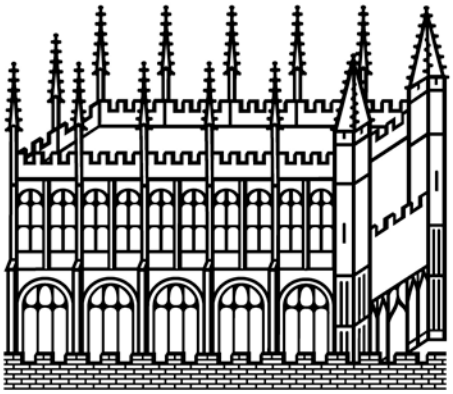
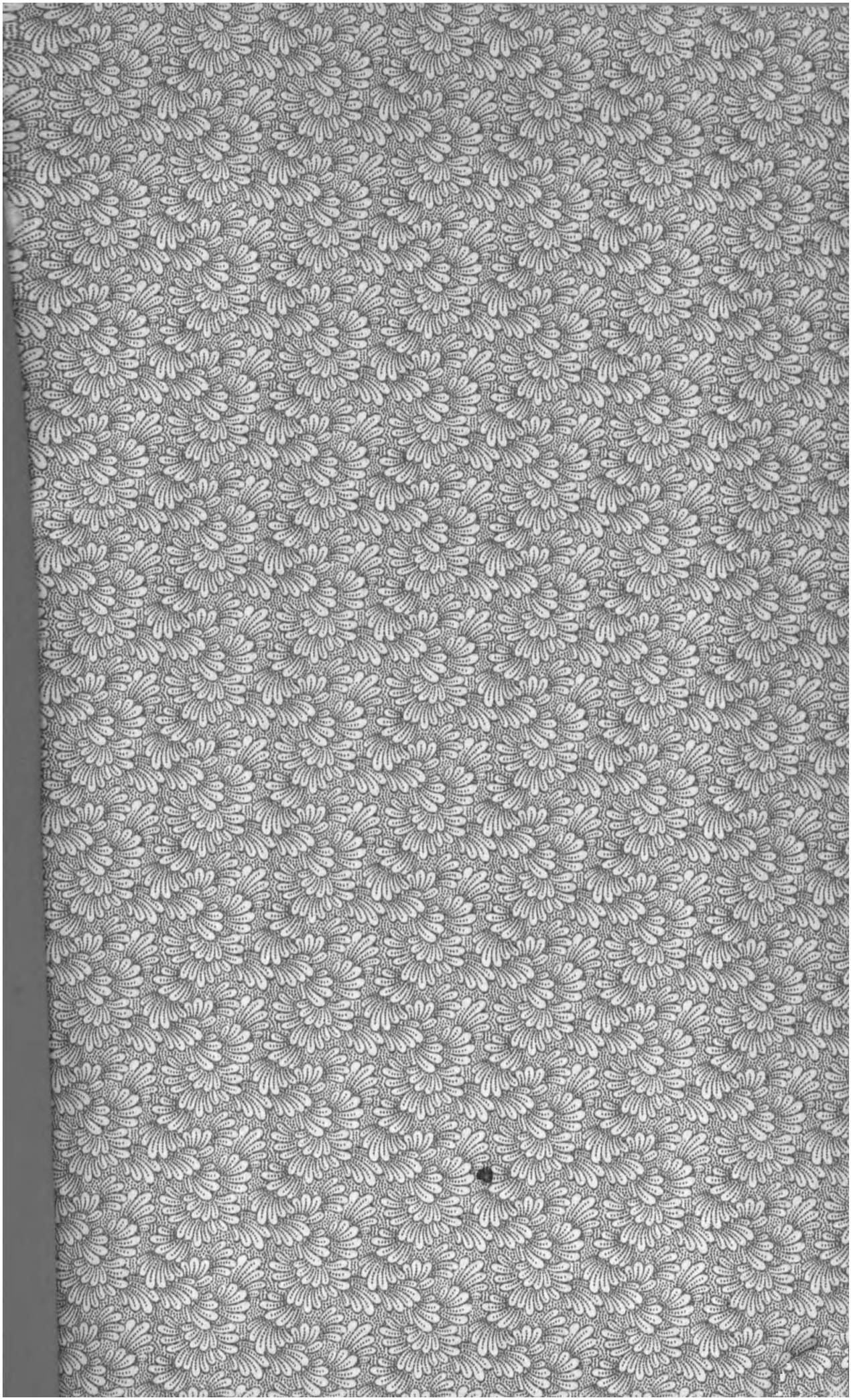


The Roman fort of Gellygaer in the county of Glamorgan

John Ward



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THE ROMAN FORT OF GELLYGAER GLAMORGAN

THE ROMAN FORT OF GELLYGAER

IN THE COUNTY OF GLAMORGAN

EXCAVATED BY THE CARDIFF NATURALISTS' SOCIETY IN THE YEARS 1899 1900 & 1901

BY

JOHN WARD F.S.A.

PUBLISHED BY ORDER OF THE COMMITTEE OF THE SOCIETY

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1903

PREFACE

It is to be regretted that the Roman Occupation of Britain, though of nearly four centuries' duration and fraught with great and lasting issues, should appear on the pages of our national history as but a short and debatable chapter. This is mainly owing to the vague and conflicting character of the documentary material relating to that period, and it is difficult to see how our knowledge can be further enhanced from that source. Rather, must we turn to the evidence of the spade; and it cannot be doubted that the systematic exploration of Roman sites which has been an archæological fashion of late years, is providing a rich store of material for the historian to work upon. The excavations at Silchester and Caerwent will deepen his insight into the conditions of Romano-British city life; while from those on the Wall in the North, and upon the sites of certain forts and camps, he will infer much concerning the military organization and administration of the Province. If the excavations recently conducted by the Cardiff Naturalists' Society at Gellygaer be esteemed (as I think they will be) to have supplied their quota towards the advancement of this knowledge, they will be deemed worthy of all the labour and money that has been expended upon them.

The treatment of the subject is sufficiently set forth in the introductory section. Those in which the various remains are described may, to the general reader, seem to be tediously detailed, but I ask him to bear in mind that the antiquary engaged in a similar exploration will look for full and precise information: for *his* sake it is better to err on the side of diffuseness rather than of brevity. In the section relating to the history of the exploration, I have not hesitated to place on

record some of the mistakes we have fallen into and have learned to avoid, in order that the Society may have the benefit of the experience thus gained for any future operation of a like nature.

The help of those who in various ways contributed to the successful prosecution of these excavations will be noted in the volume or its appendix, I hope, without omission. It now remains for me to here acknowledge the assistance I have received in the drawing up of this Memoir.

My first step was to distribute type-written notes upon the more important buildings of the fort among those members of the Archæological Section of the Society who had taken part in their excavation—Mr. C. H. James, J.P., who directed the work during the first season; Mr. J. Stuart Corbett, the President of the Section; Mr. William Riley, J.P.; Mr. Robert Drane, F.L.S.; Dr. C. T. Vachell; Mr. J. W. Rodger, M.S.A.; Mr. Edwin Seward, F.R.I.B.A.; Mr. George Seaborne; and the Rector of Gellygaer—with a view to their comments and additions. To these I must add Mr. F. Haverfield, F.S.A., of Oxford, who, although not a member of the Section, visited the spot several times, and rendered great assistance by correspondence. These notes were also sent to several other gentlemen not connected with the Gellygaer exploration, but whose names are well known in the realm of Romano-British archæology—Mr. G. E. Fox, F.S.A., one of the excavators of Silchester; Mr. J. P. Gibson, of Hexham; Mr. R. Blair, F.S.A., Secretary of the Newcastle Society of Antiquaries; Mr. C. W. Dymond, F.S.A.; and Dr. J. Anderson, the Director of the National Museum of Antiquities, Edinburgh. In the correspondence which ensued, much light was thrown upon the interpretation of the remains, and generally upon the affinities of our fort with others of the British excavated series. One outcome of this correspondence was a visit to the Wall under the guidance of Mr. Gibson, the pleasant recollections of which will always be with me. To Mr. William Clarke, of Llandaff, I am indebted for useful information in respect to the building construction and materials. Mr. James, Mr. Rodger, and Mr. Haverfield have kindly perused the proof-sheets.

The plans and illustrations demand a few words. Of the recently published plans of Roman forts, no two, except those of Great Chesters and Housesteads, are to the same scale, thus rendering comparison difficult. As the scale of these corresponds with that of the explorers of Silchester and Caerwent, and is that recommended by the Society of Antiquaries, namely, 30 ft. to 1 in., Mr. Rodger wisely decided to adopt it for his general plan of the fort. My more detailed plans had necessarily to be on a larger scale, so in order that they should be easy of comparison, their scale is double and quadruple that of his, namely, 15 ft. and 7 ft. 6 ins. to 1 in. The "half-tone" plates are selected from photographs taken by Miss Neale, Mr. D. Osborne, and Mr. M. T. Seymour. That the present volume is so well illustrated is due to the generosity of Mr. C. H. James, who has undertaken to defray the cost of all plates, blocks, and the lithographing of the plans.

Mr. James, it may be added, drew up a report upon the first year's work, which was printed in the *Transactions of the Cardiff Naturalists' Society*, Vol. XXXI. The Rector of Gellygaer, also, gave a sketchy account of the exploration and its results in *Cymri*, Vol. XX.

JOHN WARD.

The Welsh Museum
of Natural History, Arts and
Antiquities, Cardiff.
September 9th, 1902.

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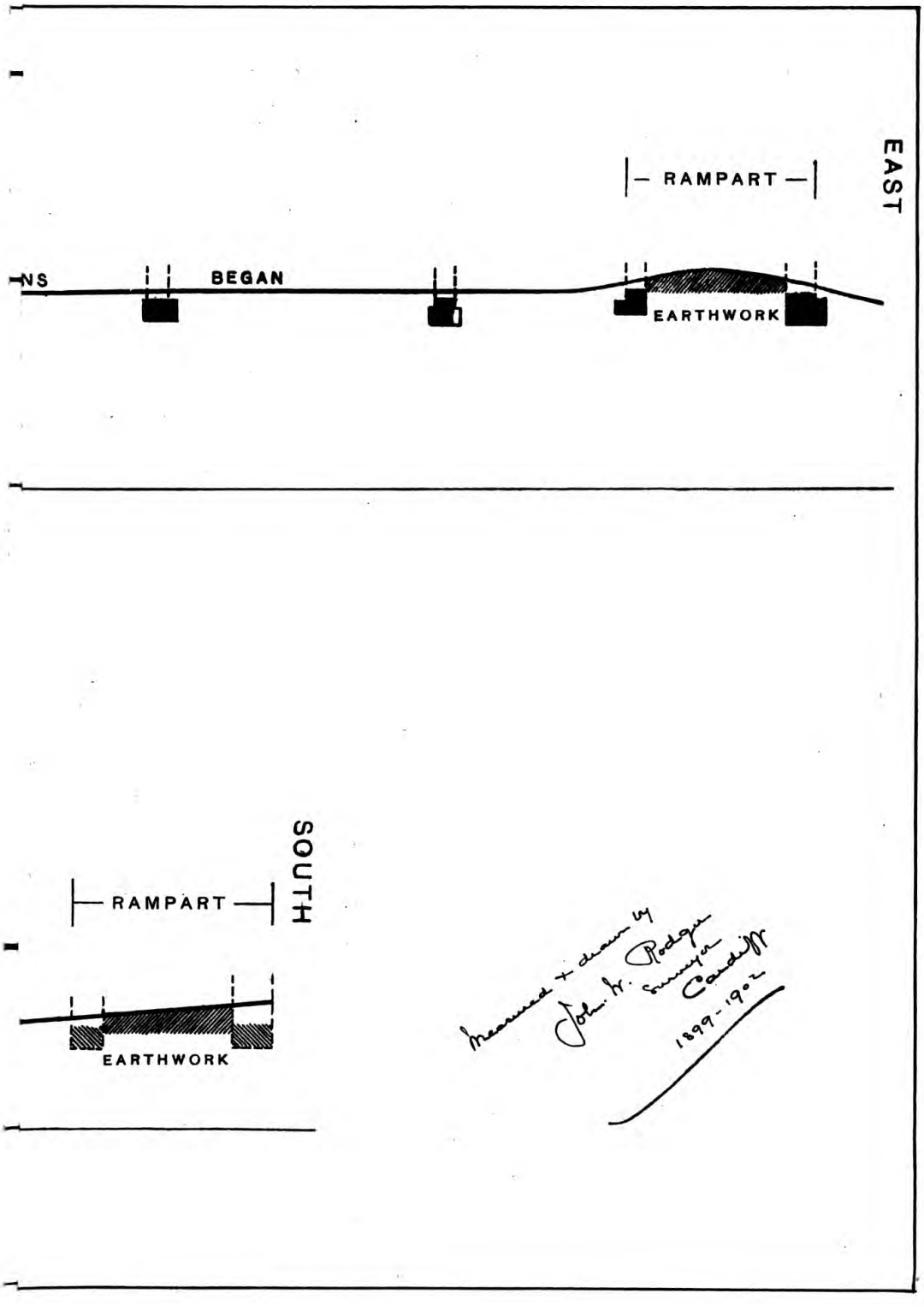
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Cardiff
1899-1902

THE ROMAN FORT OF GELLYGAER.

SECTION I.

Introduction.

In undertaking this Memoir, I recognize a double duty. The Cardiff Naturalists' Society, as its name indicates and its career has shown, is identified with the pursuit of natural science rather than with that of archæology. Hence, while we may rest assured that all its members have a sympathetic regard for the latter sphere of knowledge, we can scarcely question that those who have made it a study are comparatively few. The recognition of this is important, for it necessitates, in some measure, a different handling of the subject-matter from that I should adopt were I to address myself exclusively to antiquaries. In that case, I should assume the readers to already have a general knowledge of Roman fortification, and should confine myself to the description of the actual remains uncovered at Gellygaer and the conclusions drawn therefrom; but obviously, this would be but dry reading to the many who have not this preliminary knowledge.

In order to place these readers *pari passu* with the subject, I shall give an introductory character to this first section.

The Roman *castra*—the word is only used in the plural form*

* Professor R. S. Conway, Litt. D., in a letter to the author, thus discriminates between the words *castra*, *castrum*, and *castellum*:—"*Castrum* is certainly distinct from *castra*, as 'fort' or 'fortress' from 'camp.' But the singular word died out of use in Latin probably by 100 B.C., save as a proper name applied to various places where forts had or still existed. In classical Latin the diminutive *castellum* was used instead. This had also a special sense to denote the building erected to contain and protect a reservoir which fed more than one aquæduct, at the point where a simple leet was distributed into regular aquæducts for conveying water across a plain. *Castra Stativa* is a good classical phrase for a permanent camp: it occurs frequently in Livy. I know no example of *castellum* being used for anything so large as a camp—but I cannot say precisely how large a 'fort' may have been."

—strictly meant an entrenched camp, such as an army would throw up during a campaign, for it is well known that the Roman army never halted—not even for a single day—without forming a regular entrenchment. Such entrenchments were of a temporary nature, and so contrasted with the permanent camps or *castra stativa;* but for a moment we will disregard the distinction.

The traces of these camps are found wherever the Roman arms penetrated, and in our own country many fine examples are known. So usually are they square or oblong, that this form has come to be popularly regarded as their distinguishing mark. But while this may be accepted as generally true, it must not be too much insisted upon, as exceptional forms occur among Roman camps; and others, not Roman, are occasionally four-sided. Still, in spite of this, the Roman camps have a strong family likeness, and are not likely to be confounded with those of other races and eras.

As indicated above, they fall broadly into two classes—the field camps, in which the defences are of earth-work only and the enclosed area lacks all signs of buildings, and the permanent camps, which are of altogether more durable construction. The latter are generally known as "stations," but would be better distinguished as *forts.* They were erected to accommodate garrisons, whose duty was to hold what the sword had won, and were placed along the frontiers, by the important sea-ports, and elsewhere where their presence was desired.

Of the ancient writers who touched upon the art of castrametation as practised by the Romans, and whose works remain to us, two stand pre-eminent for the fulness of their descriptions: Polybius, the friend of the younger Scipio (died B.C. 124); and the author of a treatise, *De Munitionibus Castrorum,* who is usually called Hyginus, and who may have lived about the time of Septimus Severus (A.D. 193-211). These two writers treated upon the temporary camps—*castra*—only; yet their statements throw a flood of light on the forts. Allowance, however, must be made for the difference in size between the two classes, the forts being only intended for garrisons, while the great camps of these authorities were designed to accommodate entire

armies, in the one case, of some 20,000 men, and almost double that number in the other.

The Polybian camp was characterized by its simplicity. The site being selected, the position of the general's tent, the *Prætorium*, was fixed upon and marked by a small flag, and from this point the whole camp was developed. A straight line was next drawn through this point in the intended direction of the camp, and at a certain distance this was crossed by another line at right angles. These two lines were termed, in the language of the Roman land-surveyors, the *decumanus maximus* and *cardo maximus*, respectively, and they served as the base-lines from which the whole plan was determined, the sides of the internal divisions and of the general outline running parallel with them. The resultant figure was a square, 2,150 Roman feet each way, bisected in its "length" into two equal parts by the *decumanus maximus*, but in its breadth, or, as the Romans would say, "depth," into two unequal parts by the *cardo maximus*, which was nearer the back than the front. These lines marked the positions of the chief thoroughfares, and of the openings or gates in the rampart through which they passed into the outer space. The transverse road, which, from its importance and great width, was called the *Via Principalis*, passed through the *Portæ Principales, dextra* and *sinistra*. The great square of the *Prætorium* occupied the middle of its side towards the back of the camp; and from its entrance stretched the main longitudinal road, which passed through the *Porta Prætoria* or front gate of the camp.* A number of minor ways contributed to divide up the interior into rectangular plots for the tents, and between these tents and the rampart was a clear space or *intervallum*, 200 ft. wide, passing round the camp. The rampart itself was of earth, derived from the ditch which formed the outer line of defence.

* There is not complete unanimity as to the identification of the gates, and as to which end of the camp is to be regarded as the front and which the back. I have followed the usual view that the *Porta Prætoria* was the gate towards which the *Prætorium* looked, and that *that* end of the camp was the front. In the description of the Gellygaer fort I shall retain this usage of the words "front" and "back," for convenience sake, but shall replace the classical names for the gates by others expressing their positions with regard to the points of the compass.

Between Polybius and the treatise attributed to Hyginus elapsed 250-350 years, and during this interval great changes took place in the Roman military system. As might be expected, the Hyginian camp reflected the altered condition of things, and to us it is of peculiar interest, as the Roman fortresses of our country are more akin to it than to that of Polybius. The accompanying plan (Fig. 1) is copied from Smith's *Dictionary of Greek and Roman Antiquities*, but in order to make its chief features clearer, many of the minor details are omitted.

The lay-out of the Hyginian camp corresponded in all essentials with that of the Polybian. There were the same rectangular arrangement and bilateral symmetry, the transverse *Via Principalis* with a central *Prætorium* abutting upon it, the longitudinal *Via Prætoria*, and the four gates. But the general outline was an oblong with the corners rounded off; the *Intervallum* was greatly reduced in width; the *Prætorium* was lengthened, pushing forward the *Via Principalis* towards the front, and the *Via Quintana*, instead of crossing the front part of the camp as of old, was now placed behind the *Prætorium*. The chief difference between the two types, however, lay in the altered disposition of the troops, and the smaller space they occupied, as may be gathered from the broad fact that while the Hyginian camp was somewhat smaller than its predecessor, it had to accommodate about double the number of men. The difference in this respect is all the more significant when it is considered that the *Prætorium* and the accommodation for the officers had increased three-fold.

The Hyginian camp was divided by the two transverse roads into three segments, of which the *Prætentura* lay to the front, and the *Retentura* to the back, the middle segment containing the *Prætorium* and its wings or *latera*, in which were quartered the general's body-guard.

Josephus, in his *Wars of the Jews* (Book III., chapter v.), gives a sketch of a Roman camp in which are interspersed those little touches of detail which mark it as the description of an eye-witness. It is especially interesting to us, for it is highly probable that he wrote it within a few years of the erection of

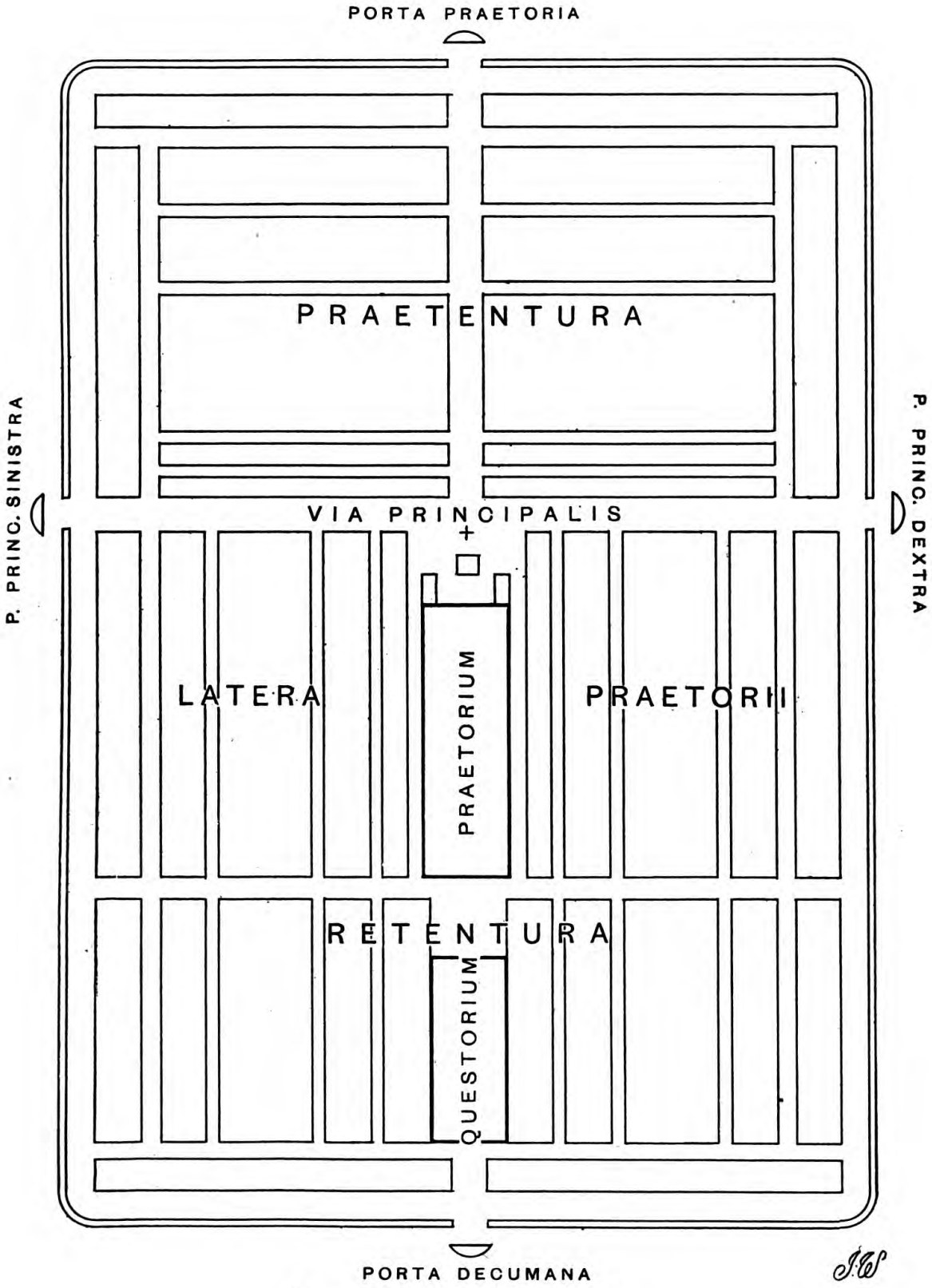


FIG. 1. PLAN OF HYGINIAN CAMP.

the fort at Gellygaer. I will not hesitate, therefore, to make a long quotation.

After describing the discipline and fortitude of the Roman soldiers, he passes to their procedure when in any enemy's land:—"They do not begin to fight till they have walled their camp about; nor is the fence they raise rashly made or uneven; . . . The camp is four-square by measure, and carpenters are ready in great numbers with their tools to erect their buildings for them. As for what is within the camp, it is set apart for tents, but the outward circumference hath the resemblance to a wall, and is adorned with towers at equal distances, where, between the towers, stand the engines for throwing arrows and darts, and for slinging stones, and where they lay all other engines that can annoy the enemy, all ready for their several operations. They also erect four gates, one at every side of the circumference, and those large enough for the entrance of the beasts, and wide enough for making excursions if occasion should require. They divide the camp within into streets, very conveniently, and place the tents of the commanders in the middle; but in the very midst of all is the general's own tent, in the nature of a temple, insomuch that it appears to be a city built on the sudden with its market-place and place for handicraft trades, and with seats for the officers, superior and inferior, where, if any differences arise, their causes are heard and determined. The camp, and all that is in it, is encompassed with a wall round about, and that sooner than one would imagine; and this by the multitude and the skill of the labourers; and if occasion require, a trench is drawn round the whole, whose depth is four cubits, and its breadth equal."

Our knowledge of the permanent camps or *forts* is mainly derived from the evidence of the spade. Only a few of these forts have been sufficiently explored to admit of an insight into the disposition of their buildings and streets; but their plans agree in their main lines, and these lines are those of the Hyginian camp. In fact, we may regard the forts as translations into stone of the temporary camps, provided we look upon them as free, and not as literal, renderings. It is evident that the Roman military authorities did not insist upon hard and fast rules

for the lay-out of the forts, but left much to the discretion of the engineers who built them. The plans are not susceptible of classification, their differences apparently being of an arbitrary nature; but it is quite likely that future investigations will show that some, at least, of these differences signify more than we suppose.

Of the Roman forts which have been explored in this country, those which have supplied the most complete plans are Housesteads (*Borcovicus*) on the Wall in Northumberland, explored by the Newcastle-upon-Tyne Society of Antiquaries in 1898; Birrens, in Dumfriesshire, explored by the Society of Antiquaries of Scotland in 1895; and our Gellygaer. Three other forts have been opened out by the Scottish Society with results almost as excellent—Ardoch, in Perthshire (1896-7); Camelon, in Stirlingshire (1900); and Lyne, in Peeblesshire (1901). Of the Wall series, Chesters (*Cilurnum*) and Great Chesters (*Aesica*) have been partially explored, the former at different times, but chiefly by the late Mr. Clayton, and the latter by Mr. J. P. Gibson and others in 1894-5 and 1897; and in less degree, Birdoswald (*Amboglanna*), the largest of the series, was subjected to the spade in 1852. In the same year a large portion of High Rochester (*Bremenium*), one of the supporting forts of the Wall, was very thoroughly explored by the fourth Duke of Northumberland; and more recently the Newcastle Society laid bare many of the buildings of another supporting fort at South Shields. A small fort on Hardknott, in Cumberland, was explored in a thorough manner by the Cumberland and Westmoreland Antiquarian and Archæological Society between the years 1889 and 1892, mostly under the superintendence of Mr. Calverley and Mr. C. W. Dymond, F.S.A. In Derbyshire, a fort of similar dimensions—Melandra Castle—received a considerable amount of digging in 1899 and 1900 from a local society—the Glossop Antiquarian and Natural History Society formed for the purpose; but I have not heard whether the work has been continued.

As these forts will be referred to from time to time in these pages, the following table will be useful:—

Fort.	Dimensions (English feet). Length.	Breadth.	Position of *Via Principalis.*	*Prætorium* (English feet). Length.	Breadth.	Where Described.
Birrens	600	381	42·5	78	68	*Proc. Soc. Antiquaries, Scot.*, Vol. XXX.
Ardoch	550	490	39·0	86	75	,, ,, ,, XXXII.
Camelon	602	562	42·0	92	120	,, ,, ,, XXXV.
Lyne	580	488	34·4	95	105	,, ,, ,, XXXIX.
Housesteads	609	373	35·1	90	76	Report not yet published.
High Rochester ...	478	438	41·0	76	71	*Royal Archæological Institute*, Vol. I.
Chesters	573	428	41·0	123	97	*Archæologia Æliana*, Vols. X., etc.
Gt. Chesters	420	347	31·6	78	?	*Archæologia Æliana*, Vols. XVII. and XXIV.
Hardknott	375	375	42·6	70	70	*Trans. Cumb. and Westmor. Ant. and Arch. Soc.*, Vol. XII.
Melandra	366	338	48·9	73	72	*Derbyshire Archæological and Natural History Society*, Vol. XXII.
Gellygaer	402	385	46·0	80	69	This memoir.

The length and breadth are taken from the outer faces of the rampart. Where these faces are not well defined, the measurements have been estimated; and in the case of Melandra Castle there is some uncertainty, as the different plans do not quite agree. The position of the *Via Principalis* is important, as it carries with it the positions of the lateral gates and the *Prætorium.* The figures express the ratio of its distance from the front of the fort to the total length reckoned as 100.

A few other Roman forts in this country have received the attention of the antiquary's spade, but in these cases the excavations have either been confined to the fortifications or have been only slight, disclosing little as to the planning of the internal buildings.

The most important of the Continental forts which have been investigated are the *Kastelle* of the Ober-Germanisch-Rætischer Limes. These differ among themselves about as much as the British examples do, but they have peculiarities which differentiate them as a group from ours.

SECTION II.

The Site and the Surroundings.

THE village of Gellygaer lies between the Rhymney and the Bargoed Taff Valleys, near the north-east corner of Glamorgan, and at a distance of 13½ miles N.N.W. from Cardiff, and of 8 miles S.E. from Merthyr Tydfil. It is finely placed on a spur of Cefn Gellygaer, which, three miles to the N.N.W., attains an elevation of 1,316 ft. above the sea; and, with the exception of that direction, it commands on every side an extensive sweep of characteristic coal-measure country, for this village is in the heart of the eastern portion of the South Wales coal-field. Immediately to the east is Nant Cylla, the stream of which rises in the lower part of Senghennydd Common and falls into the Rhymney two miles to the south. The geological formation consists of upper coal-measure shales and sandstones overlying the pennant-grit; with a sub-soil of stiff boulder clay, containing many pennant fragments, mostly worn, and occasionally ice-scratched.

The site of the Roman fort is 600 ft. to the N.W. of the ancient parish church of St. Cattwg, in a field which from time beyond memory has borne the name of Gaer Fawr—the "Great Camp"—to distinguish it from the Gaer Fach—the "Little Camp"—the smaller adjoining field towards the church, which is supposed to also contain ancient foundations. The Gaer Fawr approximates to the shape of the fort, and includes the whole of it except the north and south corners, the former of which projects into the garden of the Rectory and the latter into that belonging to the old School-house. The N.W. and S.E. fences coincide with the outer faces of the corresponding ramparts, but on the N.E. and S.W. the field oversteps the limits of the fort.

The site is not naturally strong, yet it is well chosen. It occupies a commanding position 780 ft. above the sea, on the brow of Nant Cylla, but is overlooked from the N.W. To be precise, it is set back 200 ft. or more from the line where the steep slope of the valley is transformed into the gentle rise which culminates in Cefn Gellygaer. It will be seen from this, that the site has a gentle fall in a south-easterly direction.

While the name of the field is proof that the memory of the fort never died out, the references to it by topographical writers are very few. The earliest I know of, is in Carlisle's *Topographical Dictionary of the Dominion of Wales*, 1811, which is as follows:—"The present worthy Rector, the Rev. John J. Jones, very obligingly adds, 'The name implies a Military Station embosomed with Wood. The site of an oblong square (*sic*) building is still discernible in fields near the present village Church and Rectory House: and fragments of Roman bricks of superior texture are scattered in the Walls and Inclosures about the Vestigium of the old Camp. In former times it might be an important Out-post to check incursions from the Mountains and to defend the defiles to Caerphilly Castle (from which it is distant about seven miles), and which is still majestic though in ruins.'"*

Before the recent exploration, the chief features of the fort were discernible to an experienced eye, and doubtless will remain so in spite of the disturbance wrought by the explorer's spade. No masonry *in situ* was visible, except a short length, consisting of a single course of the N.W. rampart wall, in the side of the lane leading to the Rectory; but many dressed stones, presumably from the fort, were to be seen in the neighbouring field-fences. In the field itself the indications took the form of gentle rises and falls in the greensward. The rampart, as might be expected, showed out well, and the four gates were represented by shallow hollows. The ditch on the S.W. side was equally well marked, but elsewhere its traces were very

* The account of the remains of the fort in Lewis's *Topographical Dictionary of Wales*, 1835, is apparently abbreviated from Carlisle. There are references to it as Roman, in *Archæologia Cambrensis*, vol. xv., 3rd series, p. 84 (1869), and viii., 4th series, p. 266 (1877).

slight, and on the N.W. side it was quite obliterated by the Rectory lane upon its line. Within the circuit of the rampart the most conspicuous mounds were those marking the sites of Blocks V. and VIII. on Mr. Rodger's general plan, and stretching between these were three square terraced areas representing Blocks VI. and VII. and a yard also shown on that plan. Between this zone of mounds and hollows and the N.E. and S.W. ramparts, the surface-indications were few and obscure; but the line of the *Via Principalis* was very distinct.

The Roman name of the fort, and the nationality and legion of the soldiers who held it, are quite unknown, for no inscription was found during the excavations, and one on a centurial stone, known to exist in 1822, throws no light on the question (page 93). It is off the various routes of the Antonine Itinerary, and to attempt to identify it with any of the names on the lists of Ptolemy and the "Ravenna Geographer" would be pure guesswork.

Its geographical relations to the surrounding Roman positions need not detain us long, for the Roman archæology of the district has never been seriously and comprehensively investigated. There is no doubt that it is upon a Roman road connecting the Gaer near Brecknock with Cardiff Castle. The line of this road can be traced over the high ground of Gellygaer Common, pointing direct to our fort. The last mile-and-a-half before the village is reached is probably represented by the Heol Adam, an existing road popularly accounted Roman, and so marked on the Ordnance Survey. Below the village the old road appears to have made a bend in a somewhat westerly direction, the line probably being represented by the present Heol-Pont-y-Seison, which is also accounted Roman. On the other side of Pont-y-Seison, and near Pen-y-waun, is some ancient pitching which seems to relate to this road. Ascending Mynnydd Eglwysilan, we meet with indications of another bend, this time somewhat towards the east, heading for Caerphilly and Cardiff.

It is well known that Abergavenny, which is thirteen miles to the N.E., marks the site of a Roman station, and one would expect to find some indications of communication between it and Gellygaer, but the Ordnance Survey shows no signs of such

a line of road. There is a mountain road between Llanhilleth and Aber-Sychan, which is *said* to be Roman, but it is considerably to the south of a direct route.

In an opposite direction is Cowbridge (sixteen miles to the S.W.), which appears to have been the next station from Cardiff on the so-called *Via Julia;* but I am not aware that there is any evidence of a Roman road between it and Gellygaer. It may be noted, however, that the Heol-Pont-y-Seison points to that place, and that fragments of an ancient pitched road have been found near Llantrissant running in the same direction.

SECTION III.

The History of the Exploration.

On July 27th, 1894, the then newly-formed Archæological Section of the Naturalists' Society paid a visit to Llancaiach and Gellygaer, during which the Rector of the latter place, the Rev. Jesse T. Jones, pointed out the outlines of the fort.* The feasibility of an exploration of the site was discussed, but no further steps were taken; still the visit bore fruit eventually. A lecture upon the archæology of Salisbury Plain, delivered by Mr. E. Doran Webb, F.S.A., before the Society, four and a half years later (January 12th, 1899), revived the question; and it was arranged that several members should visit the place on the following day. Mr. Webb accompanied the party, and he strongly urged the excavation of the site. This was warmly entertained by the Committee, who, with the view of testing the nature of the mounds, voted the sum of £25, and obtained the permission of the owner of the land, Mr. Capel Hanbury Leigh, J.P., of Pontypool, and of the tenant, Mr. H. Edwards, for the requisite trenching to be done. The Archæological Section having ceased to exist, the work was entrusted to a sub-committee, which had recently been appointed to co-operate with the Ordnance Survey officers in providing the revised survey of the district with correct particulars of the various ancient remains. Mr. C. H. James, J.P., and Mr. George Seaborne, of Hengoed, consented to superintend the work, and Mr. J. W. Rodger to make the survey.

Operations on the spot began early in the following October, and were continued until the middle of November. The trenching was confined to a portion of the site extending from the west

* In 1892, Roman pottery was found in the Rectory grounds during alterations.—*Cymri*, Vol. XX., pp. 188-191.

corner to the North-West Gate, and 100 ft. in width. The remains of the various buildings uncovered in this process were described in Mr. James's report, which appeared several weeks later. The results of these trial trenches were most promising, proving beyond question the desirability of a complete exploration of the fort.

During the following winter, the Archæological Section was revived, with Mr. J. Stuart Corbett as President, and Mr. George E. Halliday, F.R.I.B.A., as Honorary Secretary, and to this section was committed the exploration. Mr. Hanbury Leigh kindly renewed his permission, and arrangements were made with the tenant for the sub-letting of the field to the Society. It was felt that the undertaking would be costly, altogether beyond the means at the disposal of the Society, but it was also felt that the results would be of such general interest as to justify an appeal for outside help. The chief aim of the search was to disclose the plan and construction of the fort, as it could hardly be expected that the "finds" from a purely military site would be as many and varied as those from a villa or a city; whereas a complete and reliable plan would be a decided gain to archæological knowledge. The first operations were to be the opening out of the south-west and south-east gates, and the exploration of the whole space between the *Via Principalis* and the north-west rampart. The surface-indications of buildings in this region being extremely vague, the method proposed was diagonal trenching, the trenches to be 2 ft. wide and 8 ft. apart. The question of supervision was a difficult one, as no member of the Section could afford the time this would involve; it was, therefore, arranged that the names of the members of the Sectional Committee with the addition of those of a few other gentlemen interested in the work, should be entered upon a *rota*, each so entered being responsible for a week to make as many visits as possible to the excavations and to direct the men. Mr. Seaborne undertook to engage the men and to act as paymaster; and Mr. Rodger, to make the survey, as before.

On May 14th, 1900, I commenced the operations on the spot by the excavation of the South-West Gate. This was completed

by my successor on the *rota*, who took in hand the South-East Gate; and then followed, a week or so later, the diagonal trenching of the space just referred to.

A few words upon archæological spade-work may be acceptable at this point. When, as sometimes happens, the foundations of buildings stand out as ridges or are marked by a discoloration of the herbage, all that *may* be necessary is to simply follow up the indications with the spade, laying bare the masonry as we proceed. But when the surface-indications are slight and uncertain, the procedure has to be modified. The first step is to gain an idea of the character and extent of the buildings, and the best way to obtain this is to drive a diagonal trench across the site—I assume, of course, that the orientation of the buildings is sufficiently evident to admit of the laying down of a diagonal. The advantage of a trench of this sort over one that runs parallel with one set or other of the walls, is, that it ensures the discovery of a larger number of buildings or rooms. The diagonal trench, having brought to light sundry walls, we next proceed to follow these up as described above. This is an excellent method of excavating a villa, for the rooms and buildings on such a site being usually connected, the excavation of one leads on naturally to that of another, until the whole plan is disclosed.

In either of the above methods, the exploration will be only complete so far as the walls are concerned. In order to ascertain what the different apartments contain, it will be necessary to cut a trench or two across each. This should always be done even in small rooms, for it is impossible to say without the aid of the spade, what may not lurk beneath the turf. But it need hardly be said that the only way to make a site yield up *all* its secrets, is to wholly remove the accumulations of *débris* and mould which cover it. This is costly, not merely on account of the large amount of digging, but on account of the distance the throw-out has to be removed so as to keep the site clear. It is, however, often necessary to adopt this extreme measure, and it is the only way of making the lay-out and character of a buried building intelligible at a glance.

When it is necessary to obtain the plan of such an area as the insula of a city or this space between the *Via Principalis*

and the north-east rampart at Gellygaer, and we are uncertain what buildings it may contain or how they are distributed, we must resort to some system of trenching which will prove the *absence* as well as the presence of buildings. The most efficient and economic way of doing this is by a series of parallel diagonals, provided they are sufficiently near to one another. Set out at an angle of 45°, and 8 ft. apart, as at Gellygaer, a building to escape detection will have to be *less* than 5 ft. 8 in. square, so that we may assume that if no walls are struck in the diagonals, there are no buildings on the site. Another advantage of the system is that the throw-out is well distributed, and consequently is easily replaced. There is always a risk that the spots on which great spoil-heaps are raised, may have to be subsequently excavated.

The character of the site can be learned from the glimpses afforded by these trenches. Usually this will be sufficient, especially in the case of floors and roads; but where it is necessary to prove the continuity of walls, it will be an easy matter to remove the soil from their summits.

To return to the course of the Gellygaer exploration. During the months of June and July the work did not proceed as satisfactorily as could be wished, and the chief cause of this was the *rota*. It is one thing to have a willing heart and to be on a *rota* for a certain week, but it is another to find one's self free to act when the time comes. Business calls are not usually respecters of days. It is not surprising, therefore, that some, whose names were on that document, failed to put in more than half a day during their week. I have no doubt that they could, and willingly would, have given a helping hand at other times had their co-operation not been limited to a particular week. It is not an easy task for anyone who has not followed an excavation, to gather from the confusing web of trenches and spoil-heaps, the significance of the discoveries, yet this he must do, before he can be in a position to advise as to the next step. Nor has he much incentive for thoroughness, seeing that he will drop out at the end of his week, and his successor may reverse his procedure. Another fault of these earlier days was the insufficiency of labourers. We began with two, then the number oscillated between three and four until August 20th,

when for five or six weeks from twelve to fourteen were employed. Eight or nine labourers in continuous employment from the first would, I think, have given better results.

It is well to keep our mistakes in mind so that they can be avoided in the future. My opinion is that it would have been better to have excavated the site in sections corresponding as nearly as possible with the several buildings, and to have arranged that each section should be under the supervision of *one* person from first to last, who would also draw up full notes upon his portion. Not that he should necessarily be on the spot daily—he could seek the assistance of colleagues—but he would be responsible to see the excavation of his section through, and it is reasonable to think that he would aim to excel in the economy and thoroughness of his work and the completeness of his notes. Before each section was finished, it would fall upon someone—the Secretary, presumably—to organize the work of the next section.

Towards the end of July the Gellygaer exploration received a strong impulse. Mr. William Riley, J.P., one of the Vice-Presidents of the Section, set, at his own expense, a gang of nine men to excavate the ramparts, the four men in the employ of the Society continuing to work upon the interior of the fort. These men were under continuous supervision, the Rector, and for a week or two, Mr. Edwin Seward, F.R.I.B.A., acting for Mr. Riley in his absence. Soon the spade revealed the interesting fact that the ramparts had twelve tower-like structures, in addition to the gates. Towards the end of August, the number of men* in the employ of the Section was raised as stated above in order that the work of exploration might be finished during the autumn, but later it became evident that it could not be accomplished in the time. Arrangements were, therefore, made with Mr. Edwards for the retention of the field another year, and the more exposed walls were covered with turf to protect them from the frosts of the coming winter.

The work was resumed on June 3rd, 1901, and was carried

* An excellent photograph of these men is reproduced in *Cymri*, Vol. XX., p. 268. In the front row, with his dog, is the foreman, William Jones, a sturdy Welshman, who stuck to the work from first to last, entered fully into its spirit, and became quite an expert archæological digger. In the next volume, p. 69, is reproduced a photograph of the field at this time.

on with five, and sometimes six, men until late in August. As the important central buildings had been only partly uncovered in the preceding season, they received the first attention, Mr. Riley and the Rector superintending. These completed, all the men were dismissed except two, who were placed at my disposal for several weeks to make any supplementary investigations which might be required for the drawing up of this Memoir. I venture to suggest that in our next "Gellygaer" the editorship should be settled from the outset, for the editor should follow the excavations as they proceed, as then is afforded the best opportunity for observation and inference. Few notes had been made during the later diggings of 1900 and those of the following summer, and as I had rarely visited the place during these periods, I had to make my examinations under unfavourable conditions, all the trenches of the former year being overgrown with weeds, and often half-filled with soil. This further shows the desirability of carrying out an undertaking like this of Gellygaer in sections, full notes on each section being made while its excavations are fresh.

We now come to the last phase of the work, the refilling of the excavations. After much consideration, the Committee came to the conclusion—undoubtedly a wise one—that this should be done by contract. The tender of Mr. W. Symonds, of Cardiff, was accepted, and Mr. Rodger made all arrangements for the carrying out of the work, a task which proved to be no light one. By the end of the year the trenches were all filled in and the field was handed back to Mr. Edwards.

The total cost of the work on the spot incurred by the Society (that is excluding the portion generously defrayed by Mr. Riley) has been £402 13s. 7d. The total amount received from various contributions to meet this has been £309 2s. 6d., leaving a deficit of £93 11s. 1d. to be made good. A full list of contributions is appended at the end of this Memoir.*

* The Rector has contributed to *Cymri* (Vol. XX., *et seq.*) a series of articles on the history of Gellygaer, in the course of which he describes the Roman remains and the exploration. References to the progress of the exploration have appeared in the *Athenæum*, the *Times*, the *Antiquary*, *Archæologia Cambrensis*, the *Western Mail*, and the *South Wales Daily News;* and a short report upon the results of the work will appear in the next volume of the *British Association Reports*.

SECTION IV.

A General Survey of the Fort.

Plan.—The first thing that will strike the reader on looking at Mr. Rodger's plan is its obvious completeness.* Every portion of the site is accounted for. There is no room for an undiscovered building. It is true that a few portions of the plan—mostly on the rampart—have been conjecturally filled in. These represent places which could not be excavated in consequence of trees, of the cottage and garden at the south corner, and of the Rectory fence on the north; but fortunately there are corresponding parts which have been excavated, and so supply us with *data*. The ditch was the least investigated member, but there is no reason to doubt that it passed all round the fort as indicated, and that it was of the same character throughout.

Another feature of the plan is its simplicity. If any inference may be drawn from this, it is that such a plan is more likely to express a Roman fort reduced to its essential elements, than a complicated one like that of Housesteads or Chesters. Its value in this respect is enhanced by the fact that our fort has all the signs of being of one design and execution. The only apparent exception to this is the double set of cross-walls in Block VIII.; but I hope later to show that this does not imply a succession of two buildings on the site.

The reader will not fail to observe the general bilateral symmetry of the plan, the right and left balancing of parts. In these respects, as also in the position of the four gates and the lay-out of the streets and buildings, he will note a general

* The Ordnance Survey Office published a plan of the fort (Sheet xx. 9, Glamorgan, $\frac{1}{500}$). Owing to the circumstance that that survey was made in February, 1901, that is, before the completion of the exploration, there are points of difference between it and Mr. Rodger's. In order to avoid any question that might arise in the future as to which plan should be accepted as correct, a sub-committee, consisting of Messrs. Drane, Riley, and the writer, visited the site with both plans, and as a result of their investigations, Mr. Rodger's was confirmed.

likeness to the camps of Polybius and Hyginus. If he pursue the comparisons further, he will see in the rounded corners, the narrow *intervallum* and the forward position of the *Via Principalis*, Hyginian traits, while the approximate squareness of both the fort as a whole and the central *Prætorium* will appeal to him as Polybian legacies. And he will feel assured in these surmises when he notes the intermediate age of our fort, for when it was erected, Polybius had been gathered to his fathers some centuries, while the author of the tract attributed to Hyginus was probably not yet born.

The array of tower-like structures at regular distances apart will particularly recall Josephus's vivid description of a Roman camp. So exactly do his words tally with the remains of our fort that we might suppose him to be describing Gellygaer in its palmy days, with the important difference that he had in mind a *temporary* camp, whereas Gellygaer was a *permanent* one. But is it not significant of Roman inflexibility that the description of a camp at the far east of the Empire should so exactly apply to a post amid the hills of its western fringe?

Two further marks of intermediateness may be noticed. The three well-defined segments—the *Prætentura*, the *Retentura*, with the intervening *Prætorium* and its *latera*—of the Hyginian camp, are not clearly marked at Gellygaer. There is, it is true, no difficulty about the first segment, since it is divided from the rest of the area by the wide *Via Principalis*; but as there is no continuous thoroughfare at the back of the *Prætorium*, answering to the *Via Quintana* of Hyginus, the other two segments are somewhat merged into one another. If on the other hand we identify this *Via* with the well-defined thoroughfare midway between the *Prætorium* and the South-West Gate, the *Retentura* is reduced to a mere strip containing two buildings (I. and II.). In this respect Gellygaer contrasts with some of the Northern forts, which being probably of later erection should presumably have more strongly marked Hyginian affinities. At Housesteads, for example, the *Prætentura* and *Retentura* are of equal size, while at Birrens, the latter actually exceeds the former.*

* For some interesting remarks comparing the forts with the Hyginian camp, by Mr. Haverfield, see the Appendix.

Next, the system of measurements at Gellygaer appears to agree with Polybius rather than Hyginus. The former, in common with the older Roman land-measurers, followed the decimal system, and made use of ten-foot staves (*decempedæ*),

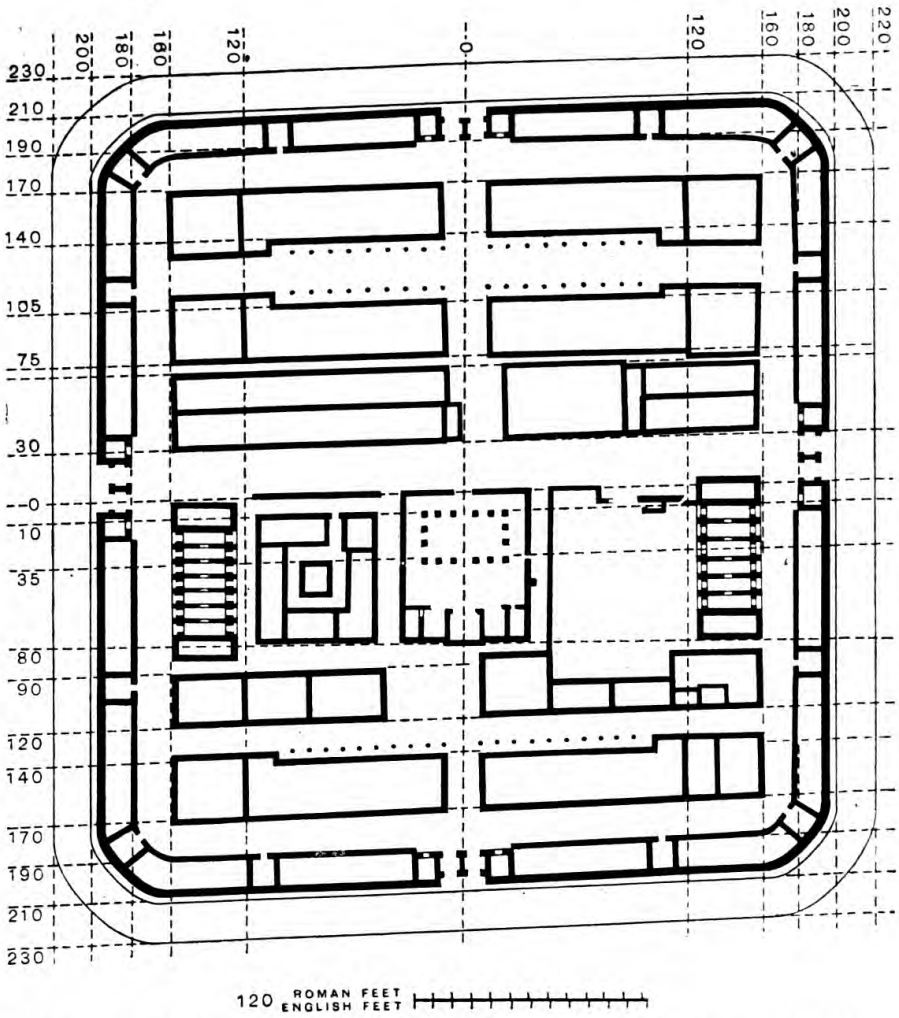


FIG. 2. PLAN OF THE GELLYGAER FORT, WITH CHIEF ALIGNMENTS IN ROMAN FEET.

whereas the later men preferred the duo-decimal system.* It is tolerably clear that the constructors of Gellygaer used a ten-foot staff, for the buildings are usually in multiples of that length, and frequently its half, 5 ft., occurs as a fraction (Roman

* So Smith's *Dictionary of Greek and Roman Antiquities*, article "Castra."

feet, of course). This may not be apparent at the first essay, for (1st) the fort was evidently not laid out with equal precision throughout, and (2nd) the deviation from exact measurements is often found to amount to the width of a wall. The latter is not necessarily due to negligence; nevertheless, the placing of a wall on the wrong side of a line is a mistake easily made.

If the general plan be again consulted, it will be observed that the fort as a whole is slightly oblique; that is, its outline would be more exactly described as a parallelogram than an oblong. There is no reason to think that this departure from right-angledness is intentional, in fact it is so slight that it would not be noticed on the spot, and probably the builders were not conscious of it. It is undoubtedly due to a faulty setting out of the work at the start; and the same defect may be seen in some other Roman forts, Cardiff Castle for one.

Treating this obliquity as accidental, the Gellygaer fort may be described as a short oblong. Its length, reckoned from the outer face of the rampart, is 404 ft., and breadth 385 ft. (or about 415 and 395 Roman feet respectively), so that it is one of the smaller of the excavated series. These measurements are along the *cardo maximus* and the *decumanus maximus;* if taken along the sides they vary slightly, the two longer sides being 400 and 402 ft., and the two shorter, 384 and 386 ft. It will be noticed that the length exceeds the breadth by only 20 Roman ft., a degree of shortness unusual in the British series, many of which are from a quarter to a third longer than broad.

Another peculiarity is the backward position of the *Via Principalis*, and consequently of the *Prætorium.* In all our excavated forts this road occupies a position nearer the front than the back.* In some, like Great Chesters, Lyne, and Housesteads, it is approximately distant from the front one-third of the whole length, but in most, the distance is greater. At Gellygaer, however, the S.W. or *Prætorium* side of the road is practically midway between the front and the back, a peculiarity only shared by Melandra Castle.

This is interesting, for the "groma," an instrument used in the setting out of lines at right angles with one another, from

* For these words as here used, see footnote, page 3.

which the various measurements were made, is shown in the middle of that side of the *Via* on plans of the Hyginian camp, as that given in Smith's *Dictionary of Greek and Roman Antiquities*, for instance. The actual centre of the fort is a spot in the middle of the entrance to the *Prætorium* on its inner side. That *that* may have been the very spot where the "groma" was set up is not unlikely, for from it the chief blocks of buildings may be measured off in multiples of the *decempeda* and its half. The foregoing plan (Fig. 2) will show at a glance how remarkably the various buildings fall in with the decimal measurements; the correspondence is surely too close to be accidental.

The length of the Roman foot is variously given as 11·65 and 11·66 English inches, the difference between these limits being only the thickness of an ordinary visiting card. The mean of a large number of Gellygaer measurements implies a foot of 11·652 English inches.

Materials and Construction.—The walls of the buildings rarely remained to a greater height than 3 ft. above the Roman level, but in spite of the vicissitudes of seventeen or eighteen centuries, these surviving portions were, as a rule, in tolerably good preservation. Even where they were obliterated, the firm foundations remained and were easily traced, so that it rarely happened that there was any uncertainty as to the plan of a building. The building material was almost wholly the local pennant-grit which is still the chief building stone of the district. This rock is a hard silicious sandstone of a dark blue-grey hue when first quarried, but soon weathering to a brownish grey, thinly bedded, sometimes so much so as to admit of its extensive use for roofing purposes; and of remarkable lasting qualities.

The masonry of the fort may be described as rubble work, more or less coursed, but varying considerably in quality. The pilasters and sides of the gates, for instance, were faced with well-selected stones, mostly squared, and laid in definite courses. The dressing was, as a rule, accomplished by the hammer, the use of the punch being limited to the removal of projections or "rough rock," which would not answer readily to the hammer. These dressed surfaces varied, being "sparrow-pecked" here,

MASONRY AT THE NORTH-EAST GATE.

Miss Neale.] WELL IN THE PRÆTORIUM. [*Photos.*

and "batted" there, the "bats" having occasionally a zig-zag arrangement. Miss Neale's photograph of some of the masonry of the North-East Gate (Plate II.) gives a good idea of the general appearance of the better-class work; and in Fig. 3 is mapped, so to speak, the distribution and varieties of dressing on a portion of that of the South-West Gate. The courses varied from 3 to 5 or 6 ins. in height. Nothing of the nature of a mason's mark was noticed.

What has been said of the masonry of the gates will apply, in some degree at least, to those portions of the exterior walls

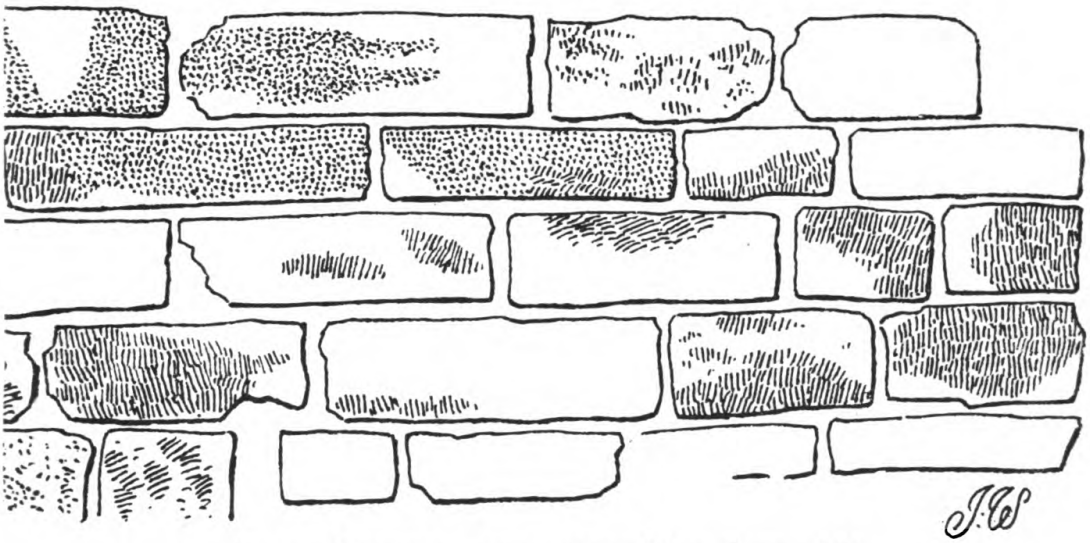


FIG. 3. MASONRY AT THE SOUTH-WEST GATE. ($\frac{1}{12}$).

of the buildings within the fort, which stood above the level of the streets. But the interior walls and the work below the ground-level or otherwise out of sight, were built of rough rubble, sometimes with an admixture of weathered field-stones.

The joints were wide. The mortar was almost everywhere reduced to a fine sandy loam of the same colour as the surrounding soil, through the removal of the lime by solution. Where least changed it retained considerable hardness, but it was doubtful whether the hardness was ever great. Mr. W. Clarke considers that the lime used was "white lime," made from carboniferous limestone, and his experience of ancient buildings

has shown that this lime has not the lasting qualities of that made from lias limestone. This is well illustrated in the Roman mortar and grout at Cardiff Castle, which are made of the latter lime, and are still of singular hardness. The nearest locality where the requisite limestone occurs is the vicinity of Castell Morlais, ten miles to the N.W., near which the Heol Adam, or rather its continuation, passes. There was no sign of the use of grout at Gellygaer.

The only other stone which undoubtedly entered into the construction of the fort, was a calcareous tufa, used for the voussoirs of the gate-way arches. There is little doubt that it came from the above district. The late Mr. G. T. Clarke noted its use in some vaulting at Castell Morlais (*Mediæval Military Architecture in Great Britain*, Vol. II., p. 313), and suggested that it was derived from a thick deposit of this substance near Pont Sticcill.* One of the blocks from Gellygaer exhibits a saw groove. On the site of Building VIII. several large squared blocks of a soft sandstone were met with, but there was no proof that they had been used for building purposes.

The foundations of all the outside, and of most of the divisional, walls were deep and strong. The builders' *modus operandi* was to cut a trench a foot or more wider than the intended wall, and from 1 ft. 6 ins. to 2 ft. deep. In this they placed rough stones either in courses or packed on end like a rude pitching, the former method being the more usual for the larger walls. On the summit of these, and somewhat below the then ground-level, they planted their wall, with or without the intervention of a footing. The simpler sort of footing consisted of a single course of stones, usually thinner and larger than the average, and projecting to form a set-off on one or both sides of the wall. In other cases, it consisted of several courses with one or more set-offs. The exceptions to this form of foundation were very few, the most notable being those of the internal walls of the *Prætorium*. Here, the footings rested upon the old natural surface which appeared to have been beaten hard for the purpose.

* Since this was written, many pieces of this substance have been found on the site of a Roman building in Pen-y-darren Park, Merthyr Tydfil, and they appear to be portions of voussoirs, and of supports for flue tiles.

Bricks entered into the construction of the walls of two buildings, which will be described on pages 68 and 69. On several spots, numbers of loose bricks of various shapes—square and half-round, flat bricks and voussoirs—were found under circumstances which led me to think that they had not been used in the construction of the fort. They appeared to have been

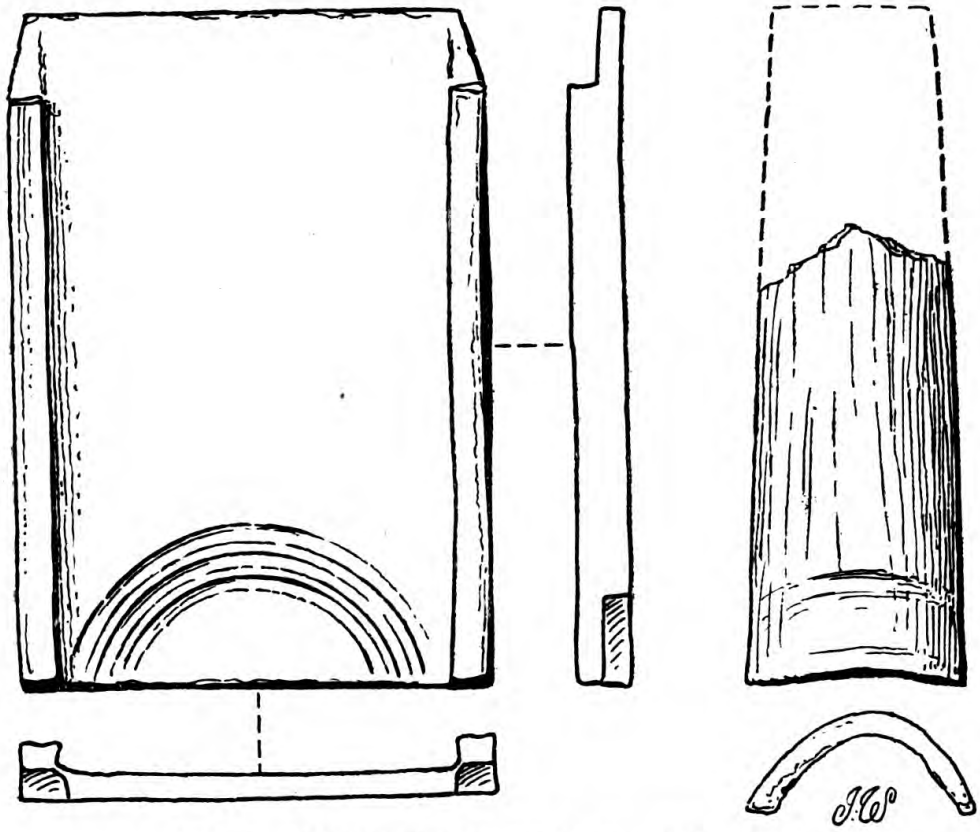


FIG. 4. ROOFING TILES: *Tegula* AND *Imbrex*. (⅛).

intended to break up for brick-concrete or *opus signinum*, several heaps of broken brick and tile suitable for this purpose having been met with in the course of the exploration.

Roofing-tiles were found on the sites of certain of the buildings, notably the *Prætorium* and its "latera," under circumstances which showed that they had fallen from roofs above. They were of the usual Roman type (Fig. 4)—flat flanged *tegulæ*,

1 ft. 11 ins. by 1 ft. 4 ins, and the half-round *imbrices* to cover the joints between the former. How these were combined is shown in the next drawing (Fig. 5). As these tiles had no nail holes, it is evident they were used for low-pitched roofs, where they would keep in place by their own dead weight. From the

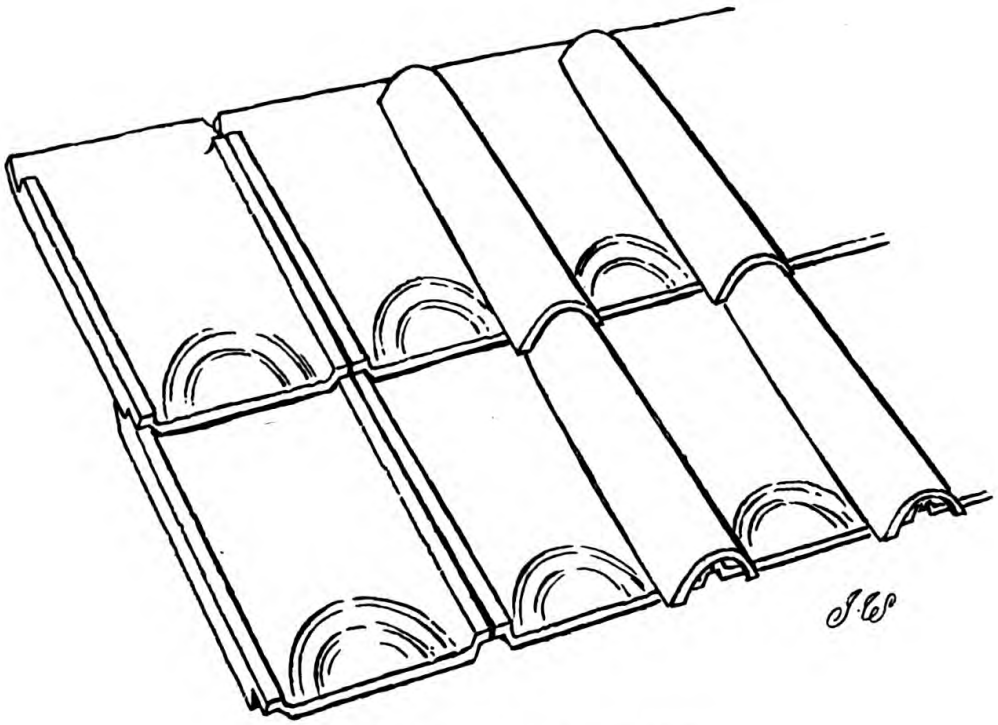


FIG. 5. ROOF OF *Tegulæ* AND *Imbrices*.

occasional traces of mortar on the flanges and inside the *imbrices*, it would seem that when the *tegulæ* were arranged on the roof, the joints were capped with mortar, and the *imbrices* pressed into position. Two, if not three, different makes of these tiles were distinguished by slight differences in shape, texture, and colour.

Several small tiles (Fig. 6), made from broken *tegulæ*, and with "knocked-out" nail holes, were found. These are regarded by Mr. Clarke as valley-tiles.

As no roofing-tiles of any sort were found on the sites of many of the buildings, we may conclude that these were either thatched or covered with wood.

It is curious, that in a district so rich in suitable stone for roofing purposes, not a single stone roofing-flag was found on the site. This is all the more remarkable, as such flags have been abundantly found among Roman remains at Caerwent, Llantwit Major, and Ely Race-course, Cardiff.

FIG. 6. VALLEY-TILE. ($\frac{1}{8}$).

The floors of the different buildings were singularly indeterminate. In several, a little pennant gravel or fine rubble suggested concrete, or a fine loamy sand, mortar, both denuded of their lime; in others, the natural soil seemed to have been rammed or "punned," or even hardened by fire; more than once, patches of paving of small flat stones were met with, but, with few exceptions, nothing in the form of a prepared floor was found. In describing Buildings V., VI., and VIII., I shall give reasons for thinking that their floors were of wood.

No trace of wall-plaster, plain or coloured, was found. In Buildings V. and VIII. there were many fallen pieces of brick-concrete, which will be described later. In the latter building I picked up some coarse stucco, with which had been mixed chippings and shavings of wood. The wood, of course, had disappeared, but the impression of the grain was left. Some of it, at least, was oak.

Window-glass.—The broken window-glass, of which a considerable amount was found, is evidence that some, at least, of

the windows had glazed windows. It was of the usual type, dull on one side, of a blue-green hue, from $\frac{1}{8}$ to $\frac{1}{5}$ in. in thickness, and many pieces exhibited the rounded edge of the melted cake. Unfortunately no record was kept of its distribution; but the Rector, whose almost daily presence on the spot gave him excellent opportunities for observation, writes as follows:—"Window-glass was found especially on the site of Block VI. It was also found in the unpillared portion of the *Prætorium*, and generally near the L-shaped buildings I., II., XII., XIII., XIV., and XV. There was a marked absence of it from the gates and the towers, also from the 'buttressed' buildings V. and VIII."

Roads and Drains.—The roads of the fort were only trenched in two or three places with the set purpose of discovering their form and structure, but they were incidentally touched at other points; the various exposures, however, sufficiently proved that their materials and construction were tolerably uniform. The best section obtained was on the S.E. side, about midway between the gate and the east corner (Plate IX.). Here, the compact surface of the road, smoothed by wear, and apparently as sound as on the day the last Roman foot trod it, was found at a depth of about 17 ins. below the turf. Its upper part consisted of several inches of broken pennant, the pieces varying as a rule from $1\frac{1}{2}$ to 3 ins. across. This rested upon a foundation of larger stones, mostly from 5 to 7 ins. across, which gave place below to still larger and rougher stones. These stones appeared to have been freshly quarried, and were piled up horizontally, the lowest resting directly on the old natural surface. Although these different grades of material did not show out as well-defined layers, there was no doubt that they had been deposited as such. The total thickness of the road here was about 2 ft., of which one-half was taken up with the larger stones of the foundation. Along the inner edge of the road—the edge towards the interior of the fort—the foundation had a kerbing of large stones built up in two or more courses, which served also as the side of a drain. The opposite edge of the road had probably a similar kerbing, but was not excavated.

The excellent preservation of the road at this point was obviously due to the considerable thickness of soil, derived from the rampart that covered it. The roads nearer the centre were rarely covered with more than 9 or 10 ins., consequently were in a disturbed condition. Usually the superficial metal of broken stone or gravel—for occasionally water-worn pennant pebbles from some local stream had been used—was very sparse, merely filling the spaces between the upper stones of the foundation, the tops of which were often worn by traffic.

The roads varied much in thickness. In several places they consisted of a little broken stone on a single spread of larger stones, the whole scarcely exceeding 6 ins. This variation in the thickness was owing to the irregularities of the old surface, the constructors filling up the hollows, so that their roads might be as level as possible. The great thickness of foundations observed in the cutting described above was evidently with a view to counteract the sharp natural declivity on that side of the fort.

In the space in front of the *Prætorium*, and still more so along the further side of the yard next to it, were remains of rude paving.

The site of the road which passed through the South-West Gate was trenched midway between the gate and the present highway, when the foundation (with traces of gravel), about 28 ft. across, was exposed.

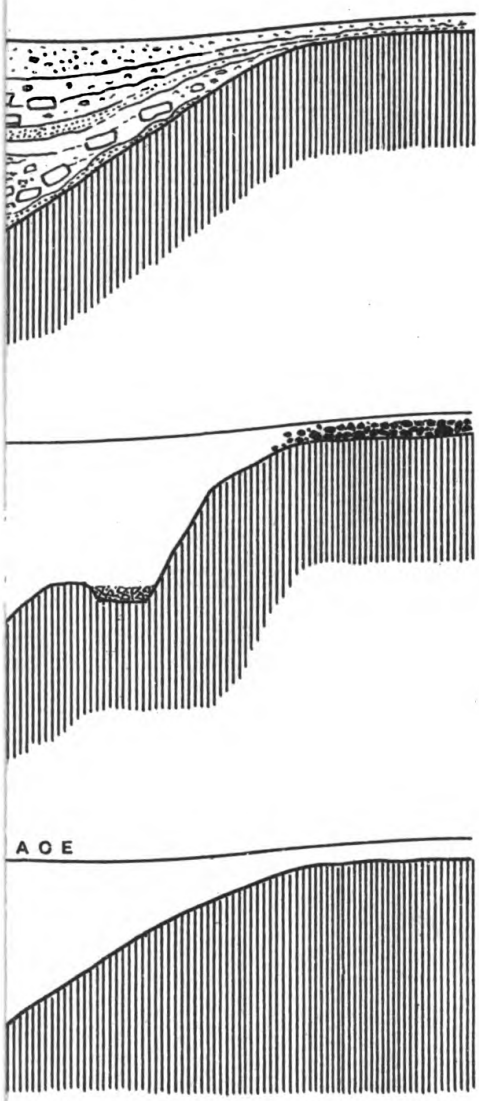
The drains were not as fully traced as they might have been, but more so, probably, than in other excavated Roman forts. Those which were found, were of like construction, but varied in size. With one exception, the sides were walled, but when the drain ran along the margin of a road, the foundations of the adjoining buildings were frequently utilized to form one side, and in the case of small drains in similar positions, the road-kerb formed the other, an arrangement which has been noticed in some other Roman forts. In the exception just referred to, the sides were formed of flags set on edge. They all appeared to have been roofed with horizontal slabs, but more often than not these had been removed. There were clear indications that these slabs had been covered with from 4 to 8 ins. of

road-metal. With several exceptions, the bottom consisted of the natural soil, hard as though beaten.

One of the main drains ran along the S.W. side of the *Via Principalis*, and for portions of its length, the foundations—carefully built for the purpose—of the adjoining buildings formed one side. It was best preserved at its northern or upper end, where its width was 1 ft. 10 ins., and height 2 ft. 4 ins., and its bottom neatly pitched; this being the only place where definite pitching was observed in a drain. Towards the opposite or lower extremity, it was also in fair condition, but the "push" of the soil had considerably reduced its width, the height being the same. The middle portion was, as a rule, in a ruinous condition, and nowhere were the cover-stones remaining. It passed through the left passage of the South-East Gate, and doubtless terminated in the ditch outside, after the manner of that which passed through the South-West Gate.

Several minor drains fell into this main drain. At its head a small prolongation pointed towards the left portal of the North-West Gate, but its termination could not be traced; probably it drained the road at the gate. In the vicinity of the *Prætorium* three others joined it: one, much tumbled about, being traced a short distance between this building and Block VI.; another drained a tank or cistern in the open space before its entrance; and the third passed along the narrow way between it and the yard to the S.E. The last drain was remarkably well constructed, 10 ins. wide and 8 ins. or 9 ins. deep, with a neatly flagged bottom, built sides, and large covering slabs—some, 6 ft. or 7 ft. long—mostly remaining. It extended at least two-thirds the length of the lane, and received two branches from the *Prætorium*, the one from its courtyard, and the other from a small sink in one of its rooms. About 60 ft. from the South-East Gate, the outlet (with flagged sides) of the latrine in the east corner of the yard, fell into this main drain; and just before entering the gate, it received the roadside drain already referred to on page 30, which consisted simply of the space between the kerb and the foundations of the buildings, from 1 ft. to 1 ft. 2 ins. wide, and originally covered with slabs. On the opposite side of the main drain at the South-East Gate, there

Plate III.



DITCH III.

J. Ward, Mens. et Del.

D. Osborne.] S.S.E. View of Guard Chamber, North-East Gate. [*Photo.*

was the opening of another, pointing towards the south corner, but it was not traced.

We must now trace the course of the large drain which debouched at the South-West Gate. The excavations showed exactly how it opened into the ditch (Plates III. and IV.). After passing through the right passage of the gate, it made an outward bend at the corner of the adjacent guard-chamber, so as to escape the abutment of the bridge. The construction here was as elsewhere, but the bottom was roughly paved or pitched. For a short distance behind the gate it was not excavated, but beyond this its whole length was opened out. It veered to the left by two bends, keeping to the roads in so doing, and at length entered, by a curve, into Building VI. For the last 100 ft. it was in excellent preservation, with most of the cover-stones remaining. Towards the end it increased in size, attaining a width and height of about 2 ft., the sides being constructed of five courses of rough quarried stones. The drain had throughout a gentle fall of about 1 in 65. The only indication of a branch drain was at the bend next the gate, and this probably drained the road between Blocks I. and III.

There was no evidence that drains passed through the other two—the North-East and the North-West—Gates; but in the former case, no thorough search was made, and in the latter, the presence of one was not to be expected, the ground there being the highest in the fort.

It will be observed that this account of the drainage of the fort leaves unnoticed many of the roads, which were either not searched for drains, or if searched, the drains were probably in too ruinous a condition to be recognized as such.

SECTION V.

The Fortifications.

The Ditch.—The ditch was excavated in two places; the one on the S.W. side near the west corner, in 1899, and the other, in front of the South-West Gate, in 1901 (Plate III., sections I. and III.). In both of these cuttings the filling was readily distinguished from the undisturbed natural soil, so that the form and dimensions could be easily made out. It was of the usual Roman form—V-shaped, approximately 19 ft. wide on the old-surface-level, and about 7 ft. in depth. The two sections slightly differed, the one being strictly a "V," that is, pointed below, while the other was channelled out into a rounded bottom. The former may be accepted as the normal form, for the latter was near the outlet of a drain, and its rounded bottom may have been due to the scour of water therefrom.

The filling of the ditch at these points consisted, first, of a variable amount of silt-like loam covering the sides and attaining to a thickness of 6 in. or more in places. This was of the same colour as the natural soil, but was more gritty and less tenacious, and it contained fragments of charcoal, brick, and pottery. It was undoubtedly rain-wash derived from the surface and the upper parts of the ditch.

Above this, and chiefly on the inner side, was much fallen *débris* from the outer wall of the rampart, which contained many squared and dressed facing-stones. The effect of this *débris* has been to throw the lowest part of the present surface several feet forward of the central line of the original ditch. At a higher level the *débris* was finer, and above all was a layer of dark surface-mould varying from about 8 ins. to half-a-yard in thickness.

No attempt was made to ascertain whether the ditch ran concentrically with the rounded corners of the rampart, but to

judge from the contour of the ground at the west corner, it is probable that it did so.

The modifications in the form of the ditch to receive the abutments of the bridge at the South-West Gate, will be considered under "The Gates."

The Rampart.—Wherever the rampart was excavated, it was found to be of earth faced with masonry on both sides, and set back from the inner lip of the ditch about 5 ft., evidently with a view to secure the stability of the outer wall. Its width varied from 19 ft. 4 ins. to 20 ft. 2 ins., but was usually a trifle under 20 ft. The variation was due to irregularities in the line of the inner wall, which was erected subsequently to, and in lengths stretching between, the gate-chambers and the towers. The builders of these lengths were guided by the backs of these chambers and towers, but as these structures varied in depth, their work varied accordingly. These irregularities, therefore, were not intentional, the original design being apparently a rampart of 20 Roman feet in width. The earth was evidently derived from the ditch and the foundation trenches of the retaining walls.

The outer wall, where it was brought to light, varied from 3 ft. to 4 ft. 3 ins. in thickness, the latter thickness being attained on the N.E. side. The stones used in its construction were well selected, and were larger than those used in the other buildings. The face was straight, vertical, and well built, most of the facing-stones being dressed to a greater or lesser degree. The back was extremely irregular, and from its general appearance Mr. Clarke, who has much experience of ancient masonry, concluded that the wall had been built *against* the earthwork,* a conclusion that I quite concur in. It was noticeable that many of the stones used in the core and back were

* This is of some importance, as will be seen on a later page. It would be a difficult task to adequately describe the indications from which Mr. Clarke drew his conclusions. It may, however, be mentioned that the chief of these was the manner in which many of the stones at the back were placed, clearly implying that they had lodged against something immediately behind the wall. The masons, beginning at the front, laid their stones flat until they almost reached that *something*, when they packed in the stones anyhow to suit the intervening space.

weathered, as though they had been collected from the surface instead of being quarried. On the N.W. and N.E. sides, towards the north-corner, this wall rested upon a projecting foot-course or set-off of rough flag-stones; but on the S.W. side there was apparently no foot-course. The foundation, where examined, consisted of large rough stones laid in courses in a trench from 1 ft. 6 ins. to 2 ft. in depth.

The earth-bank in its present state has a convex summit varying from 2 ft. 9 ins. to 3 ft. or more in height above the old natural surface. In the cutting near the west corner (Plate III., Section I.) a complete section was presented. It there consisted of the ordinary soil of the site, free from vegetable mould, charcoal, potsherds, &c., and was extremely compact, as though it had been beaten. Between it and the undisturbed natural surface was a thin seam of fine loam, which may have replaced the old vegetation in the process of decay. Similar films were noticed elsewhere in the diggings. The bank was cut into in various other places, and in each the same clean soil was observed; but in one place on the N.E. side, the outer 5 ft. consisted of a sharply marked-off dark mould, and near the South-West Gate there was a similar dark mould. These may imply nothing more than that the diggers of the ditch found it convenient to stack turf on these spots.

The inner wall arose from a similar foundation to that of the outer, but it was thinner and of rougher construction. Neither wall remained to a greater height than 2 ft., but up to that height their faces were vertical.

The original height of the rampart is an interesting question, but as might be expected, the excavations supplied no direct answer. It is possible, however, to form some idea from a calculation of the cubic contents of the ditch and the foundation trenches of the retaining-walls and other structures of the rampart, *assuming*, of course, that the earth-bank was *wholly* formed of the throw-out from these. Taking the dimensions of the ditch, as given above, to be constant throughout its circuit—and there is no reason to doubt this—each 1 ft. run would provide some 66 cubic ft. of soil, and we shall not be far wrong if we estimate the removed soil of corresponding lengths of the

foundation trenches of the two retaining-walls as 7 and 5 cubic feet, respectively. Then besides these, there were forty-four cross-walls, forming the sides of the towers and the gate-chambers, and the *spinæ* of the gates. These were of various thicknesses, but we may set down the average throw-out from each foot of their foundation-trenches as 4 cubic feet. These data give us the following totals of cubic feet of removed material available for the rampart:—

	Length.	Removed soil.
Ditch	1,650 ft. ...	108,900 cb. ft.
Outer Wall	1,440 ft. ...	10,080 cb. ft.
Inner Wall	984 ft. ...	4,920 cb. ft.
Cross Walls	572 ft. ...	2,288 cb. ft.
		126,188 cb. ft.

The average width of the earthen portion of the rampart, that is, of the space between the two retaining-walls, may be put down as 14 ft. It was discontinued not only at the gates, but at the towers, so that its length was not more than 1,020 ft. Here, then, we have an area of 1,020 ft. by 14 ft. over which to distribute the above 126,188 cubic feet of soil. A little calculation will show that this soil would form a bank with vertical sides and a level top, about 9 ft. in height. It is not likely that this was the form at Gellygaer, for the inner wall—quite an exceptional feature—being of slighter build than the outer, was not so well adapted to withstand a thrust. On the other hand, the earth, as in some other Roman forts, would probably be heaped against the outer wall, so as to have a narrow flat summit to serve as a rampart-walk, and a back-slope towards the ground, the inner wall simply retaining the foot of the slope. If we so distribute the contents of our hypothetical bank as to take the form just described, its height will be 11 ft. or more, instead of 9 ft. Above this level the outer wall would have to be raised to a sufficient height—say, to 15 ft.—to serve also as a parapet.

A bank of the height of 11 or 12 ft. would have the advantage of providing a rampart-walk sufficiently elevated to pass over the arches of the gates, and thus be continuous round the fort upon a common level. It has been questioned whether the outer

wall was thick enough to withstand the pressure of a bank of these dimensions. Most of the architects, however, whom I have consulted, have expressed the opinion that, taking into consideration the form of the bank and the stiffness of its soil, the wall would be sufficiently thick for the purpose. It has been suggested that some of the throw-out of the ditch and the foundation trenches of the rampart and its appendages was used for a glacis,* or was spread over the interior of the fort; but nothing was observed during the exploration to warrant either supposition. It may be asked: If so high a bank, where has its material gone to? Much of it has undoubtedly rolled back into the ditch, and the considerable thickness of soil which overlies the surface of the *intervallum* is proof that much has rolled in an opposite direction. If these were replaced upon the portion remaining *in situ*, their united volume would not be much short of our hypothetical bank.†

* I made special search for the traces of a glacis on the S.W. side of the fort in 1899 and 1901, but failed to detect any.

† Mr. Haverfield's comments upon the above will be read with interest: "I know no precise parallel to the stone facing and earthen core of the walls at Gellygaer. Their origin is, however, not obscure. The ramparts of forts in the early Empire were generally earthen; in the third century they were generally of stone. The exact history of the transition is not yet ascertained, but it is probable that earthen ramparts continued to be constructed down to *circa* A.D. 140, and that stone ramparts began to be common after A.D. 100. The German Limes excavations have shewn that on the Rhino-Danubian frontier the earliest forts were walled with earth and the later with stone. Arrian records that about A.D. 135 he found a fort on the Armenian frontier, at the mouth of the Phasis, which had originally been built with earthen ramparts and had at the time of his visit just been rebuilt with brick ramparts. The original fort in this case can hardly be earlier than A.D. 70-80. From an inscription found in the Carpathians we learn of a fort built not earlier than A.D. 110 and perhaps 30 years later, which had at first earthen walls, *muri cæspiticii*, and was given stone ramparts in A.D. 201. Hadrian's Wall in Britain was probably first built (*circa* A.D. 122) in turf and reconstructed (*circa* A.D. 208) in stone, and the Wall of Pius was also built in turf (*circa* A.D. 142), but it is not yet clear how the forts on these two walls were provided with ramparts; the ramparts of the forts on the Wall of Pius seem to have been constructed, at least in part, of stone. These facts suffice to shew the limits within which the transition probably took place. Gellygaer is plainly an early experiment in the use of stone, and its ramparts seem to elucidate the method of the transition from earth to stone. It is exactly the same development as that by which the early earthen *tumuli* of Rome grew into stone structures like the tomb of Caecilia Metella and the Mausoleum of the Plautii. The original earthen mound was first surrounded with a comparatively low facing of masonry, such as may still be seen in the tomb of Pætus and Polla, then the masonry extended till at the end the earth disappeared wholly or almost wholly from use. And in these cases, as in the ramparts, there was a period of transition when earth and stone were both in use!"

The Gates.—The excavations showed that the gates were of one design and of similar dimensions. They were double, that is, each contained two passages, 11 ft. long and wide, separated by an intervening wall or *spina.* Front and back, these passages were narrowed to portals, 9 ft. 6 ins. wide, by projecting jambs or pilasters, which originally carried arches. On either side of the pair of passages was an oblong guard-chamber about 11 ft. by 9 ft. 6 ins. (internal measurements), entered by a narrow door at the back (Plate IV.).

The whole structure (passages and guard-chambers) was within the width of the rampart. The front or outer walls of the guard-chambers were simply continuations of the corresponding wall of the rampart, while the front pair of portals was set back nearly 6 ft. The back portals and the back walls of the chambers were in line with one another, but as a whole fell short of the inner face of the rampart by about 3 ft., an amount representing the thickness of the inner retaining wall, so that if produced, this wall would have passed behind the gate building. It, however, stopped short at the guard chambers, and its ends were fashioned into steps leading up to the rampart walk. The masonry of the passage sides and pilasters was the best met with during the excavations.

Each of the outer or front portals had been provided with a door of two leaves, which turned upon pivots. These leaves, in closing, stopped against a rim or sill of stone which crossed the threshold and thus covered and protected their lower edges; and in opening, they swung back into the recesses in the sides of the passage formed by the projection of the pilasters.

In one of the passages of the South-West Gate (Plate V.), the raised sill, pivot-holes, and bolt-holes were found intact. The sill consisted of two large pennant flag-stones (one over 7 ft. in length), end to end, and set on edge in the ground, the exposed upper edge being worn by traffic. Behind the sill were two more flag-stones lying flat on the road-level several inches below the top of the sill, and containing the pivot and bolt-holes. The road in front appeared to have been level with the top of the sill, and this was the probable explanation of its worn surface being bevelled towards the interior. The pivot-holes were

neatly made, $4\frac{3}{4}$ ins. in diameter and 2 ins. in depth, and were placed in the angles between the front pilasters and the side walls. The bolt-holes, of which there were two, were in the centre, oblong in shape, 2 ins. by $2\frac{1}{2}$ ins., and passed through the flag-stones. The sill exhibited two worn hollows, about 5 ft. from centre to centre, made by the passage of wheels.

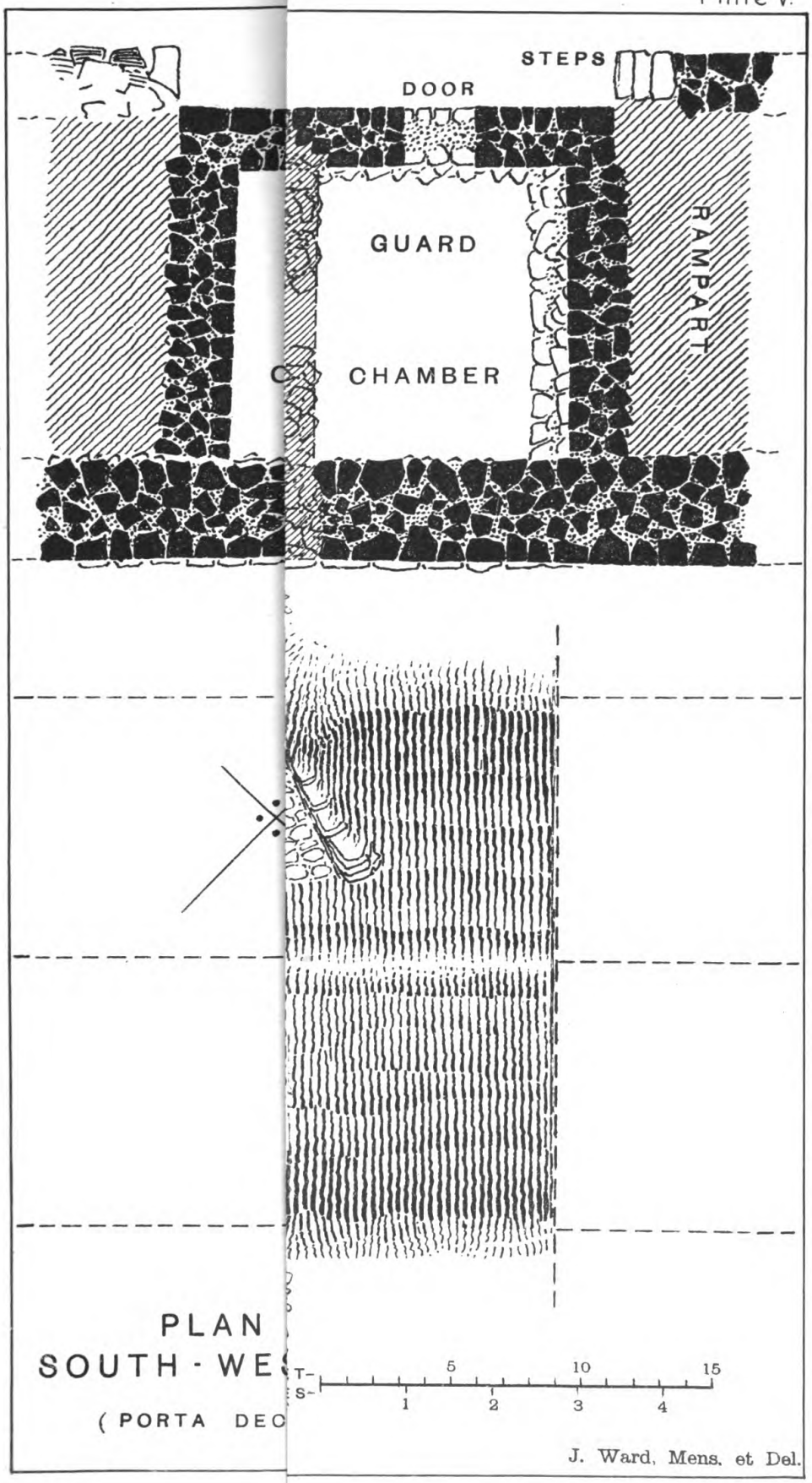
In the other passage of this gate a portion of the sill remained, and this was also the case in the North-West Gate, while in addition to this, one of the passages of the South-East Gate retained its two bolt-holes. The North-East Gate had been too much destroyed* for the sake of its materials for any of these fittings to remain, but a loose block of stone containing a square hole of suitable size for a bolt was found on its site.

The roads through the gates were horizontal, or nearly so, except the *Via Principalis*, which in passing through the South-East Gate made a descent in conformity to the natural declivity of the ground there.

The guard-chambers were excavated down to the natural surface, but nothing could be determined as to their original flooring. The height of the door thresholds and of the internal set-offs implied a floor a foot or more above the old surface, but there was no indication of a dividing-line at that level in the accumulations that filled the chambers, nor was there any seam of decayed mortar or concrete, which might be construed as a floor. The only guard-chamber explored under my own supervision was the more perfect one of the North-West Gate, and my attention was there attracted by the large amount of charcoal and burnt stones on the old surface, a common feature, Mr. Haverfield tells me, in the guard and tower-chambers in the North, which is attributed to the cooking of food. The presence of square tiles, such as were frequently used for *pilæ*, in addition to the above, set me searching for the indications of a hypocaust, but without success. They were probably simply stacked here for building purposes, perhaps for breaking up for concrete, for in one of the chambers of the opposite South-East Gate was a large heap of finely-broken brick, covering most of the floor.

* About 43 years ago, the Rector informs me, when other depredations were made on the N.E. rampart.

Plate V.



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Very little was disclosed by the excavations as to the superstructure of the gates. There was no doubt that the portals had been arched, for numerous fragments of voussoirs of the calcareous tufa already referred to, were found scattered about the sites. It was impossible to determine the original sizes of these voussoirs, as they were so much broken, but the largest pieces were about 11 ins. in height and 18 ins. in depth. The arches probably corresponded with those which still remain in partial completeness in Roman military structures in this country, that is, they were semi-circular, and sprang from imposts. No stones, however, of the usual impost form were found at Gellygaer, but considering the hardness of the pennant-grit, it is likely enough that the imposts were simply indicated by a projection of ordinary building stones. If the imposts were at their usual height of about 6 ft. from the ground, the height of the portals would be about 11 ft.

The gates, must, of course, have been roofed in some manner, but the evidence of the excavations was conflicting. On the site of the North-East Gate was a large number of broken roofing-tiles, clearly proving the former existence of a roof. I noticed fragments among the throw-out of the two lateral gates, but as there had been large tiled buildings close by, these may have been derived from them. On the other hand, I did not see any fragments on the site of the South-West Gate.

The strong sub-structure and arches of these gates imply, however, something more weighty than a roof. From various sources of information, we gather that it was usual to place a fighting chamber over the entrance to a city or fort; but as might be expected, the presence or absence of such chambers at Gellygaer could not be inferred from the excavations. The reader who desires to form some idea of what the Gellygaer gates may have been like, is referred to the sculptures on Trajan's Column, among which he will find camp and fort gates of various degrees of elaboration, from the simple opening in a rampart wall to the structure of tower-like proportions with an arched portal below and a substantial chamber above. Four examples of these gates are here given (Fig. 7). The first has no upper storey, but is simply surmounted with a pediment,

which may be the gable of a roof. The timberwork over the second portal is apparently the parapet of the rampart walk continued over the space. The third has an upper chamber of the more usual type on the column. The last is similar to the foregoing, but is of more elaborate construction, having an

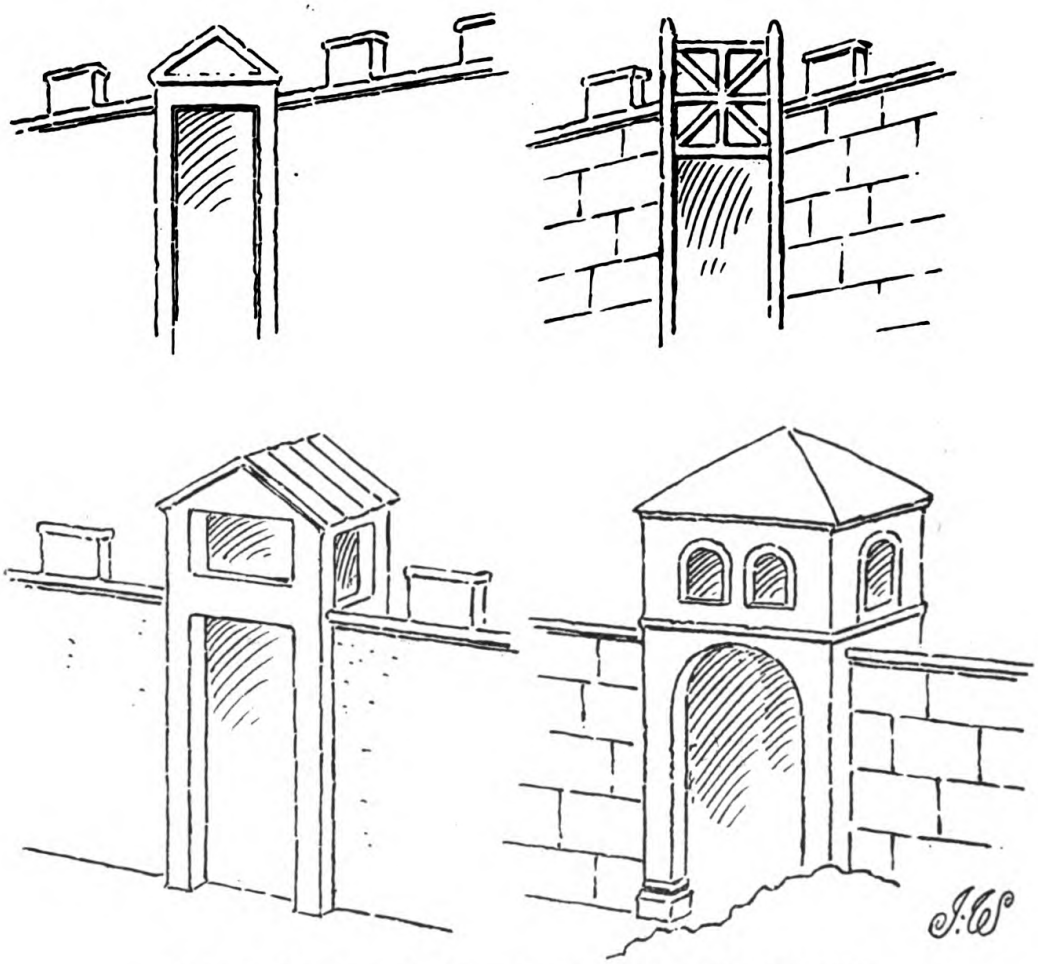


FIG. 7. GATES FROM SCULPTURES ON TRAJAN'S COLUMN.

arched portal, arched openings in the chamber above, and a hipped roof. In some of the gates which are closed, the doors are of two leaves, and in one, the very boards and nails are sculptured.

One of the most interesting features of the Gellygaer excavations was the modification of the ditch in front of the South-West Gate to receive the supports of the bridge. The ditch

there was found to pursue its V-shaped course, with this difference—the sides, about midway between the bottom and the brings, were stepped out (as indicated on Plate III.) for the length of 18 ft. immediately in front of the gate. The flat portion or " tread " of these steps was evidently intended to carry the supports of the bridge. It will be noticed that the outer half of each tread is several inches lower than the inner half. In the hollow thus produced, much broken stone was found, which had the appearance of disintegrated concrete. At first I took this concrete to be the foundation of stone abutments, but not a trace of masonry was seen, and it is hardly likely that in so sheltered a place a structure of this sort could have entirely disappeared. It is more likely that the broken stone carried wooden sleepers, from which posts supporting the bridge arose. The soil immediately above the concrete was looser than elsewhere, and this we might expect had the space originally been occupied by wood which has slowly decayed away. Whether the bridge was a fixed or a draw one, it is impossible to say from the evidence of the exploration. The width, unless the platform overhung the piers, was, as indicated by the latter, about 19 ft., or the combined widths of the two arched ways of the gate. The approach to the bridge was straight, portions of its foundation and gravel having been opened between the ditch and the present road (the Heol Adam), and indicating a track some 28 ft. in width.

In the left passage of the South-West Gate was a pile of stone which well-nigh blocked it. At first it was supposed to be fallen masonry from the upper part of the gate, but it was soon found to be definitely stacked. It consisted of stones suitable for building purposes, exactly similar to those used in the buildings of the fort, and some of them were dressed. They may have been deposited in the gateway to be handy for some building operations in the interior, but it is more likely they were placed there for removal in after times when the fort was a convenient quarry for the district.

The Towers.—At the corners of the fort, and between them and the gates, were found the remains of twelve chambers,

which, with little doubt, were the basements of towers. In plan they resembled the guard-chambers, but unlike them they extended over the full width of the rampart. To judge from their design and construction, they were all erected at the same time. In external length they correspond with the width of the rampart, that is, 20 ft. or under, and their width was a trifle under 16 ft., the internal measurements averaging 14 ft. 9 ins. by 11 ft. 6 ins. Each was entered by a narrow doorway, varying from 3 ft. 2 ins. to 3 ft. 9 ins. in width, in the middle of the back or inner wall. With the exception of that of the east, and possibly the other corner towers, these doorways reached the ground, in this respect differing from those of the guard-chambers, which had dwarf-wall sills.

As in those chambers, the front or outer wall of each tower was part and parcel of the front wall of the rampart; but on the remaining three sides it was a separate construction, not being bonded into the former; nor was it bonded into the back wall of the rampart. The inner side was faced, but none of the facing-stones were dressed, and the workmanship was rude. That portion which formed the back of the chamber was also faced externally, but in somewhat better fashion, dressed stones being occasionally used. The sides which abutted against the earth-work of the rampart were either not faced at all, or only roughly so, indicating, I think, that the bank was already there when these walls were built.

No trace of definite flooring was observed in these chambers. In that next the north corner, on the N.E. side—the best preserved of these chambers—was a layer of broken stone and rubble, such as might have served as the foundation of a floor. In the corresponding chamber on the S.W. side was a puzzling band of stones 5 ft. wide, which crossed it at a distance of 2 ft. from the outer wall (Plate IX.). The stones used were of all sizes, and were placed on edge like pitching, but of a very rough description. They formed a stratum a foot or more thick, and had the appearance of a foundation course.

The chamber at the north corner (in the Rectory garden) had two peculiarities. The side walls had broad footings, about 18 ins. in width, and three courses in height; and crossing the

middle of the chamber was a roughly-built wall, which appeared to have been an insertion, as it failed to quite reach the side walls. Unfortunately this chamber could only be partially excavated in consequence of a tree on its site.

The east corner chamber was the only one opened under my supervision. Although its excavation was incomplete, being hurriedly undertaken at the close of the exploration, it yielded some interesting results. The outer portion appeared to have been removed at no distant time for the sake of its stone, so the digging was confined to the portion next the interior of the fort. The back wall, of which four or five courses remained, showed no sign of a doorway, but there is little doubt that there had been one at a higher level, for there was a natural declivity here, necessitating the raising of the adjacent street. Lying upon the natural ground within the chamber was a variable thickness of earth, rendered nearly black with soot and fine charcoal. This layer was thickest in the south corner, where also were found a few animals' bones, some broken, and apparently belonging to the ox. Upon and near the top of this dark stratum lay many large fragments of roofing-tiles, several of which could be "pieced" together. They were mixed up with a good deal of broken stone, and many pieces of charcoal were met with. Above all, was a foot or more of ordinary soil and vegetable mould. The conclusion I came to was that the tower had been roofed with tiles, and that it had fallen in, the disaster apparently being brought about by fire. It also seemed clear that the dark earth, or much of it, was already there when the conflagration took place, and that it indicated that fires had been habitually lighted in the basement for cooking purposes.

It is unfortunate that not one of these corner chambers was thoroughly explored. I observed much dark earth and charcoal in the north corner chamber—that in the Rectory grounds—also a few pieces of roofing-tiles in the throw-out; but the slight excavation—sufficient only to disclose the plan—of that at the west corner failed to reach the requisite depth, while the south corner was not attempted, being under the cottage garden.

Several of the intermediate chambers, on the other hand,

were fully excavated, but in none of these, or indeed of the partly excavated ones, did I see evidence that the diggers had met with similar features to those of the east corner chamber. I searched the spoil-heaps for roofing-tiles, and found either none at all, or only an occasional fragment, such as might well have strayed from elsewhere in the fort. It certainly looks as though these chambers were not roofed with tiles. If so, they could not have corresponded with that of the east, and presumably those of the other corners, similar as they are in plan. Indeed, it is possible that these intermediate structures were not towers at all. I mention this,

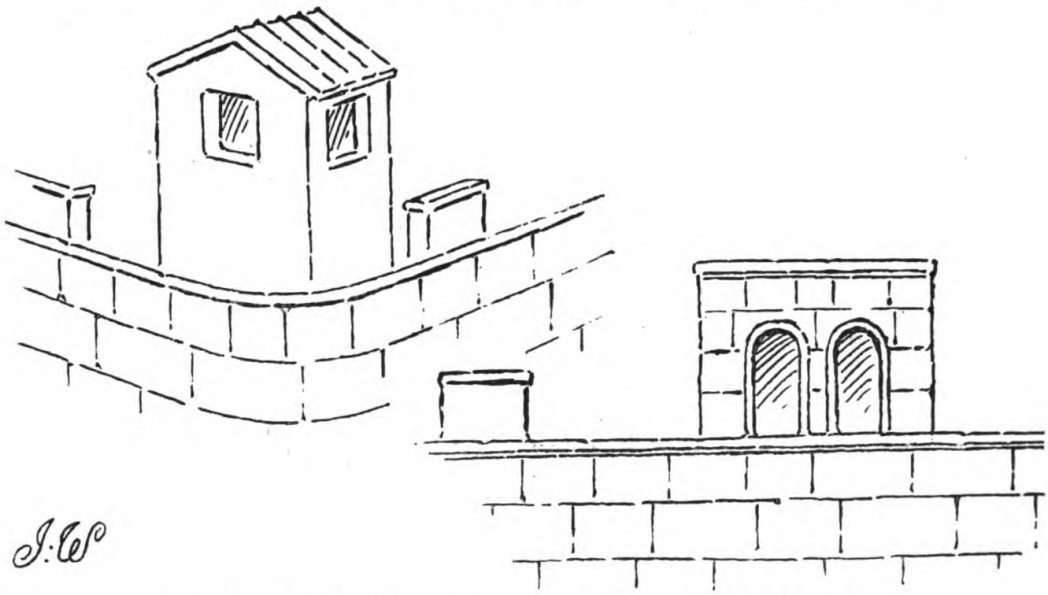


FIG. 8. TOWERS FROM SCULPTURES ON TRAJAN'S COLUMN.

because some small forts had not more than the four corner towers. Melandra Castle and Hardknott, forts of similar size to Gellygaer, are examples to the point.

Trajan's Column furnishes several examples of towers, two of which are here sketched (Fig. 8). The one is not roofed, and is built of stone; the other, which appears to be a corner tower, is roofed and is apparently of wood, as no masonry joints are indicated. Probably the superstructure of the Gellygaer towers was also of wood, for the lower walls were decidedly slight, contrasting in this respect with those of the gate guard-chambers.

Method of Construction.—It need hardly be said that a highly disciplined and organized army like the Roman, would construct its camps and forts according to a set, and probably a traditional, procedure. Any hints, therefore, that the exploration of the Gellygaer rampart may have afforded as to the order in which its several parts were raised cannot but be of general interest.

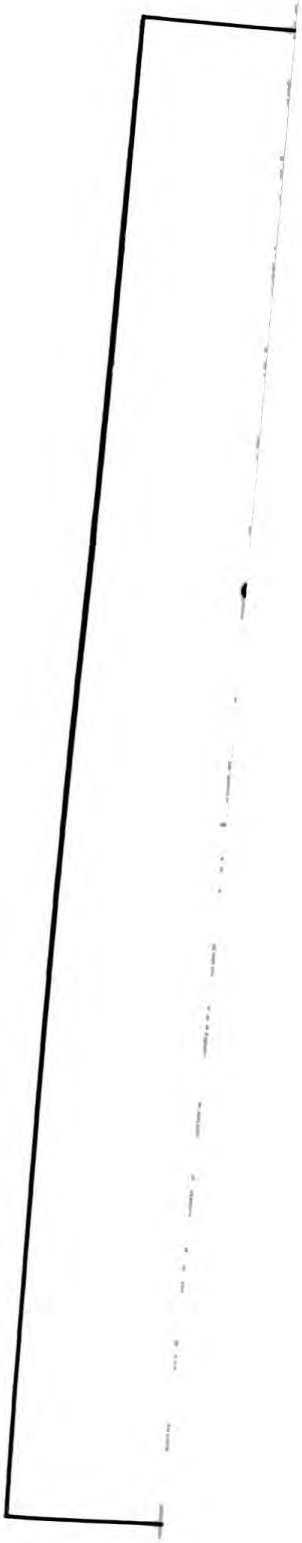
As stated above, there is good reason to think that the outer and inner walls, and the sides of the guard-chambers and tower-basements, were built *against* the bank, that is, the bank was already there when these were erected. As the bank was mainly derived from the ditch, the ditch necessarily is an earlier link in our chain of sequences. In digging this ditch, the soil was piled up behind its inner lip to form a rampart, four gaps of 25 Roman feet being left for the gates. That this was the first operation is likely enough, for the first care would be to provide a defensive barrier. Then followed, but whether before, after, or simultaneously with the bridges, we cannot say, the erection of the outer wall, which was returned at right angles for 5 or 6 ft. at the corners of the gate-openings.

In its turn, this was followed by the erection of the masonry of the gates and the towers. The first step would be the removal of the bank at the places to be occupied by the guard-chambers of the former, and the basements of the latter. This may seem a roundabout process, but the exploration showed conclusively that the outer wall had been equally built against earth *at these places* as elsewhere. The men who raised these structures used smaller stones than those used in that wall, against which their work simply abutted. The difference between the two masonries was seen in all the guard-chambers which were sufficiently preserved, the returns of the rampart wall being in higher courses and upon a higher set-off than those of the pilasters and their intervening recesses, and the difference was almost as noticeable inside the chambers. In the left chamber of the North-West Gate, for instance, those who laid the foundation of the secondary work not only made their trench less deep than that of the rampart wall, but failed to carry it up to the return of the latter, thus leaving a wedge of natural soil between the two which was very puzzling until the reason

was discovered. It was also noticed that while the foundation of the return was roughly coursed, that of the secondary work was of stones set on end.

That the inner retaining-wall of the rampart was subsequent to the gates and the tower-basements cannot be doubted, as it simply abutted against these structures, and its line was determined by their projection.

We have thus evidence of stages in the construction of the Gellygaer rampart and its appendages, but there is no ground for thinking that any of these imply a lull, whether of weeks or years, or a change of plan. My conviction is that they represent the *modus operandi* of the soldier-masons of old, and should put us on our guard against the hasty interpreting of like features in other Roman forts to indicate the presence of work of different periods.



SECTION VI.

The Buildings of the Interior.

A GLANCE at the general plan of the fort will show that the buildings of the internal area were of various shapes and sizes, and from this the reader will infer, and rightly so, that they were designed for different uses. To attempt to define these uses, would, in our present state of knowledge, be little else than mere guesswork; but the comparative study of the remains will materially pave the way to that end.

The thought will occur—were these buildings arbitrarily designed, or did they conform to types which had been slowly evolved by successive military engineers? If a number of plans of Roman forts, that of Gellygaer included, be compared, it will be found that while in no two of them do these buildings exactly agree, there is a general correspondence both in their forms and distribution. This proves that in no instance were they specially created for a particular fort, but that the requirements which brought them into being were common to all. The differences, being of a subordinate nature, must be regarded as modifications due to differing local or military conditions, or to the whims of the builders.

If the plans be further analyzed, the internal buildings will, with few exceptions, resolve themselves into these four types:—

(1) There is a single four-sided building of remarkably uniform plan, near the centre of every fort. It is always situated on the *Via Principalis* about midway between the lateral gates, and on the side next the back of the fort. Its wide portal looks towards the front gate, and gives direct admission to a court-yard more or less completely surrounded by a covered ambulatory. Behind this yard is another space, probably also roofed, into which, on its further side, opens a suite of several

rooms, of which the middle one is apparently the most important. The use of this building has not been fully determined, but it may safely be regarded as the head-quarters of the fort. It is the *forum* of some antiquaries, and the *prætorium* of others. Each term has a certain appropriateness, for the structure is somewhat *forum-like* in plan, but occupies the position of the *Prætorium* of classical writers, and for this reason alone, the latter term is used in these pages.

(2) In all these forts, one of the blocks in the range of buildings along the *Via Principalis* is a large house-like structure. That at Gellygaer (VI.) is a typical example, and has the advantage of great simplicity. Here we note a central court surrounded by a corridor entered from the *Via Principalis*, and around this nucleus are arranged the rooms, the whole forming a square building. In the larger forts the corresponding building is larger and more intricate, recalling some of the houses which have been brought to light at Silchester. Housesteads, and perhaps Birrens, have two of these buildings each. Those at Great Chesters and Chesters contain hypocausts. It is generally thought that these buildings were residences, probably of the commanding officers of the different forts.

(3) In the same range, or, at all events, in some central position, may be noticed two or more oblong buildings, usually strengthened by buttresses. At Gellygaer there is one near each of the lateral gates (V. and VIII.), but instead of standing singly they are often built in pairs, with only an eaves-drop between them. In this form they occur at Housesteads, Hardknott, South Shields, Chesters, and High Rochester, the last having two pairs, one on each side the *Prætorium.* A characteristic of these buildings is the provision for an elevated floor. The floor itself has in every case disappeared, but the supports usually remain. These consist of a series of parallel walls, or of pillars. This is a common hypocaust arrangement, but there is no satisfactory proof that the space below the floor was used for artificial heating; on the contrary, in the description of the Gellygaer examples, reason will be given for thinking that the object was the free circulation of air to keep the floor dry. The use of these buildings is uncertain, but probably they were store-houses.

(4) In *most* of the plans, the rest of the internal space, corresponding with the *Prætentura* and *Retentura* of the Hyginian camp, is occupied by a number of long narrow buildings, usually placed transversely, but occasionally, as at Housesteads and Camelon, longitudinally. They are generally of slighter construction than those described above, and may in some cases have been wholly built of timber or other perishable materials. This probably explains their absence on the Hardknott and Melandra plans; their former existence at the latter fort is, however, assured by the presence of earthen floors under the turf. Frequently these buildings are in pairs, like the buttressed structures described above.

At Housesteads and Chesters, their division into apartments by cross-walls is well seen, and at the latter place, Gellygaer, Camelon, and Lyne, some of them may be described as L-shaped in plan, the wider end, corresponding with the foot of the "L," being next the rampart. These long buildings are usually regarded as barracks, but it is quite likely they were used for several purposes.

I now proceed to describe these buildings at Gellygaer in detail.

The Prætorium.—In size, the Gellygaer *prætorium* is 80 ft. by 69 ft., or somewhat below the mean of the British series, the largest of which, Chesters, is 123 by 97 ft., and the smallest, Hardknott, 70 ft. by 70 ft. In plan, it is simple, and conforms to the British type, the only exceptional feature being the external projection of the middle room at the back. We may regard the plan as divisible into two chief parts:—(i.) an anterior court-yard entered from the *Via Principalis* by a doorway 9 ft. 6 in. in width, and surrounded on three sides by a covered walk or portico; and (ii.) a posterior portion containing a wide space, probably also covered, with a range of five rooms opening into it.

The plan on Plate VI. will show that these two divisions are co-incident with a difference in the thickness of the external wall—that enclosing the peristyle being 2 ft. in thickness, and the rest about 3 ft. Instead of the thicker wall joining

up with the thinner, there is on either side of the site a break (*a* and *c*), that on the left serving for the passage of a drain, and obviously made for that purpose; but that on the right is difficult to explain, there being no indication of a drain, and it is too narrow for a doorway. This difference in thickness is probably explainable on structural grounds, the thicker wall originally being loftier than the thinner, or having a heavier roof to carry. This view is enhanced by the buttress-like projection there on the left side (*d*). There is a general reason for a buttress. The natural slope of the ground is towards that side, and as the site was brought to a level by the removal of soil from right to left, there is a thickness of "made earth" on the left side. The wall, therefore, on this side, might well have needed support to withstand the thrust of this earth; but this does not explain why there should be only one buttress, and why it should be in its particular place. Evidently, it was because at this place the wall had to do more work than elsewhere. These structural details will be found to throw light on the construction.

The peristyle offers little difficulty. Its central open space (24 ft. by 47 ft.) is defined by the foundations—masses of rough masonry about 3 ft. square—of the pillars which supported the surrounding roofs. As nothing that would contribute to stone or brick pillars was found on the site, we may conclude that they took the form of wooden posts. These posts were a trifle over 8 ft. apart from centre to centre, except that the spaces facing the entrance were considerably wider (*e* and *f*) so as to allow of a wide thoroughfare through the heart of the building. The ambulatory was about 9 ft. in width, with a roof of a lean-to description, undoubtedly low rather than high so as to afford effectual shelter to the walk, and covered with red tiles of the usual form and size, of which many fragments were found on the site.

Between three of the pillar-bases on the left side was found a rough edging of stones (*h*) laid flat, which with little doubt extended all round the yard except across the wider spaces just referred to, and formed a kerb to the ambulatory; its presumed course being shown as a dotted line on the plan. In the yard

were patches of what appeared to be rude flagging, but which may have been the foundation worn smooth of a gravelled surface, as much gravel was observed.

On the left-hand in this yard was a well, circular and walled, 2 ft. 6 ins. in diameter, and 13 ft. 6 ins. in depth, its bottom being in the rock. As might be expected, it was choked with soil, stones, and broken pottery and tiles. Whilst open, no spring-water found its way into it; but this is not surprising, as throughout the district the springs have been reduced through mining operations. On the opposite side of the yard, a pit (*j*) about 6 ft. square was re-excavated to the depth of 6 ft., but it is questionable whether the bottom was reached. The curious thing about this pit is that its filling was pure natural soil, that is, soil free from potsherds, charcoal, etc., and this seems to show that it was filled in soon after it was made. Such a pit might have been digged for a cistern, and then abandoned for some reason. The rain-water in the yard was conveyed to the sewer in the adjacent lane by a drain (*a*) which crossed the ambulatory.

Between the last two pillars on the left of both the near and far sides, was a pile of stones (*l*, *m*) about 3 ft. across. These piles were mistaken at first for ruined pedestals of some sort, but were afterwards found not to be definitely built. They seemed to be mere stacks of stone resting on the floor of the ambulatory, but it is singular that their positions should have corresponded with one another. Below the near stack was a portion of the kerb referred to above, and under both was a little gravel. Elsewhere the ambulatory floor showed traces of gravel, and we may assume from the presence of a kerb that this floor was raised above the level of the yard.

We now pass into the space between the yard and the range of rooms. This space was thinly gravelled like the ambulatory, and I believe that it was roofed. Its considerable width—22 ft.—would admirably adapt it for a concourse of people.

The front and divisional walls of the rooms were built of small stones upon superficial foundations, and this explains their tumbled-about condition when found. Towards the right, a layer of stones was mistaken at first for rough pitching (*n*), but

it proved to be a fallen portion of the front wall of the adjacent rooms. The Rector informs me that a similar layer occurred at the corresponding place on the left. Where these walls had fallen, scarcely a vestige of the foundations remained, so superficial were they; and for this reason it was not easy to make out their line, and the positions of the doorways. There certainly was no direct communication between Room E and the space in front, for the intervening wall was intact to the height of nearly 2 ft., and showed no signs of a doorway. There was a break at the lower end of the wall of this room and the next (D), which implies a doorway. The distribution of the fallen *débris* was highly suggestive of a doorway through the front of the latter room. The corresponding rooms on the opposite side of the area (A and B) were similar in proportions to these, but not quite so in respect to communications. There certainly was no door between them. Several courses of the left-hand portion of the front wall of the former remained, but towards the right there were signs of a gap marking a narrow doorway. As the continuation of this wall in front of the next room (C) was quite gone, we could only conjecture that it contained an opening.

Immediately behind the fragment of wall just alluded to, and consequently in the lower left-hand corner of Room A, was a sink slightly below the ground level. Its drain passed through the main wall of the *Prætorium*, and thence emptied into the sewer of the lane outside. The sink was constructed of three thin flag-stones—one forming the bottom which sloped towards the drain, and the other two, the sides—next the main wall, and it was extended by means of a roofing-tile, which had a similar slope. This sink is shown on a larger scale on Plate IX.

The middle room (C) was the largest of the series, and its importance was marked by the external projection of its back wall and the slight set-forward of its front wall. The back and the side walls had no break in them, and at the extremities of the latter were the returns of the front wall. These returns were each about 4 ft. long, and left an intervening gap of 11 ft. 6 ins., which undoubtedly marked a doorway, but whether of so great a span is uncertain. The returns had broken ends.

The excavations supplied little information as to the floors of these rooms. There were no indications of mortar, concrete, or *opus signinum.* About the middle of Room D, and on the natural soil, was a patch of thin pennant paving, about 3 ft. across, which may be regarded as a hearth, as it had been much subjected to the action of fire. In the adjoining room (E) was a similar paved space, but showing little or no effect of heat. These patches presumably represented the floor-levels of these two rooms, and, if so, the rest of their floors must have been of earth. The floors of all the rooms except the middle one had traces of charcoal and burnt earth, particularly that of B. In this respect they contrasted with that of the middle room (C), the soil of which retained its natural cleanness, indicating, perhaps, that its floor was originally of wood.

A further comparison of the Gellygaer *prætorium* with other examples will not only confirm, but will amplify some of the foregoing conclusions. Any doubt the reader may have had as to whether the first large space was open to the sky, will be dissipated when he is reminded that the corresponding spaces at Chesters, Housesteads, and Birrens are surrounded by a well formed stone gutter. As the chief use of a gutter in this position was to convey away the drip from a roof, we may infer that the ambulatory roof sloped towards the court.

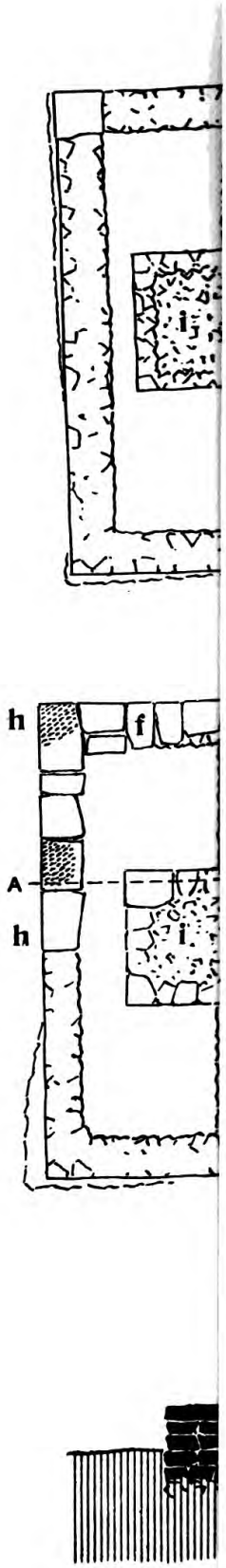
The second space is commonly regarded as a second open court, the "Querhof"—cross-yard—of the German antiquaries. To my mind, however, the Gellygaer plan does not lend itself to this treatment. The roof which the pillars on the further side of the first space supported, must have spanned the whole width of the second space in order to find a support for its opposite side. This is so obvious, that it would never have been questioned, had not certain *prætoria,* like those of the three forts named above, contained a second row of pillars to allow of the ambulatory roof on that side to be of the same width as on the other three sides of the court. A roof of this width would, of course, only cover the front portion of the second space, and thus seem to countenance the "querhof" theory. If a second row of pillars in these *prætoria,* why not a second row at Gellygaer? Such pillars were carefully looked for but were

not found. I hold that there are two types of *prætoria;* that to which the above three examples belong containing two rows of pillars, and that to which Gellygaer, Hardknott and, apparently, Camelon, Melandra and High Rochester belong, containing a single row. The structural difference between the two types seems to be, that in the one the ambulatory surrounded the court in its normal width, while in the other it, strictly speaking, passed round three sides only, and abutted against what might be described as the great "cross-hall." In the first type an open space between the ambulatory and the five rooms was structurally possible; nevertheless it seems to have been covered, for in the three large *prætoria* mentioned as of this type, the second space is *not* surrounded, like the first, with a stone gutter.*

How the "cross-hall" at Gellygaer was roofed we can only guess. It is reasonable to think that it was a gable roof, and, as Mr. G. E. Fox, F.S.A., suggests, of greater height than that of the ambulatory, in order that sufficient light might be admitted for the wider space it covered. The position of the buttress immediately below the apex of the left gable, becomes now explainable, as the wall there would be highest.

The range of rooms at the back is an essential feature in the *prætoria*, and it is interesting to note how usually their number is five. At Housesteads, Birrens, Chesters, and often in Germany, the number is manifestly five, and these rooms in the first two exactly agree with those at Gellygaer in the arrangement of their openings. At Ardoch, Great Chesters, High Rochester, and some of the German forts, they appear to

* Upon this question Mr. Haverfield makes the following observation: "The theory that the inner court of the so-called 'Prætorium' was roofed seems on our existing evidence to be unlikely. (1) No definite trace of a roof has been noticed anywhere. (2) At Lambæsis, where the central building closely resembles the type visible at Gellygaer and elsewhere, the inner court cannot possibly have been roofed. (3) At Gellygaer itself, the walls of the five rooms on the one side and the posts on the other seem to have been too weak to support a necessarily large and heavy roof. If the inner court was roofed, we must suppose a very different type of building from that which we imagine on the idea that it was not roofed. With a roofed court, the 'Prætorium' would resemble the Silchester Forum, the roofed court itself corresponding to the Basilica, and the five chambers behind it corresponding to the six or seven rooms behind the Basilica. In that case one would be tempted to suggest that the Forum and the 'Prætorium' had a common origin. Unfortunately the rooms behind the Silchester Basilica do not recur in the same place in the Basilicas of other towns."


h
f
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be imperfect through the disappearance of walls, but they are plainly based upon a quinary division. Melandra and Hardknott show a range of three rooms each, but as the end rooms are unusually wide, it is probable that they were originally divided into two rooms each by a slight wall which has disappeared. The importance of the middle room is not usually emphasized structurally as at Gellygaer, in the British series, but it is the rule in the German. The vault or *ærarium* which is frequently found under, or at all events entered from, this room in both series, is absent at Gellygaer.

What these rooms were used for is quite uncertain, but it is reasonable to think that the arrangement of five in widely separated forts implies that their uses were definite and fixed. The middle room is frequently regarded as the *sacellum*, and it may well have contained a shrine, and have been the place where the standards and the treasure were kept. At Housesteads it was open to the "cross-hall" by almost its whole width, as appears to have been also the case at Gellygaer, but was divided off by a timber fence of some sort, leaving, however, a central opening or gate.

At the right-hand end of the "cross-hall" was a scattered heap (P) of broken brick similar to that found in one of the guard-chambers of the South-East Gate.

Among the debris that filled the well, and at or near the bottom, were two worked stones of uncertain use. The larger (Fig. 9) is 23 ins. square, from 3 ins. to $4\frac{1}{2}$ ins. thick, and perforated by a central circular hole, about $4\frac{1}{2}$ ins. in diameter. It was evidently cut out of a large field stone. The upper and lower faces and one side retain the old weather-worn surface, while the remaining three sides and the central hole have been hewn, the latter with considerable care. The dressing of the sides, however, is fresh-looking, while that of the hole is worn. Various opinions have been given as to the use of this stone. One is that it covered the well and gave support to a leaden pump; another, that it formed the top of a raised superstructure over the well, the rope which raised the bucket passing through the hole; another, that it was the gully-stone of a drain. The Rector of Gellygaer suggests that it was one of the upper pivot-

stones of the gate. This, however, it could hardly have been, for the hole exhibits no trace of the striation that a revolving door-pivot would give rise to.*

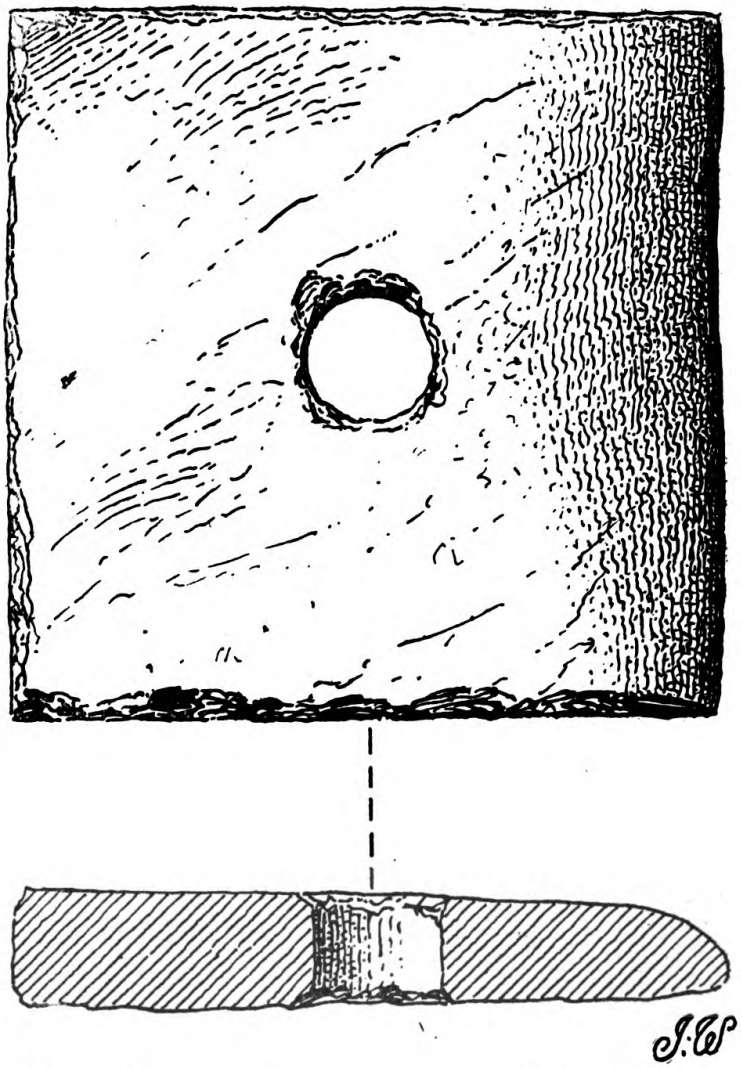


FIG. 9. PERFORATED STONE FROM THE PRÆTORIUM. (1/8).

* A perforated flag-stone closely resembling the above forms part of a stile at Penwyrlod Farm, near the fort. With little doubt it originally came from the fort, where it served a similar purpose, whatever that may have been. This stone was the subject of much controversy between Mr. Seaborne and the late Mr. John Storrie in the *Western Mail*, in August, 1900. I observed a similar stone on the site of the Prætorium of Housesteads, but the hole was larger and less carefully made.

The other stone (Fig. 10) is a disc, with a smooth upper, and a rough lower face, approximately $4\frac{1}{2}$ ins. in thickness. The edge of the upper face has evidently been worked from a circle $13\frac{3}{4}$ ins. in diameter, scribed on it by a pair of compasses, but the sides lower down are left in a comparatively rough condition.*

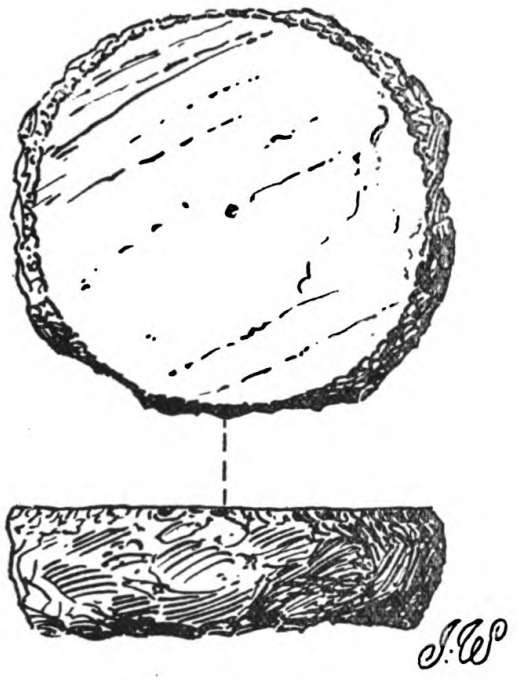


FIG. 10. CIRCULAR STONE FROM THE PRÆTORIUM. ($\frac{1}{8}$).

The House-like Building (VI.).—The excavators so thoroughly did their work here that little else than the *plan* was left for me to work at. The simple arrangement of this plan has been sufficiently described. The accumulation of *débris* over the site seems to have been slight, indicating a building of low elevation, or one largely constructed of wood; consequently, the remains of the walls were reduced to only the foundations and footings, too low for the thresholds of the doors to remain. Nothing was left to tell of the floors of either corridors or rooms,

* A portion of a monumental slab "roughly shaped into a circular form and used as a hearth-stone" was found in the Cawfields Mile-Castle. It was 2 ft. in diameter.—Bruce's *Roman Wall*, 3rd edition, page 231.

but it was clear that towards the S.E. side the ground had been raised so as to bring the whole site to a level, and overlying this moved soil within the south corner was a patch of broken stone about 13 ft. square. Near the west corner a large drain entered the building, but stopped short with the inner side of the wall, and nothing could be made out as to its further course or use, the ground in the vicinity having a tumbled-about appearance. It was clear that the building had been roofed with red tiles, for their fragments were scattered over the site. In two of the rooms I noticed tiles resting directly upon the natural ground, which seems to indicate that the floors here had been of wood. As stated on page 30, much window-glass was found on this site.

In plan, this building more closely resembles a corresponding building at Housesteads than those in other forts, still less does it resemble any of the Silchester houses; but its similarity to "House No. III." at Caerwent (*Archæologia*, Vol. 57, p. 301) is remarkable. In both, the rooms surround a central court, which is entered from an external corridor or passage, the length of the building. This corridor was open at the ends at Gellygaer, and apparently this was originally the case at Caerwent, the end best preserved having been stopped at a later date than the construction.

The Buttressed Buildings (V. and VIII.).—These two buildings were remarkable for their strength and the height to which their walls remained, due in great measure to the large accumulation of *débris* which covered the sites. From these features—the thickness of the walls and the height of the *débris*—we may infer the greater height of the buildings than the average.

The enlarged plans on Plate VII. will show that the middle portion or body of each building was oblong—59 ft. by 34 ft.—and that to each end was appended a structure of slighter build, of the full width of the preceding, and making the total length about 83 ft.

We will consider this middle portion first. The footings of the side walls were nearly 6 ft. in width, and those of the ends 4 ft. or more. Their upper surface was lower than the

contiguous streets, but unequally so, being horizontal while the ground around sloped. Upon this platform rested the superstructure (or what remained of it) shown in solid black on the plans. The interior was divided into six narrow compartments (*a*, *a*) in the one building, and into seven in the other, by thin transverse walls, each of which contained a central opening (*b*) about 3 ft. wide, reaching down to the footing. Externally, the positions of these, as also the end walls, were marked by a series of buttresses, about 2 ft. in width and projection. In the side walls, between the buttresses, were the remains of window-like openings (*c*, *c*) into the compartments, which were originally a trifle over 4 ft. in width, but had been reduced to about 3 ft. These openings were on the street levels, and so varied in respect to the footings; those of Block V. being only a trifle above the latter, whereas on the N.E. side of Block VIII. several courses intervened. The external masonry, especially of the buttresses, was well constructed, and nearly all the facing-stones were more or less dressed; but no dressed stones were used in the interior.

In the former building (V.) the natural soil was reached without the slightest indication of a floor of any sort, but in the latter (VIII.) an unexpected bottom was found—the lower courses of eight cross walls (*d*, *d*) with the narrow intervening spaces filled up with rough stones packed on edge (*e*, *e*), the whole forming a tolerably level surface upon which the subsequent series of five walls was erected (see the section on Plate VII.).

The first impulse was to regard the two series of walls as proof of the sequence of two buildings upon the site. There was, however, no indication that the outer walls had been rebuilt, so that, if any re-building had taken place, it must have been confined to the divisional walls. But the fact that these were *bonded* into the former, points rather to a modification during the progress of the building, than to a re-building. The ground hereabouts makes a rapid descent, and it is likely that after the erection of the lower courses of the first set of divisional walls, it was found necessary to raise the site to their level by packing; the building being resumed subject to the modification just referred to.

In the diagrammatic view (Fig. 11) of one of the buttresses and cross-walls on the N.E. side of Block V., it will be observed that the inserted cheeks of masonry (indicated by shading) by which the opening was made narrower, rested upon a bed of mortar about 5 ins. thick. This bed was probably continued from side to side of the original opening, and formed its sill. There were no indications as to how these openings were treated, or their original height.

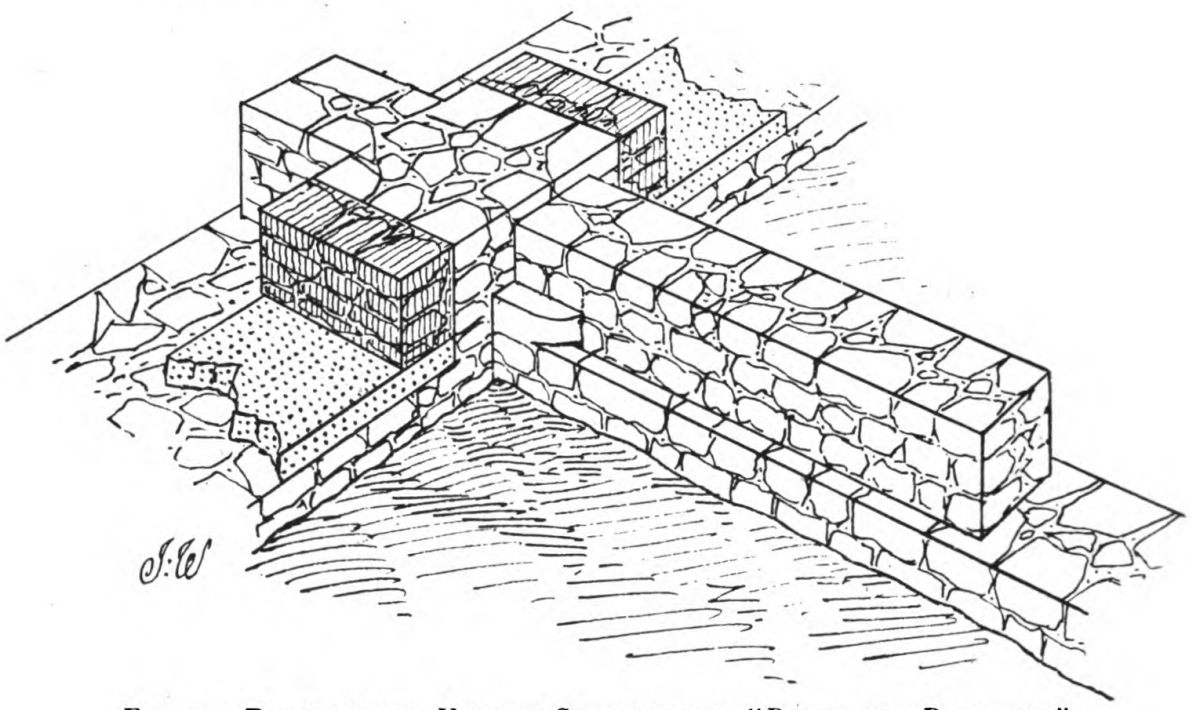


FIG. 11. DIAGRAMMATIC VIEW OF STRUCTURE OF "BUTTRESSED BUILDINGS."

We now pass to the appended structures. But little acquaintance was needed to see that their walls, which were a trifle under 3 ft. in width, were never of greater elevation than their best preserved remaining portions. These portions were capped with large flag-stones of the full width of the wall, at a height of 1 ft. or less above the street level outside. The positions of these flag-stones are shown on the plans, and two may be observed in the foreground of Plate VIII. Those at *f*, *f* were worn, evidently by the feet; whereas those from *h* to *h* were not worn, and in two places were neatly chiselled down to a true surface.

These surfaces are shaded on the plan, and it will be observed that if repeated at the same distances apart, there would be four of them along this end of the block. Mr. Clarke's suggestion that these were prepared for the posts of a verandah, or of a timber-framed wall, is a reasonable one.

Within each of these appendages was a platform of rubble (*i*, *i*) built against the end wall of the main structure, and of similar height. These platforms were about 9 ft. 6 ins. in width, and their projection was from 6 to 7 ft. We shall refer to these again shortly.

What these remarkable buildings were like in their completed condition has been much discussed, but a comparison with the corresponding buildings in other forts gives us a clue. In the better preserved of these we find the internal space traversed by a number of longitudinal walls, as at Birrens, Hardknott, Chesters, Housesteads, and Kastell Butzbach, or transverse ones, like those at Gellygaer, at Lyne; or instead of walls, we find pillars, like those of a hypocaust, at Housesteads and South Shields. These imply suspended floors, but in no instance has there been reason to suppose that the under space was a hypocaust; in fact, in several, the supports are too widely placed (as at Gellygaer) to admit of being spanned otherwise than by timber beams. The Gellygaer examples are in advance of the rest, in the series of openings they disclose. These hint that the purpose of the under-space was the free circulation of air to keep the floor above dry. We have no means of determining the height of the floor, but it was certainly several feet above the external level, and evidently higher than the existing remains, for no signs of a door-threshold to such a floor remained.* Here again the comparison of similar buildings elsewhere comes to our aid. In every case where the doorways are still indicated, they are at one or both ends. At Housesteads they occur at both ends, each reached by a flight of steps, and at High Rochester, at one end. At South Shields the actual thresholds are obliterated, but their position at one end of each building is indicated by the remains of a portico. These examples,

* Mr. Rodger remarks that the floor would probably pass through the doorways without the intervention of a threshold.

especially the latter, turn our attention to the appended structures at Gellygaer. The worn step and indicated posts of the outer walls are suggestive of a portico or lobby; while the rubble platform within might well have formed the support of a staircase leading up to a floor opening on to the raised floor of the main structure.

That these Gellygaer buildings had been roofed with the usual red tiles was amply proved by the abundance of their fragments on the sites, and the circumstance that in one building these fragments lay directly upon the natural soil, and in the other, upon the packed stone, goes far to confirm the view given above, that their floors were of wood. Within each compartment, and immediately below the openings at the ends, lay broken lengths

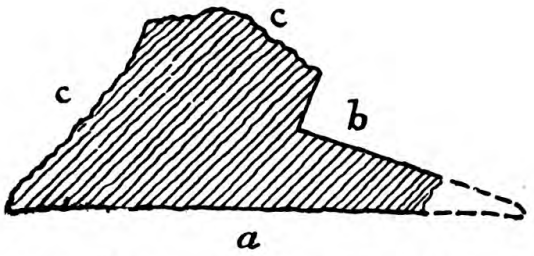


FIG. 12. SECTION OF CONCRETE FILLING, "BUTTRESSED BUILDINGS. ($\frac{1}{8}$).

of brick concrete of the general section here given (Fig. 12). The side *a*, varying from 12 to 14 ins. in width, was smooth, and had been the exposed face; *b* and *c* were rough from contact with a rough surface, and the recess *b* showed the imprint of timber. From the position and shape of these lengths of concrete, it seems certain that they had fallen from the cheeks of the openings.*

* That these buildings were store-houses is almost beyond question. It is said of the corresponding buildings at Birrens, that "the floors in order to be dry were raised on walls with air-ducts between them," and that a quantity of *calcined wheat* was found in one of the buildings (*Proc. Soc. of Antiq. Scot.*, vol. XXX., p. 112). At Ribchester, Mr. John Garstang made some excavations in 1899 upon the site of a "strong building" near the *Prætorium* of the fort, which evidently had a suspended floor, for he found the remains of *pilæ*, 3 ft. 6 ins. in height. Lying upon the ground between the *pilæ* was a compact layer of charred grain, 2 ft. in thickness, and over it was much charred wood and roofing-tiles; and Mr. Garstang's conclusion was that the place was a granary and that it had been destroyed by fire. Similar finds have been noted elsewhere.

M. T. Seymour.] N.N.E. VIEW OF "BUTTRESSED BUILDING" (BLOCK VIII.). [*Photo.*

The "Long" Buildings.—The regions—the *Prætentura* and *Retentura*—occupied by these buildings, being less thickly covered with *débris* than elsewhere, are relatively lower, and so constitute the "lowlands" of the site. From this, we may infer that as a rule these buildings were not lofty, or else were largely constructed of perishable materials, as timber. Of their walls rarely more than the foundations and footings remained, and of the floors, only the vaguest indications. From the absence of roofing-tiles on their sites, it may be concluded that their roofs were of wood, or were thatched.

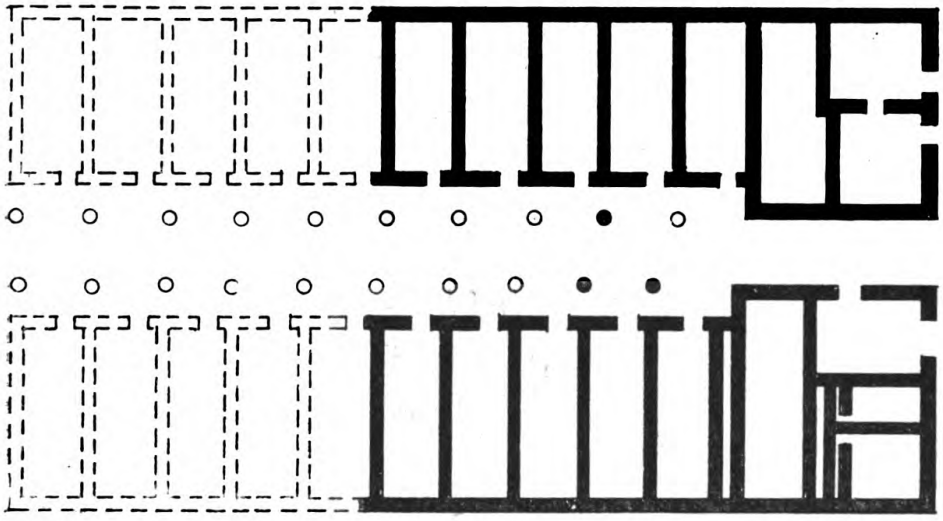


FIG. 13. PLAN OF "L-SHAPED" BUILDINGS AT CHESTERS.

The more noteworthy of these buildings were six of the L-shaped form—four in the front portion of the fort, and two in the back. They varied so slightly in shape and size that we may consider their differences as accidental. Their average dimensions were:—145 ft. 6 ins. in length, 36 ft. across the wider portion, and 30 ft. across the narrower. In each there was a divisional wall which crossed the former portion about 15 ft. from its junction with the latter, giving rise to an oblong room next the rampart, and a long narrow L-shaped one in the opposite direction. In the case of one of these buildings (II.) the end room was sub-divided by an additional cross-wall.

Blocks XII. and XIV., and a large portion of XIII. and XV., came within the region of the diagonal trenching, but the trenches threw very little light upon their flooring. In the end apartments of the former two, were patches of what seemed to be paving; and in their narrow portions were doubtful traces of rammed earth and gravel. As might be expected, all indications of doorways had disappeared.

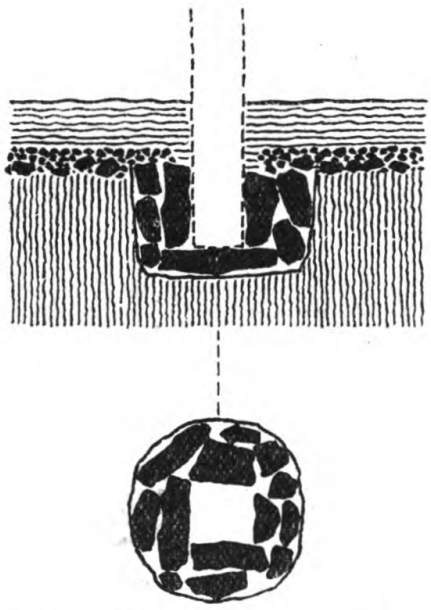


FIG. 14. PLAN AND SECTION OF POST-HOLE, "L-SHAPED BUILDINGS."

One of the most interesting episodes of the exploration was the search for "Haverfield's Posts." Mr. Haverfield had called attention to the similarity of these Gellygaer buildings to some at Chesters (Fig. 13), and to the circumstance that in front of the set-back wall of each of the latter were the remains of a colonnade in line with the advanced wall of the wider portion. It was some time before indications of corresponding features were discovered at Gellygaer, and these were so vague that they would never have been observed had they not been specially sought. The pillars had been of wood, and, of course, had completely disappeared, but the holes in which they were fixed remained. These were, roughly, 18 ins. in diameter and depth,

and in them the posts had been packed round with stones, a flat stone occasionally serving as a foundation (Fig. 14). A sufficient number of the post-holes of Block XV. were first cleared out to show that there had been nine posts, nearly 10 ft. apart, forming a verandah about 6 ft. wide. Then trial holes were dug on the presumed sites of corresponding pillars in Blocks XII., XIII., XIV., and XV., the expected indications being found in each case. Blocks I. and II. were not examined for this purpose, but it may be assumed that they would have given the same results.

It has been mentioned (page 51) that the "long" buildings at Housesteads and Chesters were divided into small rooms. This was not the case at Gellygaer, but there may have been divisional walls of wood which have disappeared. These buildings divided thus into apartments, with the larger head, recalls the arrangement of tents in the Hyginian camp. According to Smith's *Dictionary* (article *Castra*), a normal row of ten tents accommodated a century, which, at the time of Hyginus, consisted of eighty men. The length of the row was 120 ft., and the centurion's space was equal to that occupied by two tents. Usually two such rows were placed face to face with a space between, forming the *striga*, while the *hemistrigium* consisted of a single row.

It is interesting to note that the Chesters buildings and two pairs of those at Gellygaer are placed *affronté*, and so may be well described as *strigæ*. It is still more interesting to note that there are *six* of these L-shaped buildings at Gellygaer, and that an ordinary legionary cohort contained *six* centuries; but whether the garrison there was a legionary cohort is uncertain.

Very little can be said about the remaining "long" buildings at Gellygaer. As no two of them agree in shape and size, it is likely enough that they were used for different purposes. As in the preceding, the walls were too much destroyed for door thresholds to remain.

Block III. This building, 114 by 27 ft., was divided into three approximately equal apartments, which, to judge from the results of the two longitudinal trenches by which they were explored, were used as workshops. In the north corner of the

N.W. room was a heap of finely-broken brick, probably intended for concrete. This was evidently broken on the spot, for towards the west corner were many large pieces of brick. Hereabouts, the floor of the room was vague, apparently of gravel, but towards the other end it was well defined, consisting of several inches of gravel on a pitched foundation. In the middle room, a layer of yellow clay and two thick patches of charcoal and burnt earth were cut through. The S.E. room had no definite traces of a floor except towards the south corner, where was a patch of kidney-stone pitching. In this room two blocks of stone, which had been used for sharpening knives or tools upon, were found.

Block IV. Here we have an irregular building 149 ft. long, and divided into four rooms of which the two in the middle are the smallest, and are of equal size. These rooms disclosed a gravel and rubble floor, which showed signs of having been concreted. The interior of the large room towards the N.W. was not trenched. The only thing remarkable about the large S.E. room was that it contained two enclosed spaces or rooms. The smaller of these—12 ft. by 7 ft. (internal)—was in the west corner, and the larger—14 ft. by 8 ft. (internal)—adjoined this, and was built against the S.W. wall, the main wall of the large room constituting the contiguous sides of the included spaces, the remaining sides being completed by their own walls. These walls were about 15 ins. thick, and slightly above the old level, and were built of square and half-round bricks. As, however, only a single course of these remained, it was impossible to say whether they formed a lacing-course only, or whether the whole of the wall above had been of brick. Within these spaces, and resting upon the natural soil, was a layer of fine sandy loam, from 5 to 7 ins. in thickness, suggestive of a decomposed mortar floor. As these structures bore some resemblance to a reservoir or tank adjoining Block IX., which will be described shortly, they may have had a similar use. As many pieces of roofing-tiles were lying about, this part of the range may have been roofed with these tiles; but it is possible they were derived from the neighbouring Block VIII.

Block IX. was the largest of the "long" buildings, being

146 ft. by 40 ft. It was separated from Block XII. by an eavesdrop nearly 5 ft. wide, which towards the N.W. end was contracted by a row of upright flags into a descending channel of about 16 ins. in width to facilitate the removal of the drip from the roofs into the drain of the adjoining street. Of the interior of this building nothing further can be said than that it was divided longitudinally by a wall upon a shallow foundation, the diagonal trenching which covered the site being singularly devoid of results.

Attached to the S.E. end of the lower division were found the remains of a well-constructed reservoir or tank, 20 ft. long by 7 ft. 6 ins. wide, the floor of which was about level with the

FIG. 15. LEAD PIPE FROM TANK, BLOCK IX. ($\frac{1}{8}$).

street. The end of the building formed its one side, and a wall from 14 to 15 ins. wide enclosed it on the other three. This wall rested upon a foundation of coursed thin stones laid in loamy clay, and above the floor level it was constructed of the broken sides of large flue-tiles; but so little remained—three courses at most—that it was impossible to say whether the rest of the superstructure was of tile. The floor was of brick concrete lying upon several inches of gravel concrete, which, in its turn, rested upon a foundation consisting of an upper stratum of pieces of pennant closely packed on edge in a direction across the tank, and a lower of larger pieces similarly packed but running longitudinally, the total thickness of these different materials being about 20 ins.; and under all was a bed of clay. This clay was also carried up as a lining, 3 or 4 ins. thick, to the surrounding wall foundations. In the middle of the S.W. end of the tank was a lead outlet pipe, 2 ft. 8 ins. in length, still *in situ*, which, after passing through the wall, opened

into a covered drain that crossed the *Via Principalis* and debouched into the main sewer of that road. This pipe was made from a strip of lead, 9½ ins. wide, and ⅜ in. thick, bent into a cylindrical form until the two edges met to form a butt joint, when it was soldered. The end within the tank was flanged (Fig. 15).

Blocks X. and XI. These buildings were linked together by a short length of wall, and were separated from Block XIII. by an eavesdrop of irregular width. Practically nothing further can be said of them beyond what the reader may infer for himself from their plans. The first came within the area of diagonal trenching, but the trenches were refilled without notes being made of them, and the interior of the second was only trenched to expose a longitudinal wall upon shallow foundations.

Yard.—In the three most perfect plans of the British Roman forts—Housesteads, Birrens, and Gellygaer—it will be noticed that while the first has one open space, and the second none at all, the third has *two*. The smaller space, behind the *Prætorium* at Gellygaer, like that at Housesteads, is strictly an *open* space, whereas the larger one, between the *Prætorium* and Block VIII., has all the appearance of having been enclosed; in other words, of having been a *yard*.

The chief entrance to this larger space was from the *Via Principalis*, where an opening 18 ft. wide was found in the boundary wall, here recessed from the street about 7 ft. The original width of the gate is, however, uncertain, as the actual jambs had gone. The opening was flanked by a small chamber (9½ ft. by 8 ft.) on the side of the wall next the yard, apparently with a small door opening on to the track through the gate. The boundary wall was continued beyond this chamber to Block VIII., which formed the S.E. side of the yard, except for a passage between it and Block IV. On the opposite side of the yard to this passage, and in the wall between it and the lane along the side of the *Prætorium*, were some indications of another opening or gate. That this was simply a boundary wall was confirmed by its shallow foundation, barely 1 ft. deep.

Several trenches were cut in this yard, but they failed to supply any definite information; still they went to show that it was used for various purposes. In the western quarter they proved that the Roman surface was more or less gravelled, whereas in the northern quarter, the old natural surface always appeared in an undisturbed and clean condition, as though this part of the yard had never been in use. In the southern quarter there was no trace of gravel or rubble as a rule, but the lowness of the ground here necessitated a curved raised footpath which led to the angle between the large S.E. room of Block IV. and the neighbouring small room, where doubtless was a door. The path consisted of a series of large flag-stones on the summit of a low gravel bank.

In the angle between Blocks IV. and VIII., but about 8 or 9 ft. from each, was a well-laid oblong space, 17 ft. 6 ins. by 16 ft., of thin stones packed on end. It was taken at first for road-pitching, but the upper edges were not worn, and the broken stone and brick which lay upon it was suggestive of decomposed concrete. No trace of an enclosing wall was found.

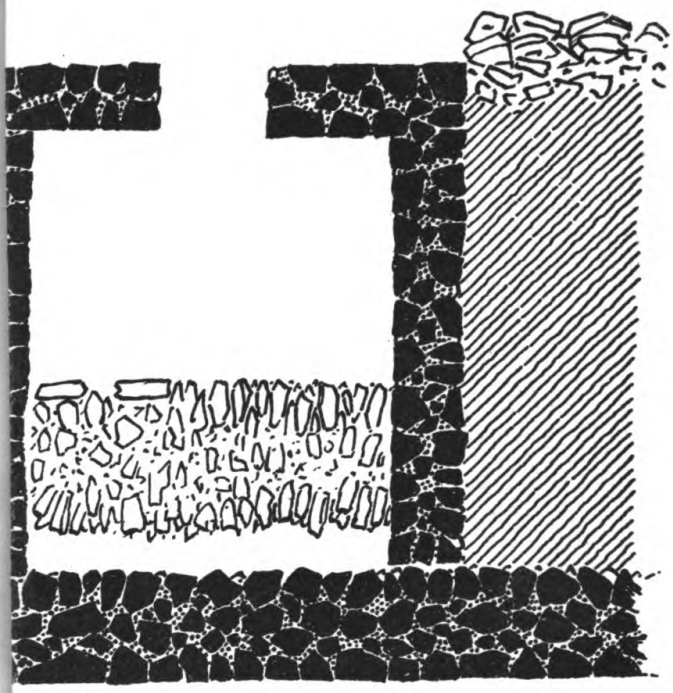
Towards Block VIII. the ground had been considerably raised, and along the side of that building, and for half its length, ran a pavement 8 ft. wide, composed of tabular pieces of stone of all shapes, not very closely placed together.

The eastern quarter contained some puzzling features—thick seams of carbonized earth; patches of clay, some burnt; fragments of walling constructed of thin stones, reddened by the action of fire, &c. Probably, if this portion of the yard had been more thoroughly explored, the remains of furnaces of some sort would have been brought to light.

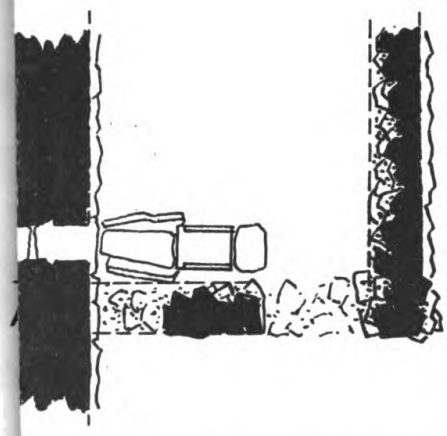
More to the east, occupying, in fact, the angle between the lesser gate-chamber and the boundary wall, was the most interesting feature in the yard—a latrine. The plan on Plate IX. will make its details clear to the reader. The floor *a*, *a*, which appears to have been on the ordinary Roman level, was paved with carefully-fitted large flag-stones, of which the largest was 4 ft. in length. Three inches from its S.E. edge ran a hewn-out half-round gutter, 22 ft. long and 5 ins. in width. This, at its lower end, drained into the sunk channel *b*, which ran parallel with the

edge of the pavement at a distance of about 9 ins. from it. Its carefully-paved descending bottom, 10 ft. long, and 14 ins. wide, passing through an opening in the boundary wall, was continued by a covered drain to the sewer of the *Via Principalis*. One of its walled sides, which gave support to the edge of the pavement above, remained, but the opposite side had entirely gone. The flag-stones of the pavement were much displaced. They had scarcely any signs of wear.

Between the latrine and Block VIII., and close by the latter, the boundary wall was pierced, apparently for the passage of a drain. The opening was about 2 ft. wide and 2 ft. 6 ins. high. If such a drain existed, its remains were probably removed during the course of the excavations, which were here carried about 2 ft. 6 ins. below the Roman level.

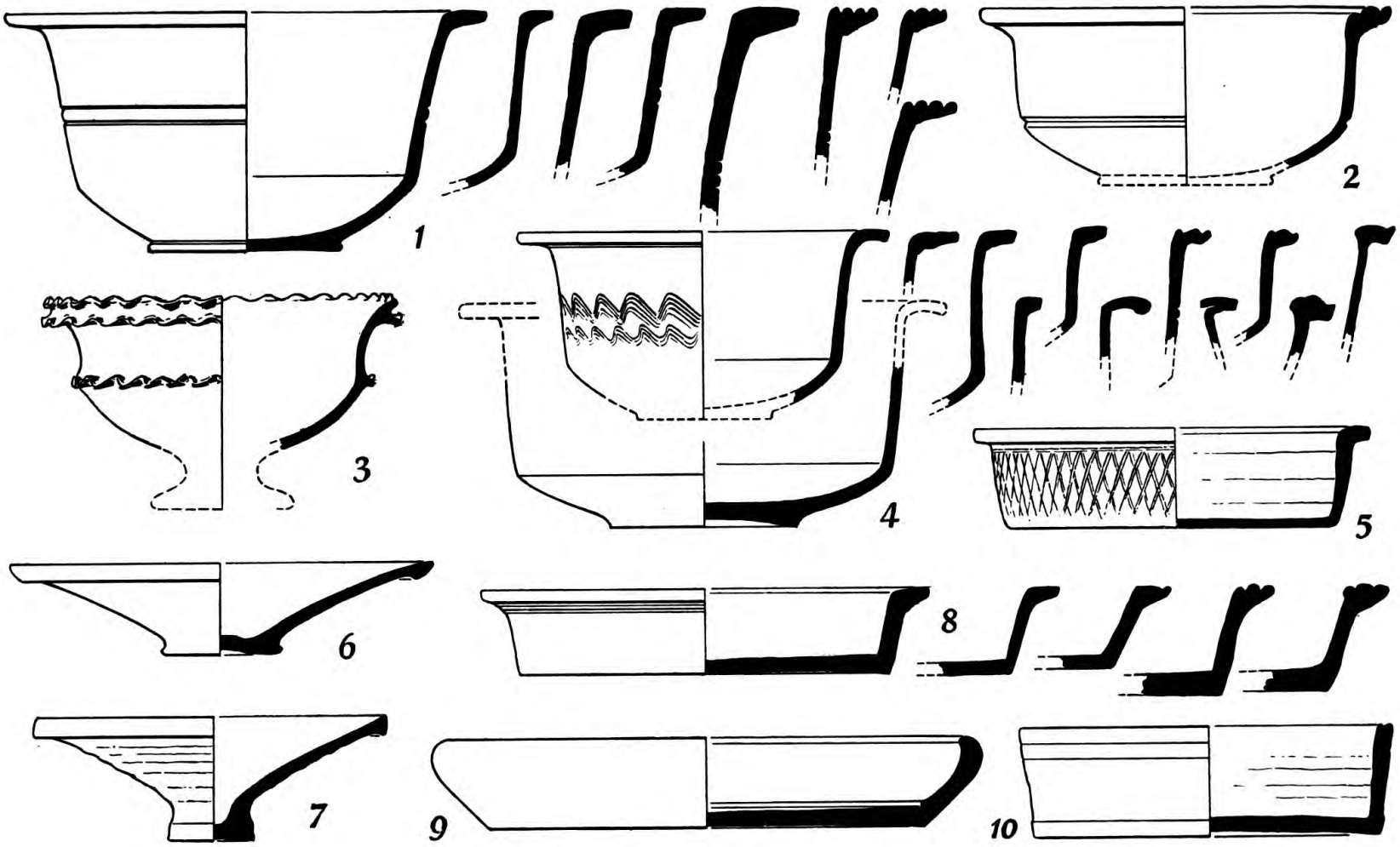


AN OF TOWER



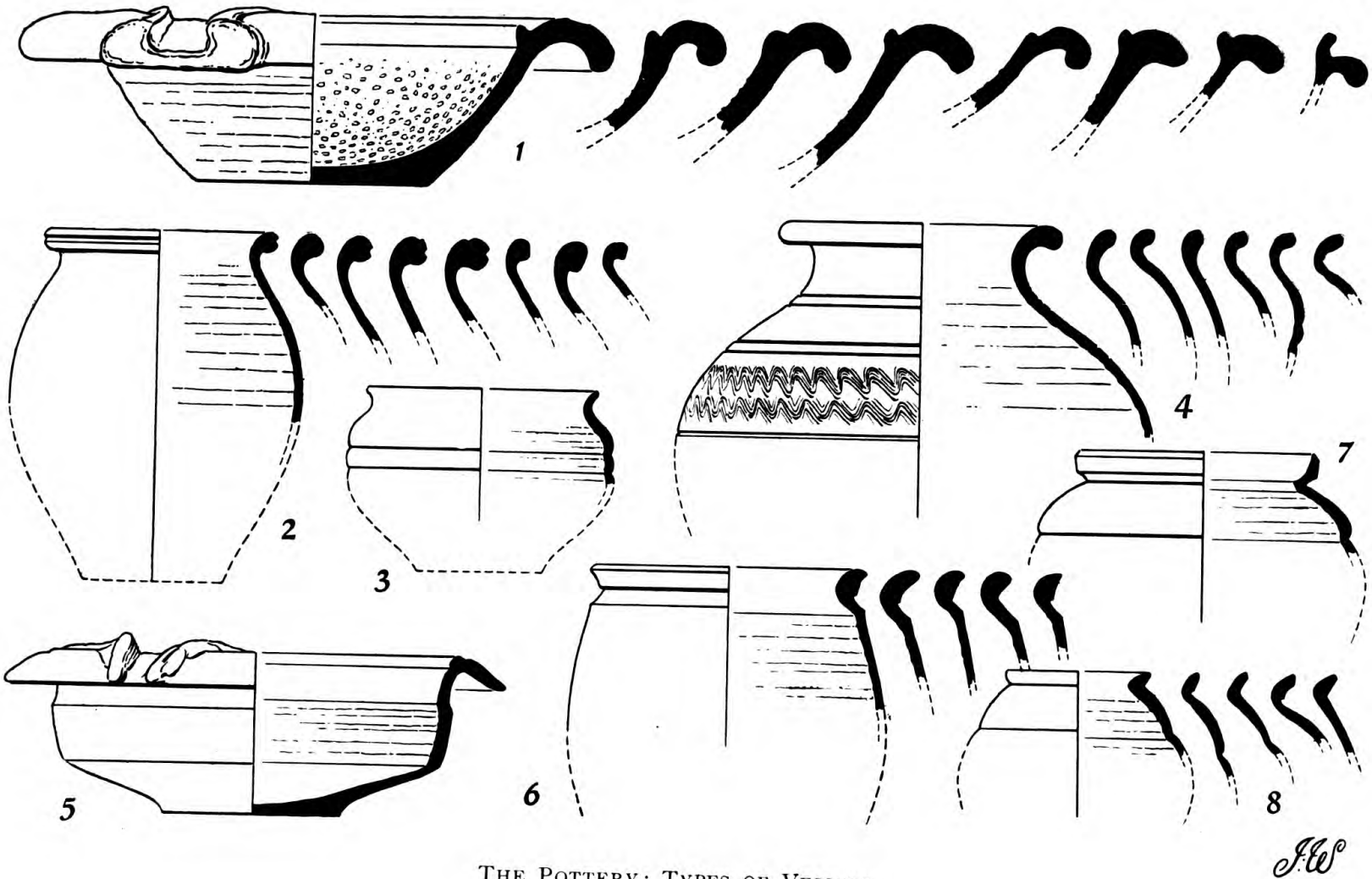
INK IN PRAETORIUM

J. Ward, Mens. et Del.



THE POTTERY: TYPES OF VESSELS.

(All one-quarter size of Originals.)



THE POTTERY: TYPES OF VESSELS.

(All one-quarter size of Originals.)

SECTION VII.

Notes on the 'Finds.'

ALTHOUGH the chief end of the exploration was the recovery of the plan, it must not be supposed that the miscellaneous objects of human workmanship, other than building materials, were neglected; on the contrary, the men were instructed to keep a sharp look-out for them, and to save all they found. These were deposited, at the end of each day's work, in a shed at the old School-house or in the Rectory coach-house; and by the end of the exploration there were several wheelbarrow-loads of 'finds,' mostly potsherds. The only fault to be found with this procedure was the mixing together of the objects, thereby rendering the task of sorting and piecing a practically insuperable task. We may accept it as a general rule that upon such sites as Gellygaer, the fragments of the different vessels will be near one another, so that if each day's discoveries, or better still, those of each trench, be kept to themselves, it will be comparatively easy to detect the fellow fragments among them, and thus the work of reconstruction—tedious enough under any circumstance—will be greatly facilitated.*

Taken as a whole, the Gellygaer 'finds' were of a common-place order. This, of course, was not surprising; we must not look for the refinement and elegance of city and villa life in a military post in a newly-conquered territory. But even for a fort they were common-place and lacked diversity. No altar or image, not even a bronze fibula or pin of Roman age, is recorded as having been found at Gellygaer. The coins

* I found strong paper bags very useful in the exploration of Rains Cave, Derbyshire. All the objects from each "foot-strip" were placed in one of these bags, which was then marked with the number of the strip, and reserved for future study.

discovered during the excavations were few, and most of the pottery was of the coarsest wares.

The collection, however, has an interest scarcely suspected while the exploration was in progress. If my conclusion that the fort was of short, and for Britain, of early occupation, is a right one, the Gellygaer 'finds' may prove to be an important factor in the chronological classification of objects, especially pottery, of Romano-British age. Mr. Haverfield, referring more particularly to the so-called Samian ware, has occasion to remark that while German archæologists, notably Hettner, Koenen, and Dragendorff, have rendered good service in this branch of Germano-Roman archæology, little attention has been given to it in this country (*Trans. Cumberland and Westmoreland Antiquarian and Archæological Society*, Vol. xv., p. 191).

The soil of Gellygaer has had a deleterious effect upon many of the objects. Those of bronze have undergone chemical change throughout; those of iron are, as a rule, reduced to mere shapeless masses of oxide; and the pottery is generally in a soft condition* with the original surface removed by decay. The glass, on the other hand, is singularly fresh. Why the soil should have had this effect, I cannot say. At Caerwent the order is reversed; the pottery has suffered little, and the glass much. At Melandra Castle I was struck with the freshness of both.

The Pottery.—No perfect vessel was found, nor has it been possible to build up a complete one from the fragments. Fortunately, however, in many instances a sufficient sequence of pieces has been recovered to render it possible to determine the original form and size of the vessel. It is also possible by comparing these partial restorations with one another and with the multitude of loose fragments, to re-construct all the commoner types of vessels used at Gellygaer, and to roughly estimate their relative numbers.

The pottery, with few exceptions, falls into the three following classes:—

* All the potsherds which have been retained as specimens have been hardened by immersing them in a bath of hot gelatine size.

(1) Coarse yellowish wares, consisting mainly of the heavy and bulky *amphoræ* and *dolia*, and of the largest *mortaria*;

(2) Common red, grey, and black wares, relating to a large number of varied, but smaller vessels; and

(3) The so-called "Samian" ware.

This classification, based essentially upon the wares, applies with almost equal force to the forms, for the vessels of each class, though diverse among themselves, have little in common with those of the other classes. As descriptions alone of pottery are of little real service, I have figured, one-quarter full size, on Plates X., XI., and XII., typical examples of the different forms found at Gellygaer, after a German manner, each figure presenting at once an elevation of the exterior and the interior, and a section of one side. These drawings may not have the pleasing effect of the usual perspective views, but they have obvious advantages.

Of the first of these classes, the fragments of the great two-handled *amphoræ*, used for storage purposes, were the most numerous, the more globular *dolia* being represented by only a few pieces. The potsherds of this class were so decayed that it was impossible to make out the exact shapes and sizes of the vessels to which they appertained. They were mostly of a soft, gritty, yellowish clay, which became brittle upon drying; but a few pieces had a reddish tinge, and were harder. The handle of one of the *amphoræ* bears the potter's name in raised letters in a sunk label, apparently CEFR or CEFN.

The potsherds of the second class are not only the most abundant, but are the most interesting, for they represent the ordinary kitchen and table utensils of the fort. In a villa, these would be confined to the kitchen, but at Gellygaer the vessels of finer wares, to judge from the fewness of their fragments, had a very limited use; probably they were not seen outside the officers' quarters.

One-half, or more, of the potsherds of this class are rather coarse, ranging from a dirty salmon colour to a dull brick-red, many of them so closely resembling one another as to suggest a common origin. The original surface has generally been

removed by decay; but where it still remains, it resembles that of our modern flower-pots. The rest of the potsherds of this class relate to thinly built vessels of the common grey and black wares, but they vary considerably in texture and appearance. Some are of a slatey-grey colour, soft, and much decayed; but those pieces which are decayed usually exhibit a carefully smoothed surface, retaining patches of the original black film. Others are harder and browner, of a fine gritty texture, and as a rule better preserved than the foregoing, but their surface-coloration appears to be simply that of the paste, and not to be due to a film.

The commoner vessels of the class we are now considering were fabricated in both varieties of ware; but each series—those of the red wares on the one hand, and those of the grey and black on the other—had certain peculiarities of form which suggest a difference of manufacture. One of the commonest forms was a bowl with upright sides, springing from a saucer-shaped bottom, and crested with a flanged lip. No. 1, Plate X., is typical of the red-ware series, and the sections on the right-hand illustrate the chief variations. These vessels ranged from 6 to 15 ins. in diameter. The larger were often ornamented with a single or double sunk bead round the middle. The upper surface of the lip was usually plain, but was occasionally reeded or otherwise moulded. No. 2 represents a form in which the transition from the lower curve to the sides was less abrupt.* The grey and black equivalents (No. 4) of these vessels were more thinly built, and the drum more cylindrical. None of these had the sunk-bead string, but occasionally in the corresponding place was a wavy pattern, produced by holding, with an oscillating movement, a toothed tool against the vessel when slowly revolving on the wheel. One or two of the sections at the extreme right seem to relate to vessels of a more globular shape.

A considerable number of fragments belong to flat-bottomed or tray-like vessels, which, for want of a better name, I will term dishes. No. 8 represents the prevailing form in the red-ware

* A bowl like No. 1 may be seen in the York Museum; and some like No. 2 have been found at Haltern in Westphalia, *Mitteilungen der Altertums-kommission*, Heft II.

series. These ranged from 6 to 10 ins. in diameter, with flanged lips like those of the bowls. Of the corresponding black-ware dishes, fragments of only two were found, one of which is shown in No. 5. Both were decorated with a trellised pattern of burnished lines on a dull ground. No. 9 is a dish of another type, of which six or seven examples are represented in the potsherds, varying from 9 to 12 ins. in diameter. The fragments of that figured are of a brownish colour, finer than usual, and well preserved. Of similar paste, except that it is minutely flecked with some glistening substance, probably mica, are the fragments of the curious dish with vertical sides, No. 10, the only one of the shape found.

On the same plate are shown (Nos. 6 and 7) two shallow vessels, the one in common red and the other in a dingy black-ware, each upon a raised foot. Of the former type, fragments of about seven were found, ranging from 7 to 9½ ins. in diameter; of the latter, only one.

The familiar jar-like vases with bulging sides and graceful out-curved lips, were as plentiful as the bowls above described, but unfortunately not one can be completely restored. Most of them were of grey and black wares, and they varied considerably in size and shape. No. 4, Plate XI., presents a typical series, varying from 5 to 8 ins. from lip to lip. The largest of these (of which only the upper portions were found) was ornamented with two or more bands of the incised wavy pattern. A few of these jars had short abrupt lips, as shown in No. 8. The solitary example, No. 7, seems intended to receive a lid. It will be observed that some of these grey and black-ware jars, especially the smaller ones, had one or more horizontal undulations or convexities, as may be especially noticed in No. 3. The fragments of these are, as a rule, of the dark brown variety of the ware.

The less numerous red-ware examples of these globose pots were about equally divided between the two types shown in Nos. 2 and 6. In the one, the lip was boldly rounded, sometimes grooved outwardly or on the summit; in the other, the shoulder was angular, and the lip cornice-like, approaching the form of an ogee moulding. The fragments of the latter were

generally found discoloured with soot, as also some of those of the red-ware bowls and dishes, showing that these vessels were at least sometimes used for warming or cooking food. Fragments of red-ware jars of these two types, derived from Scottish Roman forts, are to be seen in the National Museum of Antiquities, Edinburgh; but Dr. Anderson informs me that, as with us, it has not been possible to restore a single vessel. Apparently they were tall, the first type ranging from $4\frac{3}{4}$ to 9 ins., and the second from $3\frac{1}{2}$ to $6\frac{1}{2}$ ins. from lip to lip.

As might be expected, many fragments of that most characteristic of Roman vessels, the *mortarium*, were found at Gellygaer. They all belong to one type—that in which the rim consists of a wide rounded outer member with an inner bead or fillet, as illustrated by the series of sections in No. 1, Plate XI. It is doubtful, however, whether the last of these sections relates to a *mortarium* at all; and it may be added that the fragment that supplied this section is of a fine pale buff ware, the only example of the sort found on the site. With one other exception—a piece of an unusually large *mortarium* in the coarse ware of the *amphoræ*—the fragments of these vessels are of the ordinary red ware, but of varying degrees of coarseness. These red-ware *mortaria* ranged from 10 to 15 ins. in diameter, and as far as can be judged from the fragments, the hard material used to stud the inner surface to promote the process of trituration, was broken quartzite pebbles. The absence of the steep band-like form of rim from Gellygaer should be noted.

While the curious vessel (of which fragments of one only were found) shown in No. 5, approaches the *mortarium* in form, it is of too slight a build to have served the same purpose, and the absence of quartz "teeth" tends to confirm this. It is of common black-ware, and the simple manner in which a spout has been provided by the planting of two clay cheeks upon the rim is well shown in the drawing.

Several black-ware rims have the sections shown in No. 11, Plate XII. These appear to have belonged to flat-bottomed vessels with straight sloping sides, as indicated by the broken line—a form of vessel often found on Roman sites. On the same plate is shown an unusual saucer-like vessel, No. 13, the

only one found. It is of a dirty salmon colour. The fragments from which Nos. 12 and 14 are developed seem to relate to similar vessels. On this plate is also shown the upper portion, No. 10, of a large red-ware vessel, with a contracted mouth and flat-reeded lip. The general shape appears to have been somewhat globular, but it is impossible to say with certainty.* A fragment of a similar vessel, but with a reeded shoulder, was also found. To the right of the figure is shown the somewhat different upper section of another large vessel of a very hard and gritty brownish ware.

No. 3, Plate X., represents the bowl of a "frilled" tazza, the only example found at Gellygaer. The "frilling" was produced by the alternate pressing up and down of the thin flange-like fillets while the clay was soft. Similar vessels may be seen in the York and the Guildhall Museums, and a portion of one has been recently found at Caerwent; but the York examples most closely resemble ours, both in their manipulation and the brick-red colour of their paste. All the perfect ones that I have seen are on raised feet, as indicated in the drawing.

The fragments of the few jugs—perhaps six or eight in all—fall well within the second class, but they differ considerably in texture and colour. The spoutless bottle-like neck of one, horizontally ribbed, is in a hard, gritty, cream-coloured ware. Another, with a spout, and closely resembling that shown in Fig 2, Plate XL., of Pitt-Rivers' *Excavations in Cranborne Chase*, is in a pale red ware. These relate to comparatively small jugs, probably not more than 9 ins. high. Two large red-ware fragments belong to pitcher-like jugs, with mouths from 4 to 5 ins. in diameter. All the handles are of the flat, grooved form, except one, which is round in section. A piece of a small jug is of fine red ware, washed externally with cream-coloured clay; similar jugs have been found at Silchester and other places.

The pottery of the third class—the well-known Samian or "sealing-wax" ware—now demands attention. On Plates XII. and XIII. are shown all the types of vessels of this ware, which have been developed from Gellygaer fragments. Taking them in the order in which they appear on the plates, we have, first, the

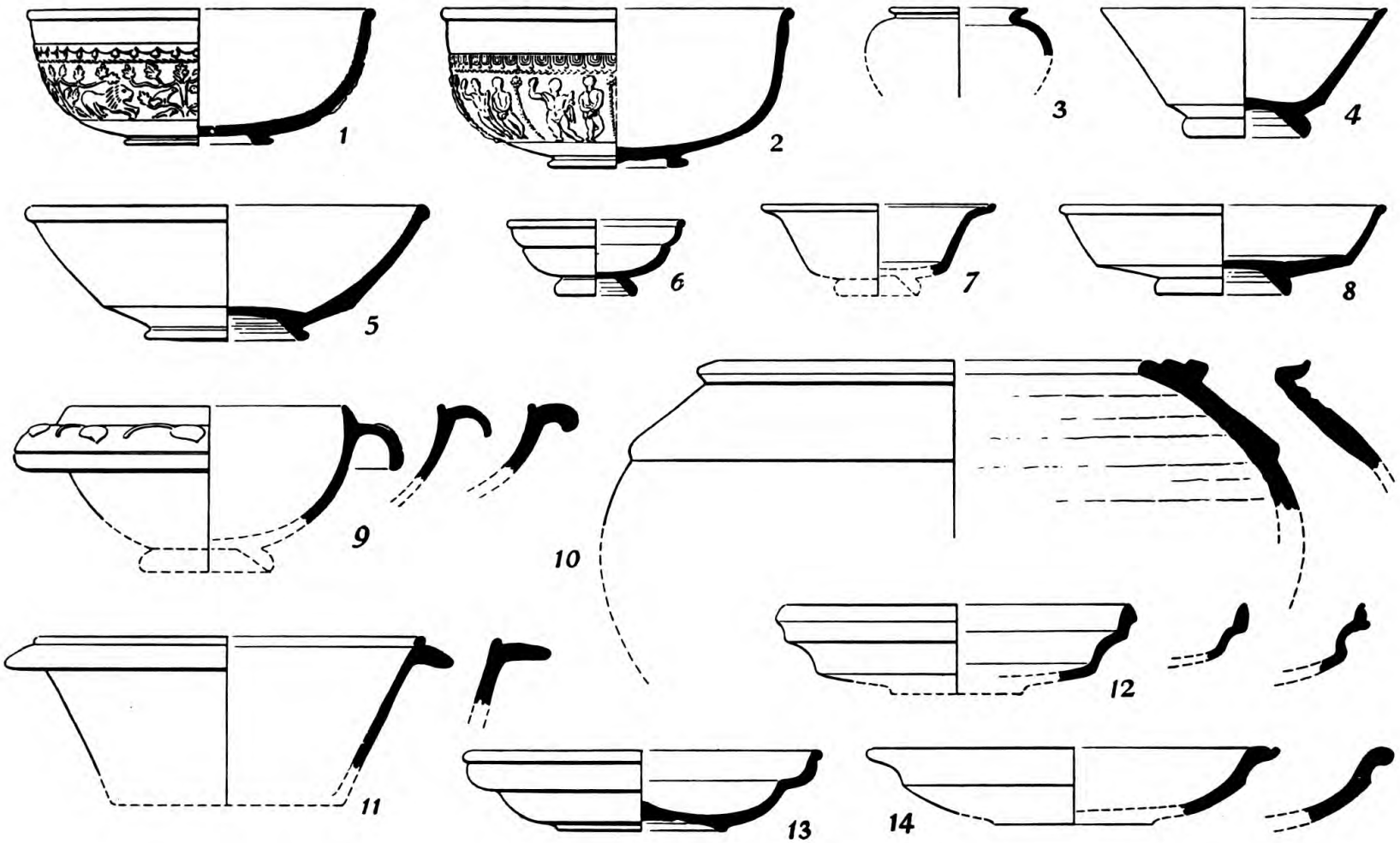
* Fragments of similar vessels have been found at Haltern, Westphalia.

decorated bowls of the common, shallow, hemispherical form, of which the two most perfect are shown in Nos. 1 and 2 of the former plate. The one depicts a forest scene: various animals, as lions, boars, and deer occupy the ground, while above, are birds amid the spreading foliage of what seems to be sycamore. The usual band of festoon-and-tassel ornament is, in this case, more realistically treated than usual. The other vessel is a little deeper. The sides are divided into a series of four-sided compartments, in each of which is repeated two nude male figures, the one apparently a captive with his hands tied behind his back, and the other in the attitude of striking him. One of these compartments is shown on a larger scale on Plate XIII., No. 5. A figure which occurs on a Samian bowl found at Rushmore Park, Wilts. (Plate XLI., *Excavations in Cranborne Chase*), so closely resembles the latter—the striker—as to suggest that both came from the same mould; it is, however, there associated with a different figure from its companion on the Gellygaer vessel.

On Plate XIII. are shown a number of decorated fragments (Nos. 1 to 15, *less* 5) relating to four or five other bowls of the above type. They call for no special comment, except that No. 6 closely resembles a fragment found at Caerleon (Plate XV., 2, *Isca Silurum*).

On the same plate is shown (No. 1) the fragment—the only one found*—of a small bowl of a different type, one with vertical sides. The piece unfortunately is not large enough to allow of the entire form of the vessel being made out, so I have conjecturally restored the upper and lower portions from other sources. The occurrence of this form of Samian bowl at Gellygaer is of great interest, for its period has been determined with some degree of certainty. The German archæologists have shown that it is rare on those Roman sites in their own country which have a later origin than the closing decades of the first century, A.D.; and Mr. Haverfield has recently given some good reasons for assigning a similar date to its disappearance in Britain (*Trans. Cumberland and Westmorland*

* Since the above has been in type I have detected a small piece of the lip of one of these bowls, probably the bowl described, among the fragments from Gellygaer.



THE POTTERY: TYPES OF VESSELS.

(*All one-quarter size of Originals.*)

Antiquarian and Archæological Society, XV., 191). He points out that the chief recorded sites on which these bowls have been found—such as London, Richborough, Silchester, Bath, Charterhouse, Caerleon, and York—"were certainly occupied by the Romans before about A.D. 85"; whereas they have been less often found on those of later origin, as the forts of the Wall and of Scotland. To Mr. Haverfield's list may be added Caerwent, Wilderspool (Warrington), and, of course, Gellygaer.

The other types of Samian vessels found at Gellygaer are shown on Plate XII. The little globular jar, No. 3, is represented by only a single fragment of the upper portion. There are potsherds pertaining to two such basins as No. 4, to five cups of the graceful form of No. 6, and to six or seven of the saucer-like vessels indicated by No. 8; while one only of the large basin, No. 5, and one of the diminutive basin, No. 7, are represented.

No. 9 represents a form which differs from all the foregoing in having a curved overhanging rim or flange, the use of which may have been to receive the frame of a supporting tripod as suggested by General Pitt-Rivers in *Excavations in Bokerley Dyke and Wansdyke*, p. 144. The fragments being insufficient, I have had recourse to more perfect vessels of the form found elsewhere for my drawing. The only decorated part is the upper surface of the flange, the simple bossy conventional foliage of which harmonizes well with its rounded surface. Fragments of two other similar vessels, shown in section in the same figure, were also found, the second apparently being quite plain.

A small number of potsherds indicate that the garrison possessed a few vessels which do not fall within the above classes. A fragment having a section similar to that just mentioned is of a fine pale red paste, superficially washed with a dark red pigment, with signs of having been polished. Several decayed fragments of bowls appear to be of the same ware. Two pieces of decorated vessels, one shown in No. 16, Plate XIII., and the other, part of the curved flange of a similar cup to No. 9, Plate XII., differ from typical Samian ware in being darker and lacking the enamel. They are extremely fine in texture, and the surface appears to have been polished.

Fragments of two, if not three, small, tall vases with thin, swelling sides, are of the ware usually attributed to Castor, buff and salmon coloured, with dark "rough-cast" surfaces. A fragment of a globular jug, and of the rim of a large mortarium, are of rather coarse red-ware, the one with a light buff, and the other with a fine brick-red wash. A solitary potsherd of a greyish ware was covered, when found, with a fine soft veneer of the same colour, which was unfortunately removed in cleansing. Steatite, apparently, entered into the composition of this veneer, for it had a soapy feel. It was decorated with incised concentric circles, from which depended vertical bands of three lines each. A vessel of the same build and shape—a tall cylindrical bowl with a saucer-like bottom—has recently been found at Caerwent.

It was formerly supposed that the Romans were unacquainted with vitreous glazes, but of late years a few undoubted examples of their pottery covered with lead-glaze, have been discovered, notably a bowl at Silchester, figured in *Archæologia*, Vol. LV. While it is evident that this ware was uncommon, it may have been less so than we suppose, as it is easily mistaken for medieval. At Gellygaer, as on other Roman sites, potsherds of later periods than the Roman, were found. A few of these have the lead-glaze so characteristic of the pottery of medieval and later times, but I am inclined to regard one of them as Roman. It is the upper part of a small globular jar, closely resembling No. 3, Plate XI., only relatively taller. The glaze is of a rich yellow-green colour, overlying a black body. In looking over a number of medieval potsherds found in the Caerwent diggings, I noticed one which resembled it, and belonged to the lower part of a similar vessel, which had vertical "pillars" at intervals round the belly.

We cannot safely determine the relative numbers of vessels of all types used in the fort, from the potsherds which have been secured from the exploration; for it is reasonable to think that the *amphora* and *dolium* fragments from their largeness, and the Samian fragments from their brightness and obvious excellence, were more frequently observed and saved than were their fellows of the second class. But if we eliminate those potsherds, we may rely upon the large residue to give

some idea of the relative numbers of the commoner vessels of the second class. The following list must only be regarded as a rough approximation:—

Bowls, as Nos. 1, 2, and 4, Plate X.; red-ware predominating	26 per cent.
Jars of the grey and black-ware types, as Nos. 3, 4, 7, and 8, Plate XI.	18 „
Jars of the two red-ware types, Nos. 2 and 6, Plate XI.	16 „
Mortaria; all of buff and red-wares, No. 1, Plate XI.	20 „
Flanged Dishes, as Nos. 5 and 8, Plate X.; mostly red-ware	8 „
Dishes, as No. 9; Plate X.; all red-ware ...	4 „
Saucers, as No. 6, Plate X.; mostly red-ware...	8 „
	100

Glass.—Of the broken glass of various ages found during the exploration, those fragments (forming the larger proportion) which are undoubtedly Roman, are in a singularly fresh condition, contrasting in this respect with the fragments of thin green window-glass and of the thick dark bottles of a century or more ago, which in most instances have been excessively filmed by the action of the soil. The Roman glass, of course, alone concerns us here.

The window-glass has already been referred to (page 29). Of the same blue-green glass are the fragments of seven or eight large bottles with necks varying from about 2 to 3 ins. in external diameter. Most of these bottles were cylindrical, and one at least was square and, unlike the others, moulded; while all had flat handles bent at a right angle, and attached to the shoulder and the neck, the lower portion being reeded. The upper portion of one of the cylindrical bottles is, to some extent, restored from the pieces; it is 6¼ ins. in diameter, and the sides are thin and highly transparent. A fragment, apparently of the bottom of the square bottle, has a cast pattern of interlacing circles.

Of the same blue-green glass is the "frilled" pillar of a pillared bowl, with the fragment of a "frilled" lip and a ring-base of apparently the same vessel. Of a finer quality of glass, are several pieces of two hollow rims, one belonging to a cup with a wide out-spread lip.

The upper portion of a thin beaker or goblet of colourless glass well illustrates the skill of the Roman glass-worker. The lip of this vessel was gently curved outwards, the diameter from lip to lip being 3 ins. The external surface of the fragment is decorated with horizontal grooves $\frac{1}{20}$ in. in width, one immediately below the lip, a band of three a little lower, and below this a band of two. The grooves have evidently been ground out on the lathe. The inner surface of the vessel is perfectly smooth, but the outer has undergone some process (probably chemical) by which it has received a fine glistening frosted appearance, and this process was subsequent to the grooving. Two fragments of other vessels—one of a greenish hue—exhibit the same peculiar surface. Similar goblets to the above have been found at Caerwent and Lyne.

A fragment of a thick vessel of crystalline glass with a faint yellowish tinge has its outer surface diapered with incuse ovals, each about $\frac{7}{8}$ in. in length. My first impulse was to reject it as a fragment of a modern glass sugar-basin; but as pieces similarly decorated have been found on other sites, as London, Birrens, Wilderspool, etc., I forwarded it to Dr. Anderson, who submitted it to a manufacturer, and reported as follows:—"The glass manufacturer to whom it was shown does not think it is modern glass. This is all he can say as he is not an expert in Roman glass. But it seems to me to confirm the attribution of it to the Roman period. We have (as you know) a similarly cut beaker from Birrens, and from Ardoch we have a fragment (broken into very small pieces) which has the same kind of cutting, and the body of the glass is about the same thickness as yours, the Birrens one being thinner. The presumption, therefore, is both on the negative and positive lines that your specimen is of the Roman period."* By the courtesy of

* Since writing the above I have found a similar fragment classed as modern in the temporary museum at Caerwent.

Dr. Anderson, the London and Birrens examples are here illustrated.

Six small button-shaped discs of glass were found. Of these, three black and two of a greyish-white are about $\frac{5}{8}$ths in. in diameter, and were evidently made by pouring a small quantity of melted glass upon a slab, so that while the upper surface is convex and shining, the lower is flat and dull. The sixth is larger, of a deep grey, and double convex. Such discs are frequently found on Roman sites, and occasionally their upper surface has five dots of coloured enamel. Various suggestions

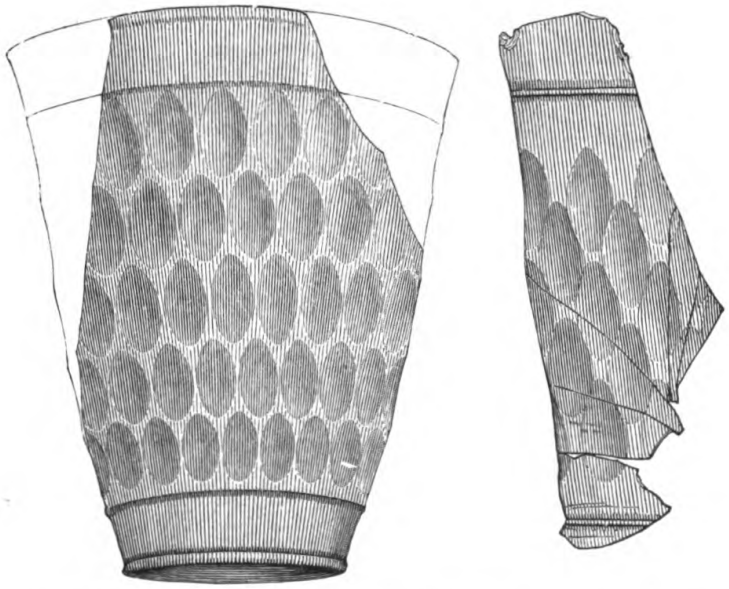


FIG. 16. GLASS BEAKERS FROM LONDON AND BIRRENS.

have been made as to their use, the most probable being that they were used as counters in some game.

One or two small ribbed melon-shaped beads, common enough on Roman sites, may be mentioned here. They are of a blue-green frit-like paste, less than $\frac{1}{2}$ in. in length.

Objects in Lead.—On Plate XIII. is figured (No. 17), full size, a disc of lead, found during the first year's diggings. It is faintly impressed on the one side with a marking resembling the letter M, and on the other with a shield-like panel, containing

a cross and pellets. It has been suggested that it is a Roman tessera, and several similar objects, supposed to be Roman, may be seen in the Blackgate Museum, Newcastle-on-Tyne; but there can be little doubt that it is medieval. On the same plate are also figured, half size, a plumb, or, possibly, the weight of a steel-yard; an altar-like pedestal with a square tenon; and the lower part of a lamp-stand (Nos. 18, 19, and 20). This stand is trefoil-shaped, with the remains of vertical sides and a coiled-up handle. It is apparently of cast lead, about $\frac{1}{8}$ in. thick. A similar stand was found at Wilderspool, and is figured in

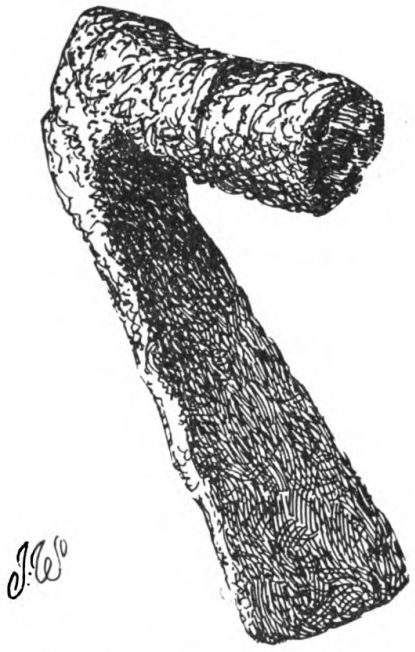


FIG. 17. IRON IMPLEMENT: A MATTOCK? ($\frac{1}{3}$).

Mr. Thomas May's paper upon the excavations there, read before the Historic Society of Lancashire and Cheshire, 1900. Several may also be seen in the York Museum.

Besides the above, there were found a spindle-whorl, $\frac{3}{4}$ in. in diameter, neatly cut into shape out of a piece of thick lead sheet; a roughly circular mass of lead with a flat top and bottom, nearly $1\frac{1}{2}$ in. in diameter, and $\frac{1}{2}$ in. in thickness*; several pieces

* When at Melandra Castle in 1900, I was shown a number of similar masses of lead, but of different sizes, obtained from the excavations there.

of sheet lead, one a long thick strip with the narrow end doubled over as if to form an improvised plumb; and a ball of lead, ½ in. in diameter, probably not Roman, as it appears to have been cast from an old-fashioned bullet mould.

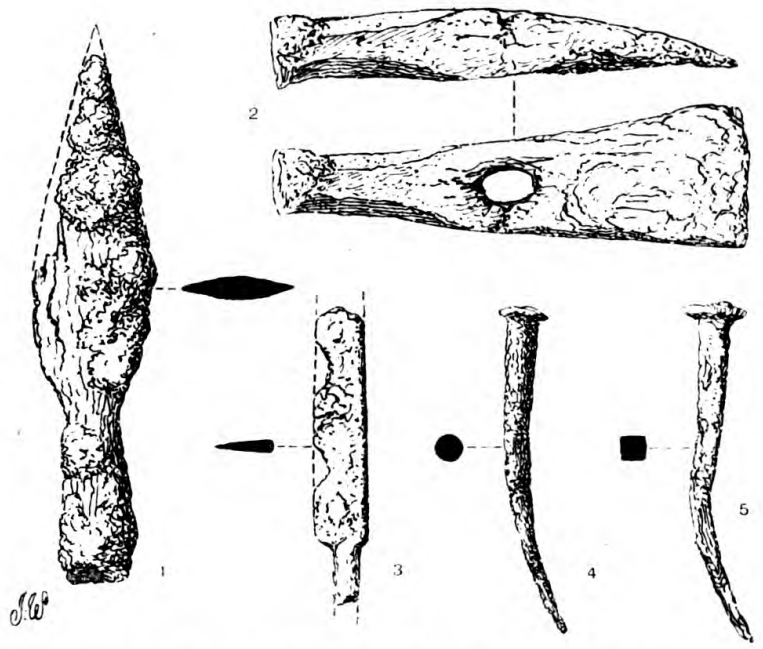


FIG. 18. IRON OBJECTS: SPEAR-HEAD, KNIFE, HAMMER, AND NAILS. (⅓).

Iron Objects.—The majority of the iron objects are mere shapeless masses of oxide, and of the residue many are obviously of more recent date* than the Roman Occupation. The most remarkable of those which can be safely regarded as Roman from their condition, is the implement shown in Fig. 17, apparently a mattock, or an adze. The blade is 7½ ins. long by 2¾ ins. across its widest part. In the socket are still the remains of the handle, about 1 in. in diameter, and apparently of ash. Iron mattocks have been found at Camelon, Ardoch, and upon other Roman sites, but these lack the elongated socket of the Gellygaer example.

* For a few examples of these, see page 94. Among the iron objects of uncertain age, may be mentioned several horse-shoes.

In Fig. 18 are shown, half size, the following:—a socketed spear-head, the only one recognized as such among the iron 'finds'; part of the blade of a thick narrow knife; a hammer-head with a transverse cutting edge; a round spike, and a square nail. It is doubtful whether the hammer is Roman. I am told that it is very similar to a form still used in some parts of South Wales in the preparation of stone roofing-flags. The nail is typical of its class at Gellygaer, where they have tabular heads,

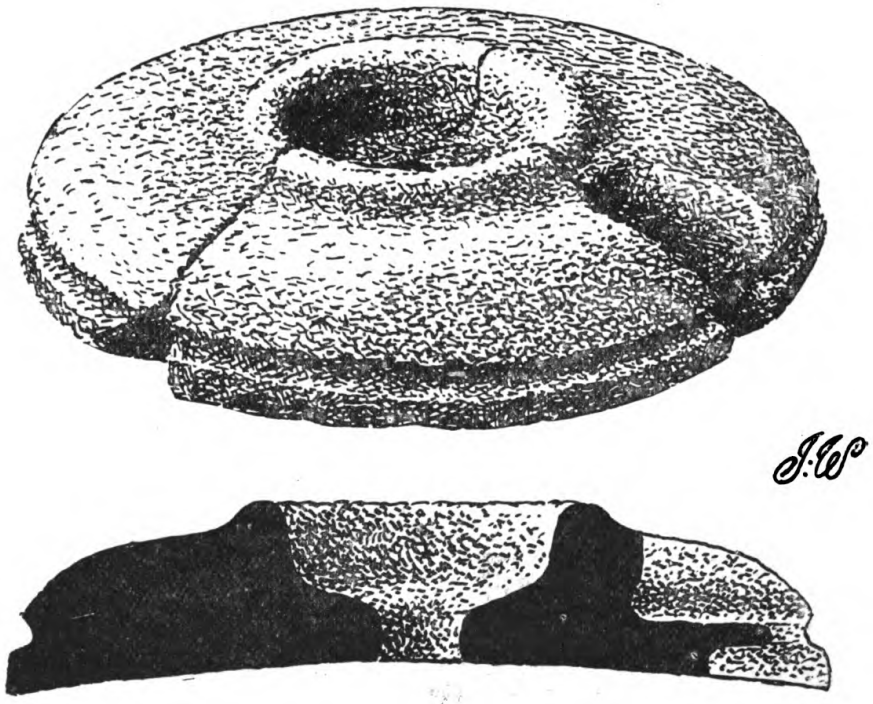
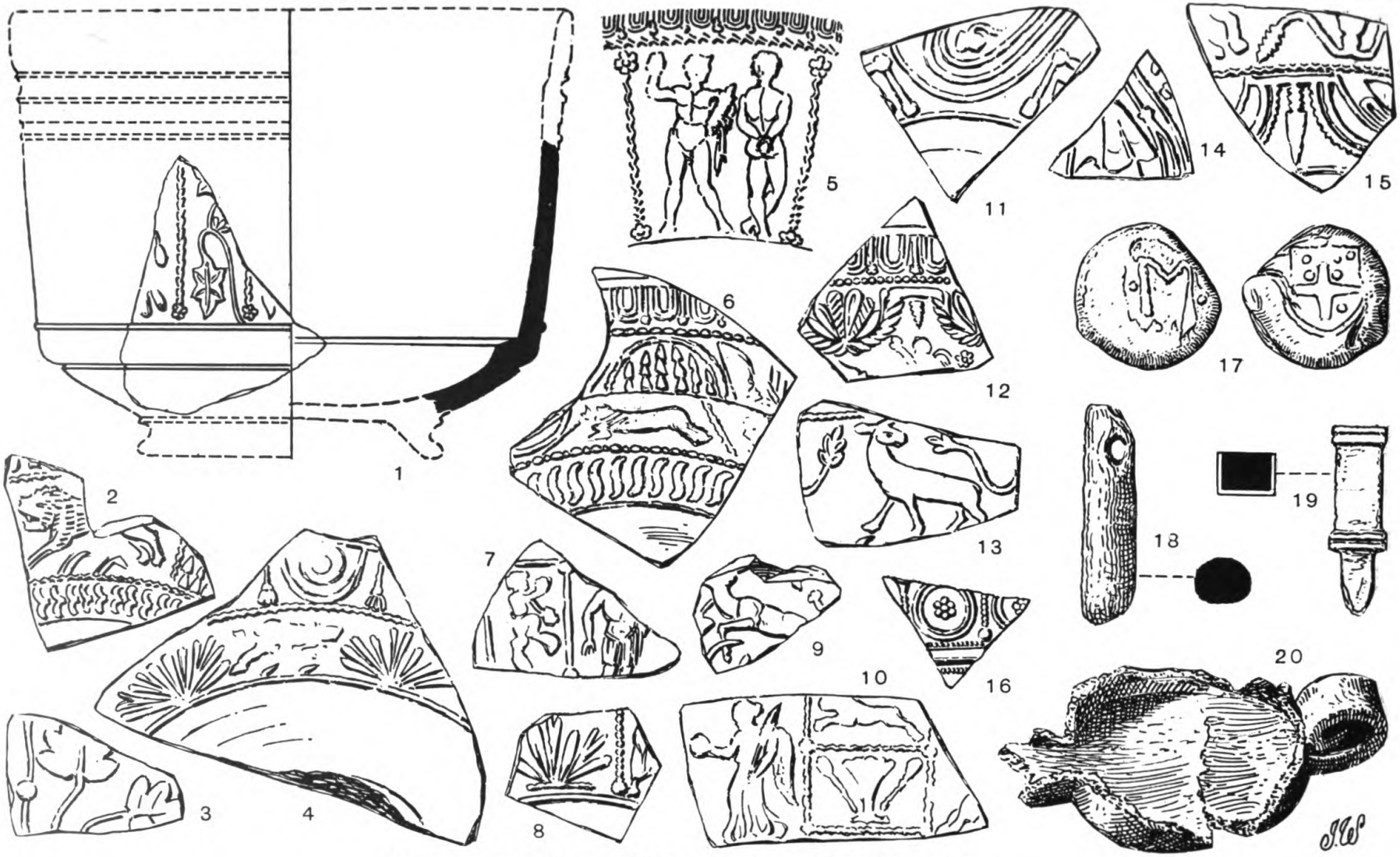


FIG. 19. UPPER STONE OF QUERN AND SECTION. (APPROX. ¼).

and vary from 2 to 4 or 5 ins. in length. Besides these, several rings of various sizes, staples, a portion of what may be a centre-bit, etc., were found.

Stone Objects.—The upper stone of a quern, shown in Fig. 19, is of millstone-grit, 15 ins. in diameter, neatly wrought into shape by "sparrow-pecking." The central hole is expanded above into a dish-like hollow with a raised rim to serve as a hopper. The stone was found broken into three pieces,



ORNAMENTED SAMIAN POTSHERDS AND OBJECTS IN LEAD.

(*All half size of Originals, except No.* 17, *which is full size.*)

and this breakage is ancient, for the groove round the periphery, which is well seen in the drawing, was evidently introduced to receive a band of some kind to hold the pieces together. The handle-socket seems to have been altered at the same time.

The fragment of a lower stone, also of millstone-grit, was found, but it belonged to a larger quern than the above.

Fig. 20 is a portion of a shallow mortar of a hard igneous rock. In its complete condition it was about 18 ins. in diameter, and had several—apparently three—projecting lugs. Stone mortars of this type frequently occur on Roman sites. One,

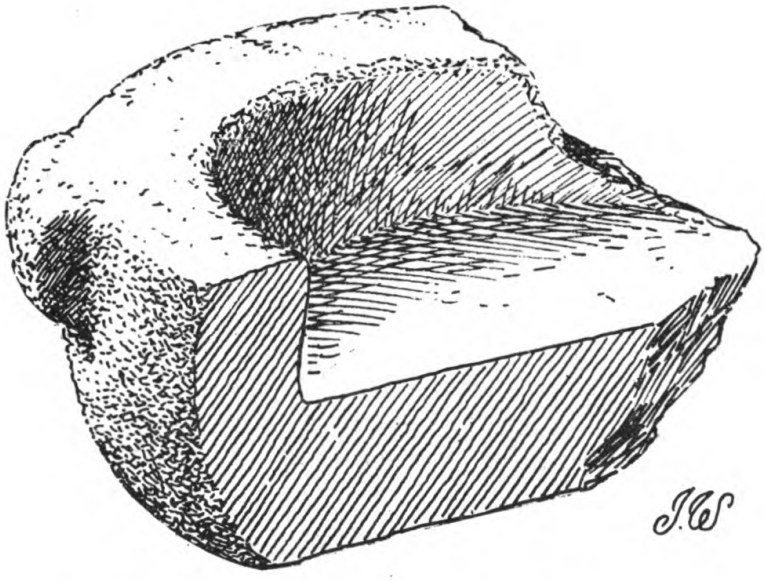


FIG. 20. FRAGMENT OF STONE MORTAR. (APPROX. $\frac{1}{5}$).

almost identical with this Gellygaer example, was found by the writer at Little Chester, Derby, in 1889; others are figured by General Pitt-Rivers.

Many whetstones of different sizes were met with during the exploration. The larger number were of fine-grained pennant-grit, the rest of long pebbles of suitable cutting power. A triangular piece of pennant-grit, 5 ins. long, and scored at intervals along its edge, was evidently used for smoothing shafts of some kind.

More than a dozen discs, rudely chipped out of pennant flagstones and ranging from $1\frac{3}{4}$ to 5 ins. in diameter, were also met with, as also others made from potsherds, and the bottoms of vessels trimmed apparently to serve the same purpose. Such discs have been found on other Roman sites—Caerwent, Caer Wrgan (Llantwit Major), and Ely Race-course (Cardiff)—and have been regarded as covers of vessels or as objects used in some game.

A spindle-whorl, neatly shaped out of pennant-grit, $1\frac{1}{3}$ in. in diameter, and slightly ornamented with radiating scratches, was found, as also was another of similar size, made out of a piece of grey pottery.

A burnisher of veined agate is a trifle over an inch in length, and has the section of a joiner's pencil. It is polished, except

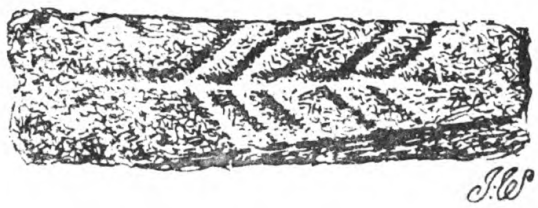


FIG. 21. STONE CARVED WITH PALM-BRANCH? ($\frac{1}{6}$).

at the square end which probably was inserted into a handle, the other end being roundly pointed, and showing signs of usage.

The carved stone, Fig. 21, was taken out of a modern wall in the Rectory Lane, but there is no doubt as to its Roman age. The incised device appears to be a palm branch, and it closely resembles those on a stone at Camelon, and figured in *Proc. Soc. Antiquaries, Scotland*, Vol. XXXV., p. 413.

Coins.—In excavations of the magnitude of a fort, where constant supervision on every spot is impossible, there is always a risk of coins being withheld by the finders, in consequence of exaggerated notions as to their value. Small, however, as was the number—seven only—of Roman coins handed over by the

labourers at Gellygaer, nothing has transpired to give rise to a suspicion that any were so withheld. It may be reasonably accepted, therefore, that under any circumstance the number found was small, and that the seven secured are fairly representative of the Gellygaer series.

In drawing up the following list I am much indebted to Mr. H. A. Grueber, F.S.A., of the British Museum, who has examined all the coins:—

1.—Republican Denarius; much worn. *Obv.*, helmeted head of Roma to the right. *Rev.*, a quadriga to the right with a flying Victoria above. The figure in the chariot is too much worn for identification, and the legends are quite effaced.

Mr. Grueber assigns *circa* B.C. 120 as the date of this coin.

2.—Republican Denarius; considerably worn, but less so than the preceding. *Obv.*, helmeted head of Roma to the right; L POMPONI CN F. *Rev.*, a warrior in a biga, to the right; legend effaced, but supplied by Mr. Grueber as L LIC CN DOM, who also gives the date as about B.C. 92.

3.—Vespasian (A.D. 69-79). Denarius of base metal, which has suffered much from the action of the soil. *Obv.*, Emperor's head to the left; CAESAR VESPASIANVS AVG. *Rev.*, Health seated to the left; [SALVS] AVG.

4.—Do. Denarius of baser metal than the preceding, and more corroded by the action of the soil. *Obv.*, Emperor's head to the right. *Rev.*, seated figure. Legends effaced.

5.—Domitian (A.D. 81-96). Denarius of base metal, considerably corroded. *Obv.*, Emperor's head to the right; - - DOMIT - - - GERM PM TR - -. Type and legend of *Rev.* effaced.

6.—Domitian. First-bronze. *Obv.*, Emperor's head to the right; [IMP CAES DOMIT AVG G]ERM COS XII CENS PER PP. *Rev.*, Jupiter seated to the left, with fulmen and hasta; [IOVI CONSERVA]TORI.

7.—Nerva (A.D. 96-8). First-bronze; surface much corroded.
Obv., Emperor's head to the right; legend effaced.
Rev., two hands joined and holding a legionary eagle; [CONC]ORDIA [EXERCITV-VM].

The condition of the Republican denarii is in striking contrast with the Imperial, owing, without doubt, to the greater purity of their silver.* In fact, two of the Imperial denarii (4 and 5) are so extremely base, that their amount of silver must be very small indeed. The two first-bronze coins have lost all their metallic properties, being reduced to oxide throughout, and when found were in a very friable condition. The Domitian coin, however, retained its surface intact, and it evidently had seen but little wear, but much of its sharpness was unavoidably removed in cleaning. The surface of the Nerva coin, on the other hand, was honeycombed by the action of the soil, but such portions of its device and legends as remain, show that it also received but little wear.

Graffiti.—Only three examples of scratched inscriptions—doubtless the names or initials of the owners—have been observed on the Gellygaer pottery. The smallness of the number is not surprising, as many such markings may have been removed by the superficial decay of the potsherds. The three are here figured one-half the size of the originals. The first occurs on a piece of mortarium, and is obviously CONTII (of Contius). The second is on a fragment of the bottom of a red-ware jar. It is incomplete, but may be the termination of "Antonii." The third, also on a mortarium, appears to be the owner's initials, M.T.

On a large tile 1,572 by 1,074 ins., is some careless lettering,

* Upon this Mr. Haverfield writes as follows: "Roman coins minted previous to the foundation of the Roman Empire (B.C. 27) are not uncommon among remains of imperial date. They occur, for instance, in numerous hoards of which the latest coins belong to the third century. Various reasons seem to have contributed to the survival of these coins in use. Some, like Antony's legionary *denarii*, probably remained in use because they were rather heavily alloyed, in accordance with Gresham's Law. Others, and among these we may class the Gellygaer specimens, may have reached Britain by way of trade at an early date and remained in circulation there. They are the *serrati bigatique* which a writer contemporary with the occupation of Gellygaer mentions as preferred by the natives in Germany even in his own day."

scored on the surface while the clay was yet soft, apparently with a piece of twig. It is partly obliterated, but it evidently begins with C and ends with VIII, and there are one or two intervening letters. The second letter resembles the Greek *lambda*, and upon the strength of this, the Rector reads the inscription as CLAVIII, and makes it to refer to the 8th Cohort of the Augustan Legion, the legion located at Caerleon. Mr. Haverfield regards it as simply a brickmaker's scrawl, indicating, perhaps, the number of bricks made; and

FIG. 22. OWNERS' MARKS ON POTTERY. ($\frac{1}{2}$).

he is inclined to read it, C R VIII. It seems to me that there is a letter between the R and the V. This brick has several footprints of a large dog, and it may be mentioned that such footprints were not uncommon on the Gellygaer bricks and tiles.*

As already intimated more than once, many objects of more recent than Roman age were turned up by the spade during the excavation. As a rule, it was easy to see at a glance that they were medieval or modern. But sometimes they were so intimately mixed with the Roman—doubtless through the action of burrowing animals and worms—as to mislead, or, at least,

* In a Welsh diary of 1822, by John Jenkins, Baptist minister of Hengoed, and now in the possession of the Rector of Gellygaer, is described an inscription which appears to relate to a centurial stone. The following is a translation :—"The above letters are on a stone which was found in an old wall in the Gaer, near the village of Gellygaer." The inscription, as given, is ›. DEMIO. The initial angular mark (frequently shown as a reversed C) stands for *centurio* or *centuria;* but, as Mr. Haverfield remarks, the centurion's name is either imperfect or misread

to puzzle, the finders. For instance, a small intaglio of cast glass was brought up from the Roman level. The first impulse was to cherish it as valuable, but its bust was soon observed to bear a suspicious resemblance to that of Queen Anne; in fact, I am assured that it is the sort of thing that frequently adorns the cheap gilt rings and jewelry sold at fairs and by street hawkers. More amusing were the conjectures that some of these modern introductions at the North-East Gate gave rise to. It has been mentioned that part of the remains of this gate were removed some forty-three years ago for the sake of the stone. The hollow thus left became a convenient dumping-place for rubbish, for during the excavation sundry pieces of common glazed pottery, rusty iron, cinders, mortar, cottage wall-plaster, some retaining its colour-wash, etc., were found there. The lime-plaster with its colouring suggested an important chamber over the gate, the residence of an officer, say; the glazed pottery further differentiated between its refinement and the austerity of the barracks; a piece of iron that suspiciously recalled a modern gridiron, was pronounced to be the look-out of the gate; in more iron was seen the remains of plate-armour; but the attempt to diagnose another piece broke the proverbial camel's back—it was the scarcely-rusted handle of a nineteenth-century bucket!

A large and representative selection of the 'finds' are now in the Welsh Museum of Natural History, Arts, and Antiquities, at Cardiff.

SECTION VIII.

The Period of the Fort.

WHEN, and by whom, the fort was raised, and when and why it was abandoned, are questions which do not admit of direct answers, seeing that history is silent as to Roman Gellygaer; still, it is possible, I think, to reduce these events to comparatively narrow limits of time. Gellygaer was about the centre of the territory of the Silures, that "naturally fierce people" whose resistance was only crushed after long years of warfare; and it is largely from the historical references to that people that we must draw our conclusions.

In A.D. 48, the whole of south Britain as far as the Severn was in the firm grip of Rome, and the then new governor, Ostorius Scapula, was paving the way for the conquest of the Silures, by quelling successively the less formidable Cangi, Brigantes, and Iceni. Two years later occurred that defeat of the Silures and capture of their leader, Caractacus, which is familiar to every school-boy. The next step was the reduction of this warlike people; but in this the governor was not successful, for Tacitus tells us that the "camp-prefect and legionary cohorts left behind to establish fortified positions among the Silures" were well nigh annihilated. The following year Ostorius himself died, worn out by the incessant struggle.

For the following quarter of a century the policy of the successive governors seems to have been to simply hold the Silures in check by confining them to their own territory. At length their subjugation was resolutely taken in hand and accomplished by Julius Frontinus (A.D. 75-7). This would be immediately followed by the construction of roads and forts; but as Frontinus was recalled in A.D. 77 or 78, it is more than probable that their completion fell under the administration of his successor, the famous Julius Agricola, whose first operation was the subjugation of the Ordovices of mid-Wales.

This sequence of events suggests three alternatives for the date of the Gellygaer fort:—(1) the campaign of Ostorius, A.D. 50-1; (2) that of Frontinus, A.D. 75-7; or (3) some later date.

With regard to the *first*, there is no proof that the camp-prefect and his cohorts actually erected any forts, nor is it likely they did so, considering how short and ineffective their occupation was. We know from the evidence of the coins, etc., that our fort was in use *after* the second conquest of Siluria, so if it was first erected under Ostorius, the remains should have shown indications of the quarter of a century interval between the two conquests; but they certainly did not.

With regard to the *third*—upon the gradual settlement of Siluria—the need of fortified positions in the interior would become less, as was the case with the country generally. Apart from this, there are reasons, which will be considered shortly, for thinking that Gellygaer was neither of late type nor of late occupation.

This leaves us with the *second* as the most feasible alternative, namely, that our fort was one of a series erected to hold the newly-conquered region under, or soon after, Frontinus. This is a view which has much to commend it, and, so far as I know, nothing to militate against it. The remains themselves tend to confirm this conclusion, also to show that the fort was of short, and, at the same time, continuous occupation.

The general plan is of early type for Britain, and contrasts with those of the bastioned series—Richborough, Lymne, Porchester, Burgh Castle, Cardiff, &c.—the building or re-building of which forts is attributed to a later period. Mr. J. P. Gibson, on the other hand, thinks that the Gellygaer masonry is late, from its analogy to the late work in the forts of the Wall, which is of smaller stones and less careful construction than the earlier. When we compare, however, the work of widely separated districts we must take into account the local conditions. No matter how skilful the Gellygaer builders may have been, they, perforce, had to use such material as was available—thin pennant stones; and it is difficult to see how their construction could have been improved.

The coins, few as were found, point to an early date and a short duration. The latest possible date of these, it will be observed upon referring to the list upon page 91, is A.D. 98; and it is noteworthy that later coins, though much corroded, show little trace of wear. Leaving the Republican coins out of the question for the moment, it is significant that all the Imperial coins should be confined to a space of only twenty-nine years at most, A.D. 69-98. Now had the fort continued in use for, say, a century later than the last date, the chances are that coins of several subsequent emperors, notably, Trajan, Hadrian, and Antoninus Pius, would have been found in great numbers, while if the occupation continued to the general withdrawal from Britain, those of the "Thirty Tyrants" and of the Constantines should have turned up in vastly greater abundance. The inference, therefore, is that Gellygaer was abandoned shortly after A.D. 98. The large proportion of Republican coins, two out of seven, is a further hint in the same direction; that coins of that period should continue in circulation under the *earlier* emperors, was to be expected.

Then there is the fragment of cylindrical Samian bowl. It is true that this cannot throw light upon the duration of the occupation of the fort, but if the early disappearance of these vessels in Britain, as given on page 80, be accepted, the early origin of the fort must also be accepted.

The structural remains decidedly favour a short occupancy. Nothing was found during the excavations to suggest that any portion of the fort had been rebuilt. There were signs, it is true, of alterations, but proof there was none, that these had been necessitated by the effects of age or decay. On the contrary, the masonry everywhere was singularly fresh-looking, even that of the projecting pilasters of the gates, exposed as it was to wear and mishap, still retained its dressing in almost original sharpness.

Some features revealed by the excavations, as the heaps of broken brick for concrete (pages 27, 40, 57), the general absence of definite floors (pages 29, 55, 66), and the circumstance that only several of the gates and towers gave evidence of having been

tiled, suggest the question whether the fort was ever finished at all! But against this must be urged certain signs of use, as the worn condition of the roads and of the sills of the gates, and the wear—slight, it is true—on the steps of Building VIII., and those leading up to the rampart at the South-West Gate. The condition of the gate-sills might, indeed, be advanced to favour a long occupancy, but the rapidity with which they would wear down would, of course, depend upon the traffic. The observed amount of wear might easily have been reached in a few years, and it is probable enough that part of it might have been effected after the fort fell into disuse, by the carting away of building material. The absence of sculptured stones and inscriptions, and the comparative paucity of the pottery and the metallic objects further tend to the same conclusion—the shortness of the occupation.

Then, as to the termination of that occupation, there was nothing found to warrant a belief that the fort was taken by violence and its garrison overwhelmed. No human remains were brought to light. There certainly were indications of a conflagration in the eastern half, but such a disaster does not necessarily imply the stress of war.

Singly, these lines of reasoning may be open to question, but in the aggregate they furnish an argument of some weight to the effect that the Roman fort of Gellygaer was one of a series erected after the successful campaign of Frontinus against the Silures, with a view to their complete subjugation and the military administration of the conquered territory; and that after a short occupation—a quarter-of-a-century, maybe—it was abandoned, all serious opposition to Roman rule having apparently ceased.

Appendix.

I.—THE FORTS AND THE HYGINIAN CAMP COMPARED.

Mr. F. Haverfield, F.S.A., in the following communication to the author, succinctly expresses the present state of knowledge in this respect:—

"It is natural and customary, in estimating the results of the excavations of Roman forts like Gellygaer, to compare the facts revealed by the spade with the description of the Roman camp given by Hyginus, or whoever wrote the pamphlet *de munitionibus castrorum*. And it is convenient to adopt from Hyginus the terms which he employs to denote various portions of the camp—*prætorium*, *porta prætoria*, *prætentura*, *strigae*, and the rest. But the process is accompanied by dangers; for here, as so often, our literary and archæological evidences relate to different things. Hyginus describes the large temporary encampments of armies on the march, capable of holding some 30,000 men, and covering eighty or a hundred acres. Archæological research has thrown no light on such encampments. The 'camps' which we know by excavation are distinct from these: they form two other classes of 'camps,' each with its own characteristics and object—(*a*) the large permanent fortress, garrisoned by a legion (5,000 infantry), and covering forty-five to fifty-five acres, and (*b*) the small permanent fort, like Gellygaer, usually garrisoned by auxiliaries, and varying in size from (roughly) three to eight acres. All three classes—the Hyginian encampment, the legionary fortress, the small fort—belong to the same period of time. The pamphlet of Hyginus, uncertain as its date is, lies within the limits of the second and early third centuries, and was not improbably written near the beginning of the second century. The forts and fortresses known to

us by excavation may be dated to one or other part of the same epoch, and they appear to have been constructed on the same models throughout it. But though contemporary, the three kinds of 'camps' agree very slightly. Some general features are common to them—rectangular outline, rounded corners, number and position of gates—and once or twice we can trace a common terminology. One inscription mentions the *porta prætoria* of a small fort in Roumania, and another the *prætentura* (as it seems) of a small fort on Hadrian's Wall. But the purposes of the three kinds of 'camps' are so different that one would not expect great similarities, and, as a fact, their internal details differ widely. The chief internal feature of the Hyginian encampment is the general's tent or lodging, *prætorium* by name, planted in the centre of the camp. But the corresponding spot in the permanent forts and fortresses is not occupied by the commandant's lodging or residence; that is traceable elsewhere, and the centre is occupied by an edifice of obvious importance and elaborateness, which certainly was not a residence. Possibly it reproduces in some way the altars, *auguratorium*, and tribunal, which formed (as it were) an official annexe to the Hyginian *prætorium*, but in that case the annexe has usurped the site of the proper *prætorium*. What it was called we do not know for certain. By modern writers it is usually styled 'prætorium.' But no direct evidence exists to prove that the term *prætorium* was applied to any edifice in the small forts, and if we assume that it was used, we have still to go on to decide what edifice was the *prætorium*. If the central building, the obstacle arises that everywhere else in Latin, *prætorium* means the residence of the general or of someone in something like a general's position. If the commandant's lodging, the obstacle arises that the *prætorium* is not in its Hyginian position. Others, quoting Hyginus, have called the central building the *Forum*, but in reality, the actual text of Hyginus does not contain the word *forum*. We have, perhaps, too little evidence as yet to decide this point; the one thing plain is that in respect of the central element of the camp, Hyginus and the small forts are widely at variance. They agree no better in respect to the buildings round the centre, the *latera prætorii* and *quæstorium* of Hyginus, and even where we find the

same name used in both Hyginus and the small ports—for example, *porta prætoria*—we cannot be sure that the name means the same in each case, for (as Mommsen has observed) it is not easy to determine which is the prætorian and which the decuman gate in a small permanent fort."

II.—ARCHÆOLOGICAL RESEARCH.

The need for more thoroughness and system is well put by Mr. John Garstang in a paper *On Some Features of Roman Military Defensive Works*, in the *Transactions of the Historic Society of Lancashire and Cheshire*, Vol. LII.

"Great though the progress of investigation has been in recent years, much yet remains to be done, or to be re-done in more systematic fashion, before that can be effected. Each branch of archæological evidence requires separate and special study. The pottery, to the neglect of which Mr. Haverfield has called attention in *The Athenæum*, is still to be classified and reduced to types suitable for reference. The grouping of coins, again, the nature of fortifications and defences, the types of masonry, construction, architecture and kindred details, are still to give their evidence. There may then evolve a relative sequence, which the more direct testimony of a dated inscription or literary reference may make absolute. The providing of material in this way, to be available for study, is still to be regarded as the duty of the investigator. Excavation is a science, and its methods must be systematised. Those principles of research which Professor Petrie has pioneered in Egypt, cannot be too soon adopted in our own country. The uncovering of ruins or the disentangling of confused foundations is a small part merely of the excavator's labours.

"These points suggest some of the limitations that face the student of Roman Britain, yet other difficulties also beset him. Each report of excavations appears in new guise, and treats new theories in new ways. Plans of buildings and the like, numerous

and often intelligible though they be, appear to every conceivable scale, and in every possible combination of light and shade or hatching. Sometimes this is caused by a mere eccentricity of the publishers; more often by want of understanding as to the best system to adopt. The consistent character of the plans yearly published by the excavators of Silchester is a conspicuous exception. Cannot the same august society which patronizes that undertaking set an enduring example by endowing also a 'Corpus of plans of Roman works in Britain,' to a scale and style fixed after due consideration, that shall be suitable for imitation by local societies and private individuals also."

III.—TYPES OF ROMAN FORTS.

The following extract from the *Roman Coast Fortresses of Kent*, by Mr. George E. Fox, F.S.A., in the *Archæological Journal* for 1896, is of peculiar interest to local readers, for the Gellygaer fort and Cardiff Castle are remarkably fine examples of the two types, neither of which had been investigated at the time he read the paper:—

"There are two very definite types into which Roman military stations may be divided. The first shows a rectangular area, sometimes approaching a square, surrounded by a wall unbroken by any internal projection; except in rare instances the towers at the gateways had no external projection. At the same time, square towers occur internal to the wall, between the gateways, and sometimes in the internal angles, which are always rounded. Sometimes these towers at the angles are reinforced by a widening of the wall, somewhat resembling a platform, for the whole length of the curved line. Occasionally the wall serves as a retaining wall to a bank of earth raised against it on the inside, which bank afforded ample room for placing military engines, and allowed space for the concentration of the defenders at any given point. Generally speaking, the walls of camps of this first type are not

so thick as those of the second, some not being more than 5 feet in width. The gates of these stations consist either of a single arch, or double arches, according to their importance, the width of each arch being from 10 to 12 feet. They are always flanked by towers. Between the towers and over the archways, a gallery with windows, back and front, was carried; occasionally, if the gate was a deep one, a chamber took the place of the gallery between the towers.

"As a rule, a ditch (sometimes two, or even more ditches) ran at the foot of the walls with an intervening berm, and completed the defences.

"It would occupy too much time to enter into the internal arrangements of camps of the first type, though they offer a most interesting subject for study. These notes, however, must be confined to a description of the defences only.

"In Britain, examples of the first type are to be found in the stations on the Wall of Hadrian, and in the great Legionary camp, at York, and also to these, amongst others, may possibly be added the largest of the camps in Eastern England, the *Venta Icenorum* (Caister, near Norwich).

"The type of fortified station here described was certainly in existence in the reign of Hadrian (A.D. 117-138). How much later it prevailed it is not easy to say; but towards the end of the third century it seems to have given place to another, the second type mentioned. In this latter, the unbroken line of enclosing wall was no longer to be seen; instead, the towers, which before had been as a rule internal, now boldly projected from the line of enclosure, and the principle by which every part of a fortification should command and defend the other had been definitely adopted and acted upon.

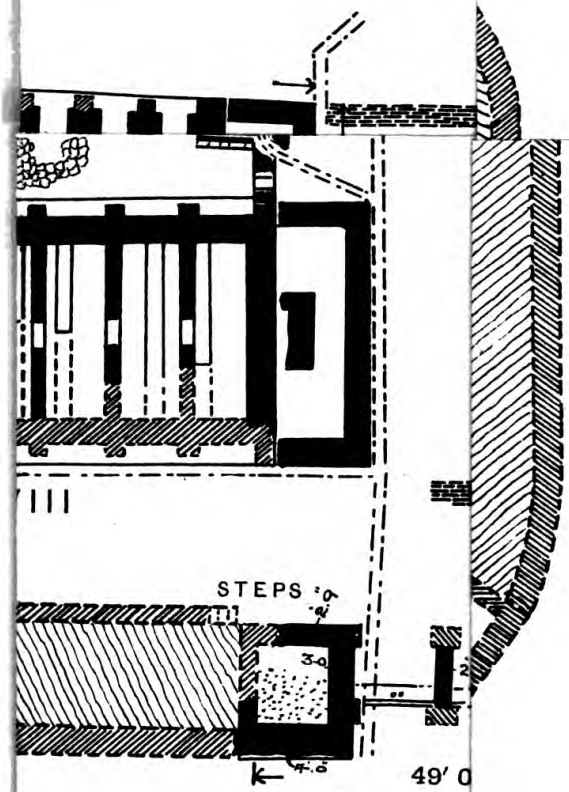
"A fine and remarkable example of the second type is to be seen in the walls of Rome itself, begun by the Emperor Aurelian, and finished by Probus A.D. 280, much of which wall still exists. The wall is 12 feet thick in its lower portion, and constructed of solid concrete faced with brick. The square towers occurring at frequent intervals with which it is studded projected as much as 13 feet from its face. The lower part of the towers, like the wall, is solid. The gates of the second type did not essentially differ from those of the first, but the square towers on either side of the arches of entrance were now

more often exchanged for semi-circular ones with slightly prolonged sides. In fact, as the years went on, it was found that the last-named form of tower was stronger and offered greater advantages for defence than the earlier square tower, against whose angles the battering ram could be used with effect. The semi-circular tower then came commonly into use, though the square tower was never abandoned. Other forms for towers were invented. In the great palace fortress of Diocletian at Spalato, the gateway towers are octagonal, while those at the angles and the intermediate ones are square.

"In this country the towers of the modified semi-circular plan mentioned are almost invariably solid, containing no chambers; they do not rise above the rampart walk, nor are they of any great size. They may be found added to pre-existing walls, or may form part and parcel of the walls of which they are the main defence. In the latter case the walls are generally of considerable thickness, and the structure may fairly be considered one of comparatively late date."

ORT, GELL

NORTH-WEST



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	£	s.	d.	£	s.	d.	£	s.	d.
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James Bell	2	2	0	—			—		
British Association for the Advancement of Science	—			—			5	0	0
The Most Noble the late Marquess of Bute	31	10	0	—			—		
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Cambrian Archæological Association	—			—			10	0	0
Cardiff Corporation Museum Committee	25	0	0	—			25	0	0
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E. W. M. Corbett, J.P.	3	3	0	—			—		
J. S. Corbett	5	0	0	—			—		
John Cory, J.P., D.L.	5	5	0	—			—		
Richard Cory, J.P.	5	5	0	—			—		
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C. H. James, J.P.	5	5	0	5	5	0	*20	15	3
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W. P. James	1	1	0	—			—		

* To pay for Illustrations in the Memoir.

	1900.			1901.			1902.		
	£	s.	d.	£	s.	d.	£	s.	d.
E. Jenks	0	10	6	—			—		
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Total	£137	0	6	82	17	0	90	0	3

GELLYGAER EXCAVATIONS FUND.

Summarized Account of Receipts and Payments from 8th November, 1899, to 2nd December, 1902.

RECEIPTS.

	£ s. d.	£ s. d.
To Contributions as per list, viz. :—		
During the year 1900	137 0 6	
,, ,, 1901	82 17 0	
,, ,, 1902	90 0 3	
		309 17 9
,, Balance—Deficit		92 15 10
		£402 13 7

N.B.—Actual Deficit, 2nd December, 1902, as per above account 92 15 10

Estimated further cost, mainly in connection with the publication of the Memoir 40 0 0

Total Estimated Deficit, for which the Cardiff Naturalists' Society is responsible .. £132 15 10

PAYMENTS.

	£ s. d.
By Wages	280 0 8
,, Cost of Filling-in—Contract and Extras ..	80 0 0
,, Rent	20 0 0
,, Other Expenses	22 12 11
	£402 13 7

WENTWORTH H. PRICE, F.C.A.,

Hon. Treasurer of the Cardiff Naturalists' Society.

Cardiff, 2nd December, 1902.

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