

into some of the stones (cuts should not be confused with the drill-marks during quarrying which are also visible), and this suggests the effects either of high winds over a long period or else the added tension existing when one of the line of stones starts to lean over, or actually falls, with the horizontal wire still attached.

These stones were, of course, entirely modern, and indeed in the town of Portis, Kansas, I observed that there was a company named 'Dierks Fence Stones' which evidently specializes in supplying these limestone posts to the local farmers. Perhaps this is merely a modern touch, but upon coming across these fence stones (and when photographing them) I had the feeling very strongly that there must be an archaeological analogy in what I was seeing. Apart from his use of standing stones for religious purposes, did not ancient man in Europe delineate or fence-off plots of agricultural ground from domestic and wild animals

and from neighbours other than by solid wooden barriers or stone walls, i.e. by fences? And if so must it be assumed that he always used wooden posts for the purpose? Here in Kansas, in country where workable limestone outcrops on the surface, was a living example of standing stones being used for fencing, and it suggested that unexplained groups, or intermittent or broken series, of standing stones in western Europe should be surveyed from the premise that they might have formed the boundary of some plot of agricultural activity—and that where modern man naturally uses wire, ancient man used a vegetable fibre or cord as the rope strands connecting stone field posts. If so, perhaps the marks of their abrasion against the stones under tension might sometimes be detectable in a somewhat less exaggerated form than that produced by the retaining wires in the Kansas fences.

M. T. MYRES

Town Defences in Roman Britain

We have received the following comment from Professor S. S. Frere upon Dr Michael G. Jarrett's note (ANTIQUITY, 1965, 57), 'Town Defences in Roman Britain'. We invited Dr Jarrett to make a brief rejoinder, printed on p. 139.

Dr Jarrett's attempt to throw doubt on the duality of Romano-British town defences in the March number of ANTIQUITY is plausible, but on closer examination superficial. It shows no sign of being based on that careful consideration of all the evidence which an authoritative treatment of the subject demands. His method is first to lay down a pattern of what he thinks *ought* to have happened on the assumption that walls and banks were part of one programme: and the rest of his argument follows from these assumptions. But this assumed pattern is quite arbitrary and theoretical, nor does it agree with the facts that are known. 'A composite earth-work consisting of an earth or turf bank behind a stone wall will normally reveal two structural phases, even if the two elements form a single plan. . . . Common sense indicates that the bank will normally be structurally earlier than the wall. . . .'

Why not look at some published sections? A study of these shows that town walls in Britain fall into three classes: (i) Those with no bank. These are few in number and late in date (Great Chesterford, Catterick). (ii) Those with a bank to rear which has been cut away to insert the wall. (iii) Those with a bank to rear which has *not* been cut away but has been piled up behind the wall as it rises, sealing the offsets and often containing mortar-spreads at intervals which show that progressive levels of the bank were used instead of scaffolding. To this class belong Verulamium, Canterbury, London, Leicester, Caistor by Norwich, Great Casterton, Aldborough, Ancaster and Water Newton. This list, which could probably be extended, is sufficient to dispose of Dr Jarrett's airy generalizations about which was 'normal' or 'common sense.'

What of group (ii)? Here a different procedure was adopted. A bank which was structurally earlier had its front cut away in order to insert a wall. Why? The great weight of a town wall could not be perched on the very edge of a ditch without danger of collapse: a berm was

required. If wall and bank were part of the same programme, the bank being erected first, it is curious to find the latter being placed where the wall should go. But if the bank and ditch had been originally designed as a single defence in themselves we would expect the front of the bank to take a slope continuous with that of the ditch—a common design in earthwork and known since Maiden Castle as a glacis. And this is just the profile we find in the Fosse earthwork at Verulamium and in the Outer Earthwork at Silchester, and the profile which is restorable in the bank which precedes the town wall at Silchester [1]. If subsequently a town wall were added, cutting back would be required; but if the wall had already been envisaged when the bank was built it was careless to put the *crest* of the bank so far forward. (Dr Jarrett is misleading when he writes merely of a 'cut through the *front slope* of the bank'.)

Dr Jarrett rightly repeats Dr Corder's warning about the difficulty of precise dating from purely archaeological evidence [2], and then writes 'only material found *on* the buried soil below the bank . . . is likely to be . . . contemporary with the building'. A commentary on this statement is provided by the excavations at Dorchester on Thames, where the pottery in this position below the primary bank gave a *terminus post quem* of *c.* 160, while the bank itself contained material down to *c.* 185; the secondary bank which accompanied the wall sealed material of almost a century later [3]. The truth is that the excavator is glad to get evidence bearing on the *terminus post quem*, wherever it is to be found. We may add that since urban defences are not random phenomena but were subject to central decision [4] they form a class in which the date of any one will assist the dating of others; and Dr Jarrett himself allows that earthwork defences on a different line from that of the stone wall will show a difference of period. Such earthworks exist at Verulamium, Caistor by Norwich, and Brough on Humber, though at the majority of towns it was obviously more economical to utilize the existing circuit. However, these examples prove that a class of independent earthwork defences does exist.

There are several further points which should

have been mentioned by Dr Jarrett. One is the considerable difference in date which is always found between the material in or under the primary rampart and that in the foundation trench of the wall or in or under the secondary bank which goes with the wall. This difference has been underestimated in the past. The evidence from Dorchester on Thames has already been mentioned: that at Caerwent is even more glaring (here the primary bank contains material down to Hadrian while the later bank contains late 3rd-century pottery). Another point is the difference of architectural style between the gateways of the two types of defence: a timber gateway is known at Brough on Humber, but even the masonry gates where known are quite distinct. But the third point is even more striking. Why banks at all? These are never found on the Continent, where town walls whether of 1st, 2nd, or early 3rd-century date (not to mention the great class of late 3rd-century walls which is irrelevant here) invariably lack them. As Dr Jarrett hints, earthworks can be provided relatively quickly by *corvée*, whereas walls take longer and require skilled craftsmen.

So we have the following suggestive points: (i) Earthwork defences for towns are exceptional in the Roman empire. (ii) The great majority in Britain form a single chronological group and are likely to have been the products of a single decision, the motive for which was speed. (iii) The occasion on existing evidence cannot be earlier than 180–200, but there is no suggestion that it was later. (iv) Town walls however are always later. Some are certainly as late as 270–280, others may be up to 30–40 years earlier than this. In most cases they followed the earthwork circuit, but (to prove the reality of the two groups) some do not.

The existence of the large group of town defences in which ramparts are contemporary with the walls (group (iii) above) shows that there was no technical difficulty in this mode of construction, and the defences of group (ii), which show a bank cut back, require a different explanation. All the evidence supports the view that two programmes of fortification are at issue, and some of the towns of group (iii) may

well have had earthwork defences contemporary with group (ii), but on a different line. This is certainly so at Caistor by Norwich and may possibly be the case in London, where a peculiarity of the street-plan, as recently mapped, suggests it.

The prior existence of the earthworks—themselves the product of emergency—may be thought the probable cause of the provision of

town walls in Britain before they were provided on any scale in Gaul. To that extent the walls of Britain may be considered as the second part of a programme, but the two parts are separated by half a century or more. This is not the context for a fuller discussion of the historical points involved, which are being treated by the writer in a forthcoming book.

NOTES

[1] Fosse Earthwork: R. E. M. and T. V. Wheeler, *Verulamium, A Belgic and Two Roman Cities* (Oxford, 1936), pl. xviii. 'Silchester, Outer Earthwork', *Archaeologia*, xcii, pl. xxxviii; inner bank, pl. xxx.

[2] *Archaeological Journal*, cxii, 21.

[3] *Ibid.*, cxix, 114-49.

[4] *Digest*, L., x., 6.

Dr Jarrett writes:

Professor Frere's reply to my note on the dating of town defences widens the scope of the discussion without clarifying the issue. He appears to have misunderstood the whole intention of my note. It was no part of my purpose to suggest that there are *no* towns with earthwork defences significantly earlier than their stone walls. I sought rather to ensure that, where this was being claimed (and important

historical conclusions drawn from it), the evidence for two distinct defences was adequate, and had been considered in the light of various possible interpretations. I did not then believe that the evidence could support what was claimed; nor have the interesting but irrelevant arguments by Professor Frere done anything to convince me that, in most cases, the evidence is sufficient to make a decision in favour of either one or two periods.

A Source of Charcoal in Antiquity

In his review of Professor Forbes's *Studies in Ancient Technology*, vol. VIII (ANTIQUITY, 1964, 230), H. H. Coghlan comments on Forbes's virtual rejection of peat as a metallurgical fuel. Coghlan argues on grounds of availability in certain areas and heat potential, that it is premature, despite lack of evidence, to dismiss completely peat from the reckoning. Peat has serious disadvantages, such as a high sulphur content, and, while a number of authorities on early technology have considered the matter briefly (Coghlan himself [1], Tylecote [2], Hodges [3], Cecilia A. Western [4], and of course Forbes), lack of evidence and the inherent disadvantages of peat have caused them to reject its possibilities for early metallurgy.

The purpose of this note is to indicate a way out of these difficulties. A very important fuel has been almost totally absent from archaeological considerations, namely peat charcoal.

This writer has published [5] conclusive evidence of the value of peat charcoal metallurgically with details of its manufacture. This paper, which embodies a transcript of a detailed description by an elderly Hebridean smith who made and used peat charcoal, does I think demonstrate not only the use of this fuel some 60 years ago in what was not very far removed from an Iron Age economy but also demonstrates, incidentally, the great value that well-authenticated oral tradition can have from an archaeological and technological viewpoint. I would suggest, subject to further technical research, on the basis of this transcript and bearing in mind the calorific potential of 'unrefined' peat, that the 'charred' form might well qualify for an efficiency rating close to that of coke and superior to wood-charcoal. This is a case where an important aspect of ancient technology has barely survived in documentary