ANCIENT MONU[illegible] ORATORY

2470

REPORT

3879

SERIES/No CONTRACTOR

AUTHOR J M Maltby 1982

TITLE Animal bones and the Romano-British economy. (ICAZ Paper)

ICAZ PAPER

ANIMAL BONES AND THE ROMANO-BRITISH ECONOMY

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The nature of the Romano-British economy has been the centre of some discussion in recent years. Sufficient is known of the history and archaeology the period to ask some interesting questions. Was there ever a fully developed market system in Roman Britain? What influence did the Roman army have on such developments? Why and in what way did the economy change in the later Roman period? What roles did the inhabitants of the various types of settlement known from the period play in the system?

This paper will review briefly some of the theories currently held about the nature of the Romano-British economy and examine some of the ways faunal analysis may be able to assist in resolving some of the questions involved. In the past most discussions of the economy of the Rpman Empire as a whole accepted the existence of a fully developed market economy. More recently authors such as Finley (1973) and Carney (1975) have argued that markets were of much less significance than had generally been accepted. In the case of Roman Britain the debate has moved along similar lines.

It does appear to be generally accepted that the Roman invasion forces and the subsequent army of occupation were important factors in the development of the Romano-British economy. It has been argued that the demand by these forces for food and other supplies would have imposed a burdon on local communities and created both long and short-distance supply networks (Rivet, 1969: 189-198; Davies, 1971; Manning, 1975; Middleton, 1979). It appears less certain whether outside these military demands, a fully developed market economy ever developed. On the one hand, the traditional view would seem to be that the developments of the first two centuries A.D. created such an economy.

> "... first under Agricola and again under Hadrian, official encouragement was given to the adoption of Roman ways, and so the numerous towns of Roman Britain came into full existence. It was these towns that

provided the new markets for British agricultural produce. Here was no forced levy, but free exchange - at the least, a market controlled by the tribal notables themselves - and as the urban population grew, so did the profitability of British agriculture. Thus it was that a situation was reached in which capitalist farming became a reasonable proposition, and this accounts for what we may call the first wave of Romano-British villas, which flourished especially in the second half of the second century" (Rivet, 1969:200).

Salway (1981: 236-7) also emphasises the impact of the Roman system on the native occupants of Britain.

"Even in the most remote or stubborn communities the imposition of taxes, the search for recruits, and perhaps most of all the appearance of a money economy, new markets, and the availability on a large scale of cheap manufactured goods must have made their mark, even if families and their traditions persisted in the same homesteads they had occupied before the Romans came".

Reviewing the evidence for the existence of a market economy, Gillam & Greene (1981) have concluded that there was an extensive monetized price-fixing market in late Roman times and, by implication, the early Empire must have possessed a more thoroughly market-orientated economy.

~~The [illegible] developed market economy by [illegible].~~ Hopkins (1980:102) also accepts the existence of money-based market economy in the Roman provinces. He argues that during the first and second centuries A.D. peasant taxpayers in economically backward regions of the Roman Empire (including Britain) would have increasingly sold some of their primary produce in local markets in order to raise money to pay taxes. The cumulative effects of such transactions would have created significant increases in agricultural production, in the division of labour, in the number of artisans and administrators and in the size of the towns where many of them lived. At the same time there would have been a development of

local markets and long-distance commerce. On the other hand, he adds a note of caution.

> "The economy of the Roman empire, in spite of its sophistication in some respects, was predominantly a subsistence economy. The monetary economy constituted a thin veneer of sophistication , spread over and tied to the subsistence economy by the liens of taxes, trade and rent .... The bulk of the labour force in the Roman empire, perhaps 80-90 per cent, were primarily peasants who produced most of what they themselves consumed and consumed most of what they produced. The solid mass of self-sufficient production always stood outside the money economy" (Hopkins, 1980: 104).

The view that Roman Britain had acquired a fully developed market economy by 200 A.D. is not, however, universal. Hodder (1979) has suggested that it was not until the later Roman period that we should envisulise such an economy. Prior to that, he argues that trading may have been largely constrained by existing tribal social relations, although the provision of the army may have encouraged local exchange which moved out of the social sphere. Millett (in press) also stresses the restricted nature of the exchange systems in the earlier Roman period. Hingley (in press) contends that during the first and second centuries A,D. a "primitive economy" prevailed , dominated by a few major towns that acted as the economic and social centres for their regions. These towns had a monopolistic control of the flow of goods into and out of the tribal territories of which they were the focus. They also acted as the centres of control of administration, taxation and the money supply. Hingley then contrasts this to the situation in the later Roman period, which he claims saw the breakdown of the monopolistic control of the major towns to be replaced by a mpre "evolved market system", in which there was a development of minor towns. These acted chiefly as lower order market centres for agricultural produce. At the same time there were breakdowns of the social, political and economic barriers to trade and accordingly the creation of more efficient trade networks

based on the widespread use of money as a means of exchange.

Reece (1980) also emphasises the contrast between an urban dominated economy in the early Roman period and a villa and village-based economy in the later Roman period, during which, he claims that many of the former major markets were by-passed as the towns suffered a major decline.

It can be seen, therefore, that there is some divergence in views of how the Romano-British economy operated at various times. Several classes of archaeological evidence have been used to support the various arguments. These include detailed studies of settlement patterns (e.g. Hodder & Hassall, 1971; Hodder, 1972; Hodder, 1975; Rodwell, 1975; Hodder & Millett, 1980), pottery distributions (e.g. Peacock, 1967; Fulford,1973; Hodder,1974a; Hodder, 1974b; Dore & Greene, 1977; Fulford 1977; Gillam & Greene, 1981), coinage (Crawford, 1970; Reece, 1973) and other artefacts, for example, tiles (McWhirr & Viner, 1978). It is unfortunate that other potentially valuable sources of information have been given less consideration. Food was probably the major good that was traded or redistributed during this period and yet little attention has been paid to environmental data, in order to observe possible flows in the supply or marketing of produce. Millett (in press) has lamented the fact that bone and see data have not been used to their full potential. He correctly points out that, although we can assume that the majority of the agricultural produce brought to the larger towns was brought from the surrounding countryside, it is as yet difficult to assess the degree of sophistication and the organisation of the exchange mechanisms involved because of the lack of the relevant studies.

Both ancient historians and archaeologists have traditionally paid little regard to the study of animal bones from Roman Britain. One reason for this presumably has been the belief that the farming practices in this province on the fringe of the Roman Empire differed little from those described in Italy by classical authors., Secondly, there has been a lack of appreciation of the type of information faunal samples can provide and, as a result, the study of these and other environmental material has itself been considered to be outside the mainstream of Romano-British research.

Consequently it is not suprising that few excavators of Romano-British sites have until recently considered that the collection of faunal data was of any value. Although over 100 excavation reports have included specialist analysis of such material, these mainly have been based on small collections of bones, many of which have been sampled and analysed inadequately (King, 1978; Maltby, 1981: 157). Nevertheless, despite the haphazard nature of data collection, we have at least obtained a basic background knowledge of Romano-British animal husbandry. This is not to say that all periods, geographical areas and settlement types are adequately studied; there are still many gaps in our knowledge. On the other hand, we have now obtained a much better selection of late prehistoric material (at least from southern England) with which to make realistic comparisons with Romano-British assemblages (Maltby, 1981: 155-6).

Thus far the questions asked by archaeozoologists have mainly been concerned with the quantification of the species represented, the ages at which they were killed and the size of the domestic stock. The same type of analyses could easily be adapted to investigate topics of more general interest to Romano-British scholars. This includes research into the organisation and mechanisms involved in the distribution of animal produce. There is a tendency sometimes for faunal analysts to view their samples in isolation. Too often there is an implicit assumption that the bones deposited at a settlement belonged exclusively to animals herded or hunted by the inhabitants of that settlement or, conversely, that the animal bones represent a cross-section of the herds kept by the inhabitants of that settlement. It is clear, however, that if any of the theories discussed above are valid, animal produce must have been commonly exchanged during the Romano-British period. Can we monitor such exchanges of meat, hides and other pastoral commodities? Recent discoveries indicate that the study of faunal remains may be of some assistance.

There is evidence from several early Romano-British major towns for the large-scale distribution of cattle carcasses. Although they vary in detail, these assemblages typically consist of a dense and discrete concentration of certain elements of the skeleton, particularly skull, mandible and metapodia fragments

butchered in a very systematic manner. Three examples of this wholesale primary butchery waste have been discovered recently in major early Roman towns. The primary butchery waste from at least 50 cattle was recovered during the Rack St. excavations in the city of Exeter, Devon. These had been dumped into a section of the legionary ditch that was infilled during the late first century A.D. (Maltby, 1979: 11).

A smaller example of the same process has been discovered near the city wall at Silchester, Hampshire. In this instance the bones thrown away during the primary butchery of at least 10 cattle were recovered from the small area of a layer that was not completely excavated. The density of the accumulation and the almost complete lack of animal gnawing and weathering on the bones suggests that they were dumped and buried over a short period of time. This assemblage has been dated to the middle of the first century A.D. (M. Fulford, pers. comm.), only a few years after the Roman invasion and is thus a very early example of this type of assemblage, which provides evidence for a system of butchery alien to native Iron Age practices (Maltby, n.d.).

Another close parallel of this type of assemblage has been discovered in the Aldgate area of London. Pit 15 on the St. John Cass Primary School site, dated t 110-120 A.D., produced a concentration of cattle bones in its lowest layers. Skull, mandible and metapodia fragments dominated the collection (Watson, 1973; Armitage, n.d.). Details of the cattle bones recorded in this and the other two deposits are given in Table 1. Cattle fragments greatly outnumber those of sheep and pig, which are much better represented in contemporary deposits in these towns. The major meat bones of cattle are poorly represented. There are variations, however. A much greater proportion of skull fragments was recovered from the London assemblage than from the other two. This may be a reflection of differential preservation and recovery, or perhaps simply the result of different methods of recording. The totals from the London assemblage include very small fragments of skull (Armitage, n.d.). Counts from the skull material from Exeter excluded many small, often recently broken fragments. This may explain the discrepancy. It is clear, however, that the skulls from all three assemblages were

Table 1

Number of Cattle Fragments Recorded in Early Romano-British Primary Butchery Waste Assemblages

	Exeter RS F.363		Silchester 78 I 26		London St.John Cass F.15	
	F	%	F	%	F	%
Mandible	258	36.9	35	15.2	198	16.9
Maxilla	30	4.3	6	2.6	48	4.1
Skull	87	12.4	48	19.7	604	51.6
Loose teeth	148	21.1	18	7.9	134	11.5
Scapula	9	1.3	23	10.0	1	0.1
Humerus	1	0.1	6	2.6	4	0.3
Radius	6	0.9	1	0.4	8	0.7
Ulna	-	-	2	0.9	2	0.2
Os coxae	15	2.1	11	4.8	8	0.7
Femur	11	1.6	2	0.9	1	0.1
Tibia	7	1.0	5	2.2	1	0.1
Carpals	1	0.1	-	-		
Astragalus	-	-	2	0.9		
Calcaneus	2	0.3	3	1.3		
Other tarsals	-	-	-	-	6	0.5[a]
Metacarpus	26	3.7	21	9.2		
Metatarsus	86	12.3	27	11.8		
Metapodial	-	-	2	0.9	84	7.2[b]
First phalanx	10	1.4	11	4.8	27	2.3
Second phalanx	1	0.1	6	2.6	14	1.2
Third phalanx	1	0.1	-	-	24	2.1
Vertebrae	(128)		(19)		(165)	
Ribs	(102)		(77)		(45)	
Total cattle	700	78.0	229	69.5	1170	93.5
Total sheep/goat	149	16.6	84	23.9	39	3.1
Total pig	49	5.5	23	6.6	43	3.4

Data adapted from Maltby (1979), Maltby (n.d.) and Armitage (n.d.). F = total number of fragments. a = all carpals and tarsals. b = metacarpi and metatarsi. Totals of cattle, sheep/goat ang pig fragments exclude ribs and vertebrae.

usually smashed to remove the brain and the horn cores were detached and removed elsewhere. Despite the large number of skull fragments, only one horn core was recovered from the Rack St. ditch in Exeter, two small fragments from the assemblage in Silchester and none at all from the London pit. These were removed for hornworking and it is significant that a dump of a large number of horn cores dated to the late first century A.D. had previously been discovered in Silchester (Boon, 1974: 290).

The large number of metapodia in these assemblages had usually been broken transversely into proximal and distal portions for the removal of the marrow before disposal. Another consistent feature is the relatively low number of phalanges, particularly from Exeter and Silchester. One possibility is that they were removed with the hides during skinning. Another is that they had been removed for glue production. A few features of the assemblages are more difficult to explain. There is no obvious reason why metatarsi fragments so greatly outnumbered metacarpi in the Exeter assemblage, for example. The Silchester assemblage included a greater number of scapula and os coxae fragments, perhaps indicating some disjointing of the carcasses took place at the same time. However, generally it appears that the majority of the meat-bearing carcasses were taken elsewhere for further butchery.

These assemblages provide good evidence that cattle slaughtering was performed in these towns on a large scale. The carcasses were butchered in a standardised manner and the meat, hides and horns distributed elsewhere. Exactly how great the operations were is uncertain. Although the density of bones and their good preservation suggest that they were buried over a short period of time, it is not clear if they were dumped en masse after a single slaughtering episode or accumulated over a longer period of time during which several smaller operations took place. In addition it was possible to excavate at both Exeter and Silchester only part of the total assemblage. Another unresolved question concerns whether the meat and other products taken away were ultimately intended for sale in an open market or destined to be

more strictly distributed by the administration to ensure supplies for the military forces, for example. Similarly was this slaughtering and butchery procedure organised centrally or were a number of independent slaughterers operating in these towns? It is possible that such a system was originally developed for the provision of the Roman legions and was then adapted as these major urban centres developed. Certainly if one accepts that the system of towns was imposed upon Britain, it is logical to argue that, at least initially, the provisioning of towns would have been administered centrally. Whatever the solution the assemblages do confirm that the major towns did act as centres for substantial inflows of animals driven there for slaughter from the early part of the occupation.

There is evidence too that some of these towns continued to be significant centres for the distribution or marketing of animal produce later in the Roman period. For example, the excavations at Tower St., Cirencester sampled an extensive midden dated to the third century or later (T. Darvill pers. comm.), wh has produced a very large quantity of systematically butchered cattle bones. The relative number of different cattle bones recovered was notably different from the earlier examples since, although skull, mandible and metapodia fragment were abundant, the major meat-bearing limb bones are much better represented (Table 2). These mainly had been split axially to remove the marrow and many shaft fragments also had evidence of meat-stripping on them. Excluding ribs and vertebrae, cattle contributed over 94% of the domestic stock fragments identifie A provisional conservative estimate suggests that at least 50 cattle are represented and the midden was possibly much larger. The assemblage again consists almost exclusively of cattle primary butchery waste and, in addition, the waste from disjointing, filleting and marrow extraction from the whole carcass. The two operations, therefore, seem to have been combined, in contras to the examples described above. Does this imply that a different system of meat distribution was in operation? The location of the Cirencester assemblage close to the south edge of the Basilica and Forum (Insula VI) suggests that the meat butchered here may have been intended for sale in the markets or shops at

Table 2

Number of Cattle Fragments Recorded in Later Romano-British Butchery Waste Assemblages

	Cirencester 1980/137 5		London Angel Court 7		London Angel Court 9		Gloucester 1 Westgate St.	
	F	%	F	%	F	%	F	%
Mandible	605	23.1	24	16.3	54	9.8	9	4.3
Maxilla	140	5.3	2	1.4	10	1.8	1	0.5
Skull	552	21.0	11	7.5[a]	123	22.4[b]	6	2.9
Loose teeth	330	12.6	17	11.6	38	6.9	6	2.9
Scapula	143	5.5	5	3.4	32	5.8	81	38.6
Humerus	89	3.4	10	6.8	26	4.7	9	4.3
Radius	71	2.7	4	2.7	26	4.7	6	2.9
Ulna	21	0.8	-	-	8	1.5	3	1.4
Os coxae	65	2.5	-	-	4	0.7	33	15.7
Femur	119	4.5	2	1.4	6	1.1	20	9.5
Tibia	108	4.1	-	-	18	3.2	6	2.9
Astragalus	14	0.5					-	-
Calcaneus	24	0.9					3	1.4
Carpals	7	0.3					1	0.5
Other tarsals	19	0.7	9	6.1[c]	11	2.0[c]	1	0.5
Metacarpus	71	2.7	24	16.3	71	12.9	3	1.4
Metatarsus	190	7.2	38	25.8	115	20.9	12	5.7
First phalanx	27	1.0	1	0.7	3	0.5	8	3.8
Second phalanx	16	0.6	-	-	2	0.4	2	1.0
Third phalanx	12	0.5	-	-	3	0.5	-	-
Vertebrae	(230)		(5)		(34)		(29)	
Ribs	(536)		Large no.		(42)		(68)	
Total cattle	2623	94.2	147	84.5	550	92.6	210	82.0
Total sheep/goat	80	2.9	22	12.6	29	4.9	30	11.7
Total pig	82	2.9	5	2.9	15	2.5	16	6.3

Data adapted from Maltby (in prep.), Clutton-Brock & Armitage (1977) and Maltby (1979b). F = total number of fragments. a = all horn cores. b = includes 98 horn cores. c = all carpals and tarsals. Totals of cattle, sheep/goat and pig fragments exclude ribs and vertebrae.

the heart of the town. Significantly, perhaps, the primary butchery deposits at Silchester, Exeter and London were all located some distance from the centre of the towns and it is possible that the carcasses were taken to a more central location before further butchery. Previous excavations in Cirencester have produced earlier examples of similar bone waste.

> "Cirencester was provided with a market-hall in Hadrian's principate;... A number of pits, which were packed with bones, had been dug in and around this building; the bones had been sawn and cut and would appear to have come from butchers' shops, implying perhaps that this part of the building was a meat market."(Wacher, 1975: 60).

Meat marketing in Cirencester appears to have continued into the third century and possibly later.

Other examples of cattle butchery in towns include the assemblages dated to the fourth century A.D. from ditches excavated on the Goldsmith St. excavatio in Exeter. These consisted of smaller concentrations of cattle primary butchery waste in association with probable stockyard enclosures attached to large town-houses. This could imply that at least some of the meat distribution in the late Roman town was in the hands of independent stockowners at that time (Maltby, 1979: 14). Excavations at Angel Court, Walbrook in London produced two layers of stream silt dated to the late fourth century A.D. These contained a very dense concentrstion of cattle bones dominated by horn cores and metapodials. Layer 9 contained a minimum of at least 40 animals (Clutton-Brock Armitage, 1977) (Table 2). The Roman assemblages from this site were interprete as bone waste that was discarded at all stages from "slaughterer, bone worker, cook and diner" (Clutton-Brock & Armitage, 1977: 93). Given the density and composition of the samples in these layers, it seems likely that much of the material there derived from the primary butchery of cattle. The types of fragment represented (Table 2) do not include a large quantity of small fragm cattle that were not tabulated (Clutton-Brock & Armitage, 1977: 90).

Finally, the excavations at 1 Westgate St. Gloucester produced evidence of cattle carcass trimming in deposits dated to the late fourth century A.D.

(Maltby, 1979b). In this instance the assemblage was dominated by scapula, os coxae and femur fragments.(Table 2). The femur fragments consisted almost entirely of the proximal articulations which had been severed during the detachment of the hindlimb from the pelvis. At least 18 animals were represente In this case the primary butchery waste was not present in any quantity. Unlike the example from nearby Cirencester, therefore, it appears that the primary butchery and this secondary carcass disjointing were separate operations, as indeed the examples from the early Roman examples also implied. This assemblage was associated with a timber booth that had replaced a large public building tha had been converted to domestic or industrial use before destruction by fire (Heighway et al., 1979:163). In spite of some decline in Gloucester from its role as a flourishing colonia , it does seem that some distribution and probably marketing of beef continued until the late fourth century.

Indeed the evidence suggests that despite their relative decline, the major towns continued to perform a function as markets for animal produce until the late fourth century at least. Whether such activity was as extensive during this late period remains to be established through comparisons with other faunal material at these and other towns. It does appear, however, that they did not have a monopoly in such activity. Similar butchery waste has been discovered at smaller settlements. Concentrations of limb extremities and mandibles of both sheep and cattle have been discovered in the Park St. excavations at Towcester in deposits dated mainly to the second century A.D. (Payne, 1980). This discovery gives support to those theories which see the development of minor (small) towns as related to the marketing of agricultural produce. We may expect to discover other examples of such activities from similar settlements.

Some of the more important villas may also have served as local distribution centres for agricultural produce. At Gatcombe, Somerset, one fourth century A.D. building has been interpreted as a slaughterhouse on the basis of the abundance of cattle waste bones and the layout of the building (Branigan, 1977: 184). It is possible, however, that this served only the requirements of the inhabitants of the villa estate. There does not seem to be any strong evidence, as yet, to

refute the assumption that the majority of surplus animals raised on such estates were destined for the various major and minor urban or military centres either as tribute or as a marketable commodity. There is, however, precious little recently analysed material from villa and other rural settlements.

The above discussion has centred upon the evidence for the marketing of be and other cattle products. Faunal evidence has, as yet, proved no more than wh many theories had assumed. Marketing, or at least the largescale administered redistribution of meat was performed in bulk at certain centres during the Romano-British period. Examination of similar material discovered at the same and other centres may provide better data to assess the scale of such activitie Most of the isolated deposits described provide evidence merely that the system existed, not its scale or organisation, although aspects of these can possibly be inferred.

Is it feasible to examine the meat distribution system further? It should be possible to use other aspects of faunal analysis to investigate the nature of the system. In certain circumstances it is possible that the demands for animal produce by the non-producing (or part-time-producing) consumers - be the legionary forces, tax collectors and other administrators or townwellers engaged in non-farming activities - would have resulted in the acquisition of animals for slaughter biased towards stock of particular ages, sex or type. Accordingly the examination of ageing and metrical data may reveal some interesting patterns and contrasts between predominantly consumer and predominantly producer settlements. Analysis of this sort is at an early stage but some results do seem promising.

Variations in the ages of sheep represented on certain types of Romano-British settlement have been noted. It has been suggested that urban and military settlements may have attracted a higher proportion of animals raised principally for their meat for slaughter at such centres (Maltby, 1981: 175). Similar variations in the ages of cattle represented on different sites are also apparent (Maltby, 1981: 182). However, the samples available for analysis are thinly spread over a wide geographical and chronological range. What are

required are a number of contemporary samples from various types of settlement in a restricted region of, and including, an urban or military centre in order to investigate this topic further. Bintliff (1981: 43) has suggested such a study to observe the relationship between villas in the Chilterns and the town of Verulamium (St. Albans). It is encouraging to note that Luff (1982) has been able to demonstrate significant differences in kill-off patterns of cattle and sheep in contemporary deposits (43-60 A.D.) by comparing toothwear patterns of mandibles recovered from the legionary ditch in Colchester and from several pits at a settlement occupied by Roman metalworkers at Sheepen Hill only 1.6 km away. Although we have to be careful about comparing ageing data from a restricted range of deposits from different settlements (Maltby, in press), it does seem that we can expect variations in slaughter patterns on different sites and that some of these variations are due to the differential marketing or distribution of certain age classes of stock.

A similar approach can be made with regard to metrical data. It has been shown that there were regional variations in stock size in Roman Britain (Maltby, 1981: 185-192). In central Europe, Bökönyi (1974: 130) found variations in the numbers of larger cattle recovered from different types of settlement in the Roman provinces. Two aspects of metrical analysis of Romano-British animal bones would repay detailed study. The overall size differences of stock found on different settlements in the same region may indicate the distribution of improved stock within the area. Secondly, there may well have been variations in the relative proportions of the different sexes slaughtered at certain settlements. Metrical analysis of distal metacarpi from Exeter indicated the slaughter there of a greater number of females than castrates or bulls according to the author's interpretation (Maltby, 1979: 32-4). Luff (1982) has claimed that there was an even heavier predominance of female cattle at both Sheepen and Colchester, although the metrical analyses used in support of this claim appear far from conclusive. The same criticism could be raised against the previous example, since it is not easy to differentiate females and castrates using metapodia measurements, particularly from incomplete specimens.

Nevertheless, although we may argue about the classification of certain specimens, potentially such sexing studies should prove rewarding. It is probably more than coincidence that a greater proportion of bulls appear to be represented in samples from villa and other rural settlements than from urban centres. It may reflect the difficulties of driving bulls for slaughter. Once again, however, such studies are generally hampered by the lack of contemporary assemblages from closely related settlements. It is only when detailed regional studies are carried out that significant patterns will become observable. We should then be in a much better position to supplement our knowledge on the marketing and redistribution of animals.

Archaeozoologists potentially can acquire the data to view the Romano-British pastoral economy both regionally and locally, not only to further their own particular fields of research, but also to incorporate their findings with settlement studies and studies of artefact and coinage distributions, to produce a more comprehensive understanding of trading and marketing practices and of the working of the Romano-British economy in general.

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Acknowledgements

I would like to thank R.Hingley, M. Millett, The Cirencester Excavations Committee, M. Fulford and P. Armitage for permission to use unpublished material in this paper.