

ON STANE STREET

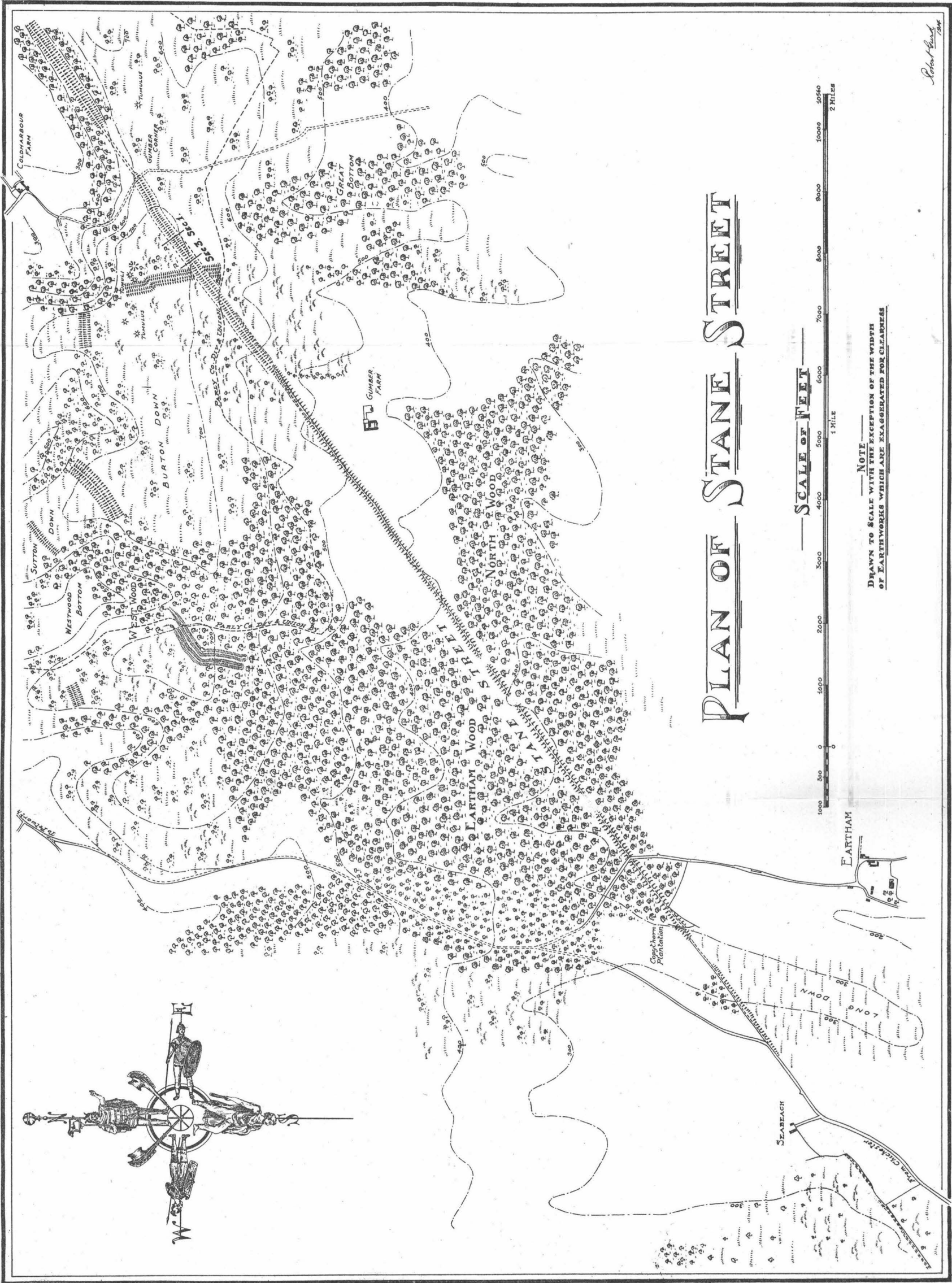
IN ITS PASSAGE OVER THE SOUTH DOWNS.

BY ELIOT CURWEN, M.A., M.B., B.C.

THE great military highway, known to us by its Saxon name of STANE STREET, was built by the Romans in order to connect London with their towns on the harbours in West Sussex and Hampshire by the nearest and most direct route. Clausentum (Bitterne) on Southampton Water, Portus Magnus (Porchester) on Portsmouth Harbour, and Regnum (Chichester) on Chichester Harbour were considerable ports of entry for the foreign auxiliaries so largely employed in garrisoning Britain, and ports of departure for the native levies who were enrolled in auxiliary cohorts and sent to serve in Gaul and elsewhere. These towns were connected by the direct road that ran from Clausentum eastwards along the coast, and the building of Stane Street opened up the shortest route between them and London.

Leaving the east gate of Chichester, Stane Street takes a direct course a little to the east of north-east, and, as Mr. Hilaire Belloc has shown,¹ covers the 57 miles of its length "not in one perfectly straight line," but in "a broken one consisting of four great straight sections." The modern main road from Chichester to Petworth almost exactly follows the line of Stane Street for $5\frac{1}{4}$ miles, and then just beyond Seabeach bends northward. From this point the next three miles of the Roman road passes over Long Down, where it supports a hedge; through Copythorn Plantation and North Wood, where its central vallum is easily traced, except at three stretches of soft ground in which it disappears

¹ *The Stane Street*, by Mr. Hilaire Belloc, p. 57 *et seq.*



PLAN OF STANE STREET

SCALE OF FEET



NOTE
DRAWN TO SCALE WITH THE EXCEPTION OF THE WIDTH
OF EARTHWORKS WHICH ARE EXAGGERATED FOR CLEARNESS

John Hunt 1844

for 480, 200 and 180-ft. respectively; across the cultivated lands of Gumber Farm, where its high ridge is flanked by a double hedge; across the rough land of the same farm, where it is again marked by a hedge; and over the high ridge of open Down to Gumber Corner on the edge of the escarpment, whence it descends to the Weald along the northern slope of Bignor Hill as a terrace 20 to 35-ft. wide.

We have in the three miles from Seabeach to Gumber Corner what is probably the best preserved section of the whole of Stane Street, for here it has neither been altered by metalling to meet the requirements of modern traffic, nor wholly obliterated by the plough. In the highest part of this stretch, between the limit of Gumber Farm at the Parliamentary County Division Boundary and Gumber Corner, the road, except for its covering of down turf, remains just as the Romans left it and presents the striking appearance of three parallel ways, for it is seen to consist of a central vallum and of two lateral side roads, each of which is flanked on its outer side by a ditch or channel. The vallum, or *agger*, is 3-ft. in width at the crown, and 27-ft. at its base, while the sideways are 25 and 26-ft. and the ditches 7 and 8-ft. wide, so the total width of the vallum, side roads and ditches is no less than 93-ft.

By the kind permission of the agent of the Slindon Estate, my son and I were permitted to cut a section through the road in the summer of 1913, and this we did at a point $50^{\circ} 54' 3''$ north, $0^{\circ} 37' 11''$ west, or 388-yds. south-west of the point at Gumber Corner, where Stane Street is cut across by the borstall leading down to Coldharbour Farm.

In this neighbourhood the general slope of the hill is to the south and east, and as the road ascends towards the north-east the ground stands at a higher level to the north and west, as is clearly seen in Plate II., Fig. 1, which represents the section cut.

The central vallum, an enlarged section of which is shown in Plate II., Fig. 2, rises 5-ft. above the old surface

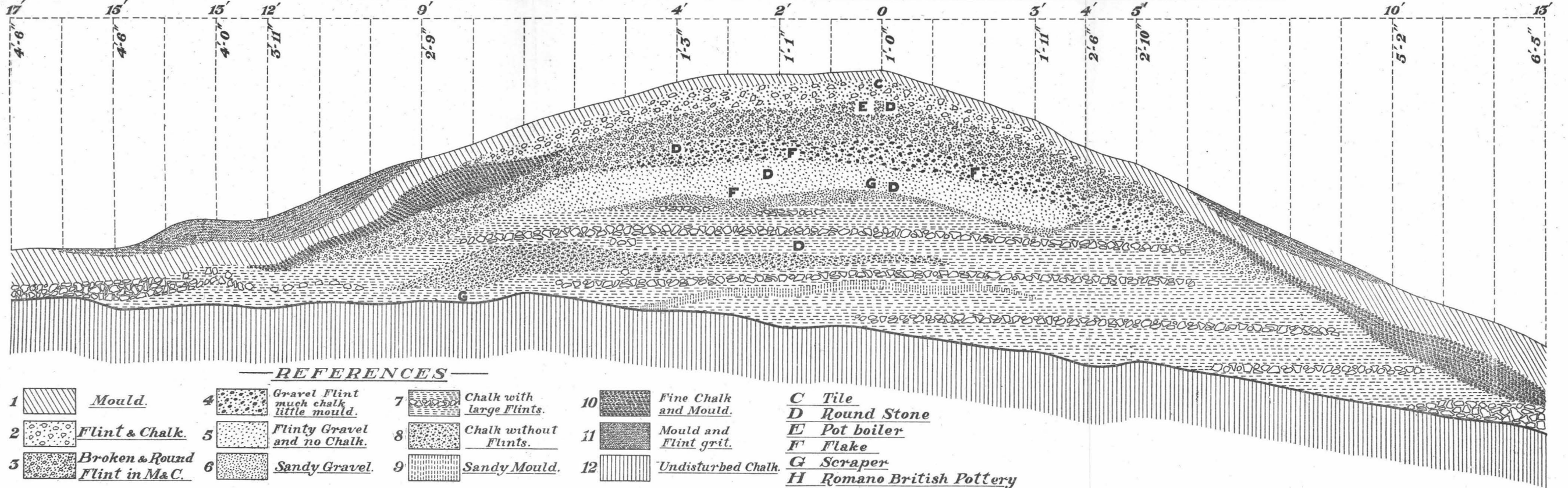
line, and consists of a succession of layers of different materials obtained locally. Examining these layers beneath the highest part (marked 0 on the datum line), we find that immediately under (1) the turf and 2-ins. of mould, come (2) 5-ins. of chalk with many flints, none of which are more than $3\frac{1}{2}$ -ins. in diameter, (3) 9-ins. of broken flints from the Downs, and water-worn flints, in roughly equal proportions, bedded in mould and chalk, (4) 7-ins. of gravel flint, small broken Down flint and small rolled flint in much chalk and little mould, rammed very hard and solid, (5) 5-ins. of gravel, with yellowish brown and red flint, and small patches of brick red sand, (6) 2-ins. of rich sandy gravel with only very small stones, (7) 27-ins. of rammed chalk with medium and large sized Down flints laid in horizontal layers; in this thick course of chalk and large flints are (8) a stratum of chalk without flint rammed into a curious homogeneous mass, 2-ins. thick, and (9) a 2-in. stratum of a sandy mould. Beneath these layers, and separating them from the undisturbed chalk, is a thin layer of dark mould, representing the old surface level, which is seen to correspond as nearly as possible with the line of the soil of the adjacent hill slope.

The side roads, now covered with several inches of clayey mould, are paved with 5 or 6-ins. of flints, many of which are of quite an unusual size; and the ditches, which are nearly 2-ft. below the present level of the ground, are filled with soil free from flint.

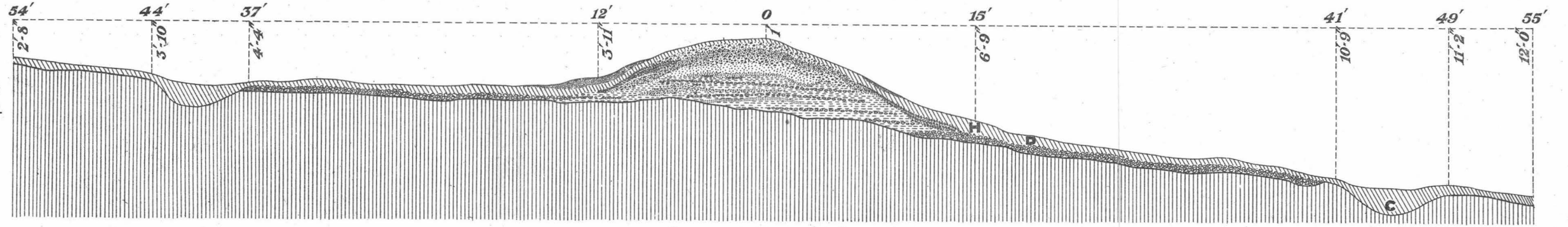
The various beds of the vallum thin off towards the sides, and each in ascending order tends to become more convex on its upper surface—an arrangement that would allow of water draining off easily. In constructing the road the builders evidently began on the lower, or south-east side, and from the first arranged their beds horizontally. The sides of the vallum are not as steep as they formerly were, for as much as 11-ins. of mould have gathered in the angles between the raised road and the sideways; most of this is a stiff mould, similar in character to that which covers the crown of the vallum and the sideways and ditches, but the soil under the turf in the angles

N^o 2

SECTION THROUGH STANE STREET AT 50°54'3"N, 0°37'11"W.



N^o 1



themselves is much lighter and looser in character, and darker in colour, being mixed with a quantity of very fine flint grit; our attention was drawn to this by a workman in our employ who in past days had had considerable experience as a road mender, and who pointed it out as evidence that the road had been much in use.

As might have been expected from so practical a people, the Romans made this road from material to hand on the Downs, or procurable within a short distance. The tertiary deposits at Seabeach, three miles down the road to the south-west, and those at Slindon and elsewhere to the south, produce vast quantities of such rolled flints as appear in layers (3) and (4), and such gravel as is found in layer (4); while brown and red flints, and red sand, similar to those seen in layer (5), are found in the Lower Greensand at Sutton, two miles to the north; from the Lower Greensand also came a large piece of iron stone found in this layer. There is nowhere any evidence of a surface layer of flags or blocks of hard stone. The whole road was consolidated with chalk, but whether grouted in, or simply rammed, we could not determine. Mr. R. A. Cripps kindly examined some of this chalk, and, as will be seen from his report which appears as an Appendix, is of opinion that it had never been burnt into lime and then become recarbonated in the course of the centuries, but had been used as chalk in the first instance.

In the soil turned over in cutting the section, which was 109-ft. long and 3-ft. wide, the only "finds" of the Roman period were three pieces of tile and one small piece of Romano-British pottery; in addition to these there were found one pot-boiler only, seven flakes of Down flint and one from the gravel; three rough scrapers, one of which was lying beneath the vallum on the mould of the old surface layer, and eight round flint-concretions from the chalk, each about an inch in diameter. In curious contrast with the scarcity of "finds" in this cutting it is interesting to record that a

cutting 53-ft. by 3-ft., through an earthwork not 200-yds. away, produced a quantity of pre-Roman and Romano-British pottery, two pieces of tile, 70 flakes, one scraper, 22 pot-boilers, three cores, and no round flint nodules or stones suitable for the sling.

For the sake of comparison a second section, Plate III., Fig. 1, was surveyed at a point $50^{\circ} 54' 19''$ north and $0^{\circ} 37' 18''$ west, or 162-yds. to the south-west of the first. Here the vallum rises about 6-ft. above the level of the slope of the hill, and is 3-ft. wide at the crown. By surface measurement the side roads are 22 and 23-ft. wide, but if 3-ft. are added to each on account of the silting up of the angles between them and the vallum—an amount quite permissible as shown by Plate II., Fig. 1—we have 25 and 26-ft. for the side roads, and 7 and 9-ft. for the ditches, giving an overall measurement of 95-ft. From this it appears that, at the points taken, the width of the vallum and side roads is constant, and the overall measurement practically the same.

Vitruvius, the architect (B.C. 27—A.D. 14) [vii. 1], has left us a description of the construction of a Roman road of the first class—*via publica* or *via militaris*; on the ground, or solid foundation (*gremium*), was to be laid a layer of stones (*statumen*) not smaller than the hand could grasp, on this a layer of rubble consisting of broken stones cemented with lime and rammed down hard (*rudus*), next a layer of smaller stones and broken brick and pottery cemented with lime (*nucleus*), and finally a surface layer (*pavimentum*) of blocks of hard stones carefully fitted together. He writes:—²

If the bedding is to be laid flush with the ground it must be first ascertained whether the ground is thoroughly sound. If it is found to be so it should be levelled, and then the courses of stones (*statumen*), and rubble mixed with lime (*rudus*) should be successively laid on. . . . If the rubble is new the proportion of stones to lime should be as 3 : 1; if it is old as 5 : 2. When the rubble has been laid it should be thoroughly rammed down with wooden beetles by gangs of men to a final thickness of not less than 9 inches. Over the rubble should be laid a course of pounded potsherds, mixed with lime

² *Dict. of Greek and Roman Antiquities*, Dr. Smith; *Vie*: 3rd Ed., Vol. II., pp. 946-954.

(*nucleus*) in the proportion of 3 : 1 and at least $4\frac{1}{2}$ inches in thickness. The pavement whether consisting of cut slabs, or mosaic cubes, should be well and truly laid by rule and level on the top of the nucleus.

This account has been supplemented by P. Papinius Statius (A.D. 81-96) [*Silvae*, IV., 3. 4], who, in a poem on the Via Domitiana, wrote:—

The task is first to cut parallel trenches (*sulci*) to mark the limit of the breadth of the road, and next to carry the excavations deep into the ground; then to fill the empty ditch (*fossa*) with new materials, and prepare a bed for the surface of the road.

Camden, who wrote 300 years ago, remarked on the fact that in some places the Roman roads were cut through by the country people for gravel; and it is clear that in days long gone by gravel seekers, or flint diggers, did not neglect Stane Street, for but a short distance to the south-west of the section in Fig. 3 the vallum, though now covered with short sweet Down turf, has been greatly reduced in height, its width to some extent increased, and its surface severely scored by digging; and the same remarks apply to a portion of the street that passes through the rough of Gumber Farm.

The problem as to how far the central vallum was accompanied by its two lateral flint roads is one that cannot be solved without further research. Dr. P. Martin³ tells us that he, and the late Mr. Hawkins, of Bignor Place, were able to trace the exact line of the Roman road through the ploughed fields across the Weald, from the foot of the Downs to beyond Grevatt's Wood, by the presence of that red gravel which we have seen entered largely into the construction of the vallum even on the high Downs; and it may be that pointed search for the presence, or absence, of large flints parallel to the known line of Stane Street may lead to a just estimation of the distance that the side roads accompanied the central vallum. These lateral roads, and containing ditches, are well marked along the $\frac{3}{4}$ -mile of grass land that separates the escarpment of the Downs from the commencement of the cultivated land of Gumber Farm, and that they extended a further mile at

³ *Sussex Archæological Collections*, Vol. XI., pp. 133-135.

least is evidenced by the great number of unusually large flints which appear for 10-yds. on either side of the Roman road as it passes between the ploughed fields⁴ onward to the point where it enters North Wood; beyond this point all surface trace of the lateral roads disappears.

These wide lateral ways, and the height and narrowness of the central vallum, distinguish that section of Stane Street that passes over the high Downs from the great majority of Roman roads in this country, which for the most part are raised a foot or two only above the level of the surrounding fields and are much narrower than we have seen Stane Street to be.

A ridge 5 or 6-ft. high is not an uncommon feature, however. Mr. Heywood Sumner gives a section of Ackling Dyke in Plan XXX. of *The Ancient Earthworks of Cranborne Chase*, from which it appears that the vallum, or *agger*, is 6-ft. high and 6-ft. wide at the crown; and Mr. Codrington⁵ draws attention to the fact that—

On the Fosse way, between Bath and Cirencester, where it is a wide grass-grown deserted road on a high oolitic plateau, there is, to the south of Jackments Bottom, a ridge with the middle 4-6-ft. high, and that the same thing is to be observed on the deserted part of Watling Street, north of Watford Gap, where the green road shows no sign of a ridge for several miles until low ground is crossed, and then the ridge appears as much as 5-ft. high.

In his *The Celt, the Roman and the Saxon*, Mr. Wright⁶ says:—

Where it runs along an uncultivated heath, the ancient Roman Road often presents itself to our view in an imposing embankment for several miles together. When they came upon higher ground, the Romans were not in the habit of intrenching, but they often raised the embankment higher even than in the plain, probably as a measure of precaution,

and instances the vallum of the Roman road on the summit of the Gogmagog Hills as an example.

“By the laws of the Twelve Tables (Dig. 8, 3, 8) the minimum width of a *via* was fixed at 8 feet where it was

⁴ Three years ago the foreman on the farm found here a silver denarius of the Emp. Constantine in a rabbit burrow in the vallum.

⁵ *Roman Roads in Britain* (1905), pp. 11-12.

⁶ *The Celt, the Roman and the Saxon*, 2nd Ed., p. 183.

straight and 16 feet where it turned,"⁷ and it was not often that a Roman road in Great Britain exceeded 20-ft. in width; for example, the military way running along the south side of the Great Wall is 18-ft. wide; the road at Godmanchester 12-ft.; at Doncaster 18-ft.; and the Fosse way, south of Bath, varies from 6 to 18-ft.⁸

The only other road, of which we are aware, that is at all comparable to that part of Stane Street under discussion is that part of the Roman *via*, known as Ackling Dyke, that passes over the highland (400-ft.) of Cranborne Chase, in Dorsetshire, on its way from Badbury Ring to Old Sarum. Two sections of this road, one a little north-east of the crossing of Bokerly Dyke, and the other a quarter of a mile further north-east, are given by General Pitt Rivers,⁹ and though they differ in measurements, they are alike in presenting a central vallum, or *agger*, with flanking side roads and ditches. The larger of the two sections (marked 4) shows a vallum 12-ft. wide at the crown, and 42-ft. at the base, with side roads covered with fine gravel 19 and 20-ft. wide, and flanking ditches 3-ft. wide and 2½-ft. deep, making an overall measurement of 87-ft. Describing this section General Pitt Rivers says:—

The layers in the centre consist of (1) Surface moulds, (2) gravel and rounded pebbles, probably from patches of tertiary formation on Pembridge Hill, 6 inches, (3) rammed chalk rubble, 6 inches, (4) tertiary gravel again, 10 inches, (5) rammed chalk, 6 inches, (6) a single layer of nodular flints lying on the old surface line. The total height from the old surface layer to the top of the Road was 3 feet. This road which the Romans termed *agger*, tallies in the main with the account given by Vitruvius. . . . We see the two ditches on each side, which, however, appear here to have included more than the intended width of the road.

In this connection it is interesting to note that Vitruvius [V. 9, 7] describes the making of *ambulationes*, or gravel foot-paths, alongside the roads, and says that

⁷ *Dict. of Greek and Roman Antiquities*, Dr. Smith, *Viae*: 3rd Ed., Vol. II., p. 946.

⁸ *Roman Roads into Cambridge*, Rev. F. G. Walker, Cambridge Antiquarian Society, 1910, January 17th to March 7th.

⁹ *Eccavations in Cranborne Chase*, Vol. III., facing p. 74.

they consist of a firm foundation of earth, covered first with a layer of charcoal and then with a surface layer of gravel (*sabulo*). Very little gravel is found on the Downs, and it came handier to the builders of the side roads of Stane Street to employ flints, and they evidently went to some trouble to seek the largest flints they could find.

The central vallum of Stane Street on the high Downs, being only 3-ft. wide at the crown, was too narrow for the passage of the large bodies of troops which came to this island from other parts of the Empire, or for the native levies who were continually being sent to serve abroad, who must have trodden the sideways on their way from or to the ships in the harbours to the south-west; nor could the raised portion of the road have served for the use of chariots, or other wheeled vehicles, for if we may draw conclusions from the distance between the ruts in the streets of Pompeii, the gauge of ordinary carts was 3-ft. That the raised vallum was intended for use is clear from its laborious, careful and solid construction, and that it was actually and extensively used is shown by the nature of the road grit found in its sides as noted above. We know that until the reign of Septimus Severus (193-211, A.D.) heavy burdens were usually carried throughout the Empire by pack horses (*i.e.*, *Caballi*) mules and cattle, in panniers, and not in carts, and it may well be that the mule trains used the high and solid road, while the footmen moved along the side ways unhindered by the baggage; or the raised road may have been used, as Mr. Hawkins¹⁰ suggested, as a position of vantage for a line of scouts marching in single file, if the surrounding Downs were then, as now, thickly studded with hawthorn trees and scrub; and it may have had the collateral advantages of offering both a line of defence, and some shelter, to small bodies of men if attacked on one side only by the natives, and, on other occasions, a raised position from which they could more easily beat off attack.

¹⁰ *Sussex Archaeological Collections*, Vol. XI., p. 132.

FIGURE 1

SECTION THROUGH STANE STREET AT $50^{\circ}54'19''N$
 $0^{\circ}37'18''W$

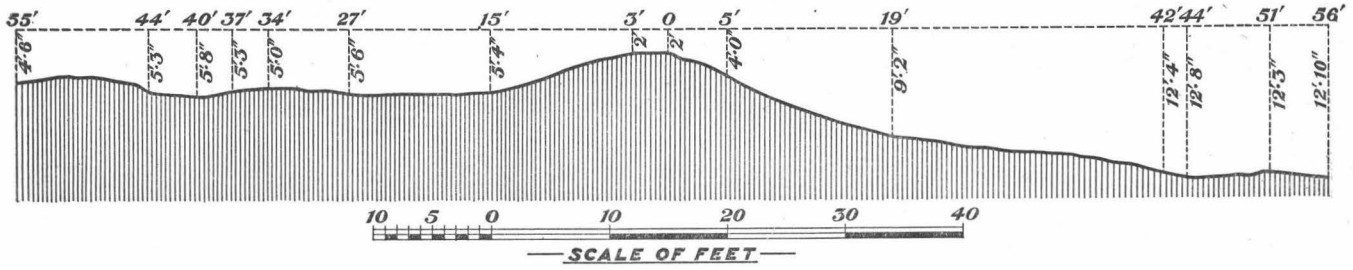


FIGURE 2

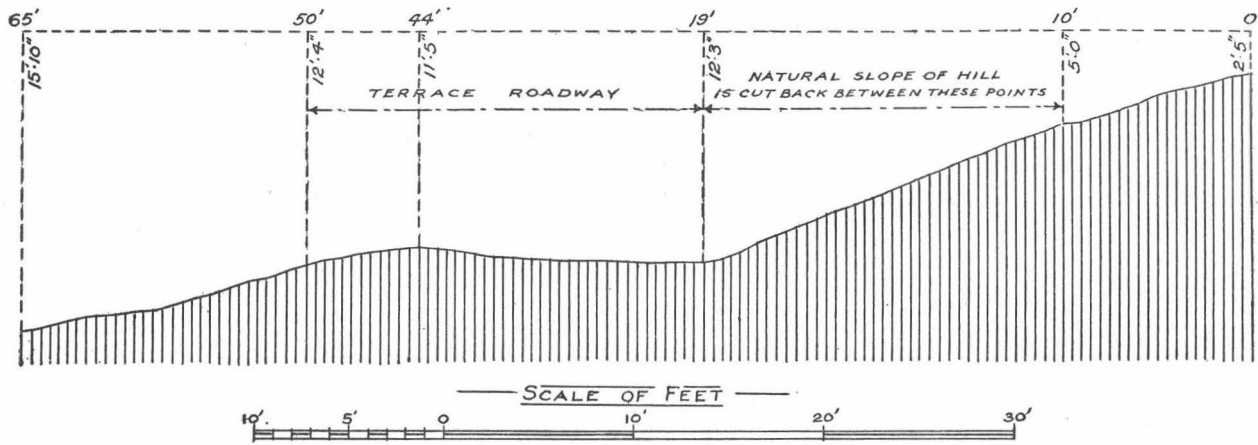


FIGURE 3

SECTION 180^{FT} BELOW JUNCTION OF THE BOSTAL FROM BIGNOR HILL WITH STANE STREET

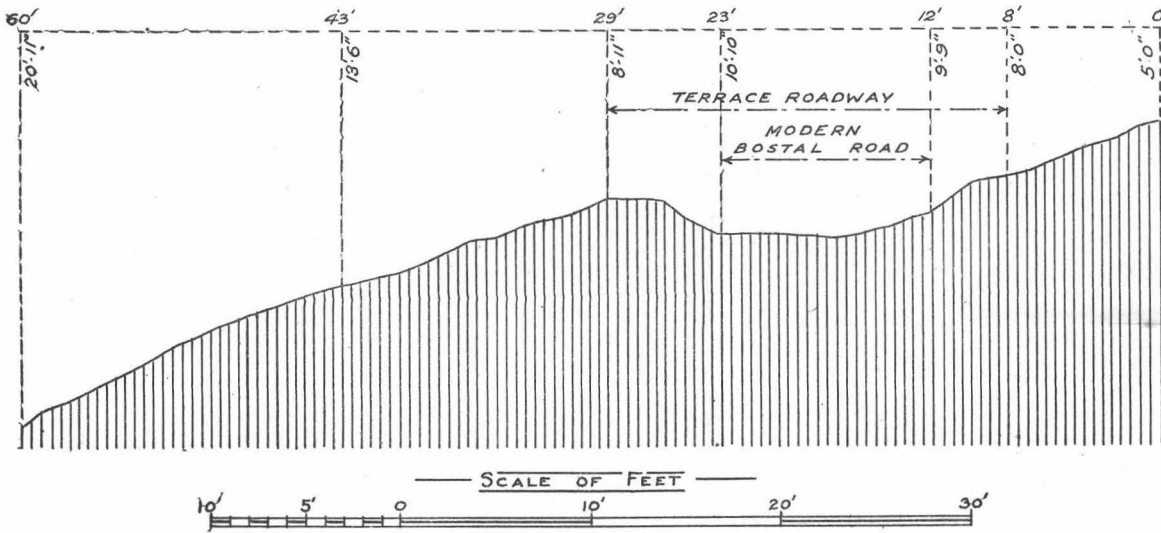
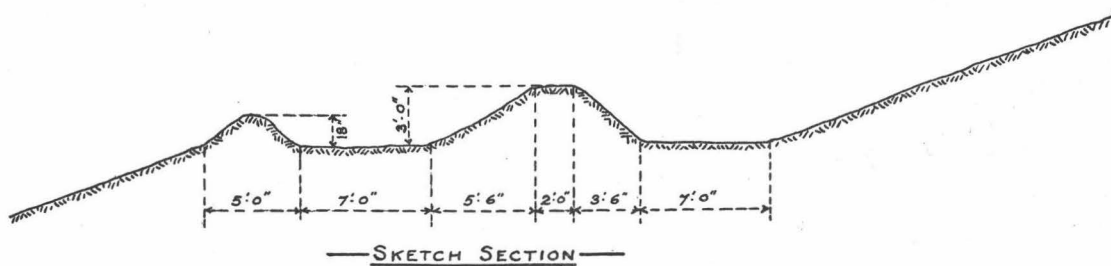


FIGURE 4



That engagements sometimes took place on a road itself is shown by Tacitus (55-120, A.D.), who, describing one such, says:—¹¹

Tertiæ decimæ legionis vexillum, quattuor auxiliorum cohortes et quingenti equites in sinistro locantur, aggerem viae tres praetoriae cohortes altis ordinibus obtinuerunt, dextra fronte prima legio incescit.

A translation of Heraeus' note on *agger viae* in this passage runs:—

Agger viae (cf. chap. 42, and Vergil Aen., V., 273) is the name given to the raised middle part of the Military road, which was appointed for the traffic of vehicles, and was paved with smooth stones, which rested on one or more layers of gravel, quarry stones and earth, rammed in tight; near this carriage way footways (*limites*) ran on both sides.

This note is interesting as showing the existence of sideways along the military roads in North Italy; the *agger viae* must have been wider in these roads if it admitted of vehicular traffic.

From Gumber Corner, where it is crossed by the borstall¹³ running down to Coldharbour Farm, Stane Street descends the escarpment as a well-made terrace 20 to 25-ft. wide. The terrace was formed by cutting back the slope of the hill, as shown in Plate III., Fig. 2, which is a section taken 468 feet east of the Coldharbour borstall, and its surface was apparently not covered with a layer of stones, for in no part of it examined did we find any evidence that the surface had been made up in any way.

At first the terrace is flat, but at places further down the level of the inner portion is lower than that of the outer part which somewhat overhangs the lower slope of the hill. Three hundred and ninety yards

¹¹ Tacitus Hist., II., 24.

¹² That is, "The standard of the XIIIth legion, four cohorts of the Auxiliaries, and five hundred cavalry are placed on the left; three Praetorian cohorts in deep formation occupied the raised roadway; the 1st legion marched on the right front. . . ."

¹³ In *Notes and Queries*, 8th S. IX., June 6th, 1896, Prof. W. W. Skeat derives the word "borstall" from the A.S. *burh* and *steal*, with "the site of the fort" as its original meaning. A quotation from the *A.S. Vocabularies* shows that even in A.S. times its sense had changed to "a descent," or "path down a hill." [The first syllable seems more probably *beorh*=a hill; the "stall" may be connected with *stelan*=to go secretly or quietly, or with *stigele*=a raised way (whence our "style").—Ed.]

from its commencement a more modern road, much used in carting flints from Bignor Hill, runs into it, and for a distance of 851-yds. has cut its way 3 to 5-ft. below the level of the terrace on its inner, or up-hill, side (Fig. 3).

Where the hill turns eastwards this more recent road sinks 9-ft. below the terrace-road and makes direct for the village of Bignor, while the Roman road turns eastwards, crosses open Down-land, and makes a more easy descent to the Weald through Bignortail Wood. When crossing the Down before entering the Wood the central *agger* re-appears for a short distance (Fig. 4), but soon disappears again, and the road enters Bignortail Wood, and sweeps round the sides of a shallow comb, as a flat terrace 36-ft. wide; lower down a ditch 5-ft. deep appears on the inner, or up-hill, side of the terrace, and this is continued until the foot of the hill is reached where the outer or raised part of the road emerges from the wood as a ridge and is quickly lost in cultivated ground.

Two hundred and ten yards after it is joined by the above mentioned road from Bignor Hill the Roman terrace widens out to 35-ft., and throws out a branch which drops somewhat rapidly to run obliquely along the hill slope at a lower level. This branch terrace, which is similar in all respects to the main one, at first 25-ft. wide, soon broadens to 36-ft., again narrows to 25-ft. lower down, and once more widens to 35-ft.; in parts its surface is quite flat, and in parts it presents a ditch on its inner side; while where it approaches the level of the cultivated land, at about the 300-ft. contour line, a central *agger* appears again. Immediately beyond this point all certain traces of the terrace-road disappears.

It is noteworthy that, whereas the supposed line taken by Stane Street after leaving Bignortail Wood passes six hundred yards east of the Roman Villa at Bignor, just before it is lost this terrace road heads almost directly to it. This terrace is much overgrown by a dense thicket of tangled undergrowth, and consequently is not easily seen when leaves are on the branches; it bears, however, a narrow and seldom used footpath, which is indicated on the 6-in. Ordnance sheet. [Plate IV.]

APPENDIX.

REPORT ON SAMPLE OF CHALK FROM STANE STREET

By R. A. CRIPPS, Esq., F.I.C.

This sample consisted of a lump of chalky substance with some small pieces of flint embedded, and some adherent sandy and earthy matter, which latter was removed before analysis.

The results of my analysis are as follows:—

The figures add up to 100·64%, but this apparent discrepancy is due to the fact that the “Loss on Ignition” is also included, at least in part, in the “Earthy Matter.”

From the fact that there is no more calcium silicate present than is often found in natural chalk I am of opinion that the chalk was used as such and has not been produced from lime by the action of carbonic acid in the air and rain water. If lime had been used I should expect to have found quite a considerable proportion of calcium silicate or other silicate soluble in cold hydrochloric acid, produced by the action of the lime on sand or other siliceous matter, as is the case in cement, mortar, &c., although probably to a smaller extent than in those substances.

RESULTS OF ANALYSIS.

Moisture	0·90	per cent.
Loss on Ignition (mainly organic matter) ..	1·06	” ”
Sand, Stones, &c.....	21·03	” ”
Earthy matter	5·60	” ”
Calcium Silicate	0·28	” ”
Oxide of Iron and Alumina	0·70	” ”
Calcium Carbonate	71·07	” ”
Calcium Sulphate		Traces.
Caustic Lime		Absent.
Slaked Lime.....		Absent.

R. A. CRIPPS.

The Laboratory, Davigdor Road, Hove,
Dec. 11th, 1913.

Specimens of the various kinds of stones used in the construction of the vallum have been deposited in the Society's Museum at Lewes.