

I.

NOTES ON AN ARTIFICIAL MOUND AT BONNYBRIDGE.

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This mound is situated, within what used to be the Barony of Seabegs, on land that now belongs to Messrs Smith & Wellstood, Ltd., ironfounders, Bonnybridge. It stands on the north side of the Antonine Ditch, about 130 yards west of the road that leads to Bonnybridge High Station, and is one of several apparently similar structures which are, or were once, to be seen on or near the line of the Roman Wall. The two others which survive are the Peel of Kirkintilloch and a well-preserved 'tumulus' near the Parish Church of Cadder.¹ A fourth was visible during the eighteenth century not far from Castlecary—'about a furlong east from the fort, near a house or two called *Booneck*'²—while a fifth, known as the Maiden Castle,³ was destroyed in 1894 during the building of Watling Lodge, a house a little to the west of 'Lock Sixteen' on the Forth and Clyde Canal.

The earlier writers were agreed in believing the Peel of Kirkintilloch to have been one of the original 'stations' on the Wall, but there was some difference of opinion regarding the remainder. At Bonnybridge, and also at Cadder, Horsley and Roy regarded the structure as an 'exploratory mount,' an integral element of the Roman defence, whereas Maitland was convinced that it was 'either a Scottish or Pictish tom-moid, or court-hill.'⁴ Before the end of the nineteenth century it had come to be generally recognised that the Peel of Kirkintilloch had been a medieval fortress of the motte-and-bailey type. But the age of the others and their purpose continued to be obscure until 1913, when Sir George Macdonald and Mr A. O. Curle dug a trench across the ditch of the Cadder tumulus, and obtained evidence which proved that, in that case at all events, Maitland had been right in holding that it was not the Romans who had been the builders.⁵

An opportunity to learn something about the Bonnybridge mound occurred last summer. An extension of the foundry is in contemplation, and to make room for this it was necessary to divert the road which had hitherto served the block of houses called Singer's Place. On

¹ Macdonald, *Roman Wall in Scotland*, 1934, pl. lviii, 2.

² Horsley, *Britannia Romana*, p. 171.

³ Macdonald, *op. cit.*, 1934, pl. lviii, 1.

⁴ *Hist. of Scot.*, vol. i. p. 174.

⁵ *Proceedings*, vol. xlix. (1914-15) pp. 108 ff.

hearing that the new road would have to be cut through the mound, the Rev. Thomas Miller of St Helen's communicated with Sir George Macdonald, who thought it desirable that an eye should be kept on the work while the road-making was in progress, in case anything of interest should emerge. As I was favourably situated for the purpose, Sir George asked me whether I would pay an occasional visit to the site. This I agreed to do, and the following notes are the result.

I have to thank the contractor, Mr T. N. Hunter, for willingly agreeing to let me come and go freely at any time. When it became

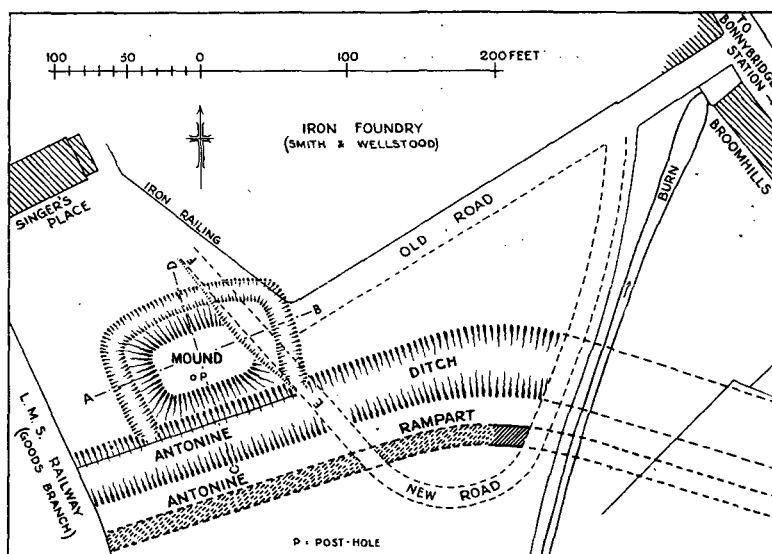


Fig. 1. An Artificial Mound at Bonnybridge: Plan.

clear that the information gained through his operations could be usefully supplemented by independent inquiry, permission for further digging was most readily granted by Mr Ure, the managing director of Smith & Wellstood, and also by the tenants in Singer's Place, on whose gardens it was sometimes necessary to encroach. Sir George Macdonald and Mr A. O. Curle, C.V.O., have visited the site from time to time, and have helped me with advice. The illustrations, which are based on my own plan and sections, have been drawn by Mr C. S. T. Calder.

It will be seen from the plan (fig. 1) that the line of the new road takes the shape of a very wide-mouthed letter U, and that soon after branching off from the old road it crosses the Antonine Ditch and Rampart, recrossing them again as it approaches the mound. To

prepare the formation bed, the whole of the turf had, of course, to be cleared away, and further excavation was sometimes required in order to provide an easy gradient, the depths of the cuttings varying with the irregularities of the natural surface. Where it was first crossed, the Ditch had been fully 50 feet wide, while the berm or space between it and the Rampart was 18 feet broad. The stone foundation of the latter, which was exposed on the west side of the road, had the normal width of 14 feet, and the material used for it here had been broken freestone, not natural boulders. The superstructure had almost entirely disappeared, but a few faint traces of lamination were observed immediately above the stones while the cutting was still fresh.

On the western half of the U the evidence regarding the Antonine Rampart was less satisfactory. Here the stone foundation had been torn up and was represented only by some small pieces of freestone scattered about on the surface. Its course, as entered on the plan, has been arrived at by assuming a uniform breadth of 18 feet for the berm. About the position of the Ditch, however, there is no manner of doubt. Its southern edge was clearly enough defined by a change in the character of the soil, and for purposes of verification a narrow trench was carried along the margin of the road. It was difficult to estimate its width, for the forced soil continued well into the cutting which was made into the east side of the mound by the contractor, the reason being that the road was now passing over the junction of the Antonine Ditch with a much narrower ditch which had surrounded the mound on east, north and west, and which it will be convenient to speak of in the sequel as the M. ditch. The inner edge of this was found by digging on both sides of the road at points which will be apparent from fig. 1. Its track, barely 16 feet wide, was distinctly marked on the formation bed of the road, as well as in the west side of the cutting where the two intersected one another farther north, the dark earth of the filling showing up very plainly between the masses of more lightly coloured soil on either side.

The position and direction of the cutting will be clear from the plan (fig. 1). Since it traversed the slope, it was naturally deeper at one side than at the other—7 feet on the west of the formation bed, as against only 1 foot 6 inches on the east, those being maximum measurements, taken opposite the middle or highest part of the mound, where the quantity of soil that had to be moved was greatest. While the section along EF was still perpendicular—that is, before it had been given the batter necessary for stability—and so long as it was still fresh, the conditions for observing the various kinds of soil displayed were favourable. Accordingly, at this stage the lines of demarcation were carefully noted

and measured and a drawing made (fig. 2). It must, however, be remembered that the section crosses the mound at an angle, so that its horizontal dimensions do not give a true conception of the width of the mound itself or of its ditch.

The dark line which can be seen stretching across the centre was obviously the residue of the vegetation that had covered the original surface. The fact that its mean level is a few feet higher than the level of the present surface round about proves that the mound has been

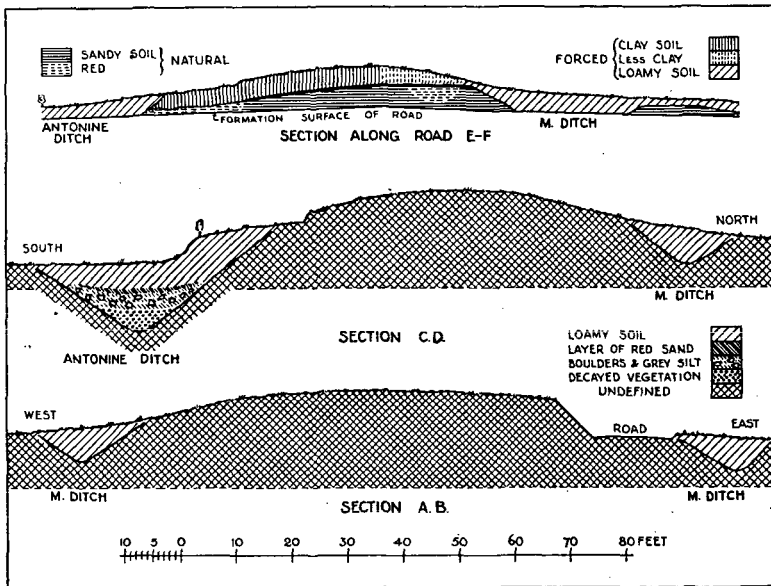


Fig. 2. An Artificial Mound at Bonnybridge: Sections.

reared on a slight natural elevation. Underneath the dark line, where horizontal hatching is used, the soil was natural, being sandy but firmly compacted, and containing an occasional boulder. Where the hatching is broken, the colour was red. Thus, the bowl-shaped patch of broken hatching on the right represents a vein of clean red soil, interspersed with numerous boulders. This vein was found to penetrate the mound and to extend beyond it, both towards the east and towards the west, in almost a straight line. It is an odd intrusion, but is in all probability natural. As it is under the dark line and as the two northern corners of the M. ditch have been cut through it, it certainly cannot represent a ditch dug for the defence of the mound. Above the dark line, where the hatching is perpendicular, the soil was more or less largely intermingled with clay. Doubtless this was part of the upcast thrown out

of the Antonine Ditch, and it will be observed that the farther one got from the edge of that Ditch, the thinner did the intermixture of clay become. The inclined hatching denotes soil of a rich loamy character, covering the M. ditch at the north end of the section, and spreading at the south end, not only over the Antonine Ditch, but also over the adjacent part of the M. ditch. It is reasonable to suppose that most of this soil has come from the mound and that a gradual process of denudation accounts for the greater amount of humus which it contains. Many boulders were met with in the course of the excavation, but I have no explanation to offer of their presence.

Besides the construction of the new road, the contract included the removal of a great quantity of soil from the area to the north-east of the mound, the object being to pave the way for the extension of the premises by reducing the level of the surface to that of the floors of the existing foundry-building. On the working-face of the excavation, which was as much as 8 feet deep and was close to the line marked 'iron railing' in fig. 1, the dark filling of the M. ditch could be readily distinguished. From the slice of it which was cut away to give a finishing touch to the slope at the side of the excavated area, there came a fragment of the rim of a vessel of light-coloured ware. It is unfortunately not possible to say at what depth the sherd had been lying, as it was picked up after the soil in which it was embedded had tumbled to the bottom of the cutting. But it had a very distinctive contour (fig. 3), and Mr Curle had no hesitation in dating it *circa* 1200 A.D.



Fig. 3. Section of Rim of Pottery Vessel. (†.)

Interesting as was the information which the contractor's work had yielded, it left a number of points unsettled, notably the shape of the M. ditch and its exact relation to the Antonine Ditch. With a view to getting further light upon these, a number of additional trenches were dug. It turned out that the M. ditch had had a width of about 17 feet, measured at a mean depth of fully a foot below the present surface. It had been 6 feet deep, and its shape had been that of an irregular V, the counterscarp descending at a sharper angle than the scarp.¹ In all the sections the filling was uniform, consisting of more or less loamy earth such as might have slipped down from the mound, and containing a very few scraps of pottery and pieces of iron slag, of

¹ See Sections AB and CD in fig. 2. In looking at these it must be borne in mind that the portions which have a diamond hatching, and which are described as 'undefined,' were not actually trenched. Only the ditches were opened up. In the case of the Antonine Ditch only the northern half was actually cleared, but the other half was presumably similar.

which something will be said later. The two northern corners were rounded, but the two southern ends, although they tended to converge, ran into the Antonine Ditch, each in a straight line, in a manner which left no doubt as to the Antonine Ditch having been there first (fig. 1). In a section near the north-west corner the bottom was filled with stones. As some gravel was observed outside the ditch here, on the west side at a depth of about 2 feet, it seems possible that the approach to the mound had been at this point.

The Antonine Ditch was sectioned directly opposite the mound, when it was found to be 42 feet wide and almost 12 feet deep. The difference in size is well brought out in the section CD (fig. 2), which also shows the difference in the character of the filling. The details of the latter deserve to be recorded. For a depth of $4\frac{1}{2}$ feet we cut through loamy soil, similar to that which had been found in the M. ditch. Then came a layer of red-coloured sand which varied in thickness. In our first trench (CD) it was 8 inches thick in the middle of the Ditch, but tapered away towards the north and disappeared before reaching the counterscarp.¹ Underneath the red layer was a layer of grey-coloured silty soil, about 3 feet deep, in which numerous large stones were embedded. Finally, below the silt was an accumulation of decayed vegetable matter, closely resembling peat. This accumulation, which had a maximum depth of $3\frac{1}{2}$ feet, contained some branches that had belonged to bushes of a sturdy growth. Varying in thickness from a mere twig to what may have been the main stem, $2\frac{1}{2}$ inches in diameter, the branches could be easily cut with the spade. When this was done, the wood looked fresh; but it rapidly turned black on exposure to the air.

Mr M. Y. Orr of the Royal Botanic Garden kindly examined the vegetable remains under the microscope. He reports that the branches were of willow. As he also found at least one willow-leaf in the peaty matter, it is safe to conclude that willow-trees had been growing in the Ditch when the silt was laid down. How they came to be buried, it would not be easy to say. If the silt is pure silt, then there must have been water in the Ditch when it was deposited. It did not appear to be stratified, but, if the stones embedded in it were thrown in when it was in a soft state, any stratification that existed would be destroyed. Is it possible that a dam has been made in the Ditch at some time? If so, the obstruction must have been where the new road now runs, for in trenches dug to the east of that line it was necessary to go much farther down before any trace of

¹ Three other trenches, dug later, proved that it had not been continuous all along the south face of the mound.

silt appeared.¹ The dam, if there was one, could hardly have been made for flooding the M. ditch, as the water would have escaped over the south lip of the Antonine Ditch.² Nor is there any means of knowing whether it was by accident or by design that the stones were in the silt. What is certain is that there has been a level of occupation above silt and stones, for on the top of them there were lying numerous fragments of bone—too minute to be identified—and several small pieces of pottery. A piece of iron slag came from the red layer. Higher up, the filling was exactly the same as that of the M. ditch. As the pottery, too, was similar in character, it follows that the mound had been occupied at a time when the Antonine Ditch was half-filled with decayed vegetable matter, silt and stones, its own ditch being meanwhile empty.

Regarding the composition of the mound itself there was not much to be learned. With a view, however, to verifying the source of the clayey stratum which appears in the section EF (fig. 2), a short trench was dug over the counterscarp of the Antonine Ditch a little way to the east of the new road. The result of the incision was to confirm the conjecture that the material had been thrown up by the Roman diggers. Clay was encountered at a depth of 5 feet, showing that there was a bed of this material through which the workmen would have to cut. It is worth adding that a trial pit sunk near the same spot but on the north side of the lip of the Ditch gave a depth of fully 3 feet for the upcast. That the clay bed continued for some distance farther west was proved by a trench dug on the top of the mound near its western end, where clay, similar to that which appears in section EF (fig. 2), was found at a depth of 18 inches. This last trench also revealed a post-hole, 2 feet deep, in the position marked in fig. 1. At the bottom were the stones that had served for packing the post, and among these was a piece of iron slag. Otherwise the hole was empty.

The manner in which the ends of the M. ditch tend to converge, as they approach the Antonine Ditch, almost suggests that the mound has been elliptical (fig. 1). But in the anonymous account of a journey made along the Roman Wall in 1697, preserved among the Portland Papers, it is described as "an heap of earth on the outside of the ditch of a square figure, about sixty feet long, forty broad, and twenty high; flat on the top."³ What Horsley says about it seems to bear out this view

¹ In one trench the silt was 10 feet below the present surface, which, however, is here $2\frac{1}{2}$ feet higher than the present surface opposite the mound. The true difference in the level of the silt was, therefore, 2 feet 4 inches.

² Unless, indeed, the obstruction was carried all the way across the berm, in which case the remains of the Rampart might have formed the southern bank of the dam.

³ *Hist. MSS. Comm.: Portland Papers*, vol. ii, p. 57.

of its shape. He calls it "a beautiful exploratory mound, not unlike that near *Calder* church."¹ As the *Cadder* tumulus, which is still in good preservation, is rectangular, we must assume that the *Bonnybridge* example was of similar form. Within the ditches it measures about 97 feet along the major axis and 65 feet along the minor. These figures are basal, and it will be noted that they agree in ratio with the measurements given by the anonymous traveller for the size of the top—60 feet by 40 feet. At present its summit is about 9 feet higher than the surface of the new road which skirts it on the east, and fully 13 feet higher than the surface of the field on the south. If the slope of the scarps of the ditches and the 'angle of repose' for the soil of the mound be taken into consideration, it will be seen that the original height of the mound may not have exceeded by more than a few feet the height it stands at to-day.

In the *Bonnybridge* mound, then, we have the essential features of a 'motte'—a heap of earth, surrounded by a defensive ditch—and the inference that it was a 'motte' is supported by the pottery fragment which Mr Curle dates to about 1200 A.D. In the excellent description of these 'mottes' which Mrs E. S. Armitage gave to the Society more than thirty years ago,² it is pointed out that they were the work of the Norman invaders. Quickly erected, and having attached to them a court-yard or 'bailey,' they were suitable in an age when vigilance and means of defence were alike necessary. In Galloway and the south-west they are often round or elliptical, but elsewhere in Scotland they are usually rectangular. Their weakness lay in the wooden structure that surmounted them. As this could be easily destroyed by fire, it was by and by superseded by the stone tower.

At *Bonnybridge* we can fortunately appeal, not only to analogy, but to documentary evidence. In 1891 the late Dr Christison collected from the Great Seal Register fifteen allusions to particular 'mottes' and seven to 'motehills.' Among these was one to "*lie mot de Seybeggis vocat. lie Turchill.*"³ Although Dr Christison does not say so, there cannot be the slightest doubt as to the identity of our mound with "the motte of Seabegs." The reference occurs in a charter of 15th March 1542/3, confirming a charter of fourteen years earlier, which recorded a transfer of the lands of Seabegs, with the right to select a

¹ *Britannia Romana*, p. 171.

² *Proceedings*, vol. xxxiv. (1899-1900), pp. 260 ff.

³ *Proceedings*, vol. xxv. (1890-91), pp. 210 ff. 'Turchill' is the form in which the alternative name appears in the *Registrum Magni Sigilli*. But the Rev. Mr Miller, who has examined the original, informs me that the true reading is 'Curthill,' i.e. Court-hill, implying that, after it had served its primary purpose, the mound had been put to another use. For examples of confusion between *c* and *t*, see *Proceedings*, vol. xxxix. (1904-5), p. 380.

priest for the Chapel of St Helen. The sasine was to be taken at "the motte of Seabegs, also called the C(o)urthill."¹ There is no other mound in the neighbourhood which could possibly answer to this description. The site of the Chapel of St Helen is on lower ground about 450 yards to the north. To-day the buildings that occupy it bear the name of Chapel Place, and General Roy calls the mound "the Chapel-hill." The 'motte' was perhaps selected as the scene of the ceremony of taking sasine because it was the original centre of the Barony.

It remains to say a word or two about the objects found. These were few in number and, for the most part, insignificant. By far the most important was fig. 3, which has already been dealt with. The rest of the pottery sherds were so fragmentary that Mr Curle hesitated to assign a very definite date to any of them, although their variety seemed to him to point to an occupation of some kind over a fairly long period. While several which came from the trenches cut to the east of the road can hardly be directly connected with the motte, they had an interest of another kind. Lying from 4½ to 5 feet below the modern surface, they suggested that this part of the Antonine Ditch had remained open to that depth until possibly as late as the eighteenth century. Mention has already been made of various lumps of iron slag which were found in the course of our excavations. Gordon remarks in his *Itinerarium Septentrionale*² that "Abundance of Iron and Lead Ore is dug up near this Hill, some of which I carried away with me, and, probably, the Romans, at this Place, might have had a Foundry for melting their Metal." That there must at some time have been a bloomery near the mound seems scarcely open to question. On the other hand, the position of the majority of the pieces which we obtained was such as to indicate that the smelting operations had been carried on in post-Roman days.³

Mr Ure was greatly interested in the discovery of iron slag, and had several samples analysed by the firm's expert chemist. At his suggestion two of the iron ingots from Newstead were similarly tested. As the ingots were in a more highly manufactured state, the iron content being as high as 98·2 per cent. in the one case and 99·05 per cent. in the other, a comparison with the Bonnybridge samples would hardly be relevant. But the metallic iron content of the latter was only 49·9 per cent., or actually less than that of some of the specimens

¹ A tradition of the uses to which the mound had been put lingered on until 1797. The *Statistical Account* says: "In the barony of Seabegs, near the canal, there is an artificial mound of earth, where courts and deliberative councils were formerly held, as appears by the name Mote, which the place yet retains" (vol. xix. p. 107).

² Page 57.

³ The only case in which there was even a shadow of doubt was that of the fragment at the bottom of the post-hole. But the date of the post-hole itself is quite uncertain.

of bog iron ores from Gairloch Parish, analysed by the late Dr Ivison Macadam.¹ The detailed analysis was—Ferric Oxide 69·85 per cent., Silica 27·9 per cent., Manganese Oxide 1·35 per cent., Sulphur ·04 per cent., with a trace of Phosphoric Oxide and of Lime. A sample of the layer of red sand from the Antonine Ditch was also analysed. After deduction of 45·62 per cent. of moisture, the analysis of the dry sample was as follows—Silica 83·36 per cent., Alumina ·29 per cent., and Ferric Oxide 17·11 per cent., with a trace of Lime.