period.[25] Dr D. B. Harden has suggested that the majority of imported glass entered England via Kent and that the absence of large numbers of vessels elsewhere in the country would indicate that such examples as there are arrived from Kent.[26]

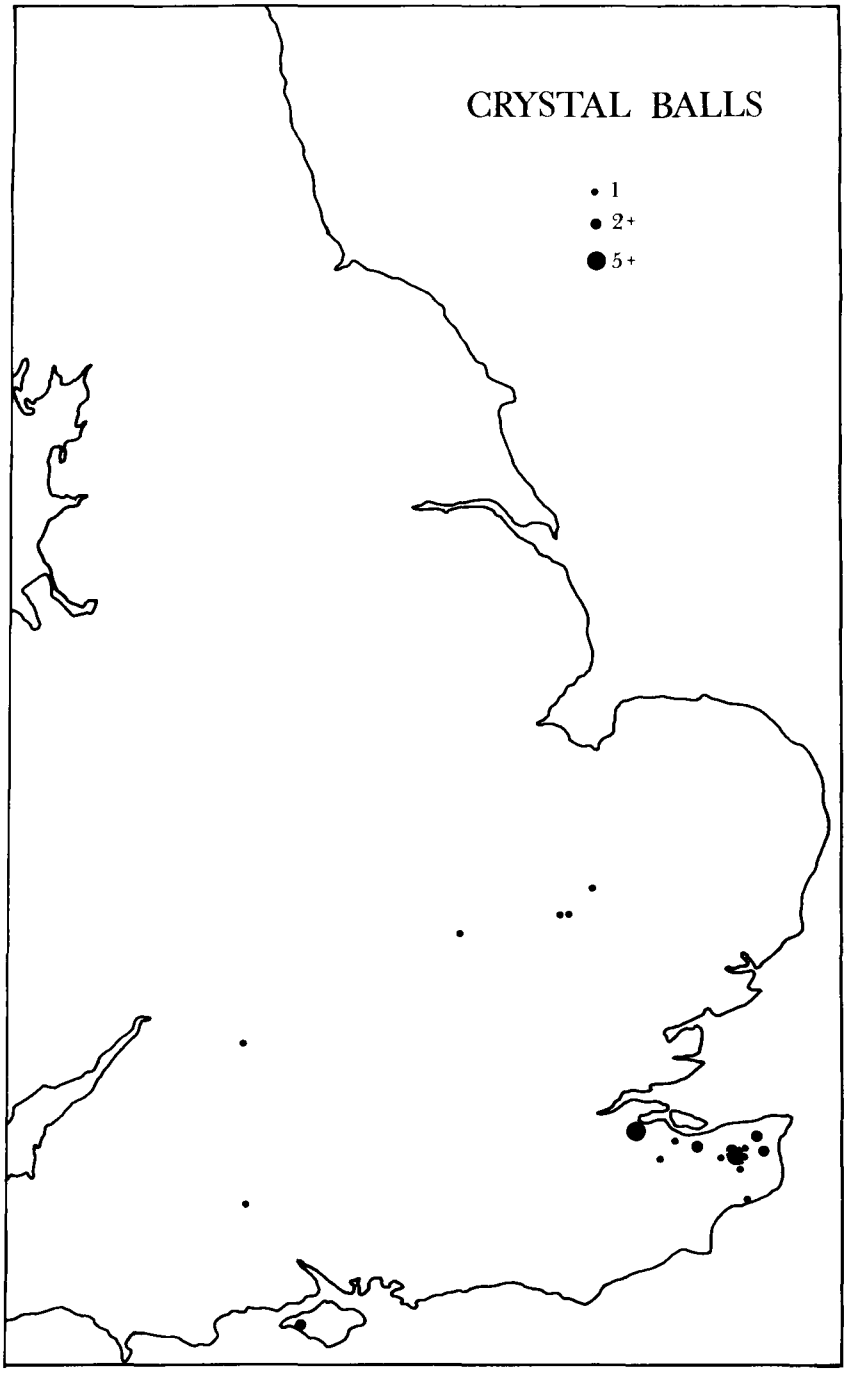

FIG. 5
Distribution of Crystal Balls in early Anglo-Saxon cemeteries

Some types of glass vessel — the squat jars, bag-beakers, pouch-bottles and certain types of claw-beaker — are rare on the Continent, and so it is suggested that these were manufactured in England.[27] The high concentrations of glassware at Faversham have led to the suggestion that it may have been the manufacturing centre for these home-produced vessels, particularly since 60% of squat jars have been found at Faversham.[28] Indeed, Professor V. I. Evison has suggested that English-manufactured claw-beakers were exported to the Continent and Scandinavia.[29]

At least 330 examples of glass vessels are known, of which the vast majority are found in Kent. Around 65% of all glass vessels appear in Kentish contexts and a high proportion of these is found at Faversham (Fig. 7). Dates for glassware range from the early 5th to the late 7th century.

8. WHEEL-THROWN POTTERY

Some 128 instances of imported wheel-thrown pottery are known, the majority being found as accessory vessels in graves. In terms of the overall distribution, the pottery is largely restricted to Kent, with lesser amounts being found in Essex and single pots occurring as far north as Yorkshire (Fig. 8).

Dates assigned to the pottery on the basis of associated grave goods tend to be from the mid 6th to the 7th century but there is reason to believe that some examples may be earlier: many show extensive signs of wear and some had been repaired. It has been noted that the generally late 6th- to 7th-century date of imported wheel-thrown pottery seems unusual given the large amount of continental metalwork and glassware found, particularly in Kent, from the 5th century.[30] This might indicate an unusual heirloom factor, except that the types of wheel-thrown pottery found on the Continent which are contemporary with the 5th-century metalwork and glassware are not found in Anglo-Saxon contexts.[31] Consequently, the lack of wheel-thrown pottery in early Anglo-Saxon graves would appear to reflect a real absence, and the introduction of continental pottery during the 6th century would imply a change in demand rather than supply.

On the basis of form and decoration, the wheel-thrown pottery in Kentish contexts has strong similarities to pottery found in the coastal regions of northern France, most particularly the Pas-de-Calais.[32] In contrast, pots found outside Kent have their closest parallels in different parts of Europe: the biconical bowl from Lakenheath is a type commonly found around the Rhine, the Driffield bowl has a southern German origin, and one of the London bowls is possibly from the Huy region of Belgium.[33]

Wheel-thrown bottles may have been locally produced, since large numbers are found on single sites in Kent (fifteen at Sarre, eight at St Peter's and seven at Dover, for example) whereas they are comparatively rare on continental sites, and a high proportion of the bottles is crudely made. However, Professor Evison pointed out that there is a wide variety of types found in England, and repairs indicate that the bottles had a scarcity value.[34] The high proportion of vessels to bowls and jugs, together with their poor quality, suggests that the pottery was imported as containers for a commodity such as wine, not as tableware.[35] Since all but two of the

FIG. 6
Distribution of Cowrie Shells in early Anglo-Saxon cemeteries

bottles are found in Kentish contexts, it would appear that this trade was restricted to Kent.

AN ANALYSIS OF THE DISTRIBUTIONS

The items under discussion fall into two clear-cut geographical groups. Amethyst beads, crystal balls, glass vessels, wheel-thrown pots and, to a lesser extent, cowrie shells are all centred on Kent, with major concentrations in the Sarre-Faversham-Bifrons region. In contrast, amber beads, ivory rings and crystal beads all have more widespread distributions, with the highest concentrations being some distance from Kent, and the quantities appearing in Kentish burials being comparatively small. Only 6% of the amber beads occur in Kent, 12% of the ivory rings and 13% of the crystal beads — a complete reversal of the pattern of those items with a centre in Kent.

The data fall into the same two groups when the form of the distributions within the country is examined. Amethyst beads, crystal balls, glass vessels and wheel-thrown pots all have a single high concentration centred on one cemetery, while amber beads, ivory rings and crystal beads have a multi-focal distribution. Glass vessels and amethyst beads are concentrated at Faversham, wheel-thrown pots at St Peter's and crystal balls at Bifrons. Cowrie shells do not conform to this pattern particularly well, although the picture is improved if only those cowries with a known Mediterranean origin which are certainly imports are considered. In contrast, there are a number of peaks in the amber-bead distribution, including Sleaford, Bergh Apton, Linton, Abingdon and Long Wittenham, and geographically these centres are some distance apart. Similarly, ivory rings have centres at Lackford, Illington, Sleaford, Caistor-by-Norwich, Spong Hill and Dover, while the main concentrations of crystal beads are at Sleaford, Chatham Lines and Spong Hill.

Although not included within this study, it is clear that 'Coptic' bowls and gold coin also conform to this patterning. The 'Coptic' bowls are primarily found in Kent, with a scattered distribution in the Upper Thames valley, East Anglia, and Hampshire.[36] Similarly, gold coin displays a similar concentration, with the pre-625 coins from mints in southern France being found mainly in Kent and the Upper Thames valley.[37]

These differences cannot be explained in chronological terms alone. There is considerable overlap in terms of the dates assigned to the various objects, clustering around the middle and late 6th century. In general terms, 5th-century glass vessels and crystal balls are confined to Kent, while later 6th-century imports such as crystal beads, amber beads and ivory rings are more widespread throughout the country. However, these patterns of distribution cannot be interpreted purely within a historical framework such as a powerful Kent moving into decline, since even imports of later date, like the largely 7th-century amethyst beads, have their focus in Kent.

Nor can the distributions be seen purely as a function of the ultimate origin of the imported goods. Those objects centred on Kent are of continental origin, but it

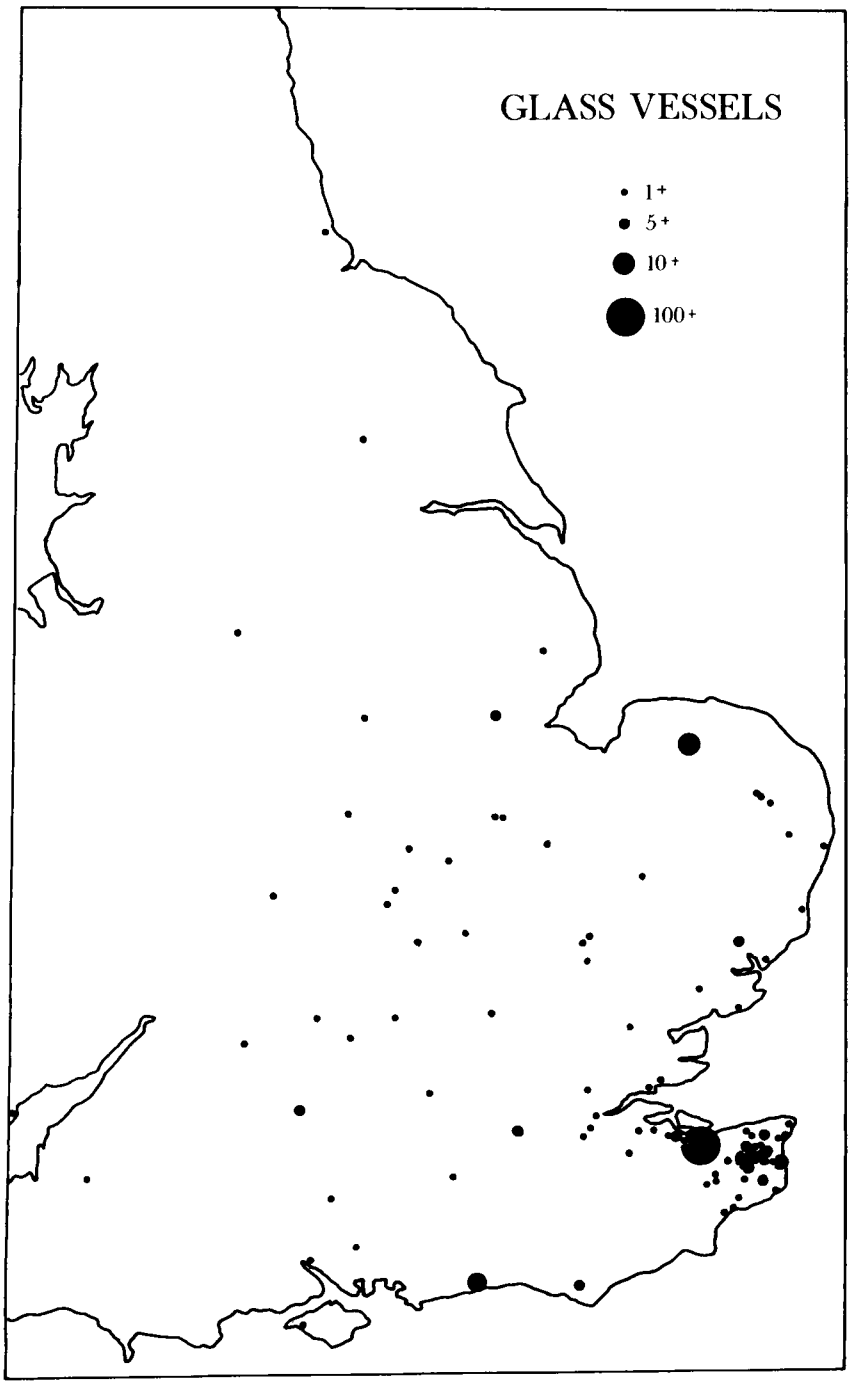

FIG. 7
Distribution of Glass Vessels in early Anglo-Saxon cemeteries

cannot be assumed that the contrasting pattern of distribution of crystal beads, amber beads and ivory rings arises as a result of a Baltic origin. The origin of the crystal beads is uncertain and some may be derived from local sources. In the same way, while amber may well be of Baltic origin, local supplies could have been exploited. In addition, if ivory rings were constructed from elephant ivory, a northern origin would be unlikely.

It would seem, therefore, most likely that these distributions can be explained in terms of past economic or exchange patterns. However, the mechanisms by which the objects arrived in their final locations are hidden, and indeed, their final deposition has little to do with economic factors except in the sense that it could be seen as representing the ritual destruction of an individual's wealth. The understanding of these mechanisms is particularly dependent upon the identification of points of entry into the country and the centres of distribution of the goods.

In order to examine the two distinctive distributions more closely, a series of frequency curves were constructed for each artefact (Figs. 9–11). The graphs were constructed by summing the quantities of each artefact which fell into 10 km bands radiating outwards from the point of highest concentration. These fall-off curves maintain the two distinct groups. Less striking are the graphs for cowrie shells and crystal balls, but this is primarily a result of the small quantities involved. For the purposes of this paper, the artefacts centred on Kent will be categorized as Group 1, while those with a more widespread distribution will be referred to as Group 2. Cowrie shells and crystal balls are not included under either heading, although both could be seen as 'borderline' Group 1 artefacts.

The frequency curves for amethyst beads, glass vessels and wheel-thrown pottery are remarkably similar. The overall shape is extremely concave, initially falling sharply to a very low level before tailing off more gradually with increasing distance. The pattern for amethyst beads is most dramatic in this respect, falling to zero within 50 km from Faversham, and with very low levels occurring from around 70 km to 320 km. Wheel-thrown pottery has a similar form of curve, falling away steeply from St Peter's and Sarre, with a slight peak in the downward trend at Faversham. Within a 150 km radius the rate of occurrence has fallen to zero, with very low peaks consisting of one or two vessels appearing between 225 and 320 km from the centre. Likewise, glass vessels drop away steeply from Faverhsam with a secondary peak occurring at Bifrons and Howletts, falling to around five vessels by the 50 km mark. The lesser peaks which interrupt the decline at approximately 110 km and 170 km coincide with High Down, Spong Hill and East Shefford.

In stark contrast, the frequency distributions of amber and crystal beads and ivory rings produce extremely irregular curves. The initially steep fall-off within only a few kilometres of the centre is extremely localized, and is followed by a series of secondary peaks which in some instances approach a magnitude similar to that found at the centre. Noticeable quantities of the artefacts occur up to 250 km from the centre, unlike the distribution of artefacts which are heavily centred on Kent. The distribution of amber beads falls away steeply in the locality of Sleaford, but from the 50 km mark the curve rises to a series of secondary peaks consisting of sites like Searby, Staxton, Bergh Apton, Linton and Long Wittenham. Further peaks

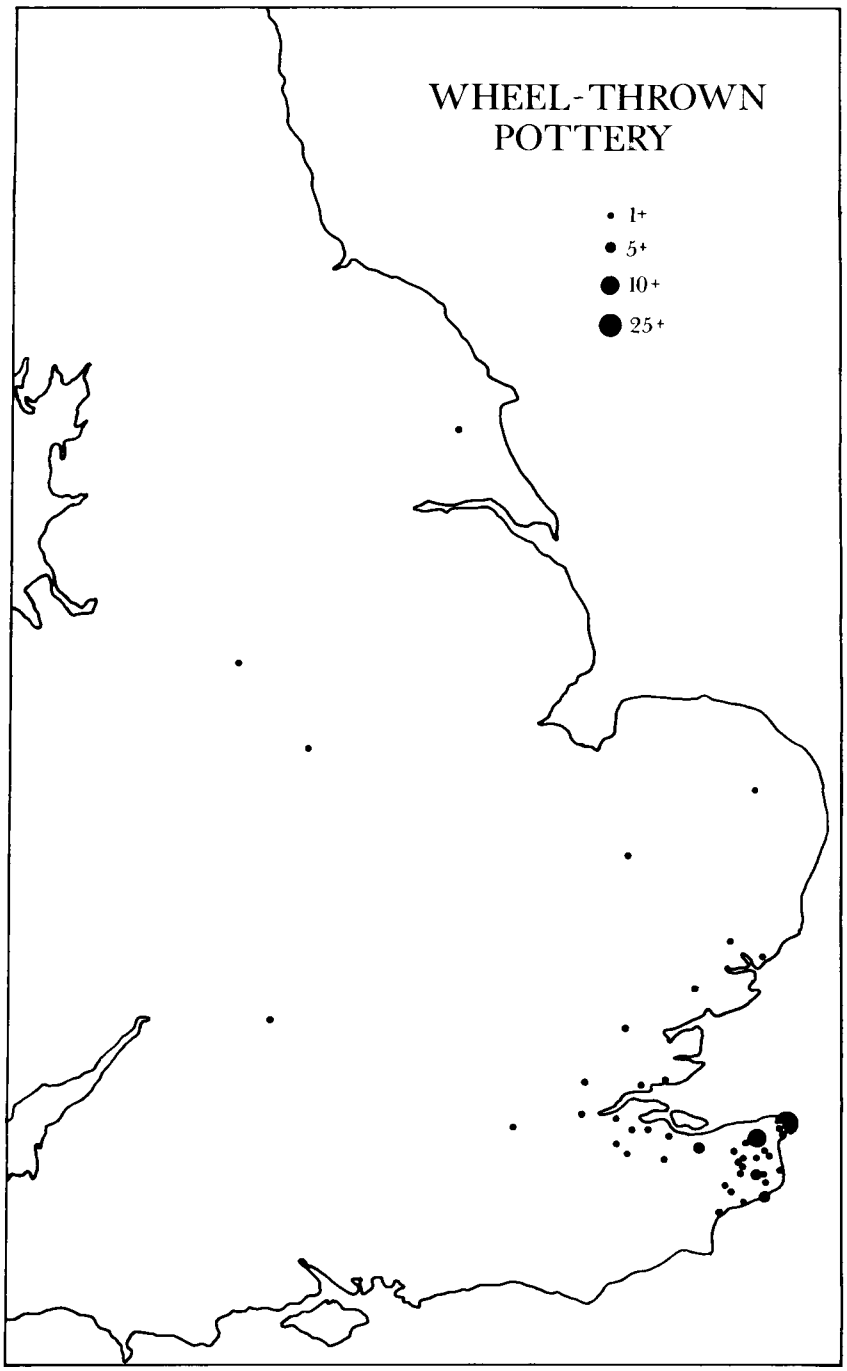

FIG. 8
Distribution of Wheel-thrown Pottery in early Anglo-Saxon cemeteries

occur between 220 km and 250 km with Petersfinger and Broadstairs, before finally falling away. Similarly, ivory rings fall off sharply from Lackford, rising to a series of peaks corresponding to Illington at 30 km, Caistor-by-Norwich and Spong Hill at 60 km, followed by peaks at approximately 50 km intervals which include Sleaford, Dover, and a Yorkshire group at Sancton and Driffield. Crystal beads also fall away rapidly from Sleaford with a series of secondary peaks which include Spong Hill and Chatham Lines.

To summarize, those items with a distribution centred on Kent decline in quantity very steeply and rapidly within a small radius, whereas items with distributions centred outside Kent have a more widespread distribution with a number of foci represented by a less abrupt fall-off and a series of peaks in the frequency curve.

It should be emphazied that no equivalence between the centres of distribution as represented by the points of highest concentration of particular artefacts and their original centres of distribution is suggested. In other words, while Faversham, St Peter's, Lackford and Sleaford possess the highest quantities of various imported items, they are not necessarily the centres from which these same items were distributed. However, the distinctive nature of the frequency curves is not a function of their construction from the centre of highest concentration, since if graphs are redrawn using different centres, the same overall patterns remain.

Two hypotheses need to be examined: whether the individual distributions are significantly different from a random distribution, and whether the two visual groupings can be borne out statistically. The null hypothesis in each case is that the patterning does not deviate significantly from a random distribution.

The examination of the individual distributions was approached in three ways: first, by testing the significance of the quantities of an artefact which occur within each 10 km band, secondly, by testing the significance of the quantities proportional to the area of each annulus, and finally, by testing the significance of the quantities found at each site within the overall distribution.

The Kolmogorov-Smirnov One-Sample Test was applied to examine whether the individual artefact classes were distributed randomly throughout the country.[38] This involved calculating the maximum difference, D, between the observed and the expected cumulative proportions for each artefact. The results are given in Table 1. By comparing D with the critical values at the 0.05 level, it can be seen that all the artefact distributions exceed this level, so the null hypothesis of random distribution can be rejected. It may be noted that the values of D for those artefacts with a distribution centred on Kent (marked with an asterisk) are much higher than those for the remaining artefact types, and the critical values are exceeded by a greater amount.

These results, however, only reflect the distribution in two dimensions: in effect, calculating the significance of the line of the fall-off curve without making any allowance for the area of the annuli which were used to produce the curves. A computer simulation was used to test the significance of the distribution taking account of the area of the annuli.[39] It was found that in each case, only the centre of the distribution within the first 10 km band was significant at the 0.05 level. When

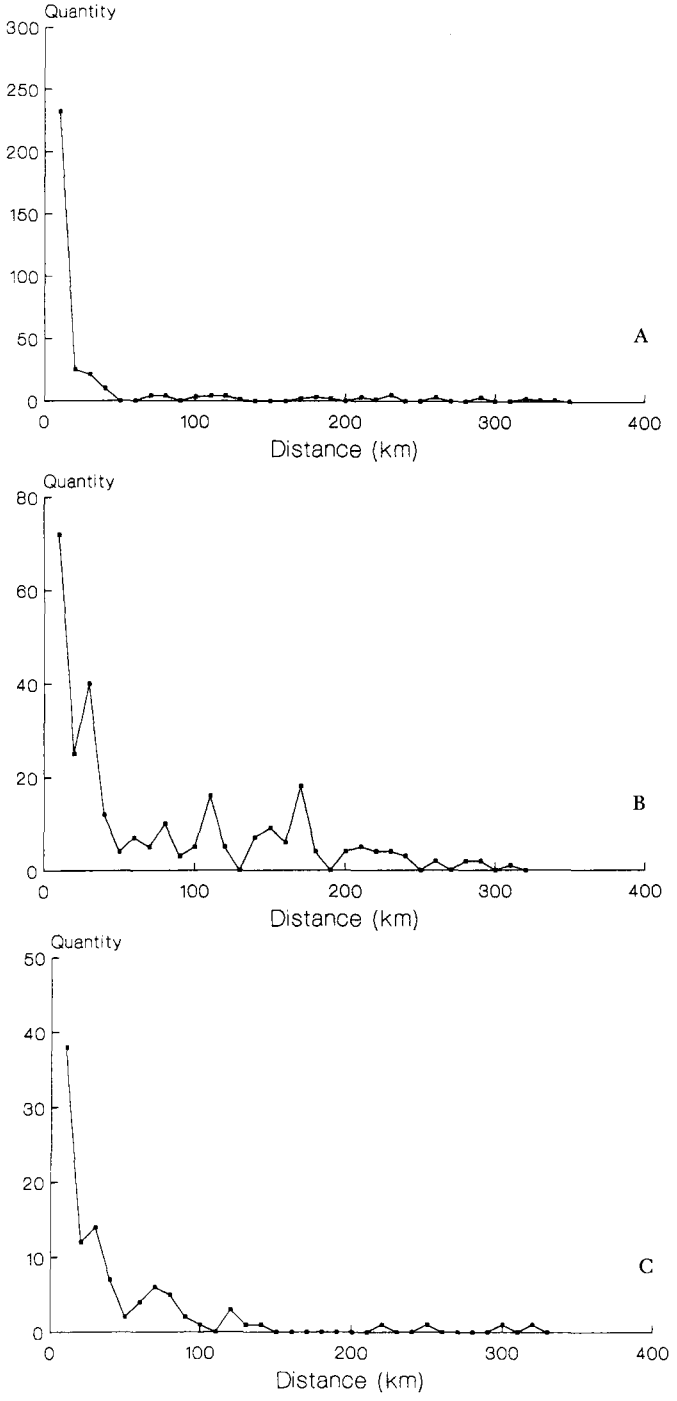

FIG. 9

Frequency Graphs:
A. Amethyst Beads B. Glass Vessels C. Wheel-thrown Pottery

TABLE I

KOLMOGOROV-SMIRNOV ONE-SAMPLE TEST RESULTS

Artefact Type	*D*	*Critical Value*
Wheel-thrown pottery	0.630*	0.136
Amethyst beads	0.745*	0.074
Glass vessels	0.413*	0.082
Crystal balls	0.527*	0.230
Cowrie shells	0.281	0.230
Ivory rings	0.136	0.128
Amber beads	0.162	0.019
Crystal beads	0.140	0.104

the test criteria were altered to examine whether significant quantities appeared at an individual site, it was again found that the only site which was significant at the 0.05 level was the site originally selected as the centre of the distribution for the construction of the fall-off curves. This would indicate that, apart from the site with the greatest quantity of artefacts, the overall patterns are not significantly different from a random distribution.

The validity of the two visual groupings remains to be assessed: the Kent/non-Kent distinction. One approach to this is to attempt to fit a regression model to each of the fall-off curves, and compare the extent to which the model matches the data.[40] The results are graphed in Figs. 12–14.

In order to achieve a 'best fit', two different regression models were required. For those artefacts centred on Kent, the multiplicative model (or powers curve)[41] accounted for the most variation in the dependent variable (the quantity of the artefact) (Fig. 12).

The coefficient of determination (R^2) for these artefacts is quite high, averaging 70% (Table 2), indicating that this regression equation accounts for a high proportion of the variation in the distribution. Thus, knowing the distance from the centre, X, enables the prediction of the quantity found, Y, with relatively little error. For example, it is predicted at the 0.05 level that between 2% and 4% of wheel-thrown pottery will be found at a distance of 80 km from St Peter's, compared with an observed level of 5% (Fig. 12c).

In contrast, the multiplicative model does not fit the frequency curves of the remaining artefacts well (Table 2). A number of other models were applied, including the exponential and the reciprocal models, but it was found that the only model which provided a better fit for the Group 2 artefacts was the linear model.[42] The results are graphed in Fig. 13. This linear model provides a marginally higher level of R^2 for the Group 2 artefacts than the multiplicative model, although the values are still very low (Table 3). The Group 1 artefacts centred on Kent do not correspond to this model as well as they conform to the multiplicative model. Thus, none of the regression models which were applied fitted the Group 2 distributions,

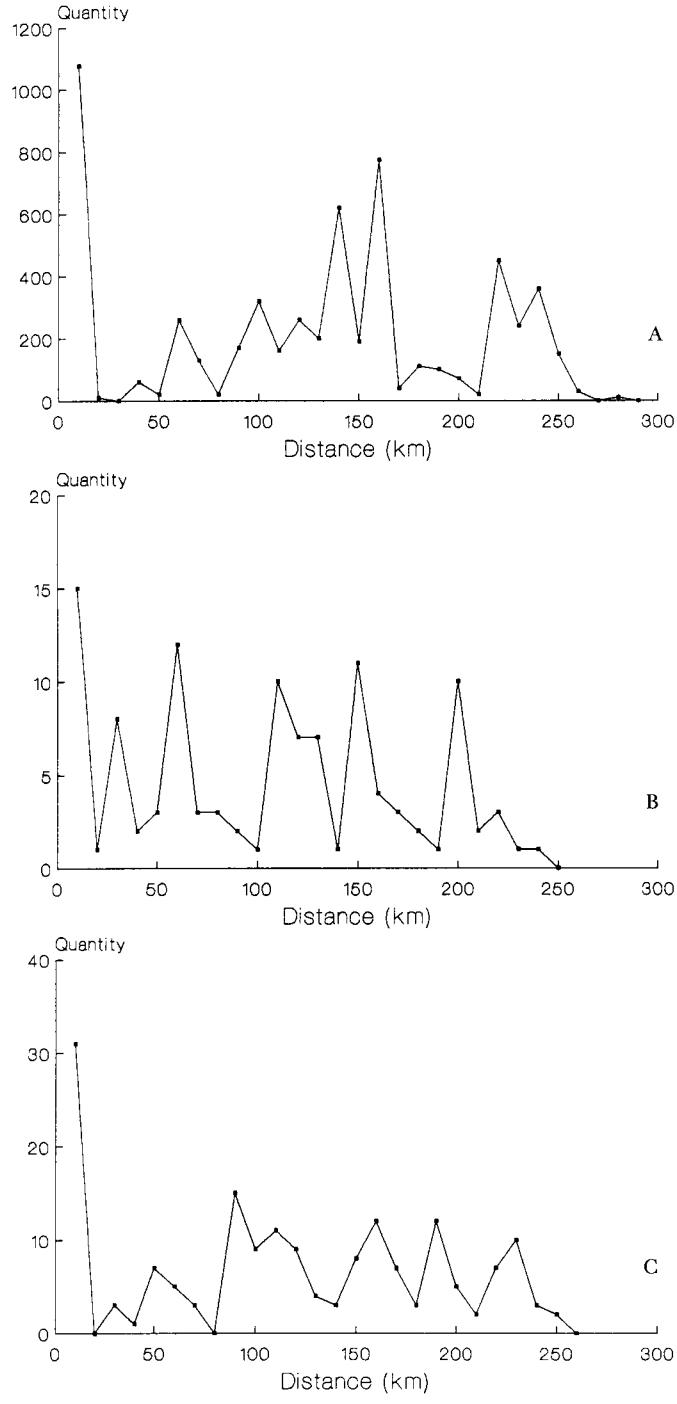

FIG. 10

Frequency Graphs:
A. Amber Beads B. Ivory Rings C. Crystal Beads

TABLE 2
THE MULTIPLICATIVE REGRESSION MODEL

Artefact Type	*Intercept (a)*	*Slope (b)*	*Coefficient of Determination (R^2)*
Wheel-thrown pottery	3.5091	−1.08700	82.89%
Amethyst beads	4.0309	−1.26475	75.34%
Glass vessels	1.5205	−0.90286	63.66%
Crystal balls	0.8742	−0.59408	58.54%
Cowrie shells	0.1209	−0.18328	7.03%
Ivory rings	0.1112	−0.35104	10.20%
Amber beads	0.0200	−0.01927	0.01%
Crystal beads	0.0770	−0.18808	3.36%

TABLE 3
THE LINEAR REGRESSION MODEL

Artefact Type	*Intercept (a)*	*Slope (b)*	*Coefficient of Determination (R^2)*
Wheel-thrown pottery	0.11810	−0.00049	27.52%
Amethyst beads	0.14921	−0.00062	17.39%
Glass vessels	0.08853	−0.00034	31.78%
Crystal balls	0.21375	−0.00101	27.56%
Cowrie shells	0.07553	−0.00006	1.25%
Ivory rings	0.05405	−0.00016	11.76%
Amber beads	0.05286	−0.00010	3.35%
Crystal beads	0.06510	−0.00016	9.75%

and consequently the quantity of Group 2 items appears to be independent of distance.

The two different regression models required to account for the variations in the distributions lend support to the original identification of the two distinct types of artefact groupings. Furthermore, it may be observed that there appears to be a strong relationship between the quantity of Group 1 artefacts and distance, a feature which is not shared by the Group 2 artefacts. Similarly, the slope of the curves representing the fall-off of those artefacts centred on Kent is much steeper than the slope representing the trend, albeit one disturbed by often substantial secondary peaks, of those Group 2 artefacts.

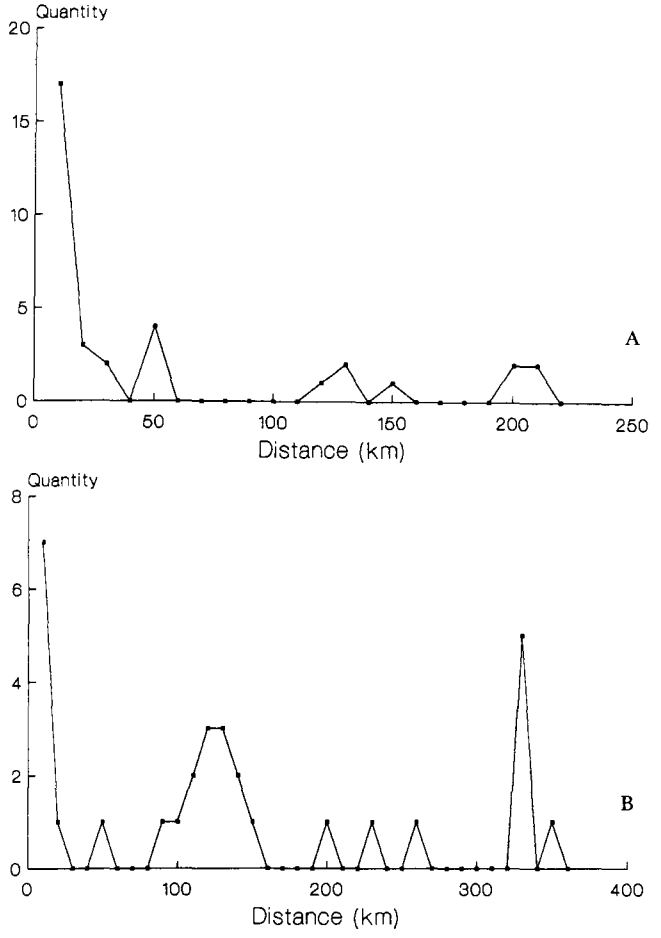

FIG. 11

Frequency Graphs:
A. Crystal Balls B. Cowrie Shells

DISCUSSION

Examination of the fall-off curves of artefact types has become a major aspect of the archaeological analysis of the spatial patterning of exchange,[43] relying upon the assumption that there is a close relationship between intensity of use at a particular location and intensity of loss or burial — and subsequent archaeological discovery — at that same location.[44] This is a particularly important assumption in the case of early Anglo-Saxon imports from cemeteries, since as well as the usual problems of differential survival and recovery, high points in the distribution do not necessarily represent where the goods were in use amongst the living. Thus any geographical separation between settlement and cemetery would result in the actual centre of consumption being situated some distance from the burial place of the consumer.

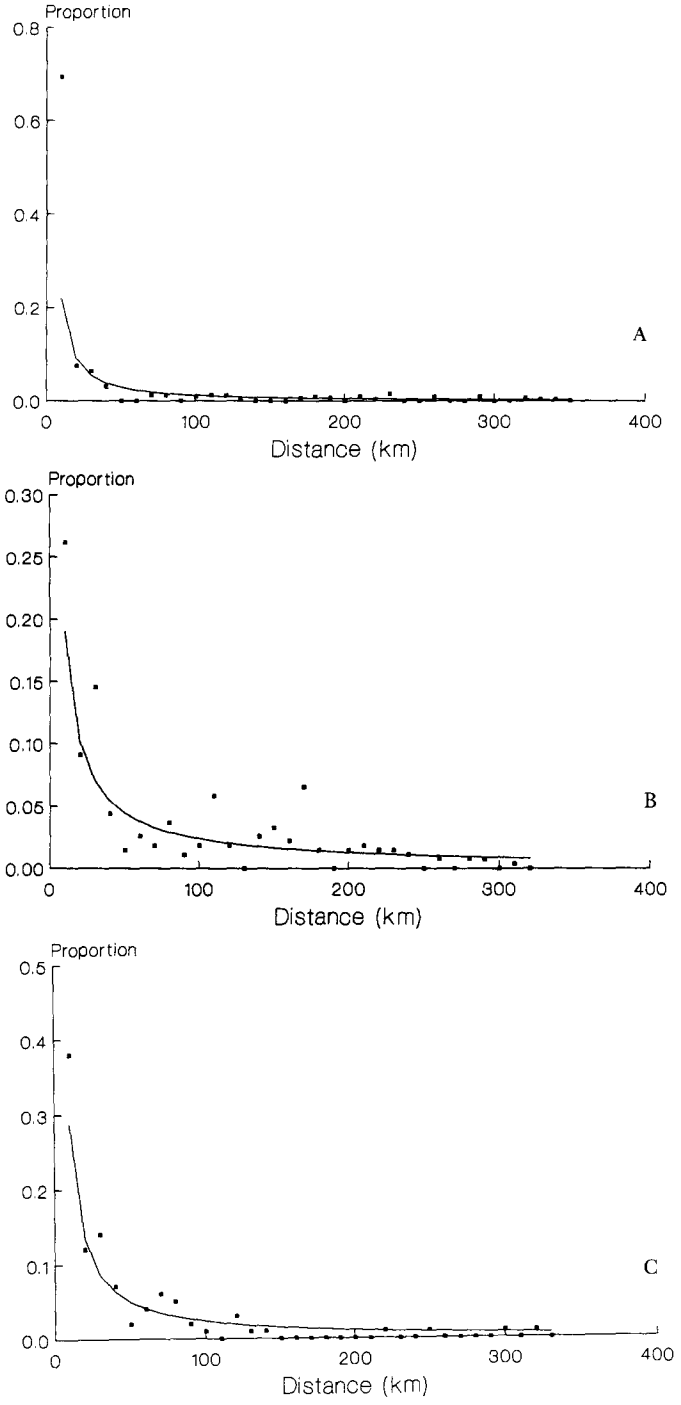

FIG. 12

Regression Curves for Group 1 artefacts:
A. Amethyst Beads B. Glass Vessels C. Wheel-thrown Pottery

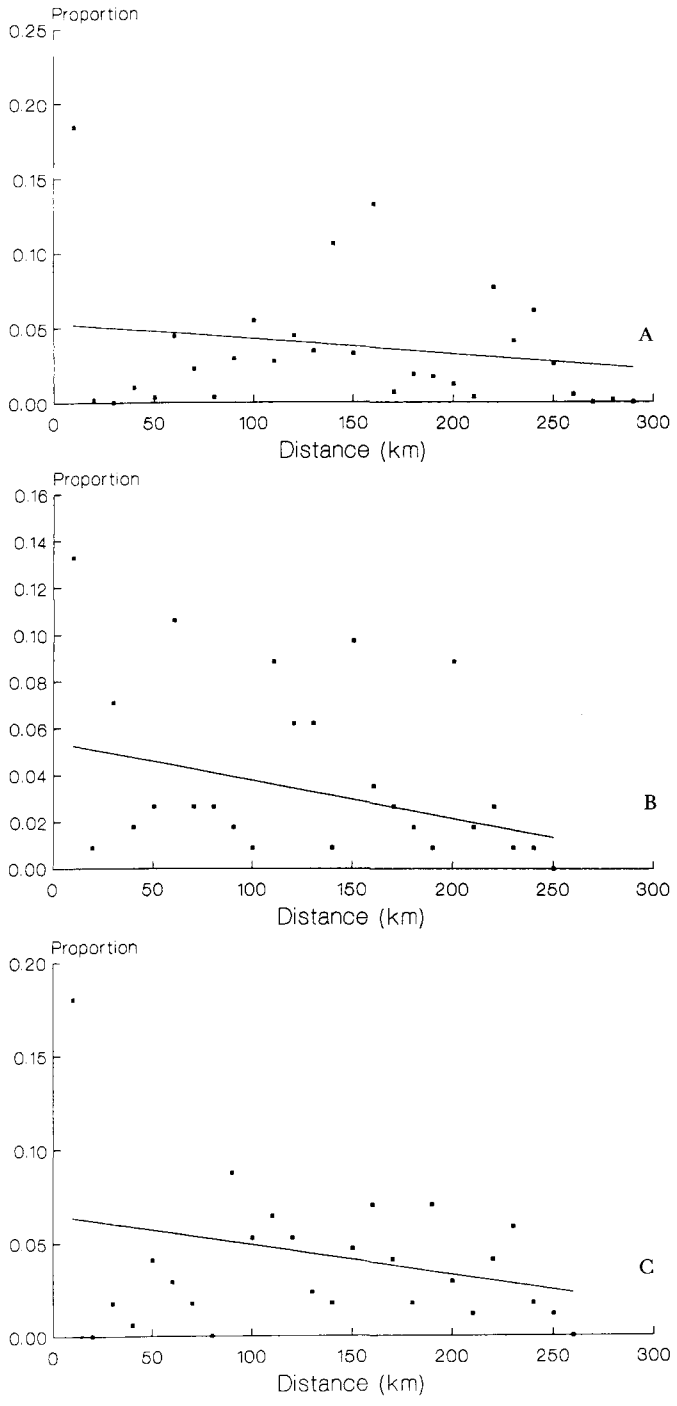

FIG. 13

Regression Lines for Group 2 artefacts:

A. Amber Beads B. Ivory Rings C. Crystal Beads

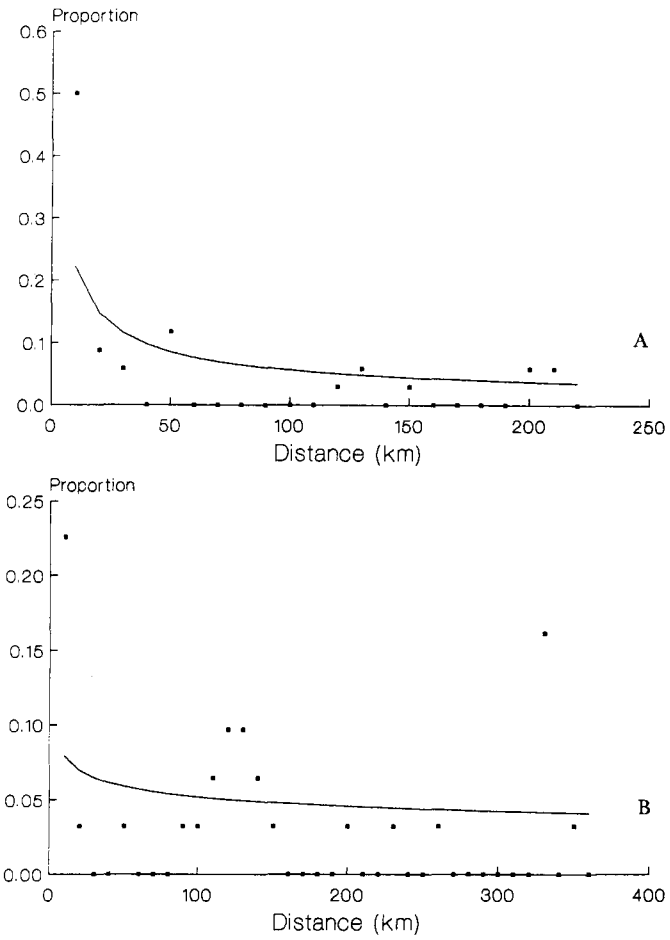

FIG. 14

Regression Curves:
A. Crystal Balls B. Cowrie Shells

This factor may be of particular importance in eastern England, for example, where the large cremation cemeteries may have had extensive catchment areas. Under such circumstances, the intensity of use at a particular location would in fact be represented by the intensity of burial and subsequent discovery at a quite separate location.

In addition, the artefacts appear in their final locations only as a result of leaving the exchange system. Exactly when a glass vessel or ivory ring entered or left this system is difficult to determine since there is no way of estimating the number of hands through which the artefact passed or of quantifying the time lapse between manufacture and deposition. Important elements in this respect will include the portability and robusticity of the object as well as its perceived value, and the operation of the heirloom factor could have profound consequences for the life-span

and date of deposition of an artefact. Moreover, as Dr I. Hodder has pointed out,[45] the fall-off curve is an inadequate summary of the distribution of an artefact. Initial optimism concerning the potential of such representations for the identification of different types of exchange has been somewhat tempered by the demonstration that different exchange processes can result in the same form of fall-off curve,[46] as seems to be the case in the present study.

The model of reciprocal or down-the-line exchange[47] has a contact zone which displays an exponential fall-off representing a series of successive exchanges in which material is passed down from neighbour to neighbour, some proportion being retained at each stage. The steep curves of the Group 1 artefacts, glass vessels, amethyst beads and wheel-thrown pottery, are of this kind. In contrast, the contact zone associated with redistribution or directional trade in which preferential access to trade items develops[48] has the downward trend disrupted by a secondary peak which represents local interaction focused on a central place or person. The raw frequency curves associated with amber beads, ivory rings and crystal beads have more in common with this form than with the reciprocal model.

At a simple level, these models should have an evolutionary aspect to them: reciprocal exchange develops into redistribution and eventually into market exchange, mirroring an increasingly hierarchical society. Assuming that there was a straightforward correlation between the idealized models and the visible patterning of early Anglo-Saxon imports, the Group 1 artefacts would be expected to be earlier in date than the Group 2 artefacts. Even given the reservations concerning the dates of deposition, this is clearly not the case. Some glass vessels may be of 5th-century date, but amethyst beads are dated to the 7th century, most amber and crystal beads have 6th-century dates, and ivory rings span the entire period. With no apparent divide in terms of chronology, it would seem that there can be no clear division between a supposedly reciprocal trade model for Kent and a more developed directional system for the remainder of the country. Such a model would in any case be the inverse of what is to be anticipated from what is known of the political situation in early Anglo-Saxon England, for of all the kingdoms Kent was the most highly developed in terms of formal relationships and trade links with the Continent.

The transactions which resulted in the movement of these artefacts into and within the country can thus be seen to have been considerably more complex. Indeed, it is quite likely that different artefacts will have been exchanged in different ways, and even the same artefacts may have been exchanged in various ways during their life-span. The whole range of possible exchange methods needs to be considered: barter, gift exchange, marriage, warfare, alliance, diplomatic gifts, tribute, redistribution, peripatetic traders, prestige goods exchange, regularized long-distance trade and market exchange. The differences between these categories of exchange will be too subtle to be detected by the generalized fall-off curves, although various aspects of the magnitude and form of the curves may provide some indications of the types of mechanisms and structures which were in operation.

Any attempt to interpret the patterning of the imports has to take into account two separate but interrelated features of the distributions. First, there is the shape of the fall-off curve itself, which is related to the type and degree of interaction

associated with the artefact.[49] Secondly, there is the division of the imported artefacts into two groups on the basis of their geographical distributions: an aspect which may be able to furnish information at a more general level.

1. THE FORM OF THE DISTRIBUTIONS

It has been suggested that the gradient of the fall-off curve ((*b*) in Tables 2 and 3) is a measure of the friction effect of distance on the overall distribution.[50] High gradient is associated with high friction, and, it is argued, represents low-value goods exchanged on a local level, whereas low gradient and friction indicate high-value commodities potentially exchanged over greater distances. This interpretation is at odds with the early Anglo-Saxon distributions, even though they are only the end of a network of exchanges which started beyond the Channel and the North Sea. Items such as crystal balls and 'Coptic' bowls are not unique artefacts, but nor can they be seen as low-value goods, in spite of the steep gradients of their curves.

More attention should perhaps be paid to what might be called the infrastructure — the nature of the communications, boundaries and the societies through which the artefacts passed — and less to the intangible value of the artefacts. An alternative interpretation, placing more emphasis on the social aspects of the interaction, is that the curves represent the level of interaction, the degree of central control, the presence of social and political boundaries, and the nature and rationale of the exchange.

The steepness of the Group 1 curves, falling away to a very low level of occurrence within a 50 km radius, suggests that Kent was able to operate a near-monopoly over the imported goods. The curves indicate that a very high proportion of any interaction involving the exchange or movement of the items occurred within Kent: nearly 90% of amethyst beads, 75% of wheel-thrown pottery and approximately 60% of glass vessels are found within a 50 km circle centred on Kent, and by 100 km the figures approach 95%. Indeed, the breakpoint at around 50 km might correspond to an internal boundary or political frontier, across which imported goods rarely travelled. This pattern would seem to suggest a degree of central control, possibly vested in an individual. In addition, the exclusivity of the exchange has implications for the motives of the parties on either side of the Channel.

In contrast, Group 2 artefacts are more widespread, and the distribution curves are interrupted by a series of secondary peaks which are often approaching the size of the dominant peak. These nodes may be interpreted as representing centres of local interactions separated by regions with a low level of activity. These centres could be seen as small-scale or localized enterprises, and the fact that many of these peaks are of a similar magnitude would indicate that there was no particular preferential access among the nodes, unlike the Kentish model. The gradient of the fall-off curve is shallow, suggesting that the overall level of interaction is similar, and that any boundaries that might have existed seem to have had little effect on the quantities of artefacts moved. However, the fact that the Group 2 artefacts do not conform well with any of the regression models owing to the substantial peaks and troughs in the

distributions would suggest that the pattern of interaction is rather more complicated. A two-level model may be proposed, in which initial interactions are between the central nodes, with subsequent movements from each node to the immediate area, possibly via a redistributive mechanism.

2. THE EXTENT OF THE DISTRIBUTIONS

The differences in the overall distributions between the two groups of artefacts may have arisen in a variety of ways. For example, the patterning may be the result of the exploitation of alternative trade routes and sources, or different relationships between the parties engaged in exchange. On the other hand, the distinction may reflect differences in the circulation of the goods within England, perhaps related to different conceptions of their social or economic 'value'.

To some extent those items found primarily in Kent can be distinguished from those found mainly elsewhere in terms of their origins, or at least of the routes by which they entered the country. For instance, wheel-thrown pottery from kilns in northern France is found primarily in Kent, while the single pots found elsewhere appear to be derived from Rhineland kilns. Dr R. Hodges has suggested that towards the end of the 6th century two mutually exclusive exchange systems developed between England and the Continent, characterized by artefacts originating from the region of the Paris basin (Neustria) found in Kent and objects from the middle Rhineland (Austrasia) occurring in East Anglia.[51] The distribution of the wheel-thrown pottery would seem to support this observation, and ivory rings may also fit the model, since continental finds seem to cluster in the Rhineland.[52] This might suggest that the ivory rings entered the country via East Anglia, and explain the concentrations at cemeteries such as Lackford and Illington.

The geographical aspect tends to support the idea of the representation of differing degrees of centralization within the distributions. Thus, for example, if the wheel-thrown bottles are seen as representing a trade in wine,[53] it was clearly restricted to Kent. Glass vessels are similarly concentrated in Kent, and it has been suggested that vessels found elsewhere in the country must have arrived via Kent.[54] In addition, Group 1 artefacts found outside Kent tend to be associated with well-equipped burials: barrows such as Asthall, Taplow, Broomfield, Bruncliffe Hartington and Sutton Hoo, and cemeteries such as Chessell Down, Ipswich, Fairford and Mitcham. This could suggest that access elsewhere in the country to those items imported through Kent was limited to the 'wealthy' or those of higher social status.

Group 2 artefacts have noticeable clusters in the distribution maps, for instance around Linton, Abingdon, Long Wittenham, Droxford, Norwich, Sleaford and Driffield. These conform to the peaks identified on the fall-off curves, and may represent the areas within which localized exchange was carried out, possibly controlled by a central place or person. Indeed, within these cemeteries the hierarchical distribution of amber beads, for instance, could represent differential access to the supply. In addition, it could be argued that those ivory rings which appear in Kentish contexts are derived from sources within England, just as it has been suggested that glass vessels were exported by Kent into the surrounding region.

Contacts with Scandinavia during the period may also have contributed to the overall picture. Wrist-clasps, relief brooches, D-bracteates and other forms of metalwork are all indications of contacts across the North Sea.[55] Uncertainty over the origin of the amber means that it is unclear how far amber beads formed part of this interaction. Scandinavian contacts were not exclusive to eastern England: relief brooches and D-bracteates attest Kentish contacts during the late 5th and 6th centuries.[56]

An alternative explanation for the occurrence of foreign imports has to be considered: that the items are found in the burials of foreigners and are therefore not necessarily the result of economic exchange. Dr J. Hines has suggested the presence of a Scandinavian element in the Anglian population on the basis of the metalwork although the possibility is also raised that the migrants may have had mercantile, rather than colonial, ambitions.[57] Similarly, Frankish elements in south-eastern England have been used to suggest the activities of Franks during the conquest of the region.[58] However, the determination of the ethnic origin of an individual from objects accompanying a burial is fraught with difficulty since we cannot reliably distinguish between a Frank and a Saxon who had acquired Frankish accoutrements.[59] Indeed, we cannot even be sure that the occupant of a Saxon grave was not a Briton.[60] In the same way, it is not possible to distinguish the burial of a trader from the burial of a settler: an observation which applies just as much to the Scandinavian settlers in eastern England.

THE NATURE OF THE INTERACTION

The distributions do not suggest that the mechanisms at work in Kent and the rest of the country were greatly different. Indeed, the characteristic patterning identified seems to be more a result of the circulation of the items once they had arrived in England than of a different means of entry into the country. Thus the single peak in the Kentish distributions is paralleled by the peaks in the other distributions elsewhere in the country. The difference appears to be in the restriction of Group 1 items within Kent, and the fact that more of the exchange route is visible for the Group 2 artefacts elsewhere in the country.

As far as contacts with Europe are concerned, it is clear that Kent was not completely dominant in comparison with the rest of the country. For example, wheel-thrown pottery and possibly ivory rings are indicators of a separate East Anglian link with the Continent, apparently via a separate route. There is some evidence of contacts between the Anglo-Saxon and Frankish leaders, which are likely to have been accompanied by some exchange activity. The marriage of Aethelbert of Kent into the Merovingian royal family will no doubt have been accompanied by the exchange of gifts, and was only one of a number of marriages between the higher echelons of society on both sides of the Channel. Such marriage alliances will have been of political value to both parties: enhancing the status of the Kentish partner, and giving credence to Frankish claims of influence over south-eastern England.[61] Relationships with the East Anglian court are more obscure, but

the quality and unique nature of some of the contents of Sutton Hoo mound 1 may represent gift exchange between the East Anglian and Frankish leaders.

High-level contacts such as these also appear to have been a feature of relations within England. For example, the 'Coptic' bronze bowls found outside Kent in rich burials such as Cuddesdon, Sutton Hoo and Taplow may represent gifts given by the Kentish king. Crystal balls are a similarly rare class of artefact, occurring in well-equipped female burials, and could also have been distributed as gifts. The appearance of such items, which are rare outside Kent, might demonstrate alliance-making activities reinforced by the presentation of gifts.[62]

The unique nature of some imported items would tend to suggest that gift exchange is a more likely mechanism than other forms of more organized trade. However, the nature of such high-level exchange would imply that only small quantities of imports or even individual items would be transferred in this way, and the relatively large quantities of some imported items has led to the suggestion that a trade alliance was in operation, at least between Kent and the Continent,[63] although this implies a degree of organization and regularization which is not perhaps justified by the evidence.

The possible identification of merchants from the presence of weights and balances in some late 6th- and 7th-century burials,[64] together with the suggestion that burials of a Frankish or Scandinavian character might represent traders rather than settlers or warriors, could imply that during the latter part of the period at least, merchants or free-lance traders were in operation. By the late 7th century, royal interest in the control of such trade is evident from the law codes[65] and in exchange for extending their protection to foreigners, and ultimately their trading-places, kings could expect to receive in return tolls, rents and other rights. It has been suggested that tolls levied by 8th-century kings at London may have had their origins in the post-Roman period[66] and laws concerning the control of trade and traders in the 7th century could be used to argue for the existence of similar controls at an earlier stage, although not expressly stated in writing. Alternatively, the 7th-century law codes could represent the imposition of royal power over a trade which had previously been in the hands of the aristocracy.[67]

Points of entry of imported artefacts are difficult to identify, but the large quantities of wheel-thrown bottles in graves at Sarre and Dover have been used to argue that they acted as major entry ports,[68] and it has been suggested that Sarre and Quentovic acted as the ports of trade for exchanges between Kent and Neustria.[69] By their association with royal vills — Fordwich and Sarre with Sturry, for instance — royal interest in the activities at these centres could be inferred, and a similar royal association is proposed for Quentovic although in both cases it may be that the royal interest was in an already flourishing trade.[70]

An evolutionary process in the development of exchange activities may be hypothesized, one which provides a background to the 7th-century rise of Ipswich and Hamwic. The occasional directional exchange between leaders in the event of marriages or alliances may have been accompanied by emissary trading in which royal agents acted on behalf of their leaders and remained within their jurisdiction. This could account for Clovis's claim to be able to uphold the rights of Franks in

English courts, for example, but otherwise there is no evidence for this form of exchange. At the same time, the activities of itinerant merchants may account for the transfer of quantities of metalwork, beads, pottery and glassware across the Channel in both directions, a trade which became focused on certain ports of entry, perhaps representing 'gateway communities' or neutral trading sites.[71] Such centres were the natural precursors of the full-scale ports of trade at Hamwic and Ipswich. The concentration of exchange activities in particular areas facilitated the imposition of royal control and also restricted the movement of foreign nationals.

This process can also be seen in the light of the expansion of royal power. High-level exchanges of gifts enhanced the status of the rulers, providing goods which could subsequently be used in social transactions such as gifts to subordinates, marriage settlements, alliances and funerals. An increasingly prosperous foreign trade would have represented a threat to royal status if control of that trade was in the hands of subordinates, since the acquisition of exotic foreign imports by other individuals could undermine carefully maintained social relationships. Consequently, the imposition of royal control over traders and trading places could be viewed as an attempt to maintain as well as to enhance the royal position.

It seems, therefore, that a variety of exchange activities may account for the distributions of imported grave goods. It has been suggested that several different long-distance mechanisms may have been in operation, particularly gift exchange at leadership level and the activities of itinerant traders. Once the imports had entered the country, gift exchange and trading activities may again explain some movements, and a generalized redistributive model has been proposed for local interactions represented by the peaks and troughs in the frequency curves. Throughout, it is apparent that the economy and society are closely interlinked to the extent that the social structure relies upon the continued successful operation of the economy for its support, while the economic system is itself a function of the social order.

ACKNOWLEDGEMENTS

I should like to thank Chris Arnold, Katharine Baker, Mike Fletcher and the Editor for their comments at various stages during the production of this paper.

NOTES

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[46] Hodder and Orton, op. cit. in note 43, 126–54.
[47] Renfrew, op. cit. in note 1, 46–48.
[48] Ibid., 48.
[49] I. Hodder, 'Some Effects of Distance on Human Interaction', 156–78 in I. Hodder (ed.), *The Spatial Organisation of Culture* (London, 1978), 162.
[50] Ibid., 162.

[51] R. Hodges, *Dark Age Economics: The Origins of Towns and Trade A.D. 600–1000* (London, 1982), 35–36.
[52] Continental examples of ivory rings include Meckenheim, Dangolsheim, Cividale, Oerlingen, Bolach, Ingersheim, Weimar, and Walheim (Myres and Green, op. cit. in note 2, 101; Meaney, op. cit. in note 2, 250).
[53] Evison, op. cit. in note 30, 50.
[54] Harden, op. cit. in note 25.
[55] J. Hines, *The Scandinavian Character of Anglian England in the Pre-Viking Period* (Oxford, Brit. Archaeol. Rep. Brit. Ser. 124, 1984).
[56] Hawkes, op. cit. in note 36, 70.
[57] Hines, op. cit. in note 55, 280.
[58] V. I. Evison, *The Fifth-Century Invasions South of the Thames* (London, 1965).
[59] See M. G. Welch, *Early Anglo-Saxon Sussex* (Oxford, Brit. Archaeol. Rep. Brit. Ser. 112, 1983), vol. 1, 222.
[60] C. J. Arnold, review of Welch, op. cit. in note 59, *Landscape Hist.*, 5 (1983), 85–86.
[61] I. N. Wood, *The Merovingian North Sea* (Occ. Papers on Medieval Topics 1, 1983), 17.
[62] Hodges, op. cit. in note 51, 36.
[63] For example, Hawkes, op. cit. in note 36, 76.
[64] C. J. Arnold, 'Wealth and Social Structure: A Matter of Life and Death', 91 in P. Rahtz, T. Dickinson and L. Watts (eds), *Anglo-Saxon Cemeteries 1979* (Oxford, Brit. Archaeol. Rep. Brit. Ser. 82, 1980), fig. 4.5; Hodges, op. cit. in note 51, 36.
[65] P. H. Sawyer, 'Kings and Merchants', in P. H. Sawyer and I. N. Wood (eds), *Early Medieval Kingship* (Univ. Leeds, 1977), 150.
[66] Ibid., 144.
[67] G. Astill, 'Archaeology, Economics and Early Medieval Europe', *Oxford J. Archaeol.*, 4(2) (1985), 221.
[68] For example, Hawkes, op. cit. in note 36, 76.
[69] Hodges, op. cit. in note 51, 36.
[70] See Astill, op. cit. in note 67, 221; Wood, op. cit. in note 61, 18.
[71] R. Hodges, 'The Evolution of Gateway Communities: Their Socio-Economic Implications', 117–23 in C. Renfrew and S. Shennan (eds), *Ranking, Resource and Exchange* (Cambridge, 1982).