V.—THE PROBLEM OF THE VALLUM AT CARVORAN

By Brenda Swinbank.

In recent years only has the significance of the position of Carvoran fort in the Wall scheme been fully realized. This realization rather recognizes and establishes the existence of problems than provides a solution to them. Concrete expression was first given to them in 1949,[1] when Mr. Birley discussed briefly each in turn and expressed a hope that some at least would be investigated within the following years. This present paper is designed to deal with one of those problems on which Mr. Birley had some interesting speculations to make—that of the relationship between the fort at Carvoran and the Vallum.

The Vallum makes a diversion at Carvoran which is unique for three reasons. Firstly, the diversion is shallower[2] than any other fort diversion known along the course of the Vallum; secondly, it runs to the north of the fort excluding it from the zone between the Vallum and the Wall, whereas the Benwell, Halton,[3] Birdoswald and Castlesteads[4] diversions run to the south of each fort and explicitly include them in the Wall zone; thirdly, the Vallum does not appear to be diverging round the existing fort, since the latter lies considerably to the south and west, and the Vallum would not need to diverge at all to avoid contact with it.

Nevertheless, Mr. Birley was disposed to think that: "the diversion of the Vallum to the north, customarily interpreted

[1] Birley: *Centenary Pilgrimage Handbook*, 1949, pp. 62-5.
[2] The diversion is approximately 1,430 feet in length and 230 feet in depth.
[3] *AA*[4] xi p. 177, *NCH* x p. 468 respectively.
[4] *CW*[2] xxxiii p. 247, iii p. 339 respectively.

as avoiding a swamp, seems easiest to explain on the analogies of the comparable diversions at Benwell and Halton, as avoiding the site selected for a fort, even if a fort had not already been built when the Vallum was constructed."

The diversions in the Vallum's course at both Benwell and Birdoswald had been provided with causeways of undisturbed sub-soil allowing access from the south into the immediate vicinity of these forts. Therefore, if the Carvoran diversion was to be paralleled with those at Benwell and Birdoswald, such a causeway providing access from the Wall zone through the Vallum, but southwards here to a fort, might be expected. Mr. Birley put forward attractive reasons for supposing that it was not for the existing fort but for an earlier one on a different alignment[5] that a causeway would have been provided. He made a plea for excavation to solve this problem.

The present writer undertook a short excavation at Carvoran, largely as a result of Mr. Birley's speculations on the subject, in an attempt to discover what in fact was the relationship of the Vallum to the fort at Carvoran.

The presence of causeways or "crossings"[6] in the Vallum ditch there has for some time been realized,[7] but whether such causeways were original or secondary has been impossible to determine without excavation. It seemed unlikely from the start that an original causeway would be discovered

[5] *Centenary Pilgrimage*, p. 63—for possibility of an earlier fort on the site. The idea that such a fort was on a different alignment was not expressed in print.

[6] The meaning of the terms "causeway" and "crossing" needs to be clarified. The writer employs the term "causeway" to indicate a very substantial fill of the Vallum ditch used to provide access to forts and milecastles. These may be of two kinds: firstly, original causeways, i.e. a usual 20 feet stretch of Vallum ditch left undug; secondly, secondary causeways, i.e. the later filling of the Vallum ditch which had originally been cut straight across. From surface evidence it seems true to say that a "crossing" is normally a much slighter filling of the ditch, not for any particular purpose in itself, but caused by the systematic "slighting" of the Vallum mounds and the deposition of this material in the ditch, in *circa* A.D. 140. Such "crossings" occur at approximately 45 yard intervals throughout the Vallum and are thus far commoner than the causeways.

[7] *CW*[2] xxii.

for two reasons. Firstly, because the construction of this fort in stone is dateable to the latter years of Hadrian's reign[8] and the Vallum to a relatively earlier date.[9] The Vallum could scarcely provide a causeway for or diverge round a fort that did not exist. Secondly, allowing the possibility of the existence of a fort earlier than the present stone one, the Vallum seems to exclude it deliberately from the Wall zone just as it excludes other Stanegate forts[10] which had doubtless been abandoned when the Vallum was constructed.

The excavation lasted two weeks in September 1951; the work was sponsored by the Durham University Excavation Committee; considerable help was afforded by the Ministry of Works foreman, Mr. Charles Anderson; Thomas Batey undertook the work of digging. The writer wishes to express her thanks to Mr. W. Reay for his kind permission to excavate, and to Messrs. W. and M. Reay and Miss Reay for their kindly encouragement and interest.

THE EXCAVATIONS

Mr. Simpson, in 1922,[11] drew attention to the fact that "not more than six" crossings[12] were visible in the Vallum diversion at Carvoran and the 25 in. O.S. map consequently marks them. In 1948, however, Mr. W. Reay, in an attempt to level the field for ploughing, filled up the Vallum ditch with heavy reddish soil from the Greenhead quarry. This reddish material is easily distinguishable on the ground,

[8] A remarkable series of inscriptions erected by a prefect, Flavius Secundus, have been discovered at Carvoran (*P.S.A.N.*[4] ix pp. 250-6; *J.R.S.* xxxi p. 142ff.). The same prefect erected a fine altar for the health of L. Aelius Caesar, i.e. A.D. 136-7. Thus the inscriptions are approximately dated, though they could be earlier. They are especially interesting because they record the building in stone of a certain number of feet of rampart. In addition, a fragmentary building inscription of Hadrianic date was discovered.

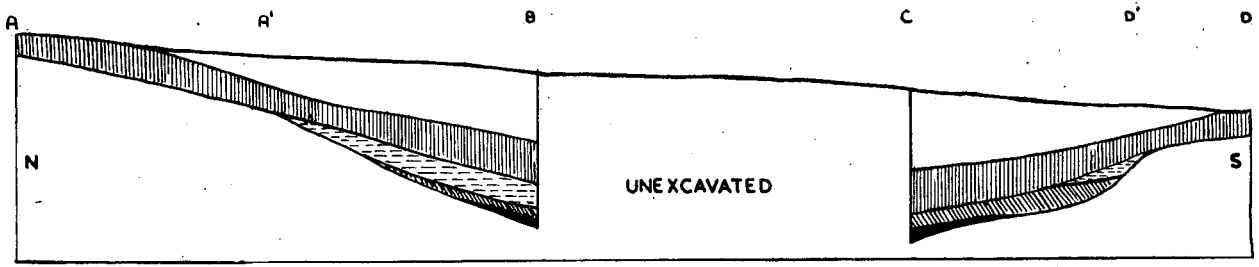
[9] Carrawburgh fort, built over the filled-in Vallum ditch, has produced a building inscription dateable to *circa* A.D. 130-3. (*C.I.L.* vii p. 620a; *E.E.* ix p. 587; *J.R.S.* xxxiv pp. 87-8.)

[10] That Carvoran fort belongs to the Stanegate series of forts rather than to the Wall, is evident from its situation.

[11] *CW*[2] xxii p. 59.

[12] There are five crossings visible in the east-west portion of the diversion.

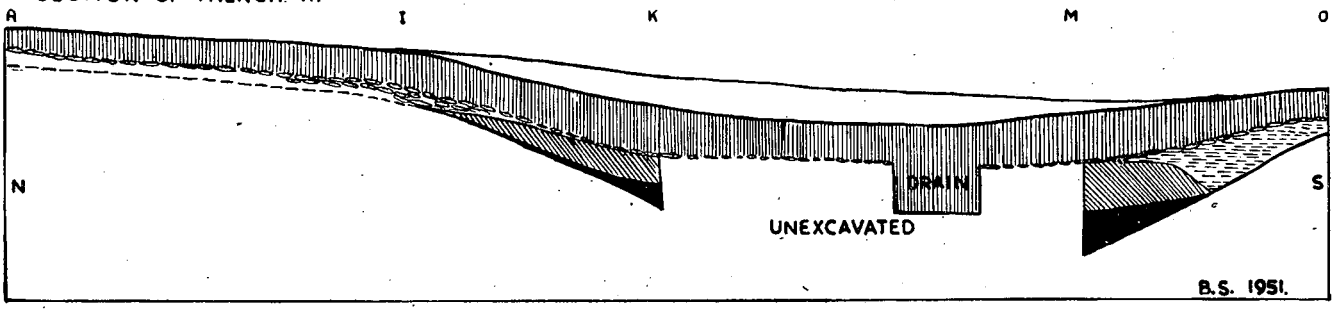
THE VALLUM AT CARVORAN: SECTION OF TRENCH I.



Red quarry material.
Old topsoil.
Soft grey silt.
Yellowish clay till.
Black silt.
Metalling.

Scale: 1 inch=3 feet.

SECTION OF TRENCH II.



stretching from the eastern field wall to a point just before the second, i.e. the south-west bend of the Vallum. Thus the crossings clearly visible to Mr. Simpson are now only distinguishable by slight depressions marking the gaps in the gradually diminishing south mound, and by the more obvious depressions in the field wall to the north, which runs obliquely over the north mound, leaving it wholly in the field to the north on the east. One crossing is in line with the junction of the Maiden Way and the Stanegate,[13] and was the obvious place to commence operations. Trench I was cut roughly along the centre of this crossing.

Trench I[14]

Firstly a portion of the north berm was uncovered and the sub-soil determined to be a pinkish-grey clay with a yellowish tinge in places. The trench was extended to cut across the Vallum ditch at right angles. A thin, black line representing the old surface of the ditch marked with unmistakable clarity the gentle profile of the north slope of the ditch. The slope was followed down to a depth of 4 feet below ground level, at a distance of 7 feet south of the north lip of the ditch. Immediately above the black line was a thin layer of dark-grey silt. This layer was superimposed by one of mixed yellow, grey and pink clay streaked with black. A layer, 1 foot thick, of clean, light-grey material overlay the mixed clay and stretched to the lip of the ditch.

Similar conditions recurred in a continuation of the trench, intended to cover the south lip of the ditch. Once more the slope was marked by a thin line of black. But the mixed clay filling appeared thicker and reached almost to the lip of the ditch, whilst the uppermost light-grey layer, quite thick in the northern section of the trench, was scarcely represented in the southern. The ditch from lip to lip was 23 feet wide. No attempt was made to penetrate the depths of the Vallum ditch. There could be no doubt that no

[13] Birley, p. 65.

[14] See section I.

original causeway existed across the ditch at this point. The mixed clay filling was assumed to be a "crossing".

Trench II[15]

The "crossing" approximately in line with the north-south axis of the fort was next investigated. The Vallum north mound has now reappeared on the south side of the field wall. The approximate centre of the "crossing" as shown by the north mound gap was trenched. Light metalling as if for a roadway or track soon came to light,[16] and was followed across the north berm ditch and over to the south side of the Vallum. In the centre of the ditch the metalling deteriorated considerably in quantity and quality, but it was quite clear that a crossing of some kind had been discovered. In an attempt to discover the limit of the metalling of the crossing, a trench was cut at right angles to the main trench for a distance of 11 feet to the east over the approximate line of the south lip of the ditch. This hope was not realized, though the metalling became gradually sparser and petered out at about 7 feet 6 inches. Moreover, the small east-west trench was too far north to show the south lip of the ditch.

The south lip was discovered in an extension of the main trench to the south-east. To show clearly the slope of the ditch and to secure a section of the filling of the ditch, the light metalling, yellowish clay fill and black silt were removed for a distance of 6 feet 3 inches north from the south ditch lip.[17] The section of ditch-filling[18] displayed was indeed interesting. Immediately above the pink sub-soil of the ditch slope was a layer, 1 foot 3 inches thick, of dense black material, presumably silt; above that and reaching almost to the south lip of the ditch a layer, 1 foot 3 inches thick, of solid, clean-looking, yellowish-pink clay, precisely the same as in Trench I but of greater thickness; next a thin layer of small pebbles set on to soft, dark-greyish silty material; then

[15] See section II.
[16] Plate X, fig. 1.
[17] Plate X, fig. 2.
[18] Plate XI, fig. 1.

the old top-soil and turf level; finally a thin layer of quarry red. The excavation was not carried farther since the non-existence of an original causeway had been proved and a field drain 2 feet to the north discouraged further investigation. At the north lip of the ditch the road-metalling and fill were removed for a distance of 5 feet 6 inches across the ditch. Precisely the same conditions recurred.[19] Attention ought to be drawn to the fact made clear in both trenches, that the Vallum (which has not been recut in this area, since the crossings remain), approximately 23 feet wide from lip to lip, exhibits surprisingly gentle slopes down into the ditch instead of a steep profile as at Benwell causeway. It seems likely that, as at Cockmount Hill,[20] the lips proper of the original steep-sided ditch have weathered away and that the gentle slopes of the ditch are the upper slopes only.

Clearly a good example of a secondary causeway or "crossing" had been discovered. The ditch had been open for some considerable time to allow 1 foot 3 inches of silt to accumulate within 2 feet from the top of the ditch before a thick layer of clay, clearly sub-soil which had been disturbed, was thrown back into the ditch. A section of the silt from the southern slope was analysed by Dr. A. Raistrick[21] of King's College, Newcastle upon Tyne. The analysis showed that any pollen that may have originally existed in the silt or "vegetable mud" had been destroyed. It would be hazardous to express an opinion as to how long the vegetable mud had taken to form. The analysis, though of great interest in itself, could throw little light on the dating of the deposition of the mixed clay, presumably material from the gaps in the Vallum mounds thrown back into the ditch. To discover then the approximate date[22] of the establishment of the secondary causeway or "crossing" it is necessary to turn to the known history of the fort.

[19] Plate XI, fig. 2.
[20] *J.R.S.* xxx, p. 164.
[21] See Appendix.
[22] See above, note 8.

The analysis gives a vivid picture of the processes of the natural and artificial filling of the Vallum ditch. Above the glacial sand and gravel sub-soil is found the collapsed sand and gravel weathered and washed down from the lips of the ditch to the bottom. In this clean silt plants begin to take root and are covered by a thin layer of vegetable mud. In this lies vegetable matter of water-plants such as sedge and moss. These are allowed to grow undisturbed in the pool-like bottom of the Vallum ditch, giving a lucid picture of the unpleasantness and discomfort entailed in falling unwittingly into its depths. That the Vallum was partially filled by water need no longer be doubted, particularly in clay sub-soil. But to impute in the place of accident, purposes of defence or water communications would strain both the evidence and the imagination. Such was the process of the natural filling of the ditch. The analysis shows the subsequent filling of the ditch to be quite a different story. Only when the pool had stagnated for some time was it disturbed by the deposition of "lumps or shovellings of boulder clay in a mixed mass". This process is one of artificial filling presumably by human agency. The contrast between the two fundamentally different processes is plainly illustrated in the analysis.

Trench II was continued for approximately 31 feet in a south-easterly direction. The aim was to trace the metalling, to discover whether it crossed the flattened south mound, and to try to find its limits. Though sparse, it appeared to continue, but ploughing seems to have removed any certain evidence that may have existed.

A third trench, cut just east of the depression in the south mound, clearly exhibited the mound standing nearly 2 feet high and composed unmistakably of the reddish clay sub-soil of the Vallum ditch. Here the mound was partially removed to expose the old turf line. Below the turf line a layer 1 foot thick of soft, light-grey material, reminiscent of the light-grey silt found on the north slope of Trench I and presumably top-soil, was uncovered. Below this the

familiar pinkish-yellow boulder clay sub-soil was apparent. The trench was continued to the north to a total length of 16 feet 6 inches, the old turf line of the south berm and the grey top-soil below it being quite distinct. Approximately 4 feet north of the north edge of the south mound slight road-metalling appeared, consisting mainly of small, flat sandstone slabs. This road-metalling existed 4 feet farther north, but no attempt was made to trace it farther. No turf kerbing of the mound was discovered and it was impossible to say whether stone kerbing had ever existed and had been removed.

CONCLUSIONS

1. No original causeways were discovered over the Vallum ditch. It seems then that if a fort existed when the Vallum was made it was deliberately ignored and excluded from the Wall zone and all access to it.

2. The lack of an original causeway here makes it virtually certain that the Vallum was constructed before the late Hadrianic stone fort at Carvoran. This converts what was only a strong presumption into a fact which is of great value in any attempt to date the construction of the Vallum.

3. The Maiden Way does not continue so far north as the Vallum.

4. The existence of at least two causeways has been confirmed. Whether either of the two structures may be a causeway within the defined meaning of the term or merely a "crossing" is still a matter for conjecture. Trench I seemed to exhibit the normal type of secondary "crossing". The existence of metalling over the crossing of Trench II, in conjunction with the substantial character of the filling, suggests that this crossing is really a secondary fort causeway presumably constructed for the use of the garrison of the fort newly established at Carvoran towards the end of Hadrian's reign. The crossing can hardly be earlier than

the erection of the stone fort here by Flavius Secundus. Before the existence of the first secondary causeway along the Vallum can be stated with confidence, at least one point must be ascertained. Does the road-metalling of this crossing continue over the south mound of the Vallum and lead to the north gate of the fort? Only then would the point be virtually proved. If such a road exists, it must inevitably lead across "the Moss", raising the question of whether a bog[23] existed here in Roman times, and if so, how far it extended. The road-metalling noted on the south berm very near the causeway may perhaps be best paralleled with the "cobbled areas" near the causeways at the Turf Wall mile-castles 50 and 51.[24]

It might be worth while at some future date to discover how wide the causeway is. Excavation this year showed that the area of ditch filled extended for at least 11 feet east of an approximate centre line. The causeway thus seems to be at least the normal 20 feet wide.

The excavation of 1951 solved a problem of immediate importance, and established the existence of the first probable secondary fort causeway along the line of the Vallum.

THE DIVERSION OF THE VALLUM

The excavation determined the question of the existence of original causeways in the Vallum diversion of Carvoran. It was not, however, designed to solve the problem raised by Mr. Birley of the reason for the unique diversion. That no original causeways were discovered does not dispose of the suggestion of the pre-existence of a fort. There are strong reasons for supposing that at least by early Hadrianic times, if not earlier, a fort existed at Carvoran. The undoubted existence of a series of alternately large and small forts along the Stanegate, representing the first stage of the Hadrianic frontier,[25] makes a large fort at Carvoran not merely probable but essential. The existence of such a fort

[23] See below, p. 92. [24] *CW*[2] xxxvii p. 158 *et seq.* [25] *J.R.S.* xl p. 55.

is then a strong probability, though its shape, size and situation are all unknown.

What is practically certain, however, is that the existence of that fort before the construction of the Vallum did not determine the latter's course. Thus Mr. Birley's suggestion that the diversion may be best explained by a comparison with Benwell is untenable.

The diversion is "customarily interpreted as having avoided a bog". Mr. Simpson discussed the course of the Vallum in the neighbourhood of boggy ground.[26] He assumed that the Vallum at Carvoran had diverged to avoid a bog as indeed it did at High Shield, near Bradley, whereas both at White Moss and Gilsland Vicarage it had been carried across boggy ground, for different reasons both of which are convincing. At High Shield the Vallum does not diverge in the real meaning of the term, but changes its course, presumably to adhere to a high ridge of ground which skirts the southern edge of the low-lying area of bog which is continuous from this point to south of Winshields, i.e. for approximately 2½ miles. Carvoran is unique. That there has been boggy land between the present fort and the Vallum is evident, and this area of land is familiarly termed "the Moss". Moreover, "the Moss" takes precisely the same position with regard to the low crest of the Whin Sill at Carvoran as Crag Lough does to the precipitous crags towering above it, west of Milking Gap. Yet one hardly realizes that "the Moss" is in fact one. Bruce[27] showed a tiny lake at this point and Horsley[28] told us that there was a "peet-moss" before the fort, though he did not mark one on his map. It seems likely that a moss has existed at Carvoran at least since Roman times, though this is not a certainty. Peat bogs can develop quickly in a short period of time. To solve adequately the problem of the age of the Carvoran moss the researches of a botanist are

[26] *CW*[2] xxii, pp. 9-11.
[27] *Roman Wall*, 3rd ed.; plate opposite p. 241.
[28] *Britannia Romana.*

essential, and the writer hopes that it might be possible in the not too far distant future to investigate the problem further.

The Vallum cannot be said to diverge round an early fort unless the latter was situated precisely in the moss. Even if the bog were proved to be post-roman, there is still insufficient room between the Vallum and the ridge of the Whin Sill for a fort. A reason other than that of avoiding such a structure must be sought to explain its diversion.

To avoid a bog seems the most reasonable interpretation, though this must not be accepted unquestioningly. Why for this short distance was the Vallum not cut straight across the bog as at Gilsland Vicarage and White Moss, when by following a straight course it need not have approached the Wall so uncomfortably closely? Was the bog too deep for such treatment? Until the nature and depth of the moss are ascertained no attempt to solve this question would be justifiable. The geology[29] of the immediate vicinity, though of intrinsic interest, throws little light on the problem, except to refute the idea that the Vallum was here skirting the edge of the Whin Sill. The Sill swings in a southerly direction under the fort on its east side. The Vallum commences its irregular, angular course well to the east of the fort and it seems quite certain that its first bend to the west-north-west was to penetrate the whin at the easiest point, namely along the course of a small burn which no longer exists. The diversion proper does not appear to be affected by similar considerations and the idea of avoiding a bog immediately reasserts itself. This problem must be left until the researches of a botanist are able to resolve it.

[29] The writer owes this information to Mr. A. Johnson, B.Sc., Research Student at King's College, Newcastle upon Tyne, and wishes to thank him for his interest and help.

APPENDIX

REPORT ON SOIL SAMPLES FROM CARVORAN, 1951

BY DR. RAISTRICK.

(Sample A represents the top of the section, sample B its continuation down into the sub-soil of the slope of the Vallum ditch.)

A. Sample from Trench II in Crossing.

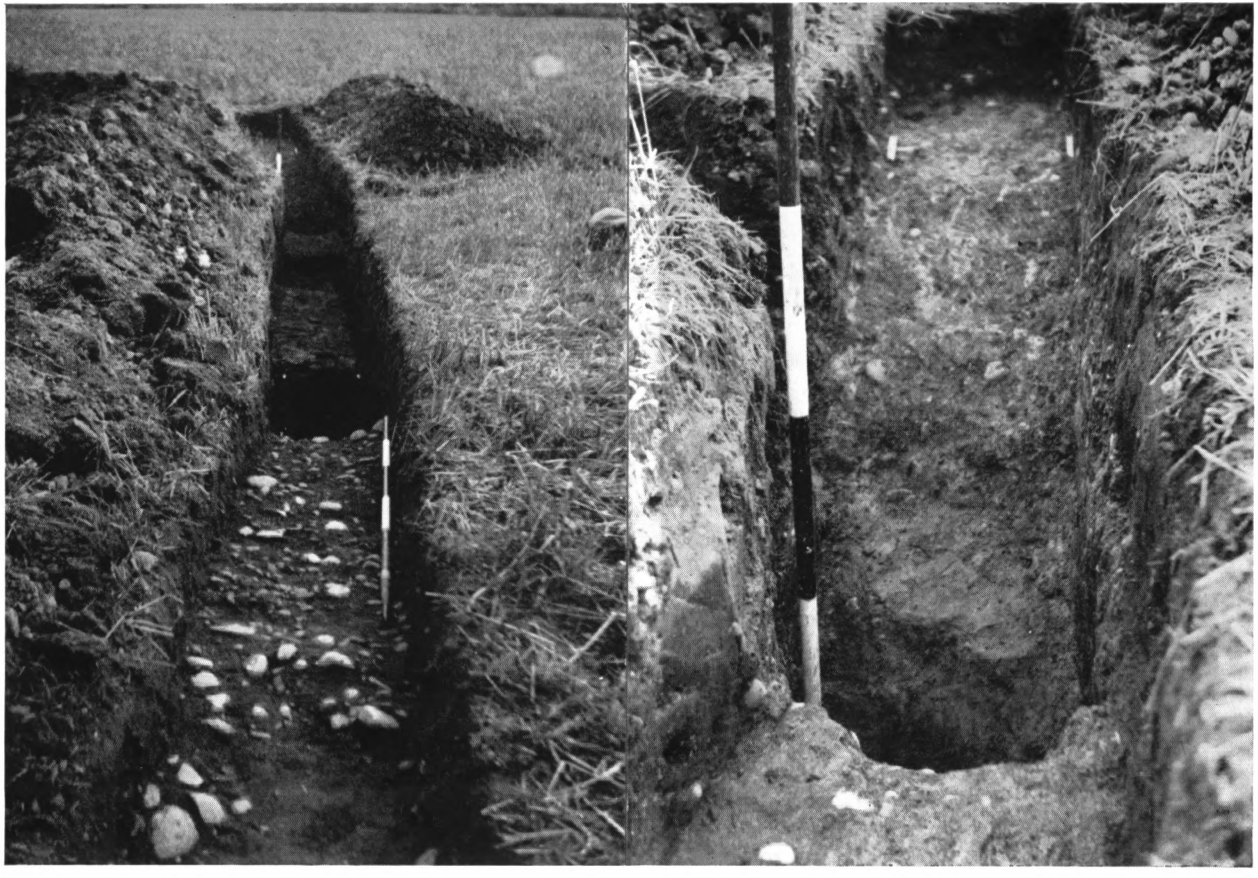
The material at the top of the sample is lumps or shovellings of boulder clay in a mixed mass. Below the boulder clay comes vegetable matter, now broken down into unrecognizable fragments, in a thin layer of black vegetable mud. This seems to represent growth in stagnant or semi-stagnant water. The bottom of the sample comprises 4" of clean light coloured silt, containing a small proportion of vegetable matter as above, and one distinct layer thereof. The basis is fine-graded clean silt.

This seems to imply the bottom of a pool in which there was very slight movement of water, and growing water plants, such as sedge, moss, etc. Only the tipping in of the upper material ever disturbed the pool.

B. Trench II in Vallum Ditch.

The material at the bottom of the sample is natural glacial sand and gravel, containing erratics from the Lake District. The upper material is collapsed sand and gravel which has been brought down by water action from its natural position. The material, when dry, becomes hard and unyielding, but when wet disintegrates suddenly and rapidly in lumps. It is a chaotic mass of pebbles and mixed sand and gravel, now penetrated by long rootlets which lie parallel to one another in the mass. These rootlets represent growth when the material had reached repose.

It will be noted that the natural soil from the bottom of the sample is here not boulder clay, but glacial sand and gravel. The rest of the material is consistent with a supposition that it represents collapsed masses from the sides of a ditch dug through sub-soil of the kind just noted, and swamping into repose at the bottom of the ditch, where the roots of growing plants much later came to penetrate it.



1. METALLING ON N. BERM LOOKING SOUTH.

2. SOUTHERN SLOPE OF VALLUM DITCH.

1. SECTION OF DITCH FILLING ON S. SLOPE OF VALLUM.

2. SECTION OF DITCH FILLING ON N. SLOPE OF VALLUM.