

SOME NEW MATERIAL
FOR THE DETERMINATION OF THE
COURSE OF STANE STREET.

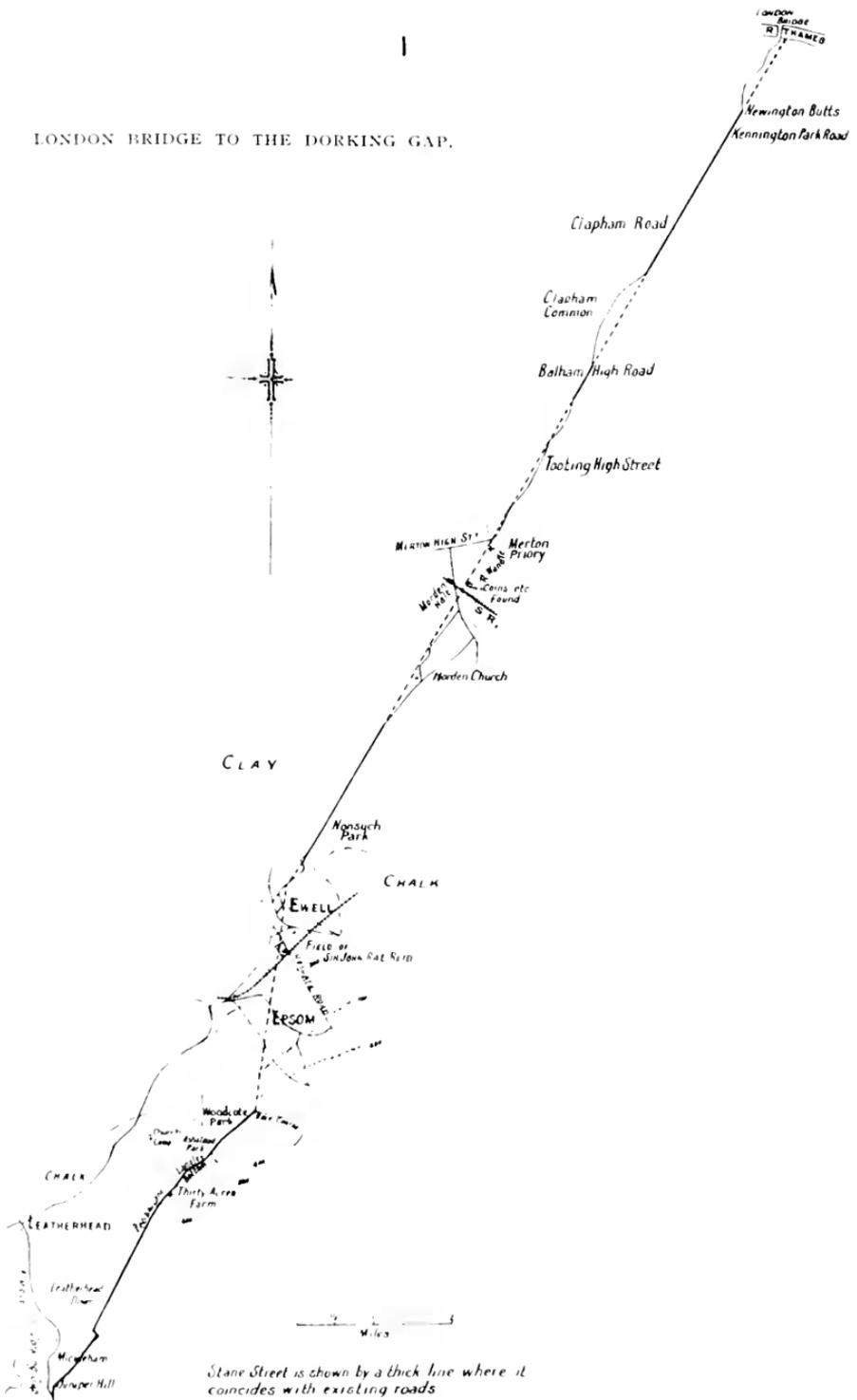
BY

LIEUT.-COL. H. F. BIDDER, D.S.O., F.S.A.

THE main facts about Stane Street are well known, and can be very shortly stated. The road was constructed at some time during the Roman occupation of Britain as a military road between Chichester and London. It is not mentioned in the Antonine Itinerary: whether this is accepted as strong evidence that it was not constructed before the third century depends upon whether the Itinerary is regarded as a log or a gazetteer. The course of large sections of the road are clear and indisputable, and include some of the most perfectly preserved specimens of Roman road work in this country.

Its trace, however, from London Bridge to Dorking has always been a matter of uncertainty. From London to Ewell it has generally been believed to follow a line with which the last 2 miles of the present London Road coincide, and to which various other sections of the existing route conform. In Ewell and Epsom it has been regarded as lost. The Langley Bottom Road from the Downs Hotel (on the racecourse) to Shepherd's Walk and on to Pebble Lane has traditionally been regarded as Roman, though its direction seemed quite unrelated to the direction of Stane Street, unless (which is no longer believed) Stane Street reached London by way of Carshalton. Pebble Lane and the well-preserved straight stretch across Leatherhead and Mickleham Downs are accepted as the reappearance of the road after the Epsom break.

LONDON BRIDGE TO THE DORLING GAP.



Stone Street is shown by a thick line where it coincides with existing roads
 Where it is conjectural, a broken line is used
 ----- Boundary of Surface Chalk

Mr. Hilaire Belloc¹ denies that the straight 2 miles on the London Road near Ewell represent Stane Street, on the strength of a supposed discovery that the straight stretch of road on Leatherhead Downs points exactly at the site of Old London Bridge, the presumed position of the Roman Bridge.² This, he says, cannot be accident, and therefore this was the alignment of the road. Captain W. A. Grant³ explodes this theory by proving from topographical calculation that in fact this stretch of road does not point exactly or nearly to Old London Bridge, but to a point more than half a mile west of it. Captain Grant makes the very interesting statement that the straight 2 miles of the existing London Road near Ewell is, in fact, exactly coincident with a true alignment from Old London Bridge to Chichester.

Additional evidence that I have been able to collect in recent years, combined with information already available, has convinced me that the course of the road was this :

Approaching London from Leatherhead Downs, it followed more or less the course of Pebble Lane and Langley Bottom Road up to a point near the Downs Hotel.⁴ Here it made a left-handed turn on to a line through Ewell Vicarage, which was followed until the main alignment from London was met. This was at a point nearly half a mile S.W. of the Ewell end of the present London Road "straight." The main alignment (which is that of the "straight") was then adopted, and maintained to London Bridge.

A. THE EVIDENCE.

The evidence for this route is as follows :

1. *Pebble Lane to Downs Hotel.*

(a) Mr. Charles Warne, F.S.A., in 1860 traced Stane Street from Burford Bridge (where "the small inn stands on its line ; at a very little distance from it a portion of the *Via*, some 200 yards in length, is to be seen in a meadow" on the left of and close to the turnpike road) through the grounds

¹ *The Stane Street*, Constable, 1913.

² This was fifty yards below the present bridge.

³ *The Topography of Stane Street*, John Long, 1922.

⁴ The Downs Hotel was formerly the "Rubbing House."

of Juniper Hall (where it can be "plainly followed") over Mickleham and Leatherhead Downs to Pebble Lane.

"On coming out of Pebble Lane, it does not proceed far before it passes some buildings (a cottage, barn, etc.), which are close to its right, attached to Ashstead Farm; this course, continued without deviation, brings it to the eastern side of Woodcote Park, with which it continues, till it becomes finally lost near the north-east corner of the Park, and not far from the Rubbing House on Epsom race-course. I have crossed and recrossed the Epsom and Banstead Downs seeking 'the lost way.' At no point have I succeeded in taking the line up."¹

(b) In 1876 Mr. C. Roach Smith, F.S.A., tracing the road from Ewell to Chichester, confirms Mr. Warne's observations.

"Although, from the highly cultivated state of the land, and the buildings, it seemed hopeless to recover any certain trace of the road between Ewell and Epsom Down, we nevertheless well surveyed the ground, taking different paths, and reuniting upon the Down at the spot indicated by Mr. Warne where he lost sight of it. Here, at the North-East corner of the racecourse, by the side of Woodcote Park, we came upon the *Via*, and never lost sight of it until we descended to the foot of Box Hill."²

2. *Downs Hotel to Ewell Vicarage.*

(a) Mr. Warne in 1860 (confirmed by Mr. Roach Smith in 1876) found 200 yards of the road, clearly defined, in a field in Ewell. He says:

"I next removed my researches" [after prospecting in vain in the Epsom common field] "to the part of Ewell that adjoins Epsom field,³ and through or near which the *Via*, if it went through Ewell, must have passed; some slight indications were hopeful, and I was much gratified, on entering a field in the occupation of Sir John Rae Reid, Bart., adjoining the Reigate Road, called the Twelve Acre Piece, and near to the railway bridge, at beholding the Stane Street lying prominently conspicuous before me, adhering to its usual straight line, and running for some 200 yards in a direction which must have taken it near to, or between, the church and vicarage; both of these, embosomed amidst trees, can be seen when standing on the crest of the *Via* in Sir John's field, where it is so unmistakably developed as to remove all scruples as to its character."

This field is, I think, clearly identifiable. The Ordnance

¹ *Proc. Soc. Ant.*, 2 Series, Vol. I, p. 312.

² *Journal of the Archaeological Assn.*, Vol. XXXII, p. 482.

³ The Epsom Common Field that remained unenclosed in 1861 lay between the College and the town, on the chalk slopes.—*V.C.H.*

Survey (before recent building operations) shows a field adjoining the Reigate Road on the N.W. side of the Croydon-Epsom railway line, with Reigate Road Railway Bridge at its corner, and containing 12.9 acres. It is the only field that in the least answers Mr. Warne's description, and it does so completely. A road on the line we are considering would pass through this field, and would lie as described by Mr. Warne. All trace of the raised road has now disappeared.¹

This field is a little over half a mile from the Epsom-Ewell boundary, next the Epsom Common Field, and the search described by Mr. Warne would naturally lead to it.

(b) A piece of Roman road was recently discovered in excavations in Church Street, Ewell, which was described by Mr. S. E. Winbolt in *The Times* of October 14, 1933. It was situated at the angle of Church Street opposite Ewell Castle, and was composed of 9 inches of flint and chalk mixed, upon a foundation of laid chalk. This would be upon the line now suggested.

Mr. Winbolt states that the direction of this piece of road was reported as "nearly N.N.E.," and provisionally claims it for a more westerly route. The direction was not accurately observed, and probably could not have been in the short length exposed in the excavations. The direction of the line now suggested would be N. by E.—which is within the limits of error implied in "nearly N.N.E." under the circumstances.

(c) Roman pottery has been found in Ewell near this line (see Map 2). In working the old chalk-pit near the present Staneway House, middens of Roman houses were discovered in 1847, and described by Mr. Diamond.² Mr. Warne in 1860 examined midden shafts found in the same chalk pit. The shafts contained household refuse and a quantity of broken pottery including Samian ware.³ In 1866, when Staneway House was built, Roman pottery and coins were found in

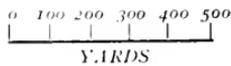
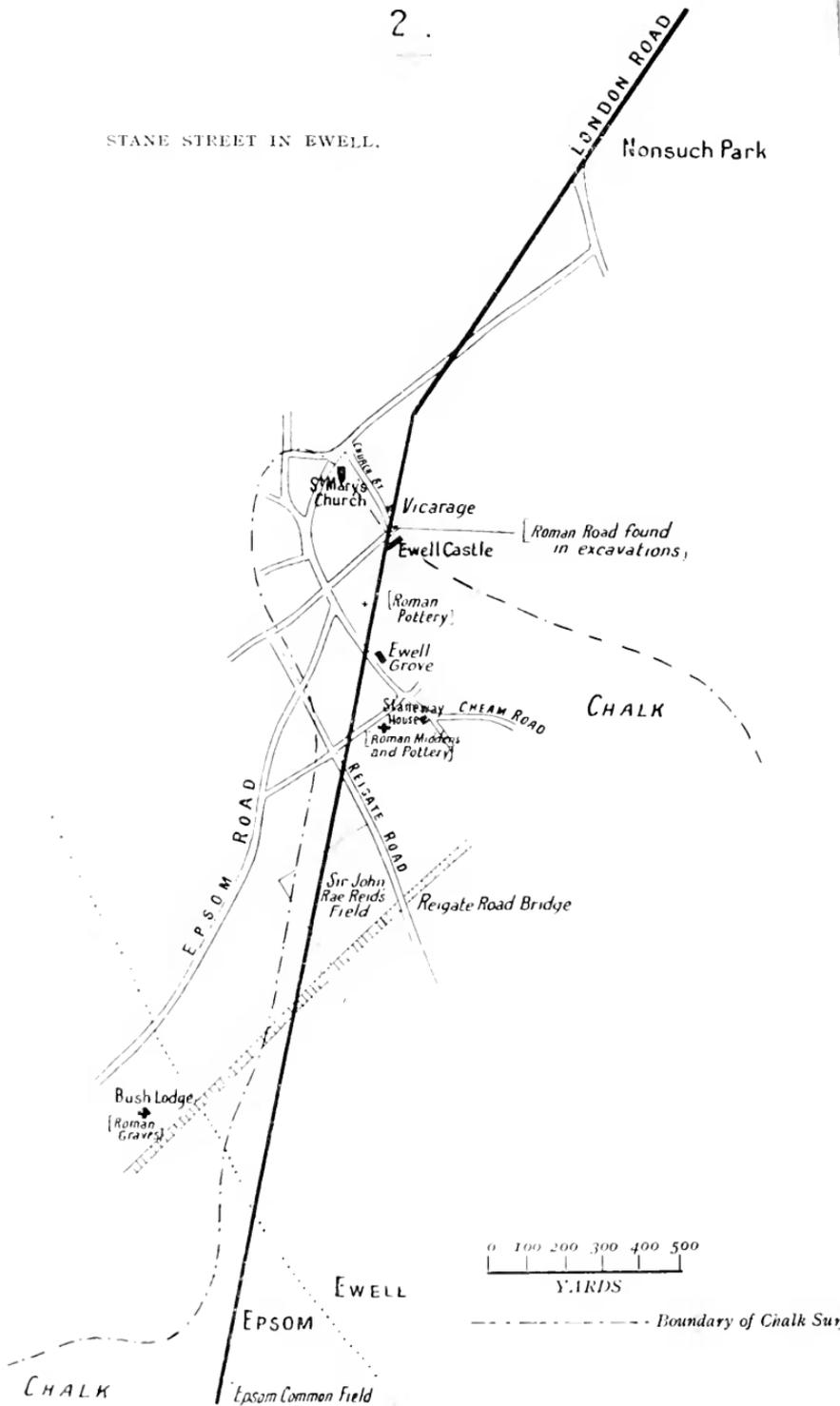
¹ I am indebted to Miss M. H. Glyn for independent corroboration of the identity of the field. She writes: "My mother said she had seen the line of Stane Street in the field you mention."

² *Archæologia*, 1848, Vol. XXXII.

³ Society of Antiquaries, *Proceedings*, 2nd Series, Vol. I, p. 309.

STANE STREET IN EWELL.

Nonsuch Park



----- Boundary of Chalk Sur

digging the foundations. It was for this reason the name of the house was chosen.¹

(d) Mr. A. O. Fisher, for many years resident in Epsom, has kindly supplied me with independent corroboration of this route at three different points. While he did not himself observe anything recognizable as the Roman road, he knew it by repute:

- (1) Near Pitt Place Farm House, where he lived many years ago;
- (2) At Down Hall;
- (3) Across the 1,000 yards firing-point of the old Rifle Range. (See Appendix I and Map 3.)

3. *Ewell to London Bridge.*

(a) The two-mile "straight" on the London Road near Ewell is directed at the old site of London Bridge. This alignment cuts the River Wandle exactly on the site of the present road bridge at Merton:² and nearly one-third of the present route from Ewell to London Bridge closely approximates to it.

(b) The parish boundary between Morden and Sutton lies along the London Road "straight" for a considerable distance. Where the existing road on its way to London diverges from the alignment, soon after the Victoria Public House, the parish boundary continues along the alignment for some 600 yards. This indicates that the road continued on this alignment when the boundary was determined.

(c) Where this line approaches the River Wandle in Merton, hundreds of Roman coins were found a few years ago, scattered over a small area close to the line, and belonging to every century of the Roman occupation. This find is described in detail later.

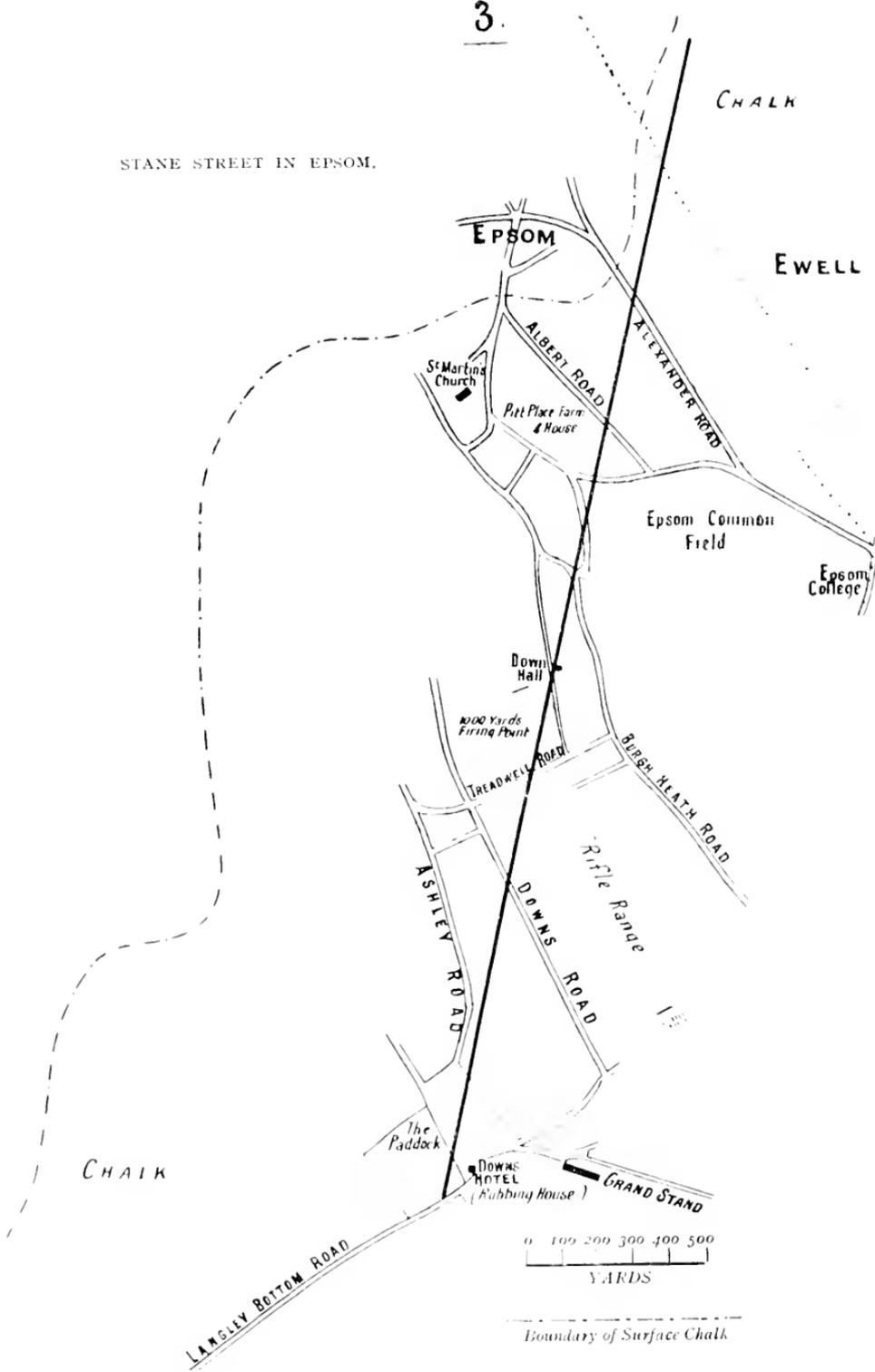
B. THE MAKING OF THE TRACE.

Before considering how the trace of Stane Street came to be made along the route above described, we should examine

¹ Sir Arthur Glyn, Bart., kindly furnished me with these particulars. His father built Staneway.

² Mr. R. M. Chart, of Mitcham, informs me that masonry supposed to be Roman was found in the demolition of the bridge that preceded the present one, some forty years ago. He used to possess specimens of this masonry consisting of flat thin bricks or tiles set in very hard mortar of the character of cement.

STANE STREET IN EPSOM.



for a moment the facilities possessed by the Roman Army for making it.

The geographers of the Roman world produced very indifferent results, and this chiefly for two reasons. In the first place they had no chronometers, and it is impossible to compare the longitudes of two places by observation of the heavenly bodies without knowing the difference between the local times. They knew that the earth was a sphere, and they could determine their latitude by astronomical observation with considerable accuracy. Their geographical maps were constructed by plotting the logs of ships and the itineraries of travellers by land, using to some extent observations of latitude: but unfortunately their estimate of the radius of the earth, and the consequent length of a degree of longitude at the Equator, was very incorrect, being about five-sixths of the true measure. When therefore the latitude and longitude of places given by Ptolemy in his Gazetteer are plotted, the resulting outlines are distorted even beyond the measure of the inaccuracy of the observations available.

But it was quite otherwise with regard to continuous land survey. Trigonometrical surveying, an ancient art, had been practised by the Egyptians: Euclid was a geometer, which means pretty nearly "land surveyor." There was a college of surveyors at Rome, and a considerable literature on the subject has survived. The Roman equivalent for the theodolite was a highly developed instrument (see Appendix II). While the Romans had no compass, they could obtain a North and South direction from observations of the sun or stars. Captain Grant writes: ¹

"When we consider the network of roads with which the Romans covered the southern part of England, in conjunction with the advanced stage of their civilization as indicated by their buildings, their literature and their arts, we must, I think, concede that their engineers were capable of carrying out extensive surveys, and of constructing maps of a very fair degree of accuracy; and that before the Stane Street was undertaken at all, the whole country between London and the sea must have been surveyed."

These facts are often forgotten when attempts are made to unravel the course of a Roman road and the process by which its trace was settled. The Roman engineers worked on

¹ *op. cit.*, p. 66.

the fundamental pre-Einstein principle that a straight line is the shortest distance between two points. In the making of the preliminary survey for a road, a first alignment on this principle might be set out. Closer examination of the detail of the ground might show that a combination of different alignments would give a better route. When the main alignments had been settled, it was of course necessary to maintain them generally in the construction of the road; but in the actual work of construction considerable liberty was allowed in adapting the trace to suit local conditions. It would have been foolish not to do so.

What, then, was the process by which Stane Street came to be laid out?

Captain Grant finds that stretches of Stane Street correspond with three actual alignments:

- (1) London Bridge to Chichester;
- (2) Chichester to Borough Hill, Pulborough;
- (3) Borough Hill to London Bridge;

and points out that these constitute a closed traverse which might have been the foundation of the survey work of the Roman engineers.

However this may be, a careful reconnaissance of the ground would certainly have been made by them, together with such survey as their equipment allowed. The direct line from London Bridge to Chichester may well have been set out in the course of their survey, and the construction of the road commenced from the London end along it. It was already clear, of course, that this would not serve to negotiate the Dorking Gap: but, an "elbow" being anyhow required at the Gap, the distance by this route to the Gap would be much the same as by any small modification of it, and the preliminary survey had shown that it was generally suitable.

On a closer examination of the conditions at Ewell and Epsom, it was found that the tiresome London Clay over which the first 10 or 12 miles were being constructed would be left soonest by inclining to the left about 22 degrees soon after the thirteenth (English) mile. Local investigation had proved that such a turn would at once bring the road upon the firm chalk: and that, through the fortunate circumstance

that the edge of the chalk closely followed this new direction, they could continue on the chalk with no further loss of direction to the left. No turn earlier or later would have given them so much chalk with such an economy of divergence.¹

The constructors of the road followed this line up to the 400 feet contour, and then inclined to the right to join the line by which it had been by that time determined to enter the Dorking Gap, across Leatherhead and Mickleham Downs and down Juniper Hill.

The route adopted from Ewell to the Dorking Gap may have been suggested by an ancient trackway observed by Mr. Warne both at Ewell and on Mickleham and Leatherhead Downs.

C. THE CROSSING OF THE WANDLE AND THE FINDS AT MERTON

It remains to describe the finds of coins and pottery made some years ago at Merton, and to discuss the trace of Stane Street near the crossing of the River Wandle.

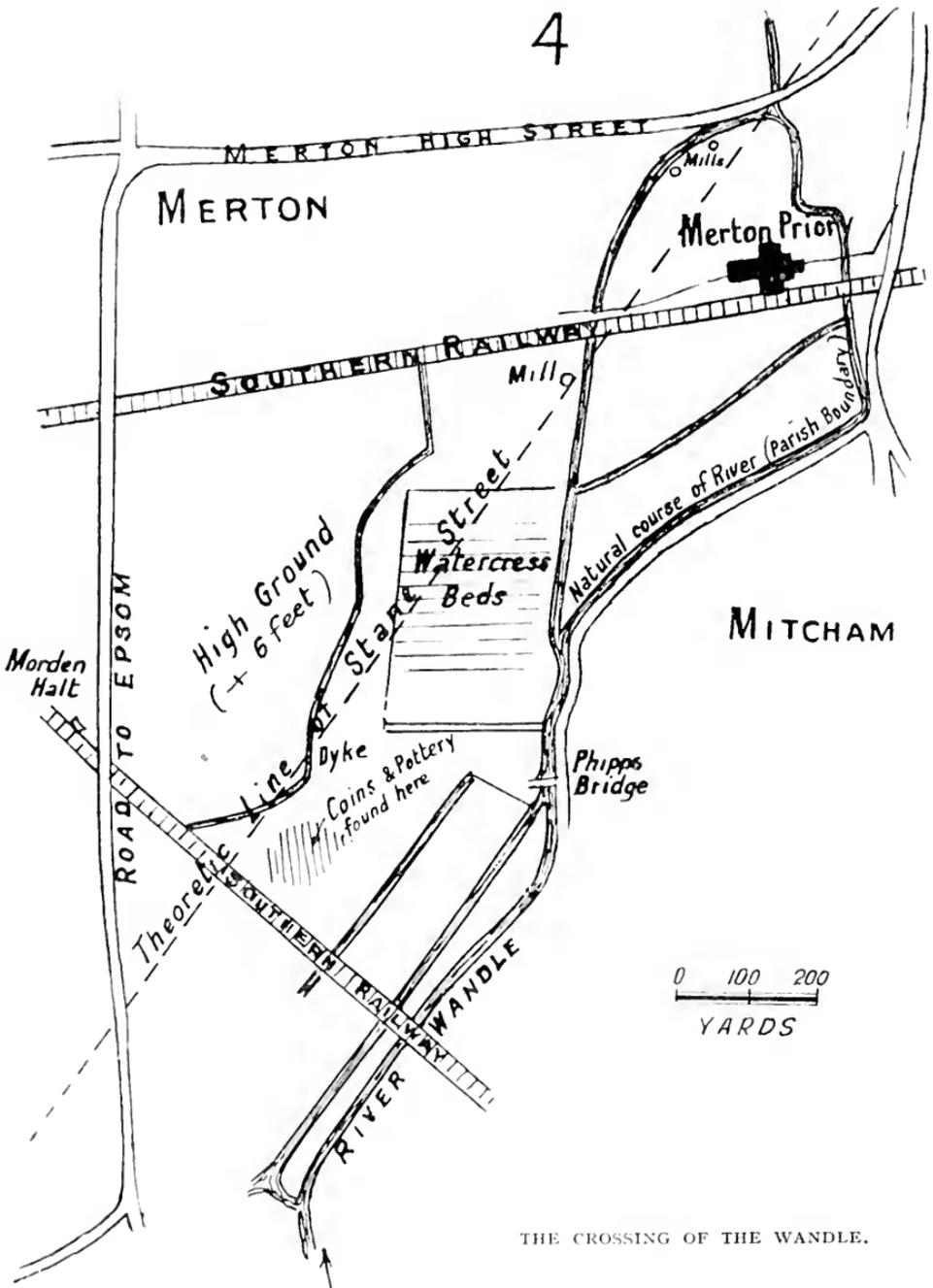
1. *The Course of the Road.*

The exact coincidence of the site of the present road bridge ("Terrier's Bridge," joining the High Streets of Merton and Tooting) with the point where the London-Ewell alignment cuts the river makes it certain that the road, as originally plotted, crossed at the present bridge site and continued across the low ground S.W. of the bridge (see Map 4).

The ground so traversed is now almost waterlogged; in part it has been used for water-cress beds, and it is intersected by dykes with the water standing an inch or two below the surrounding surface, which itself is frequently marshy. The soil consists of alluvial deposit on gravel at a depth of two or three feet. The "elbow" formed by the existing road carries it round on higher ground that rises sharply from the flat, and is edged by a dyke.

The water level, however, was not so high in Roman times

¹ I am aware that there is a narrow belt of the London Tertiaries (gravel and sand) between the chalk and the clay. But the Romans had not the advantage of our geological maps, and may well have preferred the certainty of the chalk area, once they touched it. Also they may have wished to avoid the many springs in the Tertiary belt.



THE CROSSING OF THE WANDLE.

as it is now. The natural course of the Wandle (coinciding with a parish boundary) is shown on Map 4. At some date after the Roman occupation an embanked mill-lead was made serving the mill of Merton Priory and two others, and raising the level of the river at its lower end some two feet by means of sluices.

I believe that the road was originally constructed across the low ground on the main alignment. No trace of it has ever been recorded there; but it is not impossible for the road to disappear, as is shown elsewhere; and land along the Wandle has been very intensively used for many centuries.¹

It may be that during the Roman occupation it was determined to divert the road to an "elbow" following the higher ground; or this may have been a later deviation. The original point of crossing of the river was in any case maintained.

2. *The Finds.*²

Some twelve years ago gravel-digging operations were in progress in the low ground above described, near the Wimbledon-Croydon branch of the Southern Railway. In an area which lay close to the theoretic line of Stane Street on its S.E. side a quantity of scattered coins was found. The density of the coins was "about one to the square yard," and traces of a large number, estimated at between five and six hundred, were noted. Sixteen coins were sufficiently well preserved to be identified. They formed the following remarkable series:

		A.D.	
1st century	Two	{ Nero	54-68
		{ Vespasian	79-79
2nd century	Six	{ Trajan	98-117
		{ Hadrian	117-138
		{ Antoninus Pius	138-161
		{ Faustina II	161-175
		{ Commodus	180-192

¹ A small patch of large flints set in cement was found near the area of the coins. It was certainly not part of a road, and appeared to be connected with the remains of an ancient sluice, long buried, and not on any existing watercourse.

² I am indebted to Mr. G. H. Hadfield for the particulars that follow. He conducted the gravel-digging operations.

		A.D.	
3rd century	Two	} Septimius Severus	193-211
			} Alexander Severus
4th century	Six	} Constantine II	337-340
			to
		} Valentinian I	367-375

There is a gap in this list of 100 years in the third and fourth centuries; but seeing how very few coins out of so large a number were identifiable, the range they display is most striking.

Scraps of pottery were also found: pieces of small vessels of various dates, commencing with a piece of red Samian of the first century. A bronze fibula of the first century was recovered.¹

It is thus evident that the site was frequented throughout the whole of the Roman occupation of Britain. It was suggested by Mr. Belloc in *Stane Street* that the first "mansio" or rest-camp out of London was situated at the crossing of the Wandle at Merton; and the presence of these coins may well be due to such a camp. The early date at which the series begins is evidence of the early construction of the road: and this is supported by finds of a first-century coin in Church Street, Ewell, and another at Hardham Camp, the first "mansio" out of Chichester. At Hardham early Romano-British pottery was also found.² It may fairly be concluded that Stane Street was constructed at a date very near the beginning of the Roman occupation of Britain, and was maintained by the Romans in continuous use.

POSTSCRIPT

After the above Paper was set up in type, a portion of Roman Road was discovered in the course of excavations conducted for the Surrey Archaeological Society by Mr. A. Lowther, in the old Fair Field, south-west of Ewell Grove (see Map 2). The find is described by Mr. S. E. Winbolt in *The Times* for 6 August 1934. Ninety yards of the road were proved.

¹ These identifications were made by Mr. Reginald Smith and his colleagues at the British Museum.

² See letters of Mr. Winbolt to *The Times*, 10 April 1926 and 4 November 1933. Mr. Winbolt is of opinion that Stane Street was constructed about A.D. 70.

The newly-discovered piece of road lies less than 100 yards west of the line suggested by me, and its direction is about 2 degrees more westerly. The new line, if continued, would pass through the corner of "Sir John Rae Reid's Field," but only to the extent of a few yards; so that it cannot coincide with the 200 yards of "via" so confidently identified in that field by Mr. Warne and confirmed by Mr. Roach Smith.

The new road is described as 21 inches below the present surface, while Mr. Warne's "via" was a raised causeway on which he could stand. The latter is the form in which Slane Street has survived on Leatherhead Down. "Sinking" is due to worm action, and cannot take place where there is only a thin covering of soil on the chalk.

APPENDIX I

Mr. A. O. Fisher, now of Eastergate, near Chichester, has kindly supplied me with the following information.

He lived as a boy in Pitt Place Farm House (now called Rosendale). The Roman Road was believed to pass at the back of this house (*i.e.* the East side), where a low bank was pointed out as being part of it. There was a track that continued the line to the North across what was then Mile's Fields (between the present Albert and Alexander Roads). The position of the bank and track is fairly represented by the line now suggested.

Mr. Fisher was shown by the owner of Down Hall a piece of road outside the stable gate of the Hall, as being part of the Roman Road.

Mr. Fisher remembers that the Roman Road was said to go across the old Rifle Range: and heard that a bank representing it had to be removed when the range was extended to 1,000 yards. The 1,000-yard firing-point was west of the present Treadwell Road, the targets being in the direction of the racecourse. A bank on the line now suggested would cross the range in front of this firing-point.

APPENDIX II

The professional surveyors of Rome were called *gromatici* from *groma*, a surveying instrument. The *groma* was improved into the *dioptra*, upon which a treatise has survived by one Heron. He gives the solution of a number of surveying problems, such as "to cut a straight tunnel through a hill from one point to another."

The *dioptra* consisted of a flat brass rod, 8 feet long, with two small sights at each end, supported on a movable frame. Plumbet and water-level were used to obtain the horizontal plane. Two screws regulated the vertical and horizontal movements of the rod.

Sighting poles were used 20 feet in length, with internal slides that extended them to nearly another 20 feet.

No doubt the work of these surveyors was usually concerned with comparatively small areas, but it seems most unlikely that their art was not also applied to military surveying on a large scale.