

ART. XXVII.—*The Purpose and Date of the Vallum and its Crossings.* By F. GERALD SIMPSON and R. C. SHAW, M.R.C.S.

PART I. THE VALLUM.

THE EVIDENCE OF THE REMAINS.

IN 1908, as briefly reported in these *Transactions*, N.S. xiii, p. 395, a system of equidistant and opposite gaps in the north and south mounds of the Vallum was discovered. In part, it was a re-discovery. The Rev. John Horsley, alone among earlier observers,\* made three striking references to the presence of "breaks" in the north mound of the Vallum, in his *Britannia Romana* (pp. 140, 141, and 145). On the diagram, p. 158, N. II, the "breaks" are indicated by shading, in the north mound only. As the following quotations show, he pointedly disclaimed an understanding of their purpose, but, by clear inference, recognised their Roman date:—

BETWEEN RUDCHESTER AND HARLOW HILL. The breaks in the north *agger*, which are remarkable both here and in several other parts, deserve to be considered. They look like gaps made for carriages; but whether they are really for this purpose, or whether stones have been wrought out of it for paving *Severus's* military way, or whether they are only accidental, I shall not pretend to determine (*Ibid.* p. 140).

BETWEEN WALL HOUSES AND MATFEN PIERS. A little after it† has passed by the *Wall Houses*, it runs almost parallel both to the wall and the north *agger*, and within a few yards of the north *agger*; . . . . The north *agger* is high by intervals, but has great breaks in it, and is in the main ruinous; so that probably it required more

\* The three references to the gaps in Warburton's *Vallum Romanum* (pp. 42, 44, and 52) are exact quotations from Horsley.

† *i.e.* the Military Way.

pains and expense to level and prepare it for a pavement,\* than to lay the pavement quite new where they† have done it (*Ibid.* p. 141).

His failure to observe the gaps in the south mound is evident and puzzling. The vital detail, their equidistant arrangement, also escaped him. How nearly, however, he came to an understanding of it a further quotation proves:—

They are oft very numerous, continued for a good space, and within of thirty or forty yards (sometimes more sometimes less) one of another (*Ibid.* p. 140).

The credit for this all-important discovery must be given to Mr. William Hepple, then of Sook Hill, Haltwhistle, the foreman employed by the late Mr. J. P. Gibson, F.S.A. and the first-named of the joint authors of this paper, during the excavation of the fort on the Stanegate at Haltwhistle Burn in 1908.

This discovery, made first at Cawfields, speedily led to the recognition that a regular system of gaps extends throughout the length of the Vallum, untraceable to-day only where the mounds are too completely worn down by cultivation, or modified by other less obvious causes. "A system extending throughout the length of the Vallum" is the statement of a general rule from surface observation, the exceptions to which, *i.e.* those lengths of the earth-work in which the gaps do not appear in both mounds, tend only the more fully to prove, as they come to be understood by excavation.

Between 1908 and 1920, progress, in the hands of the first-named writer, was confined to surveying the gap system in different sectors of the Vallum, and to the observation: (1) of the disposal of the material obviously removed from the mounds when the gaps were made;

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\* Horsley believed that the Military Way was carried *upon* the north mound at several points (*Ibid.* pp. 99, 141, 143, 145, 146 and diagram, p. 158, n. 11). In September, 1920, this was proved by excavation to be the case between Limestone Corner and the Coesike ( $\frac{3}{4}$ -mile east of Sewingshields), except, as pointed out by Horsley, for a short distance opposite each milecastle.

† *i.e.* the Romans.

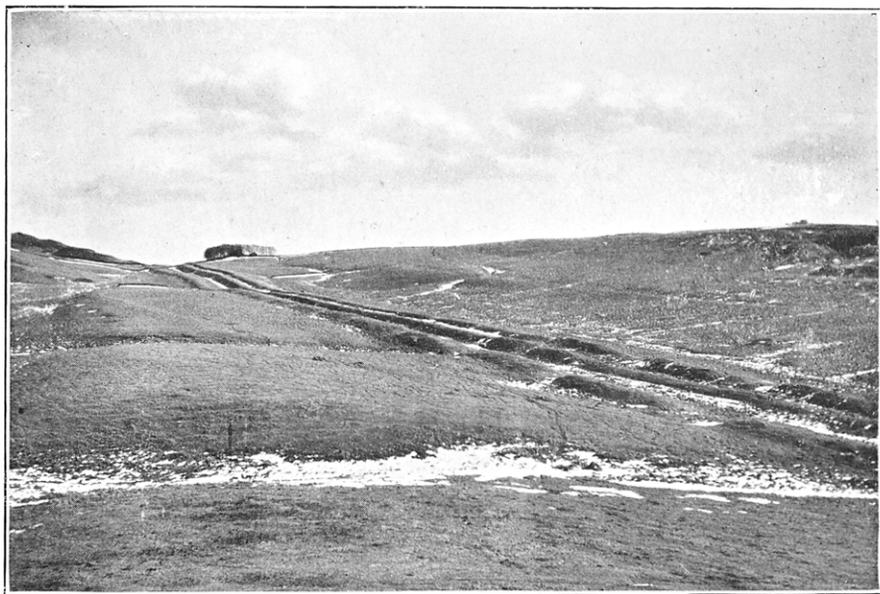


Fig. 1.—THE VALLUM AT CAWFIELDS, LOOKING EAST.



Fig. 2.—THE VALLUM AT CAWFIELDS, LOOKING NORTH.

To face p. 354.

(2) of similar gaps in the rampart of the Turf Wall; and (3) that the gaps never occur in the marginal mound, the inner, third member of the earthwork's cross-section which is shown by the character of its material to be of later construction than the original outer mounds.

No progress, however, was made in understanding the purpose of the system, nor in ascertaining its relative date, beyond the observation that the gaps appeared to increase the visibility of the mounds from a distance under some conditions of lighting, leading the first-named writer to the notion that the object of the system might have been the increased visibility of a Frontier "Mark."

In 1920, the question was taken up afresh by the writers jointly, and, in June of that year, "the missing link" in the gap system—corresponding causeways across the Ditch, obviously indicating crossings—was at last observed near Great Chesters (ÆSICA), and fully confirmed in September during the course of the Ordnance Survey Revision of Northumberland, by the further observation of such causeways near Carvoran (MAGNA), and Matfen Piers.

Before the purpose and date of these crossings can be adequately discussed, it is necessary to reconsider first the purpose of the Vallum itself, and its date (*i.e.* its place in the chronological order of the Frontier Works).

Until about 1890, the military purpose of the earthwork was invariably accepted, in spite of more or less clearly expressed surprise\* at the un-military character of many details of its design and course.

After that date, however, came an unmistakable change

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\* *E.g.*, G. Neilson, LL.D., *Per Lineam Valli*, 1891, pp. 46-7. Arguing against the southern defence theory, Dr. Neilson says:—"It cannot discount its glaring strategic disadvantages by an appeal to an average of gain: it must shew more adequate cause for its ever-recurrent weaknesses, and for its fundamental and prevalent disregard of those principles of fortification seen not better in the wall of Hadrian than in the vallum of Antonine. When this standard is applied the utter imperfection and ineptitude of the work are so manifest that it shrinks from the ordeal of comparison."

of opinion, first expressed by British and German military engineer officers,\* whose convictions as to its non-military purpose were increasingly confirmed as actual research proceeded.

It should ever be borne in mind, when the many theories which have flourished with such luxuriance along the lines of the Vallum are considered, that the very first *spade-work* dates not from 1822, as in the case of the forts, nor 1848 as in that of the Wall, but from so recent a date as 1893, when work was begun by the Society of Antiquaries of Newcastle-upon-Tyne (*Archaeologia Aeliana*, 2nd series, xvi, p. xxvi), followed in 1894 by the Excavation Committee of the Cumberland and Westmorland Society, under the leadership of the late Professor Haverfield, the late Mr. T. H. Hodgson, F.S.A., and Mrs. T. H. Hodgson.

A statement of the findings of the Cumberland Excavation Committee, based upon the work of five consecutive seasons, is given by Professor Haverfield in these *Transactions*, o.s. xv, pp. 337-344. The same conclusions are stated in Professor Haverfield's article entitled "Roman Britain" in the *Encyclopaedia Britannica*, ed. XI, 1911, vol. iv, pp. 584-6. The most recent report of work on the Vallum is given in these *Transactions*, n.s. xiii, pp. 389-396, by the first-named of the present writers.

The arguments from the two main groups of facts, *i.e.* the details of (1) its design, and (2) its course, which militate against the military purpose of the Vallum, may now be briefly re-stated.

In the first place, consider the design of the Vallum as indicated by its cross-section (fig. 3). The Ditch, which represents the centre-line of a symmetrical design, is flat-bottomed, and shallow in relation to its width compared with a V-shaped ditch—an impressively un-military section. The Ditch is flanked by two main mounds which

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\* General Pitt-Rivers, General Sir William Crossman, and General O. von Sarwey, Military Director of the German Limeskommission.

render the work neutral as regards military advantage against a northern, or southern enemy. This states the case of general average, in which the cross-section is taken as being horizontal. Theories of defence against north or south have always relied upon sloping sections, which are really exceptional in relation to the whole length of the works. Almost invariably, it has been overlooked that the total length through which the section is practically horizontal is certainly not less than the combined lengths of those portions in which the ground slopes to the north, or to the south, sufficiently to constitute a military advantage.

Again, the marginal mound (fig. 7) has no constant relation to the Ditch, varying continually in size when present, and entirely absent for considerable distances in several sectors. The intermittent character of this mound, considered by Horsley to be Hadrian's Wall—"Hadrian's Principal Agger"—(*Britannia Romana*, p. 117, and diagrams p. 158, N. 11), must, in the case of so singularly fair-minded an observer, have subjected his theory in the making to a strain which approached breaking-point.

Finally, it must be remembered that in no section through the mounds has any trace whatever of a palisade been observed.

Considering, secondly, the course of the Vallum: its general line appears to bear no constant relation to the physical features of the country through which it passes. Whatever considerations weighed with the engineers during the survey of its course, they were certainly not consistently those of military strategy. There is no indication that the Vallum endeavours to follow ground which always gives a southern command, or a northern, or that consequently it interposes, wherever possible, physical barriers such as marshland between itself and the country to the south, or to the north. Examples of the course where, for some distance along the lines, the command at

short range is a southern one are the Craggle Hill—Banks, Cawfields and Winshields sectors. On the other hand, on the Gilsland, King's Hill—Sewingshields and Portgate sectors the command is just as definitely northern.

Should a survey of this alternating "command" in hilly country, together with the total absence of anything of advantage worth the name in level country, fail to produce conviction of its non-military purpose, the evidence of particular points may be conclusively adduced.

Over any such course of sixty-six miles\* as that taken by the Vallum, isolated natural features, such as marshy depressions and abrupt elevations inevitably occur.

It may be re-affirmed that in a *military* scheme—the Wall itself is a standing testimony to this rule†—all such features would be incorporated if reasonably possible, or carefully avoided. Actually, however, the alternating or neutral treatment of such natural obstacles is the outstanding feature of the earthwork's course.

For example, though it skirts the *north* edge of the marshland between Great Chesters (AESICA) and Carvoran (MAGNA), and of that also between Shield-on-the-Wall and Winshields farms, it forsakes abruptly, between Peel Crag and High Shield, a course exactly similar to that throughout the last named sector, *i.e.* along the foot of the south slope of the Crags, and skirts the *south* edge of the marsh instead.

Again, at the west end of Walltown Crags, and south of the whinstone quarry, the command is distinctly southern. Only 500 yards to the east, however, is a small hill which completely overlooks the whole work from the south!

\* The Vallum apparently terminated at Newcastle-upon-Tyne (PONS AELII) on the east (*Brit. Rom.* p. 120), and at Burgh Marsh on the west (*Ibid.* p. 156).

† "Shooting over the country, in its onward course, it only swerves from a straight line to take in its route the boldest elevations. So far from declining a hill, it uniformly selects one. . . . But if the Murus never moves from a right line, except to occupy the highest points, it never fails to seize them, as they occur, no matter how often it is compelled, with this view, to change its direction" (Bruce, *R.W.*, 1867, p. 51).

Instead of encircling, or avoiding it, the Ditch is carried along its foot, while the south mound is not continued over its steep northern slope, but actually intermitted, dying away into the slope at one end, to re-commence at the other!

There are at least two further instances in which the south mound is thus merged into the slopes of an abrupt hill, which completely commands the whole work at "point-blank" range from the south; the first, that of Blake Law, five furlongs east of Walltown; and the second, a small hill opposite Mosskennels, the highest point in the long ridge already referred to, which overlooks the Vallum for nearly a mile between King's Hill and Sewingshields.

The well-known instance of Down Hill, so frequently cited as proof that the hill was enclosed as an element in a southern defensive scheme, is entirely negatived by the contrary instance cited above of the enclosure of the marsh between Peel Crag and High Shield, more certainly a source of weakness in a southern scheme than was Down Hill an element of strength!

Lastly, half way between Bradley and Housesteads, the course is not only neutral, but so weak as surely to constitute, for the military proposition, a *reductio ad absurdum*. At this point the Vallum is carried along the bottom of a little valley. On the south, a ridge of freestone, running parallel to the earthwork, rises sharply to a height of 50 feet above the Ditch, the distance, measured horizontally, between the crest of the ridge and the centre-line of the Ditch, being only 120 feet. The south mound, 50 feet nearer the ridge, is consequently at the very foot of a steep 80-foot slope. On the north, the sloping "back" of the Whin Sill, steeper at this point than usual, attains to a height of 50 feet above the earthwork within 60 yards. These extreme conditions continue for about 120 yards, beyond which the height of the ridge is gradually reduced in both directions. So complete is the enemy command of

the Vallum from both sides, that the late Mr. T. H. Hodgson's estimate of its efficiency as a work of defence at this point, that "bar gunpowder, a party of schoolboys could stone the best troops in the world out of the Vallum," is no exaggeration.

Finally, it may be said without risk of overstatement, that in this and in every other such instance, the fatally weak place could have been consistently avoided, or incorporated, with an additional expenditure of labour so small as to be negligible compared with the magnitude of the whole work.

It is surely impossible to avoid the conclusion that the presence of these defects in the course of the Vallum proves that the governing consideration in the minds of the surveyors was not a military one.

The displacement of any theory, strongly founded upon the convictions of such men as the Rev. John Hodgson, Dr. Bruce, and Mr. John Clayton, on whose record their successors look with unfeigned admiration, may easily be accepted as a merely negative result, the solution of the problem being deemed as far off as ever—the "inscrutable" Vallum being inscrutable still. The reply may now, however, be fairly made that the Vallum is inscrutable only when its purpose is held to be military; and that if its non-military character be conceded, the arguments based upon the inconsistent and neutral features of its design and course, which were destructive of the former explanation, will be found to be uniformly constructive of the latter, especially in view of the recent discoveries. In a word, the non-military explanation directs attention to the Ditch of the Vallum as the all-important feature of the earthwork, the meaning and value of which it was the function of the mounds to enhance. From the standpoint of design, the symmetrical cross-section of the original work, *i.e.* the two mounds equidistant from the flat-bottomed central ditch, gives to such an explanation sup-

port which is almost vocal in its clearness, while the evidence of the course strengthens the impression that the local variations described above were governed by a design to carry the Ditch across ground which gave, with a minimum expenditure of labour, the maximum of stability in the subsoil on the one hand, and the nearest approach to a horizontal cross-section on the other. This two-fold principle evidently aimed, firstly, at the preservation of the Ditch from obliteration through subsidence, and, secondly, at the preservation of the mounds from side-slip.

Any examples of exceptional treatment of local difficulties, revealed by research, which could be construed as invalidating such a generalisation as the above, must now be considered. Two instances, both of which involve the principle of the preservation of the Ditch, might be so adduced. The first, and the outstanding case, is that of White Moss, between Bleatarn and Wallhead, and the second, the hollow between Gilsland Vicarage and the railway embankment immediately to the west of the Poltross Burn. In both cases, the Vallum has been carried across ground which has an unstable subsoil—of surface peat upon soft sand at White Moss, and again of peat at Gilsland.

The question naturally arises, why was not the earth-work carried round these peat-mosses, as it was round the marshes between Carvoran and High Shield? At White Moss, the explanation appears to be that similar subsoil conditions obtain over a wide area, extending for at least three furlongs eastward, from Wallhead towards Bleatarn, and five southward (the present limits of the unenclosed common), and certainly just as far to the north of the Wall and westward towards Walby, where the ground is now enclosed and cultivated. In view of this fact, it is evident that the circumvention of White Moss, as the Roman engineers found it, would have involved the addition of a full mile at least to the length of the works.

Instead, they evidently decided that the Vallum must cross the Moss.

The conditions at Gilsland are the reverse of those at White Moss : instead of a wide expanse of level ground, the Vallum crosses a hollow, scarcely 50 yards in width opposite the Vicarage, but extending 3 furlongs from the Burn, and widening, towards the south-west (these *Transactions*, N.S. xiii, plate xxxi). To divert the whole work for half a mile in order to escape a peat-moss 50 yards wide was obviously quite unnecessary, and the case would call for no comment, were it not for the special treatment of the Ditch.

How the subsoil difficulty was met in these cases appears to be of the greatest value in its bearing upon the question at issue.

At Gilsland, excavation has shown that the size of the Ditch was considerably reduced, from at least 20 feet in width by 5 feet in depth beyond the limits of the peat-moss, *i.e.* where the subsoil is stable, to only 14 feet by 4 feet where it is cut through the peat (*Ibid.* p. 391). Reduction in the size of the Ditch, where, at a point so obviously weak, considerations of defence would call for increase, can be interpreted only as a further argument against the military theory. Considered, however, as the modification of a *civil* work, accounted for by a local engineering difficulty, the general parallelism of the whole meanwhile continuing unaltered,\* such a reduction appears to be nothing more than a common-sense precaution against subsidence.

Crossing White Moss, where excavation was undertaken in 1894 (these *Transactions*, O.S. xiii, p. 460, and plate III), the Vallum presents a unique four-mound cross-section, which reappears towards Bleatarn at the east side of the Baron's Dyke (*Ibid.* p. 462 and plate v).

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\* Throughout this sector, the distance between the centre-lines of the north and south mounds is from 100 to 105 feet (*Ibid.* p. 392).

West of the Moss, the ground has been much ploughed and the works in consequence obliterated. For this reason, the westward limit of the four-mound section is not known. Its eastward limit, however, is traceable upon the surface and is thus described in the Report (*Ibid.* p. 463, § ii) :—

East of this trench (*i.e.* plate v) the ground rises towards Bleatarn farmhouse and hillock, and the Vallum alters with the rise. The four ridges coalesce into two larger mounds with a marked depression between.

Though no explanation of the four-mound section *as such* was attempted in the Report, the conclusion as to its occurrence at this point is valuable ; it is that “ the normal scheme of the Vallum . . . . was not rigidly followed on difficult ground, such as a boggy moss ” (*Ibid.* p. 462).

An explanation of this four-mound section must, however, be advanced.

Four-mound sections occur elsewhere, *e.g.*, eastward from Blake Law, near Walltown, and again close to Shield-on-the-Wall farm, east of Cawfields ; the former about 230 yards in length, and the latter less than 100 yards. In such cases, however, the abnormality is confined to the disposal of the material forming the marginal mound, which, instead of being found wholly along the south edge of the Ditch as usual, appears for a short distance as an additional mound on the north edge, ending as it began quite abruptly, and beyond which the general cross-section of the earthwork is in every respect normal.

From such a four-mound section, the White Moss—Bleatarn example differs radically. Instead of two normal outer mounds, these are so small, and of such indefinite composition, as to have led to the conclusion that “ one, if not both, of the two outer mounds may be accidental ” (*Ibid.* p. 460). The size of the Ditch also is greatly reduced and measures hardly 5 feet in width.\*

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\* *Ibid.* o.s. xiii, p. 460, last par., “ 15 ” (feet) is a misprint for “ 5.”

On either side of it, however, are two large mounds each fully 16 feet wide at the base originally. The special interest of these mounds lies in the fact that they exhibit the special construction at the sides (*Ibid.* p. 460, last par. and plate III), first described as "kerbing" in 1908, after a similar discovery at Cawfields, briefly reported in these *Transactions*, N.S. xiii, p. 395.

The fact that this cross-section is, as usual, symmetrical about the centre-line of the Ditch, is the basis of the following explanation. The distance between the centre-lines of the outer mounds is about 91 feet: the Ditch between them is less than 2 feet out of centre; while the centre-lines of the large inner mounds are about 28 feet apart.

Turning now to the similar Bleatarn section, the distance between the outer mound centre-lines is here about 85 feet: the Ditch is central; and the inner mound centre-lines are from 28 to 30 feet apart. There is, however, no indication of the "kerbing" in the inner mounds at this point.\*

At Brunstock (*Ibid.* p. 460 and plate II), where the section is a normal one, the distance between the outer mound centre-lines (which may be termed, from the surveyor's standpoint, the "Width of the Vallum") is about 91 feet.†

In the light of that measurement, the outer mounds at White Moss (about 91 feet apart) and Bleatarn (about 85 feet), in spite of their diminutive size, at once establish themselves as original and not accidental features, emphasising, as at Gilsland, the persistence of the parallelism of the Vallum in spite of sectional modifications.

The inner mounds have no connection whatever with the usual marginal mound, the material of which, as well

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\* This method of construction is clearly intermittent. Elsewhere in Cumberland, it appears at Brunstock and Hare Hill, but neither at Apple-tree nor Gilsland. In Northumberland, it has been observed at Cawfields; near The Peel;  $\frac{1}{4}$  mile east of Carrawburgh, and at Halton.

† The average width of the Vallum from Gilsland to Whittledean is 100 ft. Here and there it measures 105 feet, for a short distance.

as that of the outer mounds, came from the Ditch. Here, the sectional area of the outer mounds, small though they be, already so nearly equals that of the Ditch, that all the material in the inner mounds must be otherwise accounted for. Obviously, it has been brought from a distance for a special purpose. The impression of a special purpose is confirmed by the careful "kerbing" of the mounds, by their position about 30 feet apart, *i.e.* the normal width of the Ditch of the Vallum, and most of all by the fact that they end where the subsoil again becomes stable.

Was not the objective the carrying of the Ditch, artificially raised like a railway upon an embankment, across ground through which it could not have been dug except at the certain price of continual subsidence? Whatever may be thought of this solution, it is not advanced here for the first time, in order to explain the White Moss section. The object of the retaining-walls of the Ditch at the crossing of Poltross Burn appears to be explained in the same manner:—

The object of the whole work appears to have been to carry forward the ditch to the edge of the stream artificially, beyond the position where the steep banks could have formed the sides and bottom naturally. The remains strongly confirm the view that the ditch was the essential feature of the Vallum (*Ibid.* p. 394, and plate xxxiv: also cf. o.s. xv, p. 179).

To argue for the military purpose of such artificial sections of the Ditch may fairly be considered as bordering on the ludicrous.

To this survey of special features which have been revealed by research, must be added three outstanding general results:—

1. At no point throughout the length of the Vallum has an original interruption of the Ditch been discovered.

Contrast the intermittent character of the ditch of the Wall:—"In those positions, . . . ., where its assistance could be of no avail, as along the edge of a

cliff, the fosse does not appear" (Bruce, *R.W.*, 1867, p. 55).

2. All the forts actually in contact with the Wall, and one slightly in the rear (Castlesteads), are placed intentionally to the north, *i.e.* on the enemy side, of the Vallum.

The intention is proved by the deviation of the Vallum from its previous, and in general, straight course, on approaching no less than five out of six forts where its obliterated course has recently been recovered by excavation.\*

3. In each case of avoiding a fort, the width of the Vallum and the size of the Ditch and mounds (where the latter have been traced) are considerably reduced, throughout the length of the deviation from the regular line.

These deviations to the south might appear to afford valuable support for a scheme of southern defence—until this third fact is disclosed!

One further source of information remains, that of the marginal mound. Its evidence is of unique value, for it refers to a period subsequent to that of the construction of the Vallum. Later examination uniformly confirms the first conclusions, that the disturbed and discoloured material of which this mound is composed represents a later clearing, or re-cutting of the Ditch (*Proceedings, S.A. Newc.* 3 ser. ix, p. 283), an operation which obviously resulted in considerable enlargement as well. This re-cutting and enlargement, now known to be subsequent to the causeways and in general involving their removal, and which has no counterpart in a reconstruction of the mounds,† only serves to intensify the impression of importance which each step in the general survey of the evidence places the more definitely upon the Ditch.

\* Rudchester (these *Transactions* o.s. xv, p. 178): Halton (Northumberland County History, x, p. 467-8): Carrawburgh (these *Transactions* o.s. xiv, p. 416): Birdoswald (*Ibid.* o.s. xiv, p. 415): Castlesteads (*Ibid.* n.s. iii, p. 339).

† No general attempt has been made to fill up the gaps.

The non-military explanation of the purpose of the Vallum may now be stated : it is that the earthwork was a boundary, or frontier mark, the actual line of delimitation being the Ditch, the abrupt impression of which was to be increased by the broad double track of the mounds. The writers are, however, aware that this is a re-statement : they are also aware that the previous statement has never advanced beyond the position of a statement unsupported by reasoned proof, and that, in consequence, it has been viewed, perhaps by the majority, as incapable of proof, and, therefore, as inherently unsatisfactory.

Whether the Vallum were a fortification, or a road—or even a ship canal, the other explanations had, at any rate, the merit of being easily understood : “ a civil boundary,” however, along a frontier which appeared to bristle with fortifications, was, until research advanced, perhaps inevitably to be regarded as a somewhat nebulous conception. The recent discoveries encourage the writers in the belief that research has now so far advanced that proof is no longer impossible.

The Roman boundary explanation was definitely advanced by Professor Haverfield in 1896 (these *Transactions*, O.S. xiv, p. 419) :—

It [the Vallum] was erected to serve some definite purpose in connection with the Wall, and that gives a presumption that it was erected at the same time as the Wall. . . We must, then, look on it rather as a “ civil ” work, perhaps one side of a *Limes* of which the Wall is the other (as Mommsen suggests), perhaps some other form of frontier-mark most probably coeval with—conceivably, later than—the Wall.

In 1899, after five seasons' work, he published a detailed statement of his conclusions in the same *Transactions* (O.S. xv, p. 337-344), from which the following extracts have been taken :—

The character of the Vallum, a ditch between mounds, has been recognised as wholly unsuitable to military uses and its course has been noticed to be such as not unfrequently to make it indefensible

against the south. We must, therefore, give up the view of Hodgson and Bruce, that it was meant to protect the Stone Wall from assaults in the rear and we must give up any other theory which assigns it a military character. It is a ditch between mounds, made by the Roman for some purpose, legal or other, which was not directly connected with fighting or fortification. . . . As to date, the Vallum can scarcely be later than the Stone Wall forts and milecastles ; nor can it be earlier, since it deviates to avoid them. It is natural, therefore, to adopt one part of Hodgson and Bruce's theory, call Vallum and Wall contemporary and ascribe both to Hadrian. We know from inscriptions and literature that that Emperor erected a wall, with forts and milecastles, from sea to sea, and, at first sight, that wall would seem identical with the Stone Wall that can still be traced mile after mile across the moors, and its forts and milecastles with the buildings on which we still look with astonishment. If this is so, the Vallum must represent a line of civil or legal delimitation, just as the Wall unquestionably forms the military barrier, and both were constructed about A.D. 124.

Following an account of the discovery of the Turf Wall, the statement continues :—

Possibly it is the sole surviving relic of a Turf Wall which once reached from sea to sea, and when, at some later date, the existing Stone Wall was built, that was raised precisely on the top of it except for two miles at Birdoswald. . . .

In that case we shall conclude that Hadrian built a Turf Wall, with forts and milecastles of some sort and the Vallum, and that the Wall was afterwards rebuilt in stone at a period of which the stone inscriptions of the Wall certainly give us no indication.

Professor Haverfield's latest position was stated in his article entitled "Roman Britain," in the *Encyclopaedia Britannica*, Edition XI, 1911, vol. iv, pp. 584-6 :—

The details of his work are imperfectly known, for though many remains survive, it is hard to separate those of Hadrian's date from others that are later. But that Hadrian built a wall here is proved alike by literature and by inscriptions. The meaning of the scheme is equally certain. It was to be, as it were, a Chinese wall, marking the definite limit of the Roman world. It was now declared, not by the secret resolutions of cabinets, but by the work of the spade, marking the solid earth for ever, that the era of conquest was ended (p. 584).

The meaning of the Vallum is much more doubtful. . . . The two facts that are clear about it are, that it is a Roman work, no older than Hadrian (if so old), and that it was not intended like the Wall for military defence. Probably it is contemporaneous with either the turf wall or the stone wall, and marked some limit of the civil province of Britain. Beyond this we cannot at present go (p. 586).

From each of the above statements it is clear that in Professor Haverfield's opinion, the frontier scheme was a two-fold one, a combined line of defence and boundary. Not one of them conveys a hint of any difference in date between the two components, such as would imply that one, or other, was an addition to the original scheme: the scheme is one.

From this point a different solution will be sought, which, while maintaining the two-fold character of the scheme, and the boundary purpose of the Vallum, modifies (1) the chronological order of the Works, and (2) the nature of the defensive component.

Among close observers of the Tyne and Solway frontier, one stands alone on account of his special equipment, Henry Maclauchlan, the surveyor of the Wall in 1852-4. He first, from a technical standpoint, for reasons stated in much detail and involving point after point along the lines, suggested that the Vallum and the Wall were not contemporaneous, but that the Vallum was laid out first, quite independently (*Memoir of the Survey*, pp. 5, 89-91). When, however, Maclauchlan attempted an historical explanation of his own findings as a surveyor, he adopted Horsley's theory.

Though research has rendered untenable Horsley's theory and, therefore, Maclauchlan's also, the force of his deductions from the laying out of the two works continues unimpaired, and has never been explained away by any advocate of their contemporaneous date.

During recent years research has increasingly furnished evidence in support of Maclauchlan's opinion. Near

Down Hill (*Arch. Ael.* 2nd ser., xvi, p. xxvi), at Cawfields and Gilsland (these *Transactions*, n.s. xiii, p. 389), and, most recently, between Limestone Corner and the Coesike, as already referred to above, the Military Way, an integral part of the Stone Wall scheme, has been found encroaching upon the north mound and berm in such a manner that the pre-existence of the Vallum, complete and independent, is self-evident.

At Harrow's Scar, the north mound has been removed to provide space for a milecastle\* (*Ibid.* p. 362).

At Birdoswald, the ditch of the *enlarged* fort interferes with, and is therefore later than, the Ditch of the Vallum (*Ibid.* o.s. xiv, p. 416).

Lastly, also at Birdoswald, the Stone Wall was proved, in June 1920, to be of later date than the *enlarged* fort,† affording with the last-quoted evidence, conclusive proof of Maclauchlan's contention that the Vallum is older than the Stone Wall.

But this discovery at Birdoswald accounts only for the Stone Wall; whether the Vallum is older than the Turf Wall, or *vice versa*, it does not decide. The Turf Wall, however, if it ever continued beyond its present limits at Wall Bowers and Harrow's Scar,‡ must have occupied the line of the Stone Wall.

Maclauchlan's deductions therefore apply as forcefully to the earlier, as to the later work, while his argument, extended to the vital Birdoswald sector, produces yet another case, actually from the Turf Wall line, comparable to those on which he bases his views (*Memoir*, p. 90), and

\* Professor Haverfield, on this evidence, at first thought the Vallum might be *later* than the Wall (*Ibid.* o.s. xv, p. 351). Mrs. T. H. Hodgson held the contrary view from the first (*Ibid.* o.s. xv, p. 376).

† *Proceedings, S.A. Newcastle*, 3rd series, ix, p. 295; see also *Addenda* to the present volume.

‡ *E.g.*, as an intermittent work, during the building of the Stone Wall, temporarily filling gaps in the line, and being gradually removed as the masonry advanced (*Ibid.* n.s. xiii, p. 360).

as an example of the close approach of the two works, more striking than them all (these *Transactions*, n.s. xiii, p. 361).

The writers are aware that this analogy does not yet amount to final proof in the case of the Turf Wall at Birdswald. In that of the Stone Wall it was supplied by excavation at both ends of the connecting link between it and the Vallum, the west rampart and ditch of the *enlarged* fort. Proof will be forthcoming when the corresponding link between the Turf Wall and the Vallum, the west rampart and ditch of the *early* fort, is re-examined.

At this point it might appear that a solution of the problem advanced years ago is being reached, namely, that the Vallum was "a civil or more precisely a non-military line marking the Roman frontier *before it was deemed to need fortification*"\* (*Ibid.* o.s. xv, p. 339). Such a solution however, is an impossible one, historically, as well as archaeologically. For the moment, the forts have been overlooked. Their significance is vital; in fact the crux of the problem is now seen to be this question, whether in Hadrian's *original* scheme the defensive element was intermittent or continuous.

To prevent possible misunderstanding upon the question of defence, it must be clearly understood that every frontier, in accordance with settled policy, had its line of defence, consisting, until Hadrian's reign, simply of a series of forts connected by a military road; † and that, in the present instance, the forts lying between the Vallum and the Wall ‡ constitute that line.

That this chain of forts is, in order of construction, § earlier than the Vallum, is practically proved by the fact already referred to, that of a probable total of nine forts

\* The italics are the present writers'.

† "In all cases known to us the line of defence along a Roman frontier was formed by a chain of military posts" (Pelham, *Essays*, viii, "The Roman Frontier System," p. 170).

‡ With the addition of Carvoran (MAGNA) and Chesterholm (VINDOLANDA) on the Stanegate.

§ Though neither necessarily, nor probably so, *in order of design*.

which lie across its course, in five cases out of six which have hitherto been examined, the earthwork's course is altered, obviously in order to avoid them.

It is satisfactory, however, that positive evidence of the isolation of the forts as originally planned, and in addition of a connection by road (the Stanegate), is available from other sources, leading to the acceptance of the whole chain as an example of the standard type of defensive frontier line, according to the above rule.\*

The direct evidence, which the Birdoswald discovery of June 1920 failed to supply, appears to be forthcoming from the parallel discovery, made a week later, at Great Chesters (AESICA). In both cases the Stone Wall, in order to effect a junction with the fort wall at the north-west angle, was found to have been carried across the ditch of the fort, which had been purposely filled up at that point.

The vital difference between the two cases lies in the fact that, whereas at Birdoswald the fort has been enlarged considerably, to the north (and apparently to the

\* Horsley held that the forts were earlier than either Vallum or Wall. He ascribed them uniformly to Agricola, and supposed the north mound of the Vallum to be Agricola's connecting military road. According to his theory, Hadrian added the Ditch and the mounds to the south of it (*Britannia Romana*, pp. 98-9).

The first trench ever cut through the mounds—near Heddon-on-the-Wall, in 1893—disproved Horsley's theory, and every other which was based upon a difference in date between the north and south mounds (*Arch. Ael.* 2nd ser. xvi, p. xxvi; also cf. these *Transactions*, o.s. xv, p. 340).

It is no longer necessary to consider Agricola as the builder of a chain of forts on the Wall line. The present evidence points to the Stanegate as Agricola's line of road between Corbridge (CORSTORPUM) and Carlisle (LUGUVALLIUM) (cf. *Arch. Ael.* 2nd ser., xvi, p. 336-7). Both sites have now produced pottery and other remains dateable to his period (*Northd. County Hist.*, x, p. 478: these *Transactions*, n.s. xvii, p. 118 and following); while from Nether Denton, on the road between them, remarkable coin (*Ibid.* o.s. i, p. 88-9) and pottery (*Ibid.* n.s. xiii, p. 385) evidence has come, pointing to an occupation ending with the establishment of the Hadrianic lines to the north, and which cannot have begun much later than that of the two more important sites. It is, of course, quite possible that individual forts on the Wall line may prove to have been first built as outliers of the Stanegate chain.

south as well\*), there is no hint of any northern enlargement at Great Chesters (AESICA).

While, therefore, the Birdoswald evidence is particular proving only the priority of the *enlarged* fort to the Stone Wall, at Great Chesters it appears to be of quite general significance.

The theoretically "general" case will cover that part of the Turf Wall theory which was not disproved by the Appletree—High House—Birdoswald evidence of 1911, namely that, *apart from any question of date*,† a Turf Wall preceded the Stone Wall throughout its length, occupying the same site, except between Wall Bowers and Harrow's Scar.

On this assumption, since the Stone Wall was later than the fort, so also would be the Turf Wall, for it must have crossed the same ditch at the same point. Further, while the enlarged fort at Birdoswald may have only one ditch, Great Chesters (AESICA) certainly has four. The crossing of the innermost only has, up to the present, been proved by excavation. That the four are contemporaneous is,

\* These *Transactions*, o.s. xiv, p. 416 : xv, p. 343 (footnote).

† The Turf Wall Theory was essentially a theory as to *date*. The following quotation from *Roman Britain in 1913* (*British Academy Supplemental Papers*, ii) indicates Professor Haverfield's agreement as to its disproof by the Appletree-High House-Birdoswald evidence of 1911 (P. Newbold, these *Transactions*, n.s. xiii, pp. 339-359) :—"This turf Wall is certainly older than . . . the stone Wall ; . . . hence came the theory that Hadrian, about A.D. 125, built from Tyne to Solway a turf Wall which was later rebuilt in stone—perhaps by Severus—on just the same line, save in one place—at Birdoswald—where the new wall deviated from the older to avoid a danger of landslip. Mr. Simpson has tested this theory, and his results are adverse to it. He has excavated a milecastle and turrets which stand along that part of the stone Wall which is parallel to the turf Wall, and has found them to contain in their lowest strata, a few potsherds which must be a good bit older than Severus and would naturally be assigned to Hadrian. He provides therefore a strong reason for believing that the stone Wall at this point was actually built by Hadrian, and the natural inference is that Hadrian generally built in stone and not in turf. . . It seems true to say that the turf Wall is the earliest frontier wall known to us, and that Hadrian is the earliest conceivable builder of a frontier wall. It seems equally true that, just where the turf Wall can be clearly traced, the stone Wall can claim to be Hadrian's work."

The work referred to was conducted jointly by the late J. P. Gibson, F.S.A., and the first-named of the present writers.

however, hardly in doubt, for the three outer ditches begin to turn round the angle of the fort concentrically with the innermost, before they are lost to view at the actual point of crossing.

The bearing of the earliest evidence of isolation, that of the rounding of the *northern* angles of the forts at Housesteads and Birdoswald, contrasting so strongly with the right-angle junctions of the milecastles, was recognised from the first (Bruce, *Roman Wall*, 1867, p. 181), and confirmed later by the similar arrangement at Great Chesters (AESICA). The awkward junction at Housesteads, and the contrast in the masonry at Birdoswald, were also noticed (Hodgson, *Hist. Northd.*, pt. II, vol. iii, p. 207). With increasing knowledge of the general system of fort-planning, the full significance of evidence of this character, pointing beyond a difference in the order of construction merely, to one of design, became clearer. The convincing contrast has come from the Wall of Antoninus, where, in every case hitherto investigated, the forts actually linked up by the continuous rampart have square northern angles, like the Tyne and Solway milecastles (Macdonald, *Roman Wall in Scotland*, pl. xxvii, xxviii and xxxiii).

The evidence of the rounded northern angles has been completed by the discovery at Housesteads of a change of plan associated with the building of the Wall. The north-east angle tower is 30 feet west of the normal position, *i.e.* the middle point of the curve. The reason for its position is obvious: it exactly enfilades the face of the Great Wall from the junction for some distance to the north-east. The remains of an earlier tower in the *normal* position have now been discovered.\*

There is, however, one example of a right-angle junction on the line of the Wall which is not that of a milecastle.

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\* *Proceedings, S.A. Newcastle*, 3rd. ser., ix, p. 296. It is highly probable, in view of this discovery, that the north-west angle at Great Chesters (AESICA) will yet produce a parallel result (cf. *Arch. Ael.* 2nd, ser. xxiv, p. 36).

It is the north-west angle of the fort at Drumburgh.† Far from weakening the case for isolation, it affords confirmation of striking significance, for though Drumburgh stands upon the Wall, it can have had no connection whatever with the Vallum, which terminated at Dykesfield two and a half miles to the eastward. It is strange indeed that a fort so situated should alone prove, by following the design of the milecastles in so essential a particular, to be contemporaneous with the Stone Wall, if the rounded northern angles of the forts *within* the limits of the Vallum are not an equally true indication of their original isolation.

A further contrast in construction, which has not hitherto been stated in general terms, is the last source of evidence.

The Great Wall is a simple masonry structure. Its average thickness, 7 feet 6 inches, affords ample space for a strong parapet and a rampart-walk of efficient width. The ramparts of the forts, on the other hand, are *composite* structures, consisting of a masonry face and an earthwork backing. The masonry face, or outer wall, is much thinner than the Great Wall: in no case does it exceed an average of 5 feet. Without the earthwork behind, proper provision for the parapet and walk could not have been made.‡

There remains the question of road-communication.

Lying between the limits of the Vallum at Newcastle-upon-Tyne and Burgh Marsh, are twelve forts of the Wall

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† These *Transactions*, o.s. xvi, pp. 81-92. The contrast between the cramped planning of Drumburgh and the comparative spaciousness of the Wall forts is as striking as the different arrangement of their northern angles. The absence of a road between the rampart and the main buildings—for the buttressed and ventilated building which occupies the corner between the north and west walls must be a granary—suggests a small fort crowded with buildings, of which Rough Castle on the Antonine Wall is an outstanding example (Macdonald, *Roman Wall in Scotland*, pp. 220-236).

‡ The remains of the backing are very noticeable at Birdoswald, Great Chesters (AESICA), Housesteads (*Arch. Ael.* 2nd ser. xxv, p. 245) and Chesters (CILURNUM).

chain, or fourteen if Carvoran and Chesterholm are included. The two last named are situated actually upon the Stanegate, and already there is evidence that four of the Wall forts were connected by branch roads with that main road (Maclauchlan, *Memoir*, pp. 28, 40, and 53). Further, Halton had an obvious line of communication with Corbridge *via* Dere Street, and Stanwix, as a bridge-head fort, with Carlisle. Eight of the fourteen sites are thus accounted for.

The mediaeval road-name "Ald-he-way," mentioned by the Rev. John Hodgson (*Hist. of Northd.*, pt. II, vol. III, p. 282), appears to hint at a continuation of the Stanegate from Corbridge to Newcastle-upon-Tyne (PONS AELII), which would also link up Rudchester (VINDOBALA) and Benwell (CONDERCUM).

As there is no trace of another connecting road, except the obviously later Military Way, the presumption that all the forts were linked together by the Stanegate is not unreasonable.

The most recent report of work on the line of the Stanegate is given in these *Transactions*, N.S. XIII, pp. 381-9.

In concluding this survey of the direct evidence obtained from the actual remains of the Tyne and Solway Frontier Works, it may be submitted that an explanation of their purpose and order of construction which asserts that the Vallum—a boundary—in association with a chain of forts, not only preceded any continuous line of defence in point of time, but was independent of it in intention, is uniformly supported by the evidence at present available, whether derived from surface observation or from excavation.

#### THE EVIDENCE OF HISTORY AND OF COMPARATIVE RESEARCH.

Consideration of the matter cannot, however, be terminated at this stage. History specifically records, in two passages from his *Life* by Spartianus, the construction by Hadrian of frontier works other than the usual forts and

roads, in Britain and elsewhere. These records must now be reviewed, not only with their context the general account of events about the time of Hadrian's accession, but also in the light of the recent examination of actual remains in Germany which has verified one of the two statements of Spartianus in a remarkable manner. A further source of information is the comparative study of frontier works in other provinces of the Empire, the exact dates of which are not at present known.

The record of Hadrian's doings in Britain is very brief, and so familiar that any hope of deriving new information from it may appear somewhat remote :—

Britanniam petiit: in qua multa correxit, murumque per octoginta millia passuum primus duxit, qui barbaros Romanosque divideret . . . . . Compositis in Britannia rebus, transgressus in Galliam (*Vita Hadriani*, II).

“ He went to Britain, where he corrected many things, and was the first to draw a wall eighty thousand paces long, in order to divide the barbarians from the Romans . . . . . When he had put the affairs of the province in order, he passed into Gaul.”

Hitherto, interest has centered upon the word “ wall,” to the neglect of the stated purpose of its construction, “ to divide the barbarians from the Romans.” In consequence of the prevailing predisposition to judge every detail of Hadrian's frontier policy by defensive standards, the association of this wall with the Stone Wall, manifestly a defensive structure, or, with more reason,\* with the Turf Wall,† has been a tempting line of least resistance. On the other hand, it may be asked, could a simpler and better description of a boundary work be given than this of Spartianus, “ a wall . . . to divide the barbarians from the Romans ”? Nor is this interpretation contradicted by

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\* Cf. the description of the Wall of Antoninus by Capitolinus :—“ *Alio muro cespiticio*,” literally “ another turf wall.” The view that the passage may mean “ another wall, a turf one ” is, however, widely held, and justifiably, in view of the late date of Capitolinus.

† Also a defensive work, similar in design to the Wall of Antoninus, according to every explanation of its purpose hitherto offered.

the second and more general record, which is as follows :—

In plurimis locis in quibus barbari non fluminibus sed limitibus dividuntur, stipitibus magnis in modum muralis saepis funditus iactis atque conexis barbaros separavit (*Vita Hadriani*, 12).

“ Where the barbarians were divided from the Empire, not by rivers, but by ‘ limites ’ (*i.e.* frontier roads), he barred them out by great stakes planted deep in the ground and joined together so as to form a wall-like hedge.”\*

Far from weakening the case, this passage affords it the strongest support, for not only is the purpose of Hadrian’s palisades stated in terms almost identical with that of his wall in Britain, conveying the same idea of separation between the barbarians and the Romans, but the examination of the outstanding example on the Rhine-Danube frontier fully confirms their character as obstacles of a boundary rather than a defensive order.

The best account in English of Hadrian’s Palisade in Germany is Professor Pelham’s, in his Essay “ The Roman Frontier in Southern Germany,” † from which the following is a full quotation :—

The researches of the Limeskommission have placed it beyond doubt not only that a palisade was erected along those sections of the frontier, where neither the Neckar nor the Main formed the boundary, but that Spartianus’s description of it is extraordinarily accurate. The ditch in which the stakes were implanted and the remains of the stakes themselves, were first identified by District Commissioner W. Kohl on the Raetian section, near Gunzenhausen, in 1894.

Since then the palisade ditch and traces of the palisade have been found along the Odenwald line, from the Neckar to the Main, and from Gross-Krotzenburg on the Main round the Taunus to the Rhine. The palisade is demonstrably later than the earth forts of Domitian, through some of which it passes, and older than the so-called “ limes ” itself, which, in Raetia at any rate, occasionally

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\* Pelham, *Essays*, ix, p. 200. Professor Pelham’s translation of “ separare ” as “ to bar out ” is very effective in this realistic description of the great fence, but nothing of defensive significance can be read into the word, which simply implies separating action.

† *Essays on Roman History*, ix, 1911, pp. 179—211 : *Trans. Royal Historical Society*, xx, pp. 17-47.

crosses and recrosses the line of the palisade (*Limes-Blatt*, pp. 302—483 sqq). The palisade was a very substantial obstacle. It stood nine feet high. For the upright stakes, as Spartianus calls them, the trunks of oak trees have been split in two, and set up with the flat face towards the "outland." Their average thickness is 23.9 cm. and breadth 37.54 cm. They were, as Spartianus says, "funditus iacti" in a ditch  $4\frac{1}{2}$  feet deep, and "conexi" (bound together) on the inside by strong cross beams."

Professor Pelham's estimate of the significance of the Palisade, which expresses not only his personal view, but the considered opinion of German archaeology as well, is of the greatest importance:—

These facts, taken together with Spartianus's statement, justify us in assigning this elaborate mechanical barrier to Hadrian. It is nevertheless inconceivable that the palisade was ever intended as an effective defence in time of war. Its erection implies a comparatively peaceful and settled state of affairs, when the dangers to be guarded against on the frontier were those of smuggling or of petty raids. From this point of view India furnishes us with an interesting analogy. The following account has been kindly supplied to me of the "Customs Hedge" in India (see also *Essays*, p. 323): "For the purpose of realising the duty on salt produced in Native States and in British districts subject to a lower rate of duty, when imported into Upper India, a customs line was commenced in 1843. In 1870 it stretched across the whole of India, from a point north of Attock, on the Indus, to the Mahanadi, on the border of Madras, a distance of 2500 miles. It consisted of an impenetrable hedge of thorny bushes and trees, supplemented in places by a stone wall or a ditch and earth mound. It was guarded and patrolled, night and day, by a force of 14000 officers and men." Hadrian's palisade must also have been intended mainly to ensure the control of all traffic crossing the frontier. Of the regulations imposed on such traffic we get some idea from ancient writers. Tacitus (*Germ.* 41) speaking of the exceptional privileges granted to the Hermunduri: "non in ripa commercium sed penitus . . . passim sine custode transeunt."—[Their traffic is not confined to the bank (of the upper Danube) but they penetrate far into the province (of Raetia) without being subject to any control.]

Persons coming from outside could only cross at certain points, usually guarded by a fort or watch-tower. No one might cross carrying arms, and duties were levied on imported goods. At the points of ingress markets seemed to have been frequently estab-

lished, the place and time being no doubt fixed, as they were in the second century on the Danube, by the Roman government (Dio, 73, 2). The Germans were to meet only once a month, at a fixed place and under the supervision of a Roman centurion.\*

A striking commentary upon the purpose of the Palisade is Mommsen's opinion of the Pfahlgraben and the Teufelsmauer, the continuous works which superseded it. At the time of writing (the English translation is dated 1886), the remains of the Palisade had not been discovered. He, however, accepted Spartianus's description as evidence that it had probably existed upon the German frontier. Though the word "military" is used in his estimate of the object of these later lines, the whole passage conveys the impression that primarily they too were not defensive, but frontier police barriers:—

The idea of a frontier-bar was common to the two structures, otherwise so different. . . † It was common to them, further, that neither the one nor the other was constructed for the defence, as a whole, of the frontier. Not merely was the hindrance, which the piling up of earth or stone presented to the assailant, slight in itself; but along the line we meet everywhere with commanding positions, morasses, lying in the rear, a want of outlook towards the country in front, and similar clear indications of the fact that in the tracing of it warlike purposes generally were not contemplated. The forts are of course arranged for defence . . . The intention rather was, that, like the bridges over the river-frontier so the roads on the land-frontier should be commanded by the forts, but in other respects, like the river as the water-boundary, so the wall on the landward should hinder the uncontrolled crossing of the frontier. ‡

No sooner does the reasonableness of this alternative explanation of Hadrian's special work on the frontier of Britain become apparent, in the light of the German analogy, than the question arises how the disposition to-

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\* *Ibid.* pp. 200—202. Cf. Macdonald, *Roman Wall in Scotland*, pp. 64-72 and 389-395.

† The Pfahlgraben, an earth mound and ditch, in the Taunus and Neckar-Main sectors; and the Teufelsmauer, a low stone wall, in the Raetian sector.

‡ Mommsen, *Provinces*, Dickson's translation, i, pp. 156-7.

wards ideas of defence developed and came to govern the whole outlook of earlier scholars ?

There is no doubt that an incorrect interpretation of the political, or imperial setting of these records of work on the frontiers is responsible for the mistaken emphasis.

The explanation of this incorrect interpretation is an entirely satisfactory one. It has nothing to do with lack of scholarship, but only with lack of knowledge, which advancing research, historical and archaeological, alone could supply. To quote Professor Pelham again, writing in 1898 :—

It is only within the last twenty or thirty years that the " ceaseless researches of science " have not merely produced new evidence, but in doing so have rendered intelligible much that was before difficult to understand. One result has been to place in our hands the clue to Hadrian's policy as ruler of the empire, and to enable us to gauge more correctly the direction of his aims and the importance of his achievements (*Essays*, VII, " Hadrian," p. 160).

The most important record of events at the time of Hadrian's accession is another well-known statement of Spartianus, of which the following is a literal translation :—

For while those nations which Trajan had subdued were falling away, the Moors were harassing the Empire, the Sarmatians were waging war, the Britons could not be held under the Roman sway, Egypt was harassed with revolts, and Libya and Palestine were in a state of disaffection. And so he gave up all beyond the Euphrates and Tigris following, as he said, the example of Cato, who proclaimed the Macedonians free because they could not be guarded (*Life of Hadrian*, 5, 2).

Imperfect knowledge of the later developments of these local troubles is responsible for the older view of their moulding effect upon Hadrian's general frontier policy.

A typical explanatory enlargement of the above passage and its supposed connections, according to the older viewpoint, is that given by Dr. Bruce :—

On the death of Trajan, A.D. 117, Hadrian was proclaimed Emperor. He at once renounced the sovereignty of the countries east of the Euphrates. This did not altogether relieve him from

the difficulties of his position. The Jews, not only in Palestine but throughout the world, were in a state of revolt; Egypt was agitated by seditions, and the Moors manifested a rebellious spirit. Britain too, soon began to exhibit symptoms of disaffection. Julius Severus, who had previously held with firmness the reins of government in Britain, was withdrawn from the island in order to subdue the revolt of the Jews. He probably took with him such native troops as had been inured to Roman discipline. To this cause, as Salmasius suggests [in a note of this part of Spartian's *Life of Hadrian*, p. 25, ed. Lug. Bat. 1661], the rising in Britain was probably to be attributed. The pressure of a heavy hand having been withdrawn, the national discontent rose to the surface. . . .

Towards the close of the year 119, Hadrian came himself to Britain . . . . He was led to this step not only by the necessity of using the most vigorous measures in order to crush the rebellion in Britain, but by the impulse of his own active habits, and a desire to examine personally every part of his wide dominions (*Roman Wall*, 1867, pp. 11-12).

How readily would such a picture of almost universal trouble, unrelieved by any hint of a speedy reversal of fortune, lead to the conclusion that Hadrian's policy of withdrawal, precise delimitation, and consolidation, instead of being freely based on considerations of far-seeing statesmanship, was a confession of weakness, a policy of mere defence, forced upon him by the two-fold pressure of external enemies and internal exhaustion, intensified by his supposed lack of ability in the sphere of real leadership.

The further deduction, that such a policy should issue in the provision of frontier defences additional to the normal chain of forts, in the form of a continuous rampart, is an almost inevitable step.

Not only is the re-colouring of the picture possible in the light of the fuller evidence, but the complete re-drawing also of that part which most concerns the Vallum, the sequence of events in Britain. From Dr. Bruce's statement, it is evident that, according to the general understanding of the historical material then available, the facts of the situation were believed to be as follows:—

- (1) That Julius Severus was Governor of Britain *before* Hadrian's arrival ;
- (2) that the revolt of the Jews, which, as recorded by Dio, Severus subdued, was one and the same event as that referred to by Spartianus ; and
- (3) that the rising in Britain (following the departure of Severus) directly led to the coming of Hadrian to deal with the *military* situation personally.

It is now known with certainty that the first two of these assumptions are incorrect. In Hadrian's reign, there were two Jewish revolts, separated by a period of nearly fifteen years ; and it was in order to quell the *second* that Julius Severus, then Governor, was withdrawn from Britain. This second revolt is attributed by Dio to the foundation of a colony at Jerusalem by Hadrian, during his second eastern journey, A.D. 130. The actual outbreak took place in 132, after his departure for Rome.

That the third assumption is also incorrect appears to be equally certain, though the proof cannot perhaps be so conclusively stated. The date of Hadrian's arrival in Britain is certainly not the autumn of 119, but most probably the spring of 122, five years after his accession. On the third assumption, the outbreak in Britain must have taken place not long before Hadrian's arrival, and therefore, in any case, some years after his accession. The evidence is, however, wholly against any such conclusion.

The only fair construction that can be placed upon the statement of Spartianus quoted above, is that he was describing the state of affairs *at the time of Hadrian's accession*. Trouble in the various provinces was, therefore, already afoot before the death of Trajan. The only way in which the theory of Hadrian's personal connection with the British rising can be reconciled with Spartianus is by prolonging the revolt from 117, or 118 at the latest, until 122. Such a solution conveys just that impression of Hadrian's besetment on every hand, and of his inability,

owing to lack of resources or initiative, to deal energetically with the situation, which was the background of the older view.

The theory of inability simply collapses before the facts, hinted at even by Spartianus, as revealed by research. The outstanding example is that of Turbo, whom Hadrian, on his accession in 117, had sent to quell the revolts, chiefly of the Jews, in Egypt and Libya. Before the close of the year, that task was accomplished, and he was on his way to deal with the Moorish rising. By the beginning of the following summer, 118, we find him already in command on the Danube—having disposed of three of these affairs within a year! Such a record is surely a sufficient testimony to the energy of Hadrian's administration.

Further, in Spartianus's description of Hadrian's visit to Britain, the phrases (1) "where he corrected many things," and (2) "when he had put the affairs of the province in order," convey the impression of civil administration rather than military operations.

Fortunately, however, we are not dependent solely upon such an argument: the evidence of coins appears to be unmistakably convincing. Belonging to a series dateable to the period 119—121 at latest, is a group of three coins bearing the following inscriptions:—(1) *Britannia*: (2) *Victoria Augusti*; and (3) *Concordia Exercituum*.\* As there is no record of fighting elsewhere than in Britain, for some years after 118 the identification of Britain with the place where the victory was gained is obvious; while the phrase "*Concordia Exercituum*" appears to be a remarkable commentary on the co-operation of Vexillations of the VIIth Legion, from Spain, and of the VIIIth and XXIIInd Legions from Upper Germany, with the British legions in the campaign, the record of which is given by a well-known inscription.† Since this group of coins commemorates

\* Cohen, ed. 2, vol. ii., 197, 1462-3, 268.

† Dessau 2726: C.I.L., x, 5829.

events not later than 121, the war must have been over by that date at the latest. In any case, their evidence is entirely favourable to the view that Hadrian arrived some time *after* its conclusion.

An interpretation of events in Britain, adequate to the evidence thus briefly reviewed, must be made and judged in the light of an authoritative re-statement of the Hadrianic position as a whole. That Professor Pelham's Introduction to the English translation of Gregorovius's *The Emperor Hadrian*, states the viewpoint of modern scholarship with authority is acknowledged. In the course of that essay, the old view and the new are contrasted in the following striking terms:—

Hadrian has unquestionably suffered in general reputation by the fate which placed him between two such commanding figures as Trajan and Marcus Aurelius. By the side of the former Hadrian appeared timid and commonplace. As Trajan became the ideal Roman soldier Hadrian was represented as the peace-loving scholar who in tastes and pursuits was more Greek than Roman. Yet Hadrian was every inch a soldier, deeply versed in both the theory and the practice of the art of war; and if he was a lover of Greeks and Greek civilization, he was also an admirer of old Roman writers and fashions. On the other hand, Marcus Aurelius justly ranks above him as a man, and holds a place in literature, and in the history of human thought to which Hadrian has no claim.

But viewed as a statesman, as the ruler of a great empire, Hadrian stands higher than either Trajan or Marcus. He is more truly representative of his time, and he left a deeper mark upon it. Above all, it was he and not they who shaped the policy of the empire, and shaped it in accordance with ideas which, if not new, were first clearly conceived and effectively carried out by him.

For Hadrian's policy was not the result of a scholar's love of peace, or of cosmopolitan tastes, or even of mere restlessness. It was directed by one dominant idea, the influence of which is everywhere traceable. This master idea was, to use a modern expression, the imperial idea (*Reichsidee*)—the conception of the empire, as a single well-compacted state, internally homogeneous, and standing out in clear relief against surrounding barbarism. The realization of this conception was the object for which Hadrian laboured. If he refused to follow Trajan in his forward policy, it

was not from timidity, or, as Gregorovius seems to think, from a scholarly love of peace and quiet. Indeed, as I have hinted, the contrast so often drawn between Trajan the man of war and Hadrian the man of peace, the Romulus and Numa of the second century, is somewhat misleading. Hadrian was anxious for peace, not in order to secure leisure for peaceful pursuits, but because the empire needed it, and he abandoned a policy of conquest in the conviction that the empire had reached its natural limits, and required not expansion but consolidation.

In this belief he set himself to give the empire, what it had only imperfectly possessed before, definite and well-marked frontiers. The lines of demarcation which thus 'separated the barbarians' from Roman territory he protected by a system of frontier defences, which was no doubt developed by his successors, but the idea and plan of which were unquestionably his; and to hold these defences he maintained a frontier force, the efficiency of which was his constant care. We are too apt in thinking of Hadrian's travels, to picture them only as the restless wanderings of a connoisseur from one famous site to another in the peaceful provinces of the interior and to forget how large a portion of his time was spent, not in Athens or Smyrna, but in reviewing the troops and inspecting the stations along the whole line of the imperial frontier (*Essays*, VII, 1898, pp. 160—162).

Such a judgment contains not a hint of weakness, imperial or personal, upon which a theory of mere defence can be founded. Rather we see a statesman, conscious of his own strength, planning and putting into operation a policy, the express purpose of which was the checking, once and for all, of the dangerous and wasteful craving for imperial expansion, so marked a characteristic of the ruling class of which he himself was a member.

That Hadrian's policy was as certainly a "barring in" of his own people, as it was a "barring out" of the barbarians, Professor Haverfield also believed. Upon this point his estimate in the *Encyclopaedia Britannica*, already quoted in full above, leaves no room for doubt:—

The meaning of the scheme is equally certain . . . . . It was now declared, not by the secret resolutions of cabinets but by the work of the spade, marking the solid earth forever, that the era of conquest was ended (Ed. XI, vol. iv, p. 584).

Is not the construction of a spectacular Frontier Mark such as the Vallum, a more logical and therefore more likely outcome of such a policy than the erection of a continuous rampart, which involved a radical alteration in the hitherto accepted frontier practice, substituting continuous patrol of an effective obstacle for intermittent patrol of open country between isolated forts?

Here again we are, fortunately, not limited to *a priori* considerations, to arguments from Hadrian's personality and policy, in order rightly to understand his works, for the invaluable results of comparative research—the undeveloped state of which expresses, in a word, the disadvantage under which our great North Country pioneers of archaeology always laboured—are becoming available for the guidance of their successors in ever-increasing volume.

At this stage of the discussion, the comparative survey of Roman frontier works, by the second-named of the present writers, which forms an appendix to this paper, may be studied with advantage.

Increasing knowledge of the frontier works as a whole, emphasises the fact that the Great Wall (*i.e.* the Tyne and Solway Wall of Stone, with its forts and subsidiary works) exhibits the fullest development of defensive efficiency.

Even in the case of the Great Wall, however, as Mr. R. G. Collingwood has recently so clearly demonstrated,\* the element of real defensive significance is represented neither by the elevated rampart-walk,† though this, by greatly

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\* "The Purpose of the Roman Wall," the *Vasculum*, viii, no. 1, pp. 4-9: Andrew Reid and Co., Newcastle-upon-Tyne.

† *Ibid.* p. 5. "The rampart walk cannot have been more than three or four feet broad, and that is a very narrow fighting-front. There would be barely room for a man to pass behind the actual firing line; no room, if the 'firing' line consisted of men throwing, with the necessary freedom of gesture, a heavy six-foot pilum. It would be practically impossible to reinforce a threatened point, even in the most favourable conditions: wholly impossible to move wounded men. And a few corpses, or a couple of Caledonians who had effected an escalade, would block the walk entirely. For the walk could only be reached

increasing the outlook, would afford the sentries an invaluable opportunity of obtaining early information of enemy movements, nor by the greatness of the obstacle presented by the rampart and ditch, but by its relation to the forts and milecastles.

Omitting Carvoran and Chesterholm as belonging to the earlier Stanegate chain, the forts, with the single exception of Castlesteads, and the milecastles without exception, are in actual contact with the continuous rampart. At each of these points, where troops were permanently stationed, was a gateway giving access to the country *beyond* the Wall.\* There alone could the defence of the frontier be effectively undertaken by troops whose training and equipment, during the second century at any rate, were unsuited to a static defensive.

In such operations, the rampart and ditch, by appreciably delaying the advance of a large enemy force and by breaking up its concentration—the work of the “centre” in a delaying action—would prove a valuable factor in the development of enveloping movements by the “flanks”—the garrisons of the nearest pair of forts, or milecastles. But, though the efficiency of the Wall (*i.e.* the rampart and ditch), considered as a defensible obstacle in actual warfare, has been generally overestimated, as a patrollable obstacle, for the prevention of smuggling, minor raiding and thieving in times of peace, its efficiency, in view of the strength of the patrolling force stationed in the milecastles and turrets, must have been well-nigh perfect.

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from the ground at the turrets, and these were 500 yards apart. Let anyone try to imagine a front-line trench during an attack with the conditions that the ‘trench’ is a wall-top 15 feet from the ground and that access can only be had at points 500 yards apart, the turrets taking the place of communication trenches; and he will recognize the impossibility of fighting on the Wall in the traditional way.”

\* In the possession of such a wealth of facilities for defensive initiative, the Great Wall, with fully 100 fortified gateways in its course of 73½ miles, is approached only by the Wall of Antoninus, and the Dobruja *limes*.

This peace-time function of the Wall was, however, equally one of the two functions of the Vallum. Further, in the exercise of this function\* the Wall obviously superseded the Vallum.

If the test of efficiency as a *physical* barrier is applied to the Vallum, there is no need to enquire why it was superseded: the contrast between the two works is so glaring that, for adequate expression, the closing words of Dr. Neilson's estimate of the *military* value of the Vallum, already quoted in that connection on page 355, may well be repeated:—"When this standard is applied . . . the ineptitude of the work (is) so manifest that it shrinks from the ordeal of comparison"!

Why then was a work so impressive as the Vallum, yet so completely ineffective as a *physical* barrier, ever constructed? It is altogether improbable that such a standard of efficiency was for a moment in the mind of its designer.

There is one explanation of the principle of its design which has the support of a remarkable historical analogy. In explaining the weakness of the position of VETERA (Xanten), the headquarters of the army of Lower Germany, Tacitus points out "that Augustus never contemplated the possibility of its being attacked by the Germans" (Pelham, *Essays*, VIII, p. 166, footnote <sup>2</sup>: Tacitus, *Hist.* 4, 23). This does not imply the total absence of Germans from the neighbourhood, but that Augustus relied upon the moral effect of Roman military prestige to deter the Germans from making an attack. The regulations recorded by Dio and other writers, already referred to on page 380, prove that reliance was still placed upon that moral effect in the second century, on the Rhine and Danube frontiers.

Did Hadrian, overestimating the completeness of his British victory, decide that its moral (and material) effect

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\* But not that of the Boundary (see below, p. 425).

upon the northern tribes, together with the normal physical factor, the chain of forts, would ensure the security of the frontier?

One outstanding fact supports the view that the Vallum and its forts represent an original scheme designed to meet theoretical requirements, the first expression of Hadrian's idea of finally fixed frontiers. In the case of the Vallum, alone of all the frontier works, the forts are placed *outside* the actual boundary. That this was done intentionally has already been shown (p. 366). Such an arrangement seems to indicate a legal line of demarcation between the areas of civil and military administration, between the province and a belt of cleared country in military occupation. It is not essential that such a boundary work should present an obstacle in the military sense.

The earliest recorded instance of a Frontier Boundary Mark is that of Scipio, which separated the old province of Africa from the allied state of Numidia. It consisted simply of a ditch, and appears to have had no military significance whatever (Pelham, *op. cit.*, p. 165). That this ditch still existed in the time of Vespasian, and was re-utilised in the delimitation of the later province (*Ibid.*, pp. 165, footnote<sup>3</sup>, 169, footnote<sup>3</sup>), affords a satisfactory reason for the adoption of such a device by Hadrian to mark an imperial boundary.

One question remains: it concerns Spartianus's description of Hadrian's work in Britain as "muris." Whatever his inaccuracies, would not such a work as the Vallum have been described by him as "fossa"?

No doubt the details of the gradual development of the frontier works in Britain during Hadrian's reign found their way into the government archives, but there is no evidence that such details ever appeared in a contemporary history. In that case, only the final development of the works—the Great Wall—would be known to Spartianus, writing nearly two hundred years after the event.

With the statement of the evidence, direct and indirect, upon which a judgment as to the purpose and date of the Vallum must be formed, the object of the first part of this paper has been almost attained. Thus far, however, the term "date" has been used relatively. The fact that there is no further evidence which would assist in ascertaining the actual date without further delay, is an indication of the point which has now been reached in the progress of general research.

The time-limits between which the Vallum was constructed appear to be no longer really in doubt. The possibility that Spartianus was in error in stating that Hadrian constructed the earliest continuous line is an old suggestion, which left the earlier limit in complete uncertainty. The new and convincing statement by Dr. George Macdonald,\* of the evidence bearing upon the duration of the earliest Roman occupation of Scotland, enables us to dismiss such a suggestion finally. Dr. Macdonald has now shown that the evidence from the great forts situated upon Dere Street and its northern continuation—Newstead, Camelon, Ardoch and Inchtuthil—is entirely favourable to the conclusion that the occupation was practically continuous from Agricola's governorship, until about 115—117. It ended with some great disaster, presumably to the IXth Legion somewhere in the northern territory, which led to a complete withdrawal.

Evidence from the forts at Haltwhistle Burn (1908) and Throp (1910) at last becomes coherent in the light of the new Dere Street facts, and indicates that the withdrawal was to the line of the Stanegate, which was transformed from a normal road-line, with a few widely-separated posts upon it, to a regular line of defence, by the addition of further forts between those already existing.

That, after thus digging themselves in on this line, the

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\* "The Agricolan Occupation of North Britain," *Journal of Roman Studies* ix, pp. 111 ff.

available troops successfully held on, though not, perhaps, without real difficulty,\* until help arrived, is proved by the fact that neither Haltwhistle Burn (*Ibid.* p. 275) nor Throp (these *Transactions*, N.S. xiii, pp. 373, 379) produced the evidence of destruction by enemy action invariably found in the Wall forts, milecastles, and turrets. The Haltwhistle Burn evidence proved, further, that the fort was purposely dismantled, either before the arrival of the Sixth Legion in 122, or actually by that Legion, during the course of its work on the Wall (*Arch. Ael.* 3rd ser., v, pp. 214, 234, 275). Evidence of date stops at this point.

It will hardly be suggested that Hadrian's policy of delimitation would not be put into operation before his arrival. If he were a statesman, his policy must have evolved in the years preceding his accession, and especially during the Parthian War, when he was faced with the obvious failure of Trajan's policy of expansion. That Hadrian inspected the African frontier *after* the completion of new defence works is the best testimony against any such suggestion.

The Stanegate being the temporary frontier during the open warfare following the disaster about 115—117, the erection of the new chain of forts in association with the Vallum must surely have followed the conclusion of the war. The coin evidence, already quoted above, implies that the war was well over in 121. How much earlier it was actually concluded is the crux of the new problem. It is not impossible that the punitive expedition was north of the Cheviots before 121 in the territory shortly to be abandoned, and that, in the rear, work on the new line, the Vallum and its forts, was already well in hand. If the coin evidence could be carried back to its earliest possible limit, *i.e.* 119 (Cos. III), the building of the forts and the

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\* As indicated by the building-up of the east gate at Haltwhistle Burn : *Arch. Ael.* 3rd. ser., v, pp. 240, 276.

survey of the Vallum's course could reasonably be assigned to as early a date as 118.\*

The later time-limit is more certainly known. The Stone Wall and, we must conclude, the Turf Wall, were built after 122, and not later than 126 or 127.† At most, therefore, a period of eight or nine years would appear to have intervened between the construction of the Boundary and the Rampart.

The most difficult of the historical problems now presents itself. The accumulating evidence of research has been seen, on the one hand to be uniformly unfavourable to theories of unity of design between the Vallum and the Wall, and, on the other, uniformly favourable not only to the explanation of the Vallum and its forts as Hadrian's original frontier scheme, but to a radical modification of that scheme, by the building of the Wall, before ten years had passed!

Is there any evidence of circumstances adequate to the bringing about, in so short a time, of so momentous a change in the method of ensuring the security of the frontier? There is, at the present time, no epigraphical evidence of such a development, nor, of course, any clear reference, or inference from history. Fronto's allusion to the heavy losses sustained by the Roman army in Britain during the reign of Hadrian may well cover other frontier operations than those in progress at the beginning of his reign, but the reference is otherwise quite indefinite and can afford no positive assistance (*Ep. de bello Parthico*. Ed. Naber, pp. 217 f.).

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\* As the small facing-stones at Haltwhistle Burn fort would be of no use for the Great Wall, we may conclude that the fort was dismantled when the original fort at Great Chesters (AESICA) was built: and that the quarry near the west rampart was opened by a working party of the Sixth Legion not long afterwards.

† The governorship of Platorius Nepos, which began in 122, cannot have terminated later than 127. His name appears on identical inscriptions from four milecastles (C.I.L. vii, 660, 661, 662, 663).

Only one deduction can be made from the evidence, that events, of which there is at present no record, compelled the building of the Wall; and only one explanation of such compulsion can be given, namely, pressure from beyond the frontier.

The accuracy of this hypothesis can at once be tested by the spade. If the pressure on the frontier so increased as to necessitate the change from an intermittent to a continuous patrol, an increase in the forces holding the frontier would be inevitable. Of that increase, evidence either of enlarged accommodation in the existing forts, or of additional forts, should be forthcoming.

The exceptional position and planning of Drumburgh have already been adduced in support of the original isolation of the forts within the limits of the Vallum (p. 375). But this did not exhaust the evidential value of Drumburgh. The fact that the existing forts were not reconstructed with right-angle junctions when the Wall was built, affords the strongest grounds for concluding that Drumburgh did not exist before the Wall, but represents an additional fort rendered necessary by the final increase in the frontier garrison consequent upon its erection.

Little more than a beginning has been made with the investigation of the early history of the forts contemporaneous with the Vallum. But though work has been confined to only two sites, Birdoswald (AMBOGLANNA) (these *Transactions*, O.S. xv, p. 172) and Chesters (CILURNUM) (*Ibid.* N.S. i, p. 84), the results obtained are of the greatest importance. Both forts have been enlarged from about three acres (or less), to five and a half acres and five and a quarter acres respectively. The significance of this fact is now apparent, for, as described above (p. 370), the fort at Birdoswald *thus enlarged* has been laid out quite independently of the Stone Wall, and yet *later* than the Vallum. Further, the remarkable agreement between the two plans, which made it difficult to avoid the conjecture

that Chesters likewise had existed as an enlarged fort independently of the Wall, has proved to be a true index of the situation. In October, 1921, the west ditch of the *enlarged* fort was found to underlie the Great Wall at the main west gateway (*Proceedings, S.A. Newcastle*, 3 ser., x, p. 216).

The present evidence points to an intermediate stage in the development of the defences, to an increase in the strength of the frontier garrisons without any modification in the general method of defence. The natural inference from such a development is that the garrisons of the original forts very soon proved to be unequal to the task of maintaining the boundary frontier inviolate, and that an increased garrison, still located in the same forts (which were enlarged), was the first remedy applied.

Is it unreasonable to suggest that here is the first hint of what followed, that this remedy failed because it was applied merely as a further concentration at the same widely-separated points? By still leaving wide spaces between the forts without *permanent* guard, it not only failed to check, but perhaps, by increasing the sporting risk attached to "getting across," actually aggravated, the development of that propensity among the tribes beyond the Vallum—not for serious attack upon strong points, but for *raiding*—which became the settled habit of life of their mediaeval successors upon the Border!

Further, the accounts of the campaign of Severus given by Dio and Herodian, bear unmistakable testimony to their possession, in an uncommon degree, of that other quality of the Border raider, elusiveness in retreat (Dio 76, 13; Herodian iii, 46).

Given persistent raiding and successful retirement, the rapid development of a situation which would satisfy both the "unknowns," (1) the absence of historical record, and (2) the cause of so great a development of the frontier system, becomes feasible. While, on the one hand, elusive-

ness in retreat implies an absence of such serious fighting as could alone have given adequate cause for comment in the meagre records which have survived; on the other, persistent raiding, demonstrating the absolute necessity for numerous small posts between the forts, admits the possibility of a decision—by that Emperor who ranks second to none as the author of great building schemes—to end the trouble once and for all, by the construction, not only of the intermediate posts, but also of a continuous Rampart Wall.

At this point the matter must rest for the moment: and, it is to be hoped, for the moment only, until the recovery of the early history of the forts can be seriously undertaken.

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## PART II. THE CROSSINGS.

### THE EVIDENCE OF THE REMAINS.

In turning to the question of the Crossings, it is evident, owing to the recent date of their discovery and the consequent unfamiliarity of archaeologists with their details, that adequate consideration of their purpose and date is dependent upon further information from two sources:—

- (1) A fuller description of the surface remains of the system than that which served, at the commencement of this paper, as an introduction to a re-survey of the general subject of the Vallum.
- (2) A summary of the results of recent research directed to the explanation of the lack of uniformity in those remains, which is as marked a feature of the Crossings as it is of the general cross-section of the earth-work.

The variation of the cross-section between two, three and four mounds has already been described, with the explanation which research has provided.

The surface remains of the Crossings fall into four main divisions of which the following features are characteristic and the order, in the light of research, chronological:—

- (1) The construction of the Crossings has been begun, but not completed. Where such conditions obtain, the Vallum shows no signs of subsequent alteration.
- (2) The Crossings have been completed and exist to-day, complete and undisturbed. Under these conditions the Vallum still shows no signs of subsequent alteration.
- (3) The complete Crossings no longer exist: the gaps remain in both mounds, but the causeways across the Ditch are absent. There is a marked increase in the size of the Ditch, compared with the cases covered by divisions 1 and 2, and the marginal mound is *invariably* present.
- (4) The details characteristic of division 3 are reproduced with one exception, that no gaps are visible in the north mound. In addition, there is a marked difference in size between the north and south mounds, the former being the larger.

The description of the above as "main" divisions is intended to imply that they are not clear-cut and invariable, but include cases not only of subdivision, but of overlapping.\* Such exceptional combinations of details, which are not amenable to simple classification, will be described in conjunction with the nearest "standard" examples.

That the Crossings are not original features of the Val-

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\* This fact may prejudice the minds of some who have not seen the actual remains. To such it may appear only too reasonable to conclude that a claim to the discovery of a coherent system among such apparently diverse indications, is in reality only a piece of archaeological romance, in which free rein has been given to the imagination! No better safeguard against such a pre-judgment could be advanced than the experience of Dr. George Macdonald. In April, 1921, Dr. Macdonald saw the remains of the Crossings for the first time and inspected both their regular and exceptional features, from Appletree to East Wallhouses, a distance of over 30 miles. At the conclusion of his inspection, he not only expressed his conviction that the remains are those of a continuous system, but ventured to prophecy a certain result, based upon that unity of purpose, from a forthcoming excavation, a prediction confirmed six weeks later by the results.

lum, but later modifications, has been already inferred in the introduction to Part I (p. 354, last par.), and again on page 365, last par. This fact has been practically self-evident since the original discovery, that of the systematic arrangement of the gaps. The following quotation from the first published account of that discovery, records the observation of a feature the significance of which could hardly have been misinterpreted :—

The mounds have certainly had an unbroken longitudinal section originally, for the material removed from the gaps can generally be traced on the surface (these *Transactions*, n.s. xiii, p. 395).

From that quotation the question inevitably arises whether, through any part of its course, the construction of the Crossings has *never been undertaken*, and consequently where the earthwork still exists in its original form?

Only one such instance has been observed up to the present time, a description of which properly precedes that of the later developments.\*

From the west boundary of Combe Crag Wood, for about 800 yards westward (C. XII, II and 15), the north and south mounds, except for disturbance obviously due to natural causes,† or to recent human agency, are unbroken longitudinally. The Ditch is also uninterrupted, apart from partial filling here and there clearly due to the same causes. There are no signs of a marginal mound.

The form of the earthwork in this sector is represented by the model in fig. 3.

The marginal mound belongs chronologically to divisions 3 and 4 of the remains of the Crossings, and the above reference to its absence at a point where the earthwork appears to survive in its original form, and where the presence of any feature of later date would seem to be a

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\* In the following descriptions the references in the text are to the Ordnance Survey maps, 25 inch scale, Edition 1921-22 in the case of Northumberland (N) and Edition 1900 in that of Cumberland (C).

† *E.g.*, the passage of the Piper Sike, a small tributary of the Irthing.

contradiction in terms, may appear to be irrelevant and misleading. Though this mound is the record of much more, historically, than a mere incident—the clearing of the bottom of the Ditch at an unknown date subsequent to its construction—yet it may actually represent no more than the carrying out of that minor operation, at certain points *where nothing further needed to be done*. As such it could have appeared in this sector without in any way invalidating the conclusion that the earthwork here shows no sign of modification by the construction, partial or complete, of the Crossings.

Mrs. T. H. Hodgson has informed the writers that no trenches were cut across the Vallum between Combe Crag Wood and Bankshead by the Cumberland Excavation Committee. It is possible, therefore, that in this sector, excavation may reveal the existence of a small amount of material disposed along the south edge of the Ditch above the original surface. Such a diminutive marginal mound would represent a few shovelful of rain-washed material and vegetable growths removed from an otherwise well-preserved length of the Ditch, at the same time that a much more considerable task had to be faced in other sectors.

Though the land has been ploughed, there is no reason to suspect that the gaps have existed and that all traces of them have been obliterated. It may be stated here, as the result of observation at many points, that evidence of the existence of gaps is remarkably persistent and appears to be lost only where cultivation has virtually obliterated the mound itself. Ploughing has not tended to fill up the gaps, but by reducing their boldly-rounded ends to enlarge them, producing a gentle switchback contour, which continued ploughing has left unchanged in outline while gradually reducing the height of the whole mound. The conclusion that the hollow representing the gap would, therefore, disappear only with the disappearance of the

mound is borne out by the state of the remains. A striking example of this persistence can be seen near Portgate, in an arable field (no. 46, N. XCII, 1).

How far this unaltered form of the earthwork continues beyond the limits named above is at present uncertain. It cannot extend eastward further than the Wall Burn, because the gaps again appear on the east side of that stream (these *Transactions*, N.S. xiii, p. 395). Between the Wall Burn and Combe Crag Wood, and particularly westward from the field no. 378 (C. XII., 15) to Banks, the land has been more thoroughly cultivated and the state of preservation is consequently such that the surface remains yield no reliable information. On Hare Hill the conditions are definitely those of division 3.

The classified remains of the Crossings may now be described.

#### DIVISION I.

In three sectors, a number of consecutive Crossings have been observed in an incomplete state which is clearly due, not to subsequent alteration as in the cases covered by divisions 3 and 4, but to the fact that the work of construction has never been finished. Though these unfinished Crossings may, in point of time, represent the last phase of the work in a particular sector, of much greater importance are the facts that at these points the Vallum appears in a condition approximating more nearly to its original form and the remains afford some information of the way in which the whole scheme was planned and the work carried out. For these reasons the unfinished Crossings should properly be placed in the earlier of the two divisions covering their construction.

The best example of the incomplete stage is to be seen on Wallend Common, half a mile north-west of Greenhead. The higher ground thereabouts has not been ploughed, and for about 210 yards in the field no. 295 (N. LXXXVIII, 7) the Vallum is very well preserved. The gaps appear in

both mounds at an average interval of 45 yards (the maximum variation being 4 yards).\* The Ditch is extremely well-preserved and there are no causeways across it. At one point the edges have been broken down and the bottom partly filled, evidently in recent times. There are no signs of a marginal mound. What has been stated above regarding the absence of this mound west of Combe Crag Wood applies equally to this and to the second example.

The state of the Vallum (apart from the "spreading" at the gaps) is illustrated by the model as arranged in fig. 4.

The distance through which these conditions obtain is again doubtful. Down the slope to the west, cultivation begins and the course of the earthwork is practically obliterated. Eastward, for about 330 yards to the steep west side of the Tipalt valley, the land is lower and swampy and the Ditch is largely silted up. The mounds have sunk in the soft ground and have been further interfered with by draining, making accurate observation impossible.

The most striking feature in this sector is the treatment of the material removed from the mounds in forming the gaps. The general case of this feature will be considered under division 2. Here the gaps have been fully dug, practically down to the ground level, but never "cleaned up." In some cases the ends of the mound have been rounded off in the usual manner, but in others they have been left in the rough condition indicative of the first operation of heavy digging. All the material removed has been spread *outside* the Vallum, *i.e.* on the north from the north mound and on the south from the south mound, but instead of being carefully levelled down, as is the case elsewhere, it has been left lying about in small heaps just as it was thrown with the shovel from the mound, as indicated by the plan and section AB on fig. 5.

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\* The spacing of the Crossings in general is considered under the third example of division 1.

It is well to recall that similar evidence of unfinished work, relating not to the Vallum but to the ditch of the Great Wall, was noticed by the Rev. John Hodgson near Portgate.\*

The second example is in the Wall Burn—High House sector, through which the Vallum, to quote Professor Haverfield, is “in astonishing preservation” (these *Transactions*, O.S. xiv, p. 187).

From a point 140 yards east of the Wall Burn, to the east side of the field no. 231 (C. XII, 12) on High House farm, a distance of over half a mile (beyond which point the mounds have been quite worn down by ploughing), the gaps are traceable in the north mound (*Ibid.*, N.S. xiii, p. 395). The depth of the majority of the gaps is about half the height of the mound, though some are distinctly shallower. In general, the gaps are more often dug down from one-half to two-thirds the height of the mound than to the ground level, and an average depth of half the mound is, therefore, in itself no evidence of incompleteness. In the south mound, however, there are no gaps, though opposite those in the north mound there are several slight depressions, which probably indicate that the gaps were “marked off” but never dug.†

The Ditch is partly filled up at several points and, in more than one case, opposite gaps. As usual, the majority of these irregular interruptions are obviously of recent date. Some may be ancient, but, in any case, they bear

\* “The earth taken out of [the fosse] lies spread abroad to the north in lines just as the workmen wheeled it out and left it. The tracks of their barrows, with a slight mound on each side, remain unaltered in form” (*History of Northd.* pt. II, vol. iii, p. 276): quoted by Dr. Bruce (*Roman Wall*, 1867, p. 56), who further commented upon it as follows:—“As if the labourers had left the work but to obtain some refreshment, and were about to return to it” (p. 139).

Apart from the use of barrows, of which the irregular heaps at the gaps give no indication, these quotations exactly express the impression given by the unfinished Crossings at Wallend Common.

† This point is fully considered below under the third example.

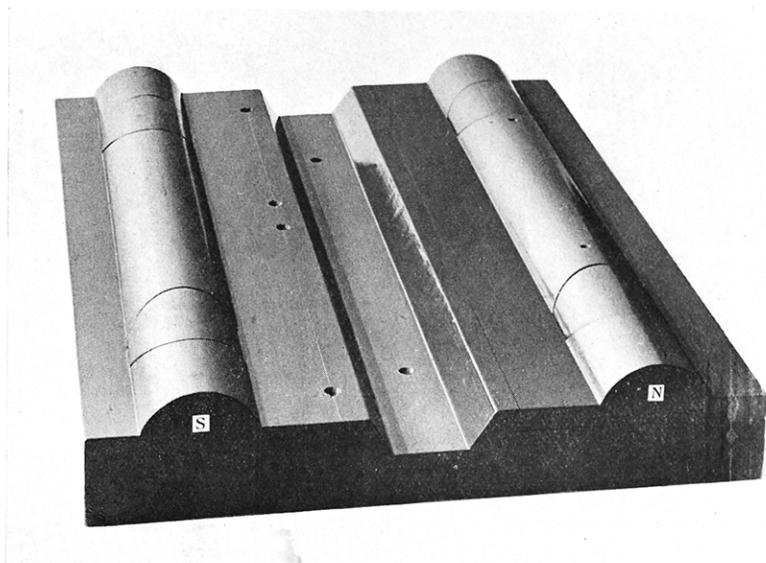


Fig. 3.—THE VALLUM AS ORIGINALLY CONSTRUCTED.

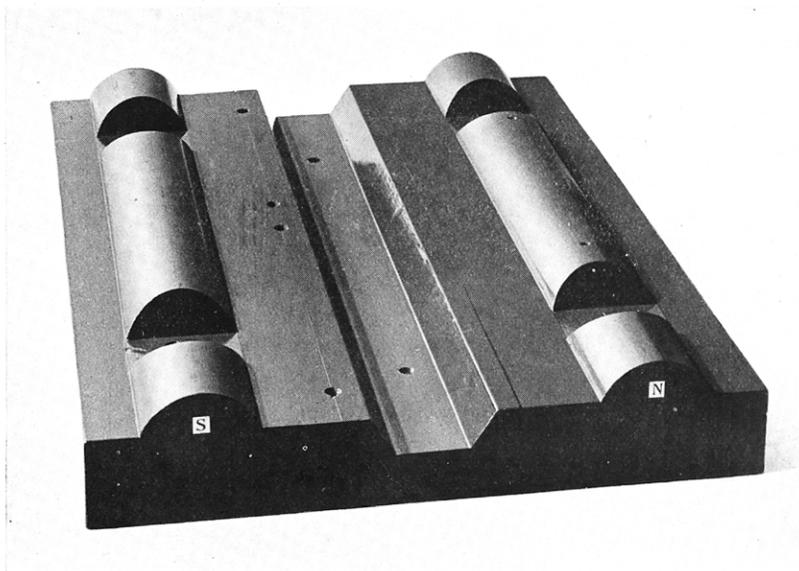


Fig. 4.—THE UNFINISHED CROSSINGS AT WALLEND COMMON. DIVISION I.  
To face p. 402.

no resemblance whatever to the series of consecutive causeways to be described under division 2 of the remains. From the Wall Burn to High House Wood there is a small mound on the south berm. It has been described as the marginal mound (these *Transactions*, o.s. xiv, p. 189), but it is not in the normal position, being set back from the edge of the Ditch. For a short distance, there is a similar mound on the north berm. Between High House Wood and the east side of the field no. 231, however, there are no signs of the marginal mound.

This sector exhibits further a unique and significant feature, the occurrence, between the same limits, of gaps in the Turf Wall opposite those in the north mound (these *Transactions*, n.s. xiii, p. 395). The turf rampart is more worn down than the Vallum mounds owing to its less clayey composition.\* The average distance between rampart and mound is only 50 feet. Opposite a number of the gaps, the south (*i.e.* the nearer) edge of the ditch of the Turf Wall is somewhat broken down and the ditch itself partly filled up.

These "causeways" have not yet been examined. They may prove to be composed of the turf dug out of the rampart, of the disposal of which there are no signs at the gaps. In that case their Roman date would be proved and they would afford further evidence of the unfinished character of the work in this sector, for in no instance is the ditch more than half filled, whereas the existing causeways across the Ditch of the Vallum have been at least level with the berms. The intimate connection between the gaps in the rampart and those in the north mound is, however, self-evident.

The third example is at Cawfields, where the Vallum attains a state of preservation unequalled at any other point throughout its course.† This sector, apart from the excep-

\* And to intentional demolition? Cf. *Ibid.* o.s. xiv, p. 189.

† The land between the Wall and Wade's road has never been ploughed. It formed part of Haltwhistle Common, which was not enclosed until 1844.

tional condition of the south mound for 765 yards, is the most perfect example of the developments classified under division 3.

From a point south of Winshields, where the earthwork has largely sunk in marshy ground, for a mile and a half westward to the Haltwhistle Burn, where it is disturbed by quarrying and, beyond the Burn, obliterated by cultivation, the gaps occur continuously in the north mound.

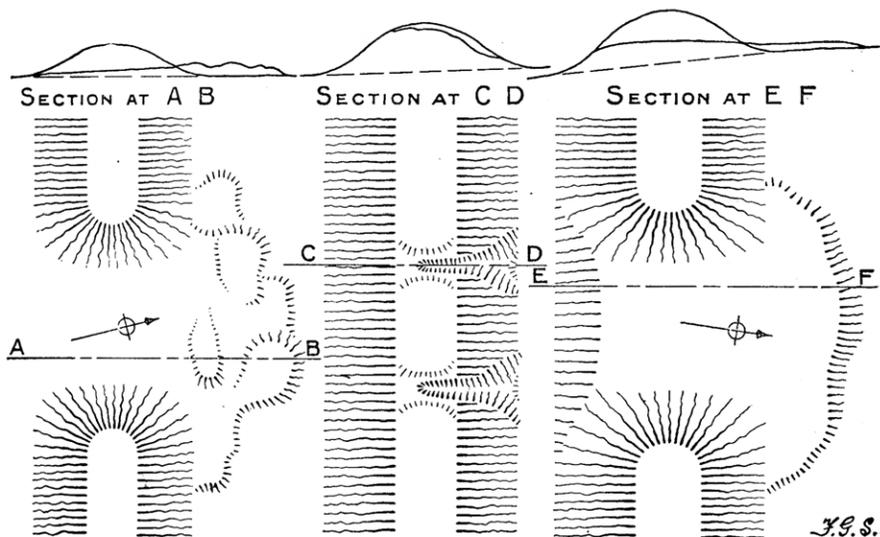


Fig. 5. DETAILS OF GAPS.

Eastward from Shield-on-the-Wall farm to the marsh, the south mound is worn down, but it is quite evident that the gaps were present originally. Westward, they appear exactly as in the north mound to a point (A) 180 yards west of the boundary between Cawfields and Shield-on-the-Wall farms, *i.e.* the fence between the fields nos. 7 and 214 (N. LXXXIX, 6). Here they cease abruptly, and the next fully developed gap\* is 765 yards (*i.e.* 17 gap-intervals of 45 yards) further west, beyond which they continue without interruption to the point close to the Burn where both mounds are disturbed.

\* From 30 to 35 feet long at the top and from 3 to 4 feet deep. Cf. plan and section E F on fig. 5.

At the next gap-position west of point A, *i.e.* exactly opposite the next gap in the north mound, instead of a similar large opening with boldly-rounded ends, are two v-shaped incisions extending from the crest of the mound down the north side, nearly 19 feet 6 inches apart, as indicated by the plan and section CD on fig. 5. Between these points the crest of the mound is unbroken. Of the following fifteen positions, at eight (four of which are consecutive) there is clear evidence of ancient disturbance. At one position recent disturbance prevents accurate observation, but at the remaining six (three of them consecutive) the crest of the mound is quite undisturbed.

The impression conveyed by this length of the south mound is that the positions of the gaps have been "marked off" throughout and the work of digging begun, not a gap at a time but at several simultaneously, and that within a few hours the work has been stopped and never resumed, leaving seven gaps half finished, two where digging had only just begun, and six positions at which work was never started. The remains illustrate the method of procedure. The positions were no doubt marked off along the mounds with a spade. Where nothing further has been done, such slight incisions must long ago have been obliterated. When digging began the two marks, representing the length of the opening, appear to have been deepened first, producing the rounded ends; the isolated portion of the mound between them has then been removed and the gap completed. The work at the first gap west of point A has evidently been left unfinished while the deepening of the original marks was in progress. Several gaps in both mounds between this point and the field wall are fully deepened at the ends but not in the middle, showing that the mound was never wholly levelled down.

The general measurements are equally clear. The distance between the two marks (about 19 feet 6 inches) is evidently 20 Roman feet, or 4 paces. The average distance from centre to centre (*i.e.* the interval) of 50 conse-

secutive gaps in this sector is 135 English or 140 Roman feet. Deducting 20 Roman feet for the gap, the length of mound left undisturbed between the gaps would be 120 Roman feet, or 24 paces.

The question of the spacing of the Crossings in general may be conveniently considered at this stage. The intervals are not *exactly* equal, *i.e.* they have evidently not been measured with a chain or tape. That they were *intended* to be equal, however, is demonstrated by a survey of the series of consecutive Crossings (complete and incomplete) which are still traceable. The following table contains particulars of the longest existing series, and of the four next in order of length, arranged geographically from east to west. Not one of the many shorter series exhibits features which are additional to, or in conflict with, those of the five tabulated.

SPACING OF CROSSINGS.

Sector	Consecutive gaps traceable	Regular			Exceptional		Remarks on Exceptions
		No.	Interval (yards)	Maximum variation (yards)	No.	Interval (yards)	
Down Hill ..	17	16	45	4	1	33	
Shield-on-the-Wall (East) — Coesike ..	28	20 7	46 51 followed by	4 4	1	62	
High Shield Twice Brewed ..	17	16	53	3	1	59	
Shield-on-the-Wall (West) — Cawfields ..	50	46	45	3	3 1	52 37	(Consecutive: maximum variation 4.
High House Wall Burn ..	20	18	44	5	1 1	51 33	Consecutive: = 42 X 2
	132	123			9		

In only nine cases out of 132, *i.e.* under 7 per cent., does the maximum variation exceed about 4 yards, or about 8 per cent. of the average interval, whereas the minimum variation in the exceptional cases is double that maximum. But a table of average figures really understates the position, for instances of a difference of 4 yards between consecutive intervals are almost as rare as the cases classed as exceptional. In the great majority of cases the variation is less than 2 yards. The actual measurements speak for themselves. The quotation of two examples, the highest and lowest maximum variations in the tabulated series, will serve the purpose of this paper:—

High House—Wall Burn : 42, 41, 43, 43, 43, 46, 47, 46,  
46, 46, 51, 33, 43, 43, 44, 43, 43, 41, 44, 44.

High Shield—Twice Brewed : 54, 52, 53, 53, 54, 52, 52,  
53, 53, 54, 54, 54, 53, 52, 55, 52, 59.

There appears to be only one explanation of such small yet persistent variations, namely, that the distances were measured by *padding*.\* There is one further point, that of the marked increase in the interval-length in the case of the third series. Even measurement by padding can hardly account for an unvarying difference of 8 yards, or 5 Roman paces. The more probable explanation is that engineer officers in some sectors fixed a different length of interval. In this particular the third sector does not stand alone. The short series of seven intervals of 51 yards in the second sector may represent part of a much longer series. In the Hare Hill sector the intervals appear to measure over 50 yards, but have not yet been accurately surveyed.

Of the nine exceptional intervals, it is not difficult to account for those occurring in the first and fifth series of the above table. They appear to be errors in measurement. The 33 yards interval at Down Hill, where

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\* "The Roman Mile," P. Ross, A.M.I.C.E., these *Transactions*, N.S. xviii pp. 219—222 : *cf.* footnote, p. 222.

the earthwork makes a double turn in order to pass the hill, occurs in the north mound at the *inside* of the west turn. At the outside, the interval was naturally longer and probably measured 41 or 42 yards (the south mound is greatly worn down at that point). At the east turn, the shorter interval measures 41 yards and the longer 50 yards. If the longer interval at the west turn had also measured 50 yards the shorter would then have been of average length. Probably an average interval was paced out, but by mistake along the south instead of the north mound, reducing the length of the north interval to only 33 yards. The two unequal intervals in the fifth series are consecutive and together equivalent to twice the average interval: a remarkable coincidence—unless (and with greater probability) the explanation be that the double length was checked and corrected at the next position.

The three intervals (37, 59 and 62 yards), occurring singly in different sectors, are also easily explained as errors, but not so easily the three measuring about 7 yards longer than the average of the very regular fourth series, in the course of which they occur consecutively. They can hardly represent an ordinary error. If measurements were made by different working parties independently, odd lengths at the junctions would inevitably occur here and there. The spacing of these three intervals may represent the division of such an odd length ( $3 \times 52 = 156$  yards) into three equal intervals, instead of into  $2 \times 45 + 1 \times 66$ .

Such an explanation has the following remarkable consequence. Only one series, the fourth, contains two distinct exceptions. The distance between them is 1461 yards. If the conjectured "odd length" of 156 yards be added, the total becomes 1617 yards, a Roman mile less one yard. Further, not only is the odd length at the *east* end of the mile, indicating that the measurements were

made in an eastward direction, but immediately *beyond* the west end is the second exceptional interval of 37 yards, which would similarly represent the odd length at the *east* end of another "milliary" sector. This calculation was first made while the second part of this paper was being written. Consequently nothing can be done before publication to verify the conjecture that each working party occupied a sector a Roman mile in length. It will, however, serve as a useful starting-point for further investigation.

It may be stated in conclusion that the cases of intervals which can be classed as exceptional met with during the course of a survey of the Vallum between the Wall Burn and Whittledean, a distance of nearly 31 miles, number about fifteen, nine of which have been included in the above table.

#### DIVISION 2.

Turning now to the second division of the remains, complete Crossings have been observed in four sectors:— (1) Carvoran, (2) Cockmount Hill, (3) Carrawburgh farm, and (4) Matfen Piers—East Wallhouses. Describing first the Cockmount Hill series, ten consecutive causeways across the Ditch are traceable south of the farmhouse in the field no. 54 (N. LXXXIX, 5), each directly in line with the gaps which appear continuously in both mounds. Four of the ten causeways, towards the west side of the field, are shown on fig. 8.

On the plan the gaps do not appear in the south mound, which has been partly levelled in order to carry a modern road (to Walltown). Shallow depressions remain, however, to mark their positions. A branch from this road, to Cockmount Hill farmhouse, crosses the Ditch on one of the causeways (which has been enlarged). The gaps at the west end of the north mound are similarly too shallow to be drawn to 25 inch scale. The abrupt impression of the causeways has been greatly impaired by the laying of a

tile-drain down the middle of the Ditch. Immediately to the south of the Vallum is a wide peat-moss, appearing on Warburton's map as a series of lakelets.

The causeways are of small dimensions and the tracks across them cannot have exceeded five or six feet in width. No provision has been made for through drainage, and the Ditch between them is consequently greatly silted up. It would appear that the causeways were originally somewhat higher than the berms, for in several cases a slight elevation is traceable from the causeways to the gaps. Some material from the gaps has also been spread outside the Vallum to form approaches. Throughout the length of the series there are no signs of the marginal mound.

Two trenches were cut in June, 1920, one at a causeway, and the other across the open Ditch. The first proved that the causeway was not original, by disclosing the sides and flat bottom of the Ditch continuing behind and below it. The causeway was composed of clean material, a boulder clay, similar to that through which the Ditch has been cut, and of which, therefore, the mounds are composed. Between the causeway-material and the bottom of the Ditch was a stratum less than two inches in thickness, better described as slimy than peaty because it contained a much greater proportion of rain-washed material from the sides than of vegetable growths.

The proportions are, of course, exactly the reverse of the above when a ditch has been open for a long period. As soon as grass has grown on the sides weathering practically ceases, the later accumulation representing vegetable growth and decay. This sequence was confirmed by the second trench. The same slimy stratum appeared at the bottom, but above it there was a gradual change into purely peaty material, the thickness of which, as might be expected in a position lacking an outlet, was excessive. The stratum below the causeway would, therefore, appear to represent a comparatively short period of time.

It had been suggested that when the causeway was made, the pressure due to its weight would cause some of the silt to be squeezed out sideways, rendering the existing stratum unreliable as an index of the lapse of time. Had water been standing in the Ditch, the silt would, no doubt, have been in a sufficiently fluid condition to have been so displaced. Water, however, could not possibly have stood at the point, which is on a *westward* slope. In practice, the pressure would be applied so gradually, the material being tipped in only a barrowful or basketful at a time, and the loose, dry upcast would tend so to absorb and hold any moisture, that the total effect would probably be small in the extreme.

The series ends at the west side of the field as shown on fig. 8, where the conditions change abruptly to those of division 3. The eastern termination is at present uncertain. The series cannot extend further than the Halt-whistle Burn, beyond which division 3 conditions also obtain.

(2) The Carvoran series numbers not more than six causeways. They are traceable along the three-sided deviation which the Vallum makes in order to circumvent the marshy ground immediately to the north of the fort (MAGNA). The gaps are present in both mounds. The causeways appear to have been slightly larger than at Cockmount Hill. The whole earthwork is somewhat worn down, and the slopes of the causeways are too slight to be inserted on the 25 inch O.S. map (N.LXXXVIII, 8). There is again no trace whatever of the marginal mound. About 110 yards beyond the east end of the deviation the mound is again visible: the gaps continue in both mounds, but the causeways are absent. How far the series continues to the west is at present unknown.

(3) The series at Carrawburgh farm is even shorter than that near Carvoran. Only four causeways are traceable, in the field no. 6 (N.LXXXI, 12). The series illustrates a

unique combination of the features characteristic of divisions 2, 3 and 4 (compare figs. 6, 7 and 10 with fig. 9). Close to the farmhouse the marginal mound, which is continuous to the eastward, terminates abruptly within 30 yards of the most easterly of the causeways. This change to division 3 conditions is described under that division of the remains. The north mound, however, exhibits *throughout* the two special features which are described and explained under division 4. The gaps appear as usual in the south mound. There is no trace whatever of the marginal mound westward of the terminal point near the farmhouse. In the next field to the west (no. 8), the earthwork is greatly worn down for some distance, rendering uncertain the extent of the series in that direction.

(4) By far the longest of the four series is that which is traceable from a point half a mile west of Matfen Piers, apparently without a break to East Wallhouses, a distance of 1 mile, 3 furlongs. The whole sector has not yet been adequately surveyed. The causeways were discovered during the course of the O.S. Revision (1920), and only those details measured which were sufficiently prominent to bear reduction to 25 inch scale. Consequently, only eight of the fifteen Crossings traceable in the fields nos. 109 and 110 (N. xcii, 3) appear on the map.

Between the limits named, the state of preservation differs widely and at only two other points can the Crossings be shown on the map. In two small fields, one (no. 177) at Wallhouses, and the other (no. 170, N. xcii, 4) at East Wallhouses, which have been under grass for a very long period, the remains are extremely well-preserved. Four causeways are visible in the first field and four in the second. Between these well-preserved portions, faint traces of causeways at the correct interval, or at a multiple of the interval, recur so persistently as to indicate their existence throughout the sector.

With the exception of one interval which measures about 39 yards, the Crossings are spaced with the usual regularity, the average interval being 45 yards. The short interval occurs near the east side of the field no. 110 at Matfen Piers. It is the only instance of an irregular interval between causeways. The gaps appear throughout in both mounds. They appear to have been unusually deeply dug—practically to the ground level. There are no traces of the removed material near the gaps.\* The inference that it was wholly utilized in making the causeways is supported by the fact that the latter are of quite exceptional dimensions, being probably three times the bulk and double the track-width of those at Cockmount Hill.

The description of the choked condition of the Ditch between the causeways in that sector, owing to lack of drainage, applies equally to the Ditch in the present instance.

As in each of the preceding examples there are no signs of the marginal mound at any point throughout the length of the causeway-series. Where that mound would be found, however, in a normal example of division 3 conditions, *i.e.* along the *south edge* of the Ditch, a new feature appears which is absent at Cockmount Hill, Carvoran and Carrawburgh farm. But in sharp contrast with that mound, which is *continuous* where the Ditch is *open*, the new feature appears as a succession of small mounds, each

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\* It was at first thought that this material was invariably spread outside the Vallum (these *Transactions*, n.s. xiii, p. 395). It is now clear that the method of its disposal was not uniform. At Wallend Common, it is wholly outside, but that example is exceptional. At Cawfields, nearly half may have been spread outside to form a sloping approach, and this appears to have been the common practice. How the other half was disposed of is not so clear, for corresponding approaches on the inside are not easily traceable except at Cockmount Hill. Probably the causeway contains a proportion of this material in every case, but, where the gaps are shallow, that proportion would be small and other material must have been added. On the other hand, gaps dug to the ground level, as at Matfen Piers (and occasionally elsewhere) would render approaches unnecessary, leaving the whole of the material available for the causeway.

in appearance like the traverse of a temporary camp gateway, literally traversing the *south* ends of successive causeways, as if to prevent passage across them. There is no reason to doubt the Roman date of these traverse-mounds for they are traceable at each of the eight consecutive Crossings in the fields nos. 109 and 110 which appear on the 25 inch map.

When the general evidence relating to the marginal mound—which belongs chronologically to division 3—has been considered, it will become apparent that, in view of the condition of the Ditch, these traverses can have no connection with that mound, in their *composition*. Whether they are connected with it in purpose or use, for they are obviously of *later* construction than the causeways, will be considered, together with the further question which arises, namely, why *any* causeways have survived, in the last section of this paper (p. 424).

#### DIVISION 3.

The main chronological division of the remains has now been reached. For 16 miles between the Wall Burn and Whittledean the exact condition of the earthwork cannot be ascertained by surface observation. Throughout the remaining  $14\frac{1}{4}$  miles, there is evidence in the form of gaps in the mounds of at least an intention to construct complete Crossings. The total length of the series covered by divisions 1 and 2 is only  $2\frac{1}{2}$  miles, leaving no less than  $11\frac{3}{4}$  miles through which not a single causeway has been observed. Through these same  $11\frac{3}{4}$  miles, however, the feature is uniformly present, which is absent throughout the  $2\frac{1}{2}$  miles of unfinished, or existing complete Crossings, namely the marginal mound.

The model as arranged in fig. 7 illustrates the general conditions of division 3.

In this mound, not one instance of a gap in line with those in the north and south mounds has been observed. Further, wherever the marginal mound is present the

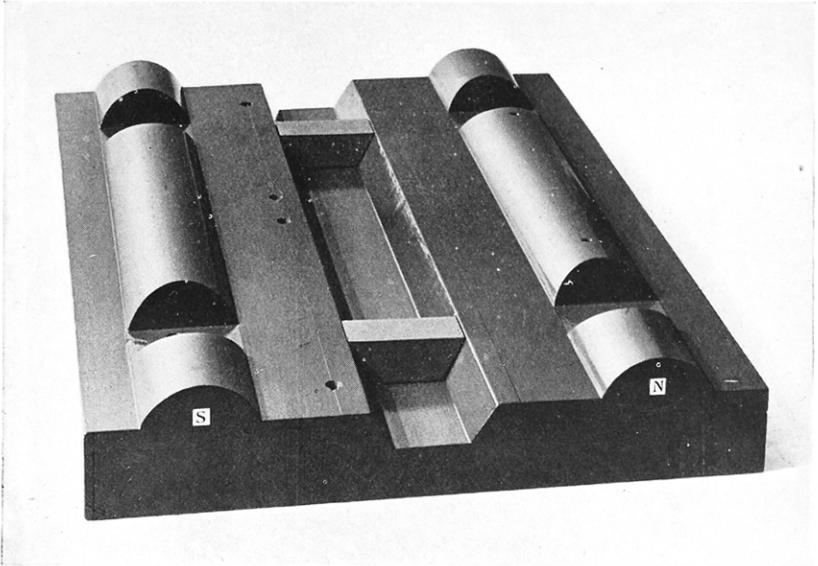


Fig. 6.—THE COMPLETE CROSSINGS. DIVISION 2.

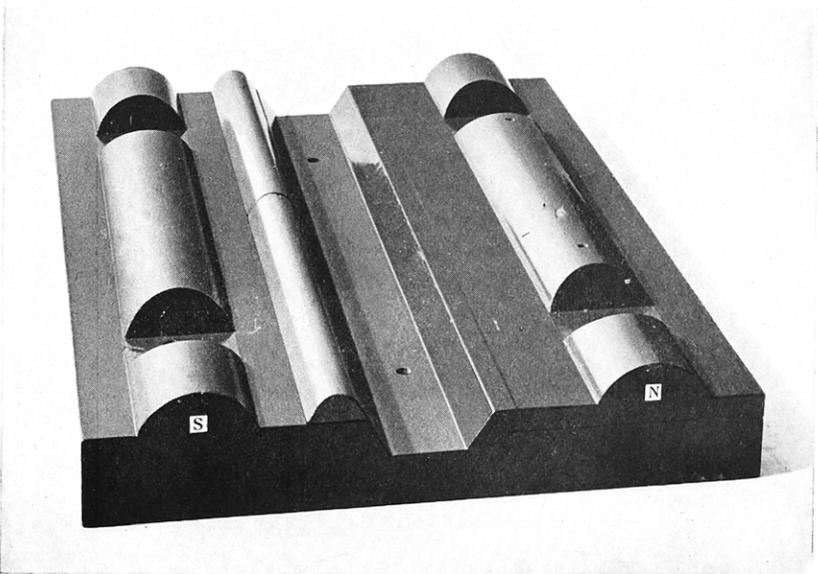


Fig. 7.—THE VALLUM AS REMODELLED AFTER THE BUILDING OF THE WALL.  
DIVISION 3.

To face p. 414.

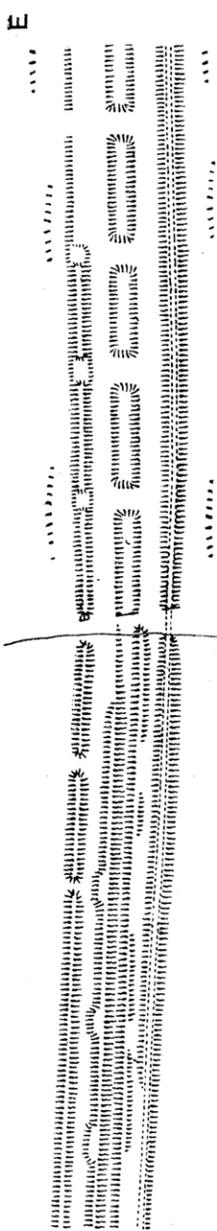


Fig. 8.

Ditch is obviously of larger dimensions than in the sectors where the causeways appear.\* Lastly, the composition of this mound indicates that its material came from the Ditch, not when the latter was first dug, but subsequently. The above facts, taken together, lead inevitably to the conclusion that there is an intimate connection between the absence of the causeways and the presence of the marginal mound, which admits of only one explanation, namely, that wherever the marginal mound appears to-day the causeways were once present. The increased size of the Ditch further implies that the removal of the causeways was accompanied by a complete re-digging of the Ditch in those sectors, and that the mound represents the material removed in *both* operations.

These conclusions are confirmed by the remains which, in two widely-separated sectors, exhibit the actual points at which the re-digging of the Ditch has, for some reason, ceased abruptly, and beyond which the causeways have been left undisturbed. The first example is at the west end of the Cockmount Hill series of causeways, and is illustrated by fig. 8.† A few feet east of the wall between the fields nos. 80 and 54 (N. LXXXIX, 5), *i.e.* within 35 yards of the westmost causeway, the marginal mound

\* The actual increase in dimensions has been enhanced by placing the mound along the edge of the Ditch.

† Reproduced from the Ordnance Survey Map with the sanction of the Controller of H.M. Stationery Office. About the middle of the plan, a line across the Ditch represents a field wall. In preparing the block the rest of the line was erased by mistake.

appears in the normal position.\* Twenty feet west of the wall, a northern marginal mound begins. This abnormal feature is no doubt due to the exceptional height of the south side of the Ditch, which is here carried along the foot of the low ridge which gradually develops into Blake Law (see p. 359). The upcast has been almost equally disposed in each marginal mound. The contrast in the size of the Ditch at this point and at the nearest causeway is remarkable. The sectional area in the former case is fully double that in the latter.

At a point 95 yards west of the wall, an expansion occurs in the north marginal mound directly opposite a gap. Opposite the next two gaps to the west are similar expansions of the same mound. The full length of this mound is only 230 yds., and throughout it has an unfinished appearance, as also have the expansions which are so far a unique feature. They appear on fig. 8. The conclusion is not unreasonable that such expansions, representing additional upcast opposite consecutive causeway-positions, afford evidence that causeways have existed at these points.

The second example is at the east end of the causeway-series close to Carrawburgh farmhouse, in the field no. 6 (N. LXXXI, 12). To the eastward (and throughout in respect of the *north* mound) the conditions are those of division 4. The arrangement of the model in fig. 9 illustrates the general features of the situation at the point where the re-digging of the Ditch ceased, with the exception of the increase in the size of the Ditch concurrently with the appearance of the marginal mound. This feature is very clearly marked although the Ditch has not been so greatly enlarged as at Cockmount Hill. The marginal mound is normal in form and position in this sector.

Though a satisfactory explanation of the marginal mound has been reached, and its relative date ascertained,

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\* The mound is represented as beginning west of the wall. It is too small, at the east side, to be drawn to 25 inch scale.

the remains have thus far afforded no assistance whatever in estimating the lapse of time between the construction of the Crossings and their removal concurrently with the mound's appearance. Such evidence, fixing the actual date of the re-digging of the Ditch within very narrow limits, is provided by the fourth division of the remains.

#### DIVISION 4.

Apart from the modification of the north mound, the characteristics of divisions 3 and 4 are identical. The north mound differs from the south mound (which is normal) in two particulars. It is of considerably larger size and possesses no visible gaps. The model as arranged in fig. 10 illustrates these special features. For many years the difference in size has been noticed. It has been emphasised in probably every "standard" cross-section of the earthwork drawn prior to 1893.\* Horsley's belief as to its meaning, namely, that in several sectors the Military Way has been carried along the top of the north mound, and the recently proved accuracy of his views in the case of the Limestone Corner-Coesike example,† have already been referred to on page 354.

With the discovery that the road-material forming the Military Way, added to an existing mound of normal dimensions, accounted for one abnormality, the possibility became apparent that it also accounted for the second, and that before the road was made, gaps existed in the mound opposite those plainly traceable to-day in the south mound. This conjecture was put to the test in June, 1921, and conclusive evidence of its accuracy obtained at three gap positions on Carrawburgh farm, two in the field no. 3c (N. LXXXI, 12), close to Carrawburgh east turret, and one in the field no. 6, opposite a causeway of the Carrawburgh series. At the position nearest the turret, the evidence

\* E.g. *Britannia Romana*, p. 158, n. 11; *Roman Wall*, 1867, p. 57.

† It is practically certain that the suggested conjunction of road and mound between Portgate and Hill Head (*Brit. Rom.*, p. 143) is also accurate.

was remarkably comprehensive. The material filling the gap was found to be one and the same, not only as that forming the foundation of the road above it, but also as that composing the marginal mound opposite the gap. It is a dark shale frequently met with locally, which contrasts strongly with the clay of the upper subsoil of which the north mound is composed. The shale-bed was evidently just reached when the Ditch was first dug, for some shale appears mixed with the clay towards the top of the mound. The re-digging appears to have been entirely through the shale.

These results establish a chronological connection between the Crossings and the Stone Wall which makes possible of solution the purpose of the system.

In the foregoing descriptions of the remains, the whole of the examples have been drawn from only one half of the Vallum's length, the 33 miles between Hare Hill and Whittledean. If nothing were known of the other half, the 12 miles from Whittledean to Newcastle and the 21 miles from Hare Hill to Dykesfield, to attempt a generalisation at the present time would be clearly unwise. Fortunately, evidence of the continuity of the system is not lacking in those long stretches of highly cultivated country.

At various points the marginal mound is visible and, at two at least, the gaps have been observed. At Davidson's Banks, about a mile west of Carlisle, four or five gaps about 45 yards apart are traceable in the north mound (these *Transactions*, N.S. xiii, p. 396). To-day, the Vallum between Rudchester and Harlow Hill is greatly worn down and no gaps are to be seen. In Horsley's time, however, it was in excellent preservation, and, as already noted on page 353, he called attention specially to "the breaks in the north *agger*."

It is not confirmatory evidence which is wanting, but evidence unfavourable to the continuity of the system:

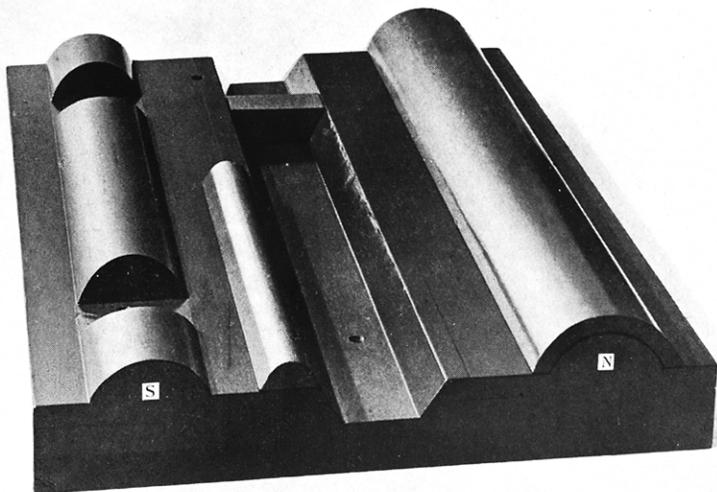


Fig. 9.—THE SITUATION OPPOSITE CARRAWBURGH FARMHOUSE.

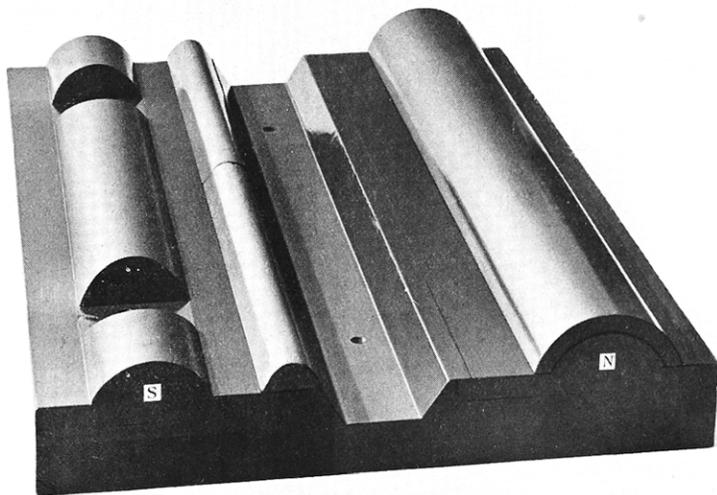


Fig. 10.—THE MILITARY WAY UPON THE NORTH MOUND. DIVISION 4.  
To face p. 418.

of the latter thus far there is none. For only 800 yards in 15 miles does evidence of the Crossings appear to be entirely absent, and, in the light of the unfinished south mound at Cawfields, the most likely explanation of the short sector west of Combe Crag Wood is that the work which was so manifestly in progress not far away in both directions, ceased before that point was reached. It is, therefore, not unreasonable to assume that the gaps seen by Horsley between Rudchester and Harlow Hill are not the only evidence of the system for the loss of which cultivation is responsible !

But such evidence should not be wholly beyond recovery. The plough has generally not reached the indelible line of the original surface below the mounds, and where the marginal mound has existed it will still be traceable by the "black line."\* Where the "black line" is absent, causeways may be sought for along the Ditch. Their preservation is ensured by the very process which has destroyed the mounds. Such are some of the tasks awaiting the resumption of excavation.

#### THE PURPOSE OF THE SYSTEM.

Prior to the discovery of the causeways, the only explanation of the gaps which presented itself to the first-named of the writers was that they represented an attempt, subsequent to the construction of the Vallum, to increase the visibility of the mounds from a distance. The visibility theory, the governing idea of which was that the earthwork represented a non-military boundary "mark" or "pale," was carefully considered and tested by the second-named of the writers, during a period of several weeks, under diverse weather conditions, in different localities and where the vegetation on the mounds varies. In certain circumstances, the presence of the gaps enhances the visibility of the mounds most strikingly. On the other

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\* *Ibid.*, o.s. xiv, pp. 188, 189 : also *cf.* o.s. xiii, p. 457.

hand, the observations neutral or unfavourable to the theory exceeded in proportion those favourable to it, and decidedly outweighed them as evidence. That explanation was accordingly abandoned and Horsley's line of thought, that "they look like gaps made for carriages," adopted. The position of the gaps directly opposite each other in the mounds, with the Ditch between, soon led to the discovery of the causeways at Cockmount Hill, when the solution of both components as complete Crossings became self-evident.

Before the excavations described in the preceding section were undertaken, however, the question of the purpose of such Crossings admitted of the following alternative answers:—

That they were made—

(1) To facilitate the transport of material and the passage of workers from quarries and temporary camps south of the Vallum to the Great Wall, during the period of its construction.

(2) For a similar purpose, during some period of its reconstruction, or

(3) To demonstrate, in a manner at once spectacular and useful, that a change in imperial policy had rendered the whole earthwork obsolete.

During the course of the Pilgrimage in September, 1920,\* the greater probability of the third solution was urged by Sir Charles Oman and Mr. J. A. Petch, as against the first originally suggested by the second-named of the writers. The building of the wall of Antoninus, *circa* A.D. 142, with the assumed extension of the area of *civil* administration to that line at the same time, was advanced as the occasion of the change. On the same occasion, a criticism of the first solution from the engineering standpoint by Mr. W. H. Knowles lent additional support to the third. Mr.

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\* These *Transactions*, n.s. xxi, pp. 257—269. *Proceedings*, S.A. Newcastle, 3 ser. ix, pp. 281—299.

Knowles urged that for the purpose of facilitating the building of the Wall, (1) the *frequency* of the Crossings was unnecessarily high, and (2) that many on account of their inaccessible position must have been entirely useless. In view of the fact that the only examples known at the time were those below Cockmount Hill, which everyone present could see led to the edge of a wide marsh only 50 yards away, it is not to be wondered at that the first solution "made little headway at the start"!

From that time until June, 1921, when the filled-up gaps were discovered below the Military Way on Carrawburgh farm, the possibility of a real solution appeared to be remote, the nearest approach promising to be a balancing of the historical evidence upon the one point whether or not the building of Antonine's Wall involved the alteration of the civil *limes*. That simple excavation transformed the situation, and gave an unequivocal verdict in favour of the first solution, based upon the single condition that the Military Way is accepted as one of the four essential components of the system of works collectively described as the "Great Wall," of which the remaining three are the Stone Wall, the Milecastles and the Turrets. It is not the intention of the writers to discuss the validity of this condition, for they are unaware of any evidence unfavourable to such a connection between the Stone Wall and the Military Way, nor have they met with any statement of a contrary opinion in the long record of the study of the Wall.

But this result offers no explanation of the two-fold engineering difficulty raised by Mr. W. H. Knowles. His second objection, that of the uselessness of certain of the Crossings, was, the writers consider, fully answered by Mr. R. G. Collingwood. Dealing with this point in his Notes on the Pilgrimage, Mr. Collingwood says (*ibid.*, p. 298):—"At *Aesica* (*i.e.* Cockmount Hill) the interruptions lead into marshy ground where no such traffic (*i.e.* in

connection with the building of the Wall) can have passed . . . . . At these points, therefore, the interruptions cannot have been used for (that) purpose. . . . . This does not appear to be a fatal objection. It is a fact not without parallel in Roman engineering. At Hardknot the north gate of the fort opens on the brink of a precipice; the same thing happens at Housesteads milecastle and in a modified degree at Housesteads itself. At Ambleside, again, the south gate opens into a marsh over which it has been proved that there never was a road. These gates were built because they were in the plan, not because they were needed. Roman military engineers were in the habit of working to a fixed plan even when the result was a waste of labour; they valued tidiness and regularity more than economy of effort. It need cause no surprise if they decided to pierce the Vallum with crossings not only where they could be used but also where, owing to the nature of the ground, they could not."

The first objection, however, raises issues of great interest and importance. The determining factor in the situation which faced the engineers in planning the scheme of building operations was the location of the supplies of material. Had these been situated to the north of the Vallum there also would the labour units engaged in the work have been quartered. In that case the military task would have been increased, for the temporary camps and quarries would have been more liable to attack than if they were situated behind the existing line of forts, but the crossing of the Vallum would have been unnecessary, and the labour which that involved would have been saved.

Why that course was not adopted is demonstrated with remarkable clearness by the geological formation of the district traversed by the Wall. In Cumberland the sources of supply are situated wholly to the south of the Vallum. In Northumberland, though good building stone is found near the Wall on the north side, and has been

worked by the Romans at more than one point, the striking feature is the persistent recurrence south of the Vallum of outcrops which have been workable with a minimum of preparatory labour. The uplands between the North Tyne and the Tipalt afford the outstanding example of this uniformity of natural conditions. Owing to the upheaval associated with the great basaltic inroad, the northern limit of which is marked by the line of the Wall from Limestone Bank to Thirlwall, immense quantities of freestone and limestone, more than sufficient for the whole Wall had no other supplies been available, have been rendered immediately workable in the belt of country between the South Tyne and the Vallum.

The preliminary survey of the district could hardly have resulted otherwise than in the decision to utilise these sources of supply notwithstanding the extensive interference with the Vallum which this course involved. The existence of Crossings additional to those which from the first must have carried the branch roads from the forts to the Stanegate, is therefore accounted for.

The writers believe the explanation of the high frequency of the Crossings to be the adoption of an intensive method of construction, in order to ensure the completion of the Wall in the shortest possible period of time. Though the centurial inscriptions indicate that the Wall was certainly built in short lengths by different working parties, they give no indication of the total number of men engaged *in every capacity* upon a particular length. It is not for a moment to be considered that a working party numbered only the hundred men of the particular company. Probably much nearer the truth is the suggestion that these hundred *legionary* soldiers represent a total staff of ten times that number.

Such a view is supported by the discovery, since 1908, of numerous temporary camps in the Haltwhistle Common neighbourhood, where, as already indicated, the earth-

work remains are in an extraordinarily perfect state of preservation. Within an area measuring less than  $2\frac{1}{2}$  miles in length, between Fellend and Milestone House farms on the line of Wade's road, *i.e.* immediately to the south of the Stanegate, and three-quarters of a mile in width, including both the Wall and Wade's road, ten camps, each complete and independent, have been located. Their total area is no less than  $56\frac{1}{4}$  acres.\* Three of the camps are of great size, far exceeding the largest of those previously located along the line of the Wall, Fellend camp covering  $20\frac{1}{2}$  acres, Milestone House nearly 16 acres, and Burnhead 9 acres. According to Hyginus the ten camps would together provide temporary accommodation for at least 50,000 men, a total representing probably ten times the number that could be employed at one time on so short a length of the Wall! †

If the scheme of operations provided for the concentration, in successive sectors, of the greatest number of men employable at one time, in quarrying and building, in the intermediate operations such as the production of lime-mortar, and especially in the work of rapid transport between the quarries and the Wall, further objection is not likely to be raised even to so many as 36 Crossings per Roman mile. The existence of these camps, affording such extensive accommodation, not only removes the difficulty at any rate as far as the whole Haltwhistle Common neighbourhood is concerned, but indicates another direction in which the complete solution may be reached, namely by a search for similar camps in other sectors.

The survival of complete Crossings in at least four sectors is the last question to be considered.

The only direct evidence bearing upon the actual date

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\* Eight are situated south of the Vallum, and two a short distance north of the Wall. They appear, for the first time on any map, on the revised *o.s.*, Edition 1922 (N. LXXXIX, 5, 6 and 9).

† There is, of course, no intention to suggest that all the camps belong to one period.

of the re-digging of the Ditch is that of the Carrawburgh farm excavation. Further evidence of this character will be obtainable at any point where the Military Way is carried upon the north mound, but no point of interference or connection between the marginal mound and any other component of the works has yet been observed at which evidence of date could be sought for. If, however, the Vallum originally marked the northern limit of civil administration, a decision to retain it as such is much more likely to have been made immediately after the building of the Wall (which certainly emphasised the military character of the administration beyond the Vallum) than at a later period, especially in view of the rapid development of the defensive element in the later *limites* throughout the Empire.

It is, therefore, natural to conclude that as soon as the Wall was completed in a particular sector, the re-digging of the Ditch commenced. Why such a procedure was not fully carried out in certain sectors may remain unexplained, but at any rate the fact is paralleled by the survival in other sectors of series of unfinished Crossings, and in one at least of the earthwork in its original form.

It is possible, however, to advance reasons for the survival of three of the existing series of causeways. At Carvoran, they would give direct access to the Military Way from a fort which occupies a unique position in relation to the Vallum.\* The wide marsh below Cockmount Hill, probably the most completely impassable of the marshes which the Vallum skirts in that neighbourhood, rendered the causeways in that sector useless from the first. Might not that fact prompt the decision that their removal would be a particularly useless expenditure of labour? Lastly, at Matfen Piers there is evidence, in the

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\* MAGNA is only 150 yards south of the general line of the Vallum, yet the earthwork makes no effort to enclose it. It is evidently an original Stanegate fort. This fact may account for its unique position.

construction of the traverses, of a decision to prevent the crossing of the Ditch from the *south*. Do the traverses represent a labour-saving alternative to the removal of the causeways on account of the exceptional size of the latter in this sector?

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In conclusion, the writers desire to express their warmest thanks to Mr. Donald Atkinson, M.A., and to Mr. R. G. Collingwood, M.A., F.S.A., for their invaluable interest and help during the preparation of this paper. But for discussion of the historical material with Mr. Atkinson and his translation from the German of Kornemann's paper in *Klio*, vol. vii, neither the historical section of this paper nor the Appendix would have been written.

Mr. Collingwood's detailed criticism led, not only to the modification of the writers' conclusions, but also to the very valuable statement of his own in the *Vasculum*, to which reference has been made.

To Mrs. T. H. Hodgson, the writers are greatly indebted for very valuable information concerning many details of the work of the Cumberland Excavation Committee, and to Dr. George Macdonald for his unfailing interest and especially for his advice and encouragement during his survey of the Crossings in April, 1921.

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#### APPENDIX.

##### A COMPARISON OF THE VALLUM WITH THE LIMITES IN OTHER PROVINCES.

By R. C. SHAW, M.R.C.S.

A discussion of the function of the Vallum would not be complete without an examination of that structure in the light of evidence deduced from its comparison with other frontier works of the Roman period. Although the Vallum stands alone in its possession of several peculiar features; and though the Roman Empire provides us with no precisely parallel work, many valuable facts, which throw light upon its purpose, may be obtained from such a comparative study.

One outstanding point of difference between the British and

Continental *limites* may be referred to here—that is, the peculiar continuity of design of the British barriers in contrast with those other lands. For example, the north-west frontier of Dacia was demarcated by a variety of works, sometimes by a stone wall, sometimes by an earth bank and a ditch, or even by an earth bank alone (*Klio*, vol. vii); on the other hand, recall to mind the continuity of design manifested by the Vallum or the Wall of Antoninus in Britain. Perhaps the brevity of the course of our frontiers determined the homogeneousness of a design which would otherwise have been governed by variations in supply of building material, or by the physical features of the country traversed.

The utilisation of a ditch as a line of demarcation at an early period is instanced by the ditch of Scipio in Africa, which was apparently solely a boundary ditch between tribes unsupported by any type of fortification whatsoever. Although this is a case where, in pre-Imperial days a ditch served as boundary, the “*Limites Imperii*” primarily followed the course of the pronounced physical features such as the rivers or, in the absence of such, the frontiers were demarcated by roads linking up the forts. The earliest line of the German frontier furnishes examples of both types of early *limites*. Thus, as far as possible, the Rhine forms the boundary (Kornemann refers to this type as “*wet limites*”), on the other hand, where the Rhenish and Danubian frontiers meet in the hill country, the *limes* followed the road from Strassburg up the Kinzig valley to Rottweil and probably joined the Danube near Tuttlingen.\*

It is probably not until the advent of the Hadrianic period that we find the delineation of frontiers by continuous boundary marks of the Scipian ditch type. Of all the great frontier works which may be assigned to that period the *limes* in Numidia furnishes us with the closest parallel to the Vallum (Cagnat, *L'Armée romaine d'Afrique*, Ed. II).

The original frontier of Northern Africa followed a line running east and west along the north side of a range of hills, amongst the supporting stations of which were Thevestus, Mascula and Lambaesis, alternatively legionary fortresses. About the reign of Hadrian (Kornemann, *Klio*, vol. vii), the 3rd legion was transferred to Lambaesis, at the earliest about 123 A.D., and the fort-

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\* The *limes Arabicus* in another example of the road type of frontier. The limiting road was constructed by Trajan and supported by a chain of strong forts, for example, El Kastal and El Leggum, the latter being a legionary fortress. At a later date a further chain of forts was added 20 miles to the east.

ress was completed in 129 A.D. At this period the frontier was advanced beyond the southern hills, and forts were planted at the further extremities of the passes, the new line following the course of a chain of Chotts (lakes) and the R. Djedi. Between the westernmost of the Chotts and the Djedi, the frontier, instead of following the bend of the river, was carried in a direct line by a continuous work similar to the Vallum in many respects. It consisted of a ditch running roughly parallel to, and 4-5 kilometres south of the Djedi, the material from which was disposed on either the north or south berms, mainly on the northern side, to form a mound, supported in places by a stone wall  $1\frac{1}{2}$  metres high.

Immediately to the rear of the north mound, at intervals of 1 km. were additional mounds bearing foundations measuring  $3 \times 3$  metres, evidently the remains of watch towers. At irregular distances there were larger mounds in groups of three,\* each of which had a diameter of 10 metres. Between the Djedi and the earthwork lay the forts. This system was interrupted at intervals by crossings for the caravan routes over the desert. Here we have a section of the Hadrianic Numidian *limes* which was demarcated by a single ditch, the impression of which was exaggerated by piling the material thrown out into a mound, which was mainly on the north side and had the additional support of a dry stone wall, evidently intended still further to increase the importance of the Roman side of the frontier, the whole line being watched by towers at intervals, and supported by forts in the rear. The entire work has a distinctly civil flavour: a barrier for customs control.

The indications on this section are corroborated by the evidence from two other parts of the same frontier. For a distance of 17 kms. between the summits of the Jebel Tebaga and the western slopes of the Jebel Melabb, the frontier ran approximately north and south, and was demarcated by a simple ditch, the sand from which was thrown to the east (Roman side) to form a mound replaced in rocky parts by a dry stone wall of a very irregular character, possessing an original height of 2 metres. This section was crossed by a caravan route at a gateway guarded by a tower. This entire line of works was obviously nothing more than a mere barrier for customs control, a simple definition of the Roman frontier. Still another instance may be cited (Cagnat, *ibid.*, Ed. II, p. 534). Traversing a valley near

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\* Compare these remains with those of watch towers on the German frontier, where the towers also occur in groups of three.

Bena des ouled Mahdi there was an important caravan route which here crossed the frontier ; the latter was, therefore, more strongly defined in order to prevent smuggling of goods, or in this case to check raiding parties following the valley. The barrier here was a wall 4 metres in height with a gateway where the track crossed, supported by circular towers.

Viewing this work as a whole, one cannot fail to be impressed by its very un-military character. Only where an important trade route crossed the frontier was there any structure of a military nature : elsewhere, the barrier, in the absence of the Chotts and the R. Djedi, was a mere ditch enhanced by the presence of a comparatively low earthen mound or a rough stone wall, bearing a resemblance to the Vallum in its non-military character, but differing from that structure in that it had a more pronounced mound on the Roman side and that its defences were all to the rear. Therefore, although the continuous lines of the Numidian frontier appear *a priori* to be boundary works, their obstacle element was more developed than in the case of the Vallum, especially in the valley near Bena des ouled Mahdi.

The importance of the ditch on this frontier, as distinct from a mound secondarily strengthened by a ditch, is illustrated by the following interesting reference from the Codex Theodosianus (8. 5. 1.). Speaking of the frontier lands, it says, " . . . . . spaces of land which had been conceded by human foresight to the natives for the sake of the maintenance and defence of the frontier and of the ditch of the men of old time."

The forest-clad hills of the Rhenish frontier were also traversed by a continuous work in the Hadrianic period, the Palisade. The details of this structure have been given in the preceding paper (p. 378). It was there shown that the Palisade functioned more as a customs hedge than as a military obstacle, although it is an obvious and undeniable fact that a palisade composed of nine foot beams would possess more of the obstacle element than the ditch and mounds of the Vallum. The two works were, however, clearly related in general principles ; they were both well-defined customs boundaries, nor need the difference in material between the Vallum and the Palisade indicate a widely different date of construction. The extended line and the superabundance of timber along the Rhine frontier may conceivably have influenced the builders in the choice of the material form of the work and hence the Palisade, whereas the shorter line of the Vallum and the soft soil along its course would lend itself more readily to the ditch type of boundary, such as was the case in sections of the

African frontier. Such a conclusion is still further substantiated by the fact that Antoninus Pius constructed a palisade similar to Hadrian's along his advanced line extending from Miltenburg to Welzheim; the evidence of the forts on this line definitely indicates an Antonine date. His work on this frontier contrasts strongly with his turf wall in Scotland.

Notwithstanding the improbability that the Romans would await a considerable assault behind such works, but rather engage an enemy in the open field, these barriers, such as the palisade and other works to be mentioned later, were obviously of some military significance as attested by the following inscription of the time of Commodus, 185 A.D. "He fortified the whole bank (Danube) with towers built from the ground and also with garrisons placed at convenient points to prevent secret crossings of the river" (C.I.L. iii, 3385, 10312-3). Here we have definite evidence that a river *limes* was held in strength in order to prevent minor incursions of the enemy into Roman territory. Reasoning by analogy it seems probable that the artificial continuous works, such as the Palisade, would possess a similar significance, since they were the later developed types of boundaries. These continuous works would be strategic lines, the possession of which had to be retained for they were the one means which enabled the Romans to control customs and tribal movements.

It would seem not improbable that they would tend to develop along military lines: their intrinsic value as obstacles, as well as their extrinsic value as imposing continuous barriers, would tend to become accentuated. We find a rapid development of the obstacle element in such works, which takes the form of a continuous stone or earthen rampart, to which the ditch was a mere subsidiary, in contrast to their simple prototype exemplified in the ditch of Scipio. If a continuous *limes* is going to develop along military lines, it would be natural to anticipate a similar process of evolution in the forts. The additional strength of a *limes* would demand an increased force to guard it, and evidence for this development is not lacking; thus, on the German frontier, the forts were enlarged in Hadrian's reign to cohort size, with masonry instead of earthwork ramparts, prior to the construction of the earth-mound and ditch. Evidence of the enlargement of certain forts on the Vallum before the erection of the Great Wall, has been referred to in the preceding paper (pp. 370, 395).

It is now possible to trace the rise of the military element of the frontier-works.

Firstly, the Rhenish frontier may be considered. At a later

date than that of the Palisade, a ditch was dug and a high earth mound raised, immediately to the rear of that structure: this earthen wall, known as the Pfahlgraben, was continuous with the stone wall, the Teufelsmauer. As indicated in the preceding paper (p. 380), it was Mommsen's opinion that even these structures were barriers of a customs type and not comparable to the stone wall in Britain; nevertheless it would seem that they contained a definite military element which, however, on other frontiers developed to a much greater degree.

For examples of such evolution, the Aluta lines present themselves. The first *limes* along the Aluta (a tributary of the eastern Danube), followed the course of that river, lying in front of it to the north, near the foothills of the Carpathians. The forts along this section were built in 138 A.D., and enlarged in 140 A.D. (Tocilescu, *Fouilles en Roumanie*); another example of increased frontier garrisons prior to the development of a stronger continuous *limes*, which, in this case, was constructed 20 kms. eastwards and was 235 kms. in length. The work itself is described as being made "of earth, beaten and baked, more than 2 metres broad and 3 metres high, crowned by battlements and a gallery for the sentinels." To the rear (150—300 metres) were nine single and four double forts and between the forts were towers. Kornemann considers that this Aluta line was constructed not later than the end of the 2nd century. Here the military element appears to have developed to a greater degree than in the case of the Pfahlgraben or the Teufelsmauer; on the other hand the structure was not as strong as the stone wall in Britain.

The nearest parallel to the Great Wall, where a continental *limes* shows the maximum development of the military element, is to be found on the Dobruja frontier, which traversed the alluvial plain of the Danube delta westwards from the Black Sea to the main course of the river. Of the two Roman lines in the Dobruja, one was a great wall of earth, the other was made of stone. The former preceded the latter in date, the barriers crossing at various points. The earth wall (*le grand vallum de terre*) was some 4 metres in height and 12 metres wide at its base, there was a ditch 10 metres broad on the north side, and a slight southern ditch is also figured by Tocilescu (*Fouilles en Roumanie*, p. 145), but appears to have been insignificant. On the south side, in connection with\* the earth wall, was a chain of forts approximately 1 km. apart, with intermediate maniple-sized forts. The forts were

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\* Tocilescu does not state if they abut on the wall.

defended by earthen ramparts and measured, according to Tocilesco, on an average,  $240 \times 226$  paces, the manipular forts averaging about  $70 \times 24$  paces, the long sides of the latter being applied to the rampart.

The whole line was apparently a very strong one; the high earthen rampart and ditch would compare very favourably with the Wall of Antoninus in Scotland when one takes into consideration the strength of the forts and intermediates. The latter would be a little larger than our milecastles, although a structure approaching the form of one of these manipular forts would be effected if the two barrack-blocks of a milecastle were applied end to end along the wall, instead of being at right-angles to it. This line is dated by Tocilesco to Trajan. Kornemann, however, dates it to Hadrian. Some evidence bearing on this point may be deduced from consideration of the legionary fortress at Troesmis, lying to the north of the lines. The suburbs of this fortress were occupied by time-expired men in the reign of Hadrian, as evidenced by an inscription. It seems unlikely that Troesmis would be occupied if these strong lines had then been established across the delta to the south. This would appear to indicate a late Hadrianic date at least for these lines.

The second Dobruja line was a wall of stone, following a very similar course to that of the earth wall. That part of the stone wall near the sea was built from the ruins of the Greek colony of Constantia. This line was supported by 27 forts and some intermediate towers, though the latter were not so numerous in proportion as those on the earth wall. Two of these forts measured  $280 \times 200$  paces and 250 paces square respectively. The forts were spaced irregularly, being more numerous near the sea. Although this wall was not so systematically supported with forts the latter were clearly larger than those on the earth wall. No date has been as yet assigned with any certainty to this later *limes*. Viewing the Dobruja stone wall as a whole, one cannot fail to be impressed with the view that here we have a development of the military element of the *limes* which, in this particular case, has attained a degree of strength greater than that of the Antonine Wall, and little below that of Hadrian's stone wall in Britain, while its forts attained an even greater strength than those of the Wallsend—Bowness chain.

A position has now been attained in this discussion of the comparative evidence which enables us to understand clearly the purpose of the Vallum in the light of such research. A careful study of the earlier continuous frontier works (Palisade and Numidian

*limites*) brings out the fact that, besides being customs boundaries, they were lines in the neighbourhood of which resistance against an enemy was to be made by military force ; though such a force was not necessarily disposed along the immediate line of demarcation, nor were the structures defensible in themselves. In course of time military exigencies came to govern the entire aspect of certain of the frontiers, notably those in Britain and on the Danube and Aluta. Strategic advantages were henceforward the primary consideration in the construction of these continuous *limites*, and as a necessary concomitant change the strength of the garrisons of the forts was increased. As a consequence of these changes the forts underwent enlargement, and on the German and Aluta lines, and on the Vallum in Britain, they show this change prior to the erection of the continuous obstacle type of work exemplified by the stone wall of Hadrian.

The evolutionary position of the Vallum relative to other frontier works may now be clearly understood. It is evident that it was of the Scipian ditch type of civil boundary, with the addition of a chain of guard forts and that, although closely resembling in many points the general characteristics of the Numidian frontier, it differed from that line in having all its forts in advance of the boundary, and was neutral as regards intrinsic military advantage. The Palisade in Germany, although differing in material type, was probably closely related in the general principles of limitation of the province and customs control.

Here, it must be repeated, that the further evolution of the frontiers was not a chronological development, but a change entirely dependant on the military exigencies of the frontier concerned. All the evidence tends to show that the Caledonians were a far more turbulent race than were the tribesmen on other frontiers, that they were constantly harassing the frontier forces. The Roman army in Britain was considerably larger than that patrolling the very much longer line of the Rhenish *limes*. Hence the more rapid evolution of a stronger type of work than the Vallum, as typified by the stone wall of Hadrian or the turf wall of Pius, an evolutionary stage which was probably not attained on the German frontier until after 160 A.D. or even as late as 200 A.D., or, in the case of the Dobruja stone wall, not until the middle of the 2nd century.