ART. V – *The Ring Ditch Site above Middleton Hall, Cumbria: Surface and Resistivity Surveys*

By D.J. WOOLLISCROFT

The site of Middleton Hall (SD 632875) has traditionally been seen as a barrow, an interpretation put forward by R.A.C. Lowndes[1] who, in 1963, described the visible surface feature as 'A shallow mound . . . surrounded by a bank'. More recently, however, Dr N.J. Higham and Prof G.D.B. Jones have presented air photographic evidence of the site[2] and have suggested, on morphological grounds, that it may be a Roman signal or watch tower. They describe the site as 'a small circular feature with a single ditch' and suggest that it may represent a similar installation to the towers beside the Roman road across Stainmore, notably Punch Bowl, Augill Bridge (which Prof Jones had, then, just excavated[3]) and Johnson's Plain (recently excavated by the writer[4]). They further suggest that, if such an identification could be upheld, the tower might have formed part of a wider arterial signalling system through Lonsdale and beyond. The work described here was an attempt to establish which, if either, of these theories was correct, preferably without the need for excavation.

Location

The site certainly does occupy a quite superb signalling and observation position, so that the presence of a Roman tower here would not occasion much surprise. It is situated (Fig. 1) high (*c.* 70 m) above the floor of the Lune Valley, near the summit of a projecting spur and, thus, enjoys very long range views up and down the valley, which here runs straight and almost due north-south (Plates 1 and 2). Yet at only 142 m above O.D. it is not so high that it vanishes into low cloud whenever the weather is poor. The site lies a few hundred metres to the east of the Roman road through Lonsdale (here largely followed by the modern A683) and roughly half way between the forts of Burrow in Lonsdale and Low Borrow Bridge (it is *c.* 11 km from the former and *c.* 13.5 km from the latter). A tower here would, thus, have been in an excellent position to form part of any signalling link between the two forts and might well, in turn, have formed part of a wider communications system.

It could not, however, have linked the forts by itself, since neither are visible from the site, even from the full likely height of a Roman tower. But, if Middleton Hall is a Roman tower, it would be reasonably easy to predict where the remaining link towers must be, for the site is in visual contact with two more splendid potential signalling positions; one close to each of the forts. To the north it can see along the Roman road to a hillside at Low Carlingill (SD 623998), only *c.* 1400 m from Low Borrow Bridge (Plate 2, arrowed) and, to the south, to High Casterton (SD 630786), *c.* 3 km to the north of Burrow in Lonsdale. Both of these sites are, in turn, in visual contact with their nearest fort (and, incidentally, with each other, although at extreme range). Both are within metres of the Roman road and both

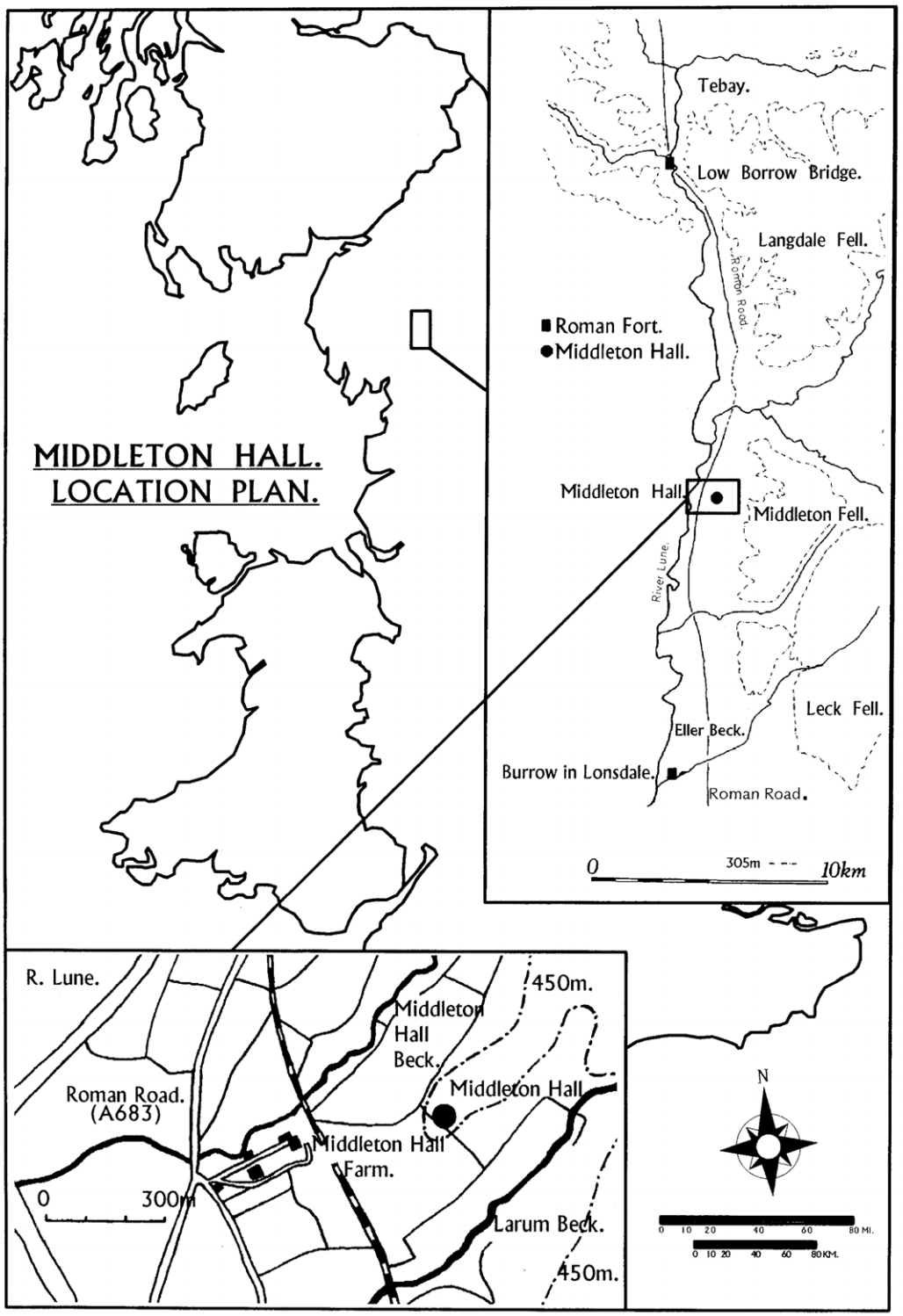
MIDDLETON HALL.
LOCATION PLAN.
Tebay.
Low Borrow Bridge.
Langdale Fell.
Roman Road.
Roman Fort.
Middleton Hall.
Middleton Hall.
Middleton Fell.
River Lune.
Leck Fell.
Eller Beck.
Burrow in Lonsdale.
Roman Road.
0
305m
10km
R. Lune.
450m.
Middleton Hall Beck.
Roman Road. (A683)
Middleton Hall
Middleton Hall Farm.
0
300m
Larum Beck.
450m.
N
0 10 20 40 60 80 MI.
0 10 20 40 60 80 KM.

FIG. 1.

represent good look out and communications positions in their own right, so that the forts could have been linked via a three tower system. It must be pointed out, however, that there is, as yet, no evidence whatever for the presence of towers on either of these sites (Low Carlingill does show signs of ancient quarrying), despite the fact that neither has been greatly disturbed by the plough. Other positions would, no doubt, have been possible, but these are by far the best relay points available, the lowest in altitude (Low Carlingill: *c.* 250 m, High Casterton: *c.* 120 m) and the only ones within a reasonable distance of the road. This means that, unless further evidence can be produced, the existence of any such Roman signalling system in Lonsdale might be doubted, especially since it is not immediately obvious what function it might have performed, given the relatively primitive nature of Roman signalling techniques. Since Roman towers seldom, if ever, stand alone, unsupported by a wider system, this may, in turn, cast at least some doubt on a Roman identification for Middleton Hall, unless this can be confirmed by the site itself.

Moreover, the position is equally suitable for a burial mound, for there are quite a number of prehistoric cairns and other structures known in the area, notably to the south around the Leck Beck (*c.* SD 646785), many of which occupy similar positions on spurs, high above the valley floor.

The Site

Surface Survey

The results of a planning survey and three levelling sections[5] are shown in Fig. 2. and it will be readily apparent that neither Lowndes' nor Higham and Jones' site descriptions are entirely accurate. The feature is not a mound surrounded by either a ridge or a single ditch, but a mound surrounded by a double ring ditch, for which the apparent bank is simply an inter-ditch ridge. The mistakes are understandable, however, for the surface traces of the outer ditch are very faint (Plate 1) and, although they do show up from the air and in resistivity plot-outs (Fig. 3) they are easy to miss on the ground, especially when the grass is not closely cropped. Indeed, the outer ditch only shows clearly on the levelling sections when the height differentials are exaggerated by a factor of ten (as Fig. 2). Furthermore, the inter-ditch area is not simply an undug strip between two ditches, but does appear to have been built up slightly above its natural level, making it resemble a rampart.

There are strong surface indications of an entrance break through these 'defences' in the north-west, the side nearest the Roman road, with a gap in the inter-ditch mound and distinct shallowings of both ditches which may be the remains of causeways. There is also a barely discernible hollow in the north-western side of the central mound as though the site has been dug into at some point and then backfilled. The central mound, like the inter-ditch area is built up above the natural ground surface, but it has a flat top.

So much is quite consistent with a Roman tower, but there are additional factors which make such an identifiction rather more difficult to accept. For example,

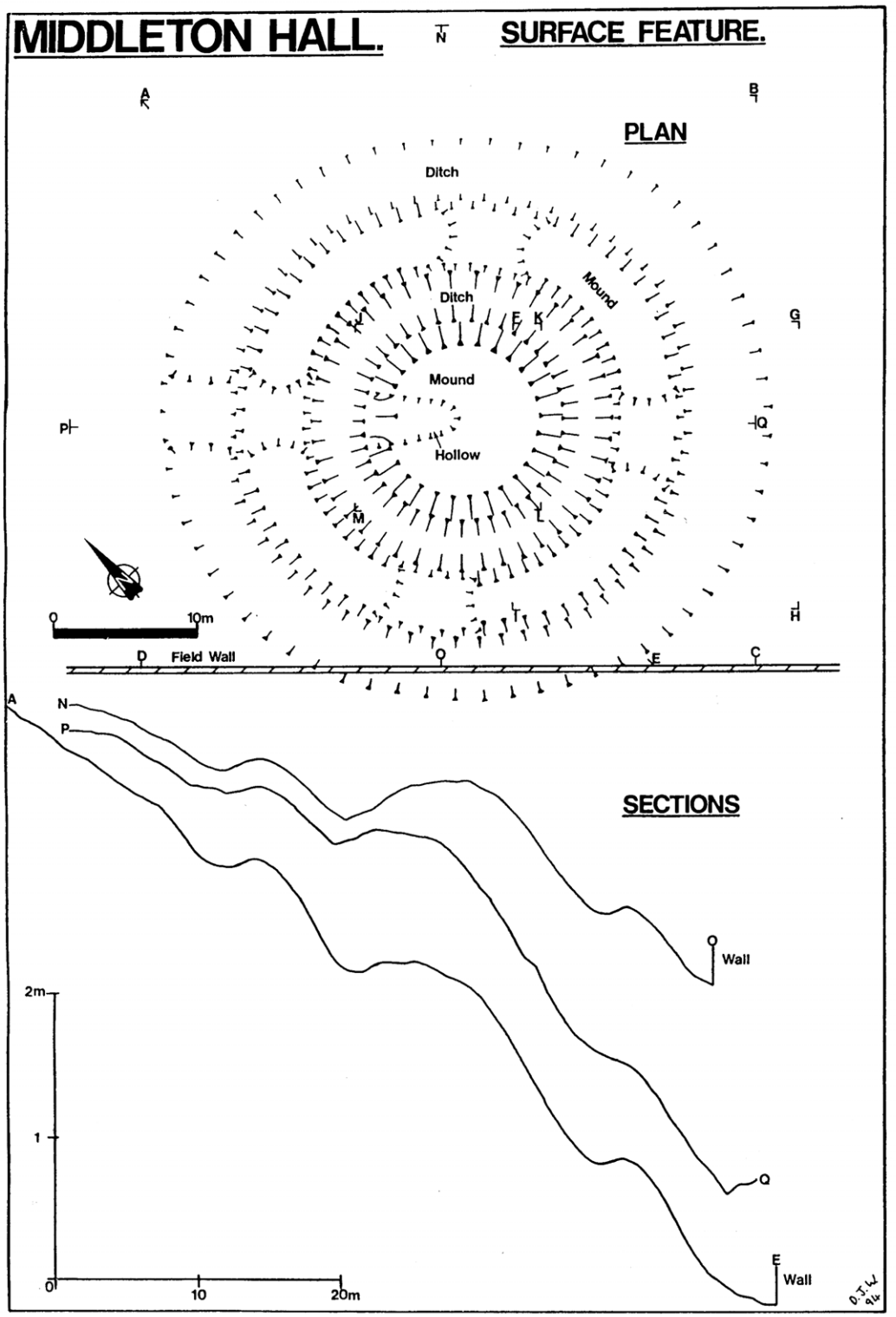
MIDDLETON HALL.
N
SURFACE FEATURE.
PLAN
Ditch
Ditch
Mound
Mound
Hollow
Field Wall
0
10m
SECTIONS
Wall
Wall
2m
1
0
10
20m

FIG. 2.

despite the superficial resemblance to the Stainmore towers given to it by its double ditches, the site is so very much larger as to seem unlikely to be Roman. In the writer's experience of Roman tower sites, both in Britain and abroad, their external diameter almost always falls within a range of between 20–25 m even on double ditched examples. Indeed, the average external diameter of single and double ditched Roman towers is almost identical, so that it is presumably the inner ditch that was the extra feature not the outer. Consequently, double ditched specimens usually have a much smaller central area available, barely enough for the tower itself and sometimes a timber palisade; whereas some single ditched examples, such as those on the Gask Ridge in Scotland,[6] had room for an internal turf rampart, despite lying towards the lower end of the size scale. Middleton Hall, on the other hand, has an external diameter of 43 m, measured east-west, or 39 m measured north-south: almost twice the size of a normal Roman tower site.

The dimensions just given also show the outer ring ditch to be rather a poor circle, being somewhat flattened in the north-east and south-west. This again, would be unusual in a Roman structure since Roman tower ditches are often such perfect circles that they were presumably laid out using some large scale equivalent of a pair of compasses, a simple enough job given a nail and a length of string. Interestingly, however, both the central mound and the inner ditch at Middleton Hall are much more truly circular. They measure 14 m and 21 m respectively in external diameter and, in so far as it is possible to judge when working with an, albeit lightly, ploughed surface feature, neither deviates more than 30–40 cm from a perfect circle. The inner ditch and central mould also have an exact common centre, whilst that of the outer ditch is very slightly displaced, lying *c.* 50 cm away to the north-west. This is a minor deviation but it might, just, be an indication that the inner and outer ditches were not dug at the same time, as might the fact that at 3.5 m and between 5 and 6 m wide respectively, as surface indications (the true widths will, no doubt, be somewhat smaller), they are not the same size. Ultimately, however, the existence and order of any such development sequence could not be proved without excavation and so further speculation is probably futile for the moment.

In addition to its size, another factor makes it hard to accept the site as a Roman tower, for a closer examination of the surface indications reveals a further three faint possible entrances, making four in all, occupying roughly the four secondary compass points. Roman towers, on the other hand, seldom, if ever, have more than a single entrance. These additional 'entrances' all take the form of a slight break in the inter-ditch mound and a shallowing of the, already faint, outer ditch, but, unlike the better defined north-western 'entrance', they show no discernable signs of a causeway across the inner ditch.

Once again there are signs of irregularity, for the 'four entrances' do not lie quite at right angles to one another, although the north-east and south-western examples are set at 180°. The north-west 'entrance' is at 97° to the north-eastern example; the north-east 'entrance' is at 87° to the south-eastern break and the south-west break is 93° to the south-east and 83° to the north-western 'entrances'. Furthermore, whilst a line drawn through the centre lines of the south-west and north-eastern 'entrances' runs exactly through the circle centre of the outer ditch (not the inner), on a true heading of 51.5° east, a similar line drawn through the other two 'entrances' does not pass through either ditch's centre. The 'entrances' also vary in width between 3 m

PLATE 1. Middleton Hall from the north. Notice the very extensive view south.

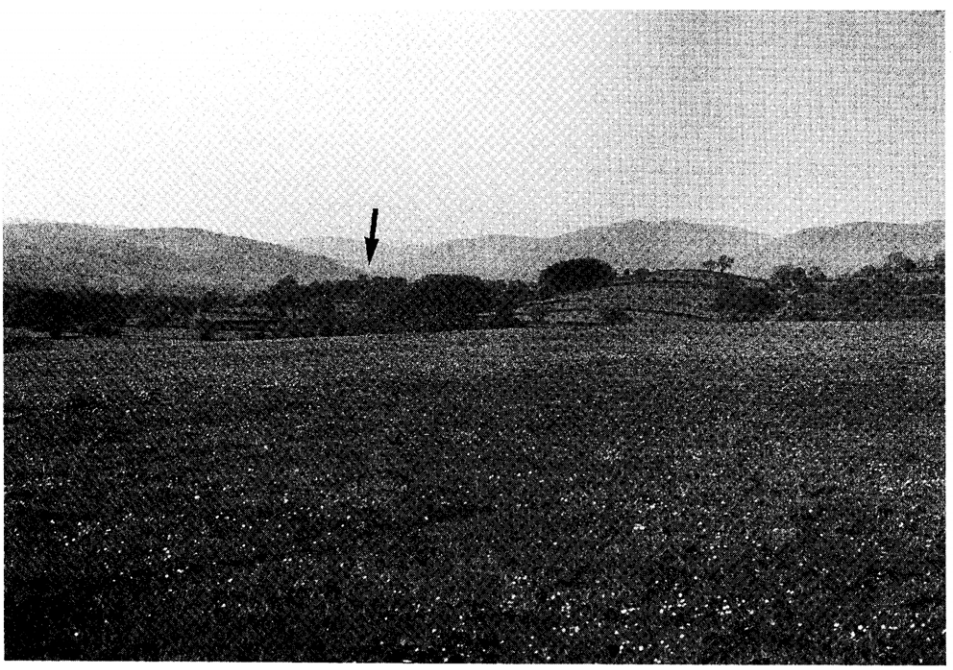

PLATE 2. The view north from Middleton Hall. Low Carlingill is arrowed.

and 4.5 m as surface features, but this may well be the result of the slumping of material due to erosion and ploughing and their original widths may all have been somewhat larger and more equal.

Lastly, although there were quite a number of mole hills present on the site, inspection of these produced no finds of any kind.

Resistivity Survey

Three resistivity surveys were carried out on the site, all using a Martin Clark five probe metre in Werner configuration. The first covered a grid of 43 m e–w × 40 m n–s (rectangle A, B, C, D, in Fig. 2) and took in all of the site north of a dry stone field wall (Plate 1 and Fig. 2) which cuts off the south-westernmost extremity of the outer ditch. This survey was conducted using the highest resolution setting of which the instrument is capable, 100 ohms, with readings taken at 1 m intervals. Since the site as a whole has a rather high average resistance, however, a number of areas, notably the central mound and south-eastern 'entrance', produced readings that ran off the instrument's scale so that no detail could be discerned. These were, therefore, re-surveyed at the lower electrical resolution of 1000 ohms. Thus Grid 2 covered an area $(20\ m)^2$ over the south-eastern 'entrance', which was again surveyed at 1 m intervals (F, G, H, I, in Fig. 2), whilst Grid 3 covered a $(13\ m)^2$ area over the central mound (J, K, L, M, in Fig. 2) which was surveyed at a higher spacial resolution with 0.5 m intervals.

The results can be seen in computer generated form[7] in Figs. 3 and 4 with Grids 1 and 2 combined on Fig. 3 and Grid 3, in an image enhanced form, in Fig. 4. Fig. 3 shows the site's resistance plotted onto the surface plan, and maps areas of low resistance as dark. Fig. 4 plots the central area only with low resistance shown as light, and it should be noted that the matrix printer used to produce this figure distorts the image slightly, hence the need for different vertical and horizontal scales.

For the most part, the geophysical results merely confirm those of the surface survey, although there are few additional details and one or two oddities. For example, the two circular bands of low readings in Fig. 3 confirm the existence of the two ditches visible at the surface, but the band of high readings towards the top left hand corner hints at the presence of an upcast mound, which is not visible either on the ground or on air photographs. This would, if confirmed, suggest that the ditches may not have been dug simply as quarries to provide material for the central and inter-ditch mounds as is normal on barrow sites. The outer and inner ditches show as *c.* 4 m and *c.* 2.5–3. m wide respectively, which may be closer to their true values, and the outer ditch appears rather less distinctly than the inner and so may be somewhat shallower. Lastly, the lowest readings from the outer ditch in the northern part of the site occur towards the apparent inner lip of the visible surface feature, so that the ditch may either have had an asymmetrical profile, or may have been considerably narrower than the surface indications would suggest, in which case the outer ring as a whole may have been slightly more oval in shape even than suggested above.

The 'entrances' produce rather interesting results. The breaks in the inter-ditch

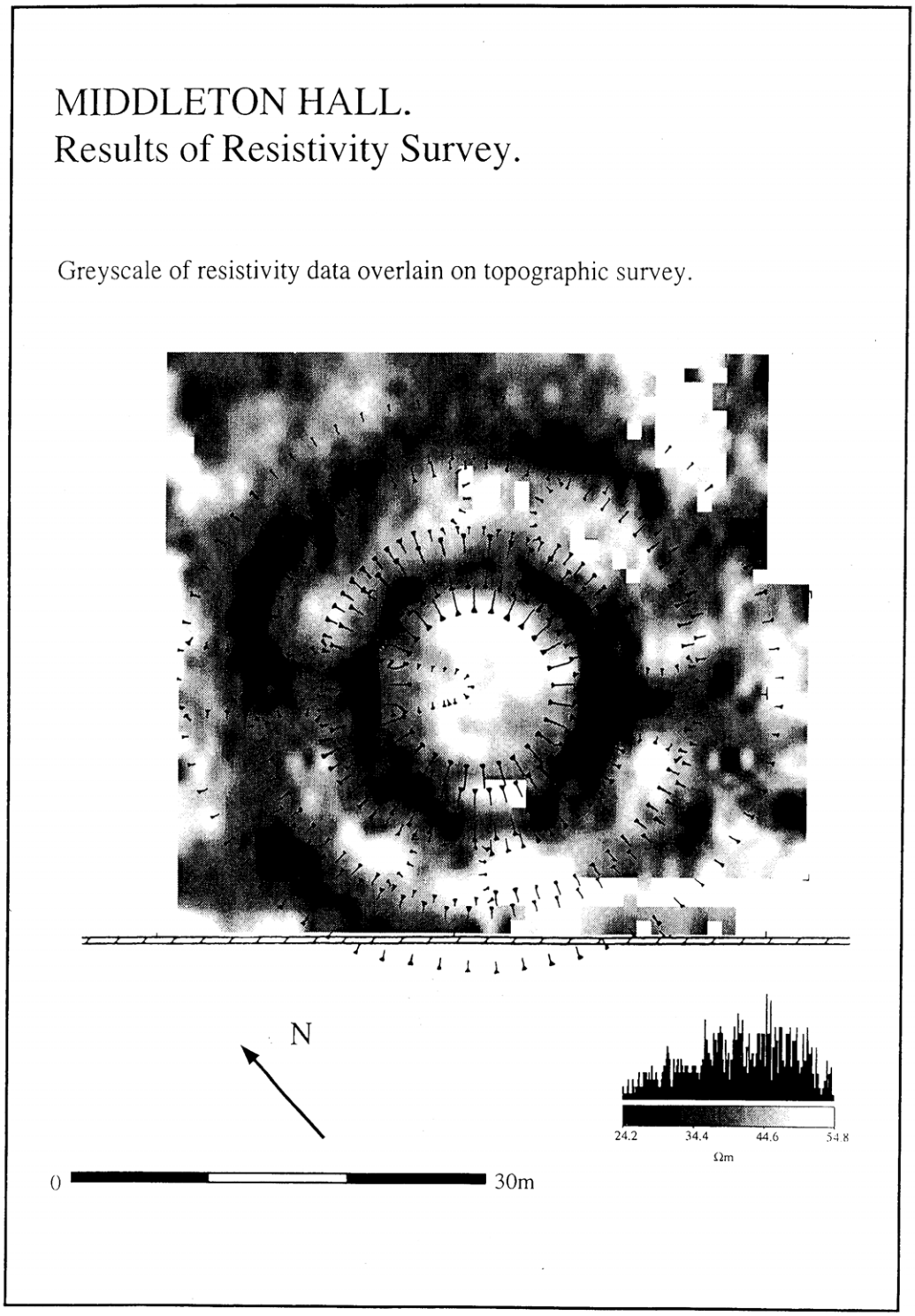

FIG. 3. Resistivity plotting by English Heritage Ancient Monuments Laboratory.

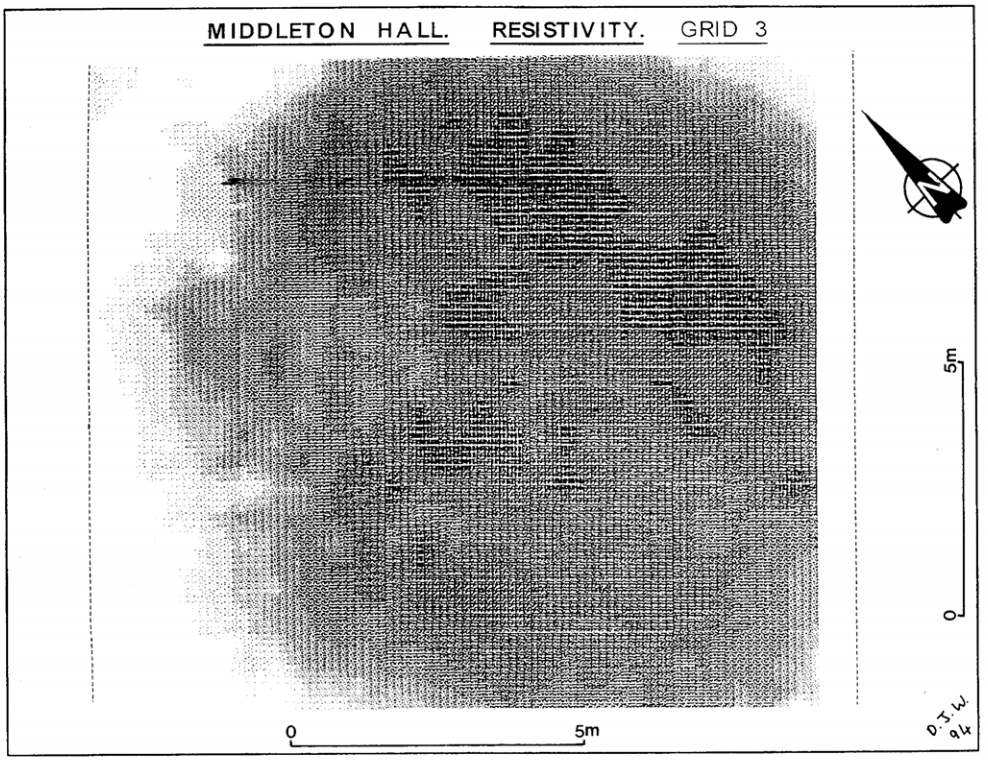

FIG. 4.

mound in the north-west and south-east show very clearly as areas of lower resistance, but those in the north-east and south-west, although visible, are less marked. Indeed, the north-east entrance produced a number of readings high enough to run off the scale of the metre. Furthermore, there are no clear signs of the visible 'causeways' in either ditch opposite the north-western 'entrance'. The north-east and south-west examples did produce higher readings in both ditches, however, suggesting that these may, if nothing else, be rather shallower here, although to judge from the feel of the ground as the electrodes were inserted, the ditch silt or backfill at the southern end of the site contains a great deal of stone, which might account for this part of the anomaly.

Perhaps most interestingly, the south-eastern and, to a lesser extent, north-western 'entrances' show bands of high readings running across the outer ditch to form inward pointing funnel shapes as if the outer ditch forms a butt end on either side of both 'entrances'. This feature has no parallel in the inner ditch and, since it is not visible at the surface, its significance cannot be gauged without excavation.

Despite considerable computer enhancement, Grid 3 (Fig. 4) shows little definite detail in the central area. The north-western inner ditch 'causeway' is just about visible here, but there is little or no sign of any internal structure. The slight hollow already mentioned in the north-west shows as an inward pointing triangle of lower resistance, which may further confirm that the site has been dug into at this point, and a second area of low readings in the south may indicate further disturbance.

The very centre also produces low readings which could be a sign of either a pit or of yet more disturbance, but the faint apparent square feature near the exact centre could well be a computer artefact. There may just be signs of a number of pits towards the north-west and of a slot of some sort running around the western hemisphere, but again it is impossible to be certain and it is unlikely that further information can be gained without excavation. The entire central area did, however, feel very noticeably more stony than the rest of the site and, in places, large stones lying almost immediately beneath the surface made it very difficult to insert the electrodes.

Conclusions

Given its size, the possibility of four entrances and the irregularity of its outer ditch, the site does appear more likely to have had a prehistoric rather than a Roman origin and its original interpretation as a barrow may well be correct. But, this does not rule out the faint possibility of a Roman re-use of what would have been virtually a ready made site and, in view of its near perfect signalling position, the possibility of such a scenario should still be born in mind. It is noteworthy, for example, that the apparently deeper and very much better preserved inner ditch is both more perfectly circular and of a much more constant width than the outer ditch.This ditch also shows visible signs of only one entrance causeway, and it may not be co-incidence that this lies on the side facing the Roman road, whilst, at 21 m in external diameter, it also fits comfortably into the normal size range for Roman tower ditches. The presence of an external upcast mound may also be suggestive, since barrow ditches seem normally to have been dug simply for the material they provided (for which purpose a double ditched arrangement would anyway be rather inefficient) rather than for defence or, indeed, any other purpose in their own right. Given all this and their slightly different centres, it would certainly not be difficult to believe that the inner and outer ditches were not dug at the same time or, at least, that the inner ditch had been modified at some point. Nevertheless, it cannot be stressed too highly that this is, at the very best, only speculation and so little more can be said without excavation.

Parallels

The writer has been unable to find any exact parallels for the site, despite considerable research. But three Bronze Age/Beaker Period sites have produced some similarities. For example, Grindale in East Yorkshire[8] is also double ditched and has at least two entrances, although it is a good deal less regular in shape, whilst the double ditched site of Barnack (Cambs) has a similar shape, but no apparent entrances.[9] Ravenstone (Bucks), on the other hand, is single ditched and very much smaller, but this has produced four entrances.[10]

Notes and References

1 R.A.C. Lowndes, '"Celtic" Fields, Farmsteads and Burial Mounds in the Lune Valley', *CW(2)*, lxiii, 79f. W.G. Collingwood, quoted in Anon. 'Proceedings: Autumn meeting', *CW(2)*, xii, 411, may also be referring to the same site.

2 N.J. Higham, 'An Aerial Survey of the Upper Lune Valley' in N.J. Higham (ed) *The Changing Past* (Manchester, 1979), 32–34 and pl 4.I: N.J. Higham and G.D.B. Jones, '*The Carvetii*' (Gloucester, 1985), 51 and fig 25.

3 N.J. Higham and G.D.B. Jones, '*The Carvetii*' (Gloucester, 1985), 47f and fig 23.

4 D.J. Woolliscroft and S.A.M. Swain, 'The Roman 'Signal' Tower at Johnson's Plain, Cumbria', *CW(2)*, xci, 19–29.

5 My thanks to Mr C.B. Harrison-Beck and his tenant Mrs H. Watson for allowing me access to the land, to Dr A.G. Keen and Fr B. Hoffmann for their help in the field and to Dr N.J. Higham for permission to use his Lonsdale map as part of Fig. 1.

6 D.J. Christison, 'Excavations Undertaken by the Society of Antiquaries of Scotland of Earthworks Adjoining the "Roman Road" Between Ardoch and Dupplin Perthshire', *P.S.A.S.*, 35, (1901), 6–43 and A.S. Robertson, 'Roman "Signal Stations' on the Gask Ridge', *Transactions of the Perthshire Society of Natural Science*, (Special Issue) (1974), 14–29.

7 My thanks to Mr M. Cole and the English Heritage Ancient Monuments Laboratory for very kindly producing the Computer print-out used in Fig. 3 and Herr E.A. Hoffmann of the University of Münster for writing me the necessary computer image enhancement software to produce Fig. 4.

8 T.G. Manby, 'Excavation of Barrows at Grindale and Boynton, East Yorkshire, 1972' *YAJ*, 52, (1980), 25, fig. 2.

9 P. Donaldson, 'The Excavation of a Multiple Round Barrow at Barnack, Cambridgeshire, 1974–1976', *Antiq. J.* 57, (1977), part II, 200, fig. 2.

10 D. Allen, 'The Excavation of a Beaker Period Monument at Ravenstone, Buckinghamshire, in 1978', *Arch. J.*, 138, (1981), 76, fig. 3 and 109, fig. 16.