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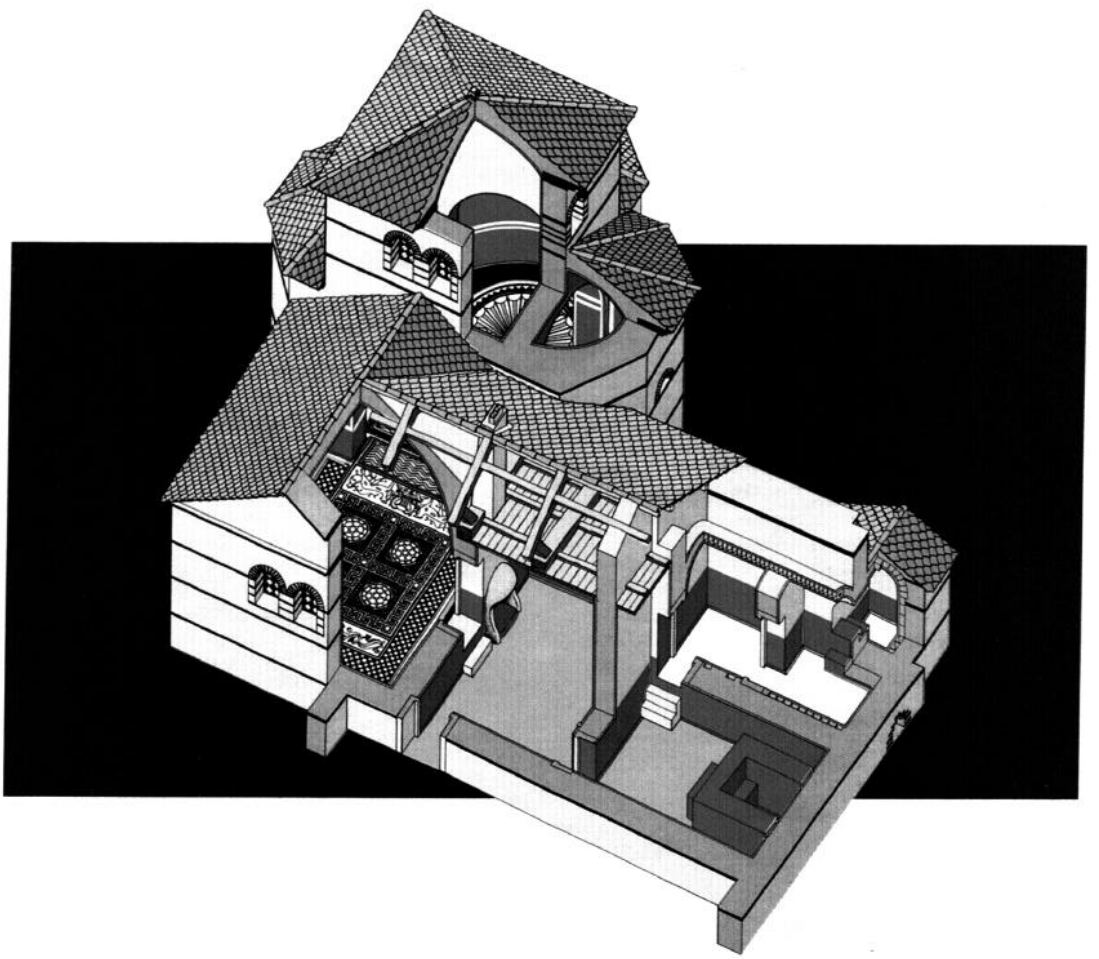
ARCHITECTURE IN ROMAN BRITAIN

Edited by **PETER JOHNSON** with Ian Haynes



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Front: The tri-conch from Littlecote Roman villa (drawing by Luigi J Thompson)
Back: East abutment and tower of Chesters Bridge, Northumberland, with Hadrian's Wall in the background (photo: Paul Bidwell)

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Summary

Architecture in Roman Britain is drawn from the proceedings of a conference organized by the Roman Research Trust and held at the Museum of London in November 1991. It contains four sections, dealing with external decoration, the elevations of buildings, military architecture, and British manifestations of the architecture of the later Roman Empire. Some of the most important recent work that is serving to change prevailing ideas about provincial Roman architecture will be found here, together with an overview by Prof J J Wilkes which puts it within its imperial context.

Examination of the evidence for the decoration of building exteriors reveals that even the most functional architecture in Roman Britain was not drab. Evidence is presented for the decorative use of paint, plaster, and even pointing in walls, together with the careful selection of coloured building materials. Dramatic finds of collapsed façades at Meonstoke and Redlands Farm, together with the structural realities of contemporary building technology, help form a three-dimensional picture of the architecture of the province. Moreover, that third dimension now seems likely to have included upper storeys for some buildings.

The Roman army were important contributors to Romano-British architecture, especially through their own military works, such as the legionary base at Chester. Recent work has enabled archaeologists to reconstruct the appearance of the curtain wall there, as well as identify surviving examples of the columns that adorned the verandas of legionary barrack blocks. A large timber building constructed in the Flavian period at Chester, apparently never completed, was reconstructed in stone in the 3rd century, when all trace of it had apparently disappeared; the possibility that some sort of plan existed is examined. At Birdoswald on Hadrian's Wall, recent large-scale excavations have shown the development of a central area of the fort through the Roman period and beyond, into continued sub-Roman occupation and exploitation of the site. The army's influence extended beyond their immediate sphere of interest, however, and the bridges belonging to the (primarily military) network of Roman roads in Britain are considered in the context of this volume.

In the later Roman period, the large courtyard house in the southern part of the fort at South Shields, interpreted as a residence for a senior officer, shows marked influence upon its design from the Mediterranean. A similar story is told by an examination of a particular types of elaborate structure in 4th century British villas.

Sommaire

L'architecture de La Grande-Bretagne romaine est un article extrait des actes d'un congrès organisé par le Roman Research Trust [Trust pour les recherches romaines] qui eut lieu au Musée de Londres en novembre 1991. Il comprend quatre sections traitant respectivement de decoration extérieure, des élévations de bâtiments, de l'architecture militaire et des manifestations britanniques de l'architecture de la fin de l'Empire romain. On y trouvera certains travaux récents et très importants qui servent à changer les idées courantes sur l'architecture provinciale romaine; on y trouvera également une vue d'ensemble, rédigée par le Professeur J J Wilkes qui sert à la situe dans son contexte imperial.

L'étude des indices de d&oration des extérieurs de bâtiments révèle que même l'architecture la plus fonctionnelle de la Grande-Bretagne romaine n'était pas terne. On présente des preuves de l'utilisation à des fins décoratives de la peinture, du plâtre et même du jointoiement des murs ainsi que de la selection attentive de matériaux de construction en couleurs. De spectaculaires découvertes de façades effondrées à Meonstoke et Redlands Farm ainsi que les réalités structurelles de la technologie contemporaine du bâtiment nous aident à former une image en trois dimensions de l'architecture de la province. En outre, il semble probable que cette troisième dimension ait compris les étages supérieurs dans le cas de certains bâtiments.

L'armée romaine contribua de manière importante à l'architecture romano-britannique, particulièrement à travers leurs propres constructions militaires, comme la base legionnaire de Chester. De récents travaux ont permis aux archéologues de reconstruire l'aspect de la courtine de Chester et également d'identifier les exemples survivants des colonnes qui agrémentaient les verandas des casernes des légionnaires. Un grand bâtiment en bois, construit à Chester durant l'époque flavienne et apparemment jamais terminé, fut reconstruit en pierre au 3ème siècle, quand toute trace du bâtiment avait apparemment disparu; on étudie la possibilité qu'il y avait eu un plan. A Birdoswald, sur le mur d'Adrien, de récentes fouilles à grande échelle ont indiqué le développement d'une zone centrale du fort durant 1'époque romaine et ultérieurement, durant l'occupation et l'exploitation qui ont continue durant la période sub-romaine du site. L'influence exercée par l'armée dépassait toutefois sa sphere d'intérêt immediate et les ponts appartenant au réseau (principalement militaire) de routes romaines en Grande-Bretagne sont examines dans le contexte de ce volume.

A la fin de l'époque romaine, la conception de la grande maison à cour de la partie Sud du fort de South Shields, interprétée comme étant la residence d'un officier supérieur, témoigne d'une influence méditerranéenne marquee. L'examen d'un type particulier de structure très ornée qu'on trouve dans les villas britanniques du 4ème raconte une histoire similaire.

Zusammenfassung

Die Publikation *Architektur im Romischen Britannien* beruht sich auf den Bericht einer Konferenz, die, organisiert vom Roman Research Trust (Romischer Forschungstrust) im November 1991 im Museum of London (Museum von London) stattfand. Das Buch ist in vier Abschnitte geteil: 1. Das außere Zierwerk, 2. Der Aufbau der Gebäude, 3. Die Militär-Architektur und 4. Die Manifestierung britischer Architektur im Spät-Römischen Reich. In diesem Buch befinden sich such die bedeutendsten, neuen Arbeiten über die römische Provinzial-Architektur einschließlich einer Übersicht von Prof J J Wilkes, die das Ganze in einen imperialen Kontext versetzt.

Bei einer Untersuchung des vom äußeren Zierwerk stammenden Beweismaterials ergibt es sich, daß sogar die zweckmäßigste Architektur im römischen Britannien nicht unschön war. Beweise, wie Farbe, Verputz und sogar Fugenverstriche an den Wanden zusammen mit dem sorgfältig gewählten farbigen Baumaterial benützt wurden, werden hier aufgezeichnet, Dramatische Funde eingefallener Fassaden bei Meonstoke und Redlandsfarm zusammen mit der strukturellen Wiedergabe der zeitgenossischen Bautechnologie verhelfen sich ein dreidirnesionales Bild der römischen Architektur machen zu konnen. Darüber hinaus nimmt man jetzt an, daß zur dritten Dimension such obere Stockwerke gehörten.

Die römische Armee war ein wichtiger Beiträger zur römisch-britischen Architektur, besonders aber such durch ihre eigenen militärischen Bauten, wie zum Beispiel der Legionär-Campus bei Chester. Die letzten Forschungen verhalfen den Archäologen sowohl ein Bild des Wandvorhanges zu rekonstruieren, als such erhalten gebliebene, die Verandas der Legionärbaracken schmückende Säulenexemplare zu identifizieren. Ein großes, in der flavianischen Periode, bei Chester gebautes Gebäude wurde offensichtlich nie vollendet. Man nahm schon an alle Spuren seien verschwunden, als es wieder auftauchte. Es wurde im 3. Jahrhundert aus Stein rekonstruiert. Das eventuelle Vorhandensein eines Planes wird such untersucht. Die letzten großen bedeutenden, bei Birdoswald an der Hadrian-Mauer stattgefundenen Ausgrabungen zeigen den Werdegang eines zentralen Gebietes der Festung durch die römische Periode und darüber hinaus in die weiterbestehende spät-römische Zeit, in der die Römer wohnten und des Gelände nutzten. Jedoch ging der Einfluß des Militärs über seinen unmittelbaren Bereich seiner Interessen hinaus und darum werden im Kontext dieses Buches auch Bruclen (hauptsächlich militärische), die zum Netze der römischen Straßen in Britannien gehörten, untersucht.

Der Entwurfdes großen Hofhauses im südlichen Teil der Festung bei South Shields, und als Wohnung eines hochrankigen Offiziers in der spätrömischen Periode identiflziert, zeigt deutlich den Einfluß des aus dem Mittelmeer kommenden Stils. Eine ähnliche Geschichte kann eine Überprüfung einer bestimmten Sorte von komplizierter Strukturen an Villen im 4. Jahrhundert in Britannien, erzählen.

1 Introduction

J J Wilkes

Roman Britain - or rather *Britannia* - was a province of the Roman Empire, embedded in the political and economic structure of that ancient superstate for more than three and a half centuries. There is no evidence that at any period between the Claudian conquest and the collapse of the western Empire in 406 the material culture of the province as a whole, which includes its architecture, acquired an identity that was at all distinguishable from the rest of the Roman Empire.

If exceptions to this statement are to be sought then one can acknowledge that in the design of temples and, in a few cases, the design of theatres, the Celtic provinces (Gaul, Germany and Britain) reveal a tradition that was quite distinct from that of the Graeco-Roman world. Alongside the Roman version of the Greek peripteral temple there continued in Britain a taste for a local tradition for a square chamber surrounded by an ambulatory, the whole set within a much larger precinct or, to use the familiar Greek term, *temenos.*

A famous major public building which differed from the classical model is the *Verulamium* Theatre, excavated by Kathleen Kenyon in 1933-4 (Kenyon 1935, 213-4). In its original form the design suggests that it was intended to function more as an arena, than as a theatre in which the attention of the spectators in the *cavea* was concentrated on the stage, located towards the rear of the *orchestra.* This arrangement was soon modified to make the theatre conform more closely to the Roman development of the ancient Greek original, a tall semi-circular structure, with the straight side formed by a stage building that rose to the same height as the seating of the *cavea.* In Britain, municipal theatres of the Roman type have been identified at Canterbury and Colchester.

The evidence for private houses, although relatively abundant, is more difficult to interpret but there does seem to be present an understanding of, and an aspiration towards, the town house of classical Roman design. Nor, especially in the light of recent discoveries, are there any grounds for disparaging the taste for, and the realisation of, interior decor in Britain during the Roman era as markedly inferior to what has survived in other provinces. The same may apply to the exteriors of a wide range of British buildings, an important theme in this volume. Several papers (Blagg, p 9, Bidwell, p 19 and Neal, p 33) show how far our knowledge of the external appearance of these structures has progressed. This progress owes much to the discovery of collapsed walls at sites such as Redlands Farm (Keevill, p 44), Meonstoke (King, p 56) and Birdoswald (Wilmott, p 93).

In recent years several cities in Roman Britain have revealed more of their planning and of individual buildings. In the case of the province's three veteran colonies, Colchester, Gloucester and Lincoln, the vacated legionary fortress not only determined the location of the new settlements but also, at least in the early years, their internal planning and even the design of houses. Several other cities, which within a few years of the conquest had become the central place, the focus of government, economy and religion, for a native community, have now revealed more of their character and internal planning, with street-grids, centrally located public buildings, *fora,* basilicas, temples and baths. So far we have no certain example of the *macellum* (likely examples have been identified at *Verulamium* and Wroxeter), the produce market, or of a dry indoor market, but they undoubtedly existed since purpose built structures of this kind were normally essential to a city's dominant role in the local economy. We can now see more clearly the role which an early military occupation may have played in locating such major centres for the native communities, the *civitates,* from the discovery of legionary fortresses beneath the civic remains at Exeter and Wroxeter. In the matter of the major public buildings, a consistently Roman character of urban architecture can be recognized in the *basilica* at Silchester, recently examined by Professor Fulford, and in the great *basilica* and *forum* complex of Roman London, whose reconstructed plan has been a triumph for Peter Marsden and his colleagues at the Museum of London. It is perhaps to this category that the remarkable stone building discovered at Stonea and discussed in this volume belongs (Potter, p 70).

It is well known that what cuts us off from a fuller understanding of architecture and its development in this province of ours is the scarcity of documentary evidence, in the form of inscriptions, which can, and in other areas of the Roman world do, tell us so much, not merely about the date or purpose of this or that construction but also about the builders and their aspirations. Even compared with the neighbouring provinces on the

continent, where native traditions were seemingly no more receptive to Roman culture, the cities of Britain are strangely silent over their civic affairs. Were there some inherent weaknesses in the social structures and organization of the province which now deny to us an understanding of the role of civic benefactors, named individuals who asserted their position at the top of society, in the same manner that sponsors of wholesome cultural projects, both corporate and private, claim that position today?

To give some indication of the knowledge which we in Britain do not possess we may consider four examples from elsewhere in the Roman world:

a) Early in the first century BC the city of *Aletrium,* a country town in Latium around fifty miles east of Rome, made a permanent record of the exceptional benefactions by one of its citizens:

> Lucius Betilienus Varus, son of Lucius, in accordance with a vote of the senate, took charge of the construction of the works which are recorded below: all the streets and alleys in the town, the colonnade along which people walk to the citadel, a playing-field, a public clock, a produce market, the stuccoing of the town hall, seats, and a bathing pool. He constructed a reservoir by the gate, an aqueduct about 340 feet long leading into the city and to the hill of the citadel, along with the (supporting) arches and good quality water pipes. As a reward for these works the senate elected him censor twice and exempted his son from the liability for military service, while the people as a whole rewarded him with a statue set up above his title of Censorinus.
>
> *(CIL* 1 ed 2 no 1529)

It may well be that the 'euergetism' of Betillienus occurred far away in central Italy and more than one hundred years before Britain became a province. Yet the social and economic structures, through which local office-holding families applied their disposable wealth to maintain their position in society and in which there was already an element of compulsion, will have been the same that produced the buildings in the cities of Britain during the first two centuries of Roman rule. Moreover, most of the amenities and other works listed can be matched in the archaeological record from the cities of our province.

b) Around two hundred years later, across the Adriatic in what is still officially Yugoslavia, the Flavian emperors had organized a Roman city *(municipium)* among one of the local Illyrian peoples. The creation of the new city was a formal enactment *(lex)* of the Roman state, a constitution which laid down strict rules for every aspect of city life. We know this from the constitutions of several cities established in Spain around the same time which have survived on bronze panels. The leading families, identified through a register of landownership, were granted Roman citizenship, with the result that almost all of them have the imperial gens name Flavius. The name of the town was *Doclea,* whose ruins lie not far from Titograd in Montenegro, from which have been recovered several inscriptions recording the dedication of new civic buildings. The *forum* and *basilica* complex was a modest affair, but still precisely the sort of building that the governor Agricola is reported around the same time to have been urging upon the Britons. In *Doclea* the native rulers, now Roman citizens, demonstrate their position by a family statue:

> For Marcus Flavius Balbinus, the son of Marcus of the voting-tribe Quirinus, who lived for fifteen years. To whom on his death the grand council of decurions decreed a public funeral, a statue in the forum, and to whom the council of the Docleates had voted as many public offices as the law permitted him to hold and also an equestrian statue. Marcus Flavius Fronto and Flavia Tertulla, parents, in their son's honour paid for the cost of gilding the statue.

Another inscription, from the architrave of the *forum,* informs us that the same persons paid for the entire construction of the *basilica* in memory of their son Flavius Balbinus *(CIL* III 13280-1; Wilkes 1969, 260, 371). We can meet the ancestors of these native families who dominated the new Roman city in the epitaphs of the chiefs *(principes),* without the Roman citizenship, who ruled from their fortresses *(castella)* in different parts of the tribal territory.

c) The language and dedication formulae of the two texts quoted above give the impression of a spontaneous gesture on the part of wealthy members of these communities. This form of public benefaction, in essence an obligation to register in permanent and visible form an individual's social status, is to be found in many cities of the Roman Empire. Later, towards the end of the second century AD when the Roman Empire began to get into difficulties after the plague followed by the protracted northern wars under Marcus Aurelius (161-80), the element of direct compulsion on the part of the imperial authorities, hitherto in the background, now comes into the fore. Provincial governors insisted that city buildings and thoroughfares, and the essential utilities, be kept in working order and good repair if not actually renewed. An example of the new dirigist tone comes from *Caesarea* (Cherchel in Algeria), the principal city of *Mauretania Caesariensis:*

> [in honour of the emperors Severus and Caracalla . . . the road leading to the gate] which, for those who were entering, by its disgusting and unworthy state detracted from the appearance of their beautiful city, on the advice and at the prompting of the governor Publius Peregrinus, (the citizens) had restored the stone paving to a condition that was appropriate to their splendid city, the former beginning the work and also dedicating it upon completion.
>
> *(CIL* VIII 10979 cf 20982; *ILS* 5376)

d) We are well informed on the corruption and inefficiency which prevailed in the cities of the Roman Empire, particularly in regard to the financial arrangements for the provision and upkeep of public buildings and similar projects. Many will be familiar with the correspondence between the emperor Trajan and his governor the Younger Pliny (collected in the tenth book of the latter's Letters), in which we learn of how much had gone wrong in the cities of the province of *Pontus* and *Bithynia* in northern Asia Minor (NW Turkey) in the years AD 110-12. Pliny was the emperor's specially appointed governor (he was far too senior for such a province) and represents an early example of direct interference in the affairs of local cities which, in name at least, were supposed to be autonomous. (We have ourselves witnessed an increasing role by central government in the affairs of local government.) Yet it was not all corruption and dishonesty. The fourth document which we might bear in mind tells us how a project got into difficulties. For us in Britain it is a useful reminder of the role, potential or actual, that personnel of the provincial army might have played in some of the more specialised projects of civic architecture and engineering. At *Saldae,* a small port on the coast of North Africa (Bejaia in Algeria), the project to drive an aqueduct channel through a hill had got into serious difficulties. A military surveyor, Nonius Datus, veteran of the Third Legion Augusta which was stationed in the same province, was requested to return to the site and rescue a project for which he had undertaken the original survey. We learn of what had happened in his own words from the hexagonal monument he erected later at his old military base *Lambaesis:*

> I set out and was attacked en route by bandits. My companions and I were robbed of everything and badly injured. I reached *Saldae* and met the provincial governor Petronius Celer. He took me to the hill where they were weeping over the tunnel and were on the point of giving up the project. The reason was that the total distance bored had actually exceed the total width of the hill. It appeared that the tunnellers had strayed from the correct line, in that the upper tunnel had wandered to the right, that is towards the south, while the lower had also strayed to the right, in that case towards the north. The surveyed line across the hill passed precisely from east to west. Lest there be any confusion the terms "upper" and "lower" should be understood thus, the upper is where the water enters, the lower where it flows out. When I had set out things so that each should know how much tunnelling there remained to be done, I assigned the task as a competition between an auxiliary unit of spear-men and marines from the fleet and as a result they soon met up to complete the perforation of the hill. Then I, who had been responsible for the first survey, marked out the water channel and set underway its construction according to a survey which I had given to the governor Petronius Celer. On completion the work, with the water already flowing, was dedicated by the governor Varius Clemens. (Certified flow) of five modii.
>
> *(CIL* VIII 2728; *ILS* 5795; Landels 1978, 52-3)

Britain is not altogether devoid of epigraphic evidence for its architecture from the Roman era. Yet if we remind ourselves of perhaps the two best known documents, the *forum* inscriptions of *Verulamium* of AD 79 (Wright 1956, 146-7, Pl XIX) and of Wroxeter of AD 129 *(RIB* 288), they seem to conceal more than they reveal. Both texts are beautifully carved by trained stonecutters having been earlier laid out for spacing by someone who knew all the subtleties of the imperial titulature, what could be abbreviated and what could not, the process known as *ordinatio.* But where are the local people, the local magistrates and other municipal worthies whose responsibility such projects will undoubtedly have been? The fragments of the *Verulamium* text leaves no doubt that Agricola the governor appeared in the text but not even that high official appears on the Wroxeter inscription of fifty years later, merely the full styles and titles of the emperor Hadrian and the name of the city, *Civitas Cornoviorum.* This contradictory state of affairs has been made even more remarkable by the high level of literacy and the quality of written Latin revealed in the writing tablets from *Vindolanda* (Chesterholm) near Hadrian's Wall which date to around the year AD 100. Though they were produced in a military context there is enough general evidence for the state of literacy in the rest of the province (temple curses, writing tablets and graffiti on tiles etc) to suggest that not only the native upper classes are also likely to have been communicating with each other through the medium of written Latin. But perhaps we should return to our theme of architecture.

Vitruvius composed his ten books on architecture *(De Architectura)* around half a century before Britain became a Roman province. His writings are a unique source for the mentality of Roman architects and are particularly valuable for the stress that he lays on what nowadays we would call environmental factors, which the Roman architect was evidently expected to keep in mind when planning his commissions. For example, in choosing the site for a city health was an important consideration: it should be far away from marshes and there should be no extremes of climate, since variations between heat and cold are harmful to city dwellers (1.4). Moreover granaries and buildings intended to contain produce should not be exposed to the sun in a manner that would cause great fluctuations in temperature. We learn how the ancients went about selecting the site for a settlement or military camp. Cattle which had fed in the area were slaughtered and their livers examined. If there was anything abnormal another sample was taken to see if this was due to disease or to the food they had eaten. If the latter the site was rejected on the grounds that food and the water supply were infected (1.4.9).

The orientation of streets should also be governed by climatic conditions, and it was important that winds should be excluded from the side alleys on which most dwelling houses were situated. This makes for a healthy town, to which people would actually come for relief from ailments caused by cold winds (1.6). Similarly the location of the principal temples should be in part determined by the character of their worship: naturally a high place was appropriate for the state divinities of Rome, the triad of Jupiter, Juno and Minerva. Mercury should be in the *forum* or market, Apollo and Bacchus near the theatre, while the shrines of Venus, Vulcan and Mars should be outside the city for reasons of moral temptation, the hazard from fire and the need to be near the military parade ground (1.7). The size of the *forum* should be proportionate to the number of inhabitants, not too crowded and not too deserted, while proportions of the open space should be around 3 : 2, length to breadth. Basilicas should naturally be near to the *forum,* and placed in the warmest possible quarter, to make meetings there tolerable all the year round. The council chamber should have a height one and a half times its breadth. The inside of the walls should have a decorative moulding at a point halfway up their height, since without this the voice of a speaker will rise and become lost but with the mouldings will be held down and will be intelligible (5.1). The siting of a city's theatre and its orientation was a matter requiring careful consideration. Since whole families sit quite still for long periods in the theatre the pores of the body are open and are exposed to unhealthy vapours. Nor should the theatre face south since the sun can be too strong, so that the air is trapped and will not circulate (5.3). Similar factors are considered by Vitruvius in the siting and orientation of a private residence, where the location of the principal rooms within an overall plan should be governed by landscape, sunshine and the prevailing winds. Moreover the design of a house should take account of the needs of the owner, according to profession, trade or status. In the matter of the rooms of the house the architect distinguishes between apartments meant for the householders themselves and those 'shared in common with outsiders'. The private rooms are those into which nobody has the right to enter without an invitation, such as bedrooms, dining rooms, bathrooms, and the like. The common rooms are those which visitors to the house have the right to enter, even without an invitation, that is entrance halls, foyers and courtyards. Ordinary people do not need entrance halls, reception rooms, and offices, since they are more likely to discharge their social obligations by going around to others than to have others come to them.

The architect of the town house should provide a setting appropriate for the role of its owner in society (6.5.2): those whose principal concern was commerce and trade needed houses with rooms for business and others for storage; bankers needed to display their solid prosperity but at the same time needed secure premises; lawyers and similar professions needed rooms for meeting and consultations; holders of public office, and so defined as the wealthiest, needed large entrance halls and grand reception rooms, along with libraries and picture galleries to advertise their culture and good taste.

In the Romano-British countryside of the early 4th century AD some of the same forces were at work, Such forces were, we may suspect, highly significant to the construction of the exotic structures that appear in western Britain at the time (Walters, p 149).

That the plan and decoration of a private residence or public building should be appropriate to a function defined by the political and social order of the time remained a cardinal principle of Roman architecture, a major theme in this volume. It was clearly important to the builders of the elliptical building (Mason, p 77) and the curtain wall (Strickland, p 104) of the legionary fortress at Chester. The principle was not limited to legionary fortresses, however, and also applies to the internal buildings in auxiliary forts (Hodgson, p 132). It has long been recognized that the residences of commanding officers *(praetoria)* in military forts are based on the standard type of urban courtyard-house. These regimental commanders, most of whom were appointed through a system of patronage, were chosen from leading municipal families in Italy and the provinces and belonged to the Equestrian Order, selected by the emperor from suitable persons with a property qualification of 400,000 sesterces. That their residences had the form, though perhaps rarely the substance, of the Roman town house would seem to underline that, even if they were not 'gentleman amateurs', the equestrian

commanders serving their normal three-year tour of duty with a regiment stood outside the professional military career of twenty-five years service to which every other person in the camp, centurions and other ranks, belonged. Even in the 4th century AD, when the organisation and command structure of the army were much altered from those of the 1st and 2nd centuries, it is striking that the new commander's residence erected in the fort at South Shields near the mouth of the Tyne should follow the traditional plan of the classical town-house and contain all the embellishments and amenities that one would expect to find closer to the heart of the empire rather than on the northern frontier of its most remote province.

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PART I: EXTERIORS

2 The external decoration of Romano-British buildings

T F C Blagg

There has been a remarkable revival in classical architecture during the last few years. Architectural ornament and external decoration are no longer in the oblivion to which the modern movement tried to consign them. So it is timely to look at this aspect of Romano-British architecture, and for another reason, too. The study of classical art has moved away from connoisseurship, mainly concerned with analysing styles and with attributions to artists and schools of artists. As is implied by the *double entendre* in the title of John Onians' recent book (1988) on the classical Orders of architecture, *Bearers of Meaning,* there has been an increasing awareness of the need to go beneath the surface in interpreting the significance of symbols, forms and images.

That we must also consider the wider contexts is illustrated by the presence in such an East Roman city as Ephesus of many features which are not conspicuous in Romano-British architecture: long street colonnades; building facades such as the Library of Celsus, decorated with columnar features and sculpture; the widespread use of marble; and elaborately carved ornamental detail. Some of the reasons for Britain's relative lack of such things are obvious. Ephesus had a much longer civic and architectural tradition, a Mediterranean climate (hence a need for the shelter of colonnades), and easier access to marble quarries. By contrast, in Britain the Richborough Arch is the only building known to have been faced externally in marble (Strong 1968). But the facade of the Library of Celsus had particular messages to convey: statues of Wisdom and similar personifications indicate its internal function as a place of learning; the wealth of its ornament and the specific detail of the inscriptions (cf Wilkes, above) tell us what a splendid man was Lucius Julius Celsus Polemeanus, for whose tomb and memorial the Library was built.

What messages may be deduced from the external design of Romano-British structures? The relevant evidence includes: columns, as used in colonnades, porticoes, porches, or attached to a wall; sculptured relief; the use of colour, or contrasting patterns of building materials; the spacing of door and window openings and of projecting and recessed features in the articulation of a facade; the treatment of rooflines and elevations.

First, columns. A stone column with capital and base mouldings is not just a means of support. It is a statement of the adoption of classical values, an architectural mode of expression, cognate with the adoption of the Latin language. Indeed, Tacitus *(Agricola,* 21) significantly refers to the building of *fora,* temples and houses in towns simultaneously with the acquisition by the sons of the British nobility of the fluency in Latin rhetoric which was the essential training for a career in Roman public life. In the towns of Roman Britain the *forum* is the main building on which columns were used externally to make such a statement. In some cases, as at Silchester, there was a colonnade on all four sides (Fox 1893; Boon 1974, 110-12), but some, eg Caerwent and Caistor-by-Norwich in its 3rd-century phase, had only one colonnaded facade (Nash-Williams 1953; Frere 1971). At Wroxeter the portico of the main street frontage on the east was mainly adapted from that of the baths which previously occupied the site, and another was added on the south (Atkinson 1942, 59-66, 77-82), but none on the north nor, it would seem, the west. The London *forum* also seems not to have had a colonnade behind the *basilica.*

At Wroxeter the entrance is marked only by a wider spacing of the columns. Elsewhere, something more distinctive is indicated, eg at Silchester, where a more substantial foundation in the side opposite the *basilica* was provided for a monumental entrance. At Lincoln, in the colonnade along the east side of the *forum,* osculating columns set further apart than the others mark the passages through to the *forum* (Fox 1892). Their form indicates that the entrances were higher than the colonnade, since otherwise single columns would have sufficed to carry the architraves of both.

There was, therefore, considerable variation in the external appearance of British *fora.* That could well reflect decisions about which architectural forms might fit best with the Vitruvian concepts of *proprietas* and *distributio* ('economy': *De Architectura* 1.2.5-9) in representing local aspirations. There is, however, no direct evidence on whether such decisions were made by the townspeople, *civitas* magnates, architects or imperial officials (cf Mackreth 1987, 134-5). Even if they were made by higher authority. however. they are still likely to

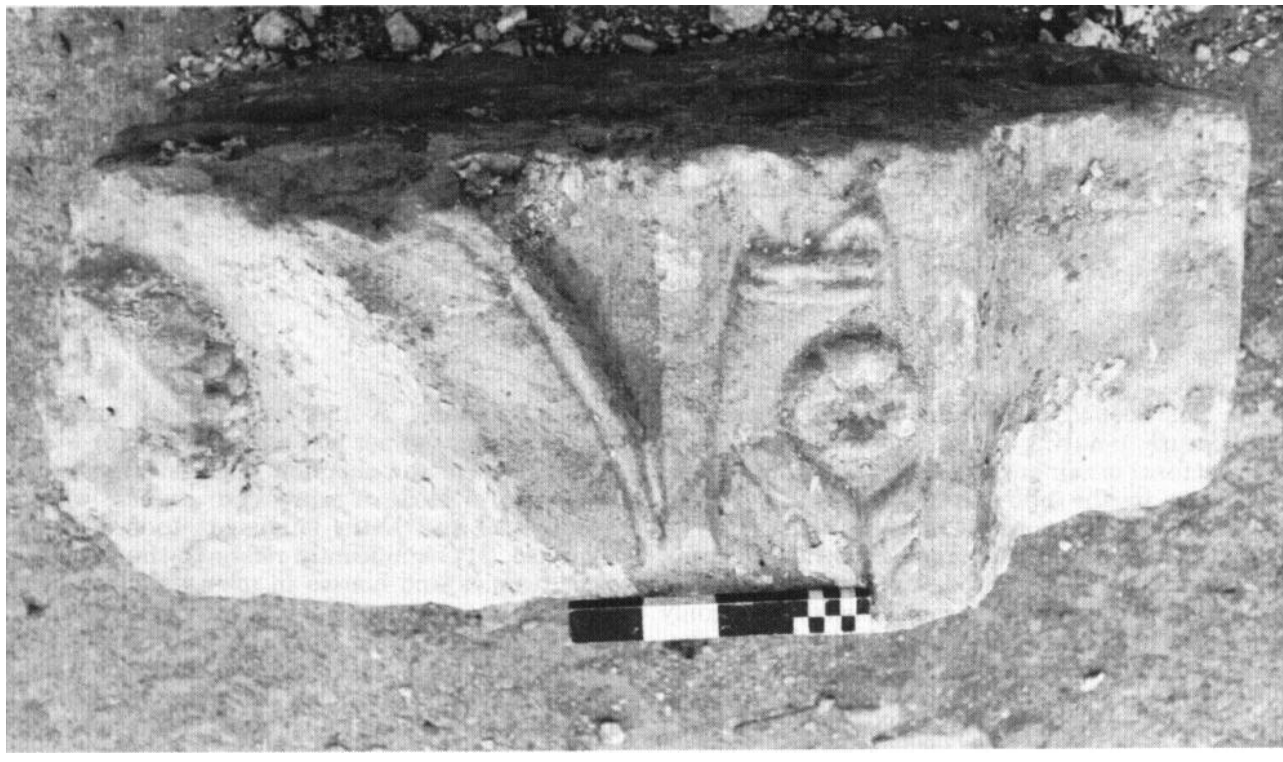

Fig 2.1 Decorated pilaster from the Monumental Arch, London

reflect the principle of *distributio* in being based on opinions about the forms of Roman architectural amenity which were suitable for that place and people. These external porticoes show classical aspirations in one sense, but in a provincial version. They are not a feature of Roman *fora* in Italy, which are usually precincts enclosed by adjacent buildings, a perimeter wall, or in part by both. Porticoes occur externally on some *fora* in the north-west provinces, eg at *Augusta Raurica* (Augst), but in Britain they may originate from legionary fortresses where the façades of the *principiae* form part of a colonnaded *via principalis* (von Petrikovits 1975, Tafn 1,2,4-12).

Where the columns of *forum* porticoes survive, their diameters are usually about 0.5-0.6m, which on the basis of the dimensions of surviving monolithic column shafts (Blagg 1982, 142) would indicate a column height of 3.5 to 4.5m. Their main function need have been no more than to give an impressive façade to the most important building in the town, Coincidentally, they might provide accommodation for street markets as well as shelter from the rain, as at Wroxeter, where the whetstones, *mortaria* and stacks of samian in the destruction debris of the 2nd-century fire came from the gutter of the east portico (Atkinson 1942, 127-46). By contrast, when the porticoes of the Leicester *forum* silted up progressively as the streets were remetalled, the inconvenience was insufficient to cause them to be cleared (Hebditch and Mellor 1973).

Few bath buildings had street colonnades. Among the exceptions are the 2nd-century baths at Wroxeter and their adjoining *macella,* which had colonnades to north, west (the main street frontage) and south (Mackreth 1987, 144-5, figs 60-61); the *via principalis* frontage of the Caerleon fortress baths (Zienkiewicz 1986, 35) and the Silchester baths in their first period but not subsequently (Boon 1974, 127-9). In the baths at Canterbury, the outer face of the courtyard portico wall had rectangular projections which may have supported engaged half-columns (BlockIey *et al* 1995, 98). The use of that feature was a way of giving the appearance of a columnar façade to a non-columnar structure, and it occurs first on Hellenistic tomb façades and later in Rome on such vaulted buildings as the Tabularium and the Theatre of Marcellus. It was an economical way of simulating the appearance of traditional column and lintel architecture. At Canterbury, quarter segments of circular tiles appear to have been used to build the attached columns, which were rendered in mortar. Other buildings where regular rectangular projections may have served to carry engaged columns include the first *forum basilica* in London (Marsden 1987, 23) and the theatre at *Verulamium* (Kenyon 1934). Such columns were also used on monumental arches, but in Britain the only example is the marble-veneered fluted columns on the quadrifrons arch at Richborough (Strong 1968). On the London Arch, decorated pilasters were employed (Fig 2.1; Blagg 1980a). On the Balkerne Gate at Colchester, the pilasters flanking the two central passageways, argued by Crumm y (1977, 93-4) to have belonged initially to a free-standing double arch, were built

out from the masonry and presumably had rendered surfaces.

The original use of columns externally in classical architecture was for temples. The only probable example of a peripteral classical temple in Britain is the Temple of Claudius at Colchester, the podium of which has been interpreted as supporting a temple which was peripteral *sine postico,* ie with free-standing columns on three sides but not at the back, arranged 8 x 11 (Crummy 1980, 248). There are remains of fluted stucco column casing. The fluted Corinthian columns of the Temple of Sulis Minerva at Bath are now thought to have come only from the facade and not from a pseudo-peripteral arrangement of engaged side-columns (Cunliffe & Davenport 1985, 27). Its well-known sculptured pediment, and the Luna pediment which is now attributed to one of the buildings added within the precinct in the 3rd century, are rare examples of their type in Britain. At Corbridge, the Wolf and Twins pediment and one with bulls' heads and garlands (Richmond 1943, 173-6, 189-91) are also likely to have belonged to temples. There is little evidence that any other type of building in Britain had a sculptured pediment. Such pediments were, of course, represented in relief on tombstones, but that is not the only respect in which funerary or religious *aediculae* do not resemble real Romano-British architecture, but are modelled on types established in other provinces. The existence of a pediment implies a columnar front. Small temples with two or more such columns are known from beside the forum at London (Marsden 1987, 32) and from outside the legionary compounds at Corbridge (Richmond 1943, 136-49).

Only about twenty examples of fluted column shafts are known from Britain. One effect of fluting is to produce contrast in the surface texture in strong light. Arguably, the additional work and consequent expense of fluting is more likely to have been undertaken on external columns, on which it would have been visually more effective. The temple of Sulis Minerva at Bath is one example, and the suggestion that the building which stood in the precinct north-west of the theatre in Canterbury was a classical temple, and also that there was such a temple at Richborough (Blagg 1984) is supported by the finding of fragments of fluted column drums at both sites.

Muckelroy (1976) has shown that columns were not a normal feature of the ambulatories of Romano-Celtic temples in Britain. Only seven rural temple sites have evidence for columnar features (Blagg 1980b). Evidence for them on urban sites is more difficult to interpret, since columns may be found unassociated with a particular building. On villas, however, columnar features are relatively as rare as on rural temples. It is four times more likely that a villa will have a mosaic than that it will produce decorative stonework of any kind (about fifty have done so). Allowance must be made for stone columns being portable, in contrast with mosaics, and for wooden columns having decayed without trace. Still, it seems safe to say that it was exceptional for a Romano-British house to be decorated with columns, whether in the form of porches or of colonnades.

Fishbourne is an exception, even among these exceptions. It is the only house in Britain where Corinthian capitals have been found, and the only one which appears to have had grand columnar entrances: Cunliffe's interpretation (1971, 113-6) is supported by the remains of columns of greater size than those of the garden peristyle, and it seems fully in keeping with the very Mediterranean architecture of the building. Fishbourne is also unusual in Britain in having a peristyle of Tuscan columns of full height. They do occur at some other sites, eg at Chedworth, but the great majority of columns from Romano-British houses are the 'dwarf columns of about one metre in height, which could only have functioned in a peristyle if they were supported on a low wall. In some cases, as at Great Witcombe (Blagg 1977), where there is a series of columns of virtually identical size and moulded profile, it is plausible that that is how they were used. Elsewhere, as at Chedworth, where there is a variety of profiles and column diameters, it is more probable that they belonged to several such features as doorways and porches. Two other possibilities remain. Dwarf columns with bulbous baluster shafts may well have supported stone table tops, as is attested in Gaul and Germany (Solley 1979). Alternatively, columns might have been used in an upper floor gallery, as in David Neal's reconstruction of the Stanwick villa (this volume, p 33), or in a window, as at Meonstoke (King, this volume), where a column, in that case not of stone but of stuccoed masonry, was used to form a two-light window in the gable end.

Apart from the Meonstoke example, however, there is rather little evidence from Britain for the use of windows as features which might, through their arrangement, be considered decorative as well as functional. That may be because, as at Meonstoke and in the window preserved in the house at Colliton Park, Dorchester (RCHM 1970), many window surrounds were probably made of the same materials as the rest of the walls, so would not be identifiable among building debris. One exception is where, as on some of the northern forts, arched window heads were cut out of slabs of stone, which in some cases were embellished with rosettes and other motifs carved in the spandrels. Some of those from Housesteads were found in excavation of the south gate (Fig 2.2), and it is thought that they belonged to the windows of galleries above the gate arches and of towers (Coulston and Phillips 1988, nos 413-32). Otherwise, jambs and lintels were probably of wood; stone mouldings do not seem to have been used decoratively for such features in Britain, In the fortress baths at Caerleon, in addition to a large amount of broken window glass, numerous fragmentary strips of white lime mortar

Fig 2.2 Window heads, cornice and column fragments, Housesteads

Fig 2.3 Lower half of Corinthian capital from Cirencester

Fig 2.4 Decorated cornice, Lincoln

Fig 2.5 Frieze of the Dioscuri, Corbridge

and brick-cement are interpreted as putty which secured windows in timber frames (Zienkiewicz 1986). A fallen fragment of masonry from the baths at Silchester retained one jamb and traces of the square head of a window estimated as just over a metre wide and at least as high (St John Hope & Fox 1905,360-l).

A potential result of an overview of exterior decoration is that it provides a test for reconstructions. So often, basilicas and villas are drawn with extremely small clerestory windows which would seem to be based on precedents from hotter and sunnier parts of the Roman Empire where cool dark interiors are more desirable than one might suppose them to have been in the north-western provinces. Even there, large windows are common in, eg, the domestic architecture of Ostia, the villas represented in North African mosaics, and such large public buildings as the Curia in Rome and most of the large bath-houses built after the 1st century AD. Recent evidence for large sections of collapsed wall with window openings at Meonstoke (King, this volume), Stanwick (Keevill, this volume) and Lebach, Saarland (Miron 1990) should help redress the balance in favour of larger more prominent windows. Jambs and lintels were probably of wood, and stone mouldings do not seem to have been used decoratively on such features.

Sculptured decoration might appear on two other parts of a building, apart from the columns and pediments already discussed. These are the entablature above the columns, and the wall surfaces. In Britain the Corinthian order is the most common of those which usually carry a decorated entablature (Fig 2.3; Blagg 1977). The nearest that any building in Britain comes to a complete Order is the Temple of Sulis Minerva at Bath, where, in addition to the fluted Corinthian columns and pediment, several decorated cornice blocks *survive* and possibly a part of the architrave (Cunliffe & Davenport 1985, 116), but none of the frieze. Also at Bath are fragments of a larger cornice decorated with palmettes and lions' heads; and from a circular structure richly decorated on both sides, an architrave with a band of leaf and tongue and a fret meander, and a frieze with acanthus rinceaux (Cunliffe & Fulford 1982, nos 58 and 59 and nos 54-7). Cunliffe (1989) has suggested that the latter came from a *tholos* which may have stood in a precinct to the east of the temple. He thought that fragments of a large Corinthian capital may have gone with it, but another candidate of suitable size and character is the Composite capital found in the reservoir of the baths (Cunliffe & Fulford 1982, nos 82, 83).

The normal Romano-British type of decorated cornice has projecting brackets alternating with square panels, as on that from *Verulamium*, which probably decorated the stage building of the theatre (Kenyon 1934, 221-2; Blagg 1977, 69), and that from the classical temple at Wroxeter, found with part of the frieze and a Corinthian capital (Blagg 1980b, 32-3). A temple or a funeral monument is the most likely original source for small decorated cornices from Lincoln (Fig 2.4), re-used in the Lower West Gate (Colyer 1975, pl xxxviii, a), and Brixworth, re-used in the Saxon church (Blagg 1978). Figured friezes, such as that of the Dioscuri from Corbridge (Fig 2.5; Phillips 1977, no 52) are uncommon, and fasciated architraves are equally rare. Plain mouldings may have served as cornices above courses of plain dressed masonry or even wooden architrave beams in many cases.

Some relief sculpture was used for the decoration of walls, though is it not usually possible to be sure of this or to work out the scheme of decoration

unless the sculpture is contained within panels or in niches framed by attached columns or pilasters. In such cases as the London Monumental Arch and the Screen of Gods (Blagg 1980a) and the Facade of the Four Seasons at Bath (Cunliffe & Davenport 1985, 123-9), the prominence of the sculpture may suggest that, rather than being decorative, it is an essential part of the purpose of the structure. Funerary monuments are also likely structures for sculptural decoration. If, however, one is considering buildings as distinct from tombstones, there is little sculpture from them apart from lions or pinecones. Nothing comparable with the elaborate monuments at Neumagen (von Massow 1932) and other Rhineland sites can be demonstrated so far, though the quantity and variety of sculptural fragments found re-used in the villa at Stanwick, Northamptonshire (Neal, this volume, p 33) might well indicate one or more such structures.

Neumagen is remarkable for the extensive survival of paint on the stonework. Colour was also a feature of the exterior decoration of Romano-British buildings, both in broad areas, such as the red-painted external wall-plaster of Temple II at Springhead (Penn 1962, 112, and on such architectural details as a Corinthian capital fragment from *Verulamium* or mouldings from the south gate of Winchester (Blagg 1976, 171). The sandstone coursed rubble walls of the Caerleon amphitheatre were rendered externally in cement, with imitations of masonry joints trowelled in and painted red, a feature also of the southern corner-tower of the fortress (Wheeler & Wheeler 1928, 118). Bidwell (this volume, p 19) discusses this and other examples of the imitation of coursed masonry in wall-plaster at Swainshill and South Shields, and also the plastering and painting in coloured stripes of the *caldarium* of the baths at Wroxeter and the portico of the villa at Piddington. The last site has red veranda columns with purple-brown and white details and blue *imbrices* laid over cream *tegulae* (Selkirk 1989, 317), a colour scheme reminiscent of such Rhineland funerary monuments as the Igel column. If Piddington can be taken as typical, the architecture of Roman Britain must have been far more colourful than might otherwise have been supposed.

A rather different effect of mortar pointing is noted by King at Meonstoke (below, p 56), where it is combined with exposed flint nodules to give a chequer-board appearance. Similar colour contrasts in the use of building materials include the course of alternating chalk and ironstone blocks below the greensand courses in the north wall of the Saxon shore fort at Richborough (Johnson 1979, fig 31), and alternating tufa and greensand in the Roman mausoleum which is the nucleus of the ruined church at Stone-by-Faversham (Fletcher & Meates 1969). While the so-called bonding courses of tile in these and other structures have a functional purpose in providing horizontal building levels during construction, they do also add a visual interest to an otherwise blank extent of wall by the contrast in colour, shape and texture.

Because of their rectangularity tiles were regularly used for quoins and door- and window-heads on buildings constructed of mortared rubble. The Meonstoke windows were fashioned in this way, with the added decorative detail of tile pilasters with stone capitals and bases between the windows in the upper level. Tile-faced concrete, with pilasters, engaged columns, mouldings and pediments also built up from tile, sometimes specially cut or moulded to shape, were a feature of building in Rome and nearby, notably at Ostia, in the 2nd century. Had such large-scale decorative use of tile been a feature of contemporary architecture in Britain, more evidence of such relatively durable materials might be expected among the relatively few surviving superstructures in the province, unless robbing and re-use accounts for its absence.

Visual contrast was also achieved through stone-carving techniques. Rusticated masonry, ie where the edges of a rectangular block are drafted smooth but the rest of the face is left in its roughed out state, uses what is actually an incomplete state of carving to give an effect of rugged strength, enhanced by the contrast of light and shadow on the uneven surface. On Building 11 at Corbridge, where it contrasts with the chiselled surface of the moulding at the base of the wall (Fig 2.6), the execution is sufficiently careful to show that the effect is intentional. To consider the work to be unfinished (de la Bédoyère 1991, 211, is also to disregard the fact that the masons' chippings of the construction layer were sealed by compacted courtyard gravel metalling (Bishop & Dore 1989, 105).

There is little prospect of knowing how Romano-British timber framing was done; whether it was used in a wall to form decorative geometric patterns, was carved with mouldings and other ornament, was brightly painted like traditional German *Fachwerk*, or on the contrary was concealed from view beneath plaster rendering. In reconstruction of timber or part-timber structures it is therefore difficult not to misapply analogies from such representations as those on Trajan's column or from early modern vernacular architecture of the region.

Where the superstructure was wholly of stone, much can be deduced even if only a few courses remain. It was suggested above that regularly-spaced rectangular projections from the walls of certain buildings may have been built to support engaged half-columns or pilasters at a higher level. In other cases where the primary purpose was to buttress the structure, the incidental visual effect of a series of projections would still have been to provide a vertical emphasis to the wall, as on the octagonal temples at Nettleton (Wedlake 1982) and Pagan's Hill (Rahtz 1951) and the rectangular west temple of the *forum* at *Verulamium* (Lewis 1965, 67-8 and figs 66, 67). In the amphitheatre at Caerleon necessity modified what began as pri-

Fig 2.6 Rusticated masonry and base moulding, Building II, Corbridge

marily decorative. In the first period, there were pilasters round most of the perimeter except at the southern end, where the projections were more substantial, but in later periods buttresses were added between the pilasters around much of the rest of the circuit (Wheeler & Wheeler 1928, 115-21).

Broader recesses and projections, which may, as in the temple at Lydney (Wheeler & Wheeler 1932), be determined by the internal design, also add visual variety to the external appearance. The addition of a projecting wing at each corner of a facade was a means of creating an axial symmetry, most familiar on the winged corridor villa. While as a villa design this is characteristic of the north-west provinces, the actual effect of the symmetry is wholly in the classical tradition. It is also a feature of some temple designs, eg Temples I and II at Springhead (Penn 1962) and that of Sulis Minerva at Bath in period 2 (Cunliffe & Davenport 1985, 34), though in such cases the corner structures are subordinated to the cella. Rather than the uniform roof-line which is normally reconstructed for the winged corridor villa, the additions to the temple façade create a triangular relationship and, while adding some emphasis to the corners, are still of lower height than the *cella* which forms the apex of the triangle, whether or not they were roofed shrines or open platforms (Blagg 1990a, 429-30). The addition of extensions to the fronts of Romano-Celtic temples serves to emphasise the centrality of the *cella* even more, and also to give it a more classical appearance in the form of a pedimental facade (Horne 1986). The entrance hall and the audience chamber at Fishbourne, in the centres of the east and west wings respectively (Cunliffe 1971, 110-16 and 87-92), create an even stronger visual statement of the importance of what might be described as the axis of power in that building. In contrast, the addition of lateral towers to a villa facade, as at Gadebridge Park in the 4th century and at Stroud (Neal 1974, 44-52, and this volume,

p 33) continues to emphasise the symmetrical spread of the house rather than its central axis. Here, a different explanation in terms of the inner functioning is required: complementary uses, such as the libraries of Greek and Latin that stood on each side of Trajan's column in Rome, flanking his *basilica;* or like the symmetrically designed suites for the lord and the lady in 18th century palaces, cited by Wallace-Hadrill (1988) in considering the social structure of the Roman House.

Several of the variations in façade which have just been discussed involve differences of roof level, some of which would have been striking. A more understated articulation of rooflines was provided by finials, often in the form of towers set on a four-way arch, used on the ridges and apexes of house and temple roofs (Blagg 1977, 52-6), as well as chimney pots on the former (Lowther 1976). They help to give definition to the top of the building, whether seen in a town among a mass of roofs of varying height, or on a hill-top temple silhouetted against the sky.

The relative siting of buildings in a group may also contribute to the overall effect of their external appearance. The axial interrelationships of the temple and baths at Bath may be considered from this point of view, notably in the perspective vistas available of the temple through the entrance to its *temenos,* or northwards from the *frigidarium* with the circular pool across the reservoir to a monument in front of the temple. The Rodwells' claims (1985, 40-5) for the geometry of the Rivenhall villa's landscape setting have been doubted (Millett 1987), but in other British cases which they cite (Hambleden, Darenth) and also at Castor (Potter, this volume, p 70) there is something of the axial layout and symmetrical arrangement of buildings that are such notable features of many Gaulish villas, eg Anthée, Le Mesge, Seeb (Rodwell and Rodwell 1985, fig 31; Smith 1978) and rural sanctuaries, eg Ribemont-sur-Ancre (Cadoux 1984). These axial layouts are by no means such a striking feature of Britain as they are of Gaul, but attention to the landscape setting of buildings is nevertheless identifiable (Blagg 1986). This might seem to involve extending the ordinary meaning of 'decoration', but it is certainly within the meaning of 'Decor' for Vitruvius (1.2.5). It shows the same concerns as those evident in the arrangement and siting of such Campanian seaside villas as that celebrated for his patron Pollius Felix by the poet Statius *(Silvae* 2.2; Bergmann 1991).

Such a comparison highlights the point discussed at the beginning of this paper, about how Britain relates to other provinces. In his opening contribution, John Wilkes comments on the absence of epigraphic evidence for individual benefactions as well as a lack of ornamentation on buildings, and he inferred that this signified a lack of competition in the province, compared with what can be attested elsewhere. He did not find a distinctive British character. This, however, may be more true of some aspects, areas and periods than others. Britain does not present a homogeneous picture, nor one suspects would any other province, when closely examined. When the epigraphic evidence is viewed in comparison with that from immediately neighbouring provinces, rather than with North Africa, say, or even the Danubian provinces, so much closer to the Hellenised East, Britain emerges as not being quite so taciturn as some have supposed (Blagg 1990b). Some types of structure, sacred buildings in particular, are more often identified epigraphically than others. Much the same applies to the architectural ornament. The exterior decoration of its buildings represents a series of choices from an empire-wide architectural repertoire, and thereby, choices of the statements which that repertoire can be used to make. It may be the classical statement of the *forum* colonnade, the villa façade or the Corinthian order of a classical temple, or the restraint of a Romano-Celtic temple in its elements of classical architectural language, or the lack of assertion in southern British funerary architecture. Romano-British *fora* may be lacking in epigraphic records, but their colonnades and Corinthian capitals make a statement of a different kind.

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3 The exterior decoration of Roman buildings in Britain

Paul Bidwell

Introduction

Some sixty years have passed since Mortimer Wheeler, in some notes on building construction in Roman Britain, briefly examined examples of exterior decoration (1932, 125-6). He referred to plaster and cement renderings, white-washed or painted in colour, to false jointing, and to the use of different types of stones to achieve patterned wall surfaces. Some new examples of decorative finishes have been recorded since Wheeler's notes were published, and recent discoveries now suggest that parts of Hadrian's Wall were decorated, a possibility that never seems to have been previously envisaged, at least in print. There is thus sufficient new evidence for another survey of the subject.

This survey confines itself, as did Wheeler's, to exterior decoration carried out with lime plaster and plain or coloured washes, or achieved by the use of building materials in contrasting colours. Architectural ornament in carved stone is considered elsewhere in this volume (p 9). The general emphasis is thus on the inexpensive but at times extremely flamboyant embellishment of everyday buildings in civilian and military contexts. The number of examples has not increased greatly since the date of Wheeler's notes, and their state of preservation is generally poor. Better preserved examples from other provinces are therefore used to illustrate some of the techniques of decoration.

Rendering and whitewashing

The rendering and whitewashing of buildings was primarily decorative, but such coatings also protected the fabric against the weather. The simplest form of rendering is the application of mud plaster to wall surfaces. Examples of this have been found at South Shields in the barracks of Period 6 construction *(c* 222-35): the walls of the barracks had been built of stone bonded in clay to their full height, as was shown by the collapse in one piece of some fourteen courses, and had been coated on the outside with mud plaster, the surface of which had been whitewashed. No other instances of external rendering with mud plaster have been noted by the author, probably because traces of it seldom survive rather than because it was rarely employed. Daub walls, especially, would suffer from erosion if unprotected, and mud plaster applied to produce a smooth surface for whitewash would have been an economical form of weather coating.

Rendering with lime mortar produces a more durable coating. The simplest decorative scheme is false ashlar jointing, well preserved examples of which have been found on the exteriors of watch towers on the German limes, the false joints emphasised with lines of red paint (Baatz 1976, Abb 15 and 16). The only comparable example in Britain occurs on a Roman structure at New Weir, Swainshill, about a kilometre south of Kenchester. On the banks of the River Wye, there are two revetments or buttresses apparently retaining a terrace on which stood a building with a mosaic pavement (Shoesmith 1980; Walker 1991). The north-western revetment or buttress stands to a height of 3.5m and consists of a base of large blocks in three courses, above which are up to fifteen courses of small facing stones. On its south-eastern elevation are two layers of plaster, the uppermost very fragmentary but still preserving traces of whitewash and vertical lines in red paint imitating ashlar jointing (Fig 3.1). A short length of the reconstructed fort wall at the Saalburg has been rendered and painted, giving a good impression of the appearance of this sort of decoration (Fig 3.2).

Evidence of whitewash applied directly to a stone surface has been found at Peel Gap on Hadrian's Wall, on a chamfered slab from the string course (Crow 1991, Fig 3). The leaching of lime from mortar or building stones can produce the effect of whitewash on wall surfaces, as on Hadrian's Wall at Sycamore Gap and on the town wall at Colchester. However, G Morgan (in Crummy 1992, 65, Fig 3.33) has shown that microscopy can distinguish the characteristic structures of these natural and artificial coatings.

Decorative pointing

A common decorative device on external wall surfaces involved emphasis of the pointing. Mortar was applied liberally to wall surfaces, so that it spread beyond the joints partly across the surfaces of the facing stones (flush pointing); vertical and horizontal lines were then scored into the surface of the

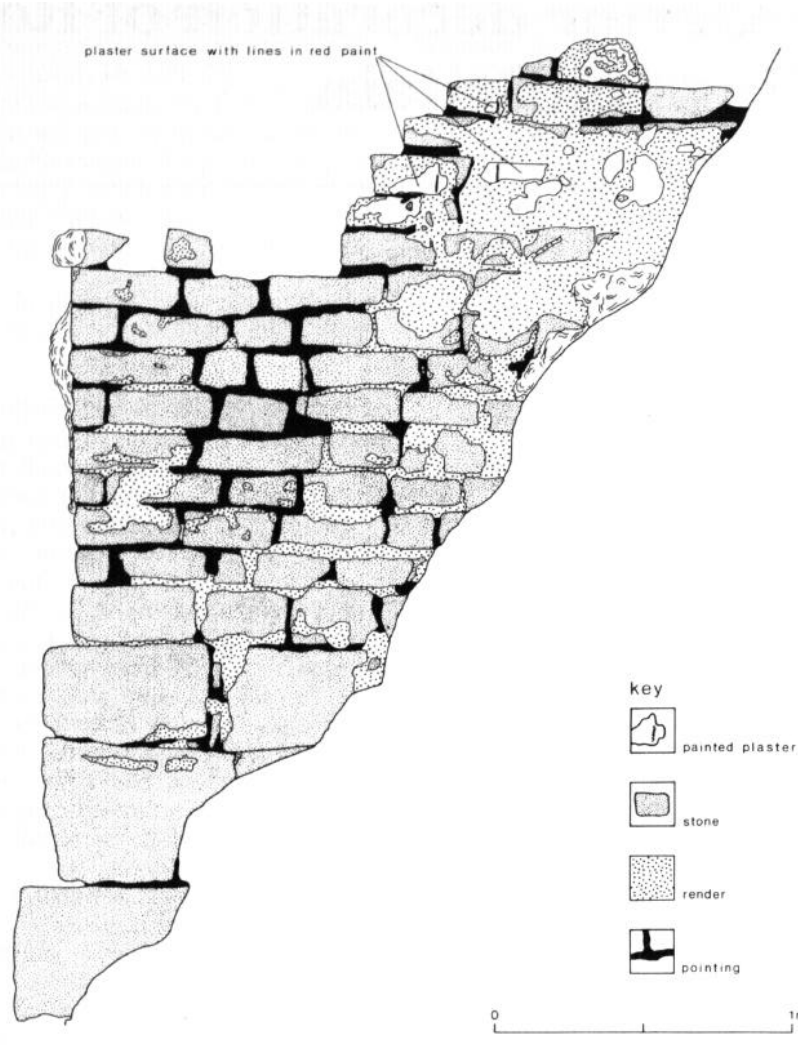

Fig 3.1 South-eastern elevation of the north-western revetment or buttress at New Weir, Swainshill, near Kenchester (Cotswold Archaeological Trust). Scale 1:25

mortar to indicate the joints of the stonework. In the amphitheatre at Caerleon (Wheeler & Wheeler 1928, 121-2, pls XXIV, 1-2), there are roughly executed examples as well as neater versions, with red paint filling the scored lines (Fig 3.3). On the town wall at Caerwent, Ward (1916, 9-10) noted flush pointing applied in a finer mortar than that used to bed the facing stones. Well preserved flush pointing with incised lines to emphasise the joints was found on the rear of the town wall at North Hill, Colchester (Hull 1958, 25, pl V); it is now known that the town wall was free-standing when it was built in *c* 65-80, so the rear of the wall would have been visible until the rampart was added in the mid 2nd century (Crummy 1984, 14; 1992, 14-18). Incised lines on flush pointing have also been recorded in the *basilica* and *forum* at Leicester (Hebditch and Mellor 1973, 14, 34, pl IIIB).

Ribbon pointing[1] was also used to emphasise joints. This method employed strips of mortar wider than the joints and standing a few millimetres proud of the wall face (Fig 3.4). In the Baths of Caracalla at Ankara, the ribbon pointing has been preserved intact on the walls of the reservoir beneath layers of lime scale (Fig 3.5). Three fragmentary examples are known from Britain. At South Shields the walls of the southern angle tower of Period 5 (built in *c* 205-8) still display traces of ribbon pointing in lime-rich mortar, quite different from the mortar in which the facing stones are bedded, which has a coarse aggregate. At the same fort, re-used facing stones of magnesian limestone, no doubt originally from a structure of Period 4 (mid-Antonine), when extensive use of this stone was made, bore traces of ribbon pointing, again in lime-rich mortar. The third example occurs at Corbridge, on the west wall of the east granary; some traces still remain under a coating of lichen, but more can be seen on a photograph taken at the time of excavation (Knowles & Forster 1909, fig 4). The masonry with ribbon pointing at South Shields and Corbridge, it should be noted, is of exceptionally

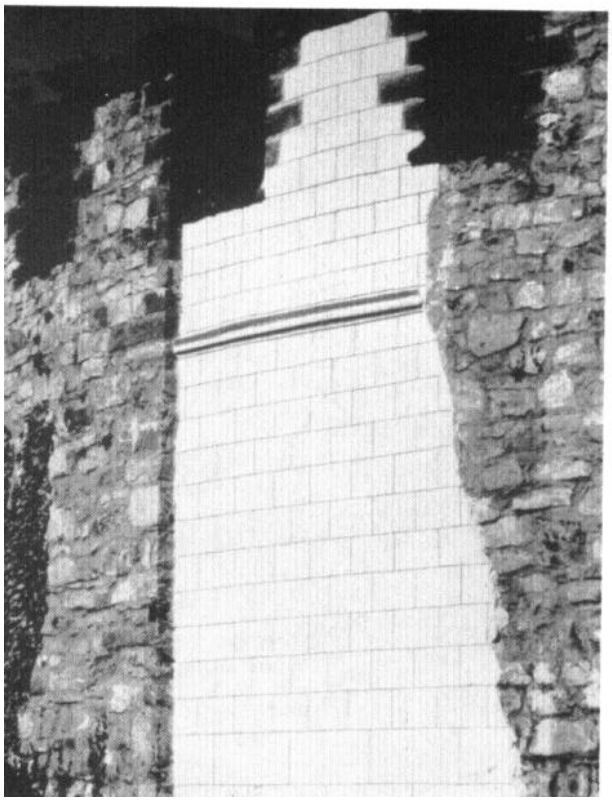

Fig 3.2 Reconstructed fort wall at the Saalburg, with rendered surface painted in red lines to imitate ashlar jointing

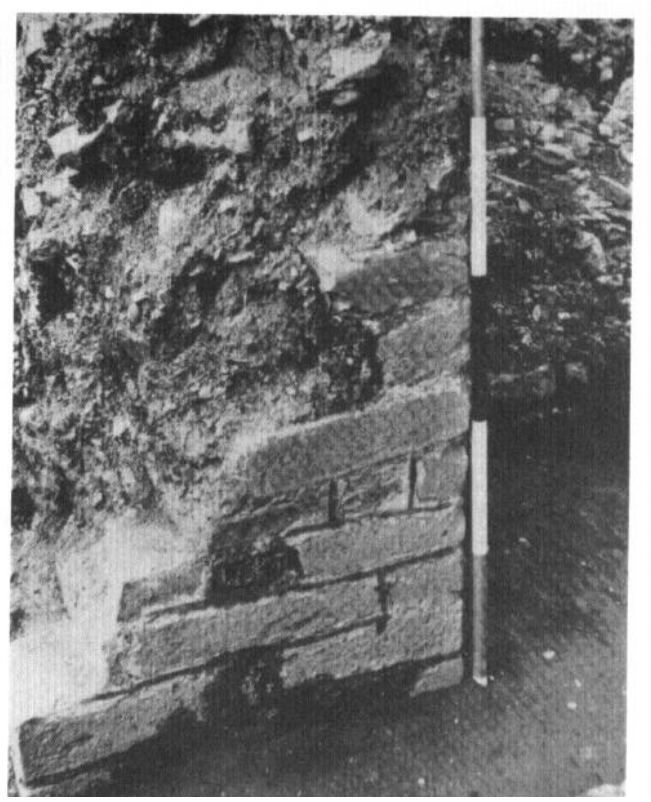

Fig 3.3 Buttress by Entrance B, at the amphitheatre, Caerleon, showing flush pointing with joints picked out in crimson paint (after Wheeler & Wheeler 1928, pl xxiv, 1). Scale with divisions in feet

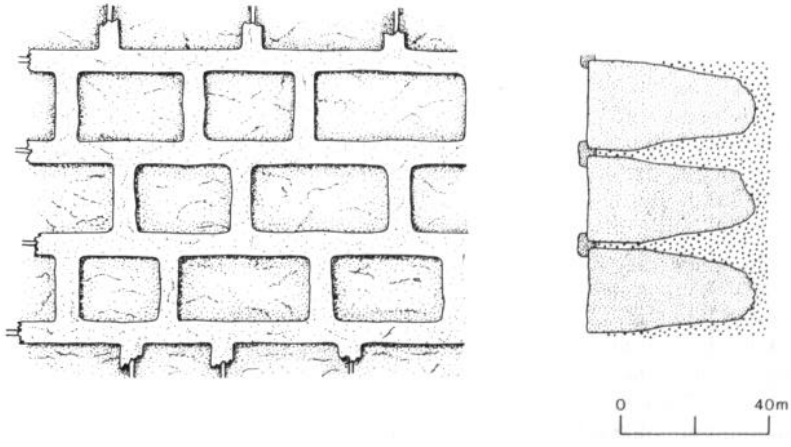

Fig 3.4 Ribbon pointing

Fig 3.5 Ribbon pointing preserved under a coating of lime scale in the reservoir of the Baths of Caracalla at Ankara. The facing stones are about 150mm in height

good quality, with plane faces, sharp arrises and narrow joints, and the reused facing stones at South Shields came from walling of comparable quality, to judge from the care with which they have been worked.

Once decorative pointing had been applied, it is possible that the whole wall surface might have been whitewashed, achieving the effect of rendering, while economising on materials; unfortunately, there are no surviving examples to show whether this was so.

Plaster on Hadrian's Wall

Excavations at Denton in 1987 showed that at some date after *c* 200, the south face of Hadrian's Wall had detached itself from the clay and rubble core and collapsed, at one point falling in a solid mass onto the ground surface (Bidwell & Watson forthcoming). The facing stones had been removed, but plaster loosened by the impact of the collapse lay face-down where it had fallen, preserving in places the outlines of the facing stones. The plaster was a lime-rich mix, contrasting with the hard, grey mortar bedding of the facing stones, which had been recessed 30mm behind the wall face to provide space in which to key the plaster. The largest area of fallen plaster was raised in one piece; its surface was found to be heavily weathered, but still preserved a horizontal groove 50mm in width cut into its surface in a position corresponding to the joints in the masonry to which the plaster had been applied (Fig 3.6). No traces of red paint were found on the false jointing but they might well have been removed by weathering; a coin of Severus was found beneath the Wall collapse, showing that the rendering, if part of the original construction of the Wall, had been exposed to the elements for three-quarters of a century or more. Whether the plaster covered the surface of the facing stones completely is uncertain. On the fragment that was raised, the thickness of the plaster extending across the face of the stones was at least 10mm, but it is possible that the plaster only partially covered their surface. Even if this was so, the impression of overall rendering might have been given by an application of whitewash.

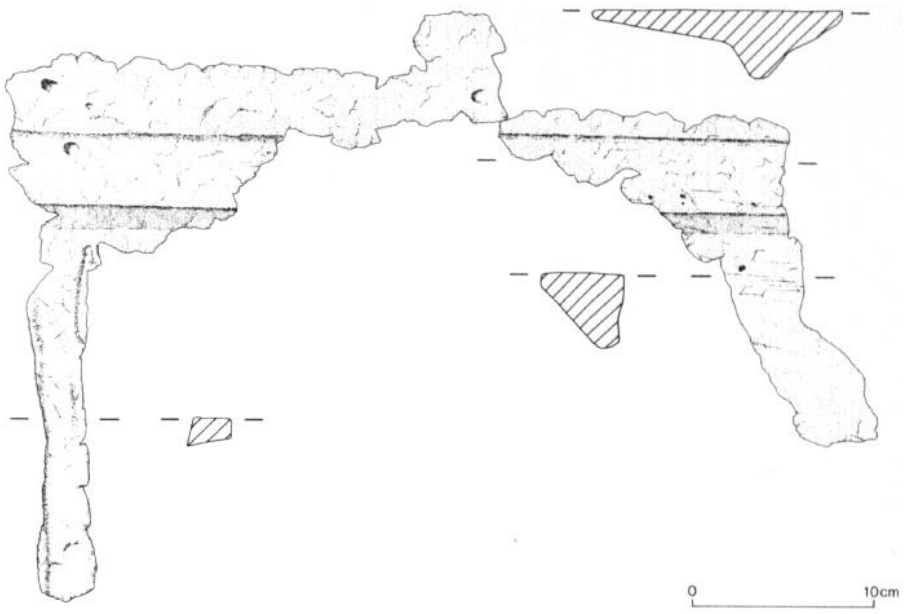

Fig 3.6 Fragment of plaster fallen from the south face of Hadrian's Wall at Denton, Newcastle upon Tyne. Scale 1:4

Decoration in stucco and colour

Pompeii provides the best guide to the extent and variety of decoration on the exterior of Roman buildings. Walls were usually plastered, and as a general rule colour was only applied to strips along their bases (Mau 1902, 456). More elaborate treatments, however, were far from uncommon: stucco was used to enhance architectural features, and exterior walls had painted decoration. Photographs of the 19th-century record such ornamentation in a much better state of preservation than is now the case: for example, at the Temple of Isis and the Stabian Baths, where there were elaborate schemes in stucco, and the Via di Mercurio, with house frontages carrying wall paintings (Museo Alinari 1990, Figs 12, 28 and 38). Buildings with walls of stone blocks seem to have been left unplastered, and so sometimes were wall facings in brick or *opus reticulatum* (Mau 1902, 456).

In Britain, decoration in stucco is rare. Indirect evidence which suggests its use is provided by semi-circular or quadrant-shaped bricks for columns which were no doubt plastered and provided with simple mouldings (Brodribb 1987, 54-5, Fig 22). Coloured paint has been found on the exterior of a number of buildings. Fishbourne provides the most elaborate examples: at the north-west corner of the Flavian garden, the revetting wall was painted with foliage shown against what might have been a representation of a trellis fence (Cunliffe 1971, 82, pl XXIIIb). From in front of the Audience Chamber came plaster painted in imitation of marble or with floral motifs, perhaps from the pediment above the entrance *(ibid,* 81, pl XVb). The design and execution of the work at Fishbourne are of an exceptional standard, but the temple at Lydney demonstrates that ambitious effects in exterior decoration were still attempted in late Roman Britain. Plaster applied to the walls at one point had been 'painted light green and speckled crudely with black' and elsewhere had been painted red (Wheeler & Wheeler 1932, 24); this seems to represent a scheme which included panels of imitation marble (perhaps reminiscent of *verde antico).* Imitation marbling also occurred on the exterior walls of the 2nd-century baths of the *mansio* at Godmanchester (Green 1959, 244) and on part of the arena wall of the amphitheatre at Chester, where red, yellow and white paint was used (Newstead & Droop 1932, 18); stretches of the arena wall excavated more recently were painted 'dark reddish-brown' (Thompson 1975, 146). At the Wroxeter baths, the plastered exterior of an apse was 'painted with stripes of red and yellow' (Wright 1872, 114).

Red paint on exterior walls, as on the south temple, Insula XXX, at Silchester (Fox & St John Hope 1890, 745), the baths at Lydney (Wheeler & Wheeler 1932, 55) and the Painted House at Dover (Philp 1989, 33), probably represents a basal strip of colour, the remainder of the surface being painted white, as at Pompeii (see above).

The use of stone and other building materials in contrasting colours

The use of building materials in different colours to provide patterned wall surfaces was widespread in

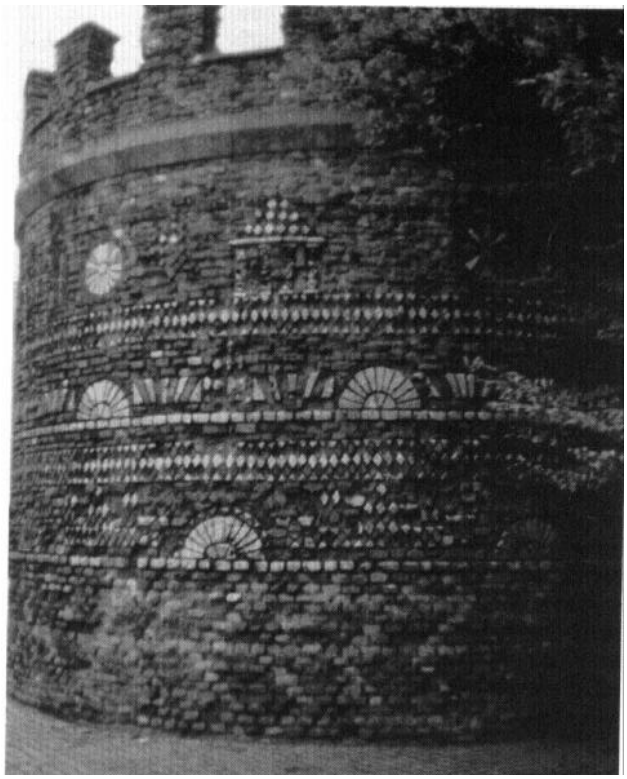

Fig 3.7. *The* Römerturm, *a tower on the Augustan city wall at Cologne*

the Roman world. The best known and most elaborate example is the *Römerturm* at Cologne, a circular tower forming part of the late Augustan defences of the *colonia* (Fig 3.7; Hellenkemper 1975, 789). Roundels, lunettes (Fig 3.8, 7), triangles formed by a pattern of lozenges (Fig 3.8, 2), bands of diapering, chevrons, and columns supporting pediments (Fig 3.8, 4) are picked out on the exterior surface of the tower in white, grey, red and buff facing stones.

It is likely that the motifs on the *Römerturm* occurred commonly in exterior decoration carried out in a variety of techniques (cf Fig 3.8, 2-7). At Housesteads, for example, a pediment supported by columns appears on one of the carved windowheads (Coulston & Phillips 1988, no 415), and almost all of the windowheads are decorated with roundels. A tympanum from the fort (Bosanquet 1904, 267, no 5) also bears comparison with the lunettes on the *Römerturm*. The decoration of cellars at Bad Wimpfen (Filgis 1987; 1988, 29, Abb 42.6) and Heidelberg (Heukemes 1987) includes triangles consisting of a pattern of lozenges in different colours (Fig 3.8, 3) which Filgis noted were closely matched on the *Römerturm*. The walls of the cellars have flush pointing with false jointing indicated by red painted lines, a decorative technique found in other cellars in Germany but apparently not employed in living rooms in either Britain or Germany. The decoration of these cellars seems to be an instance of techniques usually reserved for exterior decoration being used inside buildings. Voussoirs surrounding niches in the cellar walls at Bad Wimpfen were plastered over and painted black, red, yellow or white; their circumference was defined by two concentric bands painted in blocks of the same colour, which sandwiched another band containing triangles, again painted in the same colours. A similar but simpler treatment of niches occurred in the cellar at Heidelberg. It probably represents a scheme of decoration used commonly to decorate the arches of windows on the exterior of buildings.

Patterning in *opus reticulatum* (carefully squared facing stones laid diagonally, usually with quoins and bonding courses of brick) is frequently encountered (Adam 1989, Figs 313-7), particularly the use of facing stones in alternating colours to produce a diapered effect. At Fréjus, in the Augustan walls, irregular areas of *opus reticulatum* in stones of contrasting colours are interspersed in walling laid in horizontal courses with flush pointing and incised false jointing (Grenier 1931, 308, Figs 66-7). Adam *(ibid,* 147) noted that most of the examples of the patterning at Pompeii and Herculaneum had been covered with plaster, perhaps the result of changes in architectural fashion.

The taste for patterned wall-surfaces persisted for centuries. In the late Roman defences of Le Mans (Johnson 1983, pl 1, Fig 14), the exterior surfaces of the walls and towers are almost as elaborately decorated as the *Römerturm* at Cologne. As at Cologne, the motifs include triangles, chevrons and roundels. More than 250 years separate these examples, and there is no need to seek a direct link between them. Decoration using building materials in contrasting colours is most easily carried out using simple geometrical motifs of this kind: for example, in English brickwork of the 16th and early 17th centuries, patterning with diamonds, chequering and diapering was common (Clifton-Taylor 1972,252).

In Britain the patterning of exterior wall surfaces is only seen in simple form. The north wall of the mid 2nd-century fort at Dover had single courses of alternating chalk and tufa facing stones, sandwiched between single courses of chalk (Fig 3.8, 1); on the west wall there were alternating courses of chalk and tufa. The east wall, however, was built of bands of tufa and chalk, each two or three courses deep, while the south wall had alternating facing stones of tufa and chalk which had been rendered (Philp 1981, 20-3, pl IIIB, IVB & VIA). In all instances the rear face consisted entirely of chalk facing stones. At Richborough facing stones in alternating colours appear in part of the north wall of the late 3rd-century fort (Johnson 1976, Fig 31).

Contrasting colours were also achieved by horizontal brick courses placed at intervals in the stone facing of walls. Decoration was not their primary purpose, for in Britain they usually pass through the entire width of the wall, perhaps preventing weaknesses caused by the uneven settling of the

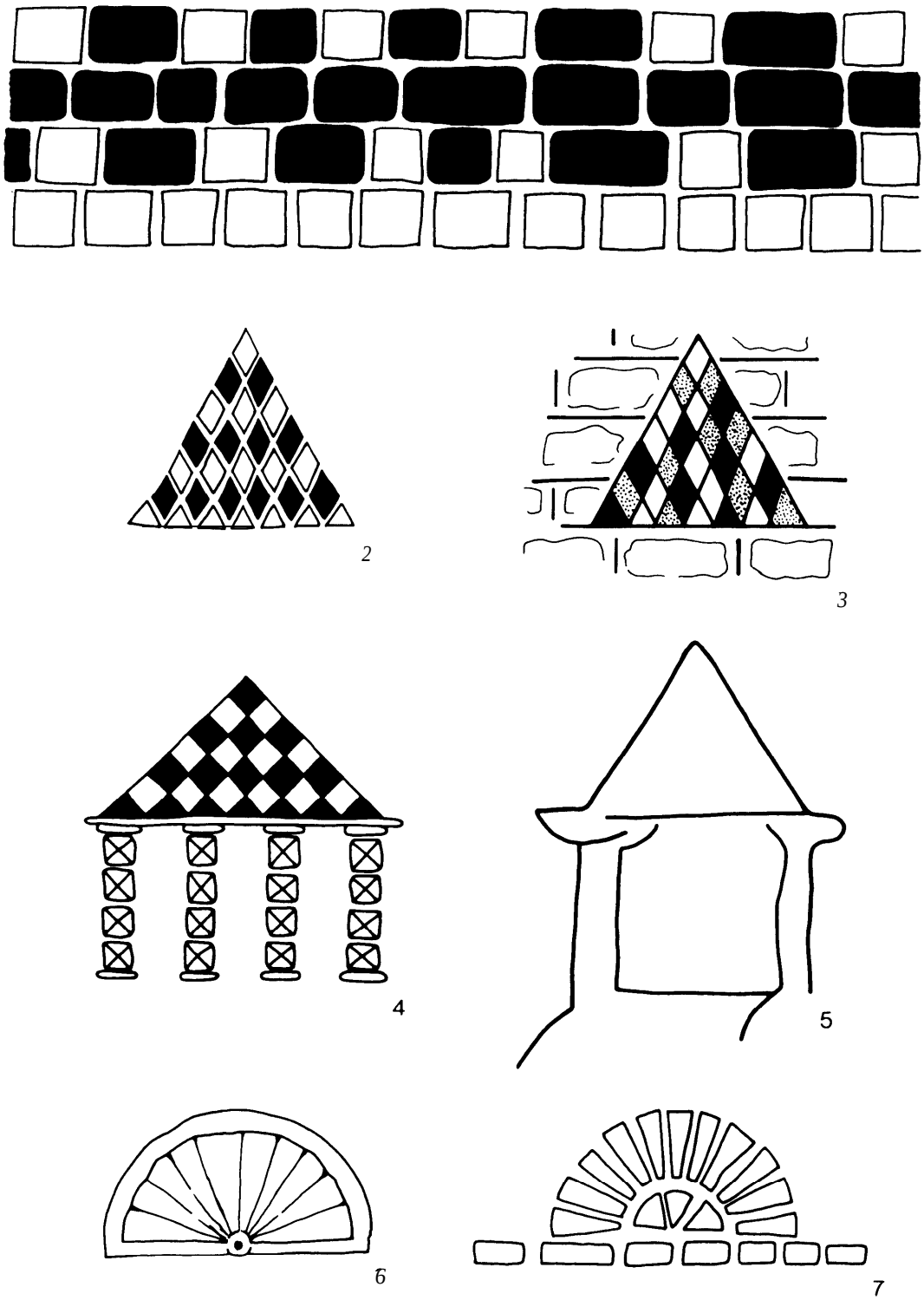

Fig 3.8 Sketches of decorative motifs on painted plaster, carved on the surface of stone, or carried out with stones of different colours (not to scale). 1. External face of north wall of fort 2 at Dover showing patterning of chalk and tufa blocks (after Philp 1981, pl IVB); 2. Triangle of lozenges in white and dark-coloured stone, Römerturm, Cologne; 3. Triangle of lozenges painted in black, white and yellow on wall of cellar at Bad Wimpfen (after Filgis 1987, 32); 4. Columns supporting a pediment in white and dark-coloured stone, Römerturm, Cologne; 5. Columns supporting a pediment carved on a windowhead from Housesteads (after Coulston & Phillips 1988, no 415); 6. Carved tympanum from Housesteads (after Bosanquet 1904, 267, no 5); 7. Lunette in white stone, Römerturm, Cologne

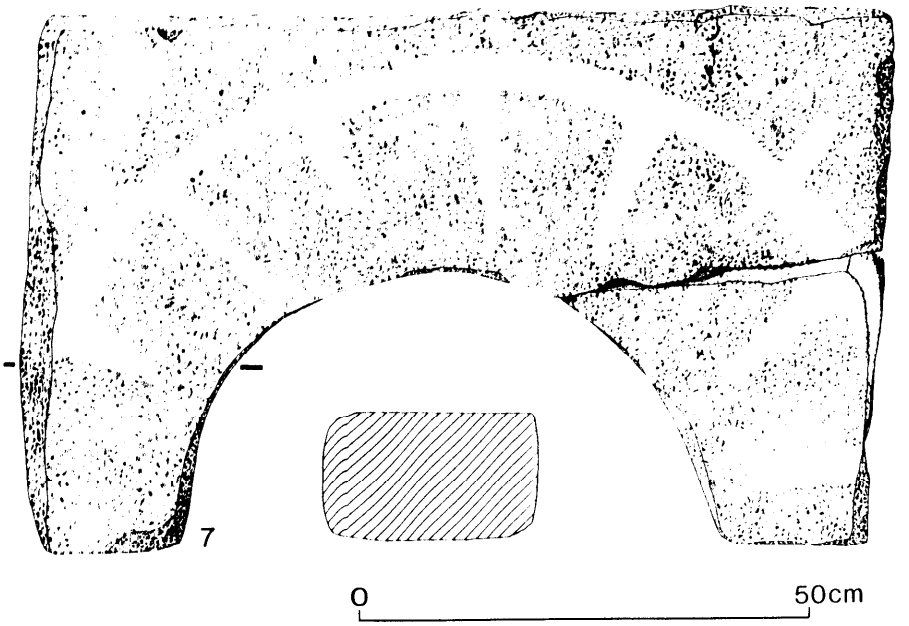

Fig 3.9 Windowhead of magnesian limestone with a ring of voussoirs depicted in lime paint, from South Shields. Scale 1:10

core and providing bases for the put-logs of scaffolding, the holes for which are usually found immediately above the through courses *(as* in the Jewry Wall at Leicester). Nevertheless, builders were certainly conscious of the decorative effect of brick courses. In Italy the horizontal courses used in *opus reticulatum* often merely formed part of the facing (Adam 1989, 155, Figs 334-7). Occasionally in Britain, as in parts of the legionary *thermae* at Exeter (Bidwell 1979, 28), brick courses did not extend through the core. Even in construction with brick-faced concrete, the through courses were sometimes distinguished by the use of bricks of a colour different from that of the wall facing; examples occur at Ostia where imitations of horizontal brick courses executed in red paint are also known (Meiggs 1973,544).

Decorated windowheads

Some stone windowheads are painted or carved, and the character of the decoration perhaps shows how the wall surfaces which had surrounded them were treated. At South Shields, for example, a windowhead recovered from a ditch in front of the south-west gate preserved lime paint applied directly to the surface of the magnesian limestone and representing a ring of voussoirs (Fig 3.9; Bidwell et *al* 1988, 171-3). Decoration of the external wall surfaces of the gate with ribbon pointing was perhaps carried out in the same medium. The fort at Housesteads has produced a large number of carved windowheads (Coulston & Phillips 1988, nos 413-32), all of which might well have come from the towers and gates, where they would have been placed in the second or third storeys. To have been visible from ground level, the decoration, carved in low relief, would have had to have been painted. Other decorated architectural fragments can be associated with the gates and towers: a lintel, a tympanum (Fig 3.8, 6) and a moulding with a geometrical design on its frieze.[2] These all betray the care lavished on the appearance of the defences, unmatched amongst other Wall forts; the elaborate architectural detailing was very probably enhanced by painted decoration on the surrounding wall surfaces.

The decoration of roofs

Ornamental features such as stone finials (Blagg 1977, 51-6) and antefixes have been studied in some detail and lie outside the scope of this paper, although it is worth noting the presence of whitewash on a Caerleon antefix (Boon 1984, 6, Type B.iii.1), perhaps the preparation for painted decoration. Examples of *tegulae* and *imbrices* in contrasting colours have been collected by Brodribb (1987, 137-8). Some sites in the Midlands and neighbouring areas have produced painted tiles (eg Stanton Low: Woodfield & Johnson 1989, Fig 47, nos 11-12), but elsewhere different colours were achieved through the use of different fabrics and firing temperatures. At the Piddington villa the bluish colour of ridge tiles was achieved by their vitrification in firing (see below); the method is the same employed to make the 'flared' bricks used in the diaper patterning common in early English

brickwork (Clifton-Taylor 1972, 251-2). At Exeter tiles in a light buff fabric first appear in deposits of the late 3rd century (Bidwell 1979, 133; Holbrook & Bidwell 1990, 281-2); their fabric is quite distinct from that of the normal red tiles. Both types are found in association, and were probably used for contrasting effect on the same roofs.

The decoration of the Roman villa at Piddington, Northants

This survey can be conveniently drawn to a close by examining a scheme of external decoration at the Piddington villa in Northamptonshire, which combines several of the techniques already discussed. This is possible through the generosity of Mr Roy Friendship-Taylor who has kindly given me much information in addition to that contained in the most recent interim report (Friendship-Taylor & Friendship-Taylor 1989). The villa was built in the early 2nd century and enlarged on more than one occasion. At the front of the main range, which was formed by the original villa building, there was a veranda consisting of a low wall which supported columns built of stone discs. The wall was plastered and painted plum-red. The columns were also encased in plaster with crude mouldings to indicate bases and capitals, which were painted white; the shafts of the columns were painted plum-red and just below the capitals were purple-brown bands bearing dabs of white paint applied vertically and horizontally. The roof over the veranda was covered with *imbrices* over-fired to a light sky-blue colour and with cream or pale yellow *tegulae.* On the main roof the tiles were red, some having been painted in order to achieve precisely the desired shade of colour.

A subsidiary range at the south end of the main building had a corridor running along its front. Its exterior wall was pierced by windows at intervals and the exterior face was painted with vertical stripes approximately 100mm wide in the following sequence of colours: plum-red, white, khaki, white, and pale green; there were also traces of trailing branches and small pink flowers.

General observations

The examples discussed above provide some indications of attitudes towards the external appearance of buildings. It is uncertain how prevalent was the application of decorative pointing or overall rendering, but the examples which have been preserved generally occur on buildings of considerable status or on masonry of good quality. Thus the examples of ribbon pointing at Corbridge and South Shields appear on facing stones far more carefully prepared than is usual in building construction on the northern frontier. Rendering painted in colours is found on the Chester amphitheatre, the residence at Fishbourne, the villa at Piddington and on some temples. Far from concealing poor quality materials and shoddy workmanship, exterior decoration in plaster is associated as much with buildings of high quality as with roughly built structures such as the South Shields barracks. All this points to a lack of interest in, and even a contempt for, the natural appearance of stone. The medieval attitude was similar: the exterior of the 11 th-century cathedral at York was rendered and painted with red lines to indicate false jointing (Phillips 1985, pls 71-3), and the keep at the Tower of London came to be known as the White Tower because it was whitewashed (drain pipes were provided so that rain water did not mar its whiteness: Salzman 1952, 157).

There are some large Roman buildings in Britain, however, which seem never to have had rendered walls. Two examples are the legionary *thermae* of the fortresses of *legio II Augusta* at Exeter[3] and Caerleon (Zienkiewicz 1986, 58). Both buildings have walls with through-courses of brick (as noted above, some of the courses at Exeter do not actually pass through the core). Another common factor is the colour of their facing stones: 'reddish-mauve coloured' Old Red Sandstone at Caerleon (Zienkiewicz 1986, 341) and trap at Exeter (a local basalt which is purple in colour: Bidwell 1979, 135). In the eyes of the Roman masons, the red tile-courses and mauve or purple stone might have seemed a particularly happy combination which did not require embellishment; red was certainly thought particularly appropriate for the exterior of buildings, as its occurrence at Pompeii and on buildings in Britain, already mentioned, bears witness.

However, another explanation for the absence of external decoration can be proposed. By the time structural work on a building had been carried out, resources to complete the architectural or decorative detailings might have been exhausted. The Porta Nigra at Trier, a tetrapylon in the circus at Vienne, and a stone-vaulted building at Patara in Lycia (Adam 1989, Figs 71-3) are examples of buildings with unfinished architectural detailing which are still standing. In Britain much of the larger masonry in the gates of forts and milecastles on Hadrian's Wall is only roughly dressed, giving the impression that work on them was not completed (Hill 1981, 14-20; Bennett 1988, 121-2). There were doubtless other buildings where schemes of exterior decoration, although originally intended, were never carried out.

Particular types of decoration seem to have been thought appropriate for particular types of structure. At least parts of Hadrian's Wall were whitewashed, or rendered and incised with false jointing, and defensive works in Germany - some of the towers on the *limes,* already noted, and the walls of forts, for example Ellingen (information from Prof D Baatz) - were similarly decorated with false jointing picked out in red paint. The only other instance of this practice noted in Britain occurs on one of the large buttresses or revetments at New Weir, Swainshill. This style of decoration seems to

have been thought fitting for large masses of masonry, particularly defensive walls. Aelius Aristides, writing in the 2nd century AD, refers to walls which 'stand gleaming with stucco' and to the defensive walls at the limits of the empire 'which gleam with more brilliance than bronze' *(Orations,* XXVI, 83; Behr 1981, 90-l). The idea that defences should shine brilliantly persisted for many centuries: in 1634-5 the governor of Istanbul ordered the whitewashing of the city walls which were previously 'repulsively black', so that the city shone 'like a costly pearl, driving all darkness from its inhabitants' (Meyer-Plath & Schneider 1943, 160-l). If a less spiritual explanation is to be sought for this treatment of defensive walls, it might simply be that a wall painted white will seem far larger and more intimidating than one with a surface of weathered stone. But this was obviously not regarded as a military necessity, for patterning in stones of different colours occurs on defensive works in the 1st century at Cologne and Fréjus, in the 2nd century at Dover, and in the late 3rd century at Le Mans and Richborough. Equally, the imitation of ashlar jointing was also thought appropriate for houses of a small size at Pompeii (see, for example, the facade of the *Casa dei Cei* with jointing in stucco imitating large ashlar above a basal strip painted red: Michel 1990, 16, Abb 58-68).

For Wheeler the application of plaster rendering to exterior wall surfaces of natural stone or 'richly-toned Roman brick' betrayed 'a curious lack of appreciation of the aesthetic value of material'. If anything, the subtle shadings of colour and gradations of texture in natural stone are more highly prized now than when Wheeler wrote: in buildings of high quality, natural stone has often superseded the use of artificial materials for external claddings, despite its great cost. The idea that ancient stone walls, displayed to their best advantage by modern techniques of consolidation, with the pointing recessed in the joints to leave the greatest possible area of stonework exposed, were originally concealed by their builders beneath decorative coatings is an affront to modern taste. That is why the exterior decoration of Roman buildings is of particular interest: it was an important element in the design of a structure, but rarely survives; when it does, it offers a glimpse of a scheme of aesthetic values very different from ours.

Acknowledgements

I am grateful to Prof D Baatz, J Crow, C M Daniels, Dr Ing M N Filgis, Dr N Hodgson and Dr D Welsby for information on specific points. I am indebted to Dr R Laurence for drawing my attention to relevant publications on Pompeii. N Holbrook generously made available an unpublished drawing of New Weir, Swainshill, and consented to the publication of Fig 1 on behalf of the Cotswold Archaeological Trust. Finally, R Friendship-Taylor kindly allowed me to publish his notes on the decoration of the villa at Piddington. The drawings were carried out by Roger Oram.

Notes

1 For ribbon pointing, see Clifton-Taylor 1972, 51-2; this technique is also known as tuck-pointing, see OED, 'pointing', citing Young's *Every man his own mechanic* (1881), Sect. 1201.

2 For the lintel, found at the door to one of the towers of the south gate, see Coulston & Phillips 1988, no 435, with a St Andrew's Cross similar in form to examples on the windowheads *(ibid* nos 425-6, 429, 433, the details of the last now obscured by weathering but shown clearly in Bosanquet 1904, 267, no 8). The decorative cornice (Bosanquet 1904, 267, no 17) was found at the east gate. No find spot is known for the tympanum (Bosanquet 1904, 267, no 5), but a plausible source is one of the towers where it might have surmounted a carved lintel. Budge (1903, 327, no 131) identified it as a sun dial, but there are no precise parallels in the catalogue of Greek and Roman sundials by Gibbs (1976); the stone is comparable with the inscribed and decorated tympana from watch towers on the Odenwald *limes* (Baatz 1976, Abb 17, l-2).

3 In the report on the Exeter *thermae* the question of external rendering was not discussed, but levelling around the outside of the *thermae,* which took place when the walls were incorporated in the civil *basilica,* should have preserved traces of rendering had it existed.

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PART II: ELEVATIONS

4 Upper storeys in Romano-British villas

David S Neal

Introduction

There has been a tendency in the past to assume that most Roman buildings, especially villas, were single storeyed. As recorded elsewhere (Neal 1982, 153), the idea of buildings having another storey was rarely, if at all, expressed in the general works on Roman Britain. Students had become conditioned by statements that there is little or no evidence for more than single storeys. Reconstruction drawings showed low level buildings to be architecturally bland and not so dissimilar to the buildings of frontier towns! There was a popular assumption that the architectural developments on the continent never reached Britain even though many Romano-British winged corridor villas, one of the most basic villa forms, for example, had building extensions with foundations far exceeding the widths of the original works and in excess of that required to support a single storeyed structure. Few excavators attempted to make reconstruction drawings of their buildings, either because they rarely considered the superstructure, or out of caution should their work be criticised for being a flight of fancy. Fortunately we now have a different attitude towards the preparation of reconstruction drawings and regard the process as an aid in the understanding and interpretation of buildings.

There were some notable exceptions to this attitude in the past; it was probably Ward-Perkins with his interpretation of the Lockleys villa (Fig 4.1) who first suggested the possibility that this building had another storey (Ward-Perkins 1938, 347). A collapsed floor of *opus signinum* in Room 8 (a semi basement terraced into the slope with its tessellated floor on the south-west side about level with the outside ground surface> was believed to have fallen from upstairs. Its walls, founded on clay and chalk, were 0.85m thick. The excavations at Gadebridge Park (Fig 4.2) also revealed a terraced room (Room 20) with three rectangular piers designed to support an upstairs wall separating a veranda from a suite of rooms (Neal 1974, 19). The foundations for the main walls were of flint, probably with string courses of tiles bonded in hard lime mortar. Like Room 8 at Lockleys they were also about 0.85m wide and, sufficiently strong to support a gable rising to a height exceeding 7m; they too were founded on clay and chalk. What is significant, perhaps, is that the thickness of walls in the main ranges of both villas, not believed to have supported another storey (although this could be questioned), were of about the same width. This implies therefore that walls of 'standard' thickness were sometimes capable of supporting another storey. If many of these walls merely supported single storey blocks it would seem that Roman builders sometimes built thicker walls than were necessary, although it is important to consider here the building materials and how they were used.

With flint, for example, a common building stone throughout much of Southern Britain, herringbone walls bonded in lime mortar were provided with string courses of tiles at regular intervals (Fig 4.3). Apart from acting as a level for stages of work, these were intended primarily to prevent the rubble core from bulging and the facing stones from falling away. The tiles were often purpose-made although *tegulae* were a regular substitute and were noted in the late 1st-century bath house at Gadebridge for example (Neal 1974, Pl IIb). The same principle applies with limestone walls of herring-bone construction where tabular string courses bonded in lime mortar are employed (Fig 4.4). However, if limestone, when quarried, is found in flat bedding planes and can be cleaved evenly, it is possible to build up to eaves level without the need for string courses. Facing slabs would interlock with the rubble and mortar core.

The building techniques described above are found regularly on Roman walls within the study area. We will now compare the use of these same materials in a later context in standing buildings to obtain a clearer understanding of what was technically possible and to compare the relationship of the widths of the walls to their heights.

Buildings of flint construction

At Old Gorhambury near St Albans are the remains of the house of Sir Nicholas Bacon completed in 1568. It was built in flint primarily with string courses of brick and quoins of Tottenhoe clunch and in its ruined state provides an ideal opportunity to look at the cross section of walls and part of a structure somewhat similar to the villas at Lockleys

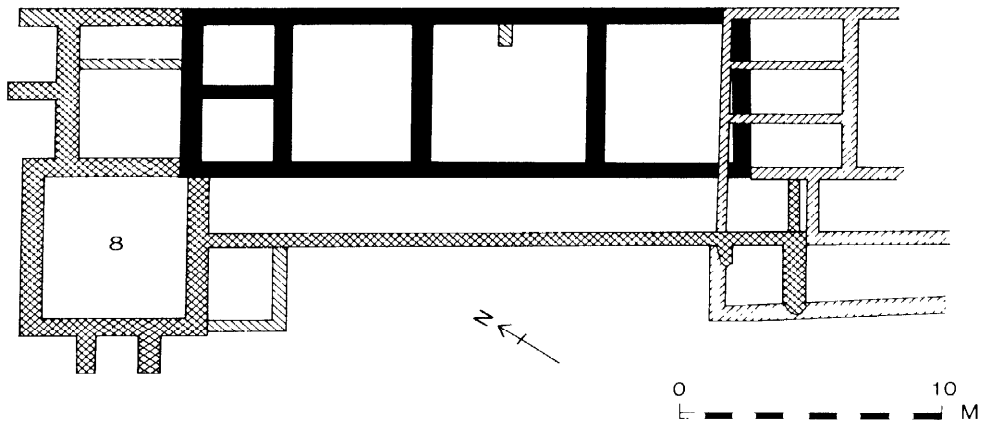

Fig 4.1 Lockleys villa, Herts. Groundplan (after Ward-Perkins)

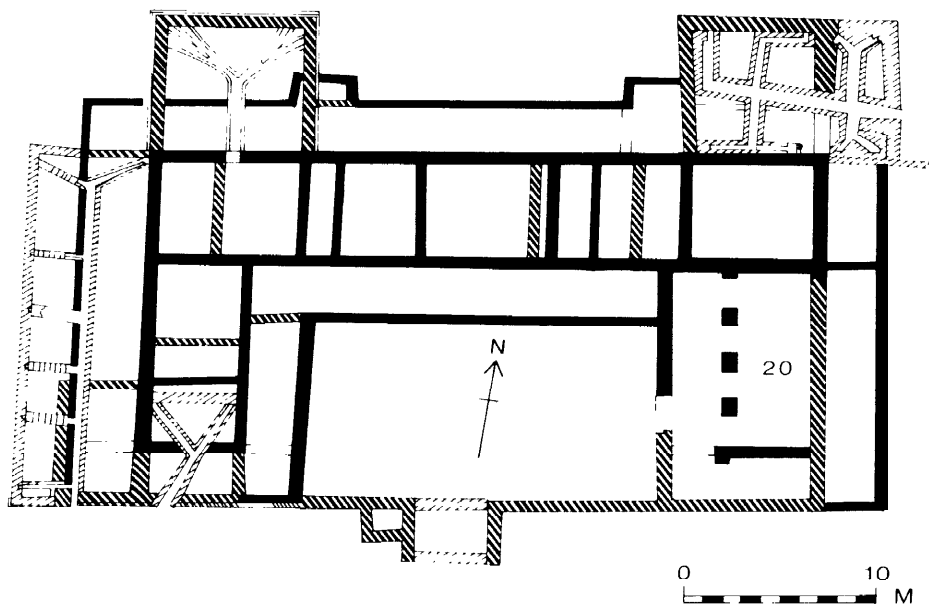

Fig 4.2 Gadebridge Park villa, Herts. Groundplan (D S Neal)

and Gadebridge. The similarity is that the Old Gorhambury ruin incorporates several semi-basements with floors about 1.20m below the outside ground level the walls of which support upper floors. Above the larger of the two cellars, which measured 11.75m by 5.50m, was a hall; the cellar walls are 1m thick and support walls at hall floor level 0.70m thick, rising to over 7m but originally higher in order to clear the tops of the windows at this level. The hall was constructed in flint and lime mortar with courses of brick. The problem of the flint facings bulging was resolved by infilling in brick and clunch giving the walls a patchwork appearance (Fig 4.5). The point to be made here is that the building technique was essentially the same as that used in the Roman period and that the walls, albeit ruinous, are still standing 400 years after their construction to a height exceeding

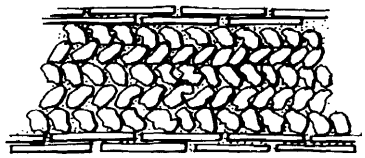

Fig 4.3 Flint herring-bone walling, typical construction with tile bonding courses (D S Neal)

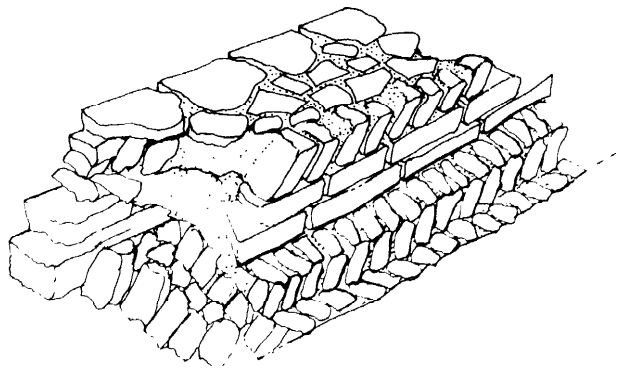

Fig 4.4 Limestone herring- bone walling, typical construction with tabular string courses (D S Neal)

that of a single storey building. General uniformity in thickness between the walls of the cellar and those elsewhere in the villas at Lockleys and Gadebridge would suggest that the walls above the cellar may not have reduced in thickness. It is important to note that the subsoil at both the Roman and medieval sites was the same and similar to that at Lockleys and Gadebridge.

About half a mile east of Old Gorhambury lies the Roman villa of Gorhambury excavated between 1972-81 (Neal *et al* 1990). The first masonry villa (Building 27) also had a cellar (not of the terraced type) about 2m deep with walls as thick as those in the main range (Fig 4.6); there is no hard evidence that this villa had another storey apart from a room over the cellar. Building 28, however, appears to have had another storey; it is an almost square building, 5.80 by 6.40m overall, with pairs of buttresses on the east and west sides. The walls, 0.90m wide, were constructed in flint on a foundation of alternate layers of flint and rammed chalk, 0.75m deep. Although the building was constructed over an earlier ditch, this was backfilled with heavy clay and it is unlikely that at the time of construction the builders were aware of its presence. The provision of buttresses on such a small building would hardly have been necessary had the building been single storeyed and it is interpreted as a towered granary. Again, the point must be made that the thickness of its walls was much the same as those of many other buildings on the site. Were it not for the fact that this example had buttresses and that its footings were taken down to a depth greater than on many other buildings, it is an unlikely candidate for having another storey. Neither must we assume however that all buttressed buildings supported another storey since it is generally accepted that granaries, for example, required buttresses not merely to support the weight of corn stored within but possibly to strengthen a wall weakened structurally by the provision of ventilation slots at sub-floor and at storage level.

The small towered granary from Gorhambury with its deep footings contrasts, for example, with Building 30 from the same site. This was much larger, 7.25m by 8.75m, but its rammed chalk foundations were only about half as deep. As we have already seen at Old Gorhambury, however, the width of its walls, 0.70m, would certainly have been enough to rise to eaves level, in masonry, for a single storeyed building or even higher. The provision of two slots against its north wall was interpreted as possibly being part of an external staircase rising into a store in the loft space (Neal *et al* 1990, 71). By contrast Building 38 from Gorhambury, 9m by 5m overall, had walls only 0.50m wide. The presence of daub around the structure would suggest that this building was half-timbered and the footings merely cills for wall plates. The footings had no depth but rested directly onto the surface of the natural clay.

It would appear from the evidence above that, providing there are regular courses of tiles and quoins of brick or stone, flint walls over 0.75m were capable of rising two storeys.

As we have seen, at Gadebridge Park, the walls in the main villa of the later 2nd century were 0.85m wide; they were trench-built and likely to have been carried up in masonry to eaves level, possibly without a reduction in width. In Period 5, dated to the early 4th century, there is a minor change in construction technique where the walls are set in wide shallow foundation trenches with offsets. The walls range from 0.75m to 1.20m thick, usually with a double offset. As noted above, walls 0.75m wide were capable of supporting two storeys and it is likely that these footings did likewise and were intended to support tower-like rooms projecting above the level of other roofs. The provision of pairs of rooms, symmetrically placed, appears to be a 4th-century development in Roman Britain and an architectural development which can be observed on other villas including, for example, Norton Disney, Lincs and Stroud, Hants. (Neal 1982, Figs 9.11 and 9.12 respectively) for example.

Buildings of limestone construction

The possibility that wing rooms of this type may have had another storey has long been recognised but excavations on the Roman villa and its estate

Fig 4.5 Old Gorhambury, Herts, house of Sir Nicholas Bacon, completed in 1568 (D S Neal)

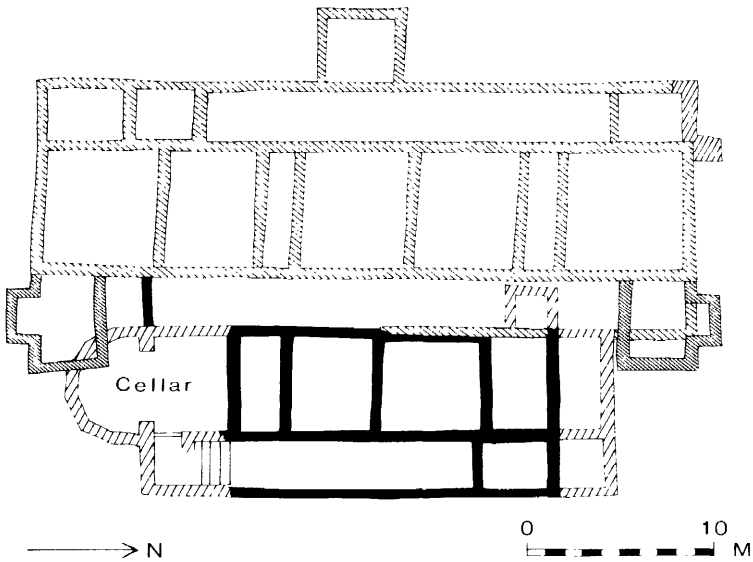

Fig 4.6 Gorhambury villa, Herts. Groundplan of Building 27 (D S Neal)

buildings at Stanwick, Northants, between 1984-1991 (Neal 1989) has recovered evidence that other classes of buildings may also have been two storeyed. The stone used in all the masonry buildings on this site was oolitic limestone taken from local quarries. Barnack limestone was used for architectural mouldings; it was also found reused in the walls of the main villa and had been stripped from other nearby structures. The building techniques varied; foundations, if trench-built, were invariably of pitched construction (Fig 4.4) and from ground level up supported tabular courses or alternating courses of tabular and herring-bone form. Sometimes the same course might combine the two; for example, if the facing was tabular the rest of the course could be herringbone. The course above might have herringbone masonry over the tabular course and a tabular course over the herringbone. The subsoil was clay and gravel.

The medieval buildings to be used for comparison are two miles south west of the villa and form the ruins of Chichele College at Higham Ferrers, an institution constructed from 1422 and 'surrendered' in 1542 (VCH Northants II, 178). It must be noted, however, that herringbone masonry is not to be found at Chichele College but this site repays study since tabular construction, typical throughout Chichele College, is also widespread at Stanwick, especially in the villa. Ironically it is possible that some of the stone used in the construction of Chichelle College may have been taken from Roman buildings as there are fragments of Barnack limestone built into its walls. These are of the same grain and tone, similar to that used at Stanwick but different in grain and colour to the oolitic limestone mouldings of the 15th century.

The late medieval buildings at Higham Ferrers once formed a closed quadrangle but little survives except the front of the gatehouse, part of the south range in which a chapel was situated, and the north-west end of the north range. The foundations of the north range, possibly that of a hall, are about 0.85m wide and the walls survive to a height of about 5.40m (the depth of the footings has not been established) and with an estimated height originally of about 7m to the apex of the gable which is lost. At 2.90m from the ground the width of the north and south walls reduce 0.15m internally to about 0.70m to create a ledge for first floor joists; the gable wall does not reduce in thickness at first floor level because it was not required to support the upper floor. The facing stones are undressed and nowhere are larger stones used as string courses although at intervals courses have been levelled and perhaps represent stages in the work. Irregular sized quoins are found at the angles including reused limestone and blocks of ironstone. In the case of the chapel, faced ashlar is used throughout the gable, and around entrances and windows. A post medieval farm building along the south range measures 7.85m by 5.10m and is built in small tabular stones with substantial quoins. Its walls are only 0.50m thick yet rise to about 6m to the apex of the gable; it incorporates a storage loft. The two buildings help demonstrate the range of wall thickness yet both are two storey structures.

Although the main buildings at Chichele College are substantial, this may be due in part to the use of relatively small stones. Had the facings been carried up in ashlar or the walls incorporated

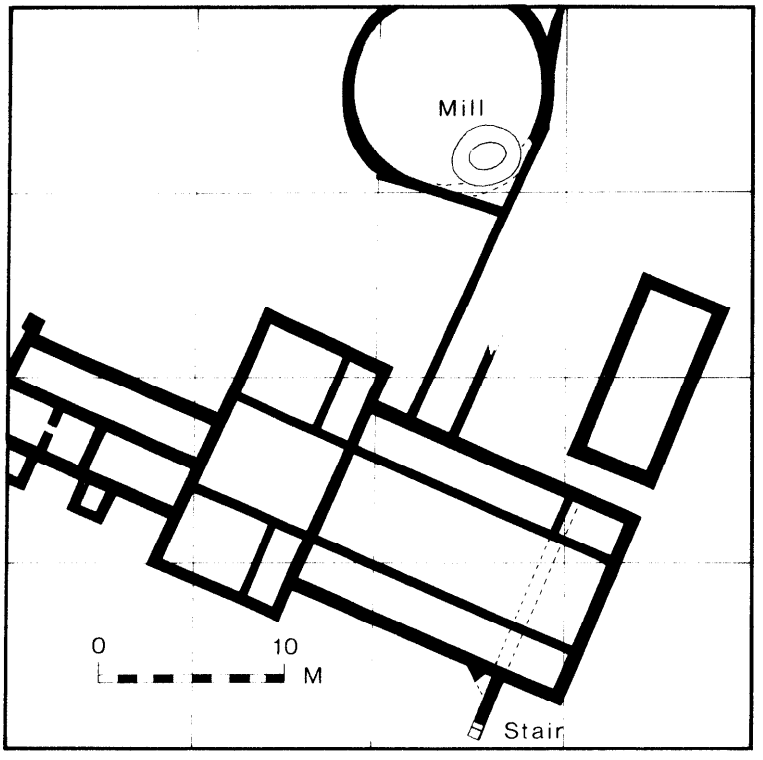

Fig 4.7 Stanwick villa, Northants. Groundplan of aisled hall and mill in the 3rd century (D S Neal)

bonding courses, the walls could perhaps have been slimmer. It could be argued therefore that some of the Roman buildings to be described below were stronger in that the walls, although marginally slimmer, incorporated larger stones as facings and bonding courses.

The Stanwick villa

The Stanwick villa complex has a long history with many diverse buildings, the most prestigious being the late 4th century villa. This was of winged-corridor plan and comprised two large blocks with fronting wing rooms built on the north and south sides of an earlier aisled hall.

The aisled hall

This measured 19.80m long by 11.30m with walls 0.70m thick and foundations 0.50m deep. The footings were of herringbone construction and the walls above footing level tabular and bonded in a colluvium of limestone chippings and clay which when dry becomes almost concrete hard. At the south-east angle was a straight length of wall with two worn steps at the south end, this has been interpreted as a staircase rising into another storey (Fig 4.7). Because the wall rises in line with the thickness of the gable a triangular foundation was placed close to the west side, possibly to support a diagonal bridge towards a first floor entrance. Whether the area above was merely a store or also provided accommodation is uncertain in this period but a Phase V cross range on the west side, incorporating three living rooms, is also believed to have had another floor. This range was associated with two narrow rooms which might traditionally be interpreted as passages but which are more likely to have been staircase wells. One of the main points to make is that with only three rooms and an open hall there is possibly insufficient accommodation to justify the integral bath-suite built at the west end. The width of the walls in the cross-range were 0.70m wide but probably sufficiently strong to support another floor.

When the aisled building was incorporated into the winged corridor villa in the late 4th century two large building blocks were added to the north and south of the hall with their east fronts in line with the hall (Fig 4.8). The block to the south measured 7.90m by 15.20m and had a wing room on the east side axial to the block. Two of the rooms had mosaics. The building to the north of the aisled hall was similar but somewhat larger (7.90m by 17.80m) and incorporated a bath-suite. Along the east front of the new complex was a corridor paved with a geometric mosaic; the corridor linked the rooms in the main range and led at each end into the wing rooms. Axial to the corridor was a porch of the same size as the wing-rooms.

The footings for the new blocks of rooms were massive, 1.40m wide. Although this could be explained due to the buildings having to be con-

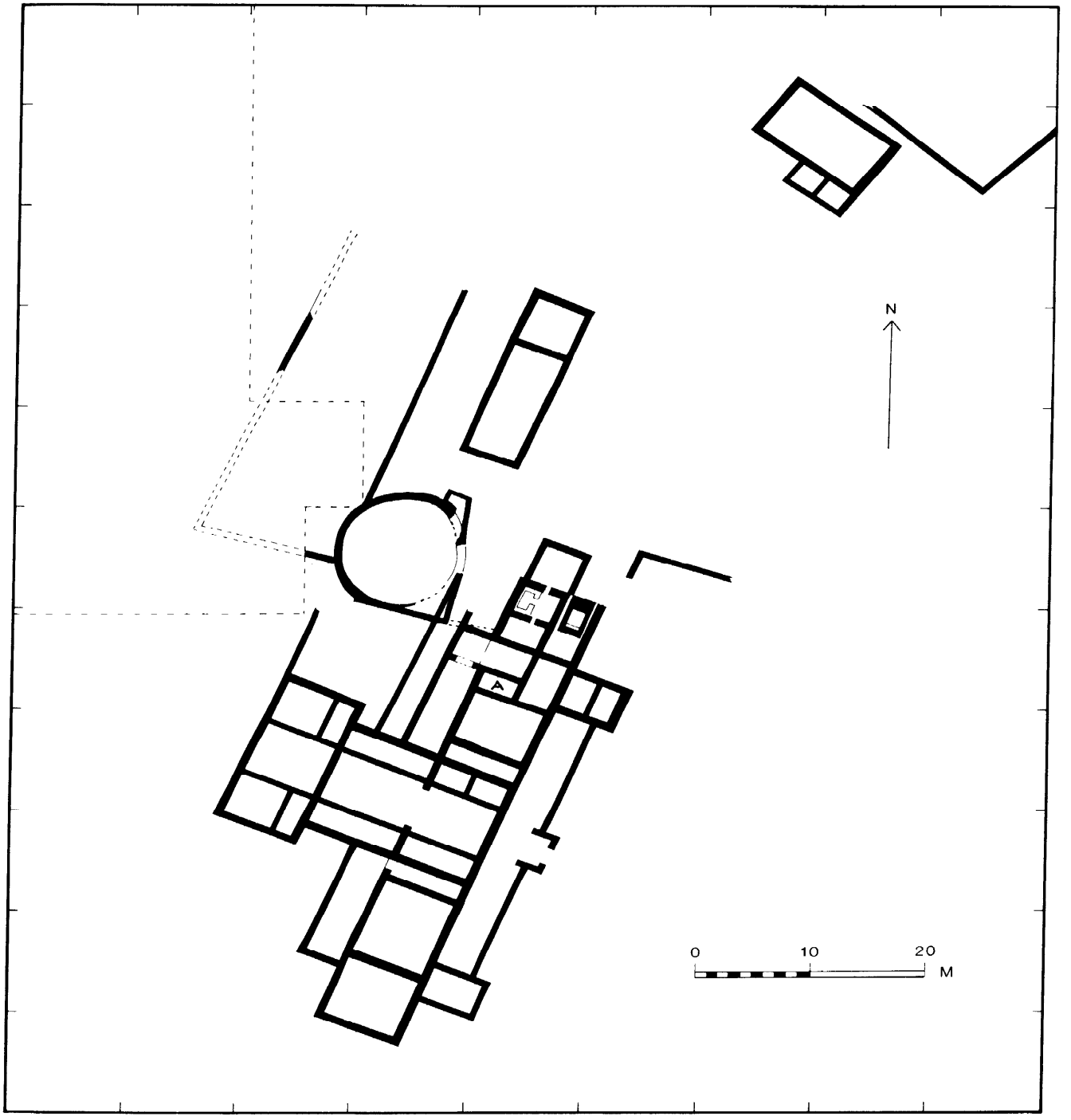

Fig 4.8 Stanwick villa. Groundplan of the winged corridor villa in the lute 4th century (D S Neal)

structed over disturbed ground, their foundations were taken down to natural gravel and therefore had a stable base. They supported walls 0.80m wide constructed in tabular courses of masonry including many large stones stripped from earlier buildings. The rooms to the south and the corridor had mosaics. In the hall the line of the west wall of the new blocks projected across the aisles and as responds into the nave.

Until now the number of rooms in the complex had been estimated as six, assuming three extra rooms over the west range and excluding the hall and any accommodation or storage facility above. With the provision of the new buildings the increase would seem to be only an extra two rooms because the northern block was taken up with a bath-suite. To go to such lengths merely to add two living rooms would seem unnecessary but the strength of the walls is more than sufficient to support another storey (Fig 4.9) and it is suggested that the rooms above also ran over the front of the hall connecting the two blocks. This would explain the partial cross wall here; the responds were designed to carry an arch or beam supporting a party wall upstairs. The number of living rooms added to the complex in this phase therefore is not two as it appears from the plan but could be as many as eight. This assumes two rooms over the south block, two across the front of the hall, and a minimum of two over the bath-suite. The number could be increased to ten if we assume rooms over the wing-rooms. This is quite possible although the foundations for these rooms were not so massive as the north and south blocks, yet wider than some two storeyed medieval buildings in Higham Ferrers for example. To postulate rooms over a bath-suite may seem fanciful but chimneys could easily have been taken up through the walls of the rooms upstairs.

The form of the corridor is debatable. Traditionally we tend to reconstruct them with an open veranda comprising a low wall supporting dwarf columns holding a pentice roof. However, at Stanwick a timber slot divided the porch from the corridor and marked the location of a door step. It would seem illogical to place a door here if the rest of the corridor was protected merely by a low wall; it would hardly afford protection from intruders, driving rain and frost (which can lift a mosaic overnight and leave tesserae on columns of ice). Evidence for doors in this position is rarely found but a good example can be seen on the villa at Boughspring, Glos (Neal & Walker 1988, Fig 1). Here a previously open veranda with an axial porch was divided into three areas and the porch provided with a main door with a central stop and drainage runnels. Clearly the previously open veranda was enclosed and the veranda walls built up to the level of the pentice.

Although there are numerous examples of open tessellated verandas on the continent, and in Britain dating as early as the 2nd century, these were plain tesserae or arrangements of coloured stripes. There are no decorated mosaics paving corridors earlier than about the 4th century; the pavements at Great Weldon, Northants and Scampton, Lincs (Smith 1969, PI 3.21 & 3.22 respectively) being good examples. It must be questioned therefore whether this trend was influenced by changes of architectural fashion rather than just affluence and that previously open verandas were being 'filled in' and the walls provided with grilled windows for greater security. Once corridors were enclosed and protected from the elements they could be more lavishly furnished.

The next question to ask is, if the Stanwick villa had another storey and an enclosed corridor at ground level, as seems probable, was there an open veranda or gallery servicing the rooms at first floor level (running directly over the corridor below) and would the corridor wall have been sufficiently strong to support it? Before this question can be addressed it is important to consider the overall loading and how much heavier a two storey veranda may have been compared to one on a single level. The outer corridor wall was built in tabular courses 0.60m wide, on a foundation set herringbone fashion 0.80m wide, bonded in a hard white mortar. The width of this wall is about the same as many of the walls of single storey buildings at Stanwick believed to have risen to eaves level in masonry throughout. Furthermore, the presence of post medieval walls only 0.50m wide at Chichele College rising to 6m has already been noted. The extra loading of a two storey veranda may not be so considerable since the wall need only rise above the height of the original eaves level of the pentice by about 1.25m, a total height of between 4-5m; its floor joists, estimated as being between three and four metres above ground floor level, would have acted as tie-beams securing the wall to the main walls of the villa. To reduce loading it is possible a gallery could have been of timber but there are no structural reasons why the wall could not have supported dwarf stone columns of a type found in association with the villa. The idea that the wing-rooms and the porch also had a second floor is contentious but if the facade had an elevated gallery it would be reasonable to assume that they were linked. The overall appearance of the building therefore would not be so different to the reconstruction of the huge residence at Castor near Peterborough (Mackreth 1984, Fig 12b). Again the point must be emphasised that it would be remarkable if the architectural trends on the continent, especially with villas like Pfalzel (Kutzbach 1935, Abb 2 and Neal 1982, 9.7), near Trier, with its three floors, did not influence architecture in Britain.

Staircases

If we accept that the Stanwick villa may have had another storey we must question means of access to the rooms upstairs. The narrow passages separating

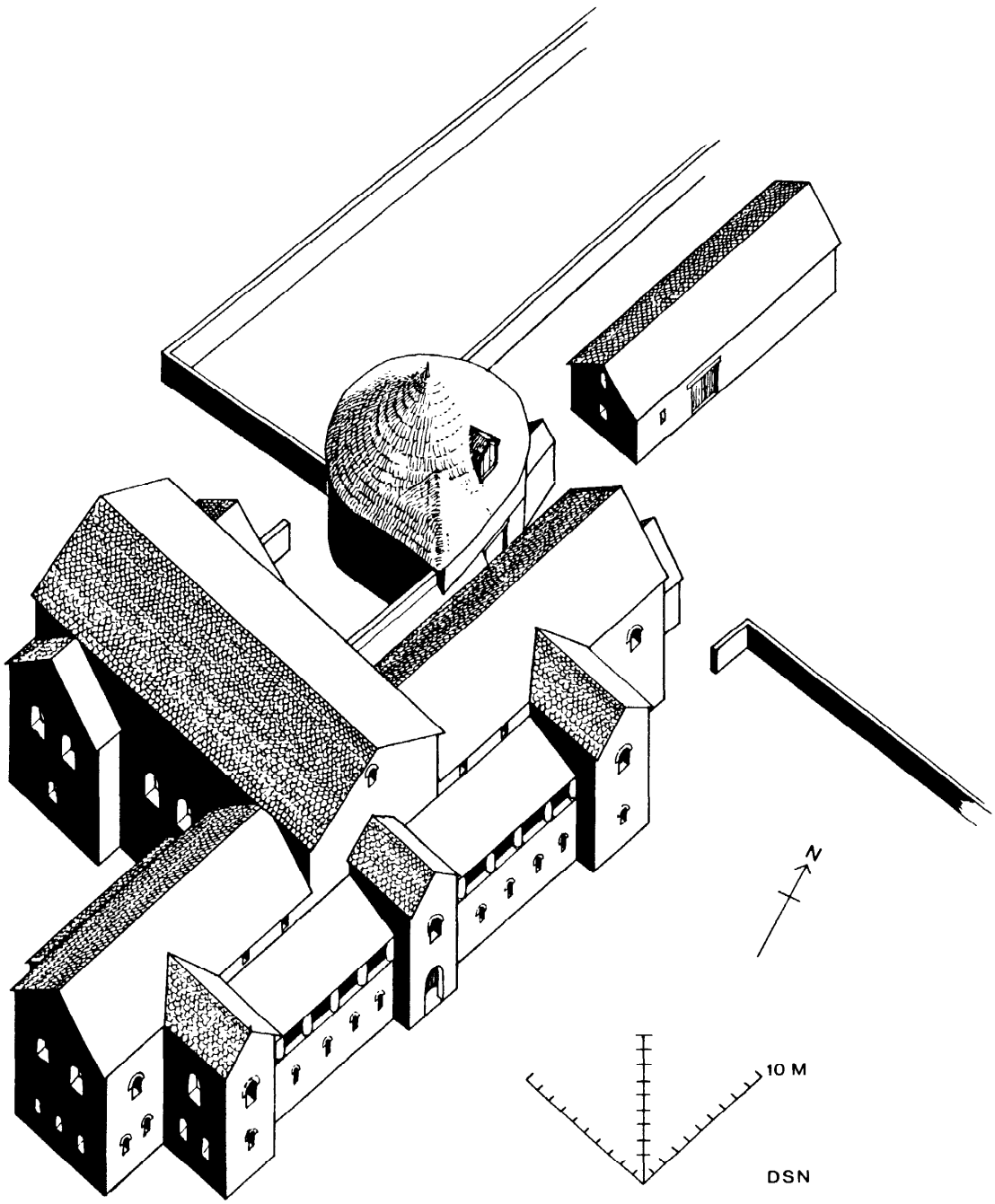

Fig 4.9 Stanwick villa. Axonometric reconstruction of the winged corridor villa (D S Neal)

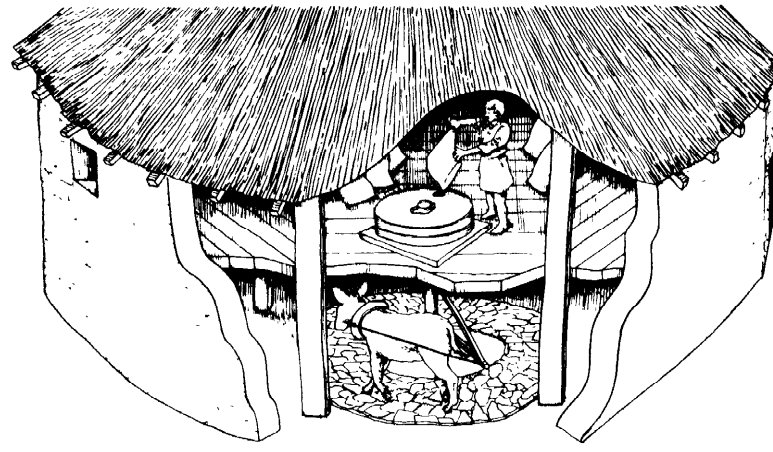

Fig 4.10 Stanwick villa. Axonometric reconstruction of the donkey mill (D S Neal)

the new blocks of rooms and the aisled hall could have been staircase wells, although the presence of a mosaic in the south passage would perhaps preclude this. Alternatively Room A, a narrow room in the north block, may be a possibility; it had direct access from the west corridor but does not appear to have provided access into the bath-suite. Alternatively staircases could possibly have been situated towards the ends of the corridors fixed against the main walls; a common location at Pompeii for example.

At Gorhambury and Lullingstone access to cellars was at the end of the front corridors which were divided; one half leading on the same level into wing rooms and the other half dropping into a staircase well. Had these villas had upper floors, staircases to them could have been arranged similarly. However, the possibility that the narrow rooms at Stanwick were staircase wells is likely to preclude this and it is unlikely that both arrangements would have been employed.

Circular houses

One of the most common forms of buildings at Stanwick is the circular cottage. Examples vary in size between 6-7m but Buildings 66400 and 84951 are exceptional in that they are in excess of 11m. Unlike the smaller cottages which have no internal supports, these have an arrangement of four post-pads in the centre and, around the internal edge of the wall, a series of post-pads. On other houses of this type (which lack the peripheral post-pads) including Building E from Winter-ton, South Humberside, for example (Stead 1976, 51), the four foundations were over 1m square. Such massive foundations are hardly necessary just to support timber posts and it is suggested therefore that in the case of Winterton the foundations belong to piers designed to support a second floor although it is also possible that they supported posts at second floor level holding a ring beam for the roof. In the examples from Stanwick the post-pads are likely to have had the same function. The post-pads around the perimeter of the wall, however, possibly supported a ring beam on which the floor rested and, if so, it would seem that the internal timber fittings were secondary to the outer walls or designed to avoid excess pressure or vibration to the walls. It is uncertain whether the walls were carried up to eaves level in stone or timber but, as we have seen from rectilinear buildings constructed in similar materials, foundations 0.60m thick, as in the case of Building 84951, were capable of supporting walls 6m high.

There is another reason for suggesting Building 84951 was two storeyed. Set into its floor was a circular stone track with wear marks caused possibly by the hooves of an animal; it is believed to have been a donkey mill (Fig 4.10). How it may have worked is open to speculation but in the centre of the track was an oval shaped area devoid of features. This space may have taken a timber block on which millstones rested, but there would seem to be insufficient space between it and the track to attend either to the collection of flour or to feed grain into it; the speed a donkey would walk would produce little flour unless gearing was employed to speed the revolutions. It is suggested therefore that the space possibly had a pivot for a vertical spindle which powered mills housed on an upper floor. Here the grain could be stored and flour collected on clean wooden floors and isolated from the stable like conditions below, as in medieval donkey mills. Evidence for agricultural buildings having a second floor is rarely found but it is common today to find post-medieval buildings with hay lofts and we can assume that similar arrangements existed in the Roman period for the storage of hay and winter feed.

Summary

Although the presence of upper storeys in Romano-British villas cannot be proved without clear evidence for staircases, the discovery in recent years of fallen gables at the villas of Meonstoke, Hants (see King, p 56), Redlands Farm, Stanwick, Northants (see Keevil, p 44) and Carsington, Derbyshire (Ling 1992, 233-6), for example, indicate masonry buildings as high as 15m; more than enough height for a second storey.

To what extent medieval parallels can, in fact, be taken as a guide to what the Roman practice actually was in Britain is debatable, but nevertheless, the examples quoted do provide a general idea as to what was possible using similar methods of construction and materials, and founded on similar subsoil. If, as archaeologists, we can discard the constraints imposed by previous assumptions we may find, as in the above examples, the evidence we seek and no longer see the buildings of Roman Britain as mere low-level structures.

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5 The reconstruction of the Romano-British villa at Redlands Farm, Northamptonshire

Graham D Keevill

Introduction

Archaeologists often give scant consideration to the architectural form of excavated buildings. In the Romano-British context, for instance, there has been a long-standing assumption that villas were always single-storeyed buildings; it is only recently that this received wisdom has come under challenge (Neal 1982 and in this volume). There are occasions, however, when it is impossible to ignore the third dimension of an excavated building because of the particular conditions of preservation- One such example is described in this paper.

The Roman villa at Redlands Farm, Northants, was discovered in 1989 during an evaluation of land in advance of gravel extraction (Fig 5.1). The site lies in the floodplain of the River Nene, 2km south-west of the major villa at Stanwick. The latter has been known for 200 years, and has been excavated in recent years by David Neal for English Heritage (Neal 1989). The Redlands Farm villa is the centre of a small farmstead comprising rectangular barns, later replaced by roundhouses, the whole being enclosed by a perimeter wall (Fig 5.2). Most of the buildings are well preserved, although one of the roundhouses has been truncated by medieval ridge-and-furrow cultivation. A field system lies to the east of the farmstead (Keevill 1990). The importance of the site led the developer, ARC Ltd, to agree that the villa and much of the land around it should be excluded from the extraction area. The villa has therefore been covered over for protection, and has been preserved for the future.

Post-excavation analysis of the site is still in progress at the time of writing, and the dating evidence in particular must be regarded as provisional. Similarly the study of the building's architecture is not yet complete. The discussion of the superstructure presented here, therefore, represents an interim statement.

The development of the villa

Fig 5.3

The villa began its life in the 2nd century as a mill, powered by leats draining subsidiary channels of the River Nene. The mill building sat on a low sand and gravel island, and consisted of two rooms, the eastern being sunken by some 0.5m. The south-facing door therefore opened out onto the surrounding ground level. In the late 2nd or early 3rd century the mill was converted to domestic use by the addition of a rear corridor on the north side of the mill, with wings on the east and west sides projecting beyond the south façade. A hypocaust, fed from an open furnace in the rear corridor, was inserted into the sunken room; the *suspensura* was now at the same level as the floor in the original mill block. The latter was further subdivided; the new central room was provided with a mosaic, while the western room had a plain white tessellated pavement.

The 3rd and 4th centuries saw various developments, including the addition of a veranda to the front façade, successive divisions of the wings into two rooms each, refurbishment of the hypocaust, and the enclosure of its furnace within a separate room in the rear corridor (Figs 5.3, 5.4 and 5.5). The latter was the only occasion when absolute symmetry of plan was abandoned, and then apparently for the strictly practical purpose of improving the efficiency of the heat transfer into the hypocaust.

The central suite of rooms, with the mosaic, tessellated pavement, hypocaust and painted wall plaster, was clearly the living area. The east wing was provided with slab floors and probably represents the bedrooms. The rear corridor was clearly a service wing, and the presence of ovens in the later phases at least shows that it was used as a kitchen. The function of the west wing is less clear. The floors were simply of beaten earth. Fragments of three coin moulds were found here, suggesting that the wing may have been used as a workshop of dubious legality!

From the mid-late 4th century onwards the villa went into steady decline. This is most notable in the demolition of the wings (Keevill 1990, 54), but equally remarkable is the dereliction of the hypocaust, and the ripping up of the tessellated pavement; the tesserae were used to cover a pair of

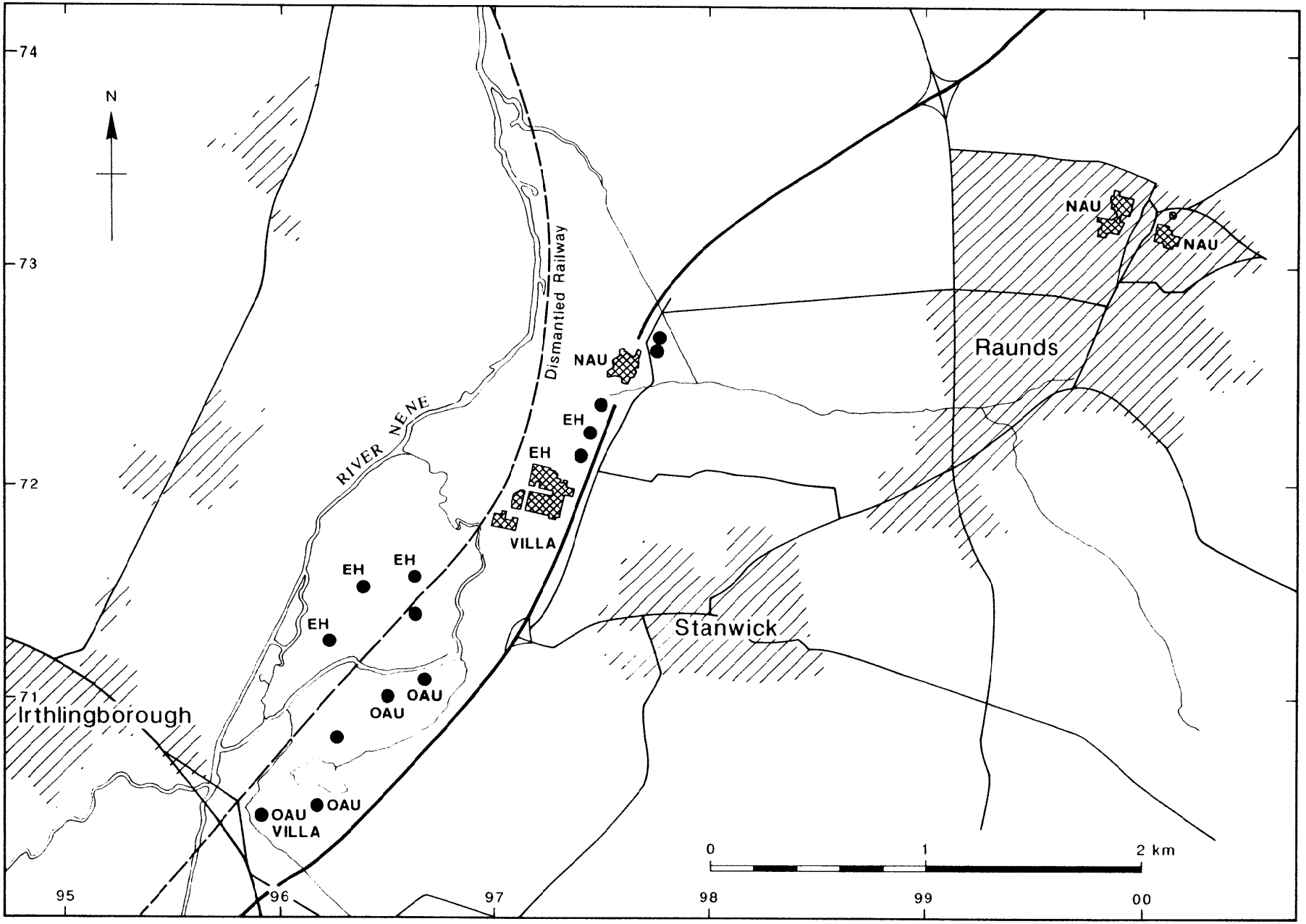

Fig 5.1 Redlands Farm, Northants: site location

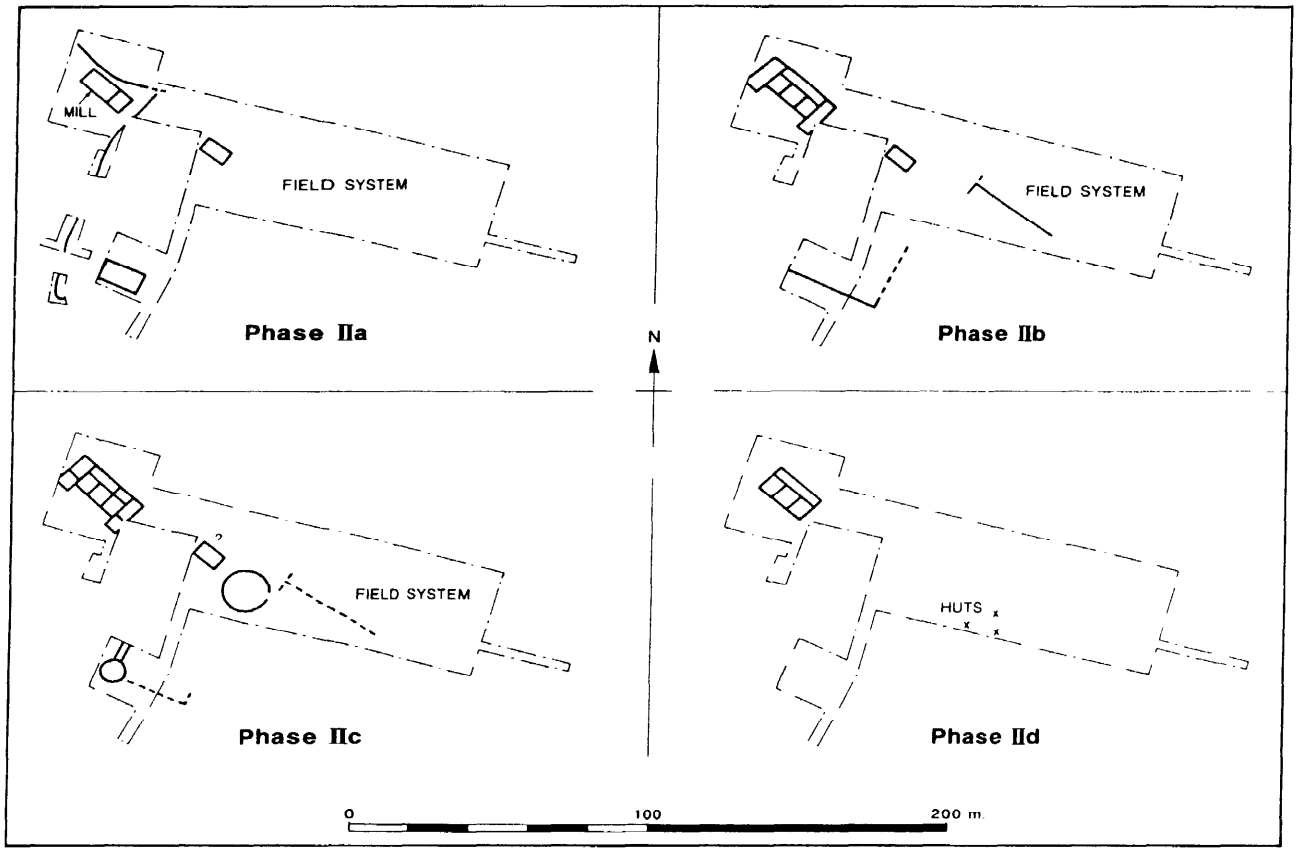

Fig 5.2 Redlands Farm, No&ants: the development of the villa estate

infant burials in the demolished west wing. The surviving shell of the building seems to have been used into the post-Roman period, with at least one very crude floor being laid down. How long this settlement lasted is not clear.

Evidence for the superstructure

There the story would rest, were it not for the remarkable preservation of the villa and the survival of several areas of collapsed masonry. The building was vulnerable to flooding because of its proximity to the Nene, and during the early-middle Saxon period the process of over-bank flooding began to cover the site with thick layers of alluvium (Keevill 1992, 183; Robinson 1992, 201). This seems to have deterred would-be plunderers of the villa and other buildings. Accordingly there was very little robbing of the standing or coliapsed masonry, in marked contrast to the larger villa at Stanwick (David Neal pers comm). The walls of the Redlands Farm villa survive to a height of 0.80m in places (Fig 5.5).

The areas of collapsed masonry derive from two quite separate episodes: demolition of the wings, and the gradual dereliction of the villa from the 5th century onwards. Most of the rooms in the building were covered with rubble characteristic of the gradual decay of masonry over a long period of time. In the hypocausted room, for instance, the rubble filled most of the cellar and had destroyed most of the *pilae*. There was one crucial exception: an intact panel at the south-east corner of the room collapsed inwards (Fig 5.6), with its painted wall plaster still *in situ* (see Fig 5.5). This panel seems to represent the full height of the room, although there are interpretational problems concerning roof configuration and fenestration if this is so (see below).

The two wings were deliberately demolished. The west wing was the only part of the villa to suffer later stone robbing, so that the process by which the demolition happened is unclear. The east wing, however, was largely undisturbed. The northern gable wall (ie at the rear of the villa) had collapsed outwards, and survived virtually intact where it had fallen (Fig 5.7). It seems that the roof had been removed prior to demolition, as intact *imbrices* had been stacked in the rear corridor (Fig 5.8), although several of them had been smashed during the later dereliction of the surviving masonry and roof.

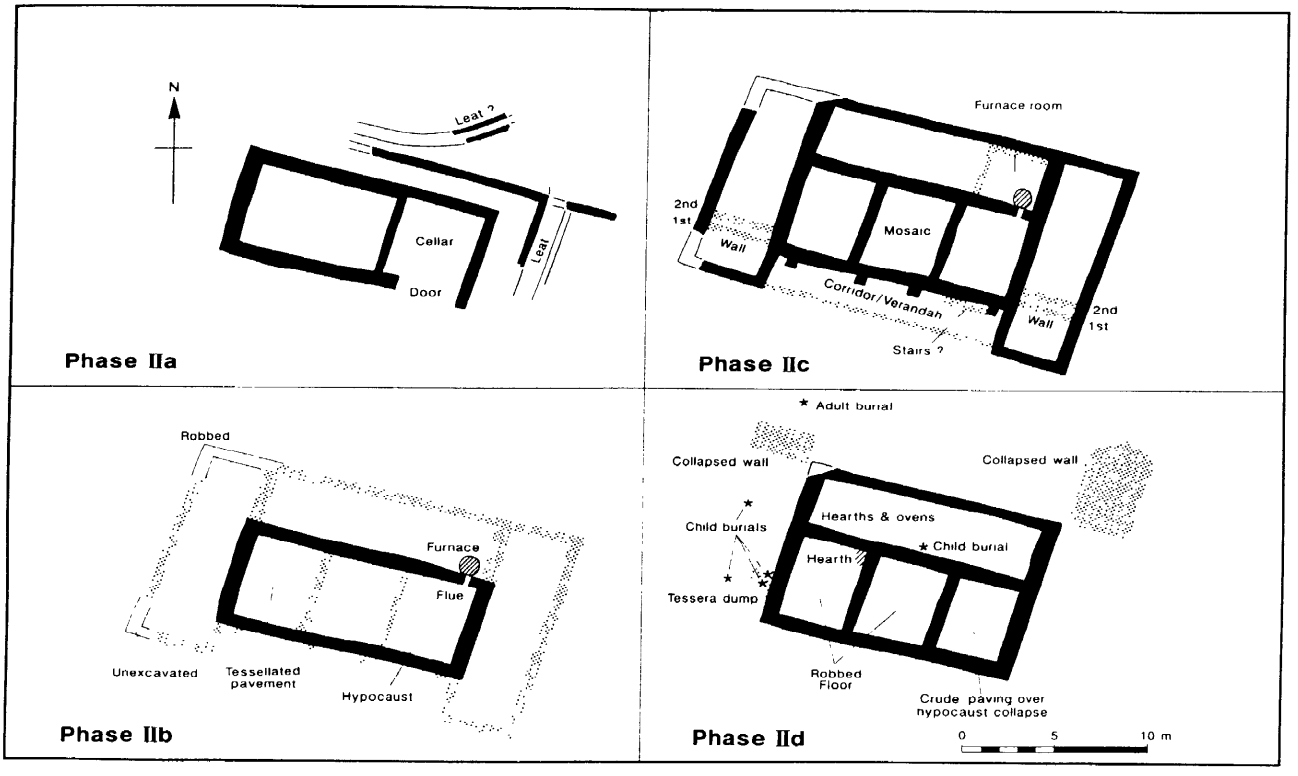

Fig 5.3 Redlands Farm, Northants: the development of the mill and villa

A total of 29 courses of masonry were present in the collapsed gable, in addition to the three standing courses of the rear wall. The collapsed fragment was 6.40m long, but had clearly expanded and twisted slightly as it fell; detailed recording and analysis showed that its actual height would have been c 5.70m to the roof ridge, or 6.50m including the standing masonry. The lower ten courses were in herringbone construction with one string course; the upper part of the wall was predominantly built of *tabula* courses. It seems likely that the change in technique represents the addition of an upper storey to the wing. A single course of *tegulae* and *imbrices* was built into the upper part of the wall; this probably capped an offset in the wall which would otherwise have been exposed to water penetration.

Quoins were used, but not all were present, especially at the corner of the building. Here, the quoins were present from the eaves downwards but they were absent in all of the seven lowest courses of collapsed masonry. The completeness of the remaining masonry makes it unlikely that they were missing accidentally, and their apparent removal is interpreted as a deliberate action to undermine the structure. The west side of the wall also had quoins in the eight surviving courses below the roof eaves. Below this the wall would have continued across the rear corridor. The latter evidently survived when the wings were demolished; the lower courses of the east wing collapse stop at a point corresponding with the end wall of the corridor (see Figs 5.7 and 5.9).

One side of a small window was preserved in the upper part of the wall. It lay above the tile course noted earlier, and had been partially cut away by a small pit. Enough survived, however, to determine that it was round headed.

Why were the wings demolished? Both had been built on the slopes of the low island on which the mill had originally been built, but this in itself would not seem to be enough to cause major instability. A more serious problem, however, was that both wings were built over the leats which fed the mill. The west wing straddled the western leat, while the east wing was built with its long wall straight along the unconsolidated infill of the southern channel. In the former case this may have caused the long wall to subside close to the north-west corner; it may be significant that this was the only point at which the villa walls were robbed out.

In the east wing the instability of the wall was manifest, and an attempt was made to shore up the north-east corner by adding a massive external buttress. It is not clear either when this was done, or for how long it was successful. Clearly, though, the structure was unsafe; eventually it had to be demolished. A fault line through the collapsed wall probably reflects a major structural crack which had appeared in the standing masonry.

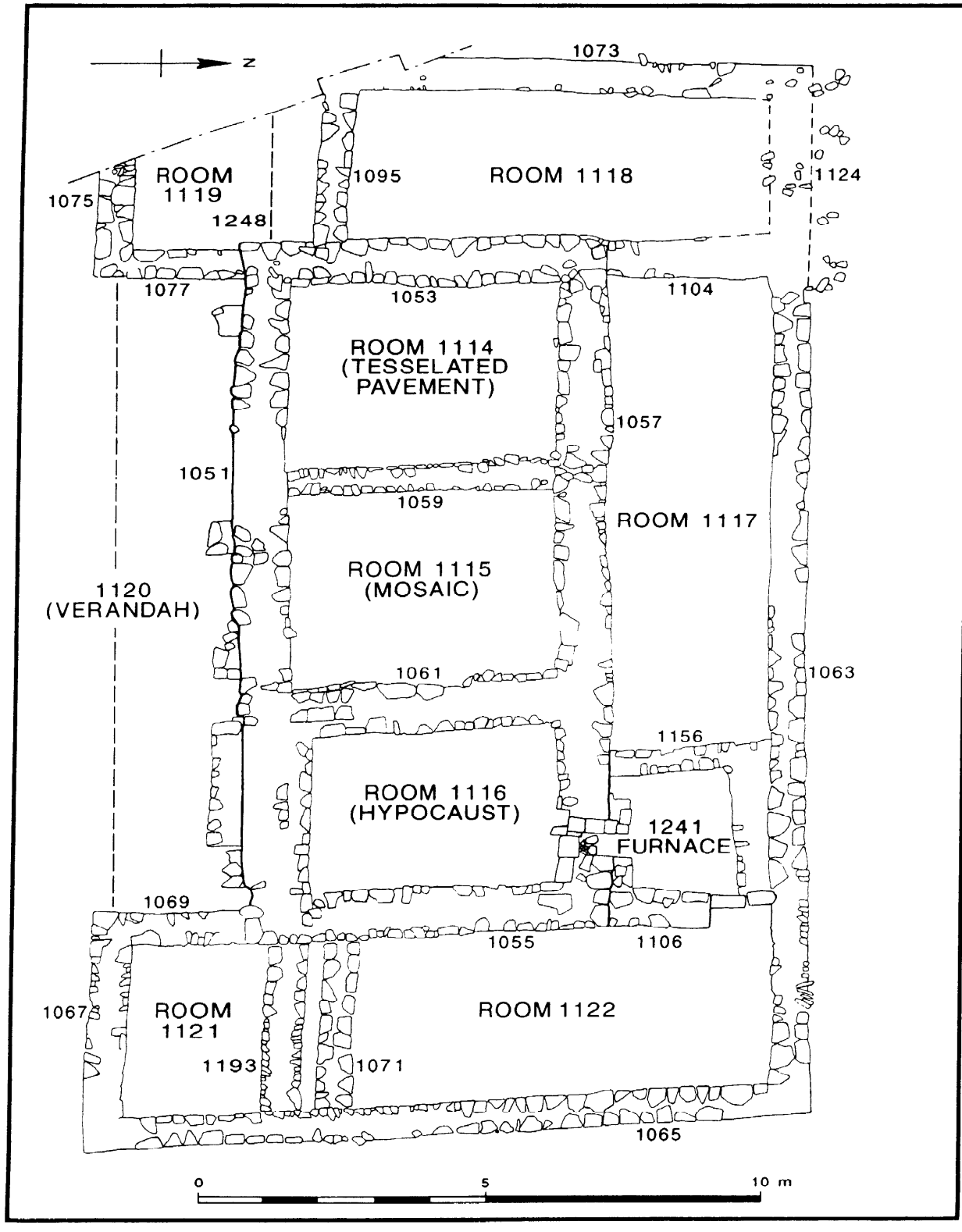

Fig 5.4 Redlands Farm, Northants: plan of the fully-developed villa

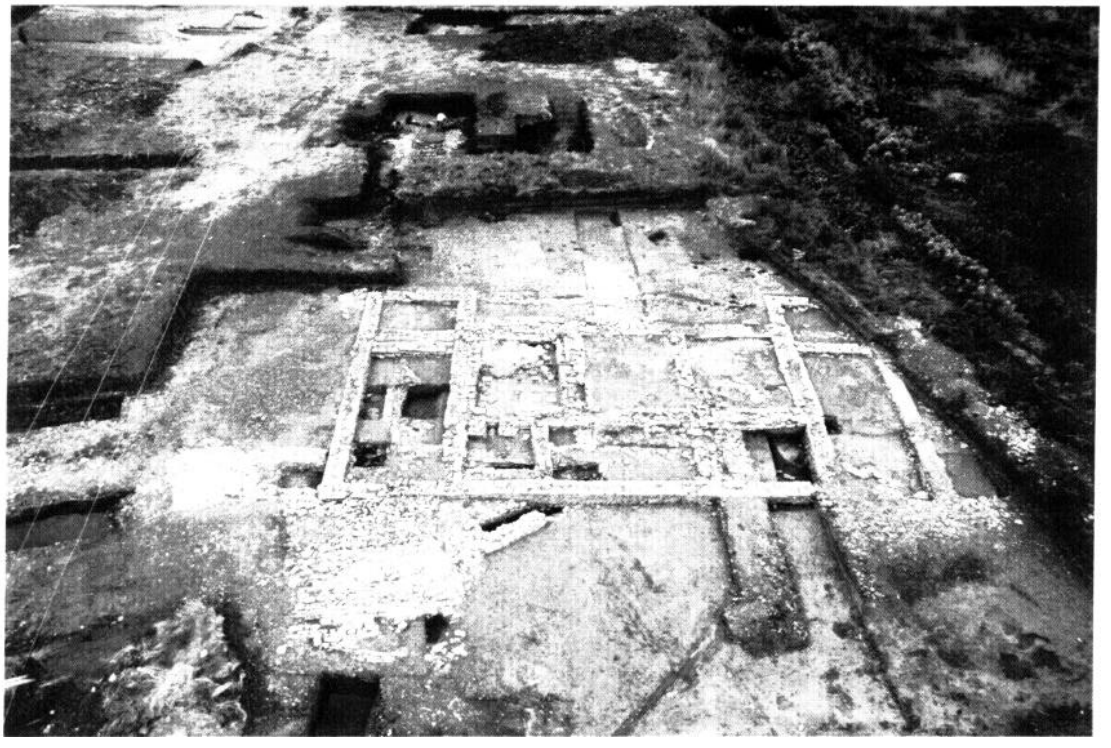

Fig 5.5 Redlands Farm, Northants: the villa viewed from the north

Ground plan

Analysis of the ground plan provides further information about the architectural arrangement of the building. It is clear that the layout of the original mill building dictated much of the subsequent planning. The central block of rooms is virtually a double square, and the division of the cellar room represents a 1 : 2 internal ratio. The further division of the block during the villa phase saw the ratio settle at virtually 1 : 1 : 1 (note that the cellar walls were thickened internally when it was converted to a hypocaust). The wing rooms are almost twice as long as the width of the mill building. Table 5.1 presents all the major interal and external measurements (metric and imperial) for both the mill and the villa. These have been converted into Roman feet using the standard measure of 295mm (11.64in) to the *pes* (Brodribb 1987, 34-6).

The plan shows some inaccuracies and irregularities in the laying out and construction of the building. It is noticeable, for instance, that the south wall (1051 - see Fig 5.4) of the mill/villa deviates substantially from a straight line (see the lengths of rooms 1114-6 in Table 5.1; wall 1051 is common to these rooms), while neither wing is a true rectangle and they are of slightly different widths.

The symmetry of the villa plan has already been noted. The division of the wings and the subdivision of the original mill block was clearly not done at random. This symmetry about the north-south axis (running, it will be noted, through the principal room in the villa) was only broken by the enclosure of the hypocaust furnace, and this appears to have been a strictly functional matter. It would seem, therefore, that the villa was built to a clear architectural design both in terms of modular proportions and symmetry of plan. This was to some extent determined by the size and shape of the existing mill structure. Perhaps the mechanistic execution of the architect's plan explains the unfortunate positioning of the east wing's long wall.

Reconstruction of the villa's rear face

There is a great deal of evidence, therefore, to inform any attempt at reconstructing the building. To date, work has concentrated on analysis of the rear face and its relationship to the central suite of rooms. Alternative three-dimensional reconstructions can be drawn from this; some of the problems concerned will be described at the end of the paper.

Figure 5.9 shows the rear face as it might have looked at the height of the villa's development. It presents the surviving evidence, in the shape of the standing masonry of wall 1063 (see Fig 5.4) with the collapsed east wing gable reconstructed as

Table 5.1 Redlands Farm, Northants: principal building measurements in metres, Imperial feet and Roman feet

dimension		metres	imperial feet	Roman feet
mill				
External	L	13.94	45.74	47.25
External	W	6.80	22.31	23.05
Main room int	L	8.00	22.31	27.12
Main room int	W	4.80	15.75	16.27
Cellar int	L	5.10	16.73	17.29
Cellar int	W	3.90	12.80	13.22
villa				
External E-W	L	21.54	70.67	73.02
External E-W	W	10.20	33.47	34.58
E Wing ext	L	12.90	42.33	43.39
E Wing ext	W	4.70	15.42	15.93
E Wing int	L	11.50	37.73	38.98
W Wing ext	L	12.80	42.00	43.39
W Wing ext	W	4.70	15.42	15.93
W Wing int	L	11.50	37.73	38.98
Room 1114 int	L	4.90	16.08	16.61
Room 1114 int	W	3.60	11.81	12.20
Room 1115 int	L	4.85	15.91	16.44
Room 1115 int	W	3.90	12.80	13.22
Room 1116 int	L	5.05	16.57	17.12
Room 1116 int	W	3.60	11.81	12.20
Room 1117 int	L	14.00	45.93	47.46
Room 1117 int	W	3.00	9.84	10.17
Room 1118 int	L	7.80	25.59	26.44
Room 1118 int	W	2.95	9.68	10.00
Room 1119 int	L	2.95	9.68	10.00
Room 1119 int	W	3.30	10.83	11.17
Room 1121 int	L	7.60	24.94	25.76
Room 1121 int	W	3.25	10.66	11.02
Room 1122 int	L	3.30	10.83	11.17
Room 1122 int	W	3.40	11.15	11.53

Several of the measurements are averages or maxima; for instance the wings are of uneven length and width internally and externally, and in general the east wing is wider than the west. The measurements here are provided for guidance

standing masonry, The height of the central block as extrapolated from the collapsed masonry panel in the hypocaust room (Fig 5.6) is also shown. The full extent of the structure has then been extrapolated from this evidence.

Perhaps the first thing to notice is that the villa is entirely built in stone. This is not a matter of simple conjecture but is based on the wealth of evidence for masonry in the collapsed walls allied to the total absence of evidence for timber framing. The intact wing gable, of course, is the most spectacular demonstration of this. It is quite clear, from this and other sites, that the traditional picture of half-timbered Roman buildings must be radically revised. Romano-British builders were self-evidently capable of building masonry structures, typically using the locally available material (Evans & Keevill 1992, 296). At Redlands Farm this was limestone, but elsewhere bricks (Perring & Roskams 1991, 79-81; Mellor & Lucas 1978-9, 70), greensand (at Drayton, Leicestershire - Richard Pollard pers comm) and flint (King & Potter 1990; Gurney 1986, Chapter 1) were used.

The wall heights were largely derived from collapsed masonry. The height of the rear corridor wall is more conjectural. There are two possible heights, both extrapolated from features of the collapsed east gable; the lower of the two possibilities is shown in Figure 5.9. A change in the herringbone masonry can be seen at this point: the final two courses are more shallow, they break the characteristic counterpitching of the lower courses, and clear bedding layers of mortar are introduced. In this sense these two courses appear to be of a build with the *tabulae* above rather than the herringbone below.

The alternative rear corridor wall height would be at the actual transition between the herringbone

Fig 5.6 Redlands Farm, Northants: view of the hypocaust room showing collapsed masonry filling the cellar. Note the intact courses just below the centre of the photograph

and *tabula* courses in the east gable. This would be logical if the upper storey in the gable was a later addition, as has been suggested above. Such a position, however, would present considerable problems in lighting the central range of rooms if the wall height there is correct; there would scarcely be sufficient space in the projecting wall of the central block for the insertion of windows. Table 5.2 shows the alternative heights. It is notable that the higher alternative is virtually the same as the width of the rear corridor.

Both wings are shown as being of the same height. This reflects the symmetry of the plan, and indicates that both wings had upper storeys. Part of the collapsed herringbone masonry of the west wing's lower storey survived, but this area of the site had been disturbed, so that positive proof of an upper storey in this wing does not exist.

Moving on to windows, the single light in each gable is taken directly from the east wing collapse. No evidence was found for a window in the lower storey of either wing, suggesting that the ground floors were side-lit from the long walls. The siting of the windows in the rear corridor and the central block is hypothetical. Their position relies on the symmetry of the plan. The clerestory windows have been centred on the long axes of the three living rooms (see Fig 5.4); the same position has been adopted for the windows in the rear corridor. Thus the architectural balance and symmetry of the building is maintained. The east window in the corridor, however, would be blocked if the enclosure of the hypocaust furnace was taken to the full height of the room.

Table 5.2 Redlands Farm, Northants: alternative heights for rear corridor wall in metres and Roman feet

	height m	height Roman ft
Lower	2.61	8.85
Higher	3.06	10.37

The semicircular form of the window heads is also conjectural, but is firmly based on comparative evidence. Square headed windows are known in Roman buildings such as the mid-late 3rd-century octagonal temple at Nettleton, Wilts (Wedlake 1982, 46-8), but round heads are much more common in later Roman contexts. The early 4th-century windows and blind arcade at Meonstoke, Hants (King & Potter 1990, and King in this volume); the windows and doors at Lebach, Germany, demolished in the mid-4th century (Miron 1990 and see Fig 5.10); the windows in the basilica at Pianabella, Italy, built c AD 400 (Coccia & Paroli 1990, figs 5.4, 5.5 and 5.6); the bathhouse windows at Sparsholt, Hants (Johnston 1978, 82); and the veranda arch at the mid-late 4th-century villa at Dewlish, Dorset (Putnam 1975, 54) serve merely to complement the many examples of round-headed arches in standing Roman buildings throughout Europe (eg the Porta Nigra and Basilica of Constantine at Trier, Germany).

The width of the gable windows, 0.50m, is known. The rear corridor windows may have been slightly wider, at 0.60m. Clearly this is speculative, but it is notable that the Meonstoke windows are this size (King & Potter 1990, figs 3 and 4), as are the South Shields windowheads (Midwell 1988, fig 7.8). Furthermore the remarkable window grille from Hinton St Mary, Dorset, is 0.61m wide (Manning 1985, 128 and Plate 60).

The windows have been reconstructed as square with the semicircular arch above. It must be said that the Meonstoke, Lebach and Pianabella windows are oblong, but the Hinton St Mary grille is square. The clerestory windows have been drawn at half the size of the corridor windows, 0.30m square with a head radius of 0.15m; this is the largest possible in the space available. It will be apparent that all these measurements relate very closely to the Roman foot.

Finally, the roof pitch of c 22.5° is again derived from the direct evidence of the gable wall. The progressive narrowing of the courses in the gable corresponds exactly to this pitch. The completeness of the masonry makes it unlikely that much, if any, of the roof line is missing. The roofs were tiled, with *tegulae* and *imbrices*. These were held in place by a combination of gravity and their interlocking construction, while some of the *tegulae* had nail holes bored through after firing. A pitch of 40° has been suggested by Brodribb (1987, 10) as a technical possibility, and a Roman building at Carsington,

Fig 5.7 *Redlands Farm, Northants: detail of the collapsed gable wall of the villa's east wing*

Fig 5.8 Redlands Farm, Northants: imbrices stacked in the rear corridor of the villa

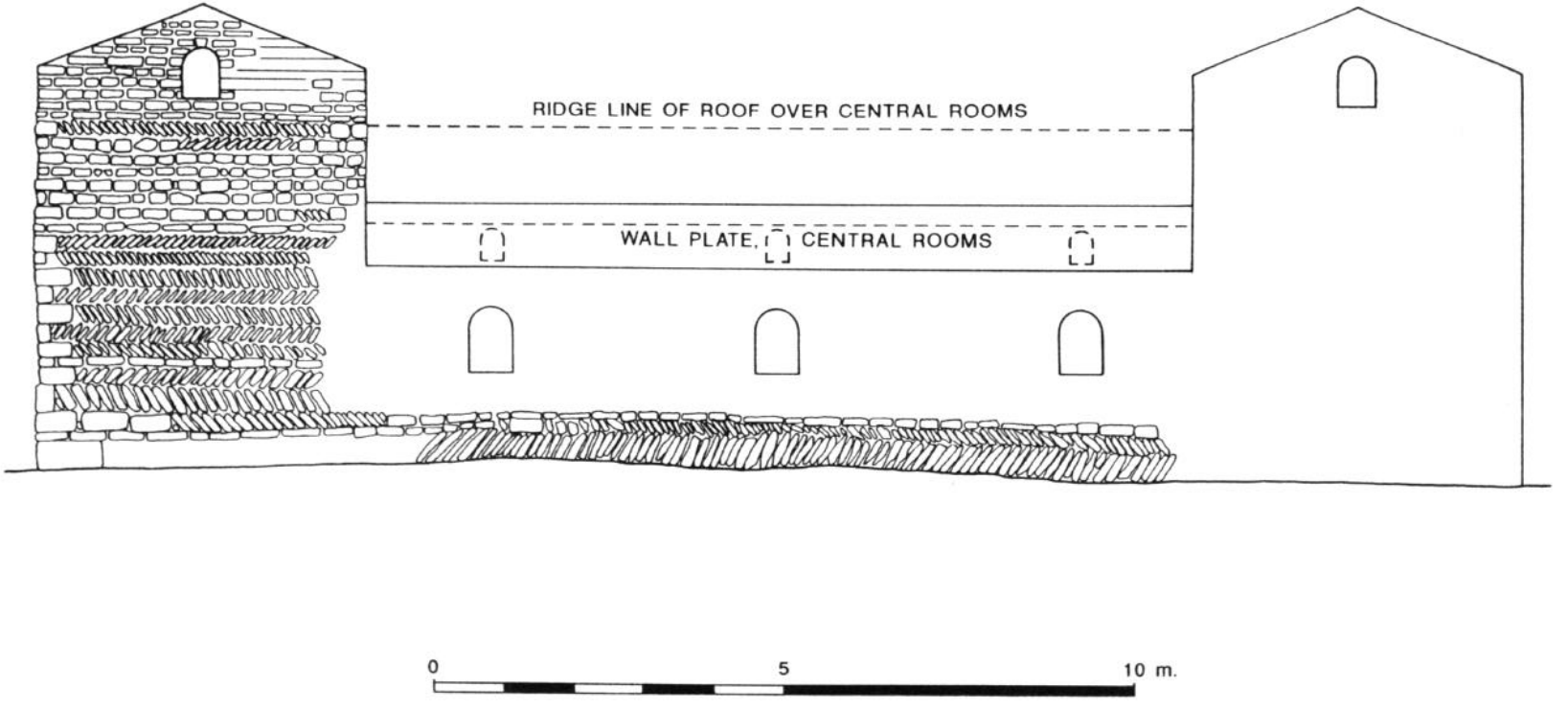

Fig 5.9 Redlands Farm, Northants: a reconstruction of the rear face of the villa

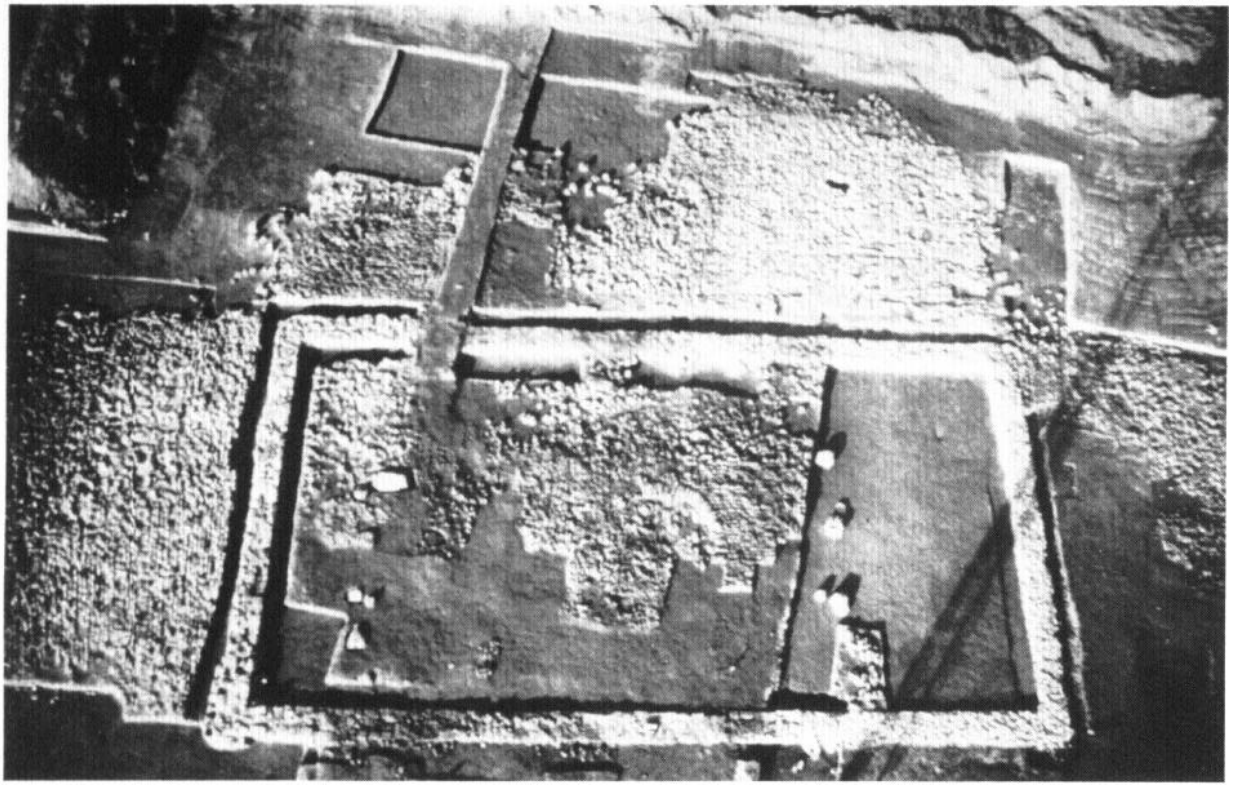

Fig 5.10 The Roman agricultural building at Lebach, Saarland, Germany, showing round-headed doors and windows preserved in collapsed masonry (photo by permission of Dr A Miron, Saarland Staatliches Konservatoramt)

Derbyshire, has a tiled roof of this pitch (Ling *et al* 1987, and Ling 1992). An angle of 47.5^0 was achieved in the pegged/nailed slate roof at Meonstoke (King & Potter 1990, 197).

Further work

The rear face of the Redlands Farm villa can be reconstructed with confidence, but what of the rest of the building? Detailed work has not yet been done on this, but it is apparent that interpretational problems exist. These centre around the roof configuration, fenestration, and the height of the central rooms.

The wing roofs ran along the long axes, as is demonstrated by the east wing gable. It can be assumed that the roof to the central block was also on the long axis. The hypocausted room appears to have been barrel vaulted, as tufa and box tile voussoirs were found in the rubble infill of the cellar. This would imply a steeper pitch than was present on the east gable if the vault was enclosed by a normal tiled roof (Brodribb 1987, 10). The ridge line on Figure 5.8 has been drawn with a pitch of 20^0, and it is clear that there is little room for a steeper pitch without an overlap onto the wing roofs.

Further problems arise in considering the configuration of the rear corridor roof. Again this must have been on the long axis, and there are two possible arrangements; either the roof could have been continuous with the slope from the central block, or it could have been a ridge. The former has the advantage of providing easy run-off for rainwater, whereas the latter configuration creates a valley in the centre of the building where rainwater could build up. Nevertheless, separate roofs have been assumed in Figure 5.8, because otherwise it would not be possible to have windows below the eaves of the central block. It is of course likely that this was lit from the front, and the rear windows may be an unnecessary addition to the reconstruction. It must be borne in mind, however, that the provision of a veranda to the façade would have curtailed the available light at the front of the villa.

A solution to this problem would be to raise the height of the central block so that the ridge was at the same height as the wing ridges. This would also allow the additional pitch necessary to accommodate the hypocaust barrel vault. There is a problem of interpretation, however, as the height of the collapsed panel in the hypocaust room has been taken as representative of the actual wall height. It is possible that the panel was actually taller, and that some courses broke away when the panel fell against the wall dividing the hypocaust from the mosaic room. It should be stressed, however, that no additional masonry or rubble was found above the collapsed panel.

Conclusion

The remarkable state of preservation of the Redlands Farm villa, allied to the presence of substantial areas of collapsed masonry, provides a great deal of information from which to attempt a reconstruction of the building. Gaps in the record can be filled in by analogy with other sites and structures in Britain and elsewhere in the Roman Empire. Interpretation of the evidence is not without difficulties, however, and further work will be necessary before a full reconstruction can be undertaken. It must always be recognised that alternative superstructural configurations can be generated, even from such detailed information as has been adduced in this paper.

Acknowledgements

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6 The south-east façade of Meonstoke aisled building

Anthony King with drawings by Stephen Crummy

Excavations at Meonstoke, Hants (NGR SU 616210) 1984-91 revealed part of a late Roman aisled building with an exceptionally well-preserved fallen wall. Evidence for the reconstruction of this wall and the building as a whole is presented, together with analysis of the proportions and mensuration used by the original builders.

The site

The Roman site in the parish of Meonstoke lies *c* 1km to the north of the village, on a shallow north-facing slope down to the river Meon, which flows only 200m from the site (Fig 6.1). The slope on which it is situated is part of a low chalk hill in the middle of a wide basin-like section of the Meon valley, dominated to the east by Old Winchester Hill and its hillfort, and to the west by Beacon Hill. A good command of the valley and the surrounding countryside is available from the Roman building, and it is also likely that it was close to north-south communication routes along the valley floor linking the minor settlements of Wickham and Neatham, as the A32 does today. Other Roman sites are known in the valley, notably the aisled building at Lippen Wood, West Meon, *c* 4km to the north (Williams 1905).

From the excavation, it is clear that the building itself was not isolated, since a courtyard or enclosure wall ran from the southern corner of the building in a south-westerly direction. This would suggest that it was part of a villa complex, with the component buildings laid out around the sides of a roughly rectangular courtyard, as at Sparsholt and other villas in Hampshire (Johnston 1978). However, excavated evidence for other buildings at Meonstoke was not forthcoming, since it is likely that they are largely inaccessible under the modern road. Geophysical survey of the field in which the east end of the aisled building lay showed up several suggestive traces which could have been of building rubble, to the south of the building itself (Stevens 1991). Test-pits to follow up the survey revealed that the traces were flint spreads caused by ploughing, however, and it does not appear that any substantial villa-like buildings were positioned in this area.

The excavation

Full details of the excavations of 1984-91 will not be given here, since the final report will be published elsewhere (Ring forthcoming), and various interim reports have given information on the progress of the excavation and its general findings.1 A preliminary notice of the fallen wall and an account of the methods used to lift a section of it has also been published in *J Roman Archaeol* (King & Potter 1990).

The building sequence

The aisled building of which the fallen wall was part was not the first structure on the site. A structure of 2nd-century date, with narrow wall foundations and an uncertain plan, underlies the south-east end of the aisled building. It suffered a catastrophic fire in the early 3rd century, which necessitated its effective abandonment and replacement with the aisled building (Fig 6.1). This occurred not long afterwards, to judge from the ceramic evidence.

The new building was very strongly built, its walls being 0.8–1m in width, up to 1m in foundation depth below Roman floor levels, and constructed in well-laid courses of flint and mortar (chalk lumps, puddled rammed chalk and laid flints in the foundations). Its plan is typical of aisled buildings in Roman Britain (Hadman 1978, 189-90), having a nave roughly equal in width to the two aisles, and two square rooms at the south ends of each aisle. The width of the square rooms, 3 x 3m internally, is likely to represent the module for the bay interval within the building. Unfortunately, it is not possible to establish the overall length of the building, or the plan of its northern end, due to the course of the modern road which is lower than the foundation level. The likelihood is that the building was of double-square proportion, being twice as long as its width. This certainly is the case with a large number of aisled buildings, but some are longer in relation to their width (eg the nearby example of Stroud, Petersfield, Hants; Williams 1909).

The impressive construction of the aisled building did not prevent problems from affecting its

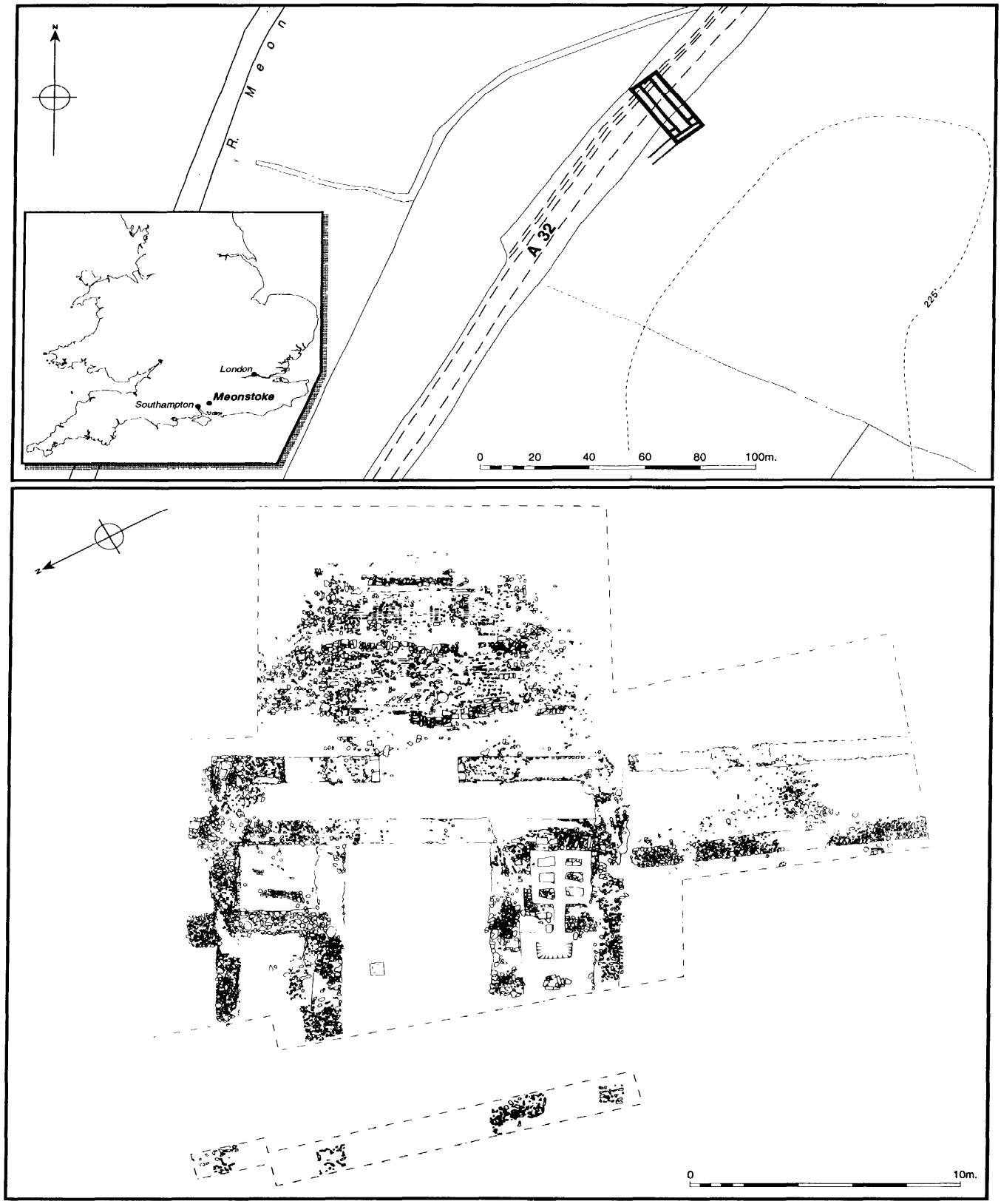

Fig 6. 1 Meonstoke: location map and general plan

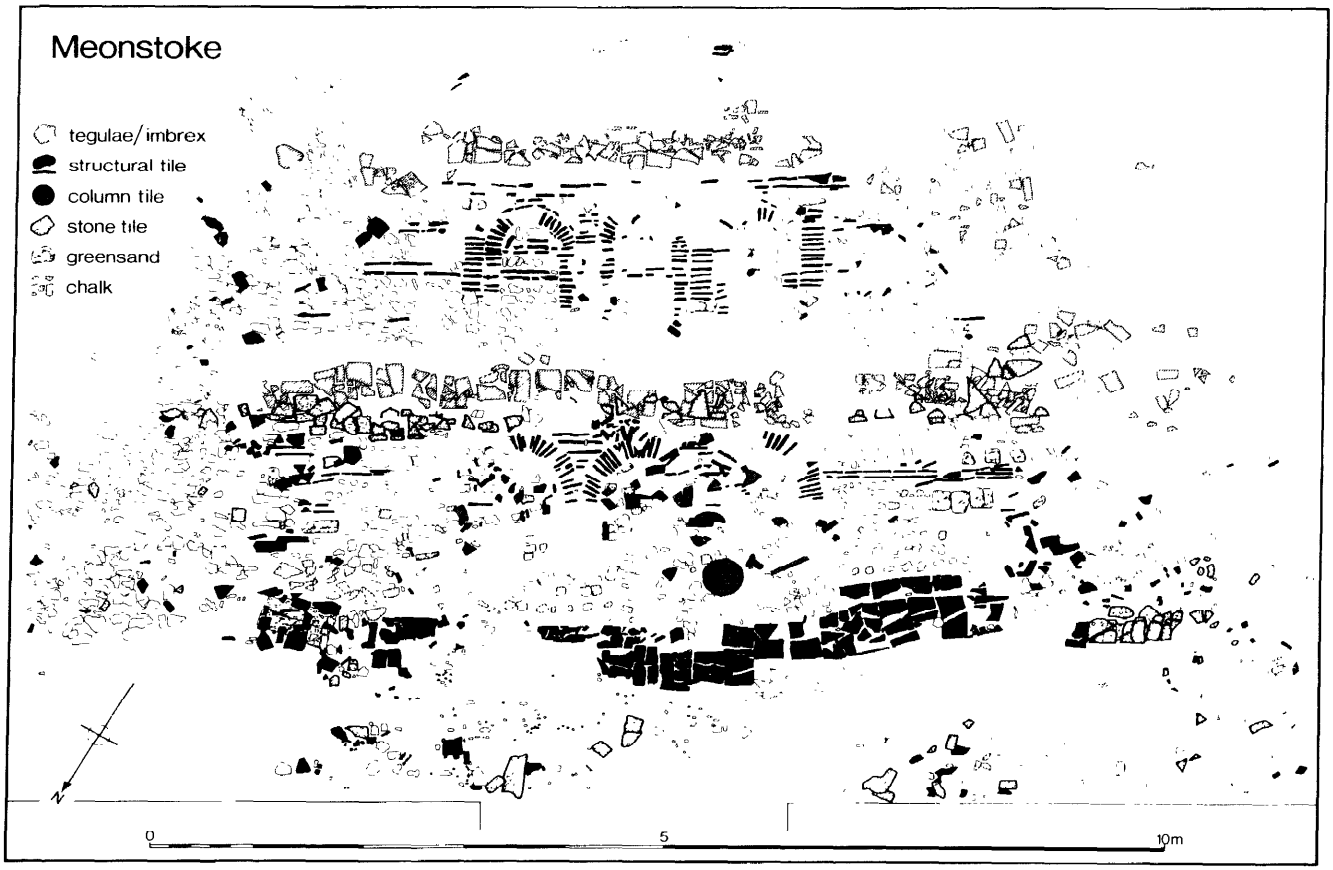

Fig 6.2 Meonstoke: plan of the fallen façade, in situ

structure in the late 3rd or early 4th century. There are signs of fire in the form of wood charcoal and ash within the building. Probably the upper part of the building was damaged by fire, which led consequently to a remodelling of the edifice as a whole. The old south-east (short) end of the building was given up as an external wall. A new facade was erected 2.6m beyond it, possibly at a sufficient distance from the old wall as to have independent, stable foundations. It is not clear otherwise why this interval between the two walls was decided upon, since the easiest option would have been to rebuild the wall on the existing foundations. The possibility also exists that the corridor formed between the walls allowed for a stairway or ladder up to a mezzanine level at first-storey window height (see below). At the same time as these changes were made, two buttresses were added to the eastern (long) side of the building, to compensate for the lateral thrust of the roofing. Internally, a hypocaust and decorated mosaic floor were added to the south-western small room. The flue to the hypocaust was positioned within the aisle, and evidence for some sort of superstructure was found around the flue itself, suggesting that arrangements were made to channel smoke from the flue out of the building.

During the first half of the 4th century, this alteration to the building continued in use. The site was at its apogee at this time, with a majority of the coins dating to this period, and evidence of a well-maintained establishment. Circumstances were to change by the second half of the century, however, since it was sometime after the 350s that the south-east wall fell down (for the details of which see below), and the building fell into general decay (Fig 6.2). Late 4th-century pottery is found in the collapsed remains of the hypocaust and it is clear that walls, apart from the south-east facade, were either being demolished or left to fall down. There is some evidence of sporadic occupation of the building after this, mainly in the form of trample layers in the rubble, and late or sub-Roman grog-tempered ware sherds. This low level of activity probably dates to the late 4th or early 5th century.

Subsequently, at some point in the later 5th or 6th centuries, Saxon occupation commenced on the site. Postholes forming two fence-lines or walls were dug across the fallen wall, to frame the old entrance to the aisled building. This seems to

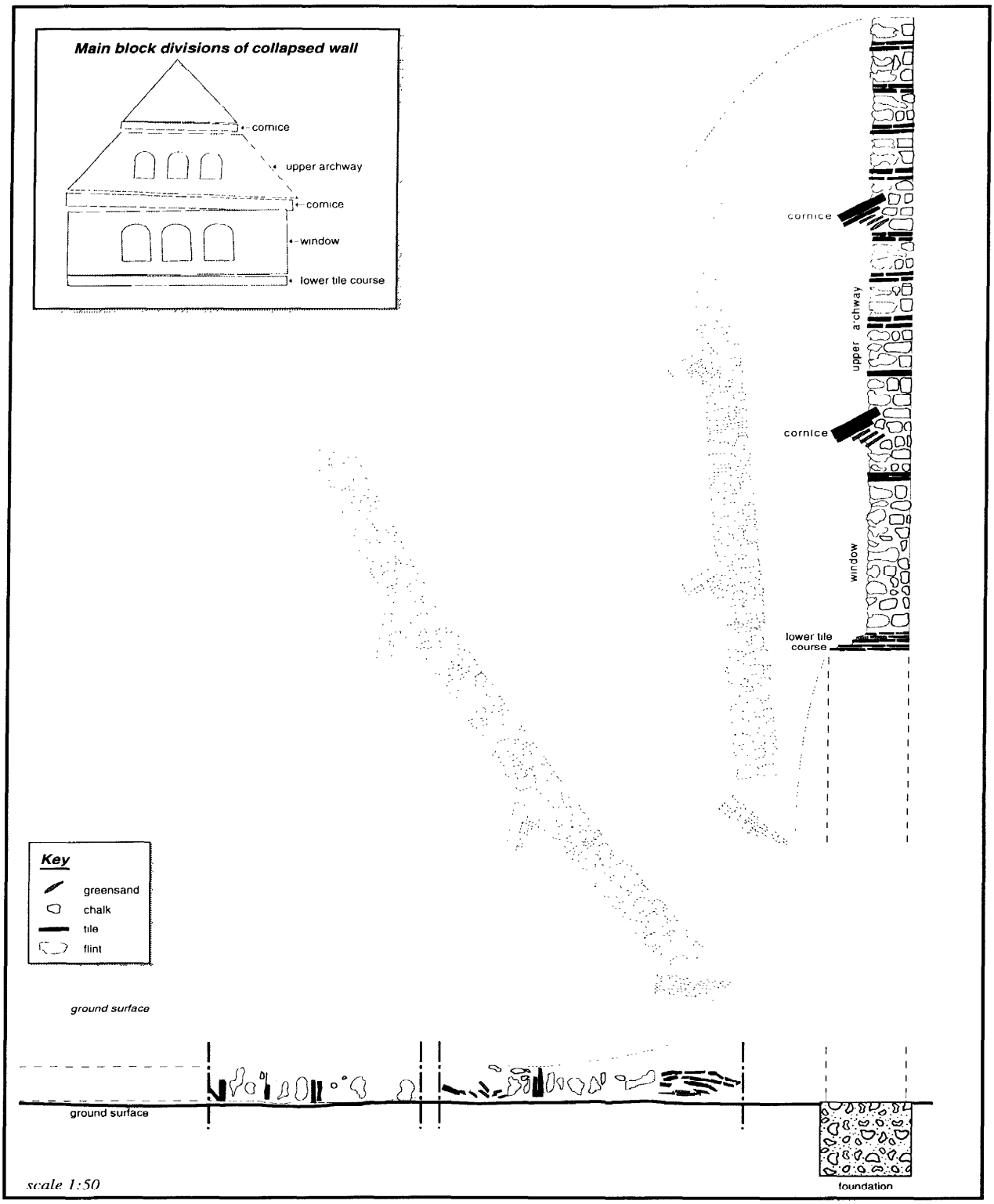

Fig 6.3 Meonstoke: diagram to show how the wall may have fallen to the ground. Inset: diagram of fracture zones in the fallen façade

represent a re-use of the ruins of the structure, and it is thus likely that some of the wall-lines at least were still visible and utilisable at this time. A little to the west of the building, a sunken-featured building was dug into a space between the walls of the courtyard. This too is probably of a similar date, and can be linked with similar structures found in excavations c 400 m to the south-east of the site, and with early Saxon burials in the close vicinity (Hughes 1986; Devenish & Champion 1977). It seems that the Saxon predecessor to the village of Meonstoke was an extensive settlement stretching down the hill-slope from the existing village to the site of the Roman building.

The fallen wall

As outlined above, the south-eastern facade of the building fell, or was pulled down, sometime in the second half of the 4th century; the event having a *terminus* post *quem* of AD 353, from the latest coin stratified under the wall. It is not possible from the excavated remains to be sure what degree of human intervention took place to cause the collapse of the wall. There is obviously the possibility that the wall was pulled over because it was in a dangerous state, and that the building was still needed for some purpose. This would relate to the phase during which trample surfaces were observed in the rubble within the building, which is a piece of indirect evidence in support of this interpretation. To judge from the lack of rubble under the fallen wall, its collapse occurred fairly early in the process of dilapidation of the structure. Another possibility is that there was something on or in the wall that attracted the attention of robbers: a carved finial perhaps, or good stone quoins for re-use elsewhere. Alternatively, the collapse was a natural event, occasioned by the weakening of the masonry as a result of weathering after the roof had fallen in. This would certainly correspond with the sequence of events in a natural collapse, and walls of abandoned and historic structures even now fall down as a result of gales or storms.2

What is clear from the collapsed remains is that they represent the upper part of the wall, roughly speaking from first-storey level upwards. The ground storey, which included the entrance-way, was not found, and the base of the fallen section lay *c* 1.5m from the excavated wall foundation, parallel to it. This suggests that the wall fractured across a weak horizontal line running under the lower set of windows. The wall fell outwards, collapsing as a single piece of masonry (Fig 6.3). The most likely manner of collapse is that the base of the fallen section, ie that with the lower set of windows, hit the ground first, but that the lowest tile courses twisted while falling, perhaps because they were the pivot from which the wall swung outward. They ended up flat on the ground, upside-down, and had clearly hit the ground surface with some force, since the horizontal tile courses had shattered on impact, but had remained in relationship with each other. This seems best to explain the nature of the lowest surviving part of the fallen wall. However, a possible alternative is that the wall fell downwards as an initial action, then outwards once the base of the masonry had hit the ground. This would leave the lowest tile courses the correct way up on the ground: examination of the remains leaves the exact relationship of these courses to the rest of the wall somewhat unclear.

The rest of the wall sheared away from the lowest tile courses, and came to rest with remarkably little further damage. Fracture zones were observed within the wall, notably between the lower cornice and the upper windows (Fig 6.3). These zones have resulted in the fallen remains spreading a little to the south-east, away from the building. However, for the purposes of reconstruction, the zones can be accounted for and the fallen wall can, metaphorically speaking, be put back together again. Another result of the wall's impact with the ground was that the individual courses of masonry, especially in those zones predominantly of flint, tended to tip forwards. Presumably this was a result of the impact firstly breaking the mortar bonding of the courses, and secondly having sufficient momentum away from the building to tilt the coursing not in contact with the ground out of true. This phenomenon can be observed in exactly similar form in the collapsed gables and other walls made of mortared thick slates at Cwmorthen quarry (see note 2). Parts of the wall did not suffer in this way, notably the window surrounds and arches.

After the collapse of the wall, postholes were dug through it, as outlined above. It is also likely that the back of the wall, now lying uppermost, suffered erosion and damage, since the excavated remains represent approximately half the original thickness of the wall. Overlying it in the zone nearest the building was a layer of degraded mortar and rubble, *c* 0.20m thick, but very variable. Amongst this layer were pockets of dark soil with sherds of grog-tempered and chaff-tempered pottery, and other indications of sub-Roman or early Saxon occupation. Further away from the building, towards the apex of the fallen wall, the preserved remains of the wall get progressively thinner, until at the apex itself, there is nothing left. Immediately above the upper cornice, the flint and tile courses are not preserved directly, but in the form of mortar impressions resting on the gravel surface onto which the wall fell. Here, the masonry has been removed, perhaps by medieval or early modern ploughing. There are thus two factors acting on the wall after its collapse: late and post-Roman activity, mainly near the wall footings of the aisled building, and later agricultural activity, mainly towards the apex of the wall.

Obviously, ploughing could easily have removed all traces of the fallen wall. It is extremely fortunate in this respect that the recent field pattern, probably formed in the 18th century when the main

road was first constructed, resulted in a boundary being placed over the south-east end of the aisled building, and a subsequent lynchet being formed exactly over the fallen wall. Even after the giving up of this boundary and the ploughing over of the lynchet in quite recent times, there was sufficient depth of soil to seal in the fallen wall area below the depth of the plough.

Description of the façade

As described above, the ground storey of the wall only survives as footings. The total exterior width of these is 15.40m, with a centrally positioned entrance 2.85m wide. It is not known what this entrance looked like, except for the survival of the lowest courses - greensand blocks and tile coursing two tiles thick. This may have been an alternating pattern on the jambs of the doorway. As discussed in the reconstruction (below), this entrance has been restored as an arch rather than a lintelled door. Another important issue concerning the ground storey is its height. This, too, is not known for certain, but various possibilities are discussed below.

The lowest sections of the fallen wall to survive are the tile courses that apparently formed the base of the lower set of windows. Flat tiles *c* 0.25 x 0.50m were used, one and a broken half laid side-by-side to span the wall thickness at this point. It is not clear whether the coursing projected beyond the wall thickness to form a cornice at this level, as occurred higher up the wall. In one place the tiles had been replaced by pieces of broken tile laid herring-bone fashion. This was in the right place to have been one of the window sills, which may imply that the window arches were used for moving goods into and out of the building.

The windows themselves were made largely of tiles (Fig 6.4). So-called 'hypocaust' tiles *(bessales)* were laid radially to form the three arches, while stuccoed brick and tile columns were used for the two central divisions and the half-columns on the jambs. It seems that the columns contained a mixture of specially made circular tiles (one of which survived complete), sections of circular tiles and broken pieces of ordinary tiles. These were laid in horizontal courses between thick layers of mortar, and the whole was rendered over with plaster, *c* 25mm thick, now somewhat weathered (a detail which gives an indication of the time that the wall was standing). The complete circular tile may have formed part of the column base since its diameter (0.40m) was larger than the surviving column shaft *(c* 0.38m including the plaster). No trace of a capital was found to any of the columns, and it is clear from the position of the remains that they were topped immediately by the springing of the arches. This must have looked rather non-classical, especially when compared with the details visible elsewhere on the facade.

The whole ensemble was *c* 3.6m wide externally,

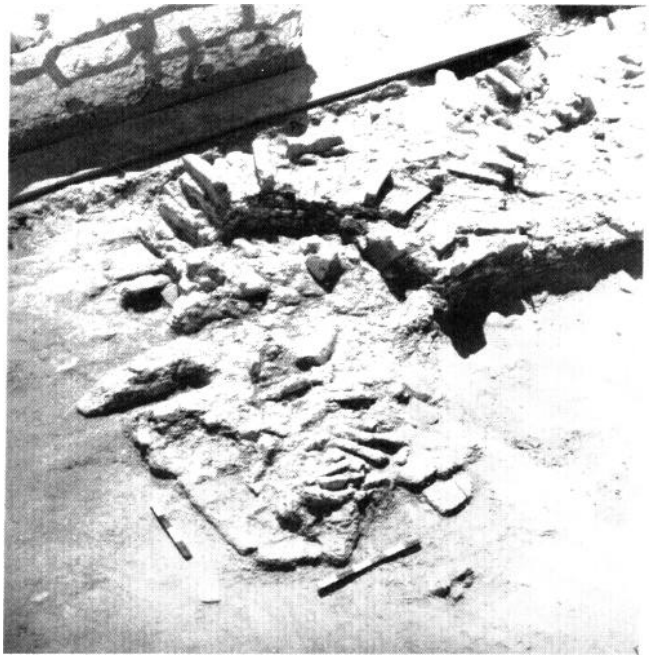

Fig 6.4 Meonstoke: the lower set of arches. Two of the arches are visible, and part *of the plaster forming the column between them*

and the arch height has been estimated at *c* 2.5m. The latter measurement has to be an estimate because of the damage caused to the lower parts of the archways during the collapse of the wall.

An important piece of evidence at this level of the wall is the indication of a vertical end to the regular coursing to either side of the windows. Chalk, tile and greensand quoins were visible, that gave a total width of 7.35m to the wall at this point (Fig 6.2). This corresponds with the aisle width, and the clear implication is that the building was basilica1 with a clerestory, not with a single roof span over both nave and aisles. Indirect support for this came from the interior of the building where a dump of tiles similar to those used for window arches and surrounds was found over the south aisle wall. It may represent a fallen clerestory window, the structure of which did not survive intact. In addition, there was a spread of rubble to either side of the fallen wall itself, which may represent the remains of the stubs of the clerestory walling.

At this level the walling material, apart from the corners and the architectural details, was almost entirely flint, with some stone coursing, and tile courses at approximately the level of the arch-springing.

Immediately above the lower set of windows is one of the most interesting features of the facade, a

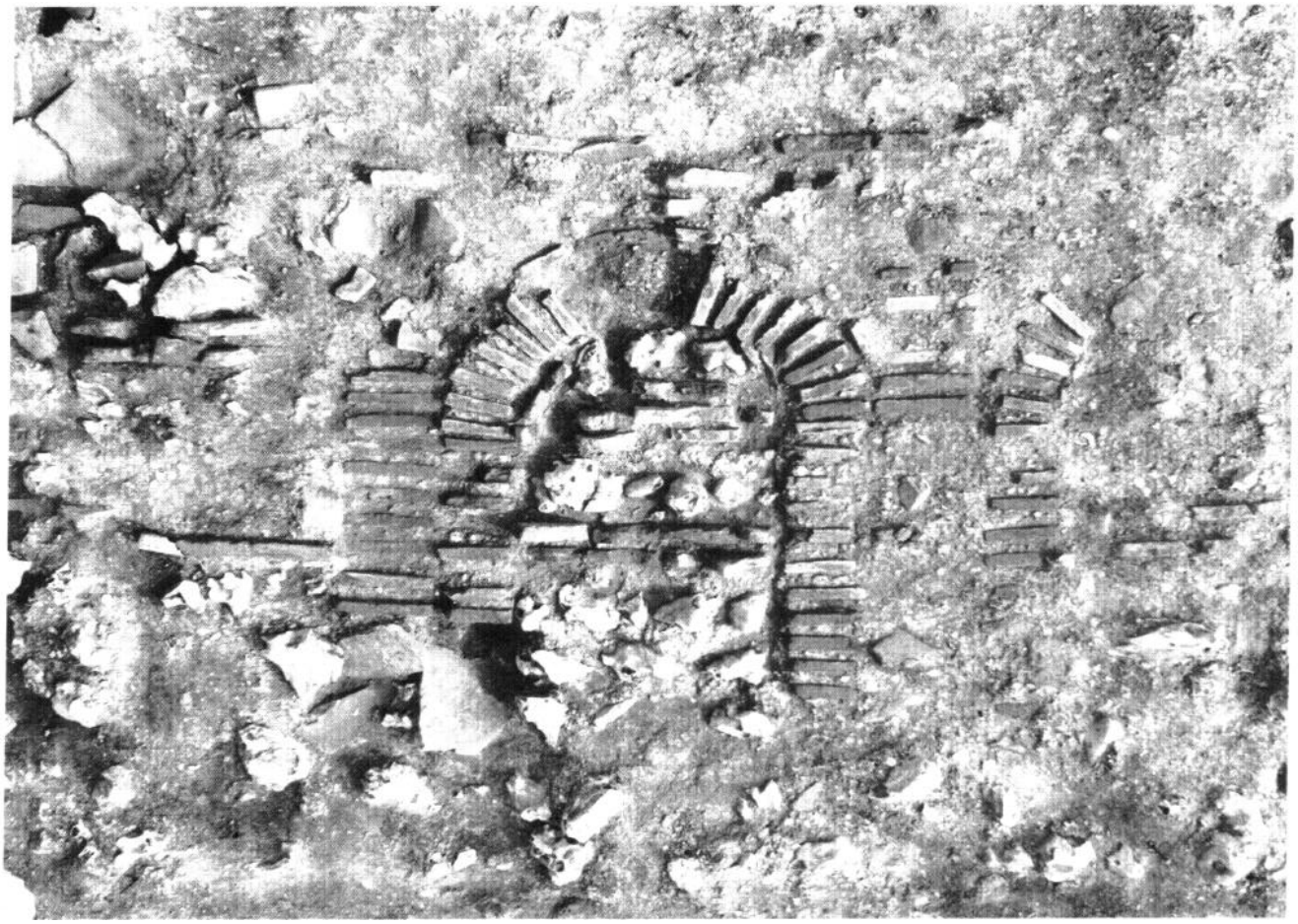

Fig 6.5 Meonstoke: the upper set of arches, in situ, showing the eastern arch (centre) and part of the central arch (right)

projecting tile cornice running the width of the wall (Fig 6.7). It projected *c* 0.20m from the wall, and was constructed at an angle of *c* 30°. A single course of *tegulae* and *imbrices* formed the uppermost layer of the cornice (King & Potter 1990, Fig 71, arranged so that the backs of the tiles were mortared into the wall and their fronts projected down to clear rain-water from the windows and walling immediately below. The tiles were supported by projecting horizontal stone tiles, also mortared into position.

This feature provided one of the significant visual lines of the façade, serving to divide the clerestory level from the gable above. It also proved to be a break-point in the collapsed wall, since the coursing just above the cornice was one of the major fracture areas in the excavated remains, despite the cornice itself being relatively well preserved.

The upper set of windows is the best-preserved part of the facade, due to the strength of the mortar and tile surrounds (Fig 6.5). It has also yielded the best information and details, since the most easterly of the set of three windows was selected for lifting, and this process gave the opportunity for close examination of the original front of the wall at this point. This, of course, could not be undertaken for other parts of the wall, except where sections of window, etc, were lifted individually. The main features of the windows, or to be more precise, blocked arches, are the three tile-constructed arches forming an arcade, each one separated by a tile pilaster with rudimentary architectural details, including capitals and bases. Pilasters are also found on either side of the outer arches, framing the whole ensemble. The base of the windows has been damaged, but it appears to have rested on tile coursing: the top is in better condition and it is clear that the pilaster capitals supported an upper cornice at the point in the wall where the roof gable line begins.

All these aspects are clear from the illustrations,

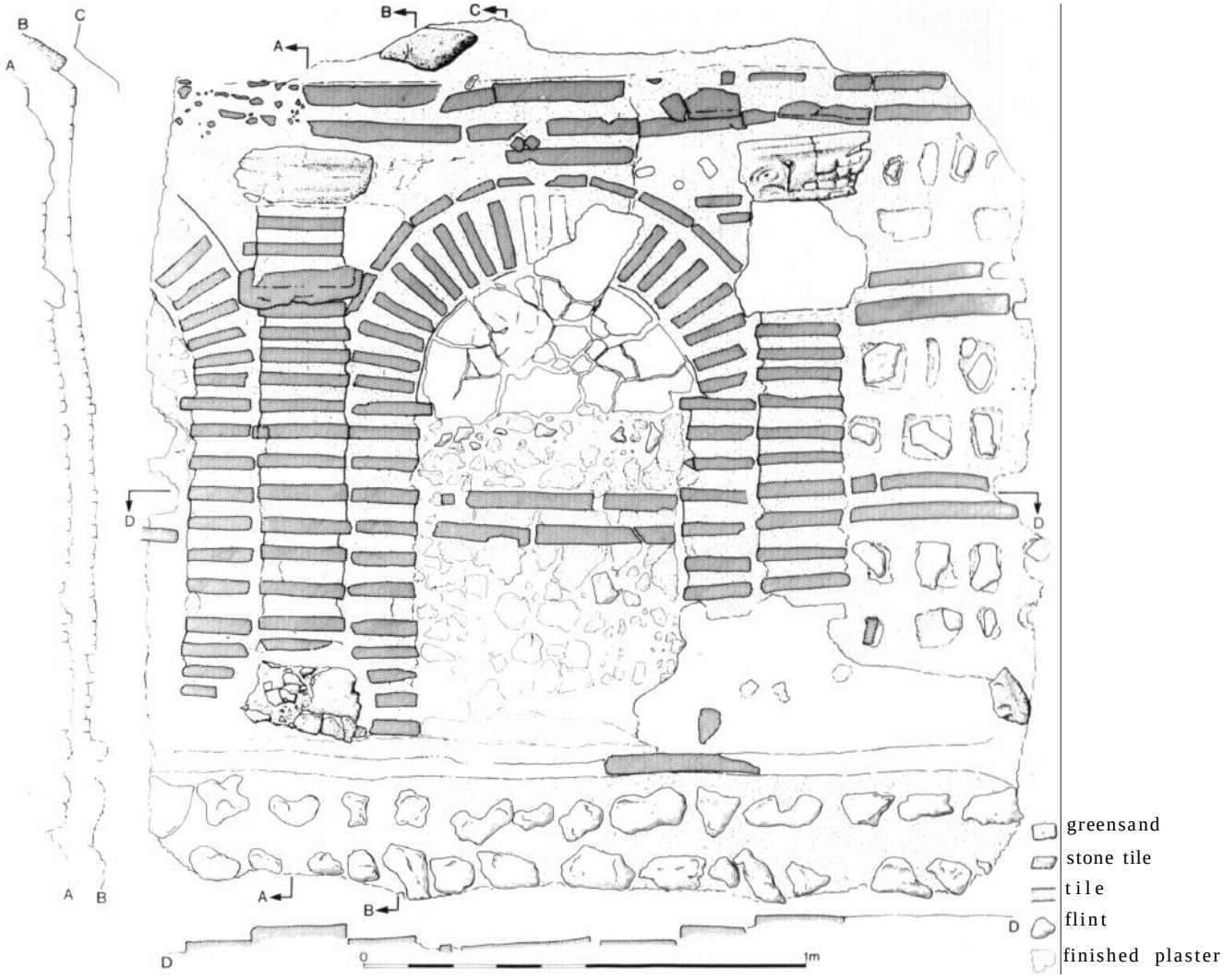

Fig 6.6 Meonstoke: front face of the lifted upper window, plan and sections

but attention should also be drawn to some of the details that are visible (Fig 6.6; see also King & Potter 1990, Fig 5 for photograph). A key outcome of the investigation of the lifted window was that the pilasters projected c 40mm from the face of the wall, and that the masonry filling the arches was recessed by approximately the same amount. This masonry was made of flint and tile courses laid at the same level as those in the adjacent area of walling. Pieces of tile were also used to line the inside of the arch. Stratigraphically, the masonry within the arches is a secondary feature, which may imply that it was a later blocking episode. Indeed, the upper part of the masonry within the arch was surfaced externally with yellow finished plaster, which may support the suggestion that the upper section of the arch was filled subsequent to the lower part. However, the similarity between the building practice of the interior masonry and the main wall, and, superficially, the mortars used, seems to suggest that the masonry could easily have been an original part of the scheme, and thus that the arches were a deliberate decorative arcade.

It was also apparent that the wall was not rendered at this level at the time the wall fell, at least not detectably so. Only at the top of the arches was there any appreciable expanse of plaster, which may have been the result of renewal in this sector or a secondary blocking phase (as discussed in the previous paragraph), since the colour of the plaster was slightly different from elsewhere. This plaster had the appearance of being finished, whilst below it were traces of mortar preparatory coating within the lifted arch. The finished plaster was probably more sheltered from the weather, and therefore it is likely that the arcading formed by the arches had some form of plaster finish. Given the presence of plaster within the arches, it is all the more worthy of remark that no traces of finished plaster or even preparatory coatings were found in other sheltered parts of the facade, eg under the cornices. Furthermore, no remains of degraded plaster were found at

Fig 6.7 Meonstoke: the gable line of the roof of the nave, viewed from the south

the foot of the wall where it originally stood, to suggest that pieces of plaster had weathered off, despite the extensive survival of decorated plaster from the interior of the building and amongst the building rubble elsewhere. It seems best to conclude from this evidence that external plastering on the facade was limited in extent, and that the builders relied on the cornices and the mortar pointing over the flint coursing to achieve a wall surface into which rain would not penetrate too deeply.

If the wall was essentially unrendered, as the surviving remains seem to imply, the tiles would have formed a decorative element in the design of the arcade, a suggestion that seems to be supported by the thickness of the mortar between individual tile courses. The mortar was usually the same thickness as the tiles themselves, creating an alternating red and white effect. The pilasters, like the arch surrounds, were made of alternating tile and mortar courses as well, with the addition of capitals and bases of greensand. The third tile course below each pilaster capital was larger than the others, projecting *c* 50mm further out. They had bevelled upper edges, and gave the appearance of being projections to protect the junction of the pilasters with the outside edges of the arches. The capitals and bases had weathered badly, due to the soft stone, but one of the capitals had a surviving volute that sets the style of the pilaster within the Ionic tradition (Fig 6.6; see King & Potter 1990, Fig 8 for photograph).

The wall itself at this level was composed mainly of flint coursing, interspersed with tile courses at intervals. This zone of the wall, too, had been the subject of decorative attention, in the form of careful mortar pointing over the irregular joints between the knapped flints. The pointing created the effect of regular square outlines to the flints, with lines added for emphasis. The colour effect of this would have been to present a series of dark or black squares with thick white bands around them. To a certain extent, the treatment of the flint courses seems intended to imitate *petit appareil*. It is clear that the intention was to regularise the shape of the flints and, at the same time, to protect their interstices. This arrangement lends additional weight to the argument that the exterior was not fully plastered over.

Above the upper set of arches was another tile cornice. It was of similar construction and appearance to the lower cornice, but without the reinforcement of horizontal stone tiles to support the projecting tiles. The cornice rested on the pilaster capitals, which projected slightly from the wall surface: this may have been deemed sufficient to support the tiles. All the walling above the cornice was in the apex of the nave roof gable. It did not survive as well as the walling lower down, the main evidence for its details being in the form of the exterior mortar-pointing lying face down on the gravel onto which the wall fell in this area. The mortar impressions indicate that the masonry was similar to that further down, consisting of flint and tile courses. The apex of the gable did not survive, and can only be restored by projecting the roof lines upwards. Therefore, it is not possible to establish whether there was any special feature at the apex, such as a finial.

One of the best-preserved features in the mortar lines of the upper part of the gable was the roof line itself. This was represented by a layer of mortar *c* 40mm thick with a smooth outer surface, which presumably must originally have been the mortar rendering that sealed the top of the wall (Fig 6.7). Its outer surface would have carried the tiles that overhung the gable, but these had not survived *in situ* and may have fallen off some time before the collapse of the wall. The main importance of the survival of the roof line is the evidence it yields for a steep roof pitch; 47/48° from horizontal, thus giving an apex angle of just under 90°. The significance of this will be discussed below.

The roofing materials used on the building survived in some quantity and consisted both of sub-hexagonal stone slates (probably of Horsham-

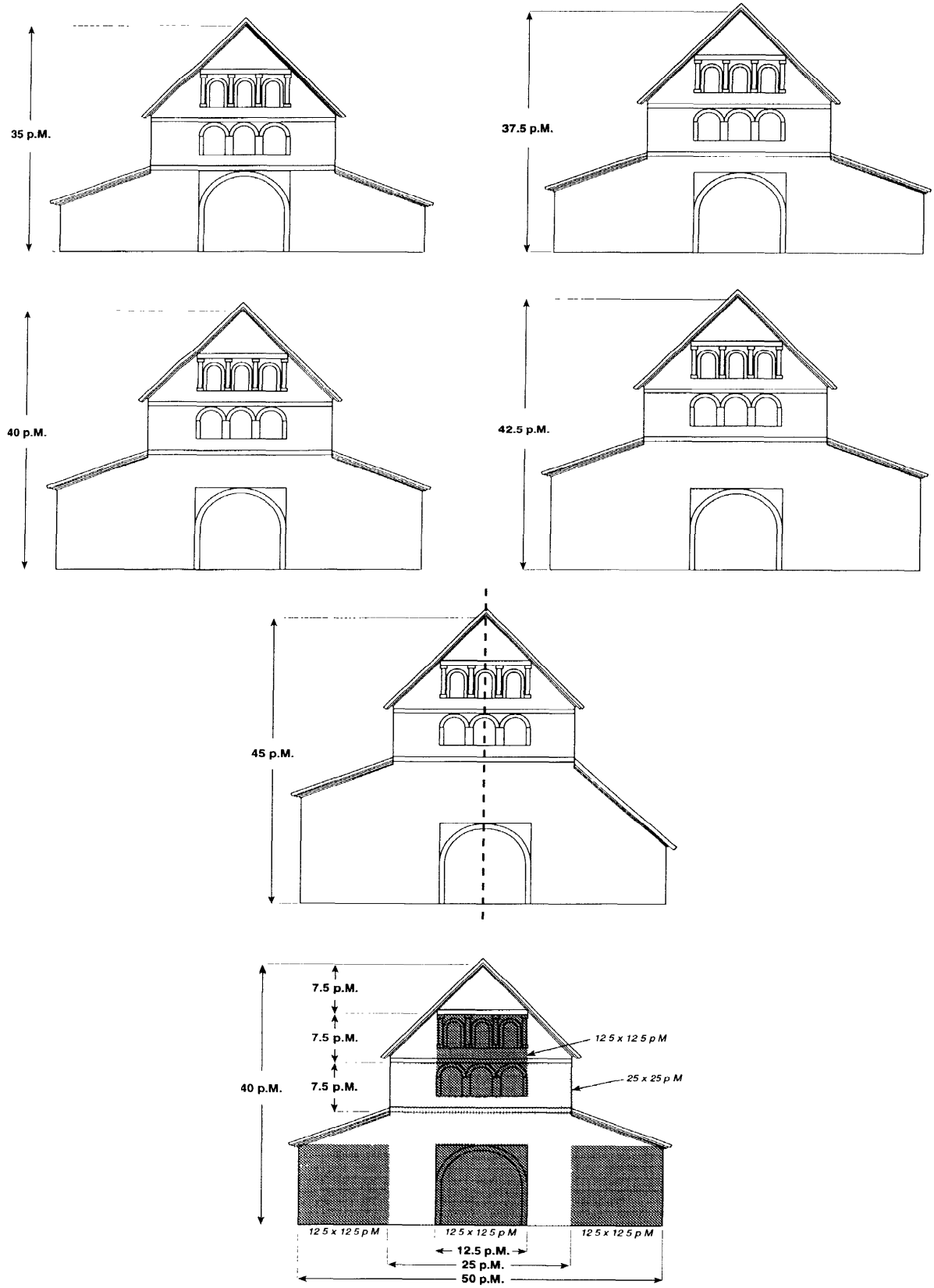

Fig 6.8 Meonstoke: alternative heights for the façade, in Roman feet (pedes Monetales). *Bottom: basic modules used in the layout of the façade*

type stone) with peg-holes, and standard ceramic *tegulae* and *imbrices*. Large numbers of ceramic tiles were found on the north and south sides of the aisled building, and in view of the reconstruction proposed below, it is suggested that these were originally on the aisle roofs, since their pitch was shallower and could have carried *tegulae* and *imbrices* without the need for pegs. The nave roof, however, had a sufficiently steep pitch to require pegged or nailed tiles, and therefore it seems likely that the stone slates were used on this roof.

Reconstruction of the façade

Many aspects of the reconstruction of the facade of the building will be self-evident from the description of the remains given above. These are sufficiently well-preserved to be reasonably unequivocal in the lines of reconstruction that they suggest. For the restoration of the entire facade, however, other factors need to be brought into play, notably that of mensuration, and whether or not specific units were used in the proportions of the building.

It becomes evident when reconstruction drawings of the building are attempted from the detailed site plans that a unit expressed in Roman feet (ie the *pes Monetalis* of 296mm length) can be applied to the facade itself, and to the foundations of the aisled building. This unit can be applied more-or-less exactly in many cases, but allowance has to be made for variations in measurements due to offsets at foundation level, the break lines in the facade and other similar factors.

The overall width of the short end of the building is 50pM, and the width at clerestory level (also the width across the outside of the aisles) is 25pM. The width of the central entrance-way, after allowance is made for the tile and greensand jambs, is 12.5pM. Further up the facade, the overall widths of both the lower arches and upper arches (including their outer pilasters) is 12.5pM. Thus a unit of 2.5pM seems to have been used in the creation of some of the basic proportions of the building, not only in terms of the layout of the foundations, but also for the arrangement of elements of the facade (Fig 6.8).

It is possible to go further than this when reconstruction of the façade is begun. Firstly, the measurement from the top of the restored cornices to the springing of the arches beneath, both for the lower and upper arches, is 3.75pM, in other words, one and a half units. It seems likely, therefore, that the lower section of the lower arches, ie their columns and bases, was also 3.75pM high, giving a total of 7.5pM for the ensemble of the lower set of arches and its overlying cornice. For the upper arches, which of course were smaller individually than those below, one and a half units, 3.75pM, for the depth of each arch below the springing would make them over-elongated. A solution to this is to include the flint courses that survived below the upper arches in the measurement. This creates a gap between the upper and lower sets of arches, consonant with the evidence and conforming to the basic unit. Overall, this would give 7.5pM to each of the sets of windows, totalling 15pM height to both together. It is also 7.5pM from the top of the upper cornice to the projected convergence point of the apex of the roof.

The apparent use of a unit of 2.5pM provides an important starting-point for establishing a possible overall height for the building. Since the ground-floor storey did not survive, any reconstruction has to estimate how high it stood, and crucially, the angle of the aisle roofing as a consequence. Various trial reconstructions were drawn up (Fig 6.8), to different heights using the unit as a module. The lowest seemed impracticable due to the low height of the roof line of the aisles, and indeed, the survival of a collapsed buttress of at least 1.5 m height, originally on the north aisle wall, would also tell against this. The highest reconstruction, at 45pM overall, offers the possibility of two alternative reconstructions of the aisles; either an aisle with shallow roof pitch and two storeys or a mezzanine floor within, or a steeper roof pitch parallel with that of the nave. The latter again leads to the problem of the outer aisle walls being too low, a factor which can only be corrected with the aisle roof pitch if the overall height of the building is above 50pM.

For reasons of the overall proportions of the facade, a height of 40pM has been favoured, ie a height : width ratio of 4 : 5. As the diagram shows, this gives a height of 25pM to the distance between the ground and the upper side of the lower cornice, ie the point at which the roof line starts. The result of this is that the main area of the facade is a square of 25pM, flanked by two squares of 12.5pM accounted for by the aisle widths and projected heights to their roof lines. The rise of the aisle roofs, if taken at 2°, would bring their junctions with the main facade at approximately the level of the heavy tile coursing that survived at the base of the fallen section of wall. In addition, it is possible to restore the entrance as a arch framed by an imaginary 12.5pM square. This height, therefore, makes the best use of the apparent unit, and has been used for the detailed reconstruction (Fig 6.9) and for the cut-away axonometric drawing (Fig 6.10).

Discussion

When first uncovered, it was assumed that the fallen facade of Meonstoke belonged to an aisled building roofed with a single overall span: until, that is to say, vertical lines representing the clerestory were discerned in the collapsed masonry. A single roof has in recent years been the prevailing orthodoxy on the reconstruction of this building type, largely following the suggestions of J T Smith (1963, 25-7), who, as a vernacular architect, drew inspiration from medieval and post-medieval long-houses, aisled barns and other such structures. The alternative reconstruction, with a clerestory and separate nave and aisle roofs, had been suggested

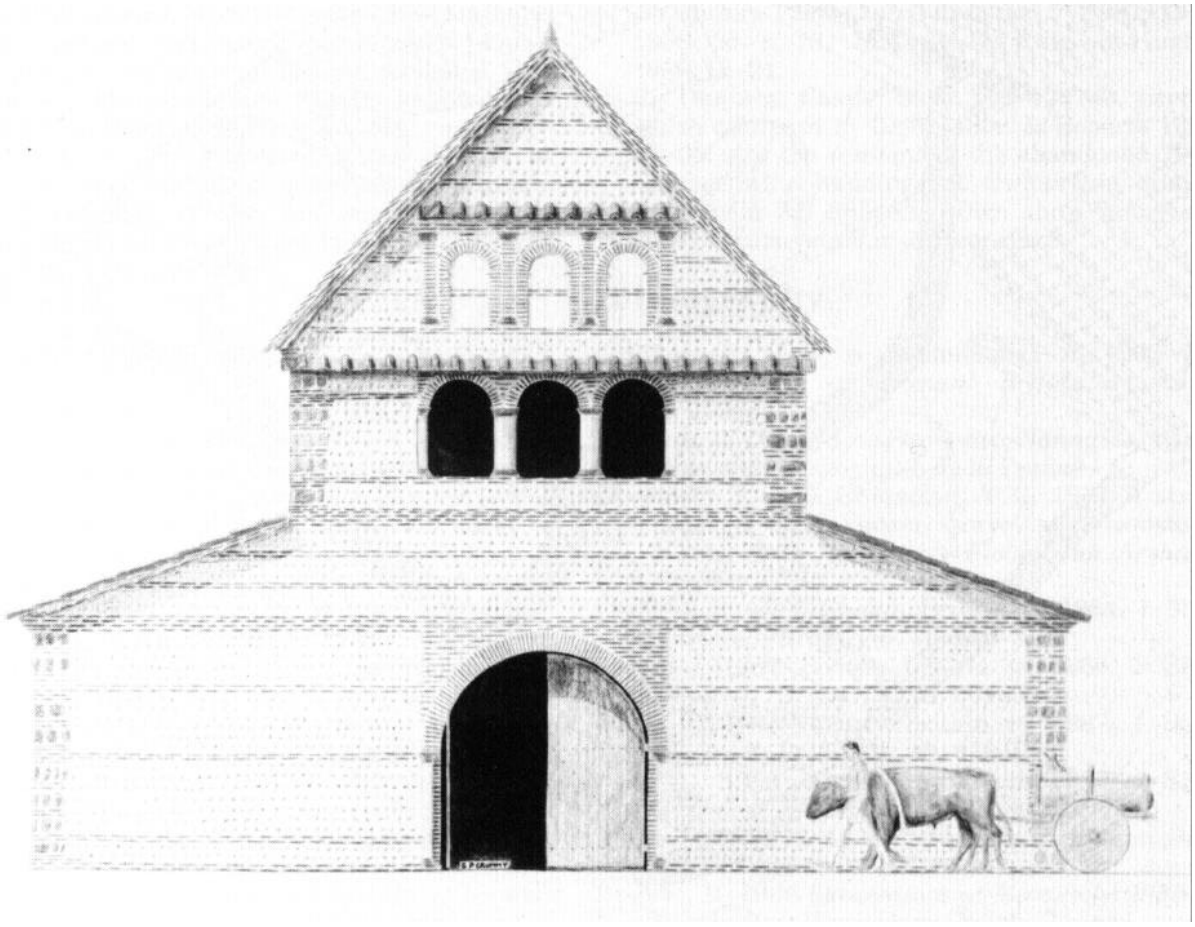

Fig 6.9 Meonstoke: reconstruction of the elevation

for aisled buildings by Collingwood, Richmond and others (Collingwood & Richmond 1969, 149), but appears to have fallen from favour, possibly because the implicit link between aisled buildings as agricultural structures and their medieval equivalents fostered opinion in favour of Smith's proposals.

Meonstoke revives the case for Richmond's reconstruction and inclines towards a different kind of linkage: that between aisled buildings and other, usually larger, basilica1 buildings. The site shows that, for one villa at least, a basilica1 prototype was drawn upon for the aisled building, and that in form it had much more in common with a *basilica* in a Roman *forum* than with a medieval aisled barn. The architectural detail underlines this link, with its window arches reminiscent of those in public buildings such as baths, and the use of Ionic pilasters.

This is not to suggest that all aisled buildings should be reconstructed in this way. Meonstoke stands out by the thickness and depth of its wall foundations, evidently designed to carry stone walls up to the full height of the building. Many other aisled buildings have weaker foundations, and it can be inferred for many of them that a less substantial superstructure may be more appropriate. If so, the use of timber, wattle and daub, thatch, etc, may indeed favour a simpler approach to the appearance of the upper parts of the building. A single overall roof could easily be better in these circumstances, and thus, Smith's suggested reconstruction may be preferable.

To return to the Meonstoke façade itself, its elaboration is a striking feature worthy of comment. The high degree of decoration and architectural organisation was not an aspect of aisled buildings anticipated hitherto, and it certainly raises the question of how extensively late Roman buildings were decorated externally. Aisled buildings, although the focus of some debate as to their purpose and as to the arrangement of their internal spaces, were probably not the main domestic structures in most villa complexes. It is likely that they were subordinate buildings, perhaps combining an agricultural storage role with subsidiary domestic accommodation. At Meonstoke, a decorated mosaic over the small hypocaust and evidence of painted

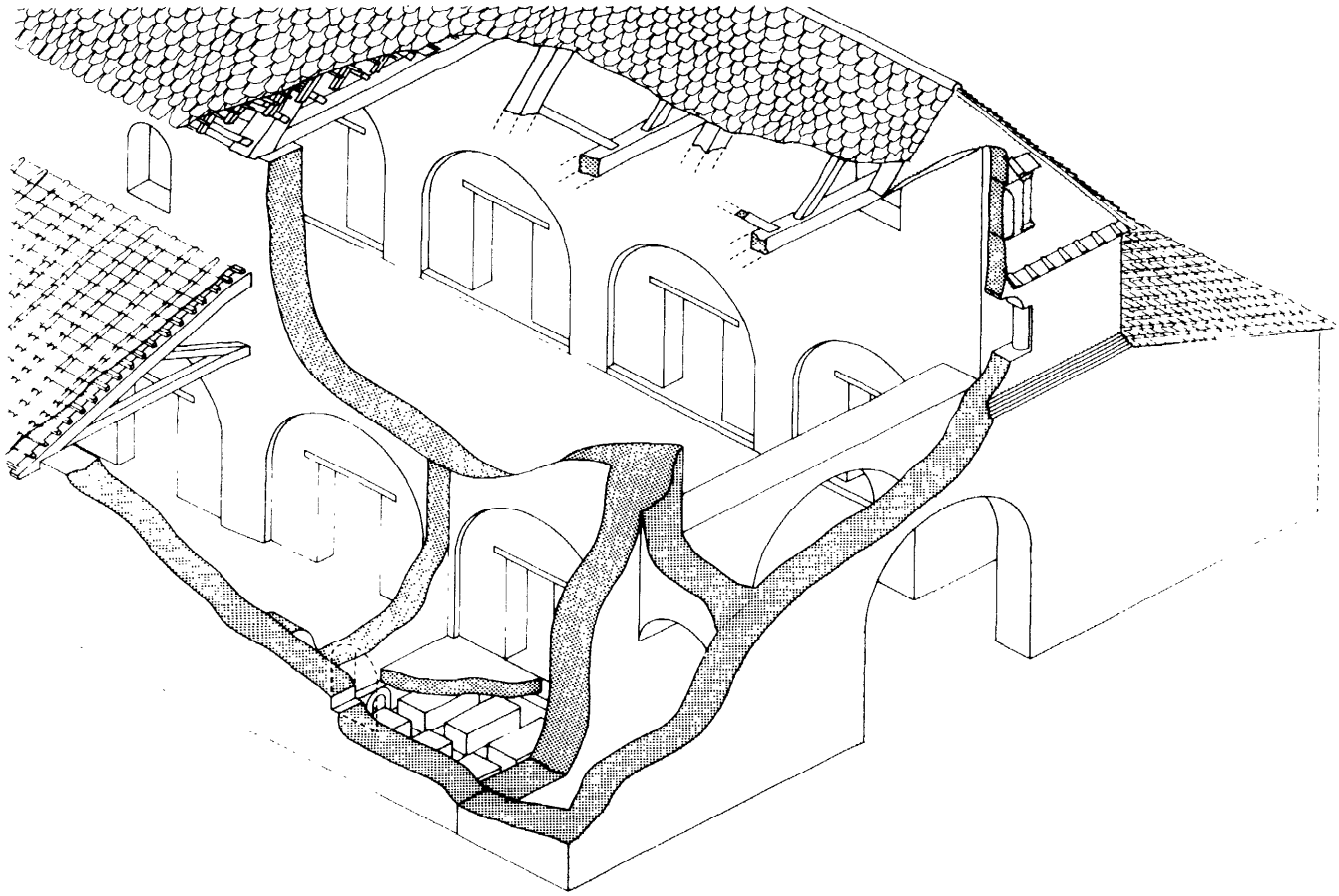

Fig 6.10 Meonstoke: axonometric reconstruction

wall-plaster show that the building did serve a domestic function to some degree. This may be a factor in the external elaboration of the façade, ie that those inside wished to display their status by means of the decoration of the building.

There is, however, another and possibly more important factor to consider in this respect, namely the value of the decoration to the status of the villa complex as a whole. It is possible that a Roman routeway ran up the Meon valley only *c* 70m to the east of the villa, in such a way that the facade of the aisled building would have been clearly visible to travellers passing along it. Thus, the façade was quite probably part of the display of the whole villa, perhaps forming the north-east corner to a more elaborate central focus to the south, that was linked to the aisled building by the courtyard walls running from the latter's south-east corner. It formed, therefore, a possible visual stop to the overall south-eastern elevation of the villa complex, and was certainly a fine testimony to the pretensions of the owner.

A final comment should be made about the contribution of Meonstoke to the architectural history of Roman Britain. In many ways, the site is that of a rather ordinary Roman villa, with nothing exceptional by way of mosaics, wall-paintings or portable artefacts. It is all the more surprising, therefore, to have unequivocal evidence of an imposing façade to what was probably a subsidiary building in the villa. Such facades may well have been a common feature of the Romano-British countryside, villas being much more grandiose visually than hitherto thought. As architectural inspiration, the builders seem to have drawn on basilica1 public buildings as their guide to the form of the aisled building - an apparent, and notable, case of *urbs in rure* in late Roman Britain.

The use of Ionic details and, apparently, units of Roman feet looks back to traditional Roman architecture, especially that of public buildings. On the other hand, the use of linked sets of arches, and columns between them, is a late Roman feature that was to become an important facet of Romanesque

architecture (similar features being found in almost identical circumstances in churches such as Saint-Perre-aux-Nonnains, Metz (Delestre 1988) dating to the 8th century and later). Meonstoke's overall contribution to architectural history, therefore, is to show how widespread late Roman architectural ideas were disseminated. From this it is possible to suggest that, on the continent, if not directly in Britain, a large corpus of relatively small-scale buildings probably existed, and many may have survived to provide visual ideas in the development of Romanesque architecture.

Acknowledgements

Our first debt is to the farmer and landowners, Bruce and Jill Horn, who have shown great kindness in providing help, facilities and entertainment for the team, and have taken a keen interest in the excavations themselves. Another key facilitator of the work has been Mike Hughes, Archaeologist to the Planning Dept, Hampshire County Council, who originally invited King Alfreds College to participate in the Meon Valley Landscape Project in order to undertake the excavation of the Roman building. We are also indebted to Mr Hughes for financial help in running the excavation and post-excavation work. Dr Tim Potter, Deputy Keeper of Prehistoric and Romano-British Antiquities, British Museum, has been of vital assistance to the project, by funding and providing the impetus for fully excavating and lifting a section of the fallen wall, which now resides in the British Museum and is to be displayed there. We are very grateful to him for the keen interest he has shown in the excavation and the work of King Alfreds College. Dr Potter was also instrumental in making available the support services of the British Museum, notably the drawing skills of Stephen Crummy, who has made important and significant contributions to the interpretation of the building in the course of drawing up the plans and reconstructions illustrated here.

A number of people and organisations were involved in the lifting of the upper windows, and grateful acknowledgement is made to G Foster and N Lee (Conservation Section, British Museum), I Kerslake (Photographic Section, British Museum), K Negus & Sons, F W Talbot & Co, VI Squadron, Royal Engineers, Tidworth, and the excavation team from King Alfreds College; A Turner, C Jarman, S Martin, A Chubb and O Gilkes. The project as a whole was financed by the British Museum, King Alfreds College, Winchester and Hampshire County Council, to all of whom the excavators are extremely grateful.

All the illustrations except Fig 6.5 are reproduced by courtesy of the Trustees of the British Museum. Fig 6.9 is also reproduced by courtesy of Stephen Crummy. Fig 6.5 is reproduced by permission of King Alfred's College, Archaeology Department.

Notes

1 Frere 1985, 308; 1987,347; 1988,476; 1990, 355; *Hampshire Field Club Newsletter, 7,* 1987, 13; 9, 1988, 30-1; *13,* 1990, 24-7; King in Hughes 1986, 18-21.

2 Eg Duntulm Castle, Skye, NG 409743, part of which collapsed in 1985; Miket & Roberts 1990, 55-64: also the remains of the abandoned 19th-century mine buildings at Cwmorthin quarry, Snowdonia SH 665462, which show many collapse features similar to Meonstoke.

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7 The Roman stone building at Stonea, Cambridgeshire

T W Potter

The site, discovered by David Hall (1992, 67) in 1978, lies on a Fenland island to the south-east of March. It was excavated for the British Museum between 1980 and 1984, when more than one hectare was investigated in detail, and a further seven by machine trenching. What follows, however, can be no more than a brief summary, since the final volume is very shortly to go to press. Nevertheless, in a collection of papers devoted to architecture in Roman Britain, the stone structure at Stonea must assuredly find its place, for it is hard to parallel.

Stonea was occupied far back into prehistory, and was particularly prominent in the later Iron Age. The well-known earthworks of Stonea Camp, a large and complex fortification, would appear to mark it out as an important central place, particularly during the period of the Icenian client kingdom of Prasutagus. It may indeed be the case that the region was amongst the lands willed to the emperor upon Prasutagus' death, since the Fens have for long been regarded as Imperially owned (Salway 1970). If so, it took time for them to be developed, for the archaeological evidence is unambiguous that it was the second quarter of the 2nd century that saw a massive expansion of essentially peasant farming in the region.

It is likewise to this period that the main Roman settlement at Stonea, at Stonea Grange Farm, belongs. In choosing the site, the builders may well have been influenced by the island's long history of settlement and, more particularly, by the nearby, and still prominent, earthworks of Stonea Camp. As with *Camulodunum* or *Verulamium*, this was apparently the traditional centre of local power, albeit inconveniently situated, and comparatively far from the main east-west line of communication across the Fens. On the other hand, the Roman authorities were well aware of the symbolic importance of some sites and, if Stonea was intended to serve a role in the administration of this part of the Fens, as has been argued (Potter 1989), then this would explain the choice of site.

It is reasonably clear that the surveyors intended the site to be laid out in units of 50 Roman feet. A military hand might well be inferred (there is military equipment from the site, and even a pair of what seem to be soldier's boots), and the use of systematic mensuration recalls the more-or-less contemporary work on Hadrian's Wall. But, as on the Wall, the blueprint was not rigorously adhered to, perhaps implying a rapid fall off of regular supervision. Nevertheless, a grid of gravelled streets, branching off a main road, was laid out, with a large *piazza* as the focal point. It was here that a remarkable stone building was constructed. Constructed in limestone brought some 25 miles from quarries in the Barnack area, near Peterborough, it was evidently intended to be 50 Roman feet square, with a *porticus* on the eastern side. It is to be doubted whether the *porticus* was ever constructed - the foundation trench did not appear to have been completed - but the main building comprised a massive foundation, on which were set walls 1.20m thick. We have tended to regard it as a tower-like structure, especially as its planned dimensions (ie including the *porticus)* closely resemble those of an unusual building at Le Mura di S Stefano, near Anguillara, to the north of Rome (Potter & Whitehouse 1982). This still stands to a height of 18m, with three storeys, and is also of 2nd-century date (although probably the later part of the century). Certainly, whatever the height of the building at Stonea, it will have had an imposing appearance in the flat Fenland landscape.

Reconstructing the building at Stonea is, however, extremely difficult, since it was efficiently demolished around the end of the 2nd century, leaving only some of the foundations. Nevertheless, it is certain that it was provided with an apse on the western side, and had a hypocaust, heated by a *praefurnium* to the south. There were enough tesserae in the backfill to show that there was a mosaic floor, and painted wallplaster, one piece an imitation of the marble *cipollino.* There was also a very large quantity of window glass, and column, box-flue and roofing tiles in abundance. As at Le Mura di S Stefano, it is reasonable to infer an internal arrangement of columns, as suggested in the reconstruction and, fragmentary though the remains are, we can legitimately conclude that this was a thoroughly grand structure.

The plan was, however, soon modified. To the east a hall-like building, measuring 14 x 7m internally, was added, as well as a corridor or rooms along the north and west sides. There was also a

STONEA GRANGE 1980-84

Fig 7.1 General plan of the main area excavations, showing features of all phases (S Crummy)

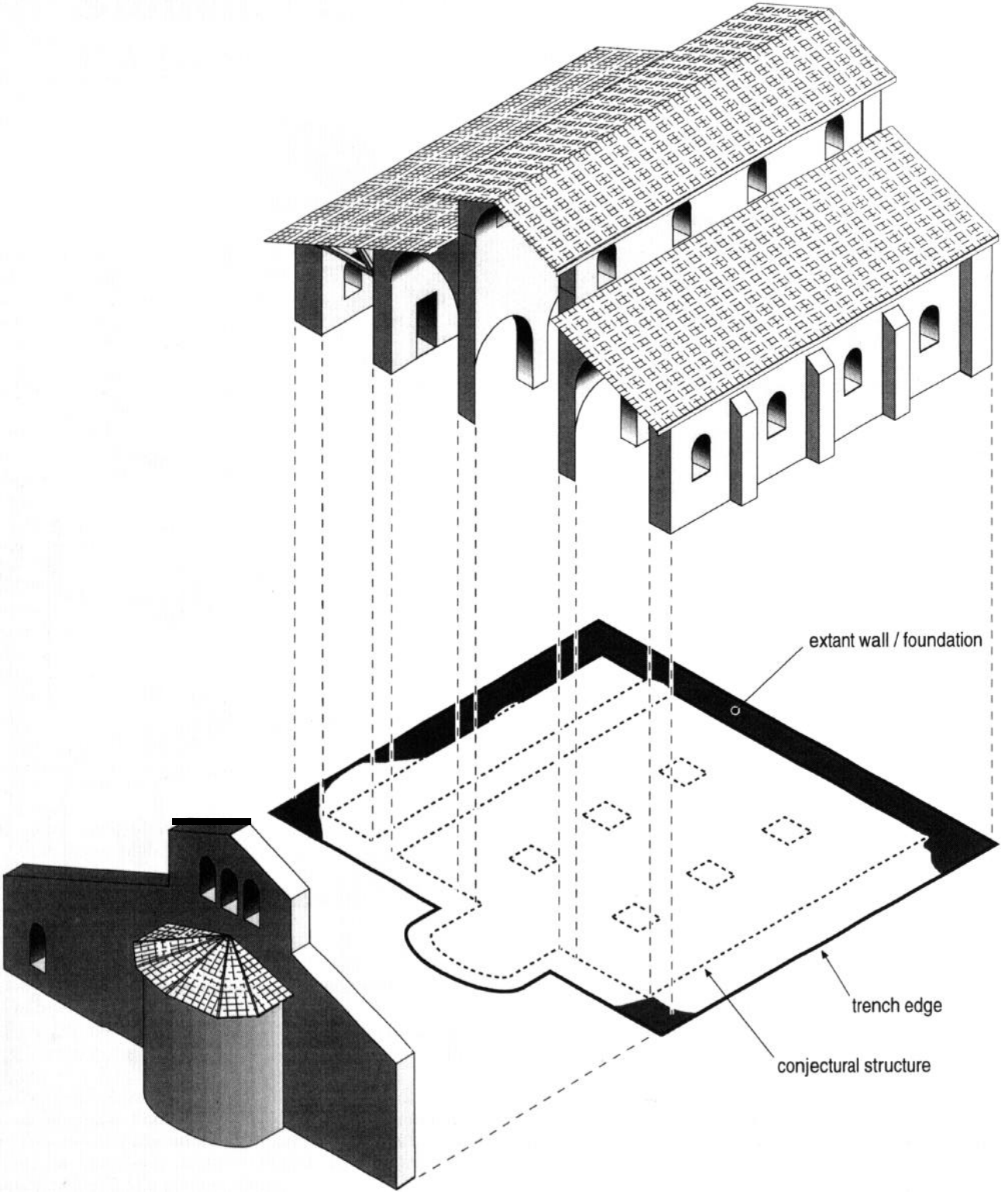

Fig 7.2 Reconstruction of the main stone building (S Crummy)

Fig 7.3 Excavation in progress upon the east side of the stone building

small hypocausted room by the south-west corner. The implication is that the building had in effect been re-orientated so as to face onto the *piazza* to the north - an open space measuring some 35 x 45m, with traces of a laid surface.

To the north of the *piazza*, beyond a fence, was an orderly arrangement of wooden buildings, rubbish pits, wells and latrines. Domestic refuse occurred in profusion, and there can be no doubt that this was a residential area, with no evidence for any sort of industrial activity. The rigidity of the division between the area with the stone building complex and the sector of housing is striking, and a further illustration of the careful planning of the settlement. Although never destined to become a large and successful place, the site at Stonea Grange has many proto-urban characteristics, and it may be that it was indeed intended to become a town. This would have been entirely appropriate in a region which was being extensively developed (including major works of canal digging and road building, presumably at the expense of the public purse), and the stone building may therefore be seen as some sort of *basilica*, albeit in an idiosyncratic design.

Tower-like buildings of this period are represented in the archaeological record. We have already referred to Le Mura di S Stefano, which is just one of a number of buildings in the vicinity of Rome which incorporated tower-like structures in their overall plan (Boëthius & Ward-Perkins 1970, 333). The villa at Sette Bassi, built *c* AD 140-60 on the Via Latina is but one example (Ashby 1907). Similarly, the so-called Temple of Janus at Autun, also probably of 2nd-century date, had a ground plan of 16.75 x 16.25m (and thus very close to that of Stonea) and still stands to a height of 23.75m (Duval & Quoniam 1963). It was a period of conspicuous advertisement through architecture of public and private prestige, as the surviving remains amply demonstrate.

This is a matter that is also vividly reflected in letters of the Younger Pliny, especially those that he wrote while governor of *Bithynia* and *Pontus* in the early 2nd century. His concerns are above all with cities which threw away money on badly conceived schemes. Nicomedia had squandered vast sums on two unsuccessful attempts to build an aqueduct (10,37); Nicaea had a still unfinished theatre costing more than ten million sesterces, but so badly built that it was already falling down; and had a gymnasium in a similar state (10,39); and Prusa had been mismanaging its funds (10,17a), but still wanted new public baths (10,23). It was an extravagant but not always efficient age, when display, whether through architecture or by other means such as games, was all important.

Seen in this light, the building at Stonea might well, therefore, be regarded as an exercise in lavish 'display architecture', which was doomed to failure. The main stone-built complex apart, there was little further investment in the settlement and, whatever the intentions of those who ordered its creation, it failed to develop any significant agricultural or industrial base. It is striking that, while tiles appropriate to a bath-house were found, it would appear that no such building was ever constructed. The lack of so basic an amenity must surely mean that the site never attracted the private or corporate wealth that was so fundamental an element in the development of Roman towns, whatever their size. Stonea was left with one grandiose building, and little more, and even that was completely demolished within 50 or 60 years of its construction.

Stonea remains, therefore, an unusual and somewhat enigmatic place, which cannot be readily paralleled. It is not easy to interpret, and much depends upon accepting the hypothesis that the Fens were Imperially owned, which not all do (eg Millett 1990, 120f). However, it does underline (as does the Meonstoke building) that there are still novelties to be found in the architecture of Roman Britain, and that it is too easily dismissed as provincial. However it is reconstructed, the stone-built complex at Stonea was far from unsophisticated: to find it in the heart of the Fens is the true surprise.

Note. The final volume on the excavations, which very considerably extends the above conclusions, will be published by the British Museum in the autumn of 1996.

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PART III: MILITARY

8 An elliptical peristyle building in the fortress of *Deua*

David J P Mason

Introduction

In 1939, an excavation carried out in the centre of Chester under the direction of Professors R Newstead and J P Droop on behalf of the Chester Archaeological Society exposed elements of a large building of unusual design occupying a site in the central division of the Roman legionary fortress.[1] The structural remains exposed consisted essentially of a long semi-circular wall with four radial walls heading off from it and contained within a rectilinear frame wall, The building was attributed to the late 1st century but the excavators were unable to identify either its overall form or its function. While they likened the recovered portion of its plan to that of a theatre they recognised that its walls were far too insubstantial for such a purpose and in the published report suggested instead that it was part of a complex of buildings enclosing an open space or *forum* (Newstead & Droop 1939, 13). Despite the rejection in print of the theatre hypothesis, the appellation 'theatre-like building' continued to be used thereafter for ease of reference. Traces of a later Roman building were also encountered, consisting for the most part of areas of substantial sandstone-slab paving, but this was thought to have no connection with the earlier structure.

No further archaeological investigations were carried out in this part of the city until the early 1960s when the council's long delayed plans for its redevelopment, entailing the destruction of all archaeological remains, neared implementation. This later campaign of excavation was undertaken by Mr J V H Eames of Liverpool University's Department of Classical Archaeology.

Despite limited time and resources, the campaign recovered much new information about the building. Excavations revealed that the 'theatre-like building' discovered in 1939 was the southern half of a circular structure incorporating an oval courtyard and enclosed within a rectangular frame. At the centre of the courtyard lay some form of monument and around it, fronted by a colonnaded portico, ran a range of 12 wedge-shaped rooms. For obvious reasons, the building was now given the new name of 'The Elliptical Building'. Further information was also retrieved concerning the structural remains of the later Roman period found in 1939. These were revealed to belong to a reconstruction of the Elliptical Building datable to the 3rd century.

An increase in resources meant that full area-excavation could be effected in 1967-9, the final campaign of excavation. This work encompassed exploration of the eastern frontage and south-eastern quadrant of the Elliptical Building and the remains of a bath building of row-type *(Reihentyp)* plan occupying the southern end of the same *insula.* The impression gained from the earlier work that the Elliptical Building belonged to the original design for the fortress was confirmed both by the absence of any signs of previous legionary buildings on the site and by the discovery of a lead water-pipe leading to the courtyard monument which carried a cast inscription recording its manufacture 'during the ninth consulship of the emperor Vespasian and the seventh consulship of the emperor Titus, in the governorship of Gnaeus Julius Agricola' - that is during the first half of AD 79 (Wright & Hassall 1971, 292-3 No 17 = *RIB* II.3 2434.3), similar to two other examples on lead-pipes found at Chester (Wright & Richmond 1955, No 199 = *RIB* II.3 2434.1-2). It was also established that this Flavian building had never been completed; the most advanced elements had hardly risen above ground level before work was halted prematurely. Apart from a partial and short-lived occupation by a collection of timber workshop-buildings later on in the Flavian period, its site remained vacant throughout the following 150 years being used as a dumping-ground for refuse produced by various activities including metal-working and the processing of animal carcasses. This material covered the remains of the uncompleted Flavian Elliptical Building to a depth of 0.90m through which the foundation trenches of the second Elliptical Building, datable principally on numismatic evidence to the third decade of the 3rd century, had been cut.

Sadly, in the years following the end of the site investigations, a combination of pressure of work and a lack of adequate resources conspired to prevent the excavator from preparing a full and publishable report on the Elliptical Building. The general form of this unusual building did become known, however, as a result both of brief summaries

included in general accounts of the fortress and lectures given by its excavator (Thompson 1965, 40; Petch 1969, 39). Following the latter's retirement in the late 1980s, responsibility for the preparation of a comprehensive report was willingly accepted by the present writer; a participant in the excavations of the late 1960s and a member of staff in Chester City Council's Archaeology Service during the periods 1971-6 and 1983-90. The major task of transforming the site record into an integrated and intelligible archive was then begun, as and when other commitments permitted, with the subsequent preparation of the publishable report (approaching completion at the time of writing) being supported by grants from the St John's House Trust and a Leverhulme Trust Research Fellowship.

The Flavian Elliptical Building

Location within the fortress

Fig 8.1

The Elliptical Building was positioned in the *insula* in the second *scamnum* of the *latera praetorii* lying to the dextral rear of the *principia*. It occupied the central, and greater, portion of this *insula* where it was flanked to the south by a *Reihentyp* bath house and to the north by a long narrow timber building. The bath house was in addition to the much larger principal fortress baths *(thermae)* which lay in the *praetentura*. The plan of the timber building suggests either a range of *tabernae* or a single barrack-block, the latter conceivably for the legion's cavalry *(equites legionis)*. [2] To the front and south of this *insula* lay the barrack accommodation of the First Cohort while to the west, from the early 2nd century at least, lay the principal workshops *(fabrica)*. To the rear and north lay an elongated plot which was not fully occupied by buildings until the beginning of the 3rd century while the area to the east of the Elliptical Building and the latter was taken up by an unusually large *insula* containing a single, vast building occupying the position normally given over to the *praetorium*. [3] The latter, together with the Elliptical Building and possibly the *horrea*, was one of the few buildings in the Flavian fortress other than bath buildings - which obviously had to be constructed of masonry - to be built in stone.[4]

Plan

Figs 8.2 and 8.3

As can be seen from the accompanying plans, at the centre of the Elliptical Building lay an oval courtyard approximately 14 by 9.75m in size surrounded by a 4m deep ten-columned portico. At the exact dead centre of the courtyard lay the 1.5m square concrete foundation for a monument. That this was intended either to consist of or in some way to incorporate a fountain, and possibly if not probably an accompanying pool, was indicated by the inscribed lead water pipe found running directly to it. Beyond the portico lay an 8.30m deep concentric range divided up internally by radial walls into 12 wedge-shaped chambers, each with a notional width of 9m. This range was the most important part of the building and was designed on an impressive scale. Whereas its rear element consisted of a continuous and conventional wall the inner took the form of a series of massive double piers about 1.80m square positioned at the courtyard *termini* of the radial walls. Clearly, therefore, all 12 chambers in the principal range were intended to be approached via a monumental arched entrance 4m wide and at least 5m high. About 1.50m in from these piers and running concentrically within the range was another foundation which, judging by its modest width and depth, was not designed to support anything more substantial than some form of balustrade or timber screening.

The principal range just described was interrupted at both ends of the building's long axis by a 1.80m wide passageway which afforded the only means of access to the range of rooms and the courtyard from the exterior. The reconciliation of what - for an intramural military building - was a extremely unorthodox plan with the surrounding rectilinear street-grid was achieved by its enclosure within a rectangular frame. Further walls divided up the spandrel-shaped areas at the corners and these also served to buttress the principal range. The plan of the complex was completed by a single range of rooms, again fronted by a colonnaded portico, along both of the shorter sides. Each side was 5.50m deep and was divided into six rooms, three either side of the centrally located entrance passage with those at the outer ends being considerably wider than the neighbours at 5.70 vs 3.80m. The addition of these street-frontage ranges gave the Elliptical Building overall dimensions of 59.60 by 33.20m.

Scrutiny of the plan of the building as laid out on the ground, here reproduced as Figure 8.2, reveals that there were noticeable differences in the details of the layout of the two halves of the building. This is most obvious in the relative positioning of the radial walls and the foundations for the columns of the external street-frontage colonnades. Thus, whereas in the southern half of the building the radial walls were positioned so that all six rooms were of more or less equal width, in the northern half the way they were located meant that the width of the rooms closest to the short axis was far narrower than those at the outer ends of the range. Similarly, while the foundations for the columns of the southern half of the eastern street-frontage portico were correctly spaced and positioned with respect to the range which they fronted and the entrance passage leading to the interior of the building, the location of those constructed north of the latter bore no sensible relationship whatsoever

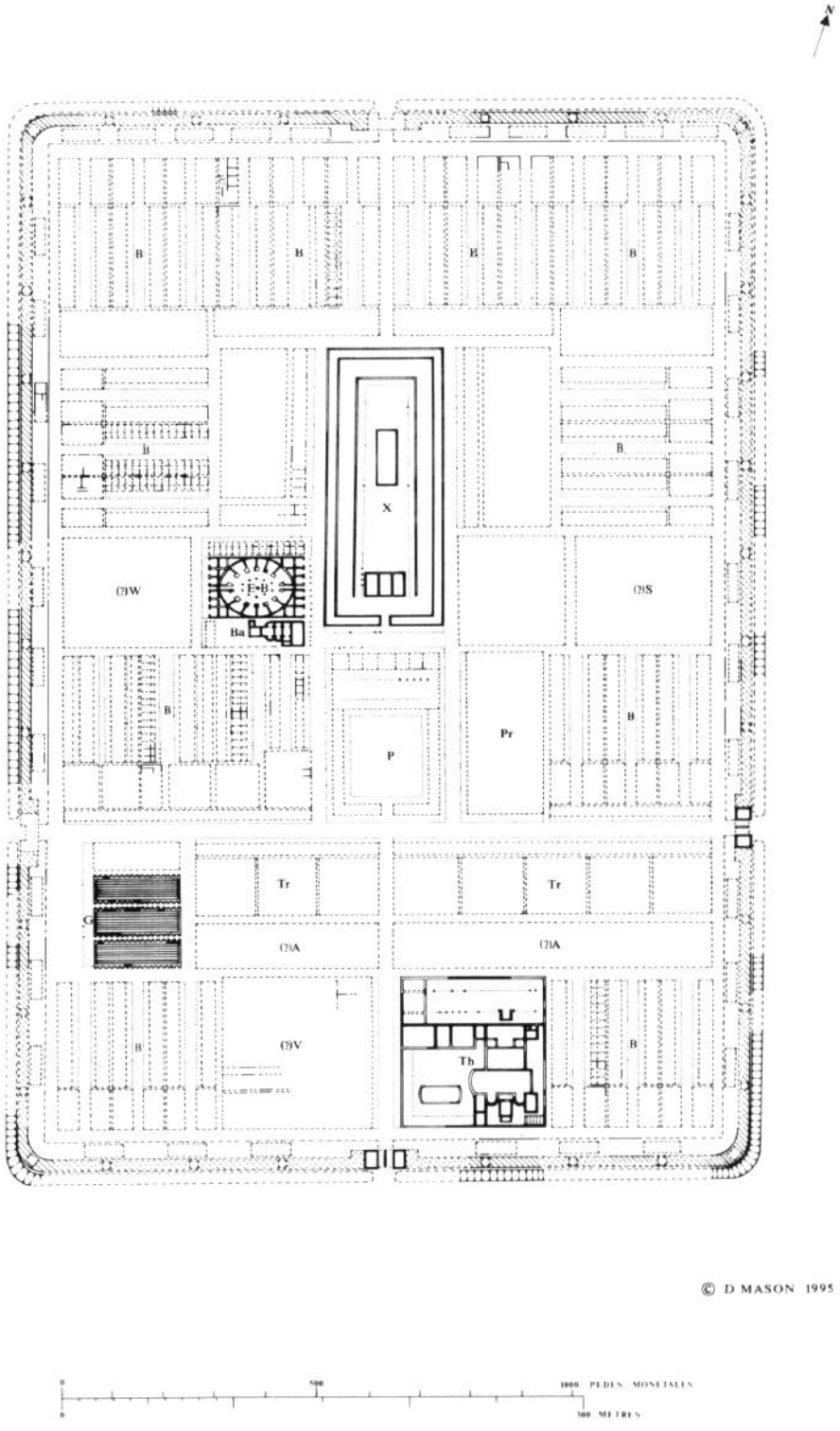

Fig 8.1 Plan of the primary (Flavian) legionary fortress of c AD 77. Key: A - (?)accommodation for unit of auxiliary cavalry; B - barracks; Ba - minor bath house; EB - Elliptical Building; G - granaries; P - principia *(headquarters building); PR -* praetorium *(legionary commander's residence); S - store building; Th -* thermae *(main bath-building); Tr - Tribunes' houses; V -* valetudinarium *(hospital);* W *- workshops; X - masonry building of unknown purpose*

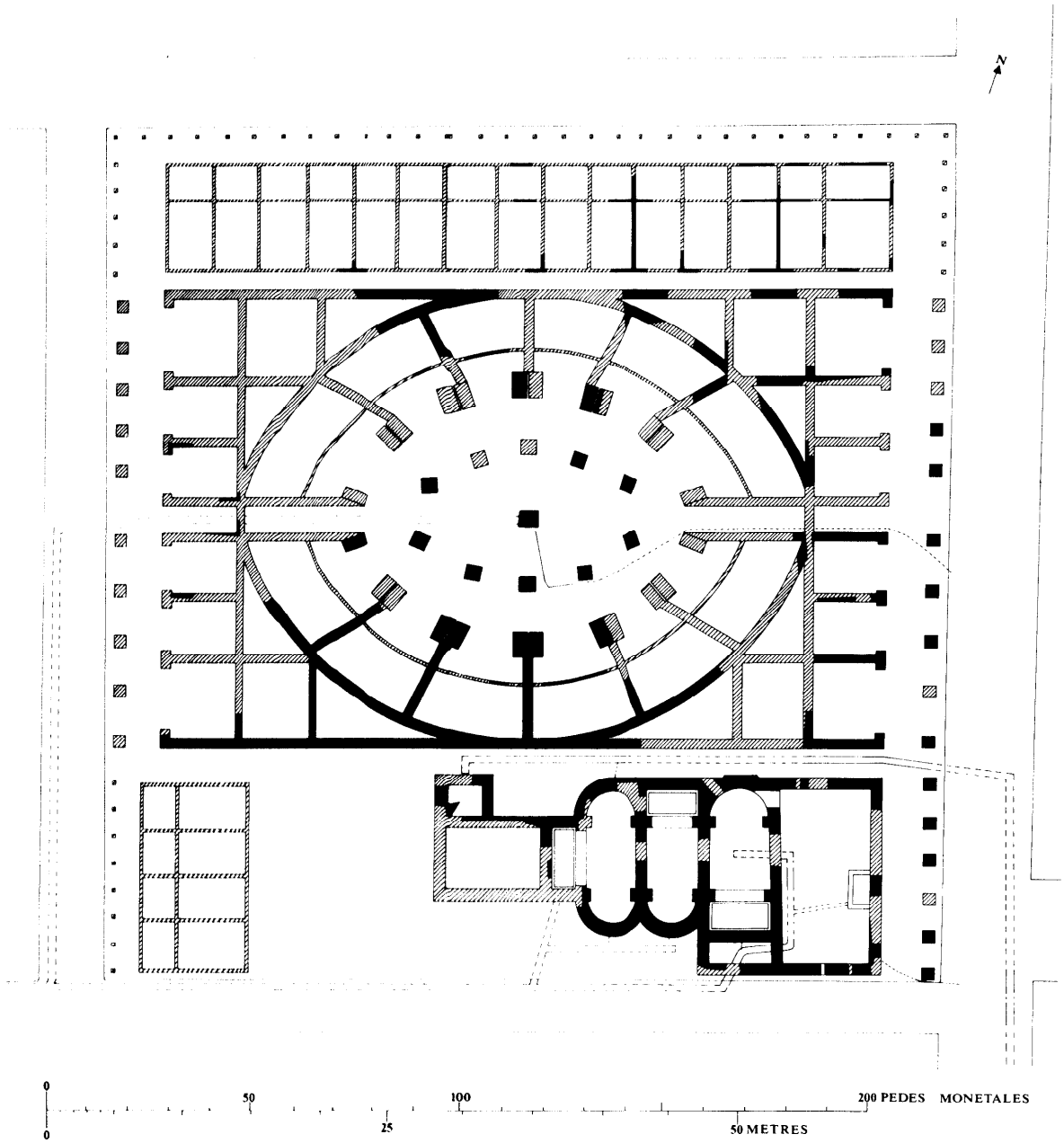

Fig 8.2 Restored plan of the Flavian Elliptical Building as begun, together with adjacent bath-building and (?)tabernae; (solid = walling/foundation found, hatched = restored)

to these elements. Given the nature of these differences, it is evident that this asymmetricality in the plan was the result of a surveying error, or errors, made during the laying out of the northern half of the building. On the reasonable assumption that the architect had intended complete symmetry in the building (as illustrated in Fig 8.3), this was a mistake of no mean significance. Yet, it is doubtful if this alone would have caused the project to be abandoned and it may not even have been noticed before the order to cease work was given. Had the building been carried through to completion, it would have been a relatively easy matter to correct the spacing of the foundations for the external portico but whether a rectification of the radial walls' positioning would have been attempted must remain a moot point.

Other errors, or rather alterations to the original design, were made during the early stages of the construction process. Foremost among these was the alignment of the drainage culvert serving the monument at the centre of the courtyard. The rock-cut channel to accommodate this, following a diagonal alignment towards and beneath the south-west corner of the building, had already been excavated when the decision was taken to alter the route and so this was backfilled with mortared sandstone rubble. That this modification occurred

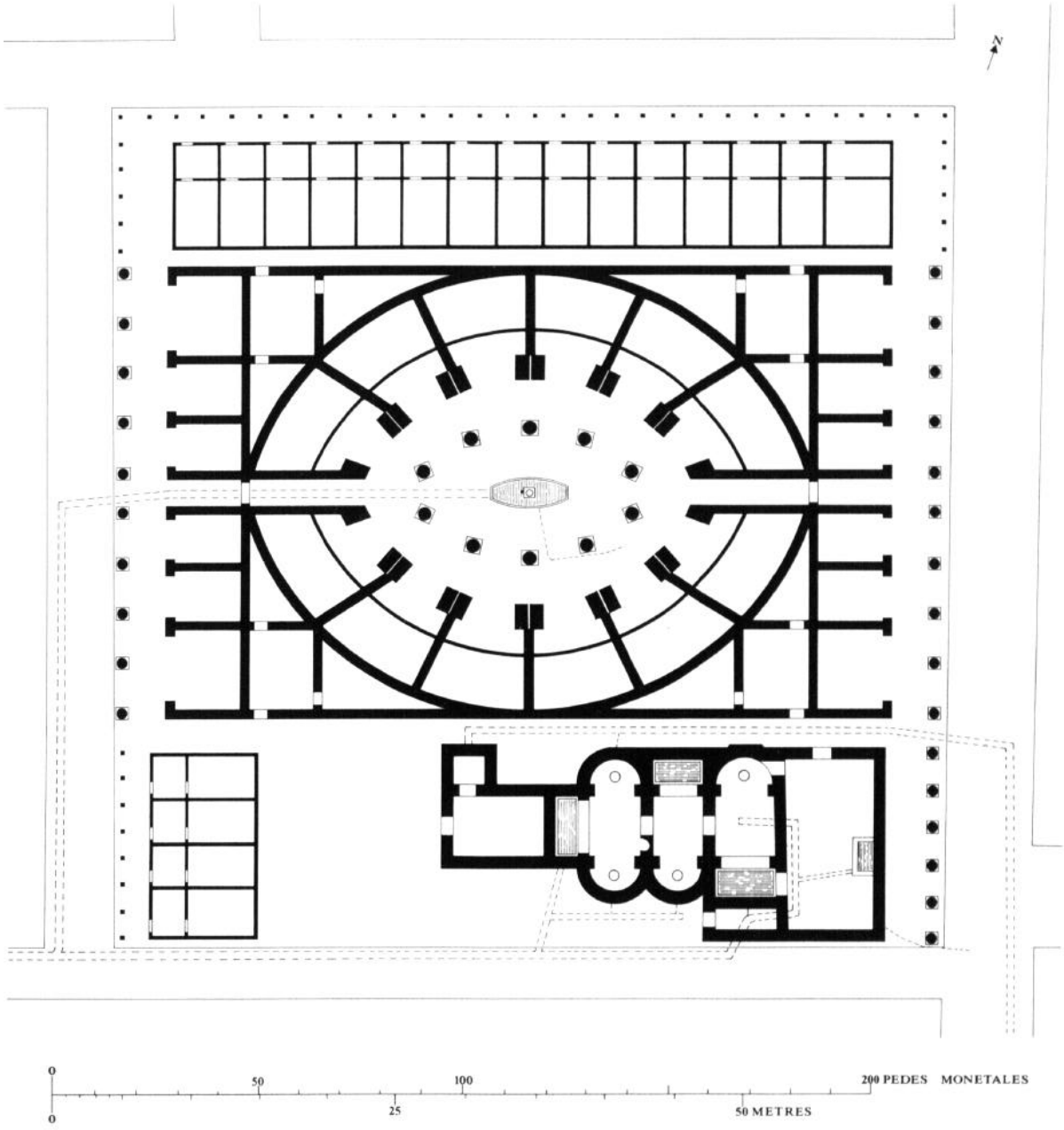

Fig 8.3 Fully restored and corrected plan of *the Flavian Elliptical Building as the architect presumably intended*

at an early stage is shown both by the fact that construction of the drain lining had not even begun when it was abandoned and by the fact that the foundations of the walls and column bases in the south-west quadrant of the Flavian building were inserted into the backfill of the abandoned channel. The new route for the culvert would - like that which served the monument in the 3rd century version of the Elliptical Building - presumably have followed the long axis to exit beneath the west entrance of the complex but construction of the building was terminated before its provision was even begun.

Constructional details

Although uncompleted, and in places severely affected by later stone-robbing operations, sufficient remained of the walls of the primary Elliptical Building to show that they were of concrete *(opus caementicium)* construction with facings of neatly dressed blocks of local sandstone - typically measuring 300mm in length, 150mm in breadth, and 100mm in height - in the style known as *opus vittatum*. The walls generally conformed to a width of 0.60-0.65m, the sole exception being the slighter wall running just behind the double piers at the front of the principal range which, judging from the

size of its foundation, can have been no more than 0.45m wide. Again with the exception of the latter, the wall foundations were formed according to one of two specifications. The curving back wall of the principal range was set in a foundation trench with an average depth of 1.401-n up to 0.90m of which was excavated into solid rock. The 0.60m thick layer of foundation material set in the base of this trench was typical of that employed throughout the primary Elliptical Building, and all other Flavian masonry buildings in the fortress; it consisted of concrete made with a very pure lime mortar and an aggregate consisting chiefly of river-washed, fist sized cobbles. The coursed masonry thus began at a level approximately 0.90m below the construction horizon and continued up to the latter devoid of offsets and thus with no decrease in width. The foundations of all the other walls, including those of the end ranges, the radial walls, and the enclosing frame, were constructed in similar fashion but to a more modest depth. For these, the foundation trench averaged 0.75m in depth, 0.30m of which was rock-cut, with a layer of cobble-concrete foundation 0.25m thick. The foundation of the much slighter wall mentioned above consisted largely of mortared sandstone rubble set in a trench no more than 0.35m deep which barely cut into the surface of the solid sandstone bedrock.

Cobble concrete was also employed as foundation material for the bases of the internal and external colonnades as well as the piers at the inner end of the radial walls. For each of the latter, a pit approximately 2.30m square was excavated to a depth of 1.40m, equivalent to that of the outer wall of the principal range, and the lower 0.60-0.75m filled with cobble-concrete. Two massive blocks of sandstone, each measuring 1.80 by 0.88m and with a thickness of 0.40m, were placed side by side on the foundation pad thus formed before the concrete set. Only one of these was found actually still *in situ* but impressions of others could be seen on the upper surface of the concrete foundation pads. Whether the builders intended to place a further level of monolithic blocks on these or commence immediately with regular masonry is unknown because the superstructure was either never built or was removed soon after construction work ceased.

The foundations of the courtyard and external colonnades were similarly formed though less massive. The cobble-concrete foundations of the former were 1.50-1.80m square and up to 0.75m thick, their smooth upper surface being finished flush with the general construction horizon on the site. The positioning of the bases indicates a centre-to-centre intercolumniation of 4m. No base-stones for the columns were found in position but, as with the piers at the ends of the radial walls, it was plain from impressions in the surface of the concrete pads that more than one had been placed in position. From their 'ghosts', it is clear that the base-stones of the courtyard colonnade were 0.99-1.02m square. The concrete pads for the bases belonging to the street-frontage colonnades were of a similar thickness but were slightly smaller in size at 1.30-1.40m square,

The degree to which the construction of the building had progressed by the time that the order to abandon work was given varied throughout the complex. The excavation of the foundation trenches and pits had been undertaken throughout and in many cases the foundation material had been inserted and the supervening masonry completed as far as ground level. In other cases, however, such as the north wall of the eastern entrance passageway, not even the foundation material had been laid. In no area had the process of forming the internal floors or external surfacings been started and no work had been done towards the excavation of the trench to accommodate the replacement drainage culvert for the central monument. The Elliptical Building was not the only construction project to be interrupted at this time; work on the massive complex lying to its east was clearly delayed as was the completion of buildings in the *insula* to its north. The deployment of much of the Chester garrison, *Legio II Adiutrix*, to Scotland for Agricola's campaigns is the most likely explanation for this interruption (Petch 1968; Strickland 1983, 10-22).

Design

As stated above, there seems little doubt that the architect had intended the Elliptical Building to be perfectly symmetrical about both axes and that the asymmetricality in the plan of the building as laid out on the ground was due to errors made by those responsible for surveying its northern half. The 12 chambers of the principal range were, within the constraints associated with the curvilinear plan adopted, intended to be equal in size and are shown as such in the fully restored and corrected plan of the building illustrated in Figure 8.3. This conveys a much clearer impression of the overall design and intended appearance of the building. In particular, it makes one appreciate the considerable length and - for a building of this size - narrowness of the entrance passages, the totally enclosed environment of the central courtyard, and viewed from the latter, the dominating character of the monumental entrances of the 12 main chambers (the latter perhaps executed in impressive ashlar masonry in *opus quadratum* style and, in view of the shape of the basal pier blocks, possibly incorporating pilasters or even free-standing columns).

Although the building under discussion is referred to as the Elliptical Building it has become apparent during the process of piecing together its detailed overall plan that its curvilinear elements were laid out as arcs rather than ellipses. A truly oval structure was laid out with reference to four separate foci.[5] Here, however, the form of the curvilinear elements implies that only two foci were

employed. It would appear that the location of the reference point from which each arc was surveyed was established by taking a measurement along the short axis equal to one half of the length of the building (minus the street frontage ranges) along the long axis. From each of the two points thus fixed concentric lines could then be surveyed marking the positions of the principal range's features of the building plan. The position of the radial walls in the centre of the range was easily defined as these lay on the short axis of the building. Fixing those of the intermediates required a more complex and subtle process. First, the points at which they were to meet with the outer wall were determined by taking bearings at 30°, 60°, 120° and 150° from the base surveying point. However, probably in order to facilitate the provision of entrances of equal size, these radial walls were actually aligned on the exact mid-point of the building. Thus each quadrant of the building was divided into three chambers of very similar though not absolutely identical dimensions. In order to rationalise the awkwardly shaped areas lying between the curvilinear ranges and the outer frame wall, and also probably to provide a degree of buttressing for the former, two partition walls were inserted in each of these so as to form a rectangular chamber. To simplify the laying-out process, those aligned east-west were continued beyond the frame wall to form one side of the large room at the outer ends of the street-frontage ranges.

The Elliptical Building and the two other structures which shared its *insula* provide some evidence, as one might expect, for the employment by the legionary *mensores* who laid them out of modules or units based on standard multiples of the Roman foot (the *pes Monetalis* of 295mm). The *insula* was a perfect square with sides of a little over 60m. Equivalent to 203.5pM this suggests it was the intention to form a plot with sides of 200pM although it is probable that the actual base grid included provision for the streets on either side as this yields measurements of (east-west) 73.75m or 250pM and (north-south) 70.90m or nigh on 240pM. The three sub-divisions of the *insula (balneum* and alleyway; Elliptical Building; and alleyway and *(?)tabernae)* correspond to 56, 112.5 and 37.5pM respectively. From these figures it can be seen that the strips allotted to the bath-building and the *(?)tabernae* were respectively precisely one-half and one-third of that reserved for the Elliptical Building. Thus, the *insula* was divided up from north to south according to a ratio of 1 : 3 : 1.5. The Elliptical Building itself had a width to length ratio (excluding the street-frontage ranges) of 4 : 5. With regard to the principal range of the latter, the employment of the *pes Monetalis,* again in multiples of five and ten, is revealed by the internal width of the colonnaded portico - 2.90m or close on 10pM - and the interior depth of the wedge-shaped rooms - 5.90m or exactly 20pM. Similarly, the overall depth of both street-frontage ranges was 8.85m or 30pM. There was also, however, one instance where units based on multiples of three *pedes Monetales* had been used - the basal blocks of the entrance piers of the principal chambers which measured 1.80 by 0.87m = 6 x .3pM - and there are in fact many other instances throughout the building where the case for the use of such units is at least as strong as that for units based on multiples of five or ten. For example, the four smaller rooms in each of the street-frontage ranges had an average internal width of 3.55m or 12pM and each of the centrally positioned entrance passageways was 1.80m or 6pM wide while the overall apportionment of the space allotted to these ranges between rooms and portico was 5.30 and 3.55m or 18 and 12pM respectively.

Similarly the layout of the curvilinear ranges and the fronting portico, with respective approximate overall depths of 8.30 and 4.20m, or 30 and 15pM, could just as easily have been worked up using units based on multiples of three and six as those based on multiples of five and ten. Additionally, and obviously, there was a total of 12 chambers in both the principal and the street-frontage ranges.

Superstructure

An analysis of the comparative strength of the foundations for the various components of the Elliptical Building shows that the outer elliptical wall and the inner ring of double piers were designed to carry the greatest structural loading, indicating that the curvilinear ranges of rooms were intended to be the tallest element of the building. Substantial though the foundations of the colonnade fronting the ranges were, they were nevertheless slighter than the outer wall and inner ring of double piers. This not only suggests that there was no intention to roof over the central area but could also imply that the principal range was designed to rise above the internal colonnaded portico in a clerestory arrangement.

The minimum intended height of the principal range can be estimated using several pieces of structural information. First, there is the width of the arched entrances giving access to its wedge-shaped rooms which, at an average of 4m and assuming the normal semi-circular form for the arches themselves, would suggest that the minimum height to their intrados would have been in the region of 6m or a little over 20 *pedes Monetales*. The ceiling of the colonnaded portico - whether the springing-level of a vault or the tie-beams of a more traditional form - would obviously have had to have been set at a level which fully cleared the extrados of the arches. The calculated figures cited above are in agreement with, and help to calibrate, those derived from the second source of evidence, the size of the individual foundations on which the portico columns were set. The base stones of the latter, although no longer *in situ,* could be

measured from the impressions they had left in the surface of the concrete pads on which they had been placed, giving their size as between 0.99 and 1.02m square. These dimensions can be compared with the 1.29-1.35m of the equivalent blocks employed in the colonnade of the *basilica exercitatoria* which formed an integral part of the legionary *thermae* erected during the same period (Watkin 1886 (rev Petch 1974), 144). These were surmounted by an upper block 0.90m square supporting a column which, including the capital, had a total height of about 5.80m or 20pM. Thus, the basal blocks of the Elliptical Building's internal colonnade were about 75% the size of those in the contemporary fortress baths. Of course, it does not follow that the height of the associated columns was reduced by the same amount for they had merely to support the roof of the portico whereas those in the *thermae* carried the much greater weight of the *basilica* clerestory as well as its roof-structure, Furthermore, as described above, we know that the columns must have been more or less the same height as those in the baths *basilica* in order for the portico roof-structure to clear the extrados of the arched entrances into the rooms beyond. While the principal range may have risen above the colonnaded portico in a clerestory arrangement of considerable height the possibility of the curvilinear ranges having contained two levels of accommodation seems most unlikely given the design and style of the ground level chambers. The overall character of the Elliptical Building appears to the writer to be firmly rooted in the mainstream tradition of monumental public architecture. There seems little reason, therefore, to assume a compromise or conflation with design considerations of a utilitarian nature as represented by the provision of an upper level of accommodation. Thus, although of considerable height, the building's principal range should be considered as containing but a single level of high-ceilinged chambers. Interpreted as such, the case for a clerestory arrangement of its superstructure becomes weaker. It is equally if not more likely that the portico and the rooms were covered by a single, common roof-structure. This is perhaps also indicated by the rather odd sub-division of the spandrel-shaped areas at the corners. The sub-division gives the impression of being designed to allow the incorporation of a row of windows in the outer wall of the curvilinear ranges while salvaging some of this 'dead zone' to create one usable and orthodox shaped room in each case: the two irregularly shaped portions being left unroofed and the latter forming an extension of the street-frontage range. Whether equipped with flat or vaulted ceilings, the curvilinear ranges were intended to tower above the other elements of the Elliptical Building and, if completed, would have had an overall height to ridge level of somewhere in the region of 12m (detailed restorations of the building's intended superstructure will be included in the Final Report).

Thus, the Elliptical Building appears to have been designed as a tall range of monumentally fronted chambers arranged around an oval peristyle court. Access was confined to a narrow entrance passage at each end of the long axis and had the building actually been completed a visitor, after having negotiated one of the 15m long entrance passages, would have emerged into the central courtyard where, on looking around them, they would have seen at the rear of the encircling colonnaded portico the wide and massively framed entrances of 12 chambers. Entering any of the latter, they would then have perceived the screen or balustrade situated a short distance into the interior which may well have prevented them from approaching its contents too closely.

Dereliction

Following the cessation of work on the construction of the Elliptical Building in AD 79/80 its site lay derelict for most of the next 150 years. At an early stage in this long period, many of the monolithic blocks of stone employed in the foundations of the colonnades and piers were removed for re-use elsewhere while the northern portion of the site was briefly occupied by a group of timber workshop buildings. In contrast, the neighbouring *balneum* and *(?)tabernae* were completed and used. After the demolition of the workshops at the beginning of the 2nd century, the site of the Elliptical Building remained derelict and was used as a general dumping-ground for various forms of rubbish including large quantities of animal bone and metalworking waste. The latter presumably derived from the main legionary workshop immediately to the north which had replaced the earlier timber *(?)tabernae* at the beginning of the Trajanic period. By the time the decision was taken to construct a new building on the area *c* AD 225, this detritus covered the whole site to a depth of about 1 metre.

The Severan Elliptical Building

Plan

Figs 8.5 and 8.6

At some stage during the period AD 220-40, as part of the general reconstruction of the fortress which was undertaken at this time (Fig 8.4), the decision was taken to resurrect the Elliptical Building project.6 The design of the new building was clearly modelled on that of its predecessor; consisting of a principal oval range of 12 rooms fronted by a covered ambulatory disposed around a central courtyard, all contained within a rectilinear frame incorporating a street-frontage range along both of the shorter sides. Even the monument at the centre of the courtyard was retained from the original design and although no new water-supply was found associated with it the fact that a drainage

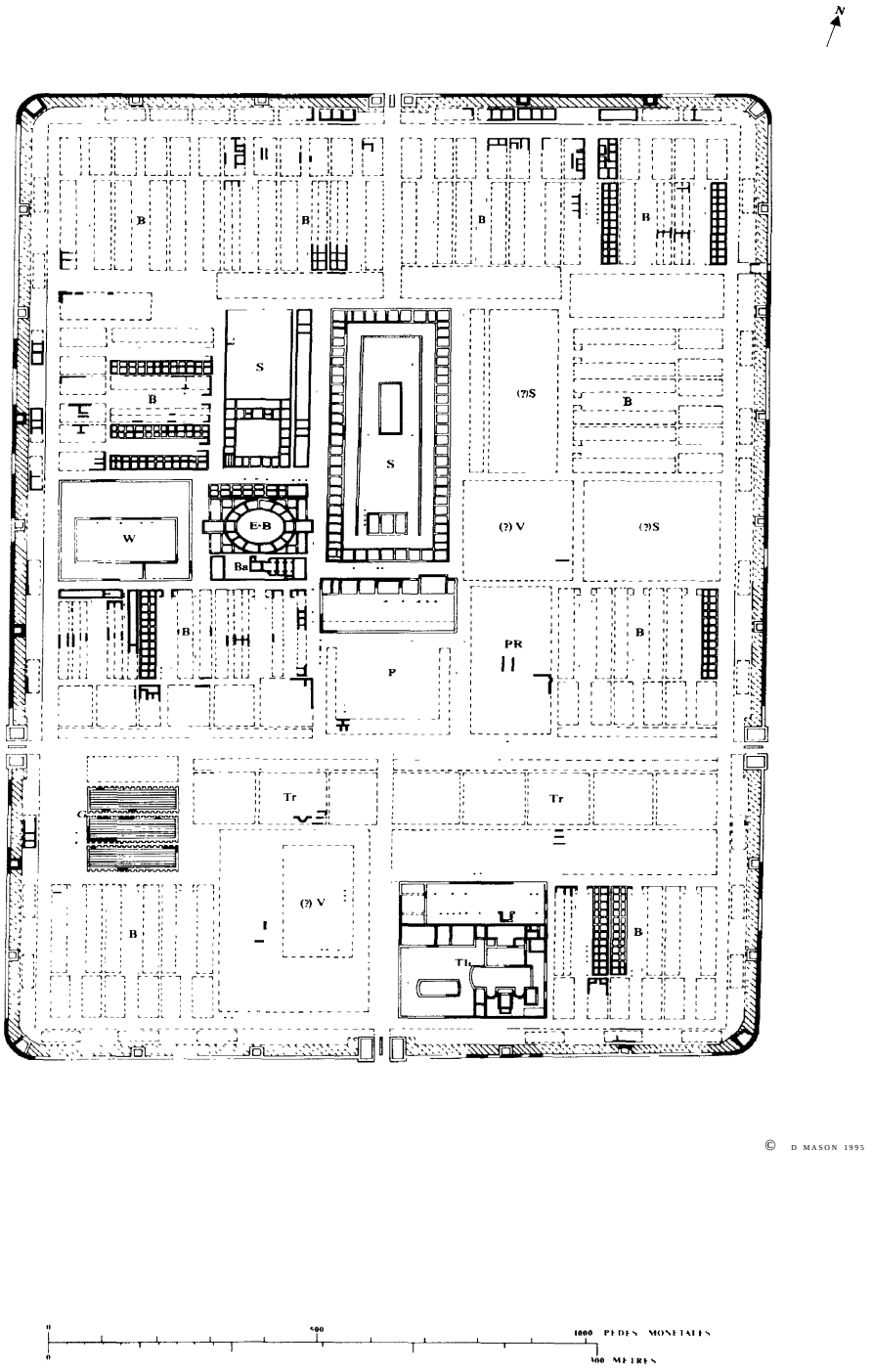

Fig 8.4 Plan of the legionary fortress as reconstructed c AD 220. Key: B - barracks; Ba - minor bath house; EB - Elliptical Building; G - granaries; P - principia *(headquarters building); PR -* praetorium *(legionary commander's residence); S - store building; Th -* thermae *(main bath-building); Tr - Tribunes' houses; V -* valetudinarium *(hospital); W - workshops*

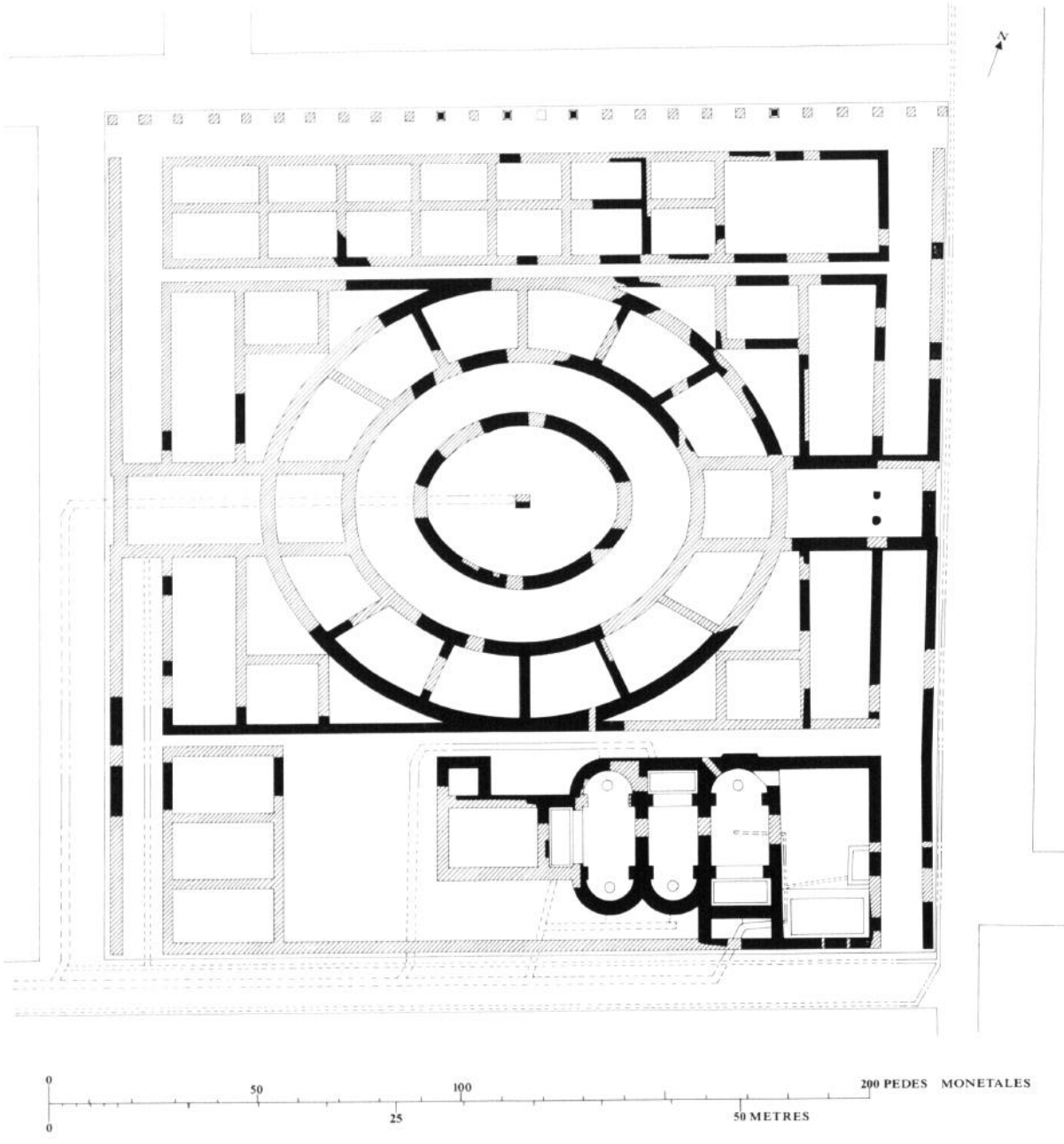

Fig 8.5 Restored plan of the Severan Elliptical Building and adjacent bath-building and tabernae; (solid = walling/foundation found, hatched = restored)

culvert proceeded from it to exit beneath the western entrance passage implies that, as had been the intention with the Flavian building, this consisted partly or wholly of a fountain.

The size of the plot available remained as before and so the overall dimensions of the building (as measured at ground level) were the same as its predecessor at 41.60 by 33.20m. The street-frontage ranges were allotted the same amount of space as those in the original plan but, unless equipped with timber partitions whose remains had either been removed by later alterations or gone unrecognised in excavation, were now undivided internally. The dimensions of most of the other components were also very similar to those of their Flavian precursors, Thus, the central courtyard measured 14.20 by 10.50m while the maximum internal width of the 12 rooms in the principal range (laid out without repeating the surveying errors committed in the northern half of the Flavian building) ranged between 6.95 and 7.30m. The width of the portico, however, was increased at the expense of the overall depth of the range behind it; the comparable figures for the two elements in the Flavian and Severan schemes being 4 and 8.30m vs 4.85 and 6.70m.

There were other modifications to the original design of a far more drastic nature, however, which

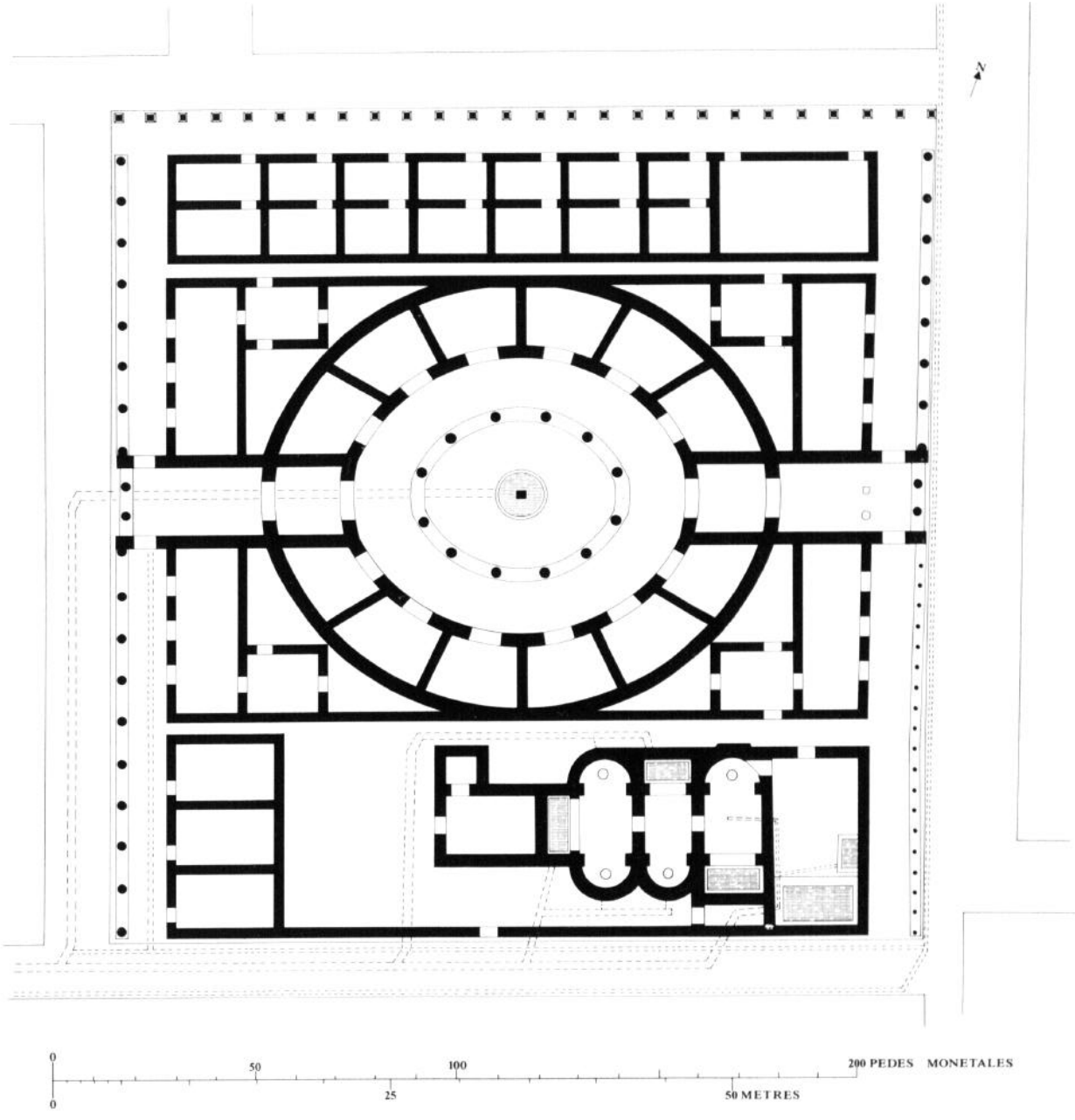

Fig 8.6 Fully restored ground-plan of the Severan Elliptical Building

not only suggest that some elements of the Severan building had an appearance significantly different from that envisaged for the Flavian structure but which could also imply a changed, or at least modified, function. Chief among these were, first, the clear physical separation of the inner curvilinear and outer rectilinear ranges - achieved by endowing the former with a tighter curvature so that its outer wall no longer merged with that of the street-frontage ranges. Second, the entrance-passages of this building were almost three times as wide as those of the old one (5.10m against 1.80m) and enjoyed more imposing architectural treatment, making them the most prominent feature of the external facades. The character of the principal range was also altered. In addition to the decrease in its overall width already mentioned, the entrance piers which formed such a prominent feature of the Flavian scheme were replaced by a continuous wall identical in its size and mode of construction to that which formed the rear element of the range. Although large arched entrances like those of the Flavian design could have been incorporated into this wall, doorways of a more conventional size and height seem a more likely possibility, an impression which is reinforced by the deletion of another original feature from the Severan scheme, the concentric screen wall.

Design and the Forma Castrorum Devae'

Given that the Elliptical Building is a structure of such singular form the architect of the Severan version must have been aware of, and in possession of detailed information about, the original Flavian design. The evidence demonstrates that the precise form and dimensions of the new building were determined not by following the foundations of its unfinished precursor but rather by the preparation in advance of a modified and carefully prepared version of the original plan. First, there is the marked divergence in the alignment of the two phases of the oval range as it approaches the entrance-passages. Excavation revealed that those lengths of Flavian foundation not overlain by 3rd-century masonry had remained completely undisturbed for they were still covered by the detritus which had accumulated during the century and a half when the site lay derelict. Second, the errors which had crept into the laying out of the northern half of the oval range were not repeated in the Severan building. Third, the entrance-passages were more than doubled in width and given greater emphasis in the overall design. Clearly, therefore, the Elliptical Building of the Severan period was no mere slavish copy of its Flavian predecessor but a carefully considered adaptation of an earlier design which incorporated modifications which it was thought would enable it to undertake its future role more effectively. This leads us on to the inevitable and extremely interesting conclusion that the architect of the Severan building must have had access to and made extensive use of the original working plans prepared for the construction of the fortress in the Flavian period, a *forma castrorum Devae*. Perhaps these plans - executed either on parchment, flat sheets of bronze, or tablets of stone or slate - had lain in the fortress *tabularium* gathering dust since they had been deposited there by the *praefectus castrorum* of *Legio II Adiutrix* *c* AD 80 before being retrieved by his counterpart in *Legio* XX *Valeria Victrix* almost a century and a half later!7

The adjacent bath-building and *tabernae* were included in the general programme of renewal carried out at this time and the opportunity was taken to give the frontage of the *insula* a more integrated architectural appearance. This was achieved by extending the new foundation for the street-frontage porticoes of the Elliptical Building (now in the form of a stylobate rather than the previous individual pads) across the ends of the two buildings. This afforded those who frequented these buildings with a continuous covered walkway and also demonstrated that the whole of the *insula* was redeveloped in a single operation.

Details of construction and finish

The foundations for the Severan building were carried down to a depth which, allowing for the general raising of the ground level during the intervening century and a half, was equivalent to that of the foundations for the Flavian building. Those for the walls of the main part of the building and the entrances, however, were made twice as wide as their predecessors at *c* 1.30m. Yet, as is clear from the surviving masonry placed upon these foundations, the superstructure they supported (with the obvious exception of the outer portion of the entrances) was no more massive than that envisaged for the Flavian building. It is evident that the increased width of the foundations was to compensate for the coarser nature of their construction and the poorer quality of the mortar employed by the Severan builders. The lowest portion of the foundations consisted of a mass of mortared rubble no more than 0.50m thick. The walling placed on these was built with regular courses of facing-blocks, generally slightly larger and less carefully dressed than those used in the Flavian masonry, containing a rubble core. Whereas all of the walls in the main part of the building commenced with a basal width within the range 1.05-1.30 only the front and back walls of the oval range, perhaps together with the side-walls of the entrance passages, continued above ground level with their width unreduced. Other walls were narrowed by several offsets to two-thirds this value, with the exception of those of the rectilinear perimeter which were narrowed to half. The walls of the street-frontage ranges were 0.65-0.75m thick above floor level. As mentioned above, the individual foundations of the Flavian colonnades were replaced by continuous stylobates in the Severan building, set on foundations constructed in the same fashion as those of the walls. Only a single example of one of the massive stylobate blocks was found, belonging to the courtyard colonnade, and this measured 0.95 by 1.40m. As elsewhere throughout the complex, no architectural fragments from the superstructure of the colonnade were retrieved; this is understandable given the circumstances under which the investigations were conducted and the thoroughness of the stone-robbing operations in later centuries. The monument at the centre of the courtyard was retained from the original design, the Flavian work being supplemented by a truncated pyramid of additional foundation material which afforded an 0.80-0.90m square base for the superstructure. Unfortunately, the central monument was only recognised during the course of contractor's mechanical excavation in 1965 and had already been partly destroyed before work could be halted for recording. Consequently, while the existence of a fountain and pool is clearly implied by the provision in the Severan scheme of a new drainage culvert to serve this monument, their form remains unknown.

That the Severan Elliptical Building was completed and used was amply demonstrated by the presence of worn, repaired and replaced internal

floors and external surfaces. Numismatic and other evidence proves that, in conjunction with the neighbouring *balneum,* it continued in use until at least the closing years of the 4th century. In both the oval and the street-frontage ranges rooms were equipped with concrete floors, of varying quality, with an *opus signinum* finish. The colonnaded portico around the central courtyard was surfaced with sandstone flags 0.60-0.70m square while the courtyard itself, as one might expect, had been given a more substantial paving with flags up to 0.90 x 1.20m in size an 0.20m thick. These had been fitted together with considerable care and laid concentrically with respect to the line of the surrounding colonnade.

Superstructure

The completed Elliptical Building of the Severan era was a very close replication of its unfinished Flavian predecessor although, as already described, significant modifications were introduced to the original design. As before, the oval range with its 12 wedge-shaped rooms was clearly intended to be the tallest element of the complex, fronted by a colonnaded portico almost certainly with a separate, lower, and a single-pitch roof. Rather ironically, calculating the height of the oval range in the completed structure is rather more difficult than doing so for its much earlier and aborted predecessor. This is because the evidence does not reveal if the chambers in the later building were given entrances as monumental as those originally intended. It cannot be proven that the continuous front wall of the Severan oval range incorporated arched entrances of similar size but it was certainly substantial enough to have done so. The wall was 1.20m wide above ground level, and succeeded a series of widely spaced 1.80m square piers. It is evident from the thickness of the wall of the 3rd-century range that it was an entirely masonry construction at least as high as its Flavian predecessor.

If the tall, monumentally fronted, chambers of the original design were dropped then the oval range of the Severan period must have contained two storeys of accommodation. While the street-frontage ranges may have been either single or double-storeyed, the much enlarged entrances leading into the central courtyard of the Elliptical Building would in all likelihood have risen to a height equivalent to or a little below that of the principal range.

Function and purpose

Although this paper is principally concerned with the architectural aspects of the Elliptical Building as they have emerged from the preparatory research for its full publication, some comment about its possible function and purpose is desirable. Interpretation is made difficult by the absence of similar buildings from any other legionary fortress. If found at the centre of a town or city in one of the more Romanised provinces of the Empire the Elliptical Building would probably be regarded as one of the collection of public buildings normally provided, if possessing an unusual but in no way untraditional design. However, the inclusion of a building of such - comparatively speaking - architectural sophistication, high quality construction, and exotic character amongst the original complement of structures in an early Flavian legionary fortress at the extreme periphery of the Roman world, is thought-provoking to say the least. The importance and level of priority accorded to the Elliptical Building in the overall scheme of fortress construction can be judged from the fact that it was one of the few structures to be built in stone *ab initio* (even the *principia,* for example, was of timber construction at this time). Furthermore, even though it does not give the impression of being essential to the efficient functioning of the fortress, work on the building had started by AD 79, within a few years of *Deva's* foundation. Because detailed plans and information relating to the Elliptical Building have been unavailable hitherto, discussion as to its possible function and purpose has not only been impeded but, when attempted, has usually involved particularly imaginative hypotheses. These have included, *inter alia,* a retirement palace for Cartimandua following her ejection from Brigantia by the anti-Roman party (Reed 1977), a theatre, and a market-building *(macellum).* As regards the last of these, it was suggested that it may have been part of a complex of buildings erected in the centre of the fortress in the Hadrianic period as part of a scheme, ultimately abandoned, to convert the legionary base into a town (Strickland 1981, 417). However, while there is now considerable evidence for a greatly decreased level of military occupation and much poorer standards of maintenance throughout much of the fortress in the post-Hadrianic period - eventually necessitating total rebuilding in the Severan era - this theory must now be rejected in view of the firm placing of the primary Elliptical Building in an early Flavian context.[8] The excavator's preferred hypothesis was that the Elliptical Building was designed as a *praetorium;* intended not for the legionary legate, however, but for no less a personage than the provincial governor himself. Eames further suggested that the unusual, and to a certain extent 'metropolitan', character of the Elliptical Building might be explained by the personal involvement in its design of Sextus Iulius Frontinus, governor AD 74-8, who is known from his published works and career to have had a very strong interest in architecture, civil engineering and surveying *(PIR* I 322).[9]

Now that the form of the Flavian Elliptical Building has been fully elucidated, with its principal range probably having a sole storey of tall,

open-fronted chambers, it seems particularly unsuited to a residential function. Furthermore, while the existence of a neighbouring bath-building – additional to the normal fortress *thermae* - could be cited in support of the *praetorium* theory the two structures would certainly have been more fully integrated if they had been elements of a single residential complex. The theatre/amphitheatre identification can also be rejected, not only because such a facility should lie outside the defences but also because the structural design of the Elliptical Building is clearly unsuited to the purpose of supporting tiered seating. The placing of bath-building and Elliptical Building next to one another in the same *insula* might lead one to think that they were component parts of a bathing and recreational complex, perhaps reserved for the senior officers of the legion, with the latter affording the facility for both physical and intellectual exercise like many of the great imperial bathing complexes in the major cities of the empire; the courtyard functioning as an exercise-yard or *palaestra,* with a *nymphaeum* at its centre, and the encircling chambers containing libraries, cult-rooms, lecture-rooms and dining-chambers (eg Nielson 1990, 163-6). As with the *praetorium* hypothesis, however, one feels that if this were the case the two structures should and would have been more fully integrated, and the fortress *thermae* clearly demonstrates that the architect/s involved in the planning of the Chester fortress was/were fully capable of producing building plans of integrated design (Mason 1990, 218 Fig 2). We come next, therefore, to the *macellum* idea. It cannot be denied that within the repertoire of Roman public buildings it is *macella,* or rather a sub-group thereof, which provide the closest parallels to the Elliptical Building.

Many market buildings, such as those at *Alba Fucens,* and *Herdonia* and *Baelo* in Spain, consisted of a circular or oval courtyard equipped with a fountain. The courtyards of these structures were surrounded by wedge-shaped rooms with wide doorways. Furthermore, fountains and/or water-tanks are often found within circular, hexagonal or octagonal pavilions *(rotunda)* even in the courtyards of square or rectangular *macella,* as at *Hippo Regius* or *Puteoli* (De Ruyt 1983, Figs 1, 11, 17, and 32). There is also, of course, the Central Market in the veteran colony at Timgad which, with its pair of semi-circular ranges laid side by side, could be likened to an opened-out Elliptical Building (Courtois 1951; Fentress 1979, Fig 8). However, on closer inspection, there are differences between the design of these structures and that of the Elliptical Building which, quite apart from other considerations, are sufficient to make one doubt this analogy. First, those *macella* with oval or circular courtyards belong without exception to the smaller examples of buildings of this type and even the largest is barely half the size of the Elliptical Building. Second, none of the rooms in these *macella* possess the 'screen' wall present in the Chester building. Third, whereas in the examples of *macella* cited above the courtyard occupies on average 25% of the total ground area occupied by the building, in the Elliptical Building it accounts for only 9%, a figure which drops to 6.3% if the street-frontage ranges are included. Fourth, and most importantly, not only do the chambers in the *macella* open directly onto the courtyard, with no intervening portico, but also they extend all the way back to the frame wall and, with the exception of the altogether much smaller Central Market at Timgad, they lack the continuous rear wall of the Elliptical Building which made the range of rooms surrounding the courtyard into a structural unit separate from and much taller than the enclosing frame. All of these objections are based on Mediterranean models, however, and it may be argued that a greater proportion of the Elliptical Building was placed under cover as a precaution against Britain's less clement weather. However, there are other objections of a more fundamental character which are less easily dismissed. Market-buildings were by their very nature civil structures housing and operated by civilian traders and as such would not have been included amongst the internal buildings of a legionary fortress. As is evident from the examples found at *Noviomagus* (Nijmegen), *Carnuntum* (Petronell), and *Vindonissa* (Windisch), such structures usually took the form of large rectangular courtyard buildings and were confined to the *canabae legionis* outside the defences.[10] Furthermore, even if such a building had for some reason been included in the intramural facilities at Chester it is difficult to believe that such a utilitarian structure would have been the subject of such lavish structural and architectural treatment when the vast majority of contemporary fortress buildings were relatively unsophisticated timber constructions.

There is a long-standing tradition in archaeology (well-recognised within the profession if not outside it) which involves the assignment of any structure or phenomenon not easily classifiable to the categories of religion and ceremonial. The Elliptical Building, being an oddity, falls into this category and the suggestion has sometimes been made during the course of discussions with colleagues that it may have had a religious or ceremonial function; specifically that of an *auguratorium,* the structure within a legionary camp where the will of the gods was divined by augury - that is prediction by the flight and calls of birds (Hyginus xi). Structures interpreted as *auguratoria* have been tentatively identified within the fortresses at both *Noviomagus* (Nijmegen) and *Vindonissa* (Windisch) but in both cases the structures involved are modest in size and consist of a simple platform or chamber and in no way do they approach the size, architectural sophistication, and grandeur of the Elliptical Building (von Petrikovits 1975, 76-7).

That said, however, the plan and restored elevation of the Elliptical Building strongly convey the impression that its design was based partly, if not

exclusively, on the need to satisfy requirements of political and/or quasi-religious symbolism. A building which draws its visitors through a long entrance-passage into a central courtyard where, isolated from the noise and distractions of everyday fortress life outside, they are then confronted by a range of chambers with elaborate entrances screened by a colonnaded portico, seems specifically tailored to the purpose of instilling feelings of awe, wonder and respect. Perhaps, therefore, the Elliptical building was in some way intended to commemorate and celebrate the 'limitless majesty' and achievements of Rome. This perceived commemorative and 'sacred' character of the building is reinforced by the excavator's discovery beneath the foundation of the monument at the centre of its courtyard of what he interpreted as a ritual trench or *mundus* connected with some form of foundation ceremony. This consisted of an 0.30m deep trench cut into the rock floor of the foundation-pit along the entire length of its east side. In contrast to the mortared rubble fill of the rest of the pit, this trench was found to contain nothing but clean earth which, given that any such material had been stripped from the Elliptical Building site prior to the start of construction work, would appear to have been deliberately imported for the specific and exclusive purpose of providing the fill for this slot. It would seem, therefore, to have had a very particular significance and it may be legitimate speculation that this slot was the focus of some form of ceremonial connected with the foundation of this building or, just conceivably, that of the entire fortress.

According to this line of reasoning, the Elliptical Building may have been designed as an *'imago mundi'* - an image of the Roman World - its 12 chambers intended to contain statuary, reliefs, and murals depicting the extent of Rome's empire and the geography, peoples and principal cities of its constituent regions. The fact that there were 12 chambers might be explained by the great significance of this number in both celestial and terrestrial mapping in the ancient world (Dilke 1985, 21-53). Alternatively, each of the 12 chambers may have had as its focus a statue of one of the 12 principal deities of the Roman State - Jupiter, Juno, Mars, Minerva, Vesta, Diana, Apollo, Ceres, Neptune, Janus, Mercury, and either Dea Roma or Vulcan - or a combination of certain of these with those personified virtues considered desirable in military life such as *Discipulina, Fortuna, Honos, Pietas,* and *Virtus.* It is true that temples were usually located outside military bases but this general rule may not have been followed if the building concerned was for the formal and official worship of the established state religions, in contradistinction to the private and individual homage to the cult of a single deity.

This interpretation of the Elliptical Building's intended function might seem somewhat farfetched. We should remember, however, that the internal arrangements of legionary fortresses are not so well understood that further surprises can be ruled out entirely. In addition, we also have to bear in mind that the initial garrison at Chester was *Legio II Adiutrix,* a legion recently formed out of the marines element of that section of the Mediterranean fleet based at Ravenna. *Deva* was the first fortress built specifically for this legion (it took over the old base of *Legio IX Hispana* at Lincoln on its transfer to Britain) and, in view of its origins, we ought not perhaps to be surprised if its new base contained some buildings not found in the bases and the other and longer established legions.

Then again, the presence of the Elliptical Building could be accounted for by a particular set of circumstances obtaining at the time of Chester's foundation. This, together with the question of whether the Flavian and Severan elliptical buildings were intended to serve the same purpose, will be fully addressed in the final report.[11]

Notes

1 The former, following his retirement as Professor Emeritus of Entomology at Liverpool University, became Curator of the Grosvenor Museum in Chester while the latter was a senior member of staff in the Department of Classical Archaeology at the former institution.

2 On the organisation of which see Pitts & St Joseph 1985, 169-70 and Dixon & Southern 1992,27-30.

3 The layout of this building, which was built in stone *ab initio* and whose construction was similarly interrupted but with completion to a modified layout occurring in the Trajanic era, does not accord with its having functioned as a *praetorium.* In its completed form, it seems likely to have been a massive store-building, although a hospital has also been suggested. The *praetorium* seems likely to have lain on the sinistral (east) side of the *principia* - see Strickland 1981,425-7; 1983,16-22.

4 For the 1960s excavations in the south-west quarter of this large building see Petch 1968. With regard to the *horrea,* the 1950s excavations - Petch & Thompson 1959 - failed to locate any convincing evidence for the existence of timber structures underlying the stone granaries and the same results were obtained by the writer during further investigations in 1987/8 - Frere 1989,283.

5 The process is amply described by N J Sunter in Thompson 1976,230-6 with Fig 52.

6 Evidence of general reconstruction see Strickland 1981,419-28.

7 For general discussion of the evidence relating to town and building plans in the Roman World see Dilke 1985, 102-12.

8 Strickland 1981, 415-19 and results from recent unpublished excavations.

9 An hypothesis advanced both in public lectures and in an article entitled 'the House of the

Unfinished Fountain', published in the *Deesider*, June 1969,20-3.

10 *Noviomagus* - Bloemers 1979a, 52-3 and 1979b, *473-5; Carnuntum* - Stiglitz, Kandler & Jobst 1977, 678-81 with Fig *4; Vindonissa* - Laur-Belart 1935, 74-7.

11 The Final Report will appear in the Chester City Council¡®s Archaeology Service's Monograph series and is due to be published in late 1996.

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9 Birdoswald: a military case study

Tony Wilmott

Though Roman auxiliary forts contain broadly the same architectural features, no one is exactly the same as another either in original layout or in subsequent development. Excavations at Birdoswald fort on Hadrian's Wall between 1987 and 1992 have revealed parts of the north, west and east defences including two gates, the west *porta principalis* and the east *porta quintana*, as well as the two *horrea*, a probable *fabrica* and parts of a basilican building, possibly a *basilica exercitatoria*. The last mentioned is the first such building to have been positively identified in an auxiliary fort, and as such adds to the repertoire of buildings in such establishments. In the interpretation of the excavated structures a variety of techniques have been employed. Analysis based upon the study of comparanda of other sites has naturally been of importance, but reference has also been made to specialists in particular aspects of stone building technology. It should be noted that the ideas presented in this paper are interim in nature, and may be subject to variation when the final report is published (Wilmott forthcoming).

The gates and defences

The two gates examined during the excavations are typical of the kind of fort gates which have have been the subject of intense recent study in connection with the reconstruction at South Shields (Bidwell *et al* 1988a; 1988b). These gates, therefore, have little new of general importance to contribute, and their study has supported conclusions reached in other work. It will perhaps be useful briefly to review the form of the gates in order to contextualise a number of points of detail.

The foundation layout is the most unusual feature of the west *porta principalis*. The foundation consisted of stone and clay rafts 1.42m in width, which formed a series of four hollow squares. The two inner squares acted as foundations to the gate portals, with the *spina* constructed on the centre raft (Fig 9.1). The two outer squares formed the foundations of the flanking gate towers. The piers which supported the gate arches were laid on the inside edges of the foundations flanking the portals, and these were joined by the passage walls. The south wall of the south gate tower was built on the southern (outer) edge of its foundation, giving a width for the tower of 3.54m. The north wall of the north tower, however, was built on the inner edge of its foundation and was thus only 2.98m in width. This difference of 0.56m in the width of the towers would have produced an unbalanced facade which would have been very visible to those entering the fort. Though first interpreted by the writer as an error in construction, the fact that the same difference occurs in the eastern counterpart to the gate suggests an intentional plan, though the reason for this is far from clear.

The earliest reconstruction of a Roman fort gate known to the writer is John Storey's 1855 drawing of the south gate at Birdoswald (Potter 1855). This shows a double portal with a crenellated platform above, flanked by a pair of towers which rise a single storey above the platform. The towers are also flat-topped and crenellated. A string course above the portals lies at the same level as the top of the curtain wall. The only significant difference between this and more recent reconstructions, including the South Shields simulation, is the insertion of a storey between the top of the portals and the platform above.

The problem of roofing on gates is a perennial one, and possible reconstructions vary. Storey drew flat roofs on all parts of the Birdoswald gate, and the gates at Housesteads were also reconstructed with flat roofs by Richmond and Child (1942). A recent reconstruction of a gate at Housesteads by Crow (1989, Fig p 10) shows pyramidal roofs over the towers and a gabled roof above the portals, while the South Shields simulation has a flat roof over the portals and gabled roofs over the towers. In Figure 9.2 the west gate at Birdoswald is shown with pyramidal roofs on the tower tops and a flat roof over the portals. The reason for the reconstruction of a flat roofed element is the fact that a number of merlon caps were found in the masonry debris which had collapsed from the gate. Such capstones are not a common find, though are now recognised more frequently. Bennett (1983, footnote 44) and Crow (1988, 151) have listed findings of such objects at the milecastles and turrets of Hadrian's Wall, on the Cumberland Coast and also at Housesteads.

A problem with the interpretation of the gate towers as roofed structures is the fact that no roofing materials were found among the stonework

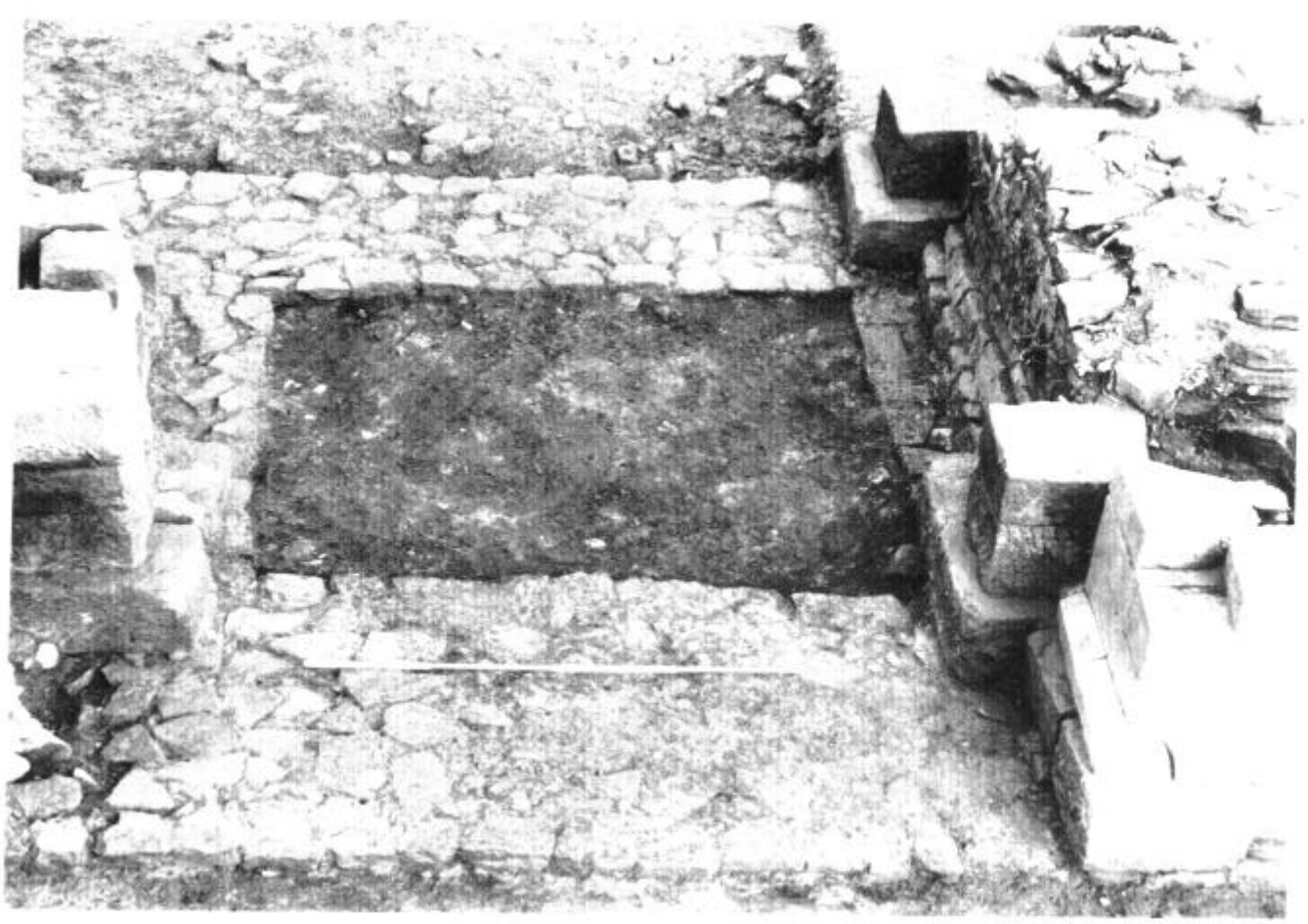

Fig 9.1 Raft foundation for the south portal of the west porta principalis (English Heritage)

which later collapsed from the gate. The presence of architectural stonework including merlon caps, string courses, cornices and window heads in some quantity would suggest that had slates or tiles been used on the towers in their latest form, these too would have been recovered from the collapse deposits, unless they had been robbed from the standing structure. At milecastle 27 (Lower Brunton) collapsed debris which included architectural fragments was found at the south gate. This also contained no tiles or slates (Gillam 1953, 171), and the resulting interpretation was that the turret roof was flat. The problems with flat roofs in a climate such as that of north Britain have been discussed by Bidwell *et al* (1988, 195-200) and also by Hill and Dobson (1992, 41), who regard them as an 'abomination to be avoided wherever possible'. They suggest that where no roofing survives in the material collapsed from gates, thatched roofs on wooden uprights might have been used over flat crenellated platforms. Though novel, this idea does at least take account of the evidence.

Despite the paucity of roofing material, a variety of architectural fragments was found in the rubble deriving from the collapse of the west gate, and is the sole evidence from which the form of the upper parts of the gate may be deduced. It was impossible to be certain how much of this material may have originated from the first construction of the gate, as at least one major rebuild took place. The fragments included part of an elaborate dentilled cornice, a large number of chamfered string-course stones, several merlon caps, window heads of various kinds including monolithic, bilithic and voussoir, and facing stones decorated with diamond broaching. The dentilled cornice may have been positioned above the gate arches between the towers on the exterior face of the gate. An elaborate cornice from the *porta praetoria* at Housesteads is thus reconstructed by Crow (1989, Fig p 10). The chamfered string courses would have been employed at parapet level and possibly at the floor levels of the towers. Shuttered windows, constructed in a variety of ways, would have been

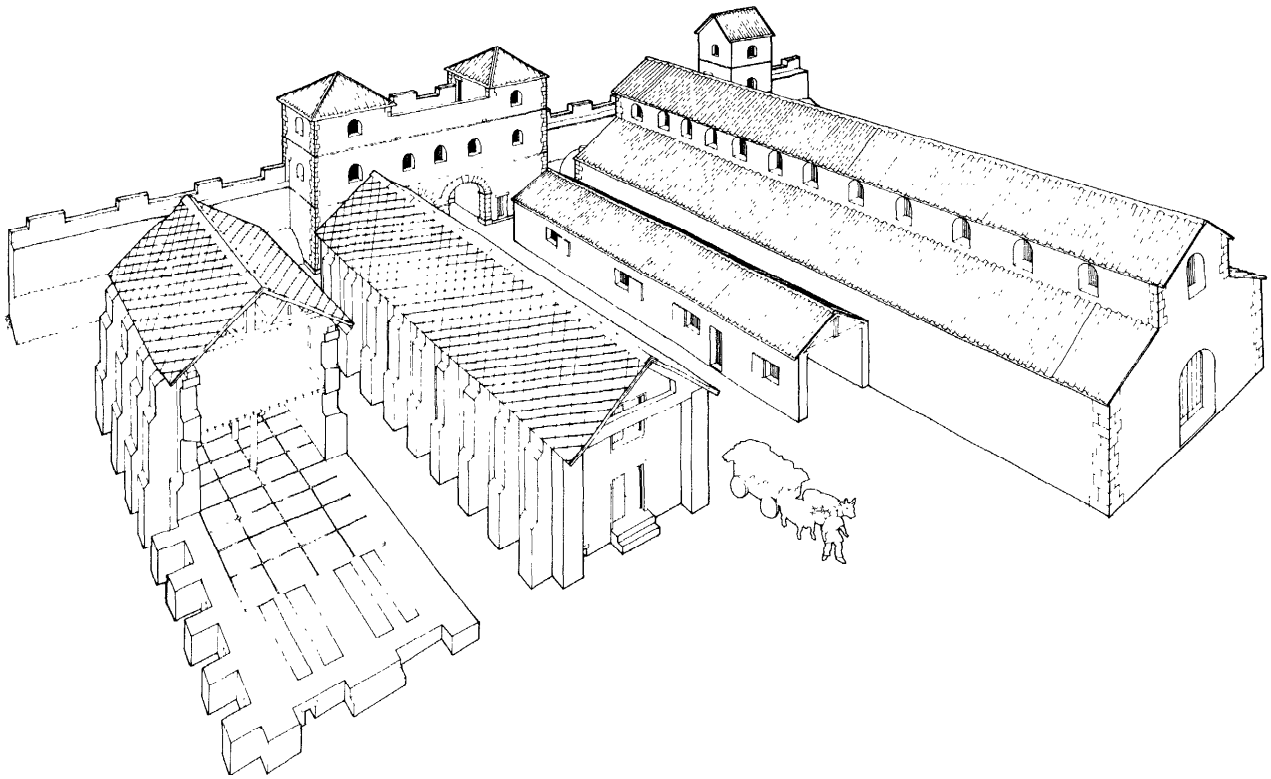

Fig 9.2 General reconstruction of the excavated portion of the fort. The west porta principalis *opens onto the* via principalis. *To the south of the road are the* horrea, *and to the north, behind a long, low workshop building, the basilica*

provided in the storey above the gate and also in the upper storeys of the towers.

The east curtain wall

Excavations in 1992 were carried out on the eastern curtain wall of the fort. It was found that an area of wall had collapsed and survived, lying in courses to the east of the standing fragment (Fig 9.3). Because the discovery of collapsed walls as a guide to reconstruction was such an important theme during the conference it was decided to give a brief interim statement of this discovery.

Clearly the collapsed piece of wall represented the final phase of the curtain wall at the very end of the Roman period. The bottom 1.81m - or twelve courses - of the wall, which remained *in situ*, consisted of the primary coursed rubble (Hill 1981) wall. The three courses above this were the bottom courses of the collapsed panel. They were built of re-used stone blocks featuring lewis holes and the slots for bar-cramps, the lead and iron of which survived in some places. The only likely source for such stones is the bridge over the Irthing at Willowford (Bidwell & Holbrook 1989), where closely similar stones have been found in quantity. Above the re-used blocks was a string course of thin bedded sandstone slabs around 200mm thick. This course appeared patchily as an almost continuous string running through the rubble collapse and as such gave the first indication that an intact collapsed panel existed. To the top of this course the wall height can be calculated as 2.72m.

The next course was the most important, as its stones had been carefully selected for their decorative quality. These were small, water-worn, limestone boulders comprising white fossilised coral, The blocks were virtually free of tool marks although, as they are soft enough to be scratched with a fingernail, any marks may have been weathered away. There is no doubt as to the source of these stones; the river Irthing below the spur on which the fort stands contains huge numbers of them. This soft stone would not have readily withstood the climate in the Birdoswald area, and must have been utilised because of its virtually pure white colour. It formed, therefore, a decorative white band 26mm broad, designed to contrast with the grey of the rest of the wall. A further two courses above this were constructed of thin natural

Fig 9.3 Intact panel of the collapsed east wall of the fort

slabs bringing the total projected height of the wall as represented by its fallen courses to 3.30m (10.82ft). There was no trace of parapet or rampart walk above this, and it seems certain that the wall in its latest stage was no higher.

This entirely unexpected discovery shows that the latest fort wall was relatively poorly built, using a variety of materials, but that care was still being taken, at least for the decorative appearance of the exterior of the fort.

The Basilica

The southern exterior wall of this building was excavated in plan (Figs 9.4–5) over a distance of 28.84m, and a northward return at its western end was also discovered. Access to the archaeology of the building was difficult owing to the fact that Birdoswald farmhouse was built on top of it. However, excavations both inside and to the east of the house were sufficient to identify and characterise the structure. The first pier base to be found (Fig 9.4, 5N) was discovered inside the building during renovation works on the public conveniences. The remainder of the excavated piers were found during an evaluation exercise in advance of the positioning of a new septic tank to the east of the house. The plan is given at Figure 9.4.

The load-bearing elements of the building were the pier bases (Fig 9.5), which were constructed on sleeper walls consisting of a single course of faced, clay-bonded core. The southern of these foundations lay 2.85m to the north of the southern exterior wall, and the distance between the two sleeper walls was 7.48m. In Fig 9.4 the excavated and projected pier bases are numbered from the west end of the building l–12N (north) and 1–12S (south). The piers were 2.36m apart where it was possible to measure between them, and they each measured 1.32 x 0.71m in plan. The preservation of the piers varied from one course in the case of 8S (Fig 9.5) to five courses in the case of 9N.

The piers consisted of facing stones set on a rectangular plan with the centres filled with rubble and mortar. The quoins were long stones with short returns, laid so that each face of the pier shows one long and one short quoin face. The long and short returns were reversed in successive courses. Between the quoins the stones were noticeably less well worked. The quoins can with some justification be regarded as ashlar faces, the remaining stones coming under the heading of good quality squared rubble. The interpretation which best fits the evidence is that the building which the piers were to support was of some importance and that appearance was more of a consideration than was often the case in military work. The quoins, assuming they continued in the same style in the upper courses, would have looked impressive with their unusually sharp arrises and smooth faces. It would seem that the quoins were worked by skilled men, while the rest of the stones were worked by less skilled men, or alternatively that their finish was felt to be less important.

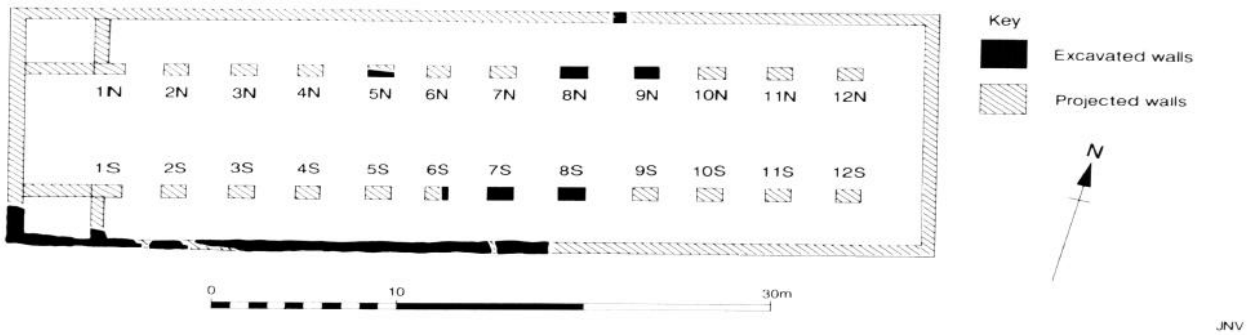

Fig 9.4 Plan of the basilica

The dimensions of the building were a problem as so little of the structure had been excavated. However, a plan can be reconstituted by mathematical means. The overall external width of the building was 15.96m. Measuring between the edge of the *via praetoria* at the probable eastern end of the building, and the *intervallum* road at the western end gives an available length for the building of 49.80m. This gives a possible internal length of 48.88m. The end bays of the building were each 3.48m long, giving a length for the columns and intercolumninations of 41.48m. This breaks down into two rows of 12 piers with 11 intercolumninations, given that the intercolumination between piers 5S/N and 6S/N, is different, at 1.90m instead of the usual 2.36m. A cut-away of the interior of the building is given at Fig 9.6.

A comparative discussion of this building is hardly possible, as it is so far unique in auxiliary forts. The comparanda for this building are to be found in the basilicas attached to *fora* in the towns of Roman Britain, where similar construction, albeit on a much larger scale, can be seen. The two successive basilicas of London (Marsden 1987) as well as those of Leicester, Wroxeter, Silchester, Caerwent and Cirencester (Wacher 1974, 42-7) include continuous sleeper wall foundations upon which piers were placed.

The epigraphic references to basilicas in British auxiliary forts were summarised by Richmond (1961) in context with the discovery of a building inscription from Reculver, Kent referring to *aedem principiorum cum basilica*. The find spot of this inscription indicates that it referred to the cross-hall of the *principia* and not to a separate *basilica.* This important find was the first evidence that the cross-hall was termed a *basilica.* The *balneum [et b/asilicam* repaired in Lancaster by the *ala Sebosiana* in the third quarter of the 3rd century (RIB 605) is cited by Richmond as referring to an exercise hall attached to the unit bath-house, and the same interpretation is given for the *balneum cum basilica* (RIB 1091) of *cohors I Lingonum* at Lanchester. The only other specific reference to such a building from British forts is the *basilica equestris exercitatoria* attested at Netherby (RIB 978). Richmond (1961, 226) gives two other examples of the use of the word alone in inscriptions from the auxilliary fort of Syene and the legionary fortress at Mainz, where the building was in the care of one C Lucilius Messor of *Legio XIII Primigenia,* who acted as *cust[os] basil[icae]* (Davies 1969, 75). The use of the term in these forts is ambiguous. It seems that the term *basilica* could be

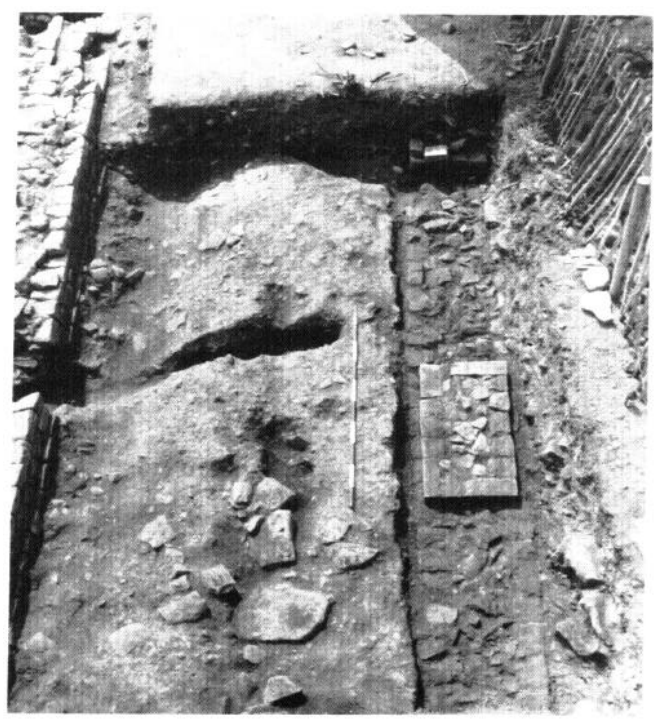

Fig 9.5 Part of the south aisle of the basilica, showing pier bases 6S and 7S

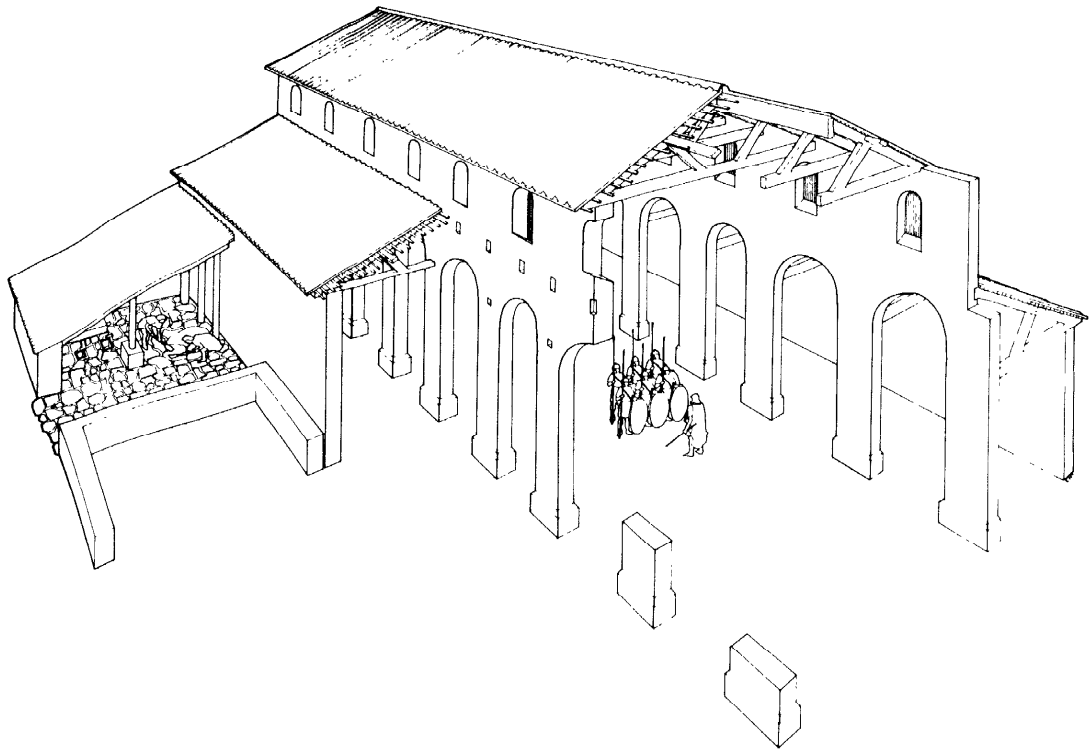

Fig 9.6 Cut-away drawing of the interior of the basilica and adjacent workshop

used for buildings with differing functions within forts, as long as they shared the plan which we still know as basilican.

The cross-hall of the *principia* at Birdoswald is clearly visible as an earthwork in the field beyond the excavation area, and there is no evidence for a primary internal bath-house, which would in any case be anomalous in a Hadrianic context. It therefore seems most likely that Building 4403 functioned as a *basilica exercitatoria,* or drill hall, of the kind described by Vegetius *(Epitoma Rei Militaris* 2, 23, translation from Pitts & St Joseph 1985, 124):

> Continual unceasing drill with missiles and loaded javelins was enforced to the extent that for winter use porticoes roofed with tiles or shingles . . . were provided for the cavalry, and buildings like basilicas *[quaedam velut basilicae]* for the infantry. In these the troops were given their training in wet or windy weather.

If missile practice, particularly with throwing spears or javelins, was undertaken under cover in this building the length would need to be well above the effective range of such weapons. Experiments carried out at South Shields (Bidwell *et al* 1988b, 181, fn 3) showed that 20-25m could be achieved by an untrained individual, and it is unlikely that this would be much increased given the weight of the weapons. The 48.88m length of the building could easily contain such a range. The reconstruction drawing (Fig 9.6) shows that there would have been room for small groups to move under cover within the building.

The *horrea*

Roman military *horrea* have been well served within the last 20 years by major surveys. Roman *horrea* generally were examined by Rickman (1971), and military *horrea* in Britain have been surveyed by Gentry (1976). A similar catalogue and discussion for Dacia has recently appeared (Petculescu 1987). Despite much discussion, and a

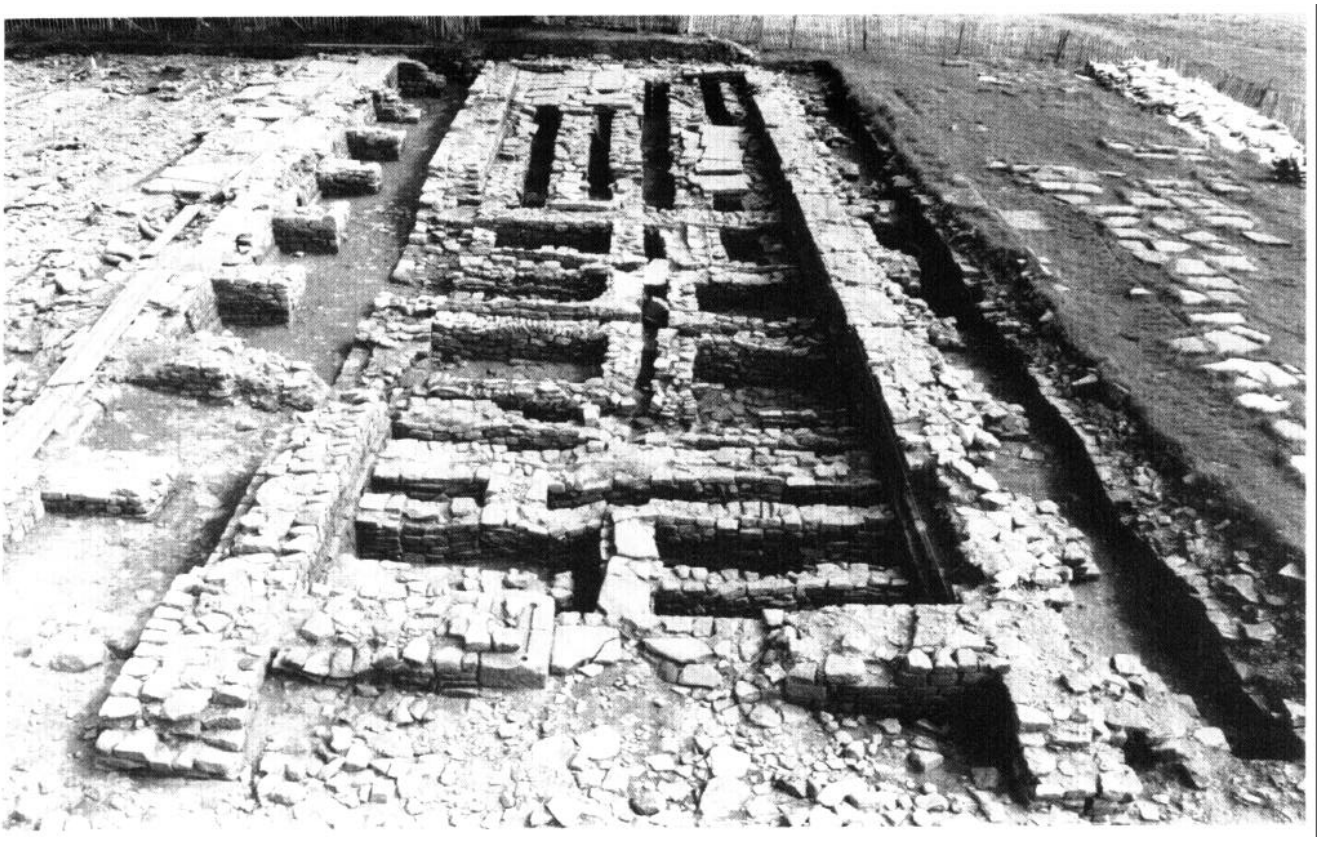

Fig 9.7 The south horreum *when fully excavated*

general feeling that *horrea* are now largely understood, the excavation of the Birdoswald pair has raised sufficient doubts to undertake a re-examination of the reconstruction of this class of building (Wilmott forthcoming).

For surviving structural detail and height of walls the Birdoswald *horrea* rival the best in Britain, at Corbridge and Housesteads. The walls survived up to 2m in height, and in the south wall of the south *horreum* a row of putlog holes in the wall was associated with post holes to indicate the type of scaffolding employed in the construction of the building. The first 'lift' of scaffolding was 1.89m above the first masonry course and contemporary ground level. The upright members lay 1.12m away from the wall face. This gives both sufficient width of platform for safe working, and a height of lift which can be worked with conveniently by men of average height.

There are two oddities in the plan of the Birdoswald *horrea;* they were laid out with their long axes on the *via principalis,* and they were provided with buttresses on the south sides only (Figs 9.2, 9.7). The more normal arrangement would be to have the loading entrances in the short sides opening onto the *via principalis.* There are two possible reasons for this. The buildings were constructed in the early 3rd century, as attested both by the evidence of stratigraphy, and of an inscription of this date *(RIB* 1912) which was found in 1929, and which records the building of a *horreum.* The buildings were thus additions to the fort plan, and it is possible that they had to be designed to fit the space available. In addition they were built on a slope, and the simplest way to deal with this would have been to terrace them such that their long axes ran along the edge of the slope. The buttresses were disposed along the southern (downhill) side of the buildings, again aiding the stability of the *horrea* on their sloping site. The building to the south of the *horrea* predated them, and so they had to be slotted into the space between this building and the *via principalis.* The fact that two rows of buttresses were sacrificed allowed the buildings to fit into a space 2.24m narrower than they would otherwise need.

The fact that the builders of the *horrea* were willing to sacrifice the buttresses suggests that they were optional features, and this impression is compounded by the south wall of the south *horreum* (Fig 9.7), where the buttresses were built on peat without foundations, while the main wall of the building had proper stone foundations. This has

considerable implications for the reconstruction of the buildings. Johnson (1989, 54) has remarked of *horrea* that 'buttresses along the sides gave the building lateral strength, as well as providing for archaeologists of today a distinctive plan and the basis for endless arguments about what the superstructure looked like.' The relationship between function and design has frequently been debated. The standard view of these buildings was advanced by Bulmer (1969, l0), who was the first to suggest that the buttresses were intended to support the weight of a roof, acting as piers between broad louvred openings. The suggestion that walls were louvred was based on Richmond's (1939, 131-2) assumption of such features in his reconstruction of the timber granaries at Fendoch. Both of these reconstructions relied on the idea that grain was stored in timber bins along the sides of the building, and that the louvres provided ventilation above them, furthermore, the reconstructions assumed that the buildings were a single storey high. Rickman (1971, 237) accepted the arguments for louvred wall ventilators in timber-built *horrea*, but suggests that air and light were provided to stone *horrea* by way of tall, narrow, splayed windows like those in civil *horrea* in Ostia and Trier (Eiden 1949). Arch stones found in 1860 (Norman 1860) in the south *horreum* and in 1989 in the north *horreum* may have come from such splayed windows, and these are accordingly reconstructed in Figure 9.2. Although louvres are not proven, the idea that the buttresses strengthened walls which were pierced by some provision for ventilation retains some value. This certainly appears to have been the function of the blind arcade built into the walls of the Trier civil *horrea* (Eiden 1949, 80, Abb 3). The weight of the roof may have a bearing upon the function of the buttresses. A survey of the roofing stones which had collapsed from the *horrea* demonstrates that the weight of stone on each roof would have been some 49 tonnes. This does not take account of the weight of any supporting timber. It has been suggested to the writer that the buttresses might have been finished at the top by an arcade. Both the blind arcades at Trier and the buttresses on military granaries would have the potential to provide an extra wide seating for the principal roof timbers.

No evidence that bins were used has been found in any excavated *horreum*. Those assumed for timber horrea would have vanished with the rest of the superstructure, and there is no evidence whatever for bins in stone-built *horrea*. The stresses on bins would have been similar to those on the exterior walls. If it is argued (as it frequently is) that these stresses necessitated thick walls and buttresses, it is not reasonable to imagine the bins as free-standing and self-supporting; they would have had to be keyed into the stone floor and walls. The fact that floors were raised makes their survival rare, and the survival of walls above floor level is equally uncommon. It is, however, unlikely that if such bins were used in the *horrea* at Birdoswald no evidence would survive. In the primary thresholds in Building 197 there were deeply marked provisions for the installation of timber door furniture, and on the exterior walls there were putlogs for timber scaffolding. In spite of the fact that much of the floor of this building was relaid, sufficient flagging was found in its original position in both *horrea* to confirm that no provision had been made to slot timber bins into these floors. This is also true of Corbridge, as noted by Gentry (1976, 18). Walling above the level of the raised floor can be seen at both Corbridge and Housesteads as well as at Birdoswald. In none of these walls can any trace of timber fittings appropriate to the construction of bins be seen. Gentry (1976, Fig 1) reconstructs a *horreum* without bins, and these features, which were never more than theoretical should perhaps be rejected as unlikely.

The evidence suggestive of two storeys in the Birdoswald *horrea* consists of the mode of construction of the primary spinal sleeper-walls of both buildings, and the later treatment of this wall in the south *horreum*. These walls were as deeply founded as the exterior walls. The floor supports which they accompanied in the first sub-floor plan were timber joists on low posts, and scarcements only 120mm wide. Though a timber floor would have required central support, the well-constructed, deeply founded spinal walls would have been excessive merely to take the load on the floor; further timber supports would have been quite adequate. The implication is that the spinal walls served another function, possibly as sleeper-walls for posts supporting the floor of a second storey or a loft. The span of the *horrea* would not require central supports to supplement the roof trusses. The fact that in later periods post-holes were provided on the line of the partially eradicated spinal sleeper-wall demonstrates the perceived importance of maintaining structural support on this line. All reconstruction drawings of military *horrea* hitherto published show them as single storey buildings (Gentry 1976, Fig 1; Wilson 1980, Fig 24; Johnson 1983, Fig 114). Rickman (1971, 236) states that 'we are to think of them as one-storeyed buildings, as there is a complete lack of evidence for any arrangements for supporting or reaching a second storey'. Evidence that reconstructions of Roman buildings have, in the past, been somewhat timid is growing apace, and is a major theme in the papers in this volume. The reconstruction of upper storeys from evidence on the ground is naturally problematical, but such evidence does exist for a number of British stone-built *horrea*. Gentry (1976, 16-18) suggested that foundations placed alongside the long walls of buildings at Caerhun, Mumrills and Old Kilpatrick may have been the bases of external staircases leading to an upper storey. It is difficult to see the central piers added to the Severan east *horreum* at Corbridge as anything other than provision for the addition of a

Fig 9.8 Roman pointing on the south wall of the south horreum

second floor, or for auxiliary support for a replaced upper storey, and the excavators (Richmond & Gillam 1950, 157) were of the view that this was the function of the piers, citing the two-storey *horrea* at Rome and Trier in support of their argument.

In reconstructing the *horrea,* all of the above considerations have been taken into account. In common with all archaeological reconstructions the suggestions put forward here, while based in the evidence, are interim ideas advanced to stimulate discussion. The height of the buildings is the starting point from which other conclusions must flow, and in Figure 9.2 the *horrea* are shown as two storey buildings. The walls are entirely capable of supporting a second storey. The buildings were narrow enough to allow roof trusses to span the width of the building without ancilliary support, though for a roof as heavy as has been calculated for these buildings a large number of trusses might be expected. The deep foundations of the spinal sleeper walls are in puzzling contrast to the lack of foundations provided for the external buttresses. Logic suggests that it was the sleeper wall and not the buttresses which was expected to carry a substantial weight. The emphasis placed on maintaining support along this axis further confirms an important function for the spinal wall. It is difficult to see what this might be other than to support the weight which was carried on an upper floor.

The wall thickness of the buildings may hold the key to the questions of the second storey and of buttress function. At ground level, the walls were 1.25m thick. The scarcement provided for the raised floor of the lower storey reduced the wall thickness to 1.13m. A similar scarcement for the floor above would reduce the wall width to a more normal lm; the width of the walls of most other fort buildings. This wall thickness might not, however, have been considered sufficient for the principal roof timbers, and it is possible that the buttresses were added to lend support to the roof.

It has long been recognised that the *horrea* were not merely granaries, but were also the places where other food and equipment were stored. A two storey interpretation allows for very considerable amounts of goods to be kept, while moving away from the idea of corn bins allows the interior of the buildings to be used with more freedom. The storage of grain in sacks, properly stacked, seems inherently more reasonable.

A final point on the *horrea* relates to their external appearance. Areas of original pointing survived in good condition (Fig 9.8) on the south wall of the south *horreum*. Mortar adhering to the stones demonstrated that the arrisses were well covered, and in some cases only a small portion of the centres of the stones would have been visible. The strong impression which emerged was that the builders required a virtually flush face to the walls,

and that this was achieved by thick pointing which was deliberately spread well beyond the stone joints. During the consolidation of the north granary it was decided to experiment with a pointing technique to assess whether similar results to those observed in the Roman mortar would be obtained. A lime-rich mortar was prepared, and the easternmost bay of the south wall of the building was treated. The mortar was placed into the joints roughly, using a large trowel. A stiff-bristle brush was then used to point the wall. The work was done by a mason with experience in the use of this brush-pointing technique. The results of this exercise were extremely instructive; the thick mortar filled the joints, covering the arrisses of the stone and filling irregularities, such that a flush surface was created. The brush required constant wetting in order to work the mortar effectively, and to prevent the bristles from clogging. A side-effect of the brushing was that lime from the mortar was held in suspension in the mason's water-bucket. As the brush travelled over the stones a thin limewash was applied, which would have given the building a white appearance. The experiment was conducted as a contribution to the continuing debate on the treatment of the face of Hadrian's Wall, most recently summarised by Crow (1991, 59). Whitening of the Wall face has been variously interpreted as lime leaching from the mortar over time, or as whitewashing. One of the principal pieces of evidence for the latter is a part-whitewashed chamfered stone from Peel Gap (Crow, 1991, Fig 3). Though the use of deliberate whitewashing in repeated coats has been found on the town walls at Colchester (Morgan, 1988) it is entirely possible that the 'whitewash' observed on the Birdoswald *horrea*, and on the Wall at large, is a by-product of brush pointing.

Birdoswald has added to knowledge on a number of areas of architectural interest. The gates are similar to those from other forts and conclusions on these buildings merely supplement work carried out elsewhere, though the asymmetrical facades of the *portae principales* need explanation. The constant rebuilding of the curtain wall is unsurprising, though its final form could not have been deduced without the recognition of the east wall which had collapsed intact and was found *in situ*. This collapsed wall adds to a growing corpus, and a number of others are discussed elsewhere in this volume (Keevill, p 44; King, p 56). It is the appearance of the fort interior which is illuminated most by the recent work. The accepted reconstruction of fort *horrea* appears to be in need of drastic revision. The evidence that these were two storey structures complements a theme which runs through several papers in this volume (Keevill, p 44; King, p 56; Neal, p 33). Most importantly, however, the discovery of the basilican building shows that there are still surprises in store for students of Roman military planning and architecture.

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10 Recent research at the Chester legionary fortress: the curtain wall and the barrack veranda colonnades

T J Strickland

The curtain wall

Since the recovery of the now famous collection of Roman inscribed and sculptured stones from the north wall of Chester a century ago archaeologists and historians have been interested in the stretches of Roman masonry which form part of the fabric of the city wall there.[1] However, it was not until the city's conservation programme in the early 1980s, which made it possible to examine the external face of the Roman masonry close-up, that a number of details concerning the real nature of the higher parts of Roman structure became clear.[2] Subsequent work through the 1980s revealed more information on a piecemeal basis but it was not until 1989/90 that the opportunity arose for the first archaeologically controlled and complete dissection of the city wall.[3] In the process much important new information was gathered concerning the history of the city wall ranging from the Roman period and the Middle Ages to the rebuilding and restoration works carried out during the reigns of Queen Anne and Queen Victoria. Some features revealed during the process of this unprecedented operation could, with the wisdom of hindsight, be related back to previously imperfectly understood features of the defences of the legionary fortress, most recently the major excavations in the garden of No 1 Abbey Green, Chester 1975-8.[4] At the time of writing, research continues into the Roman legionary curtain wall and it is important therefore that this paper is treated as an interim statement, reflecting as it does only the implications of the most recent work.

The original defences of the Flavian legionary fortress consisted of a double-turf revetted rampart 6m wide (20 *pm)* at base and 3m (10 *pm)* high, topped with a wooden palisade and wooden interval towers (Fig 10.1).[5] If, as seems likely, the palisade-merlons were some 1.5m (5 *pm)* in height the crenellated breastwork would have been approximately 4.5m (15 *pm)* high overall. Along the rampart, spaced at intervals of approximately 50m, stood wooden interval towers approximately 4.5m (15 *pm)* square and some 7.5m (25 *pm)* high (see Fig 10.1). Both the wooden palisade and these interval towers were dismantled and replaced by a stone curtain wall with stone interval towers *c* AD 100.[6]

This new stone curtain wall was merely a revetment to the Flavian rampart and was at no point designed to be a freestanding structure. It is clear, however, that the rampart would have been raised and new material imported to fill the space between the front of the original rampart and the back of the new, significantly higher, curtain wall (Fig 10.2). The walkway of the curtain wall appears to have been set a little above cornice-level, approximately 4.9m (15 *pd)* above base.[7]

The wall was constructed of *opus quadratum* on a scale and design only closely paralleled in defensive walling in Britain at Gloucester but probably also at the legionary fortress at Inchtuthil, both places strongly associated with *Legio xx valeria victrix* for short periods during a construction-phase in the later 1st century (Hurst 1986, 119-21)(8). It was set on a rubble-filled foundation, sometimes mortar-bonded and sometimes clay-bonded and capped. For stability and security, care was taken to ensure that this foundation made contact with the sandstone bedrock. Above this, the curtain wall was usually, though not always, set on a base-course and at all points on the circuit, was provided with the plinth-course at ground level. With rare and localised exceptions, the wall-courses lacked any form of mortar bonding, being merely 'lubricated' with sand during construction to aid the settling of the sandstone blocks.

The levering of blocks into position with wooden beams was presumably facilitated by the small roughly-cut sockets or cut-outs found on the ends of many of the stones.[9] The blocks themselves were of fairly consistent height (0.30-0.34m), suggesting that an attempt had been made to render each approximately 1 Roman foot *(c* 0.33m?) in height at the time of quarrying. In the better preserved stretches of the Roman curtain wall today the undisturbed lower wall-courses exhibit a high degree of pleasing and impressive uniformity when viewed from a distance but this uniformity is more superficial, and deceptive, in many of the higher courses. It may well be that this distinction is only

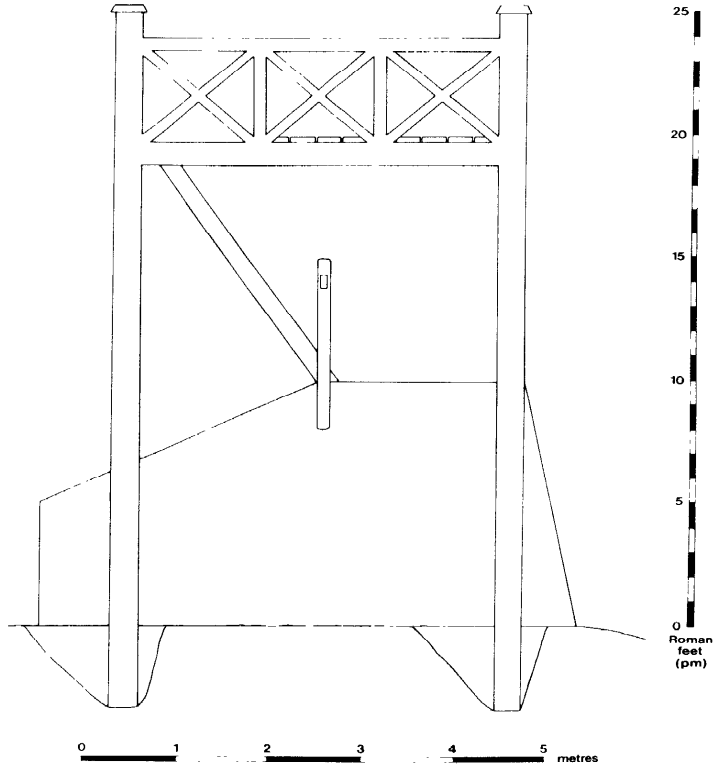

Fig 10.1 Cross-section through the Flavian turf-revetted rampart, timber palisade and interval tower. These have been interpreted in Roman feet (pm) *of 0.295m*

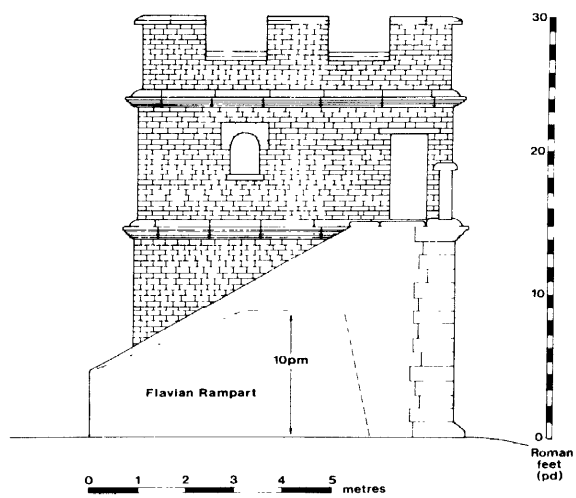

Fig 10.2 Section illustrating the relationship of the stone curtain wall to the pre-existing rampart and one of the stone interval towers. Note the proportions of the heights of the respective elements and cornices which are here interpreted in Roman feet (pd) *of 0.330m. Note also that the merlons on both curtain wall and interval towers have been restored with a simple design of capstone*

Fig 10.3 The north wall, Chester - the finest and most complete stretch of the Roman curtain wall at Chester. Nite the decorated cornice in situ

partly the result of later repairs and that the wall structure actually exhibits two phases of 'original' construction: unfinished Trajanic work of *c* 100 and 3rd century completion to a slightly different standard. If so, such a process is closely paralleled on many sites within the fortress at Chester.

It may be assumed that the external face of the sandstone blocks had once exhibited a carefully dressed draft similar to that proposed for the supposed 'first city wall' at Gloucester (Hurst 1986, 104-5). This would have given the face of the wall the 'rusticated' effect which was common on *opus quadratum* on prestige walling throughout the Roman World in that period (see for example Herod's temple-compound wall at Jerusalem and the Nimes aqueduct where it crosses the River Gardon on the Pont-du-Gard). If the stones had been so treated, however, it is clear that weathering over centuries of the relatively soft Chester sandstone must have removed any of the more obvious features of the original rustication. Thus the evidence is as yet unclear and for the time being the original appearance of the external face of the curtain wall at Chester must remain uncertain in this respect.

A remarkable decorative cornice, apparently unparalleled in Roman defensive walling in Britain, topped the curtain wall. A famous stretch of this feature survives *in situ* in the north wall at Chester (Fig 10.3).[10] Although clearly embellished for decorative reasons, inspection of the best preserved stretch of wall has shown that the cornice must also have served to limit the erosive effects of rainwater run-off on the masonry below. The design of the cornice is of course entirely in keeping with the monumentally impressive style of the whole curtain wall structure.[11] Irregularities in the finished design of the cornice blocks suggests that, contrary to previous assumptions, these stones were prepared and finished completely off site.

A fragment of wall-cornice of a generally similar, although slightly different and smaller, design was recovered from the vicinity of one of the stone interval towers in the excavations at Abbey Green in the 1970s. The context from which this much weathered stone was recovered seems to indicate that it had fallen from the nearby interval tower in the late Saxon period (Ward 1994, 84). It thus seems possible that the towers were also embellished with decorative cornices as string-courses. If so, it is possible that no less than two levels of cornice may have been provided, at first floor and patrol-top levels respectively.

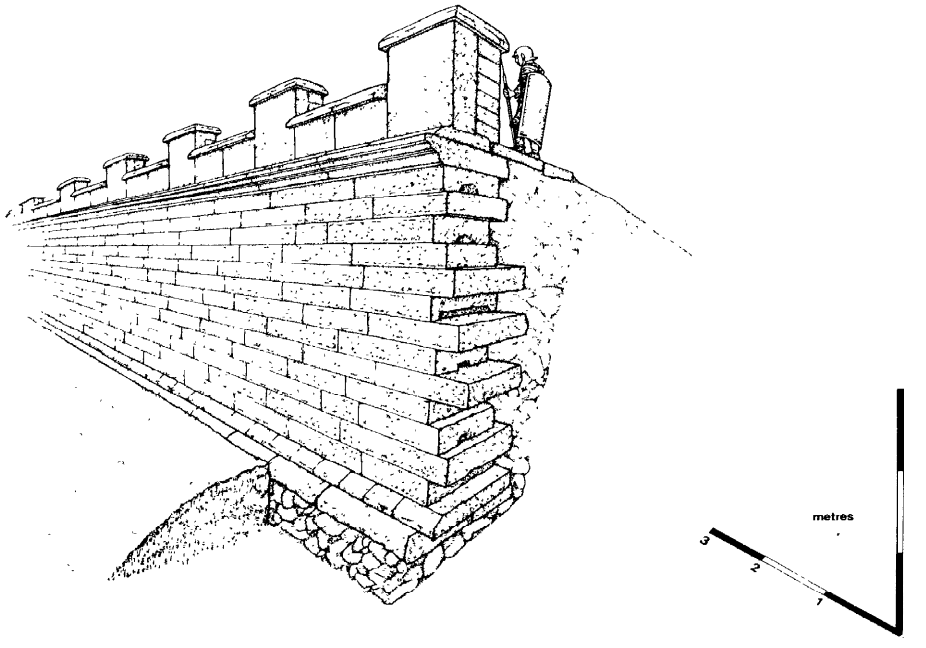

Fig 10.4 Reconstruction of the stone curtain wall of the legionary fortress at Chester (c *AD 100.2) Note especially the rustication to the external face of the masonry, the very irregular cut-outs in the sides of the stones, the fine decorative cornice, the parapet-structure and the relationship of the whole structure to the pre-existing rampart at rear*

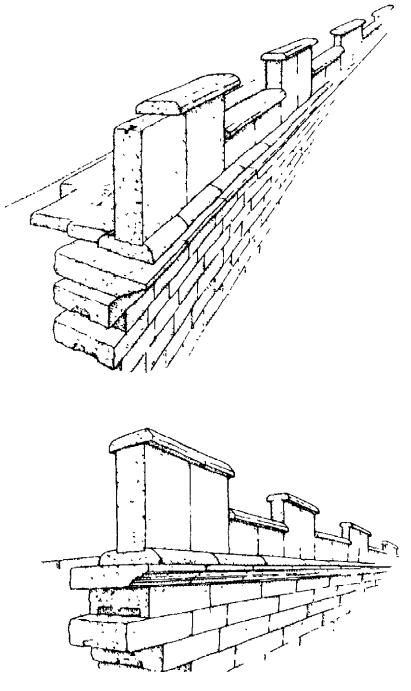

Fig 10.5 Different views of the parapet structure of the curtain wall at Chester Restored without traverses

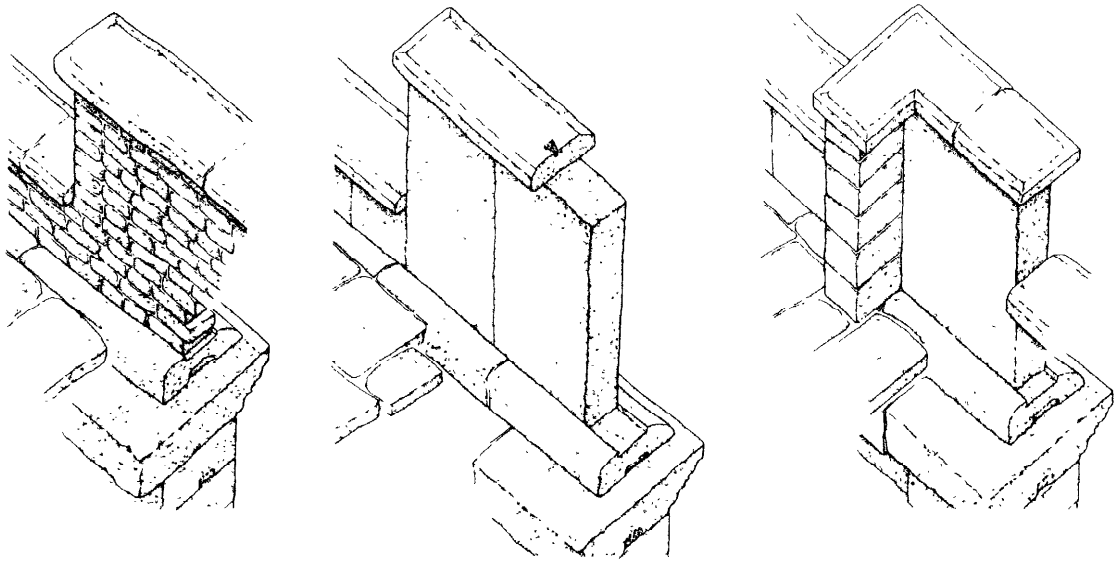

Fig IO.6 Details of the curtain wall parapet at Chester Note especially the preferred monolithic design. Whilst it cannot be completely ruled out, the alternative to the monolithic structure is a breastwork made up of many small blocks of stone. It will be seen, however, that the parapet-rebate seems too narrow for this to have been the case. Note also the structure of a parapet-traverse, a feature hinted at by some of the evidence from Chester

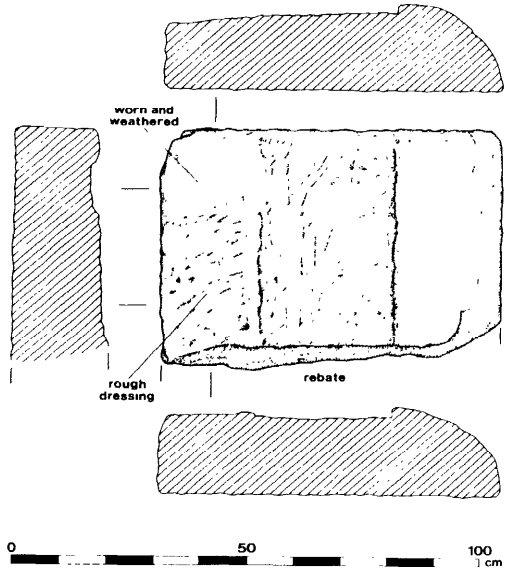

Fig 10.7 Fragment of curtain wall parapet-block from Chester. Note especially the tooled surface and adjacent weathered area on the interior side of the parapet-rebate, indicating that this stone accommodated a masonry feature (traverse?) at right-angles to the parapet

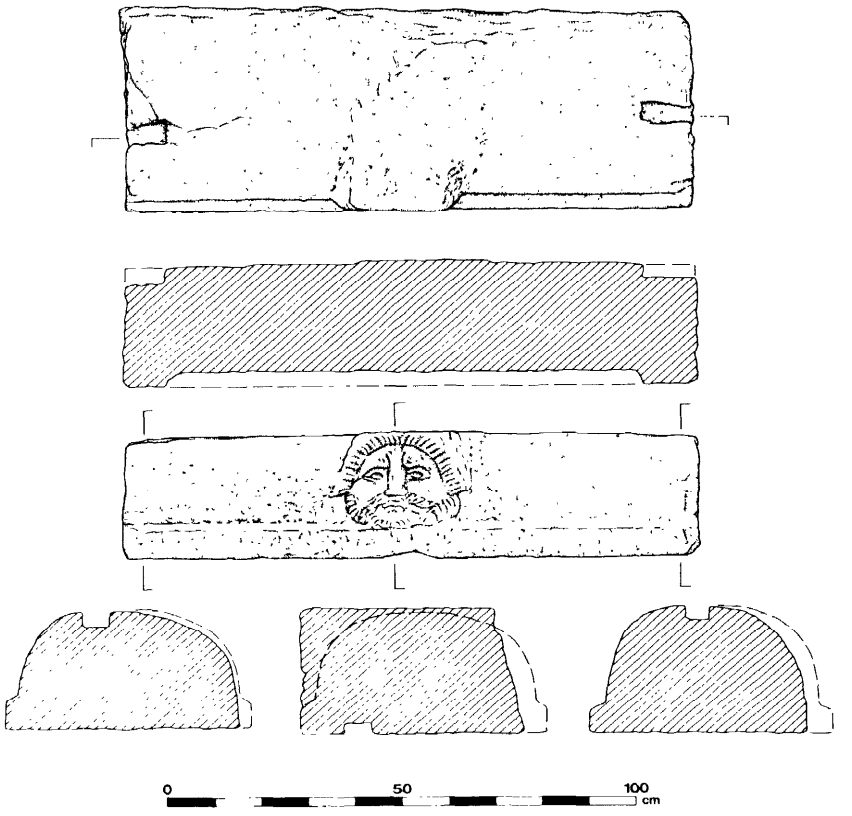

Fig 10.8 Decorated capstone recovered from the western sector of the north wall at Chester in 1890. It has been thought that this stone may well have come originally from a sepulchral monument lining one of the roads outside the fortress and to have been re-used in a later repair of the city wall at this point. Alternatively, it may be evidence for curtain wall embrasures and merlon-caps of an altogether- more impressive design which would be in keeping with the monumental nature of the wall as a whole, If so, the sockets for dovetail-clamps indicate wide embrasures

Set on the curtain wall cornice was a course of rounded blocks rebated to accommodate the parapet masonry. Unrestricted examination of complete examples of these rebated parapet blocks has now been possible for the first time. This has confirmed that the rebate was actually consistently 0.30-0.35m in width and that it was a carefully cut and uniform feature. This suggests that the missing parapet structure may have consisted of monolithic blocks of sandstone held together with clamps and toggles in a manner similar to the design of the parapets on some of the bridges of Hadrian's Wall (Bidwell & Holbrook 1989, 34-47; Holbrook, this volume, p 119). Whilst it thus seems most likely that the parapet was of monolithic construction a less likely option, given the narrowness and regularity of the rebate, is that the breastwork was made up of many smaller blocks of stone, an idea once suggested after research on the eastern sector of the north wall in 1982 (Strickland 1982, 31–2).[12]

There can be no doubt that the merlons and embrasures on both the curtain wall parapet, gates and interval towers were topped with capstones. In the collection of carved blocks from the excavations at Abbey Green in the 1970s are some weathered blocks which may once have been curtain wall merlon-caps of a relatively flat and simple chamfered design very similar to those found, for example, at South Shields and elsewhere on Hadrian's Wall (Strickland 1983, 6 Fig 1; Bidwell *et al* 1983, 171-6).[13] After all, such capstones do represent the simplest solution. However, an elaborate though compelling alternative is possible. Amongst the stones on display in the Grosvenor Museum is one very fine capstone carved with a bearded human face on its external surface (Fig 10.8). This stone is reported to have been recovered from the western sector of the north wall during repair works carried out towards the end of the last century (Wright & Richmond 1955, 164, Pl xxxix). If one is looking for a merlon-cap of a monumental style in keeping with the rest of this fine and impressive curtain wall this could be it. Interestingly a number of such stones, of similar shape but

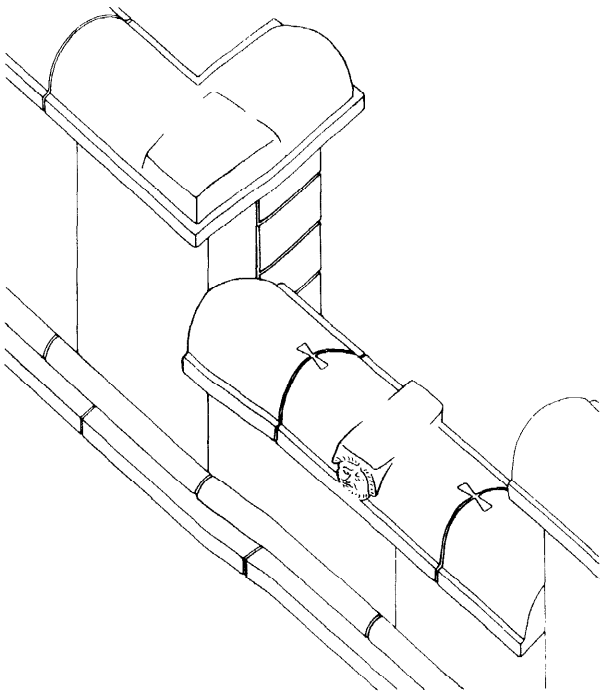

Fig 10.9 Theoretic& reconstruction of a crenellated wall-parapet at Chester illustrating how the more impressive style of capstone recovered in Chester might have appeared (it must be noted, however, that these stones could have come from elsewhere in Chester and may not belong to the wall-top)

undecorated as one might expect, were found in this same stretch of the north wall at the same time. What became of most of these stones after discovery is unrecorded but it appears that a number of them were kept on site and can be found to this day adjacent to the relevant section of Roman curtain wall restored *c* 1890, a short distance to the west of the North Gate. Before driving to a conclusion, however, a note of caution is necessary. It is known that this stretch of the city wall has been substantially, if not completely, restored a hundred years ago, at which point many of these interesting capstones were rearranged into a meaningless feature. It must also be said that some of these impressive stones are strikingly reminiscent of several found on the site of a Roman sepulchral monument on the Eaton Road and removed from there to an unknown destination in Chester in the 1920s. So it is possible that these stones are a 'red herring'. Furthermore, they seem very wide for a *c* 0.30-0.35m wide parapet breastwork with overhangs of *c* 0.10-o. 15m. However, this would not have been a problem if the merlons were closely spaced on a parapet supported by traverses (see below) and it remains tempting to reconstruct the parapet with these marvellous stones and an effort has been made to do so here (Fig 10.9).

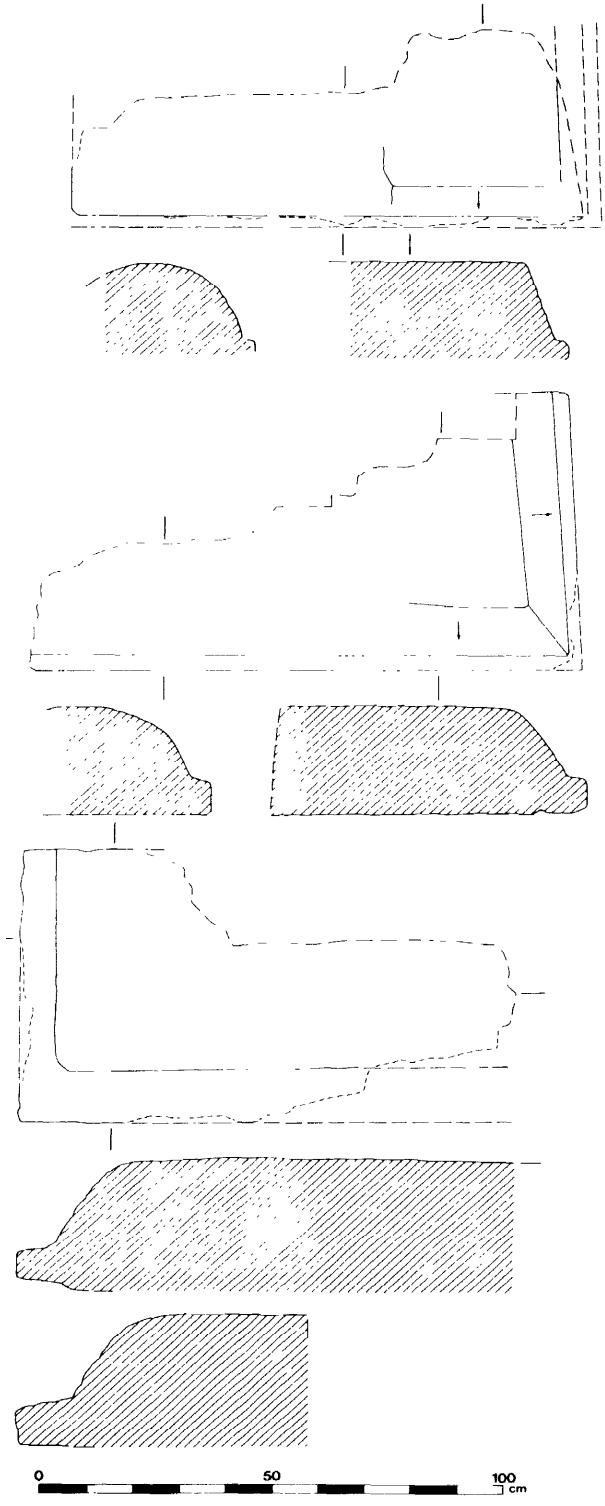

Fig 10.10 Fragments of Chester capstones which form right-angles (for traverses?). Note, however, the flat rectangular surfaces to accommodate additional decorative features

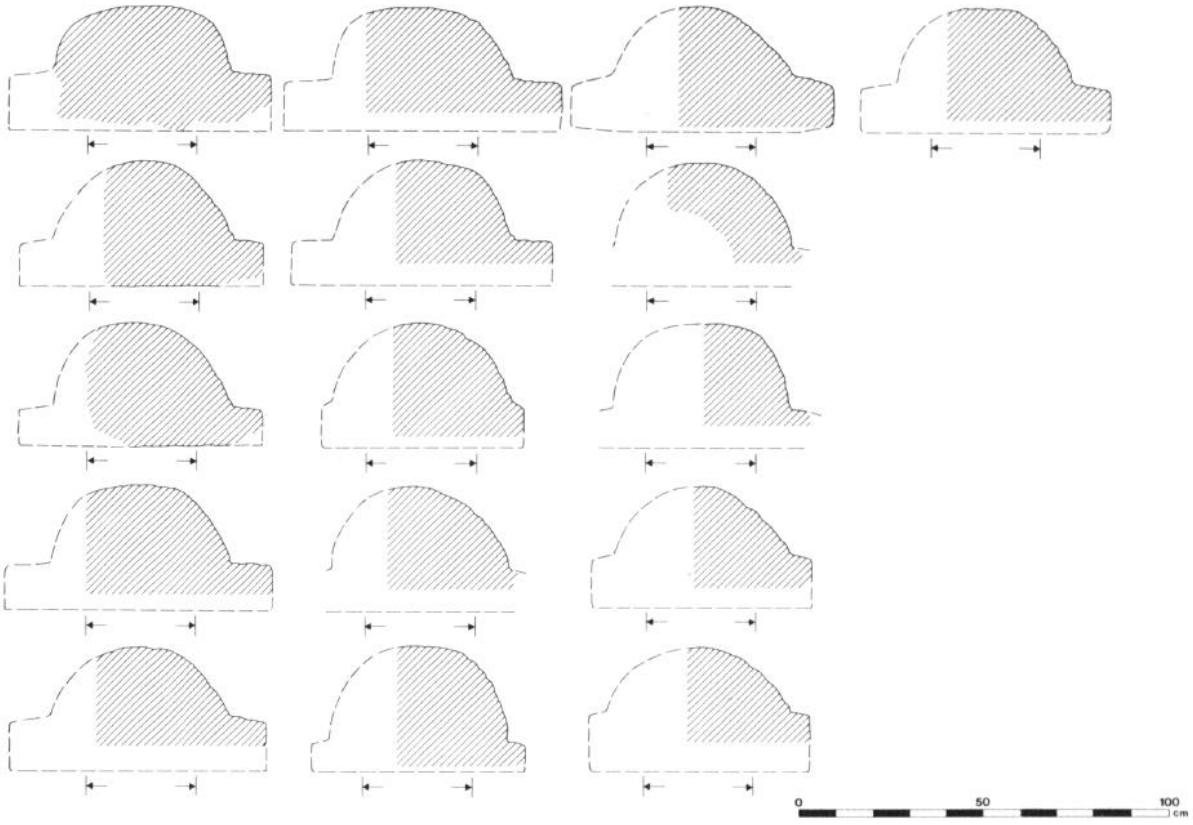

Fig 10.11 Cross-sections through the series of capstones which can today be seen adjacent to the north wall of Chester (from which they were recovered in 1890?). A parapet-width of c 0.30-0.35m is indicated beneath each stone, indicating that some of them may have been too wide for parapet capstones. Short embrasures and traverses would have resolved this difficulty

The dressing and weathering-pattern on one of the rebated parapet-blocks indicates that masonry structures were set at right-angles to the breastwork at certain points (Fig 10.12). The most likely explanation is that the parapet-breastwork was provided with traverses at regular intervals. There is evidence for such traverses elsewhere although their function is not conclusively understood (Bidwell *et al* 1988, 200-7). They would, of course, have provided extra strength to a thin parapet structure and could also have given some degree of protection from lateral fire; they were perhaps also a convenient place against which to lean spare weaponry. In view of this, it is interesting to note that several of the impressive Chester capstones described above were designed to form right-angles. On some of the forts in the Upper German *limes* it is considered that very similar stones were used to cover traverses (Bidwell *et al* 1988, 204-6).

It is reasonable to assume that the general design of the curtain wall structure at Chester was worked out according to a modular approach. Indeed, it is clear that the wall-walkway, cornice and parapet rebate structure were designed to be at a height of *c* 4.9m (15 *pd)* above ground. One's conviction that the wall structure was of a modular design is strengthened by the discovery that an ample, but by no means generous, allowance for headroom in the interval towers between wall-walk level and patrol-top indicates that a minimum height for the merlons on the interval towers must have been in the order of *c* 9.9m (30 *pd):* exactly twice the height of the wall-cornice. Adding further speculation, the arrangement overall could thus have been: base of curtain wall to cornice 15 Roman feet, to parapet-top 20 Roman feet, to interval tower roof/patrol-top and upper cornice or string-course 25 Roman feet, to top of towers 30 Roman feet. Although this may seem wildly speculative it is stressed again that it is based on provision of a minimum reasonable headroom in the interval towers, and with merlons on the parapets of no more than 5 Roman feet.[15]

With the possible exception of one stone which appears to have been re-used at modern ground level in the 1890s restoration of the City Wall in the 'Cestrian Builders' yard, a short distance from the site of the north-west angle of the Roman circuit, no other inscribed or sculptured stones were found re-used in the external face of those stretches of the Roman curtain wall which have been dismantled recently and examined in detail.[16] Indeed, close

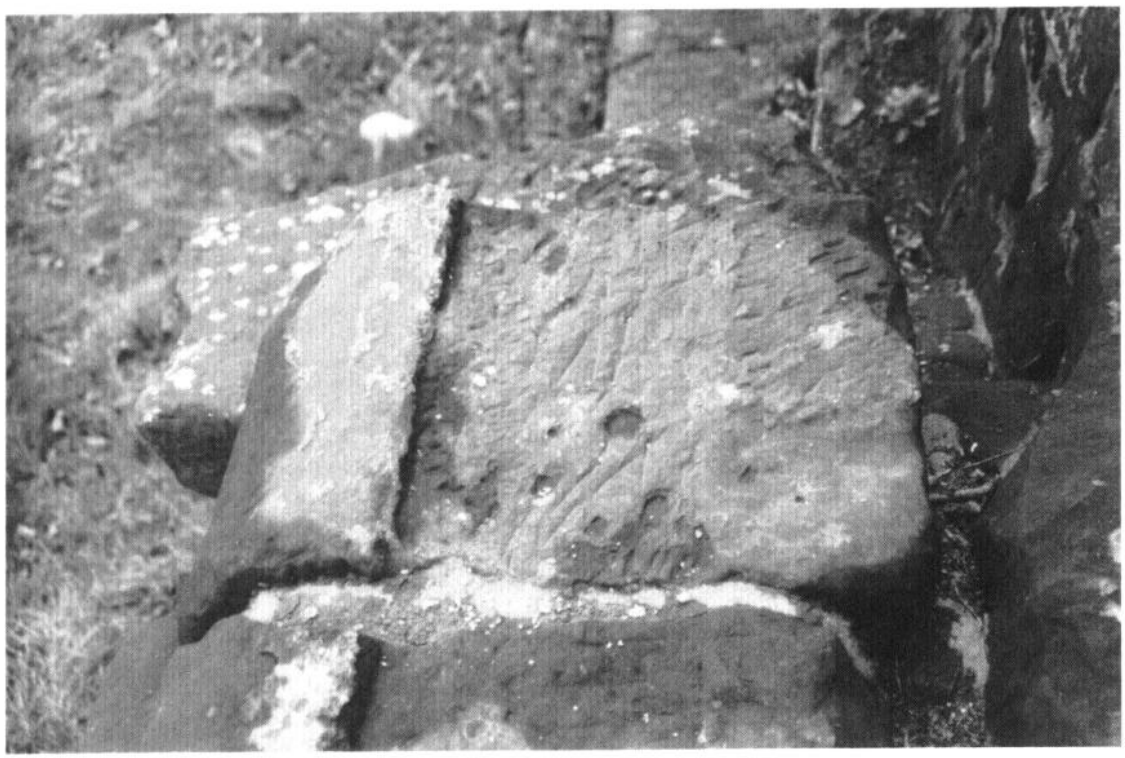

Fig 10.12 Detail of the cornice and parapet rebate-structure restored west of the North Gate, Chester. Note the rebate-block with tooling to suggest the former existence of a traverse at that point

inspection of the surviving photographs and section-drawing of the stretch of wall to the east of the North Gate from which many of these stones were recovered a hundred years ago indicates that the re-used material may have been inserted behind a pre-existing wall-face in order to strengthen it (Strickland 1983, 9). The evidence on which this assertion is based is flimsy, however, consisting as it does of one faded photograph, but the obvious conclusion that can be drawn from the general absence of reused stones in the sections recently examined is that their presence in the wall is more to do with patching and repair than to do with the original construction. This being so, the datable inscribed stones cannot of course provide a meaningful *terminus post quem* for the wall's construction. [17]

Conclusions

With the proviso that research still has far to go, it is now possible to begin to draw some conclusions for the curtain wall at Chester.[18]

Given that the datable re-used early 3rd century inscribed stones in the north wall do not after all provide a TPQ for the construction of the wall in the later Roman period, it is therefore necessary to reconsider the whole question of its date. The grand style of the defensive curtain wall masonry at Chester is so far only closely paralleled at Gloucester and possibly also at the legionary fortress of Inchtuthil. Both these places were strongly associated with the *Legio XX Valeria Victrix* in the latter years of the 1st century and it seems likely therefore that Chester's curtain wall is the product not only of this legion but also of the same military architects and craftsmen who built - or at least designed and intended to build - the defensive walls at all three places in *c* AD 100.[19] However, as with much else in the fortress at Chester work on the new wall may have been abandoned, unfinished, in *c* AD 125 only to be completed to a slightly inferior quality over a century later. If this is the meaning of the somewhat conflicting dating evidence currently available the later work (Severan dynasty?) was also designed to finish off the original scheme in *grand appareil.*

Although the construction of a curtain wall in such a monumental and impressive style is rendered easier by the ready availability of superb building stone in close proximity to the site the evidence from Gloucester, where the best sources of building stone are in the Cotswold ridge several miles distant shows that proximity of stone was not so important as the intended design; and in any case it is clear that such walls are far more easily built out of small blocks of stone than the enormous blocks which were employed, each of which requiring considerable ingenuity to move and lift into

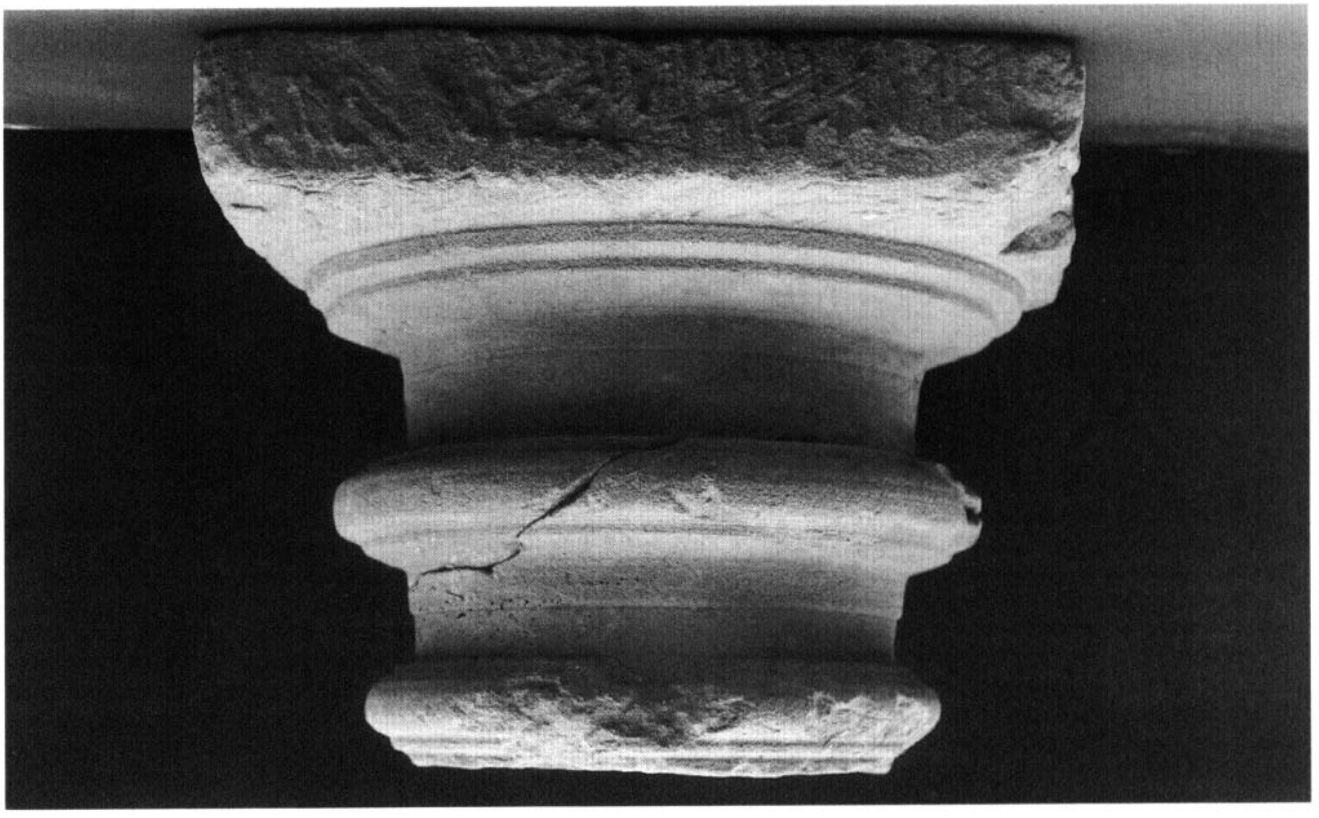

Fig 10.13 Sandstone capital recovered from barrack veranda site adjacent to Princess Street, Chester, 1981

position. In this respect one must consider also the fine cornice which, though serving various practical functions, must have been decorated to impress. Indeed, it is tempting to conclude that the curtain wall at Chester was designed and intended as a statement; namely, that this was the work of *Legio XX Valeria Victrix* in *c* AD 100.[20]

Legionary barrack veranda colonnades

Parts of the barrack-buildings on sites assigned to all but two of the legionary cohorts at Chester have been examined over a period of many years and the resulting collection of veranda-stones is now considerable;[21] but it was not until the chance discovery of a series of column-bases and capitals in the rearward part of the fortress, the *retentura,* in 1983 (Strickland 1983, 53-4) that the true significance of the previous discoveries was appreciated. This led to the realisation that excavation of the barracks in many parts of the fortress had recovered lathe-turned sandstone column-bases and capitals of a standard 'Chester' design which may be termed 'unfinished Corinthian' or perhaps even 'debased Tuscan'.[22] It is now clear that such stones were recovered - sometimes in fragments only - in the *praetentura, latera praetorii* and *retentura* although, with rare fragmentary exceptions, the column-drums were missing. That said, the existence of fragments of the drums on some sites demonstrated that the veranda-colonnades had been entirely of stone in most cases.

The crucial missing information led to a search for a complete surviving example of a suitable column-drum. As is so often the case, this turned out to have been on display for many years at the amphitheatre where a barrack-type column-base and capital, of the correct design and scale, had been reused later in the Roman period as bases for altars in the *Nemeseum* (Thompson 1976, 169 Pls XLVI d, XIVII b, c and d). Furthermore, a column-drum recovered from the eastern side-entrance to the amphitheatre, though worn through later misuse, could be seen to have been exactly of the right dimensions to fit the reused column-base and capital in the *Nemeseum*. This discovery led to a reconsideration of finds from excavations in the barracks of the first cohort[23] and in those of the *retentura*.[24] On the information from these sites, together with the building-plans available, it has been possible to attempt below a tentative reconstruction of Chester barrack veranda-colonnades on the assumptions that, first, given the utilitarian nature of the buildings concerned, the Roman Army would have designed them to give a total height which was sufficient merely to provide adequate headroom below the wall-plates; and second, that the verandas would obviously have been for low, single-storey, structures whether or not the central

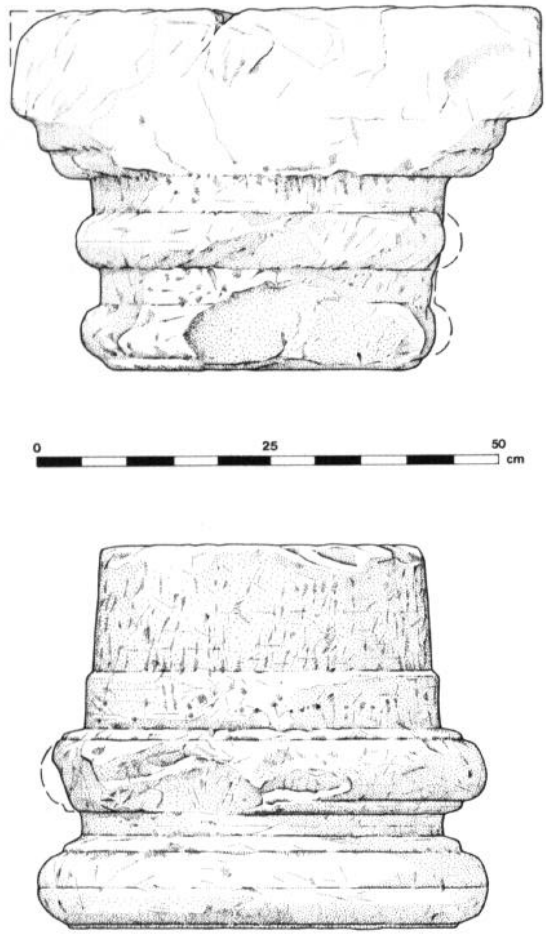

Fig 10.14 Sections of column-base and capital recovered from the legionary amphitheatre, Chester

parts of the barracks had been higher.[25]

There are of course, variations in column-dimensions from site to site, barrack to barrack, even stone to stone; but these have been observed to be very minor and are due rather to inconsistency in carving than to any intended feature of the design. Measurements have now been taken from a sufficiently large sample of column-elements at Chester to make possible for the first time some general assumptions about the dimensions of barrack veranda columns. Research on this subject is still at an early stage, however, and the following typical measurements are presented for further consideration rather than as a conclusion.

On average the decorated elements of column bases are 0.28m high with a diameter at the top of the base 0.35m. The column drums themselves are 1.20m high, including elements carved integrally with the base and capital, and have a diameter of 0.35m at the bottom of the drum and 0.32m at the top. Typical dimensions for the column capitals are 0.39m high and 0.32m in diameter at the base of the decorated element. When all these elements - base, drum and capital - are assembled their combined height is 1.87m. When the height of the plinth-block (0.30m) and wallplate (estimated at 0.20m) are added to this figure it gives a total estimated height for an average barrack veranda block of 2.37m.

Widespread minor variations in proportions have already been noted. Furthermore, the stated dimensions of the altogether missing wooden wall-plate are at best only a rough, though entirely reasonable, estimate. However, despite these problems it is clear that the total height set out above cannot be more than a few centimetres, at most, from the truth.

It can be seen from the above that a column whose elements would, at first consideration, seem to have been rather low would in fact have supported barrack veranda roofs with eaves set at a height of approximately 2.40m - ample headroom for this type of building. The relationship of height to diameter of this column can thus be expressed as 5.34 diameters (for all elements except plinth-block and wall-plate), an entirely acceptable proportion in comparison with other published examples from Britain (Blagg 1982, 140-2).

Recent study of the now large number of veranda-colonnade bases and capitals at Chester has revealed that these stones were turned on a lathe, sometimes two or more such pieces being made out of one block of stone. Examination of variations in the dressing of the stones suggests that they may have been stuccoed and perhaps also painted, although no evidence of this survives *in situ* at Chester. The sockets which are commonly found in the tops and bottoms of these stones, and which are reasonably assumed to have been provided for clamps holding the different component parts of each column together, clearly cannot only have been for such purposes at Chester since some of the bases and capitals have no sockets at all. One is forced to the conclusion therefore that some at least of the sockets were provided for fixing the stones to the lathe in the first place when more than one such stone was being turned at once out of a single, larger, block of sandstone.[26]

Archaeological excavation and research in the legionary fortress at Chester since the Second World War[27] has demonstrated that the 'Chester barrack-type' column-design was widely used there and it remains to consider the historical context.[28] It is known, of course, that the legionary fortress at Chester was first constructed, substantially in a timber-framed form, by *Legio II Adiutrix* in the AD 70s and 80s and that a major programme of reconstruction in stone appears to have been initiated by *Legio XX Valeria Victrix* in the closing years of the 1st century and the first twenty years or so of the 2nd. However, research in recent years has also demonstrated that many buildings in all parts of the fortress and its extramural settlements, whether or not they had already been built in stone in the early 2nd century, were fundamentally rebuilt, even in some cases as completely new buildings on sites

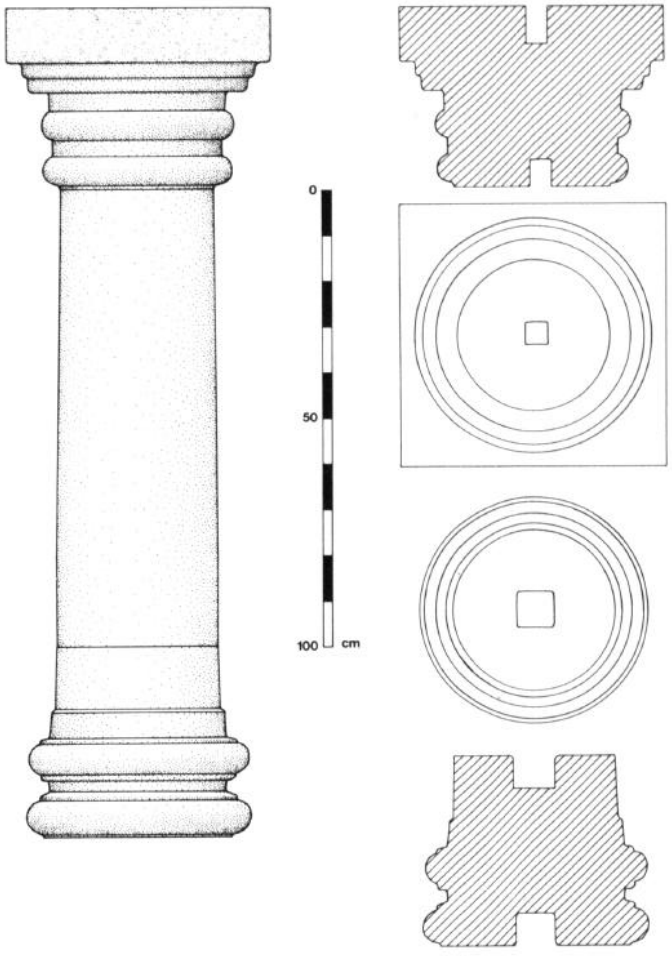

Fig 10.15 Chester barrack veranda-type column (composite of elements recovered from various sites in Chester); column-base and capital

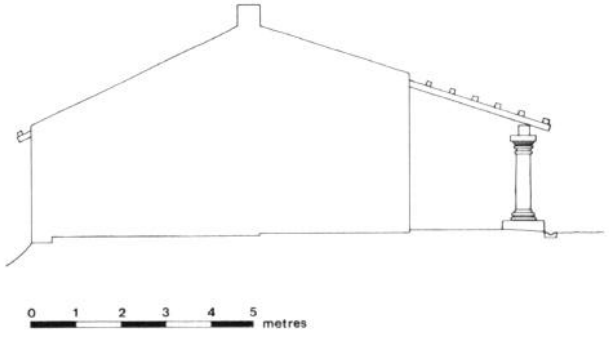

Fig 10.16 Chester legionary barrack cross-section: to illustrate proposed barrack veranda colonnade height and structure

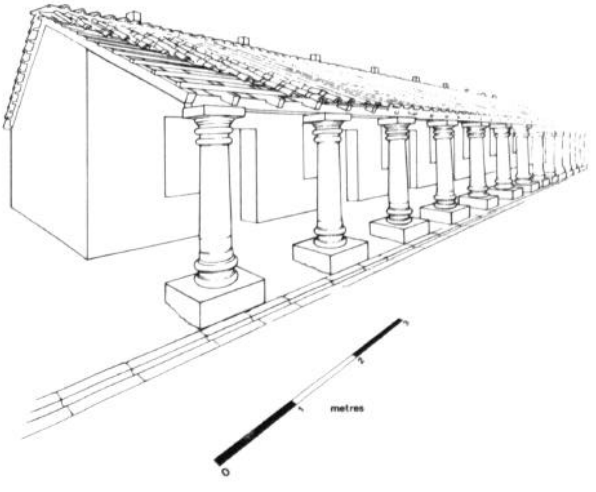

Fig 10.17 Chester barrack veranda-type colonnade restored: reconstruction based on discoveries from various parts of the legionary fortress

Fig 10.18 Restored 'Chester barrack-type' column in the principia *at South Shields*

which had evidently been intended for them many years previously, in the period following on AD 200 (Strickland 1981, 423-7; 1982, 11-13).[29]

So extensive was the reconstruction of Chester in the 3rd century that it seems likely that the 'Chester barrack-type' colonnades were a 3rd century phenomenon. However, it is quite possible that much barrack-rebuilding at Chester included the re-use of early 2nd century elements. Re-use of a barrack veranda-type column capital and base is clearly demonstrated, for instance, in the *Nemeseum* of the amphitheatre some time after the late 3rd century (Thompson 1976, 169). It seems unlikely that the style of such simple elements would have changed much during the 2nd century, but even if it had the possibility remains that during the Severan reconstruction of Chester column-bases and capitals were manufactured to an earlier design to ensure some degree of uniformity. At the present time it is therefore possible only to give a wide date-bracket of 2nd and 3rd century AD for the 'Chester barrack-type' colonnades. It is nonetheless possible to conclude that, with certain exceptions they were very widely used in the fortress there.30

For the moment, one final discovery remains. Research by the author in recent years (Strickland 1985, 17-36) has demonstrated the extensive survival of the buildings of the Roman fortress, in a more or less ruinous condition, into the Middle Ages and this has prompted questions about the re-use of Roman building material in later times. However, reasonable as it is to assume that such re-use was extensive at Chester conclusive evidence for it is difficult to come by. One exception, appropriate in the context of this paper, may be found within the 12th-century Norman fabric of the cathedral at Chester where the proportions of the masonry used bear all the hallmarks of re-used Roman *petit appareil*. Close inspection has shown that the fragmentary remains of at least two Chester barrack-type veranda capitals have been re-used, albeit in a slightly reshaped form. Undoubtedly, too, some of the many veranda column-drums probably also disappeared into the same medieval building (Fig 10.19).

Fig 10.19 Part of the Norman fabric of Chester cathedral showing re-used legionary barrack veranda colonnade capitals (first and second from the right) and probably also re-used column drums and petit appareil

Acknowledgements

The ideas summarised in this paper have gradually taken form over a number of years and can be said to be the fruit borne of numerous discussions with friends and colleagues who must take credit for them, whilst in no way bearing responsibility for the errors and more obvious flights of fancy which justly remain mine alone. I would like to single out the following to whom my particular thanks are due: Paul Bidwell, Tom Blagg, Andrew Davison, Neil Holbrook, Henry Hurst, Stephen Johnson, Mick Jones, Donald Mackreth, David Mason, Gaenor Morris, Dennis Petch, Cheryl Quinn, Dan Robinson, John Weaver and Graham Webster. I should like to thank my friends and colleagues in Gifford and Partners with whom the systematic dismantling of sections of the city wall was carried out, particularly Geoffrey Clifton, Richard Smith, Fay Newham, Simon Love11 and Lisa Morris.

Considerable thanks are due also to Charlie Le Quesne and Gerry Wait for much stimulating discussion and help during their production of the forthcoming Gifford volume on the Roman defences of Chester, to which this paper is merely a preliminary statement. I would like to thank Tim Morgan for his marvellous drawings which have made this paper a pleasure to write.

Last, but by no means least, I must thank Anne Thompson at Gifford for providing so much of the essential day-to-day support which has enabled me to find time to pursue my research interests.

Footnotes

1 The great recovery operations took place in 1883-4, 1887 and 1890-92. Well over 150 inscribed and sculptured stones were removed to the Grosvenor Museum.

2 Especially in 1982 and 1983. See Strickland 1982, 25-36; 1983, 5-11.

3 This work was of unprecedented archaeological importance. Gifford and Partners as consulting engineers and archaeologists, were retained by the City Council to design and direct the project.

4 For a summary report see McPeake *et al* 1980, 15-37. It should be noted that some of the interpretation has since been revised. See for

instance Ward 1994, 70-92.

5 These wooden interval towers may have been spaced at intervals of approximately 50m. One was examined at Abbey Green and what appears to be another has been located through remote-sensing radar in 1989, some 50m east of the northwest angle-tower in Water Tower Street. Dimensions indicate that the smaller Roman *pes monetalis* of 0.295m was used in their construction.

6 There is no conclusive evidence for the date of construction of the stone curtain wall; at its best it is circumstantial.

7 Measurable dimensions of the stone curtain wall indicate that the larger Roman *pes drusianus* of 0.33m may have been used in its design and construction. That said, the regularity of the courses is more apparent than real, the variations in course-height sometimes being as much as 0.10m. The *pes drusianus* thus appears only to have been used as a general design guide.

8 I am grateful to Henry Hurst for discussing this point with me. His reasoning is compelling but the continuing lack of conclusive evidence is stressed.

9 As was demonstrated by the stonemasons appointed to dismantle and then rebuild the Roman masonry in 1989/90.

10 Although cornice stones of an identical design have also been recovered from the eastern and western sides of the Roman circuit close inspection, once again, shows up subtle variations both in the design and the quality of work. Such variations would be entirely consistent with the concept of 3rd century completion of unfinished Trajanic work, not to mention late Roman repair.

11 Little is known about the gates at Chester but Stukeley's drawing of the Roman masonry in the Eastgate at Chester, dated August 1725, and described as an 'interior view' seems to show the decorated cornice and may even illustrate a series of large parapet monoliths on top. Presumably the cornice would have been carried round both the interior and exterior of this gate. See Petch 1987, Pl 14. Such treatment of a cornice in the gates is also hinted at by the recovery of what appears to have been an interval tower cornice at Abbey Green, Chester, in the 1970s.

12 The small blocks found in the north wall, east of Northgate, in 1982 could not be properly explored. They may have been later repair-work, perhaps even post-Roman in date. It is clear, however, that the blocks of *petit appareil* in a parapet breastwork of no more than 0.35m in width would have had to be dressed on both external faces, the rebate being too narrow to accommodate separate facing-blocks unless these were unusually small for Chester.

13 I am grateful to Paul Bidwell for drawing my attention to the South Shields parallels.

14 No conclusions can yet be drawn for merlon-caps at Chester but the discovery in 1989 of one of them, buried in the soil in front of the city wall may indicate that not all these capstones were reused in the wall. This example remains *in situ* for further examination.

15 The problems of gate and interval tower heights have been clearly set out in Bidwell *et al* 1988, 180-200.

16 The stretch of curtain wall masonry examined on the east side in 1983 has since been dismantled and rebuilt. Though substantially of Roman materials it appears to have been rebuilt in antiquity - perhaps even in post-Roman times. Information from S Ward.

17 The well known reused Roman inscribed stones could belong to post-Roman, probably even Ethelflaedan, repairs of the early 10th century. The tombstones and other monuments in the derelict Roman cemeteries would certainly have been not only readily available for re-use then but, more important, visibly obvious to those looking for available stones. In the later medieval period this source would have become much scarcer and less apparent.

18 At the time of writing research on the Roman defences continues. Two major monographs are in the closing stages of production - one by the Grosvenor Museum will be devoted to publication of the results of excavations carried out by Dennis Petch and others prior to the late 1970s discoveries; the other by Gifford and Partners which is devoted to the details, research, structural and historical implications of the work carried out since the late 1970s.

19 But the construction-date actually remains wide open and it remains a real possibility that the curtain wall is entirely of early 3rd century date. It may even have replaced a now-missing Trajanic stone curtain wall of which only the interval towers remain.

20 The Twentieth Legion is assumed to have ended up at Chester sometime after the abandonment of lnchtuthil in *c* AD 87.

21 The collection has not been retained by the Grosvenor Museum in all cases but the excavations have produced column-bases and capitals, blocks on which column-bases were set, fragments of column-drums and gutter-stones.

22 I am grateful to Tom Blagg for discussing this with me. Clearly, the style is unusual but not actually unique to Chester (see for example the South Shields *principia* column: Fig 10.18). The style is certainly not orthodox Tuscan.

23 Crook Street 1973-4.

24 Princess Street area 1978-82; Hunter Street 1983.

25 The reconstructions are thus necessarily of a composite nature.

26 The inner ends of the stones would then be sawn through, with no sockets provided. No great risk was involved in low and light, veranda-structures.

27 Woolworths 1959. Newgate/Pepper Street 1963-4.

Amphitheatre 1965-9, Crook Street 1973-4, Princess Street area 1978-82, Hunter Street 1983.

28 A column of 'Chester barrack-veranda type' is restored in the *principia* at South Shields (Fig 10.18).

29 The early 3rd century reconstruction may well have -been stimulated by Septimius Severus but it outlasted his dynasty.

30 One at least of the barracks examined in the Deanery Field 1922-35 appears to have had its veranda roof supported on wooden posts. These were set on small square plinth-blocks. See Petch 1987,149-51.

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11 Roman bridges in Britain

Neil Holbrook

Introduction

Over thirty years have elapsed since the last general survey of the evidence for Roman bridges in Britain (Dymond 1961). The purpose of this short paper is to review the advances that have been made in this period, both in the discovery of new sites and the reinterpretation of old evidence. Opportunities for the detailed examination of bridges have been rare: timber bridges have come to light during rescue excavations on a few occasions, while previously unknown stone bridges were discovered during gravel quarrying at Piercebridge (Co Durham) in 1972 and in the bed of the Dee at Chester. On Hadrian's Wall English Heritage has sponsored a programme of localised problem-oriented excavation combined with detailed survey and analysis of the existing fabric at the two sites in its care (Chesters and Willowford). Taken together, this work has engendered a better understanding of the superstructure of several bridges, and consequently we now have a much better appreciation of the form which a number of these structures must have taken.

Collingwood and Richmond devoted one paragraph in *The Archaeology of Roman Britain* to the subject of bridges and fords, and cited a number of examples of stone and timber bridges. They stated 'In Britain, however, the various bridges arched in stone and called 'Roman' have no serious claim to such antiquity. All attested Roman road-bridges in this country had stone piers and timber superstructures, like that of Trajan spanning the Danube' (1969, 2). Richmond had clearly drawn upon his detailed knowledge of Hadrian's Wall in forming this view, and in particular his reinterpretation of the great bridge at Chesters for the 10th edition of *The Handbook to the Roman Wall* which states:

> It is not yet known whether the first bridge was arched in stone, as seems to have been the case at Willowford, but the superstructure carried by the stone piers of the second bridge was undoubtedly of timber. Several of the stones which lie scattered about have grooves in them for admitting the spars, while no arch stone has been found amongst the ruins (Richmond 1947,79; this interpretation of the stones had in fact first been propounded by Bruce 1863,76)

If even this monumental undertaking possessed a timber superstructure, quite possibly of the form depicted on Trajan's Column,[1] then Richmond must have felt that it was likely to hold true for all Romano-British road-bridges. The first bridge at Willowford was only wide enough to carry the wall-walk across the Irthing and thus it could safely be excluded from an analysis of road-bridges. Richmond's view became accepted opinion and numerous reconstruction paintings (such as Alan Sorrell's depiction of Chesters (Fig 11.1) and Ronald Embleton's painting of Corbridge (Embleton and Graham 1984, 206)) presented bridges with stone piers and a timber superstructure copied directly from Trajan's Column.[2] As we shall see the basis for this 'text-book' view of British bridges can now be shown to be incorrect thanks to Paul Bidwell's meticulous study of the very same stones at Chesters which had conditioned Richmond's thinking. From basic observation of material which has been visible for over a century we now have a very different idea of the form that that bridge and, by implication, certain others as well, once took.

Collingwood and Richmond can, however, still be considered correct in their assertion that the majority of bridges in Britain were built entirely from timber. The expansion of archaeological survey over the last decades has failed to identify a significant number of new stone structures (Piercebridge and Chester are notable exceptions), and furthermore such evidence as there is is concentrated in the northern military zone, in particular on frontier works and major arterial routes. There are only a handful of stone bridges in southern Britain which can be identified as Roman with any confidence. Before examining specific sites it is this distribution which requires further discussion.

The Roman roads of Britain are likely to have been constructed by the army and conscripted labour, and considerations of speed and expense must have dictated the erection of timber bridges where fords would not suffice. The latter were undoubtedly more common than the relatively few known examples suggest, and could be found on major roads, such as the Fosse Way, where a paved ford accompanying a footbridge is known from the crossing of the Windrush at Bourton-on-the-Water, Glos (O'Neil 1968, 46-8; Collingwood & Richmond 1969, 3 cite further examples). The army had

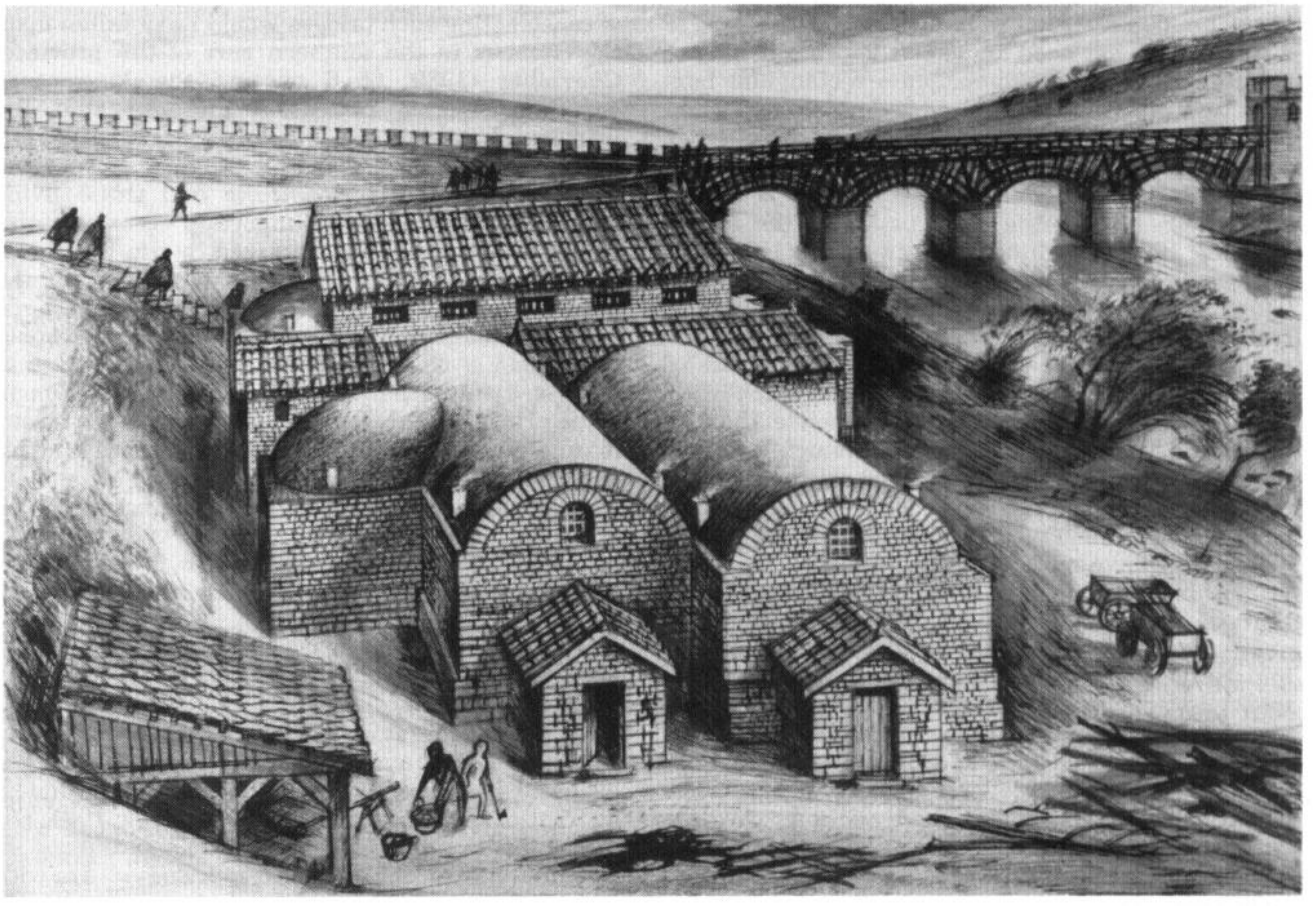

Fig 11.1 Alan Sorrell's reconstruction of the road-bridge at Chesters. The superstructure is based upon the depiction of the Danube bridge on Trajan's Column

considerable experience and expertise in the construction of timber bridges (see for example Tacitus *Annals* 1,20 and Caesar's description of his bridge over the Rhine; *Gallic War* 4,17) and so their rapid erection would have posed few technical problems. Few readily intelligible traces of this initial phase of bridge construction survive for modern analysis, although timber piles of possible Roman date have frequently been noted (Dymond 1961)[3] Exceptions are Fishbourne where a very simple structure 3m wide and spanning 3.4m is dated to the Neronian period (Cunliffe 1971, 46-7), while a more elaborate bridge at Aldwincle (Northants) on the Godmanchester to Leicester road was discovered during gravel quarrying in 1968 (Jackson & Ambrose 1976). The bridge was rebuilt on at least two occasions and possessed in its final phase a timber-revetted box abutment 5.5m wide which would have originally been built to the height of the approach ramp. Over 80 piles define the position of the bridge, although more than one period is represented, and some piles on the downstream side were angled at 30° to the vertical; the latter were possibly diagonal struts such as Caesar described. The little dating evidence available points to construction in the 1st century; unfortunately greater precision is not possible.

Although it is commonly held that the Roman road-system (and thus bridges) was established in the immediate aftermath of the military conquest of the province, archaeological evidence does not always bear this out. Road construction was a major logistical undertaking and it is possible that metalling and bridge construction lagged somewhat behind the pace of military advance. For example at Coddenham (Suffolk) the Colchester-Caistor road was examined to the north of the two-period fort and a date of *c* 70 proposed for the earliest metalling (West 1956). Similarly at Piercebridge excavation suggested a date in the 90s for the earliest metalled surface of this major route which is likely to have been Agricolan in conception (Scott 1982, 77). The relationship of roads to forts and settlements can also be instructive, For example at Cirencester the early fort is sited on Ermin Street rather than the Fosse Way which is thus probably a later accretion to the system (Wacher & McWhirr 1982, 65-6). As Valerie Maxfield (1986) has elegantly pointed out forts and fortresses along the Fosse Way, which is still sometimes regarded as a Claudian frontier line, seem to date to the 50's rather than earlier, and so it is possible that this major route was not established until a decade after the Invasion.

At London a structure interpreted as the base of a timber pier has been found on the probable line of the Roman bridge. It comprised a rectangular box-structure with an internal cross-brace constructed from squared oak timbers. If the interpetation is correct the carriageway would have been 7m wide. Stratigraphy and dendrochronology point to a date around 85-100 for the construction of the bridge (Perring 1991, 37; Milne 1985,46-53). It is known, however, that this bridging point had been established before this date, as a road through Southwark, which was aligned on a point on the southern bank of the Thames opposite the site of the probable pier, appears to have been established *c* 45-60 (Perring 1991, 5). It is possible that an earlier bridge awaits discovery (although note the poor showing of Claudian copied-coinage in the substantial assemblage recovered from the Thames at this point; Rhodes 1991, 189); equally the known bridge may have replaced a ferry.

Within a few decades of the invasion it is likely that timber bridges had been constructed where necessary; elsewhere fords must have sufficed. With maintenance timber bridges constructed in the mid-late 1st century could easily have had a serviceable life for more than a century. At Aldwincle, for example, the lst-century bridge was repaired on at least two occasions following collapse: once in the late 1st/early 2nd century, and again in the late 2nd/early 3rd century. It is not known when the bridge was finally destroyed (Jackson & Ambrose 1976, 43). In London the probable bridge pier constructed *c* 85-100 was incorporated into a new waterfront *c* 150 (Perring 1991, 65-6), and so at the very least drastic reconstruction must have occurred to the original structure at this time. Outside Britain Strabo (4,1,12) records that wooden bridges were still in use on the *via Domitia* in *Gullia Narbonensis* in the Augustan period, at least a century after the road was first established.

The timber bridges built in the aftermath of the invasion could therefore have stood for at least a century, and the fact that they were not subsequently replaced in stone must surely be a reflection of the time and expense such works would have required. It has been estimated that the construction of the road-bridge at Chesters on Hadrian's Wall (58m long; four arches) would have required labour in the order of 29,000 man-days (approximately one century of the army for two years taking into account a reduced building season; Bidwell & Holbrook 1989, 47-9). This bears comparison with Whitby's (1985, 140-1) estimate of three years for the construction of Justinian's bridge over the Sangarius in Turkey (429m long; seven principal arches and five lesser ones). An inscription on the Ponte d'Augusto in Rimini shows that approximately six years (AD 14-21) elapsed between conception and completion of this bridge which comprised five principal arches and five lesser ones (Ballance 1951, 87; *CIL* XI, 367).

In the absence of Imperial intervention the cost of constructing such bridges would have fallen upon the *civitates* in the southern part of the province. Chevallier (1989, 65-6 quoting the lst-century surveyor Sisculus Flaccus) points out that the principal trunk routes *(viae publicae),* while primarily being financed by the State, also required contributions from the *civitates* and those living beside the road. Less important cross-country routes were built and maintained by the individual *pagi* within the *civitates,* although much of the burden may have fallen on individual landowners. Thus the maintenance of roads and bridges would have been a charge upon the *civitates,* and that there are only a handful of securely dated Roman stone bridges in this part of the province (see below) is ample testimony to the fact that individuals or the *civitates* were either unwilling or unable to commit this level of expense. The absence of such structures therefore bears out the evidence from elsewhere for a comparatively low level of civic munificence and benefaction in Britain in the 2nd and 3rd centuries.[4]

Stone bridges in southern Britain

The evidence for stone bridges in southern Britain can be briefly summarised. At Cirencester there is evidence for a curving stone abutment immediately in front of the *Verulamium* Gate (Wacher 1961, 65; *idem* forthcoming; see also the comments of Dymond 1961, 156-7). It comprised a lm-wide facing of large *opus* quadratum[5] blocks standing at least five courses (1.5m) high. A similar facing retaining a clay and rubble core was detected at a distance of 4.2m from the abutment; it was interpreted as a pier (if the proposed reconstruction is correct the width of the channel would narrow to a little over 2m at the centre of the gate). The bridge was to cross the Churn which had been canalised into an artificial channel at some stage in the later 1st or 2nd century. The robber-trench of the abutment contained some moulded blocks from a string-course and some small voussoirs from an arch or barrel vault. It cannot be certain whether these stones derive from the bridge or gate; if the former they would point to the existence of a stone-arched bridge. Considering the narrowness of the passage at this point, and the fact that it subsequently became silted up, it is possible that this was only a subsidary flood-relief channel rather than the main course of the Churn which was probably bridged in the unexcavated area to the north-east. It seems probable (although unproven) that the bridge should be related to the construction of the *Verulamium* Gate in the later 2nd century. Elsewhere in southern Britain there are a few other possible and probable sites, although unfortunately in many cases they are known from old accounts which are not sufficiently detailed or exact to permit much reinterpretation. Consequently little can be added to the comments of Dymond *(ibid)* on the possible Roman bridges at Caistor (Northants), Cromwell

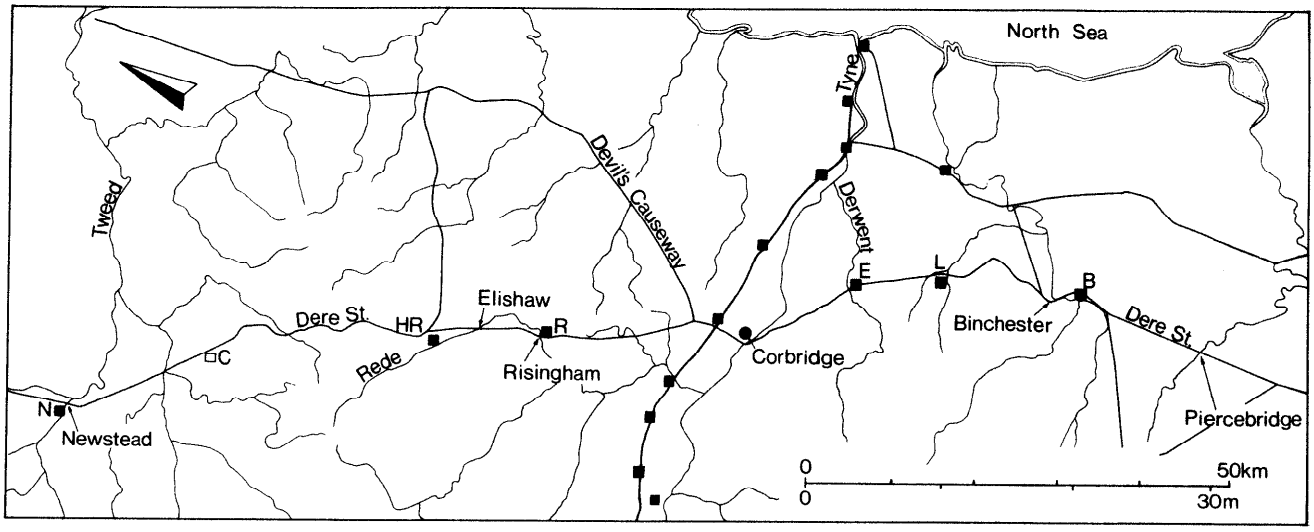

Fig 11.2 Dere Street, showing location of bridge sites

(Notts), Wroxeter, and the very dubious examples at Teignbridge (Devon) and Rochester (Kent). One example which can certainly now be deleted from a list of Roman structures is Blackpool Bridge in the Forest of Dean: a radiocarbon date with a range of 1660-1945 was obtained from a deposit sealed beneath the associated road and there are other good reasons for dismissing its greater antiquity (Standing 1988).

Stone bridges in northern Britain

In southern Britain it is therefore clear that stone bridges were a rarity What of the north of the province? The structures may best be discussed under two principal groupings: those on Dere Street, the arterial road from York into southern Scotland, and those associated with Hadrian's Wall. In addition there are a few other structures of note. At Summerston opposite the Roman fort of Balmuildy on the Antonine Wall, dredging of the River Kelvin in 1941 and 1982 yielded a number of worked blocks. Some displayed decorative tooling and possessed sockets for dovetail-clamps:[6] their Roman date is not in doubt although little can be said of the form of the bridge (Davidson 1952; Bidwell & Holbrook 1989, 116). The bridge lay about 9m south of the presumed position of the Antonine Wall and must have carried the Military Way, the road which ran behind the Wall. No conclusive evidence has so far been recovered for a bridge at the other major crossing on the line of the Wall, the Avon at Inveravon although worked stones have been recorded from the bed of the river (Keppie 1990, 46). At Newcastle upon Tyne, *Pons Aelius* of the *Notitia Dignitatum,* a recent survey has demonstrated that the remains traditionally ascribed to the Roman structure are almost certainly medieval (Bidwell & Holbrook 1989,99-103). Nevertheless the presence of a Roman bridge is not in doubt. and the recovery of a pair of altars dedicated to Neptune and Oceanus from the river may suggest the presence of a shrine on the bridge. In north-west England a stone bridge across the Dee at Chester has recently been identified (Frere 1985, 281; 1990,329), and we may note the buried bridge found in a gully parallel with the river Mersey at Birkenhead last century (Massie 1857; Dymond 1961, 155). The bridge was 30.5m long and possessed two stone piers spaced 10m apart supporting a timber carriageway 7.3m wide. The carriageway was formed from squared oak beams laid three deep; one beam was described as having 'mortice holes, some perpendicular, some inclining', presumably to take a cross-railed parapet. There is nothing in this description which need preclude a Roman date; equally it could be more recent, although an article concerned with the height of sea-level in Roman Britain has stated that the depth to which the bridge was buried (2.9m) is consistent with a Roman date (Waddelove and Waddelove 1990, 262-4). Only further investigation of the structure, if anything remains, or elucidation of the Roman road-system hereabouts, can settle the matter.

Bridges on Dere Street

The general line of Dere Street is likely to have been established during the Agricolan campaigns, even if parts of it were not actually metalled until sometime later (see the evidence from Piercebridge; p 121). Indeed a writing tablet from *Vidolanda* found in a deposit dated 105-125 makes it plain that this road was not always readily passable, perhaps because only fords rather than bridges existed at certain crossings at this time. The tablet records a letter from one Octavius to Candidus:

> The hides which you write are at *Catarac-tonium* (Catterick, N Yorks on Dere Street) - write that they be given to me

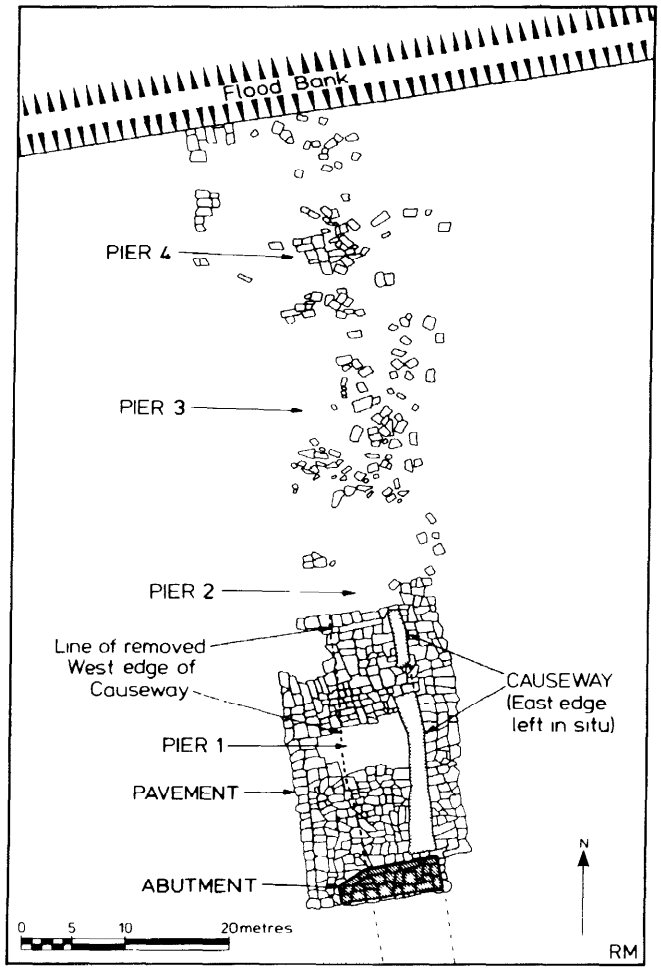

Fig 11.3 Plan of the stone bridge at Piercebridge (R Mills)

> and the wagon about which you write.
> And write to me what is with that wagon.
> I would have already collected them
> except that I did not care to injure the
> animals while the roads are bad *[dum uiae male sunt].*
>
> (Bowman *et al* 1990, 41-52)

Because of its strategic importance Dere Street it is likely to have been classed as a *via militaris* (Chevallier 1989, 65) and consequently the army would have borne responsibility for its construction and maintenance. In marked contrast to other roads in Britain there is evidence for a number of stone bridges between York and Newstead, and these will be briefly described (Fig 11.2; further references and a discussion of all these structures will be found in Bidwell & Holbrook 1989, 102-16). The southernmost site for which we have firm evidence is Piercebridge where two bridges have been found on different sites: one on the original line of Dere Street, the other some 200m downstream. The chronology of the structures has yet to be fully published but on general grounds it seems hard to conceive that they were contemporaneous. The bridge on the original line of Dere Street is only known from a series of stakes recorded in the bed of the River Tees and a few loose blocks recovered from this area. Recently Mr R Selkirk has recovered a remarkable array of Roman coins and small objects from around the piles and it has been suggested that they were votive offerings cast into the waters (Casey 1989). The coins suggest active deposition in the later 2nd and first half of the 3rd centuries; a distinct hiatus in the period 318-48 with reduced deposition thereafter. It is noticeable that the coinage falls off at about the time the stone fort was constructed *(c* 260). The second bridge was found during gravel quarrying in 1972 downstream of the original site; a branch road leading from Dere Street to the new site was also located, The bridge consisted of stone abutments and piers set on a heavy sandstone pavement (Fig 11.3). The southern abutment was a relatively small structure (8.05m long by 3.1m wide) and lay 100m to the south of the present channel of the Tees. Even allowing for the northward shift of the river it would appear that a length of the flood plain must have originally been bridged. Cut into the uppermost surviving course of the abutment were six shallow slots at an angle to the horizontal of 57-59". Two functions can be suggested; either they were constructional features to hold the timber centering of stone arches, or they held diagonal supporting struts for the longitudinal members of a timber superstructure (for more substantial examples see the *Römerbrücke* in Trier; Cüppers 1969, 65-70, Abb 151). Although a number of problems remain, the latter interpretation is probably to be favoured in the absence of further evidence, and so we may presume that the stone piers and abutments carried a timber superstructure. In the forthcoming report the excavator argues that the branch road and bridge were built *c* 180, Occupation appears to have continued by the side of the branch road into the 4th century, while there is no evidence for resurfacing of the original course of Dere Street north of the Tees after the late 2nd century, and in the 3rd and 4th centuries *vicus* buildings encroached onto its earlier course. It is likely therefore that the first bridge lay on the original course of the road, to be replaced (following flood damage?) by a new structure a little downstream in the later 2nd century. If this is correct we can only explain Selkirk's coinage by imagining that votive activity did not commence on the old site until after the bridge ceased to be the principal crossing-point of the Tees.

Unconfirmed accounts exist for Roman stone bridges at the crossing of the Wear at Binchester and Derwent at Ebchester before we arrive at the Tyne at Corbridge where a substantial Roman bridge has been recorded on a number of occasions.

Fig 11.4 Stones of the southern abutment at Corbridge (N Hodgson)

The southern abutment (Fig 11.4) and the southernmost four piers have been surveyed in the bed of river in some detail; fragmentary traces of two further piers (one of which may in fact be the north abutment) are also known. An unusual facet of this bridge is that the cutwaters on the upstream face of the river piers rest upon semicircular foundations. A parallel can be cited from Justinian's bridge over the Sangarius in Turkey which has rounded cutwaters on the upstream and pointed on the downstream. To some commentators it appeared that the bridge was facing the wrong way, and it was argued that Justinian built a canal which reversed the natural direction of flow in the Byzantine period. The most recent survey however has found no evidence for such a canal and suggested that the arrangement of cutwaters was one which was well designed to reduce turbulence and scour on the downstream side of the bridge (Whitby 1989, 129-36). It is therefore possible that this technique was also known to the architect of the bridge at Corbridge. The bridge at Corbridge is also of interest in that it displays techniques of construction which mirror in many respects those observed in the second bridge at Chesters (similar proportioned stone work; lead tie-bars to bind the stones together, and a technique of stoneworking known as band anathyrosis amongst other traits). Indeed the similarities are sufficiently marked for it to be suggested (Bidwell & Holbrook 1989, 105) that the two bridges were designed by the same architect. The second bridge at Chesters is now dated to the Antonine period and thus we may suggest a similar date for Corbridge as well.

From Corbridge, Dere Street ran northwards and a gate was provided for it when Hadrian's Wall was built. North of the Wall evidence for a bridge exists at the crossing of the Rede at Risingham. Here blocks with sockets for dovetail-clamps are visible in a small burn near its confluence with the Rede (Fig 11.5), and Hodgson recorded that in the early 19th century two columns were discovered standing upright, 7.3m apart, by the site of the north abutment of the bridge (one of the columns now stands in the garden of the local pub). Further north antiquarian accounts exist for stone bridges at the crossings of the Rede at Ellishaw and the Tweed at Newstead. Although the descriptions are convincing these structures have not been observed in more recent times.

It is not as yet certain whether the stone bridges on Dere Street were constructed simultaneously as the result of a single initiative, or piecemeal over many decades. The only dated structure is Piercebridge, apparently *c* 180, although if the similarity in construction of the bridges at Corbridge and Chesters is accepted then the Antonine date proposed for the Wall bridge ought to apply to Corbridge also. The link between Corbridge and Chesters is of importance as it suggests that the reconstruction of at least one of the bridges on Dere Street was contemporary with the construction of the Military Way to link the forts on Hadrian's Wall. At the present time it has not proved possible to date accurately the construction of the second bridge at Chesters; it could be as early as *c* 140 or as late as 160-70 (P T Bidwell pers comm). The Antonine period as a whole saw interest in Scotland; expansion to the Antonine Wall under Pius in 139 and, following the abandonment of that frontier

Fig 11.5 Blocks with dovetail-clamp sockets from the bridge at Risingham (N Hodgson)

twenty years or so later, it appears that the forts on Dere Street as far north as Newstead were held as outposts for several decades. At present therefore we cannot be certain whether the bridge at Corbridge dates to the period of the Antonine Wall or of the later outpost forts.

What significance should be attatched to the bridges on Dere Street? Do they represent a single initiative to mark the military importance of this road, or was the replacement of timber bridges in stone simply part of the process of frontier consolidation in much the same fashion as we see the piecemeal replacement of turf and timber forts in stone? If the latter, we might expect greater evidence for stone bridges on other roads in the north. It is possible that other sites await discovery and our evidence is biased,7 but at present the concentration of evidence for stone bridges on Dere Street appears too remarkable to be mere chance. It is therefore proposed that Dere Street and the Military Way were provided with stone bridges as a reflection of the military importance of these routes in the Antonine period.

Bridges associated with Hadrian's Wall

On its 80-Roman-mile course between Wallsend and Bowness Hadrian's Wall crossed three major rivers (the North Tyne at Chesters; the Irthing at Willowford, and the Eden at Stanwix) and a number of minor streams and burns. At the first two sites a programme of survey and limited excavation over the last decade has substantially aided our understanding of the bridges, although a number of outstanding questions remain. The studies at Chesters and Willowford are fully published (Bidwell & Holbrook 1989 to which the reader is referred for further references); a report on subsequent work at Chesters in 1991-2 is in preparation. Consequently for the purposes of this paper the bridges will only be briefly described.

Evidence from Chesters and Willowford combines to demonstrate the form of the primary Hadrianic bridges. At Chesters a pier of the first bridge was incorporated into the later abutment; it was constructed from squared stone-blocks bound together with iron dovetail-clamps set in lead. It had cutwaters angled at 45° on both the upstream and downstream faces, and could have supported a superstructure about 3m wide. The robbed-out scar of the abutment which seems to have comprised a single row of large blocks was found at a distance of 4m from the pier. If this spacing was uniform we can estimate that the Hadrianic bridge at Chesters possessed eight piers over a length of about 61m. Due to the massive scale of later reconstructions no evidence was forthcoming to suggest the form of the

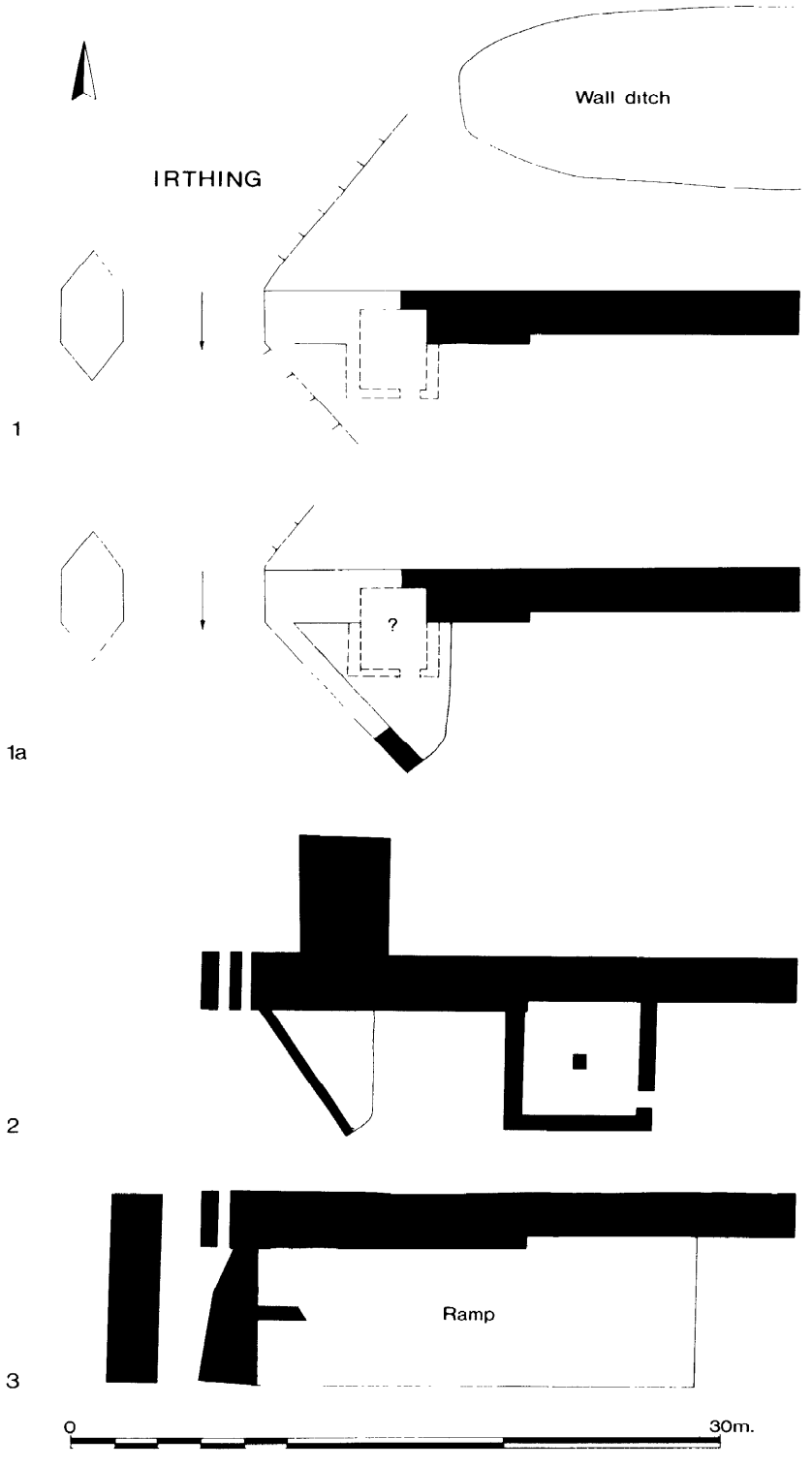

Fig 11.6 Outline plans of the successive eastern bridge abutments at Willowford

Fig 11.7 Possible reconstruction of the first (Hadrianic) bridge at Willowford (Frank Gardiner)

superstructure of the bridge. At Willowford, however, a significant find was a stone voussoir reused in a secondary structure: this demonstrates that the Hadrianic bridge here possessed stone arches, and by analogy we may suggest that the same was true for the other bridges also. Comparatively little is known of the plan of the first bridge at Willowford (Fig 11.6, 1) although we can discern that it suffered greatly from erosion and required repair and modification: an angled wing-wall was added to the southern side of the abutment within a few decades of its construction, presumably to counteract scour (Fig 11.6, 1a). Around the middle of the 2nd century the bridge collapsed, the eastern abutment and first pier at least having been destroyed by an innundation of the river. Extrapolating from the position of a scoured-out pit in the bed of the river, and some collapsed masonry from a pier, the space between the first pier and the eastern abutment can be estimated at approximately 6.5m, somewhat greater than at Chesters. Evidence was also recovered for a tower recessed into the Wall in the manner of a turret by the eastern abutment. Of the third principal bridge on Hadrian's Wall, at Stanwix, all that is known is a series of blocks dredged from the river in 1950; some of these display techniques of clamping and dressing found in the Hadrianic bridges at Chesters and Willowford.

The Hadrianic bridges are noteworthy structures because their width and positioning on the very line of the frontier work strongly suggests that they were designed to carry a sentry walk on top of the Wall 'across the rivers (Fig 11.7; on other frontiers bridges were usually placed to carry the road which ran behind the mural barrier; as at Summerston p 123). Indeed the very existence of the bridges makes a persuasive case for the ability to patrol along the top of the Wall, a subject of considerable academic debate of late.[8] The bridges are therefore another element of the Hadrianic frontier works, like the stone curtain and Vallum, which are otherwise unparalled, and serve to reinforce the uniqueness of Hadrian's Wall in terms of contemporary military engineering practice.

At Willowford the bridge was rebuilt following flood damage to a new pattern; it appears to have carried a timber superstructure upon stone abutments (Fig 11.6, 2). Finally the bridge was remodelled to accommodate a 7m-wide road, the Military Way (Fig 11.6, 3). At Chesters silting of the east bank may have clogged the passageway of the first arch before all was swept away for a massive new bridge built to a different plan. The remains of this second bridge have been described as 'the most remarkable feature on the whole line of the Wall' (Daniels 1978, 106) and this is not mere hyperbole: what we know of it suggests that the bridge stands

comparison with renowned structures in other provinces.

The bridge at Chesters possessed three piers and two exceptionally large abutments, the latter built from squared blocks set in place by a crane and bound together along the faces with lead tie-bars. The eastern abutment originally stood eight courses high and had at its rear a tower approximately 7.2m square. The corresponding tower on the western abutment has been found in the recent excavations, where it was conclusively demonstrated that the Military Way approached the bridge on a large stone-revetted ramp which curved around the tower before passing onto the bridge (contra the previous reconstruction in Bidwell & Holbrook 1989, 24-8). What of the superstructure of the bridge? As stated at the beginning of this paper Richmond's interpretation of the remains at Chesters was influential in his consideration of British bridges as a whole. Little further thought had been given to Chesters since Richmond wrote in 1947 and subsequent editions of the *Handbook* copied the text largely *verbatim*. The eastern abutment had remained open to view after the initial excavations of 1860-3 and the stones to which Richmond referred had been excavated from the river bed immediately in front of the abutment and piled upon it for storage.

In 1946 the site was placed into the care of the Ministry of Works and by 1982 the remains of the Wall and tower were crumbling from the effects of visitors. The Department of Environment therefore commissioned a programme of consolidation to be preceded by an archaeological survey under the direction of Paul Bidwell. An accurate scale plan was produced of the remains and every loose block was catalogued in detail. Bidwell identified a group of 33 blocks with mouldings cut along one of their sides and in many a groove in the upper surface parallel to the moulding; it was clearly these stones which Richmond considered held the timber spars. That the stones formed a cornice or string course was not in doubt, but importantly Bidwell identified that many of the stones displayed wear on their upper surface, a facet not noted by previous commentators. The presence of what appeared to be slots to provide purchase for a crow-bar in the base of the grooves enabled it to be shown that the stones came from the uppermost course of the bridge and that the grooves must have accommodated the upright slabs of a stone parapet (such as are known from well-preserved Roman bridges in other provinces; Fig 11.8). At one stroke the whole interpretation of the form of the bridge changed as a stone parapet demands stone arches (a number of probable voussoir stones were also recognised) and the stone columns which had puzzled earlier archaeologists became readily explicable; they too stood on the bridge parapet (one column possessed the same moulding as on the grooved parapet blocks). An elaborate superstructure could therefore be visualised comprising a stone parapet interupted

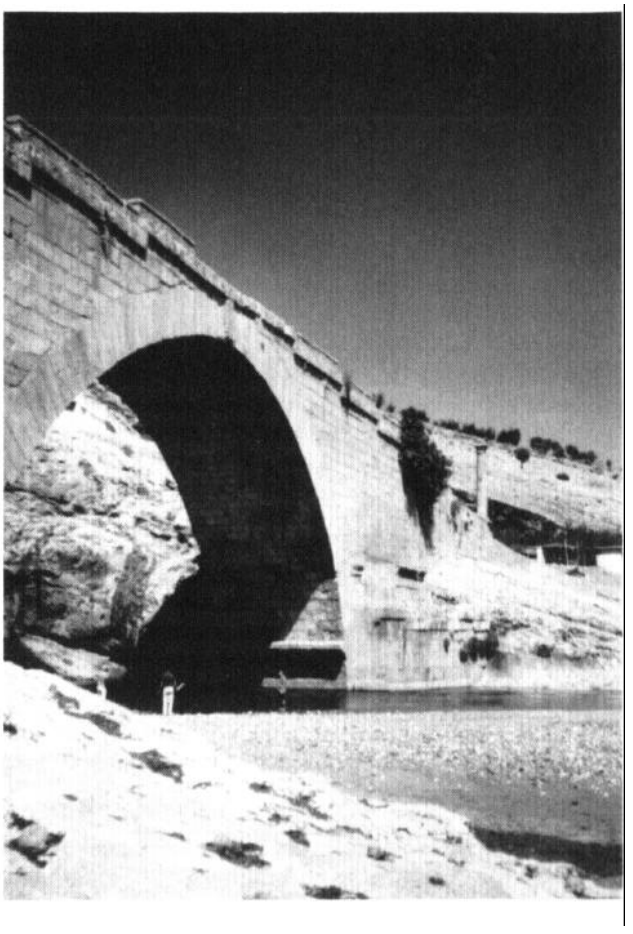

Fig 11.8 The Roman bridge at Cendere (Turkey). Note the column and parapet (N Hodgson)

at intervals by columns and perhaps small shrines above one or more of the piers; an inscribed stele was recovered from the river bed and evidence exists for shrines on a number of other bridges (Rhodes 1991, 184-5). Thanks to Bidwell's meticulous study and the evidence recovered from the recent excavations on the west bank a detailed (and we may suppose reasonably accurate) reconstruction of the bridge superstructure has proved possible in which the height of the bridge is calculated at about 9m above the river bed (Fig 11.9).

The date of the second bridge at Chesters has been thrown open to question by the results of the new work on the west bank. In the report on the earlier work a Severan date was proposed from a very small quantity of dating evidence, and a historical context sought. Pottery recovered from sealed constructional contexts on the west bank now points to a date in the Antonine period. Whatever its precise date and historical context a fundamental question posed by the reinterpretation of Chesters is whether this bridge stands out as an extraordinarily elaborate structure, or whether adornement with parapets, columns and shrines was the norm for stone bridges in the North. The similarities in constructional techniques tend to

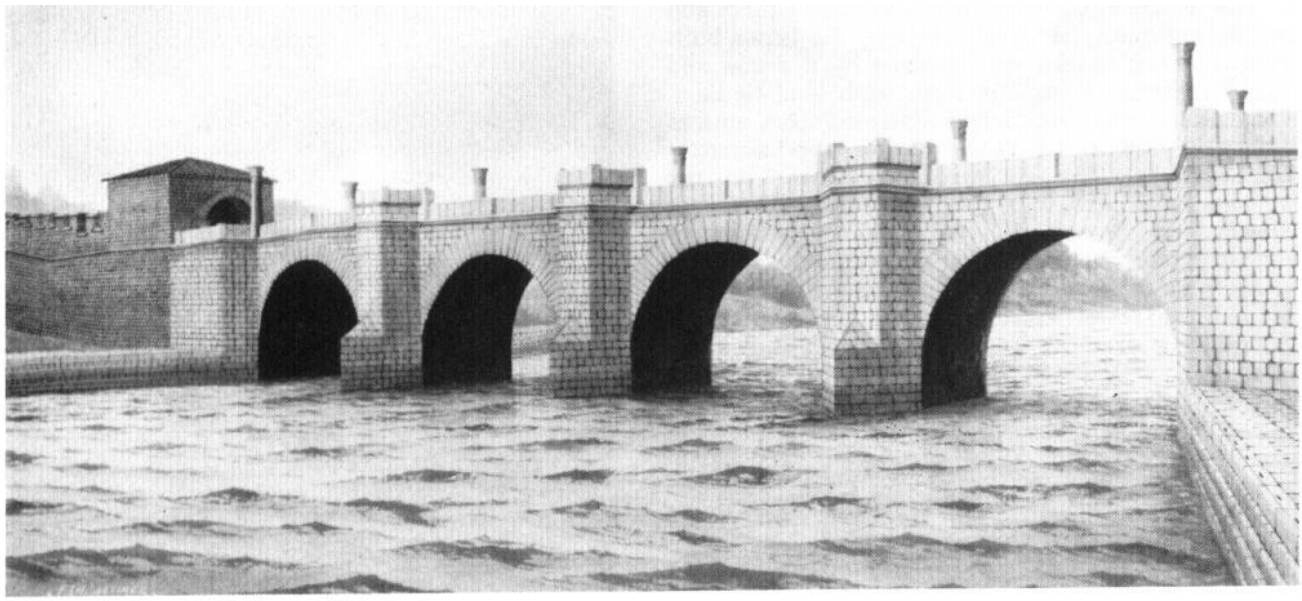

Fig 11.9 Possible reconstruction of the second bridge at Chesters. It is now known that the road passed around rather than through the towers (Frank Gardiner)

suggest that Corbridge also received such treatment. Elsewhere the surviving evidence is too limited for certainty (Risingham at least was certainly equipped with columns), although what we know of the eastern abutment at Willowford suggests a less monumental structure here (it would be surprising if remains on the scale of the Chesters abutments have escaped any previous comment). If this is so it is of interest as Corbridge lies on a major road and Chesters lies in the North Tyne valley, which was both a natural corridor and seems to have possessed a substantial native population: Jobey (1981) has noted that the observed distribution of enclosed settlements of possible Roman date is far more sparse throughout the valleys of the Irthing, South Tyne and Tyne than the North Tyne, Rede, Wansbeck and Blyth. The imposing scale and architectural opulence of the Chesters bridge may therefore have been partly a consequence of its location where it could have impressed the significant native population which lived, worked and travelled the North Tyne valley. At Willowford, on the other hand, the Irthing seems never to have invited settlement or travel due to its propensity for winter flood: consequently we appear to find a structure built on a lesser scale there. If the intention was to impress those living to the north as well as south of the Wall then bridges were as good a symbol as any. Ancient sources indicate the prestige attached to bridges as engineering achievements: Pliny the Younger suggesting to Caninus suitable topics for a poem to celebrate the first Dacian war wrote 'you will sing of rivers turned into new channels, and rivers bridged for the first time' (Pliny *Ep* 8,4), and see also Statius' glorification of the bridge over the *Volturnus* on the *via Domitiana* in Italy *(Silvae* 4,3). Drerup (1966) and Briegleb (1971) both remark on how bridges were regarded as a symbol of Rome's ability to subdue and overcome the constraints of nature and the physical landscape. Consequently what better propaganda for the Roman military and engineering achievement in Britain than a series of classically appointed bridges, which would not have been out of place in the mediterranean provinces, constructed on the very edge of *barbaricum?*

This paper has highlighted recent advances in the study of Roman bridges in Britain. As ever, more could usefully be done to advance our understanding further. Location and excavation of waterlogged timber bridges could be of much benefit as dendrochronology has the potential to date these structures to within one or two years. Such information would tell us much about the chronology of the military conquest of the province and the date of the establishment of the road system. Examination of the stone bridges on Dere Street should reveal whether these structures were built simultaneously or piecemeal over a number of decades, which would be of interest to our understanding of the northern frontier as a whole. Finally the recent work at Chesters has demonstrated just what an achievement this bridge was, and how it deserves wider recognition as one the most outstanding remains of the Roman period in Britain. Further work at other stone bridges in the North should clarify whether Chesters stands out by virtue of its architecture, or whether this level of treatment was the norm on

these major engineering projects.

Notes

1 Which Richmond had previously studied with insight (1982, 35-7; reprint of 1935 article); note also how his comments on the translation of timber segmental arches (as depicted on the Column) into stone were taken up by F G Simpson (1941, 214) in his interpretation of some stones at Willowford as the springers for segmental arches.

2 Even if these bridges did possess a timber superstructure it is unlikely that it would have been of the form actually depicted on the column. As Richmond (1982, 35; see also Lepper & Frere 1988, 150) pointed out the column must be a simplifiication as the supporting struts within the triangular trestles above the piers are angled uselessly to meet a non-trust bearing timber. For a convincing reconstruction of the actual superstructure see Choisy 1873, 162 (reproduced in Adam 1984, 308, Fig 657). Clearly the Danube bridge possessed an elaborate superstructure and this must be due to the exceptionally wide pier spacing (32-3m; Tudor 1974). That simpler superstructures sufficed elsewhere is shown by the *Römerbrücke* in Trier (maximum pier spacing 21.3m) where the piers were joined by longitudinal timbers supported by six diagonal struts (Cüppers 1969, 65-70, Abb 151; reproduced in Chevallier 1989, 100).

3 Some found in the most curious circumstances. For an amusing anecdote see Waters 1971, 89 who recounts how an eccentric expedition for a buried casket in the bed of the Wye at Chepstow which it was believed held evidence that Francis Bacon was the true author of Shakespeare led only to the discovery of a Roman bridge; for the bridge see Hart 1967, 37, Pl 17.

4 Blagg's (1990) survey of architectural munificence derived from a study of inscriptions shows there is comparatively little evidence for individual benefaction of large buildings in Britain, and that of the five inscriptions mentioning construction by the *civitates* two are from *fora* and the other three from milestones dedicated to the Emperor by the *civitates*. *See* also Millett (1990, 78-85; 137) who explains the contrast in civic munificence between the northern and mediterranean provinces as a reflection of the underlying social structure. He also notes the virtual cessation of construction of new civic buildings after the 2nd century.

5 *Opus quadratum* is used here in the definition of Lugli 1957, 48 'construction with rectangular blocks laid in horizontal courses without mortar and somtimes joined together with clamps and dowels'. See also Bidwell & Holbrook 1989, 117.

6 For a full discussion of the techniques of construction utilised in Roman bridges *see ibid*, 117-33.

7 Stones displaying distinctive features such as dovetail-clamp sockets etc reused in later structures hint at the location of other stone bridges in the North. Bidwell (pers comm) has identified such stones reused in the monastic buildings at Jarrow (Tyne and Wear; from a bridge over the Don?) and in the neighbouring churches of Kirkby Thore and Long Marton (Cumbria; from a bridge over the Eden?).

8 See *ibid*, 134-5; Dobson 1986, 9; Dobson & Breeze 1989, 296.

Acknowledgements

I am grateful to Prof John Wacher and Paul Bidwell for allowing me to use details of their excavations at Cirencester and Chesters respectively in advance of publication. Ian Standing kindly drew my attention to his work on the Dean Road and the evidence for Chepstow bridge. My greatest debt howewer is to my friends and former colleagues Paul Bidwell and Nick Hodgson who read a draft of this paper and made a number of perceptive comments on interpretation and presentation. That I have not always followed their advice is at my own peril.

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PART IV: LATE EMPIRE

12 A late Roman courtyard house at South Shields and its parallels

Nicholas Hodgson

Since 1983 Tyne and Wear Museums Archaeology Department has been engaged in the total excavation of an area of some 1500m^2 within the eastern quadrant of the Roman fort at South Shields, where a Roman military site had probably existed from the late 1st century in order to guard a major port of supply at the mouth of the Tyne. Much of the research area was found to have been occupied in the late-Roman period by a courtyard house. Comprehensive excavation of the house has been completed. The present paper considers the architectural character of the house and its wider implications, It was originally intended that this paper should confine itself to the house in its primary form, but since the time of writing it has become clear that some details of the plan published here belong to subsequent phases of alteration during the first half of the 4th century. None of these changed the essential architectural form of the house. What follows is a statement and discussion of one especially interesting aspect of the excavations, full publication of which will follow. Rooms 11 and 12 of the building, and the passage between them, were partly investigated in 1977 (before the present excavations) and published (Miket 1983, 9-13).

In the late-3rd or early-4th century this area of the fort (and probably much of the fort outside this area) was destroyed by an extensive fire (Bidwell & Speak 1994, 33). The cause of the fire remains uncertain, but it was followed by a replanning of the entire fort (Fig 12.1). Throughout the 3rd century, the fort had functioned as a supply base, being packed, with the exception of some compact barracks and a small headquarters, with 24 stone granaries. After the fire those granaries in the south-eastern part of the fort, at least, were converted into barracks. In all ten new barracks may be identified. A new headquarters was restored to the pre-supply base central position (the 3rd-century headquarters and barracks had been segregated from the granaries and placed in the south-east end of the fort). Certainly as part of the same building programme the courtyard house which forms the subject of this paper was built to occupy the east corner of the fort.

The building measured 42m by 24m overall, covering an area of almost exactly 1000m^2. The progress of construction was found to have been complex, a number of wall lines being laid out and then abandoned before the completion of the building; there is some evidence that the earliest foundations were laid out with reference to the building plot of the preceding barracks, intended to form a courtyard building of rather smaller size than that actually completed. The abortive phases would undoubtedly have been interpreted as major periods of building or modification had they been examined within a limited area.

Exterior and interior walls of the courtyard house were mortar-bonded throughout and deeply founded on clay, cobbles and broken sandstones. A very large proportion of the walls had been completely robbed to foundation level after the Roman period (Fig 12.2), although the archaeological recording of the robber trenches allowed the recovery of the complete plan of the building shown here (Fig 12.3). The major drawback for analysis presented by the degree of robbing is that it has made it difficult to identify the location of doors into certain rooms; the plan shown here is still in an interim stage of preparation and it must be borne in mind that several of the walls here shown as solid may have contained doorways; where a door is shown on the plan its position is certain.

The building was entered through a small (7m by 6.50m) entrance-court (21), with six column-bases defining a central area containing a water tank or cistern. From the court access was gained to an ambulatory or portico 3.60m wide (NV-EV) which ran around two sides of a small central courtyard (Fig 12.4). On the north-west side of the building was a range of residential rooms (2-6), identified by their *opus signinum* floors. The four rooms at the north-east end of the range (3-6) were connected by an alignment of doorways, and the two furthest from the entrance (5-6) were provided with channelled hypocausts. The ambulatory at the north-east end of the courtyard (EV) possessed a fine mortared floor (Fig 12.5), and had been decorated with figurative painted wall-plaster. Beyond this space lay the largest room of the house (7), 10m by 6.60m internally, and shown to be a *triclinium* by a tripartite arrangement of emplacements for couches, consisting of flagstones set into the north-east end of its *opus signinum* floor (Fig 12.2).

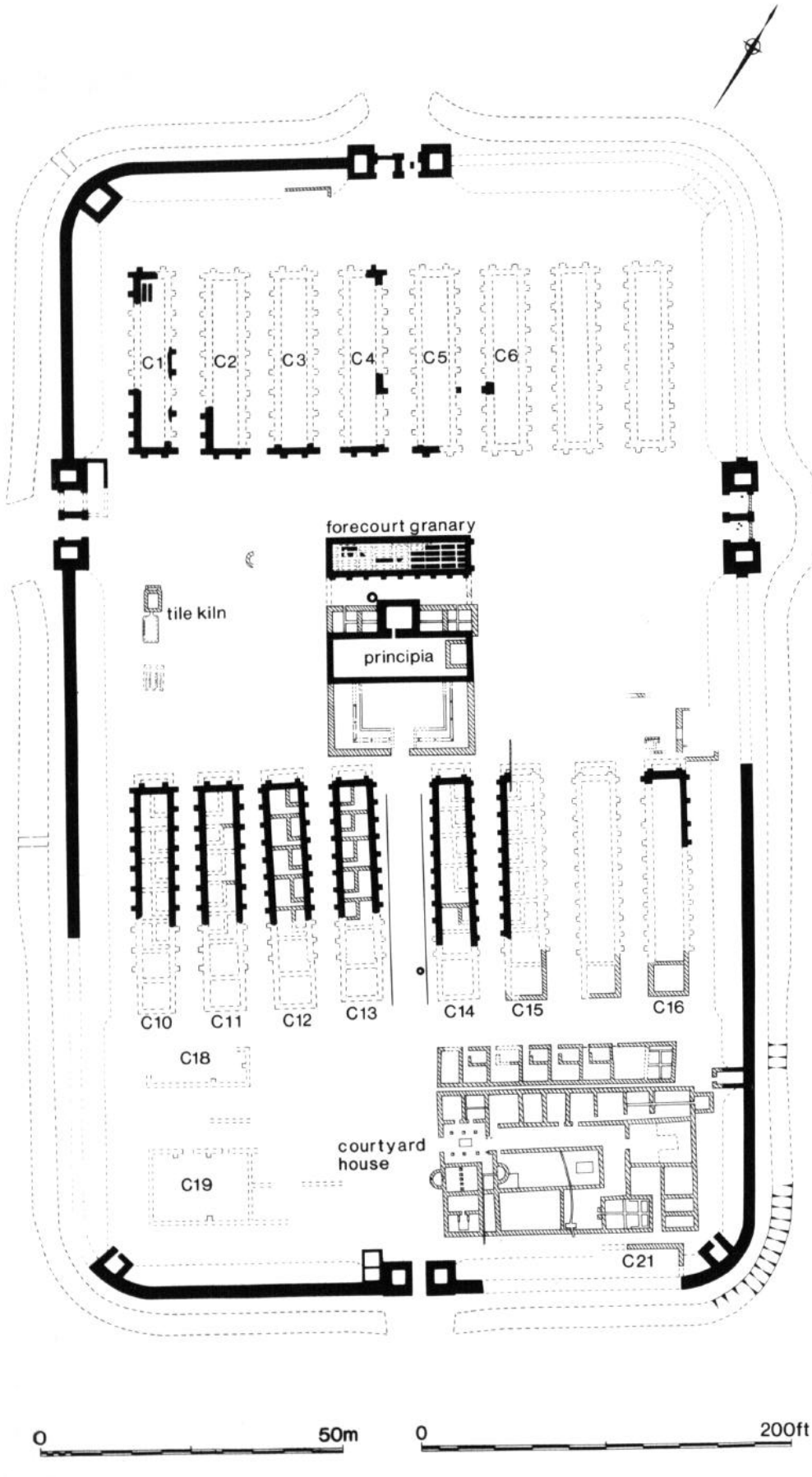

Fig 12.1 *The late Roman fort at South Shields*

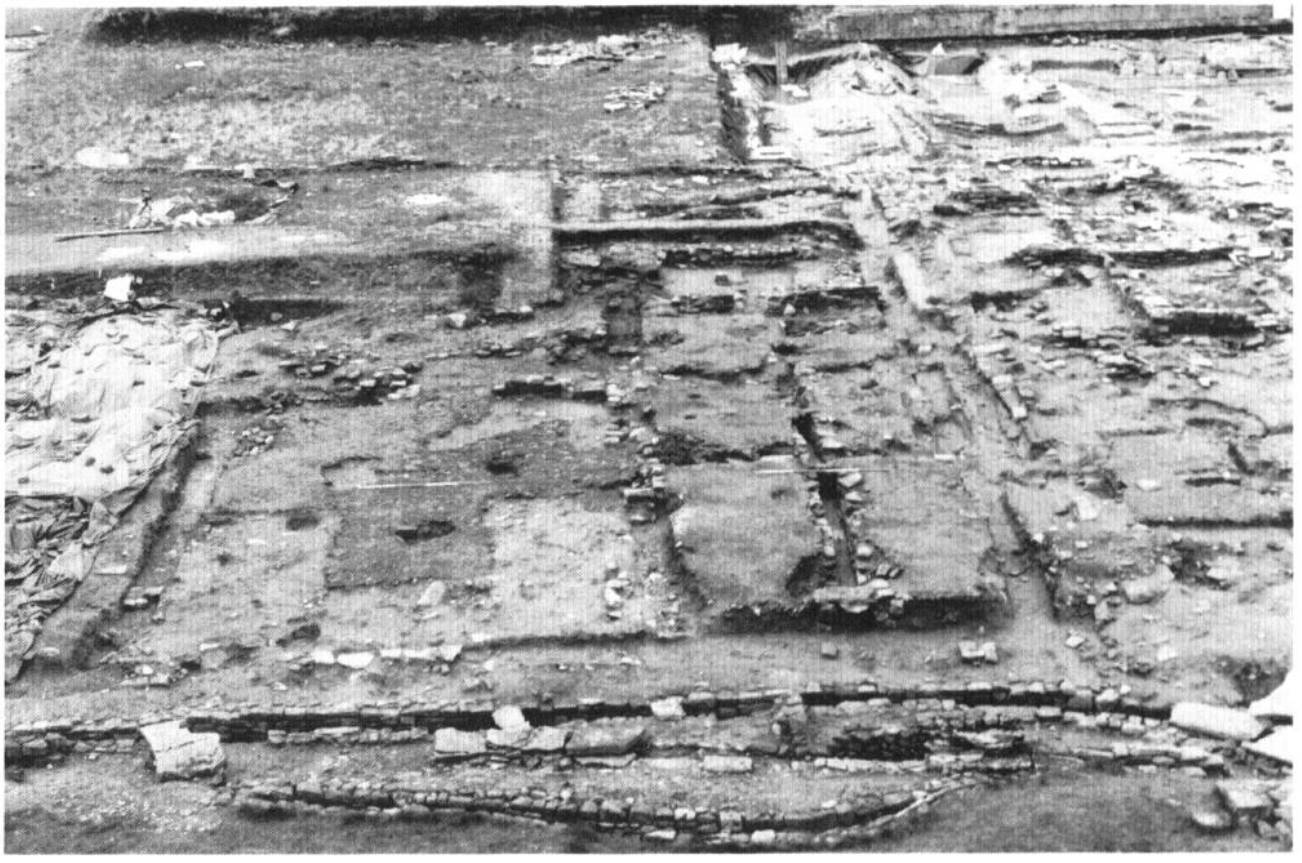

Fig 12.2 Aerial view of northern quadrant of house, looking south-west, showing (left) cut for couch emplacement in room 7 and (centre) opus signinum *floors and hypocaust channels. Note the near-total robbing of the exterior walls. The building to the right is a barrack block. Scales with 0.50m divisions*

A further heated room (12) in the south-east range, measuring 7.50m by 5m, was also floored in *opus signinum*. The distinctive arrangement of its hypocaust channels around the three sides of the north-east end of the room recalls that of the couch emplacements in room 7 and compels the conclusion that the walls at this end of the room were heated through a continuous lining of *tubuli*. This would seem likely, therefore, to have been a winter dining room, a counterpart to room 7.

By process of elimination we must place the kitchens and related service rooms in this corner of the building (rooms 8, 9 and 11). The only other unidentified rooms in the building are that immediately next to the entrance (22), and room 1 in the north-west range, which produced no evidence to suggest that it had been a kitchen area. On the archaeological evidence, room 1 was perhaps a storeroom or service room. Although the primary floor levels of rooms 8, 9 and 11 were missing and so provided no direct evidence, it is notable that these rooms, besides being close to the two dining rooms, were linked by what may have been a service corridor: this was a passage, 1.20m wide, leading from the south-east *intervallum* street. In the centre of the south-east range was the furnace room (13) for the last-mentioned hypocaust. To its south-west lay a room (14) 10m long which, on the basis of its large size, rough metalled flooring, drains, and proximity to the *intervallum* street, almost certainly served as a stable. No portico arrangements existed on the south-east and south-west sides of the courtyard. At the north-east end of the courtyard lay a stone-lined rectangular tank (Fig 12.6), 0.50m deep and measuring 2m by 2.70m. A 0.30m wide covered stone drain originated in the courtyard and passed out of the building through the furnace room (13) in the south-east range, which had doubled as a latrine.

To the left of the entrance-court were two small rooms, one heated with a channelled hypocaust; that in the west corner of the building had no surviving floor levels. To the right of the entrance lay a bath-suite (Fig 12.7). This had been very badly robbed after the Roman period, but the entire plan (now known not to represent the primary arrangement) could be recovered. This consisted of a small *frigidarium* (20), 1.80m by 3.80m, a *tepidarium* (19) and *caldarium* (18), each 2.40m by 3.80m. A room (17) leading from the *caldarium* contained the hot bath, and immediately beyond this lay the *praefurnium* (16). An apse containing a

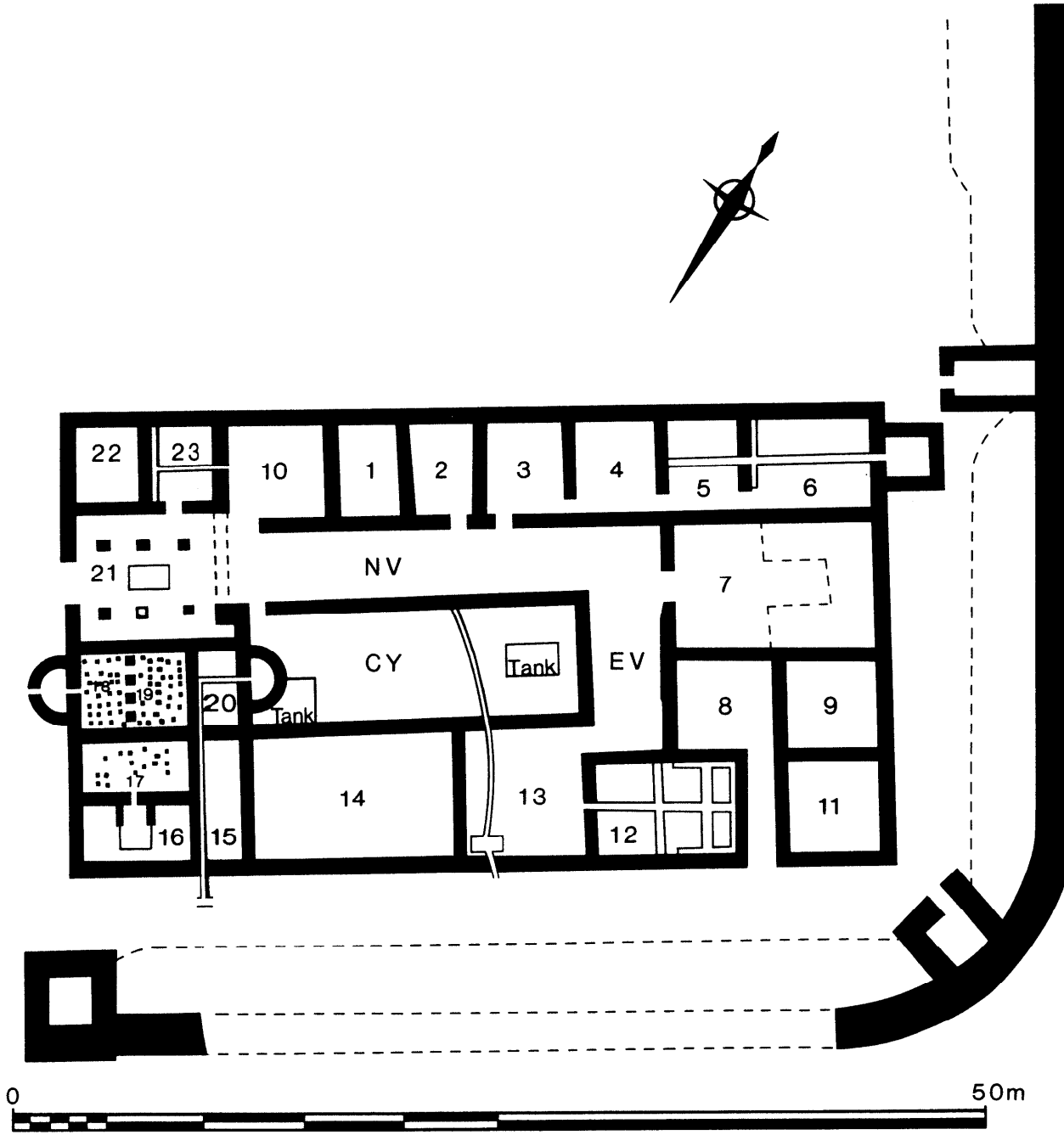

Fig 12..3 The South Shields courtyard house: plan showing primary arrangement

tepid bath projected south-west of the building from the *caldarium*, while the cold plunge was situated in an apse projecting from the *frigidarium* into the central courtyard. Room 15 represented a latrine or passage leading to the *frigidarium*.

The superstructure of the house

Fig 12.8

Post-excavation work on the courtyard house is not yet complete, and work on the reconstruction of its original appearance is still at an early stage. Although the basic evidence presented here is unlikely to change, it is hoped that the following preliminary ideas will provoke suggestions or

Fig 12.4 View north-east along central courtyard, with mortar floor of portico on north-west and north-east sides. Scales with 0.50m divisions

criticisms which may be incorporated into the final report.

There is no reason why the mortar-bonded walls of this building should not have been carried everywhere to full height in stone. However, there is no compelling evidence to suggest that the house possessed more than one storey. A clue to the finished height may be provided by the fragments of three dwarf stone columns, two recovered in excavation in 1977 and the third in 1989. Two of these were reused in the courtyard building in the late 4th century (Miket 1983, 12), and the third derived from the ruin of the building, being found in a 5th century grave dug in the courtyard. These columns very probably originally stood on the wall that separated the courtyard from the L-shaped portico. Although none is complete, the columns cannot have been more than 1m in height. Assuming that the portico walls were low enough to allow a view through the colonnades, the walls then standing to perhaps no more than 1.30m in height, the arrangement of wall and columns probably did not exceed 2.30m. Even allowing a further 0.30m for an entablature to carry the rafters (anything greater being out of proportion to the columns), this would give a very low ceiling for the portico area. Admittedly, this assumes that the ceiling was a separate horizontal element, and not merely formed by the underside of the sloping roof, In view of the quality of the flooring (Fig 12.5), and use of figurative painted plaster in the east portico, which formed an impressively sized ante-room to both *triclinia,* horizontal ceilings may be argued for. In this case it is possible that an arcade was carried on the dwarf columns, which would have raised the portico ceilings to a more reasonable 3m. Semi-circular tile arches, for example, with a diameter of 1m, would suit the proportions of the columns well. An alternative would be to have the dwarf columns on top of a wall some 2m in height, ie too high to allow a view through the columns, but nevertheless a possible arrangement (see Ward 1911, 169 for the reconstruction of a portico wall in this way).

A roof running back from the 3m high colonnade, covering the north-west portico (3.60m wide), pitched at a reasonable angle (say 20-5°) would reach the north-west range of rooms at a height of 4m. This fixes, therefore, the minimum height of the rafters and ceilings of the rooms in the north-west range. In theory the north-west range at South Shields could have risen up higher, with a clerestory above the portico roof. The width of these rooms varies between 4m and 5m, and a ceiling height of between 4m and 5m would give the square

Fig 12.5 Mortar floor of north-east portico. Scales with 0.50m divisions

that was generally the minimum in Roman room proportions. Such a square was not the invariable rule in Roman Britain, however, as shown by the evidence of decorated wall plaster; for example, at Verulamium *Insula* XXVIII, 3 Room 9 (5.10m square) the height suggested was *c* 3.66m (Frere 1983,238-9).

It is unlikely that there was an upper storey in this part of the building. Although the complete building plan has been recovered, there is only one instance where two walls are set closely parallel in such a way that they could have enclosed a staircase. Throughout the north-west range, where we have discussed the evidence for height provided by the portico, there was no archaeological indication that there had anywhere been a staircase, of stone or timber. In the south-east range, however, as described earlier, there was a passage leading from the street which could have contained a staircase, although it is just as likely to have formed a service corridor. This part of the building probably contained minor rooms and kitchen areas, implying the possibility that upper storey rooms were provided only in a limited part or parts of the building, as, for example, in the House of the Porch at Ostia, where a *triclinium* without upper storey is thought to have been flanked by two-storey ranges (Boersma 1985, 94-5). In contemporary Ostia, however, upper storey rooms were provided not for the accommodation of servants, but for letting to tenants, not a likely circumstance inside a frontier fort.

It is also reasonable to suppose that the large dining room (7) may have stood to a greater height than the adjacent ranges. Such height differences were not reflected in variations in the size of the foundations; however, a maximum difference between the highest levels of standing masonry of only 2-3m is proposed below. For a room 10m by 6.60m in area, a ceiling with a height of 4m - the minimum proposed for the north-west range - would have been very low. If the roof pitch postulated above for the north-west range was continued to reach an apex over the central axis of the large *triclinium,* then the maximum height of this roof, and therefore the maximum height of the whole building, would have been some 8m. Within a roof like this the permitted ceiling height of the *triclinium* would have been some 6m. This is, therefore, the minimum possible height for the

room. Such an unbroken roof span would be unusual, however. Furthermore, a figure of even 6m for the ceiling height is probably on the low side: a grand dining room 6.60m wide should have been at least 6.60m high, while Vitruvius' proportions would *give* 8.30m *(de Arch* 6.38). It is most likely, then, that the roof-line was broken, as shown in Fig 12.8, and that the dining room rose as a separate unit higher than the surrounding parts of the building. With a ceiling height of 7m, the apex of the roof, and the highest part of the whole building, would have been 8.66m above ground level. There is no need here to think in terms of an upper storey. The *triclinium* could have been lit by a clerestory above the north-east portico. At Verulamium *(Insula* XXI, 2, room 4) Frere (1983, 164) suggested a height of 4.90-5.20m for a smaller room than this (7.47m by 5.90m) which produced fallen chalk voussoirs, probably from a clerestory looking out over a roofed corridor.

Room 12 (the winter dining room) was probably similarly roofed as an upstanding unit, which gave way to a much lower roofing over the central part of the south-east range (rooms 13 and 14). The fact that the blank north-west wall of these rooms formed a right angle with the colonnade wall at the north-east end of the yard strongly suggests that the former wall cannot have exceeded the height of the colonnade, that is *c* 3m. The ceilings here would have been low and the resulting room height only the. same as in the portico, ie *c* 3m. This would be appropriate for the rooms in question: a hypocaust service room, combined with latrine, and a stable.

On the assumption that rooms 18, 19 and 20 in the baths were barrel-vaulted along their long axes (with the apexes of the vaults at a height 1.5 times the 2.40m width of the rooms), the eaves of a roof over this block would have been at a height of about 5m, and the apex of the roof at about 6m. 'This would provide space for clerestory lighting above the pent-roof of the entrance-court portico. The reconstruction drawing (Fig 12.8) shows the primary arrangement of the bath-suite, before room 17, housing a new and larger hot-bath, was provided, and apses added, as shown on Figure 12.3.

The roofs were constructed not of stone roofing slates (common site finds at South Shields), or at least not wholly of such, for *tegulae* and *imbrices* occurred plentifully in deposits associated with alterations to the building. It seems that a pair of tile kilns, long known, situated on the site of one of the redundant supply base granaries to the north, were probably built to manufacture the tiles for the rebuilding work of which the courtyard house was a part: the tiles in question were unstamped, in contrast to those manufactured in the 3rd century by *cohors V Gallorum* (Bidwell & Speak 1994, 35). Tiles *of cohors V Gallorum* also occur in deposits associated with the courtyard house, but these were certainly re-used.

As for the exterior decoration of the building: it may be assumed that the crudely dressed stone

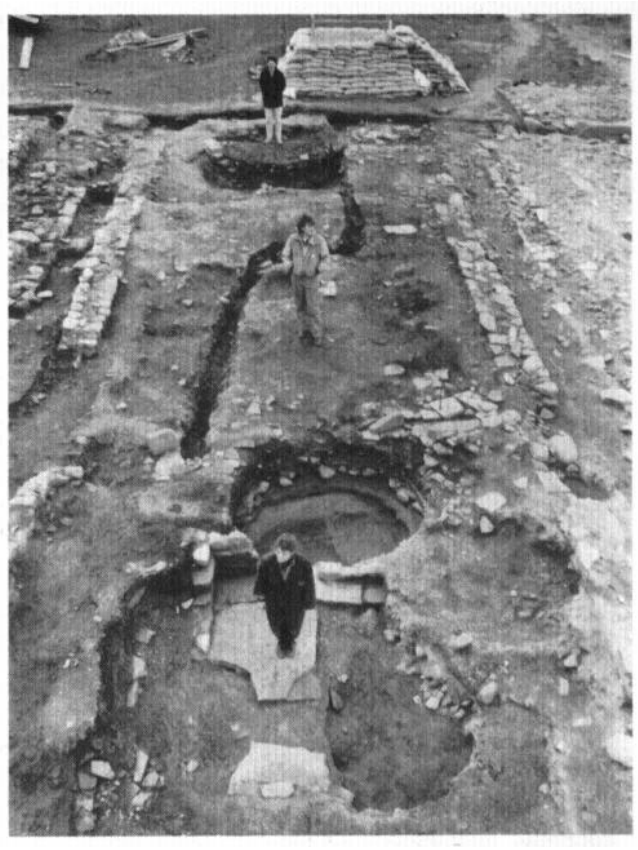

Fig 12.6 View south-west along central courtyard, showing (foreground) water-tank and (background) the cold plunge bath apse of the baths. The central pit is a 5th-century burial

walls were rendered throughout, although little evidence survived owing to the drastic robbing of the walls. The portico walls, however, had been rendered with a lime-rich plaster, and at some time within the life of the building the exterior front of the large *triclinium* was lined with *opus signinum*. Earlier, this wall may have been covered with painted plaster, for it was here, from a demolition deposit associated with the primary arrangement, that a figurative fragment, probably depicting a cupid, was recovered. Patterned red and green painted plaster came from other rooms of the building, including the large dining room. Some painted plaster from the house has already been published (Miket 1983,147-9).

The identification of the house

It is absolutely clear from the plan here described that this courtyard building represents a residence for an individual dignitary and his household. Unlike certain unidentified courtyard buildings inside frontier forts - such as Building 9 at Housesteads, conventionally identified as a hospital - the combination of reception rooms, dining rooms, private accommodation, stabling and private baths

Fig 12.7 The baths after excavation, looking north-east

indicates that this was certainly the residence of an individual. The manner in which rooms 3-6 intercommunicate rather than being entered from the portico should demonstrate that these formed a single residential unit and not the multiple units (Drury 1982, 295-6) or separately entered rooms to be expected in any kind of *mansio* or accommodation for transitory officials or passing travellers (in spite of what was said earlier about general uncertainty regarding the positions of doorways; in this part the walls were well enough preserved to make their presence or absence clear).

To whom, then, did the South Shields house belong? The replanning of South Shields at the beginning of the 4th century almost certainly denotes the arrival of a new garrison. The provision of at least ten new barracks was out of proportion to the space required to hold the known 3rd-century garrison of South Shields, *cohors V Gallorum*, which had administered the 3rd-century supply base. The rebuilding of the fort is therefore probably associated with the departure of the Gauls and the arrival of a new and larger unit. As the fort underwent no further general replanning before the end of the Roman period, it seems possible that the unit attested as being present in the late 4th century in the *Notitia Dignitatum* (if the *Arbeia* of the *Notitia* is correctly identified as South Shields) may in fact have been the unit for which the fort was drastically replanned at the beginning of the century. The *Notitia* places at *Arbeia numerus barcariorum Tigrisiensium*, a specialist water-borne unit from the area of the Tigris. An obvious suggestion, then, is that the courtyard house was built as the residence of the commanding officer of the late Roman unit, whether or not this was the *numerus barcariorum*. In size and character the house conforms closely to the pattern set by commanding officer's houses - *praetoria* - in auxiliary forts of the 2nd and 3rd centuries in Britain (Fig 12.10.3-4). The unusual position of the house reflects a tenet of late Roman fort planning - at the contemporary northern fort of Piercebridge, a sumptuous courtyard house also occupied the south-eastern corner of the fort (Goodburn 1979, 285-6). Bidwell has observed (Bidwell & Speak 1994, 40-2) that, if the north-western part of the fort at South Shields had continued to be occupied by a reduced supply-base, the south-eastern area would have formed a self-contained fort with the area in front of the headquarters divided into quadrants by two intersecting major streets of equal width, in the manner of characteristically late Roman plans at sites such as Drobeta in Romania and the Saxon Shore fort of Portchester (Fellmann 1976, 179-81). The same disposition of

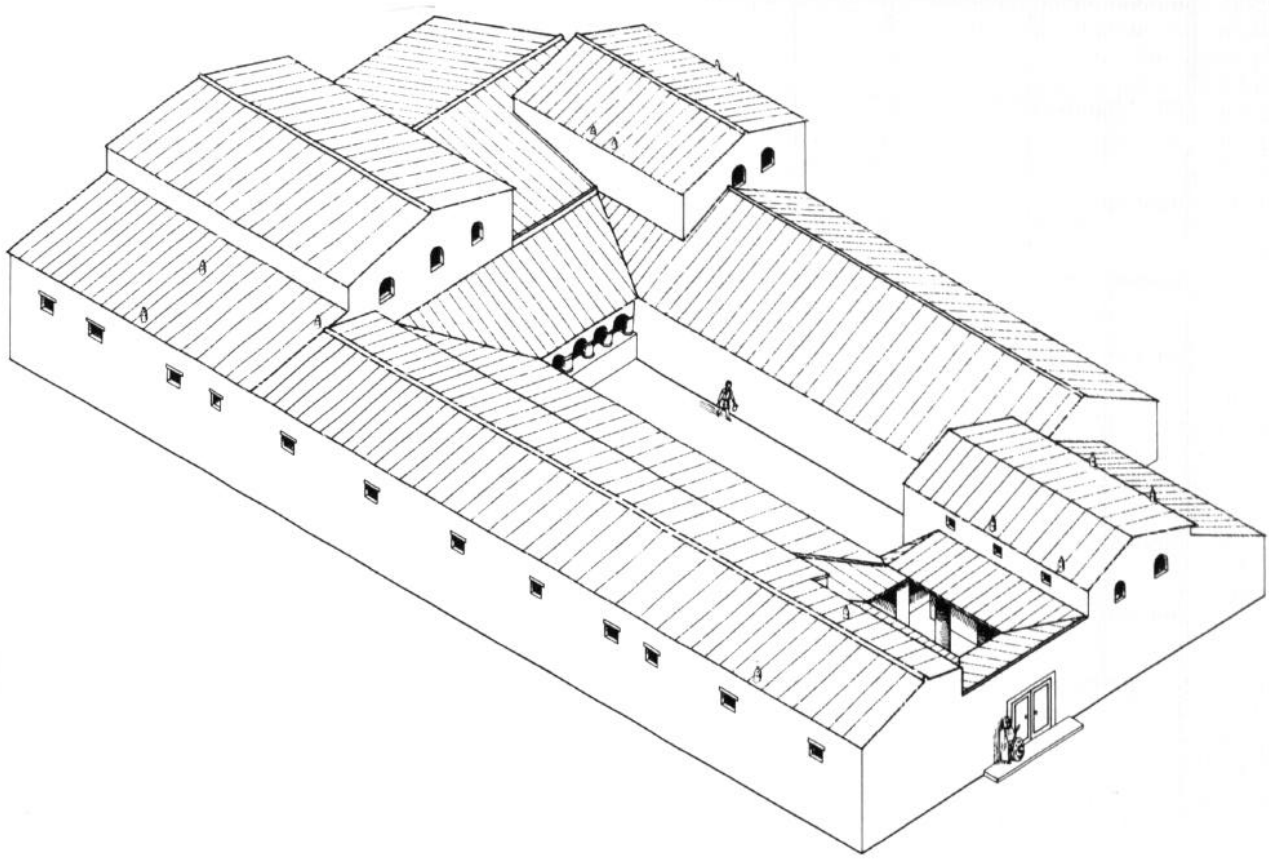

Fig 12.8 Preliminary reconstruction of the South Shields courtyard house

streets and accommodation is seen in Diocletian's palace at Split (Wilkes 1986, 33). In this interpretation of the fort plan there would no longer have been a traditional central range, and the courtyard house and accompanying barrack would have neatly occupied one quadrant of the accommodation area of the late Roman fort.

The question of the identity of the occupant of the house is complicated by the recording by 19th-century excavators of a late, hypocausted, residential building in the central range of the fort (Bidwell & Speak 1994, 39-40), raising the possibility that the *praetorium* was situated in the orthodox position and that the present house was the residence of some other official. On the other hand, nothing is known of the extent of the northern building, and it need not be as early as the beginning of the 4th century. It is even conceivable that a house to the north replaced that in the east quadrant (which ceased to be maintained to a high standard in the mid-4th century). It is also impossible to preclude categorically the existence of a *praetorium* in the south quadrant of the fort, where Victorian plans show a large building that is not a barrack.

All that can be said, then, is that there is a high order of probability that this house was built to accommodate the commander of the late Roman unit (whether or not this was the Tigris Bargemen) that had arrived at South Shields by the beginning of the 4th century: but that the possibility remains that some other official may have been quartered in the fort here. A direct parallel for the latter model would seem to be furnished by Segontium, where a courtyard residence in a corner of the fort, dating from the Antonine period, co-existed with a *praetorium* in the usual central range position (Casey & Davies 1993). The excavators suggested that the unusually-placed building was the residence of an official in charge of local mineral extraction.

Parallels and significance

The South Shields house may be recognised as being of peristyle type. What characterises a Mediterranean peristyle house is that the inner court forms one element within a compact plan, designed as an architectural whole, and constitutes part of an axis of progression (not necessarily a straight line) through the building. Perhaps seemingly obvious, this definition is emphasised here because it is common for students of Roman Britain to

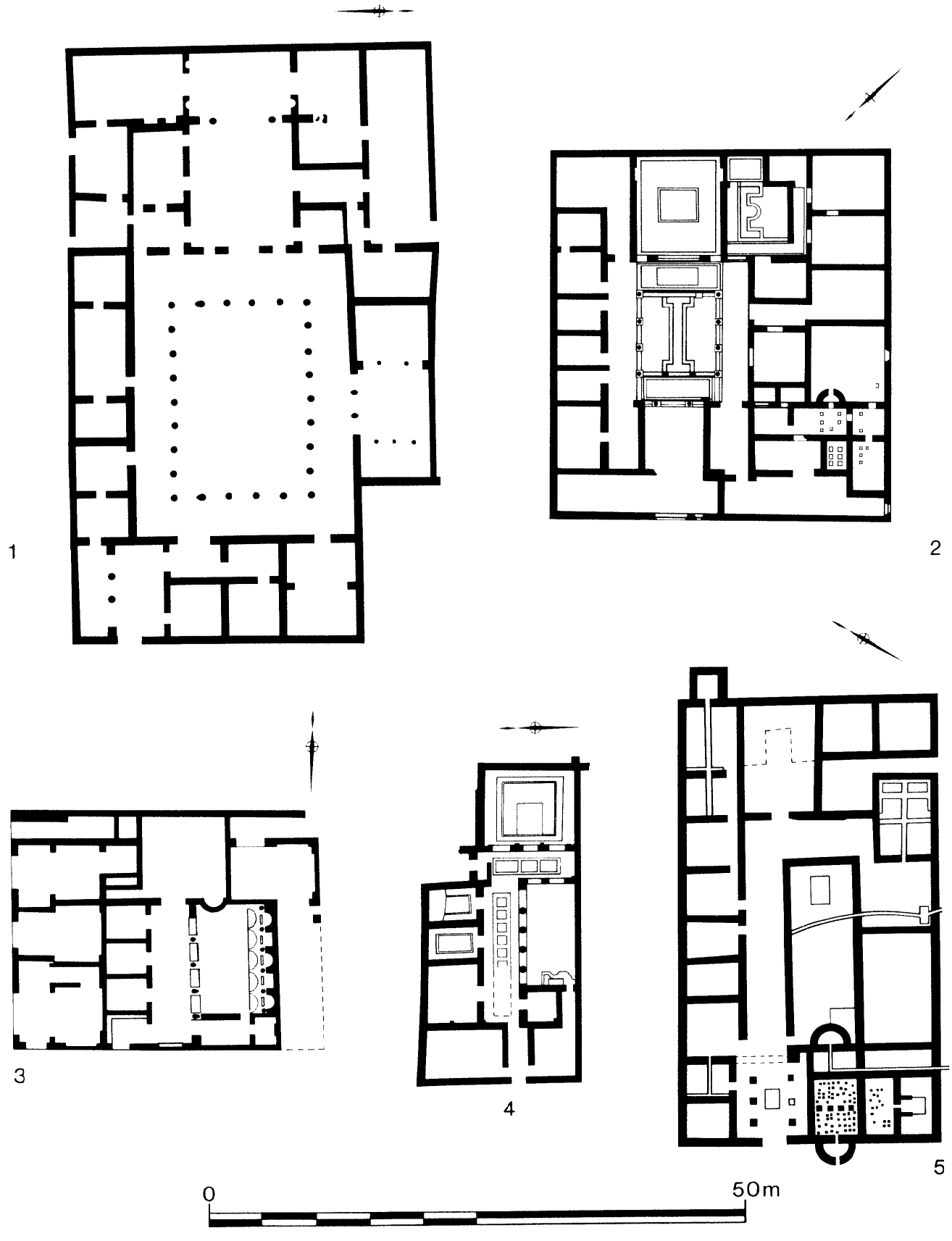

Fig 12.9 Houses at 1 Apamea (after Balty 1984); 2 Volubilis (after Ward-Perkins 1981); 3 Ostia *(after Packer 1967) 4 Seluceia (after Stillwell 1941); 5 South Shields*

describe any building possessing a courtyard as having a 'courtyard plan', although very few of these buildings in Britain closely resemble Mediterranean peristyle houses.

The South Shields house belonged to the mainstream of late classical town house building. The 2nd- and 3rd-century houses which furnish the closest parallels are found in North Africa, the eastern Mediterranean and Ostia. If we take, for example, a well preserved 2nd-century house in Apamea in Syria, the House of the Consoles (Fig 12.9.1; Balty 1984), we find the same emphasis on a large dining room, flanked by rooms and carried to a greater height than the rest of the building; here too the room is entered from an open ambulatory at right angles to its front; here also a large reception room, interpreted as a second dining room, lies to the right of the peristyle upon entry, while the familiar row of square living rooms extends up the left side of the house.

Turning to North Africa, and the mid-3rd century House of Venus at Volubilis (Fig 12.9.2; Rebuffat 1969, 669), there is the same emphasis on the large *triclinium* at the opposite end of the peristyle to an entrance-space (possessing a screen of columns), and the same row of square residential rooms running up the left side of the building as it is looked at from the front. The Volubilis example, like the South Shields house, has a compact bathing suite to the right of the entrance. The houses further resemble each other in having been forced into a compact plan by the size of the available building plot. Building a courtyard house of this type in a Roman fort evidently had the same design implications as in a rationally ordered and crowded town. 'Peristyle houses of this type, usually with a principal living-room, the *triclinium*, dominating the courtyard and with a greater or less emphasis on compactness of planning in accordance with pressures on building space, were typical of the better-class town houses of North Africa' (Ward-Perkins 1981, 402-3). The importation of such a Mediterranean plan at South Shields was not merely a matter of taste: faced with the constraints of the fort plan, the architect of the house could not have turned to more utilitarian examples than those available in North African towns.

Other particular aspects of the South Shields house plan make clear sense when recourse is made to North African parallels. Room 21, with its distinctive column or pier bases, is difficult to understand in Romano-British terms. At the time of excavation it was considered most likely that this room was an aisled entrance hall. The numerous published peristyle house plans from North Africa (Rebuffat 1968; 1974) allowed the interpretation of this space as a small entrance court, an amenity commonly noted in houses in that region, as for example in the House of Castorius, at Cuicul (Thebert 1987, 355). In the House of Sertius, at Timgad, the house is entered by a colonnaded vestibule, with a suite of baths immediately to the right of the entrance, as at South Shields *(ibid*, 331).

The parallels so far drawn relate the South Shields house to the peristyle house as widely attested in the high empire. There are also elements of the house which seem related to the late-imperial *domus* known in 3rd- and 4th-century Ostia, with relatives elsewhere. In Ostia, the House of Cupid and Psyche (Fig 12.9.3; Packer 1967), roughly contemporary with the South Shields house, displays the same equal emphasis on a courtyard and an ambulatory-portico. As at South Shields, the wide portico gives access to *cubicula* to the left, and provides the transition from vestibule to *triclinium,* while looking out over a courtyard, to the right. A similar house type can be found elsewhere. The House of the Drinking Contest, at Seluceia, the port of Antioch in Syria (Fig 12.9.4; Stillwell 1941, 31-3 and plan VIII) resembles South Shields in several respects. It has ambulatories on two sides of a courtyard. The courtyard is not central to the plan. One ambulatory leads to another, which serves as an anteroom perpendicular to the front of a large, marked out *triclinium*. In both the Ostian and the Syrian example, as well as at South Shields, the ambulatory leading to the *triclinium* or its anteroom has come to resemble a central corridor more than one side of a peristyle. The central role of the ambulatory-portico in the late *domus* has been seen as having its origins in the *medianum*, or central passage room in high imperial apartment houses (Hermansen 1982, 44-5 and n 35). The occurrence of this plan in a contemporary house in a British northern frontier fort adds a further dimension to the distibution of a motif which, once seen as originating in the East (Ward-Perkins 1981, 212; 325-6), more probably had its origin at the metropolitan centre of the empire.

As we have seen, however, alongside this characteristic the South Shields house displays a range of features recognizable in Mediterranean town houses of several types, periods and regions. Rather than conforming closely to any narrowly dated or regional type, the house stands out simply in possessing commonplace Mediterranean features which are not usually so clearly represented in Britain, and especially not in the Roman towns of Britain.

The inspiration for the design of the South Shields house surely lay outside the province. Its architect can have drawn on no Romano-British architectural tradition, except for that of the army itself; and since the 2nd century the army in Britain, by now adapting long-established permanent bases, can have built few *praetoria* from scratch. Whereas some later Roman buildings on the northern frontier display an increased use of regional military building techniques, such as stone roofing slates, socketed sills for timber uprights, and individual roofing of barrack *contubernia*, the South Shields house reveals an assured familiarity with the peristyle tradition.

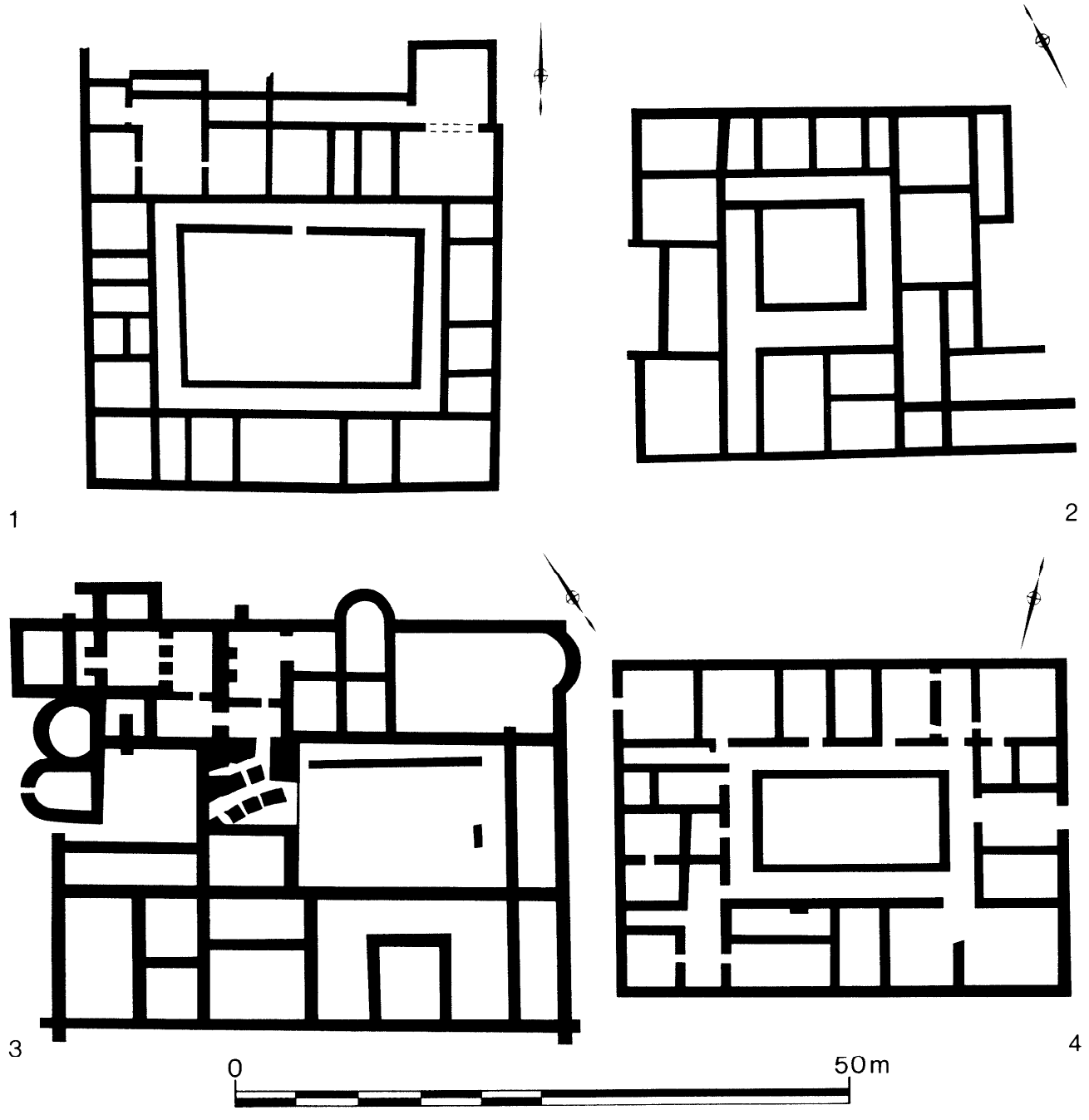

Fig 12.10 Houses at 1 Caerwent (after Ward 1911); 2 Gloucester (after Hurst 1972); 3 Mumrills (after Johnson 1983); 4 Housesteads (after Johnson 1983)

Turning away from military contexts, it is striking that peristyle houses are close to being absent from Romano-British towns of any period. John Ward (1911, 168) drew attention to their rarity in his discussion of a peristyled building at Caerwent; since he wrote, few additional urban examples of Romano-British peristyle houses have come to light. There are two known examples of the 1st century at Colchester (Hull 1958, 82-4). At Colchester, house 123 provides a possible 2nd-century example (Crummy 1992) as does a well known compact courtyard house at Gloucester (Fig 12.10.2; Hurst 1972, 41-2, Fig 10). At Caerwent, besides IIIS, discussed by Ward, there is one example in the north-east corner of *Insula* VII that looks like a compact peristyle house. More recently this town

has seen the excavation of a large house (30m by 45m) with its rooms arranged around two compact courtyards (Wacher 1989, 108; Brewer 1990, 76-7): it displays elements of peristyle planning, but its rambling size, evident agricultural functions vying with residential spaces, and apparent incorporation of two units of accommodation, are more reminiscent of the usual Romano-British town house or villa, and it is possible that here is a house of Romano-British type which has simply been more influenced than most by the peristyle idea.

In general, houses in Romano-British towns bear a clear resemblance to the corridor and winged-corridor villas of the countryside. Walthew (1975, 199-200) and others have noted the similarity between types of villa and town-houses at Verulamium (Fig 12.11.1), Silchester, Caerwent and Canterbury. At Silchester it has been said that the house-plans 'present an urban adaptation of the country farm-house or villa' (Boon 1974, 192-3). Typically simple rows of rooms, or corridor or winged houses predominate. At Caerwent, it is possible to speak of 'villa establishment[s] set down in the middle of the town' (Walthew 1975, 200).

Several houses in Romano-British towns enclose courtyards, but that does not mean that they should all be thought of as peristyle houses. Ward (1911, 141-4)showed clearly how in many cases a corridor house evolved gradually, by the addition of wings, into a house of four ranges which enclosed a central space. Even in the examples of purpose built, fully enclosed courtyards that there are, the impression is often of four simple rows of rooms, which inevitably leave an unoccupied central space; what distinguishes the true peristyle houses of the Mediterranean is that the courtyard is an integral part of the architectural plan of the house, and of any passage through it. In Romano-British urban houses the courtyard in this sort of case tends to be of disproportionately great size in comparison to the simple rows of rooms in the surrounding ranges. As examples of this phenomenon we may cite house VIIS at Caerwent (Fig 12.10.1), and a large 2nd-century courtyard house in Verulamium *Insula* III (Fig 12.11.2), whose plans suggest none of the compactness or progression through space of the true peristyle house. A 2nd-century house in *Insula* XVI in Leicester (Wacher 1974, 350) may fall into the same category. A possible example of a peristyle house at Cirencester *(Insula* XXV,l: McWhirr 1986, 231) shows itself as a complete contrast to other houses in that town, which may be seen to have 'a distinctly rural character' (Millett 1990, 136). These last examples underline the common difficulty of assessing the character of Romano-British town house in the common absence of anything like a complete plan; the Romano-British urban house, then, tends (whatever its standards of construction or decoration) to sprawl in plan, in rural fashion, and even where designed from the outset to surround a courtyard does so in a way that makes it look as if it is constructed of separate units rather than forming an integral whole.

It will be noted that most examples of peristyle houses in British towns gathered above occur in *coloniae* rather than civitas capitals; Caerwent is an exception, and at this town *RIB* 311 demonstrates the direct influence that the neighbouring military of Caerleon exerted on the capital of the Silures. At these places, in other words, it seems that the presence of veterans, traders and others with military links or direct contact with Mediterranean ideas (Wacher 1974, 388) led to the early development of peristyled houses or official buildings - an official use has been suggested for IIIs at Caerwent (Ward 1911, 168) - whose plans were imported wholesale rather than being adaptions of a rural style of building (itself perhaps growing out of an imported plan, that of the corridor villa, derived from the houses of the north Gaulish and German countryside: Walthew 1975, 203; Blagg 1990). Other official courtyard buildings away from towns, such as the probable *mansiones* of Wall, Staffordshire (Webster 1985, 13) and Cold Knap, South Glamorgan (Evans *et al* 1985) display characteristics of peristyle building, but of course do not represent the residences of individuals and their households.

In the towns of Roman Britain, then, Mediterranean house-types appeared only occasionally as a grafted import alongside home-designed houses of rural type, which got as far as imitating Mediterranean courtyards without yet capturing the essence of inward looking peristyle architecture. The reluctance of the residents of Romano-British towns to build in the peristyle fashion may represent more than mere conservatism: in the light of suggestions that houses built up of several units of accommodation might reflect occupation by extended families or more than one family of similar status (Smith 1978, 162; Black 1987, 28), we can see that such social structures would have had great difficulty in adapting themselves to the use of the compact peristyle house, which had evolved as the residence *par excellence* of an individual household.

This excursion through the towns of Roman Britain should emphasise how alien a plan such as that of the South Shields house was outside the military and official bureaucracies of the province. Architectural features suggesting direct links with the Mediterranean do occur in certain villas at all periods, but these may have been confined to a small section of society, and in any case the use of compact peristyle planning reminiscent of Mediterranean urban housing is seen no more in the countryside than in the towns. It is clear, then, that it was predominantly amongst the military, or rather the commanding officers of the army, that the architectural idea of the peristyle house flourished in Britain. Given the general lack of an indigenous use of this kind of house, it seems inescapable that the architectural ideas must have come directly from the continent with the officers for whom the houses were designed. It is possible to

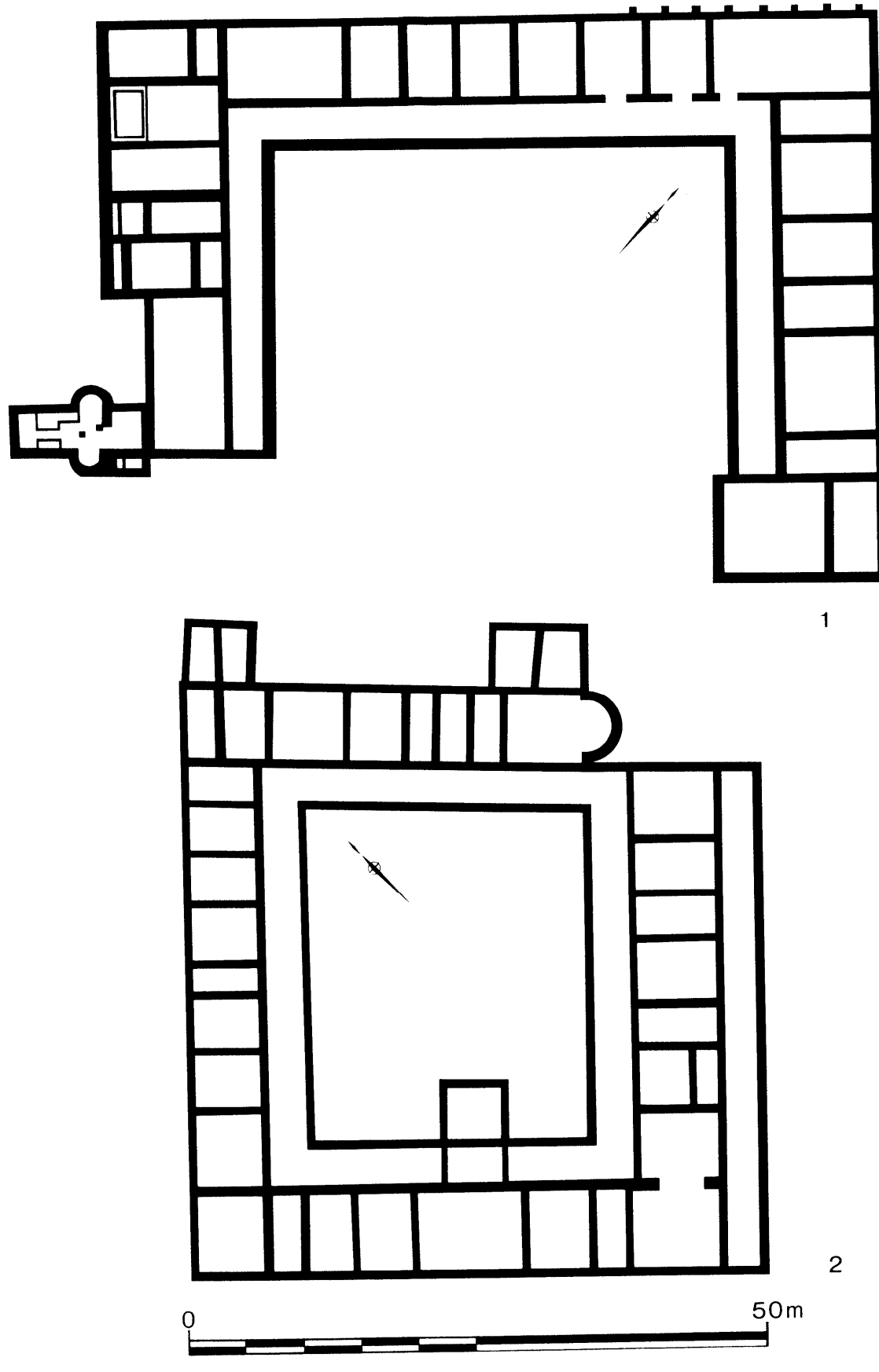

Fig 12.11 Houses at Verulamium (after Branigan 1973)

go further than this and to suggest that there must have been an architect (perhaps, but not certainly, a soldier), familiar with fashions in Mediterranean town house building, who was consulted or personally supervised the construction of the South Shields house. This is because the house displays an aborted building phase, adapted to the preceding building plot; in its enlarged and completed form it occupied a building plot which respected a layout of streets established when this part of the fort was first constructed about a century earlier; in other words the house cannot have simply have been erected from a blueprint, for its plan, along with all of the distinctively Mediterranean features that we have noted, was altered during the course of construction in full knowledge of the complexities of the building plot available at South Shields. This does not necessarily mean that the architect was present - he could have drawn up a plan at a distance if sent the required dimensions - but the input of an individual architect is strongly suggested (cf Evans 1994 for the role of architects in military life).

Of particular interest is the fact that the South Shields house should be of such late date. The occurrence of so many motifs of continental origin serves to re-emphasise the cosmopolitan nature of military contacts. Given the prevailing view of the late Roman frontier army as a force of declining numbers and efficiency, increasingly parochial in outlook and commanded no longer by individuals of high social status, it comes as something of a surprise to see these most cosmopolitan of architectural motifs surfacing in a northern frontier fort of the early 4th century. The fact that such features as the *triclinium* couch-seating, and the provision of summer and winter *triclinia*, have never been observed in other *praetoria*, most of which are of earlier origin, may well simply be a product of their excavation history. Most plans were recovered in the early stages of the development of excavation techniques, and the South Shields house remains the only sufficiently well preserved example to have been totally excavated using modern methods. Whether it really represents a more ornate and cosmopolitan expression of Mediterranean urban domestic architecture than its military predecessors of the 2nd and 3rd centuries, is something for further excavation to show, in spite of all of the investigations that have taken place inside the principal buildings of Roman forts.

The function of a private residence in late-Roman military life

As stated, this is clearly a house belonging to an individual dignitary. It has long been recognised that *praetoria* in auxiliary forts draw their architectural tradition from the town houses of the Mediterranean provinces. However, in no excavated example of a *praetorium* in Britain or elsewhere have the functions of sufficient rooms been identified to produce a model of how the house was used. Roman houses can be understood in terms of gradations of 'public' and 'private' space: while the house had to function as a residence for a household, the disposition of the rooms also had to serve as a sort of machine for communicating the rank and status of the owner, and for allowing him to receive clients and guests of varying status *(de Arch* 6.5.1-2; Wallace-Hadrill 1988). At South Shields, a clear axis of function can be identified. The public entrance court, which could have doubled as a reception space, leads to an ambulatory, in turn giving access to a further more dignified reception space (the north-east portico which, significantly, seems to have been impressively decorated) which led finally to the large *triclinium,* situated at the end of the axis of approach. There is an obvious element of gradation here; only clients or guests of sufficient status might pass beyond the entrance hall (the lowest ranking public room in the house) to the grand and private reception room at the far end. The 'private' rooms of the house are represented by the suite of interconnecting rooms, presumably living rooms and bedrooms, numbered 3-6, obtained from a doorway from the north-west ambulatory before the second 'public' space was reached. Should any visitor be introduced into this private space, there would also be a clear line of gradation along which he must progress before the most private rooms of all were reached. The second portico also gave access to the second, heated, dining room. The entrance-court also provided access to the baths, an example of 'private' and 'public' space combined, for not only would arriving guests be comforted and entertained there, but the baths' separation from the private parts of the house may imply their use on occasions by more humble members of the household. As we have seen, the kitchens of the house are probably among those (8, 9, 11) in the east corner, with service areas represented by room 1 and hypocaust furnace rooms 10 and 13. With the identification of the stables (14), this leaves very little unidentified space, and this can be guessed at; specifically rooms 22 (just right for a porter's lodge), and 23, a heated room. This would be a good candidate for a room off the reception hall in which low-ranking clients might be received; alternatively it may have complemented room 22 to form a suite of rooms for the doorkeeper.

Thus the house operated in formal fashion just like those familiar from Roman towns elsewhere in the empire. In military terms there is nothing necessarily unusual in this; *praetoria* must always have functioned in this way. Nevertheless, the house provides, for the first time, concrete evidence for the social status and origins, and degree of sophistication, of the commander of a typical northern frontier fort in Britain in the first half of the 4th century. It also suggests a complex range of social interactions between such an officer and his superiors, inferiors and local dignitaries. The

surviving archive of Flavius Abinnaeus, prefect of a frontier unit at the fort of Dionysias in Egypt in the reign of Constantius II, that is, exactly contemporary with the *floruit* of the South Shields house, reveals interesting details of a late Roman commanding officer's extensive household and business (Bell *et al* 1962). The letters show that Abinnaeus was used to receiving visitors of varying status and pursued many private business interests. Even so, he commanded a unit of lower status than the new-style unit based at South Shields (Abinnaeus' *ala* being of equivalent status, in fact, to the old cohorts and *alae* probably still in place in the Hadrian's Wall forts in the early 4th century), engaged in purely bureaucratic, non-military duties. The late-Roman commanding officer at South Shields will, we may suspect, have had an important military role, and his house will have seen no fewer visitors and no less official business conducted than that of Abinnaeus, especially given the role of South Shields as a port of entry.

The established late date of the house shows that, whatever was happening in the non-military zones of Britain, military contact with Mediterranean fashion was still strong in the 4th century, whether or not the architectural design had come to South Shields with the late Roman unit itself. The design, competent execution and standard of decoration of the South Shields house should force a reassessment of the hitherto underrated status of at least some frontier units in the late Roman period, and a recognition that their commanding officers were still part of an empire-wide military bureaucracy, used to receiving guests and clients of varied status, and capable of drawing upon the wider architectural traditions of the Mediterranean,

Acknowledgements

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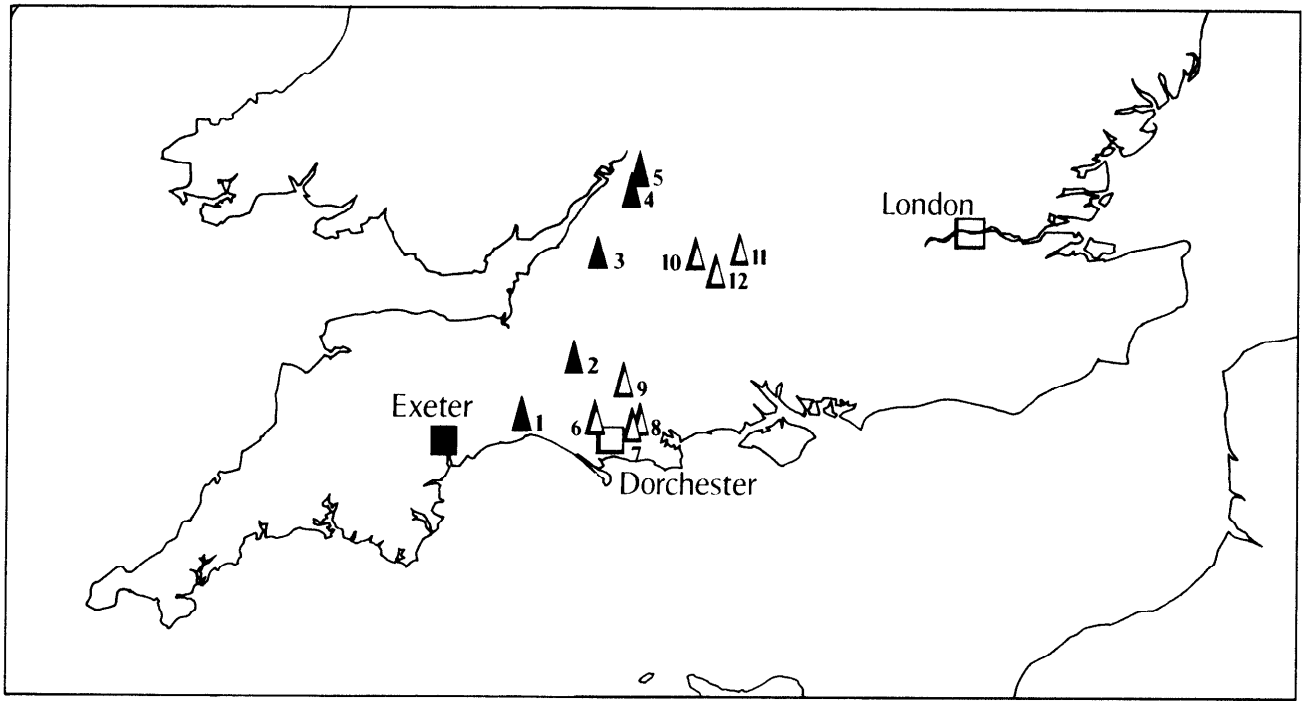
13 Exotic structures in 4th-century Britain

Bryn Walters

In the south-west of Britain a number of elaborate structures were built in the 4th century, several of which have been known to scholars of Roman Britain for many years, whereas others have only come to light more recently. The structures in question fall into two very distinctive groups (Fig 13.1). To the west, in what can be termed the Exeter-Severn group, the buildings have either a plan or an internal design based on a polygon, and they are often associated in some way with water. Further to the east is the Dorset-Wiltshire group, where a distinctive series of interconnecting chambers linked by broad arches occurs. Since 1978 excavations in Wiltshire have enabled one well known example of this type to be re-examined and two others to be added to the list. In this paper the question is posed: why do these exotic buildings appear in that part of Britain? An explanation for at least part of the answer can be offered.

At Holcombe, about a mile and a half to the west of Lyme Regis, lies the remains of a Roman building. Initially this was a simple corridor house, until its fifth phase of development around the middle of the 4th century, when its southern end was dramatically redeveloped. The front corridor was extended with a side chamber and floored with a fine mosaic. It terminated in a large octagonal structure of a most unusual design (Fig 13.2); a central tower with, at its base, a large white tessellated pool 3.50 metres across surrounded by a mosaic-floored ambulatory. Extending from four sides of the octagon was a chamber – the western half of the whole complex comprising a full suite of baths. Its eastern half consisted of one of the most unusual chambers in Britain. Owing to its poor state of preservation when excavated between 1969-71 (Pollard 1974) the chamber was interpreted as three separate rooms, but it more probably formed a 'Y'-shaped hall, originally designed with a hypocaust in its central area and a heated apse on the central axis. The function of this chamber is difficult to determine. Its west side must have opened directly onto the ambulatory, and it seems likely that the pool and ambulatory formed the *frigidarium*. The 'Y'-shaped hall may have been intended for relaxation. This is astonishingly lavish for what appears to be a simple rural site. Judging by the extent of these baths, yet unidentified buildings belonging to the Holcombe villa remain to be located. If not, then the social function of this structure should be reassessed. Similarly at Lufton, about three miles south of Ilchester in Somerset, another simple corridor building received at its northern end an elaborate octagonal tower leading from a large rectangular hall (Fig 13.3), again forming the focal point to a range of baths (Hayward 1972). Here the ambulatory, floored with a fine fish-patterned mosaic, was surrounded by a series of columns which would have supported the upper tower, each facet of which may have been pierced by a splayed window. The intention was probably to catch the maximum daylight over the 4m wide pool below. Yet again this site may have been much larger than is known at present. At Holcombe the symmetry and construction of the building was poor, whilst at Lufton the large buttresses seem only to have been an afterthought – possibly for safety. Both of these buildings bring to mind the detached baptisteries of the late Empire, such as those at Ravenna. This should be borne in mind when considering the social and religious changes which it is suggested were taking place in the 4th century, as at Lullingstone and Chedworth (Webster 1983), Littlecote (Selkirk 1981, Walters 1983), and Thruxton (Henig & Soffe 1993).

More successful in its design and execution, however, was the magnificent house at Keynsham, south of Bristol (Bullied & Horne 1926). This was no ordinary villa but an important establishment on a palatial scale. Chambers and extensions projected from the polygonal towers at the northern and southern ends of the main residential wing (Fig 13.5). This wing was constructed on a raised terrace to give it prominence over the rest of the villa. The arrangement of the rooms in the northern corner resembles the Holcombe baths where a separate chamber extends from each facet of a central core, creating an impressive arrangement of residential apartments floored with very fine mosaics. Here, however, the architectural proportions were much finer, and extensive use was made of the best quality Bath limestone and tufa vaulting. At the southern end the hexagonal plan matches that of the north, providing symmetry; but here the projections belong to a single ornate chamber 9m across. Its function is not easily defined but the room is



Exeter-Severn Group:
1 Holcombe
2 Lufton
3 Keynsham
4 Woodchester
5 Great Witcombe

Dorset-Wiltshire Group:
6 Frampton
7 Olga Road
8 Dewlish
9 Hinton St Mary
10 Cherhill
11 Littlecote
12 Castle Copse

Fig 13.1 Location plan (two groups) (Luigi J Thompson)

usually interpreted as a *triclinium*, though it also closely resembles the more elaborate *frigidaria* of the Eastern Empire. Another recent interpretation suggested that the room may have been the villa's library (Beeson 1995). One can only speculate at present about the Keynsham building. Set upon a gentle hillside overlooking the Avon valley, the main wing of the villa would have dominated the descending courtyards. One would expect further fine chambers, and a centrally placed *aula* on the main axis, common to so many eastern and African villas. An African influence may be further inferred from the plan and execution of the mosaics, especially in the southern room 'W' at Keynsham, where the composition of mythical scenes in the detached square panels, with finer details and faces in its borders, resembles mosaic styles in Africa and Spain.

The greatest of the Romano-British chambers is the central hall or *aula* at Woodchester, near Stroud, which was undoubtedly built to impress: even an emperor would feel at home here. Lysons has provided sufficient information for certain conclusions to be drawn about the construction of this room. Firstly its underfloor heating channels respect a now lost feature that once extended from the rear of the room to the centre: most probably the inlet and outlet pipes for a fountain in a large centrally placed octagonal pool sunk into the floor. The foundations for the four central columns were also avoided by the heating channels. It is logical to assume that above the pool and its fountain was a vaulted ceiling, possibly a large dome set on pendentives that would have echoed and reflected the sound of cascading water. To this day, just behind the villa in the gardens of Woodchester Priory, a prolific fountain, fed by a natural spring, still rises over 2m into the air. It passes down the original Roman water channels which were traced by Giles Clarke in 1973 (Clarke 1982). This water source would have supplied the villa, including the suggested fountain in the great hall. The dome would have been central to a cross-vaulting with the construction conceivably being carried out in timber and plaster within the pitch of a large ridge roof. This method of construction would reduce the weight and thrust of a conventional stone vault, the central section being supported on the four columns, the massive foundations for which were also examined in 1973 and found to extend beneath the hypocaust.

Interpretations put forward by antiquarians are often dismissed. Lysons (correctly) referred to this chamber as a tetrapylon (Fig 13.4). The walls of

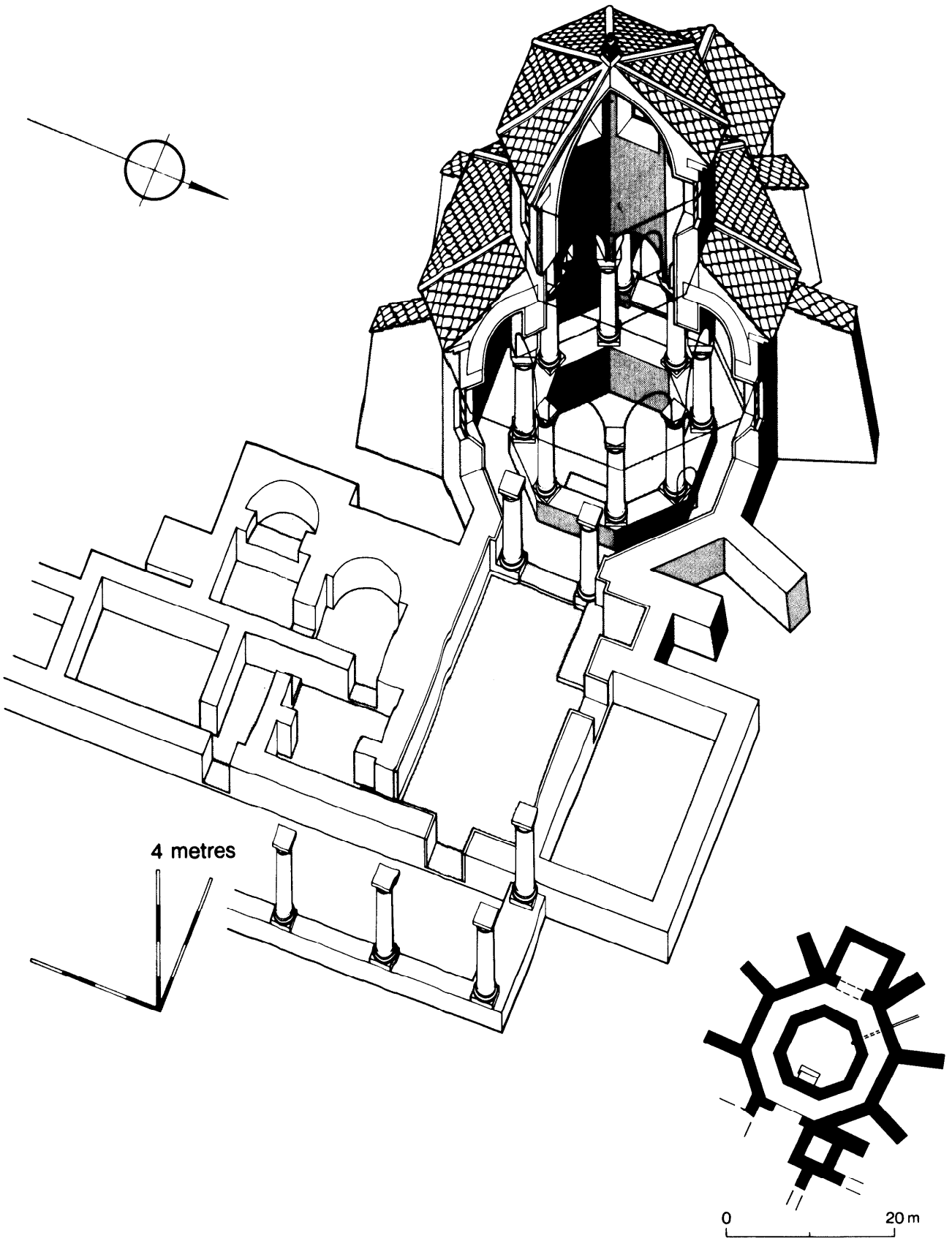


Fig 13.2 Holcombe baths (Luigi J Thompson)

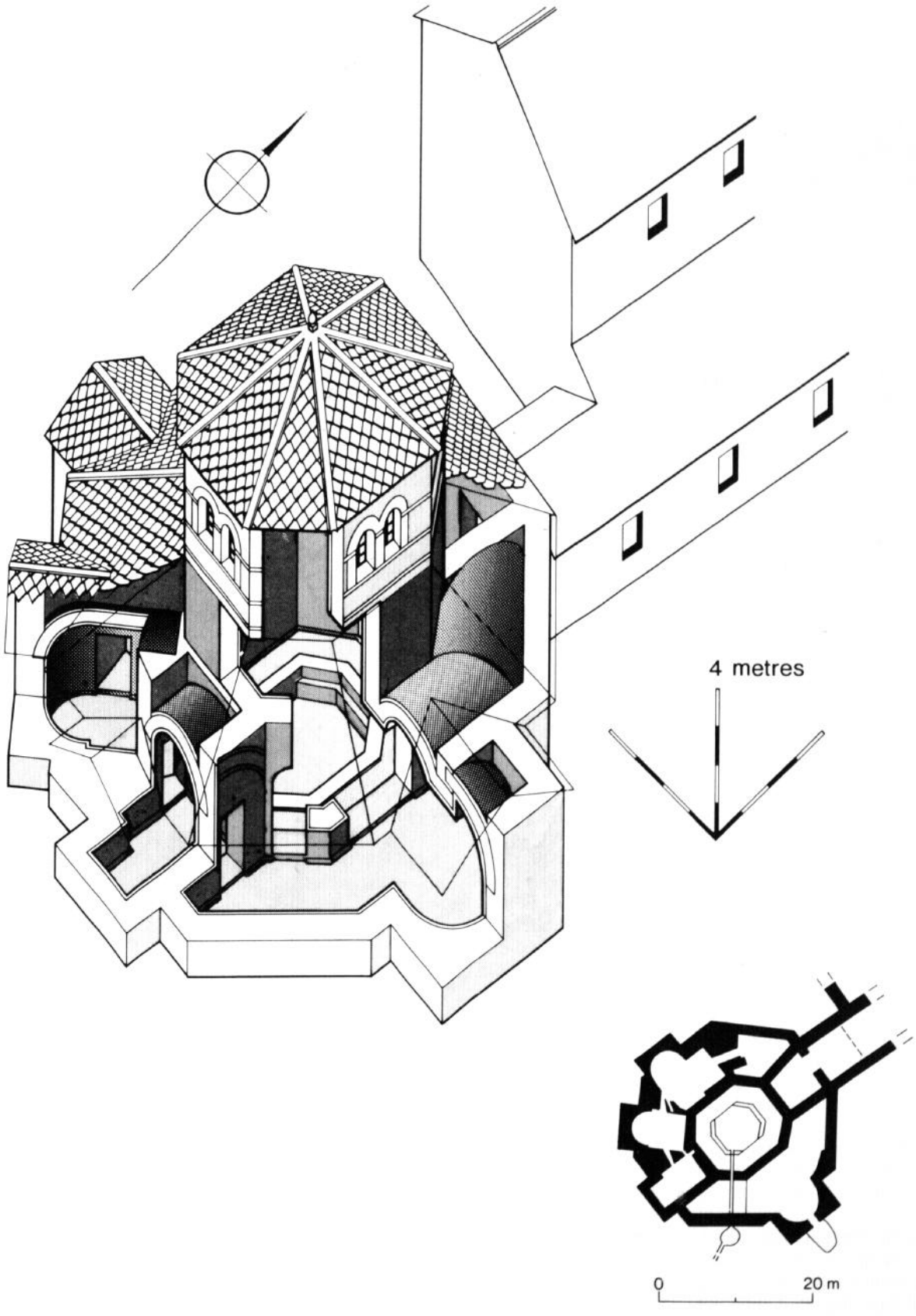


Fig 13.3 Lufton baths (Luigi J Thompson)

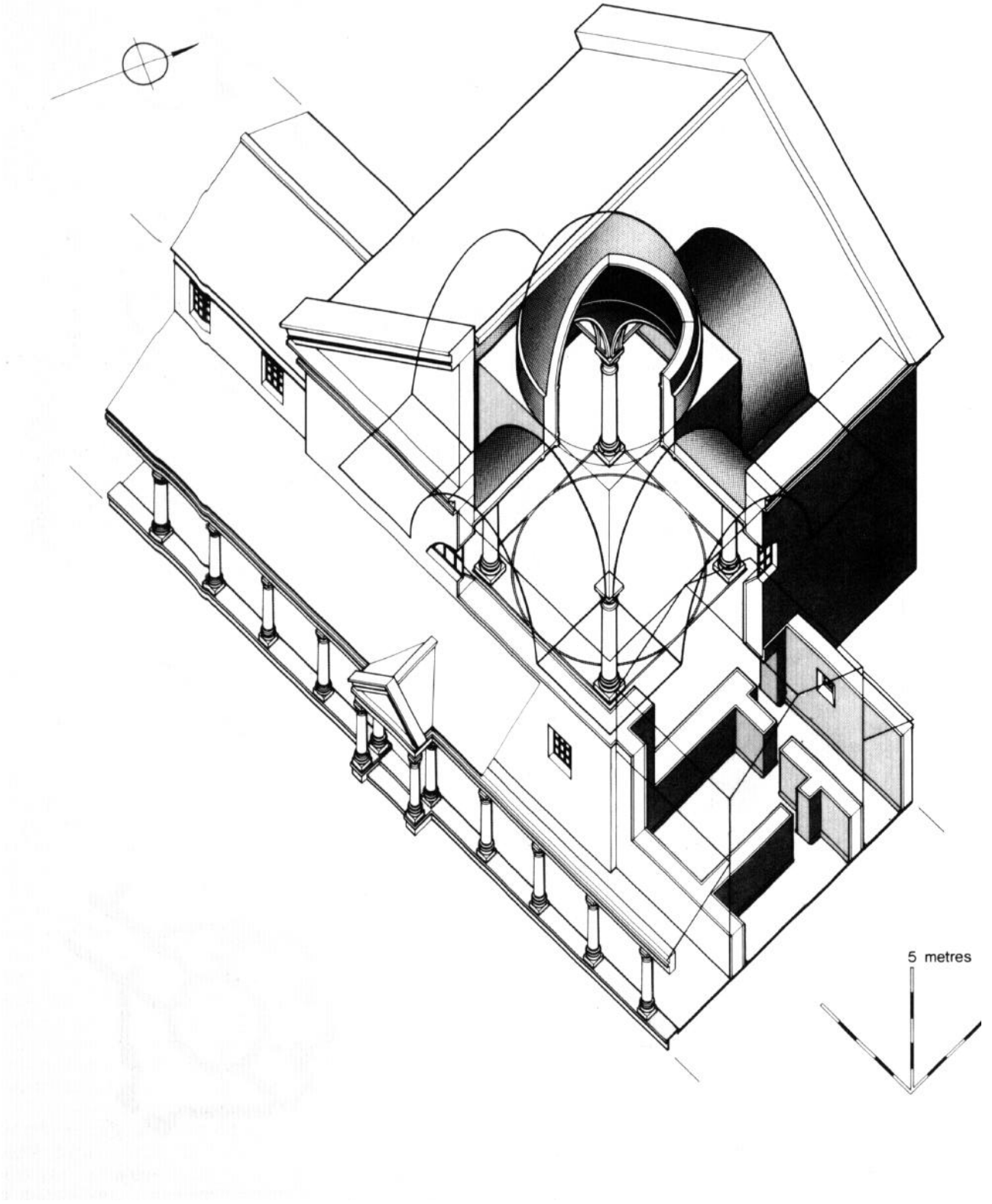


Fig 13.4 Woodchester (Luigi J Thompson)

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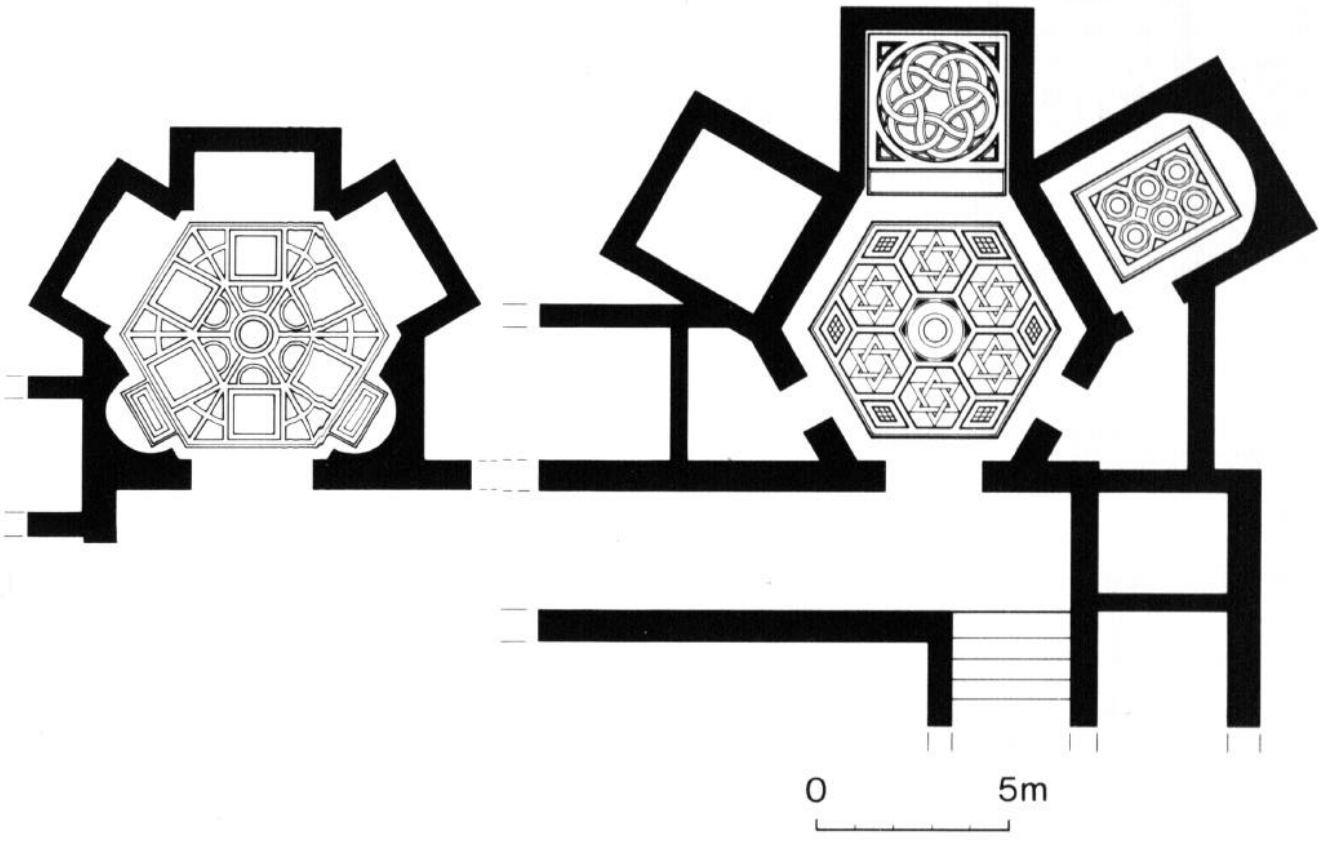

Fig 13.5 Keynsham (Luigi J Thompson)

this room are 1m thick, Ceilings such as those proposed here would have been possible with the columns bearing the vertical pressure, and the surrounding ground floor rooms providing a buttressing effect to counteract outward thrust. The interior belongs more to the later Roman and Byzantine world, where the techniques of construction for such complex vaults in tile and concrete would have been applied, but might have been outside the experience of local British builders. The *aula* would have been given prominence over the surrounding buildings by its higher ridged roof. There may have been no need for a projecting lantern, as sufficient Light would have been obtained from windows at the ends of the vaults and the front and rear walls.

Finally, in this group, mention should be made of the unusual building at Great Witcombe in Gloucestershire. It was built somewhat precariously on unstable sloping ground from which rises a copious spring. The central wing comprises a high broad terrace with a single axial chamber, which was replaced in the 4th century by an octagonal tower with an apse at its rear. This was fronted across the terrace by a pedimented extension. The description of this site as a Romano-British villa needs careful reconsideration (Walters 1993). The association of the building with the spring (which was channelled directly under its central axis) may have been the principle reason for its construction. It is, therefore, more plausibly a sanctuary associated with a water deity which would accord well with the extensive arrangement of late baths in the west wing (Webster 1983). The architect was no doubt inspired by the more magnificent hillside sanctuaries elsewhere in the Empire, such as that of Fortuna at Palestrina. All the chambers described so far fit well within the richer areas of the Empire, which is why they stand out against the volume of the more conventional architecture in this province.

A distinctive style of buildings emerges in Dorset and Wiltshire where several sites have been identified containing large halls subdivided by cross-arches into bipartite chambers. A simple example is the building from Olga Road in Dorchester (Fig 13.6). Here more-or-less equally proportioned rooms

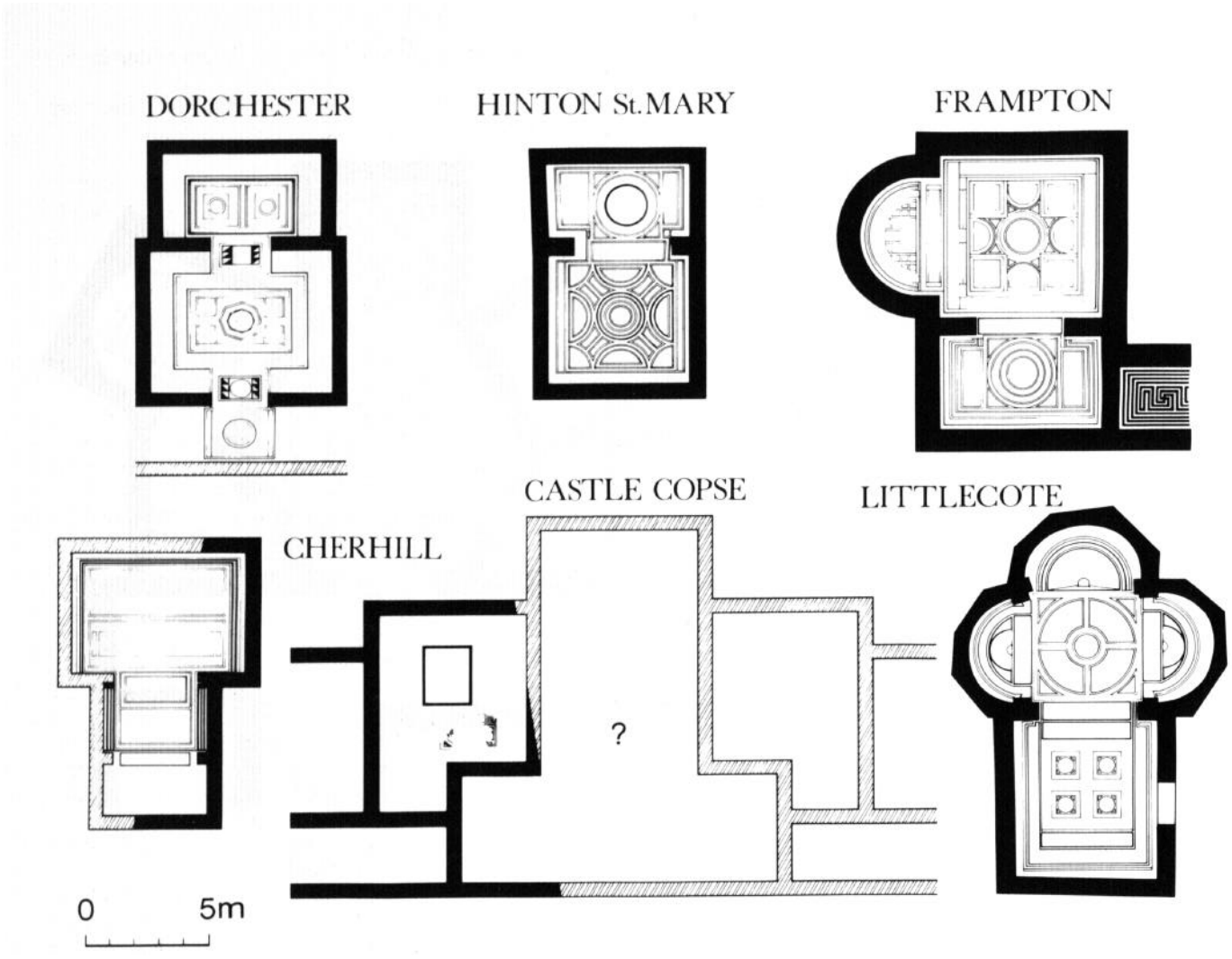

Fig 13.6 Plans of bipartite rooms (Luigi J Thompson)

were separated by arched openings. The ceilings may have been continuous vaults. Similar arrangements occur on two rural sites in Dorset, both of which have been central to discussions on 4th century religious activity in Britain. At Hinton St Mary (Fig 13.6) a rectangular bipartite chamber was floored with the well known mosaic – generally interpreted to include a representation of Christ (Painter 1967). At Frampton (Fig 13.6) there is a room of similar proportions, here with an apse (Lysons 1813). It is possible that the same architect was responsible for both structures. Certainly the mosaics of these rooms originated from the same Durnovarian workshop. The similarity of the design for both architecture and mosaics in these buildings was first pointed out in the Villas Conference at Leicester in 1967 (Smith 1978). The influence of Durnovarian mosaicists has been traced through Wiltshire and into Gloucestershire. One may speculate that architects too would have travelled further afield in search of commissions.

In 1984 the writer was invited to re-examine a known site at Cherhill near Calne in Wiltshire where a suspected Durnovarian mosaic had been partially exposed in 1911. The area available for excavation was very small but, fortunately, enough evidence was recovered to indicate that a Durnovarian mosaic had once graced a tripartite hall of differing sized chambers, not dissimilar to that at Dorchester's Olga Road (Figs 13.6 and 13.7) (Johnson & Walters 1988).

East of Cherhill, also in Wiltshire, is Littlecote. The tri-conchal hall on that site is unique in Britain and, architecturally, quite alien (Fig 13.6 and 13.8). Its closest comparison is the Frampton chamber with only one apse. At Littlecote the apses have polygonal exteriors. Polygonal tri-conches are not common before the early 6th century. It is a structural element of ecclesiastical architecture which evolved in the Aegean area of the Eastern Empire at this time (Walters 1983). At Littlecote the tri-conch is possibly the earliest of its form known, dating to around AD 360-5, even though tri-conches with semi-circular or square exteriors are common in Africa and the Eastern Empire from the 3rd century.

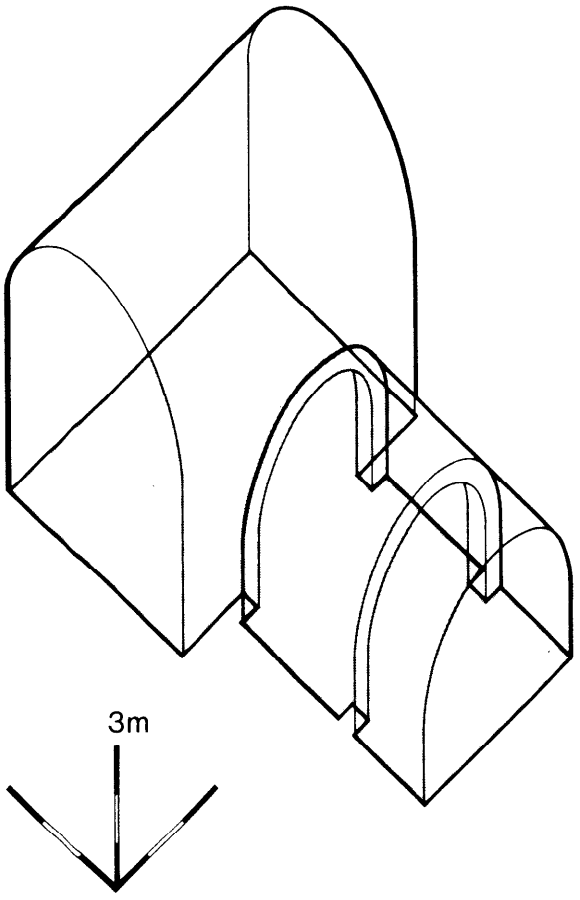

Fig 13.7 Cherhill (Luigi J Thompson)

The late gatehouse at Littlecote may also have had an impressive entrance, with twin towers flanking a vaulted entrance passage, and linked above by a room rather like that within the gateway of a fort (Fig 13.9). On the plan what appears to be the foundations of large buttresses were, more likely, arched extensions designed to increase the size of the rooms above, providing, speculatively perhaps, yet another example of a tripartite hall, only now on an upper floor.

At Castle Copse, Great Bedwyn, a few miles south of Littlecote an unusual suite of rooms was partially uncovered during excavations undertaken by E Hostetter of Indiana University (Hostetter 1987; 1996). An 'L'-shaped room was exposed which contained a pool at its centre. The pool was surrounded by a mosaic which had been polished to a marble-like finish. This chamber shared an irregular party wall with a possible ornate *aula* which extended into the forward *porticus* (Fig 13.6) and may be a further example of a multi-partite chamber. The late house at Castle Copse exceeds 100m square, far larger than those of Keynsham and Woodchester. Excavations have shown that the quality of its construction and finish undoubtedly places this building amongst the most palatial in Britain, and comparable with the finest villas in the Empire.

Exeter and Dorchester, as *civitas* capitals, may have achieved a greater height of economic prosperity in the 4th century than hitherto credited. It has been shown in recent years that London declined as a major port (Brigham 1990). The evidence suggests that, before the end of the 3rd century, and before the riverside city wall was constructed, London's wharves had been abandoned and left to decay. It was further suggested that this was caused by a tidal regression resulting in a fall in the Thames' levels. This prevented shipping from reaching the capital. What then was happening to the trade routes in and out of *Britannia*? In the London area excavations have produced about 100 sherds of 4th-century African *amphorae*. When one compares the large areas excavated in London with the far smaller sites examined in Dorchester and Exeter, a higher percentage of African and Mediterranean imports would appear to have been entering those western capitals. Up to 1980 some 5kg of North African *amphorae* sherds had been recovered from Exeter (Holbrook & Bidwell 1991). To date, in Dorchester, over 80 sherds have been recorded collectively; 21 from one site alone (Williams 1993). This comparison is made as an indication of the change which could have been taking place in the direction of foreign trade in the south of the province, favouring ports in the south-west – a shift which could reflect a strong Mediterranean influence in that area. North African and Eastern Mediterranean pottery has been recovered from several post-Roman sites in Western Britain. Could those later trading traditions have been established in the 4th century at major centres like Exeter and Dorchester? Aside from *amphorae* and their contents, there would have been more perishable commodities. For example, the remains of a dress made of cloth originating from North Africa was recently found in a sarcophagus in North Wiltshire, along with a Palestinian *amphora* (Chandler forthcoming). But what of the influx of ideas and innovations? These would only survive if written down, or developed into a tangible form, such as the remains of those buildings described above, which could be recovered by 20th-century archaeology.

This paper has attempted to demonstrate that two distinctive groups of ornate architectural styles developed in a fairly limited compass of late Roman Britain, and that this was brought about, not by any local indigenous evolution, but by an increasing contact with the greater Empire. This resulted in a distinctive school of architectural designers in south-western Britain in the middle of the 4th century. If not themselves of African or Mediterranean origin, they, at least, received instruction or inspiration from those areas of the Roman world. The archaeological evidence indicates that late Roman Britain, architecturally at least, was not quite the backwater it was once deemed to be.

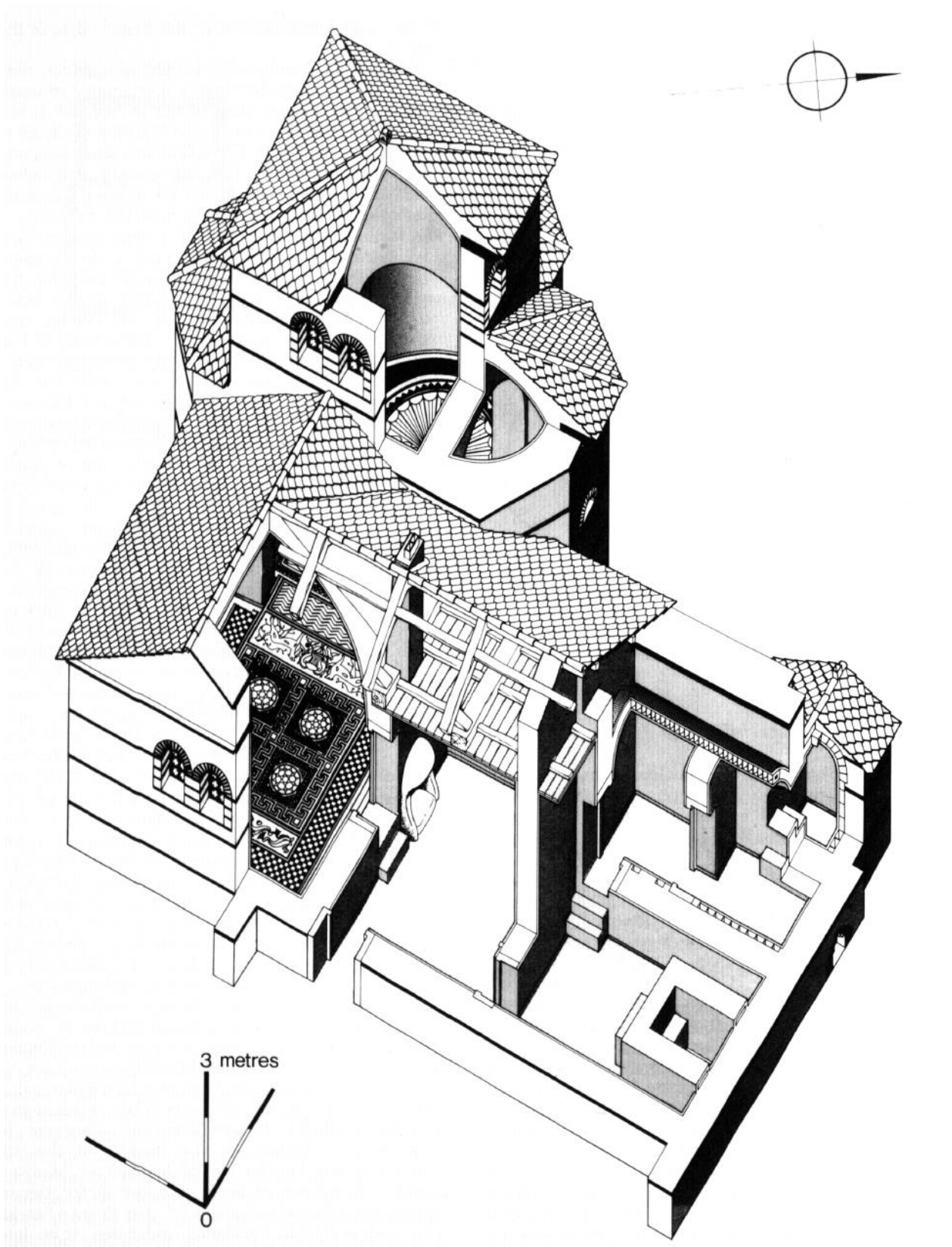

Fig 13.8 Littlecote tri-conch (Luigi J Thompson)

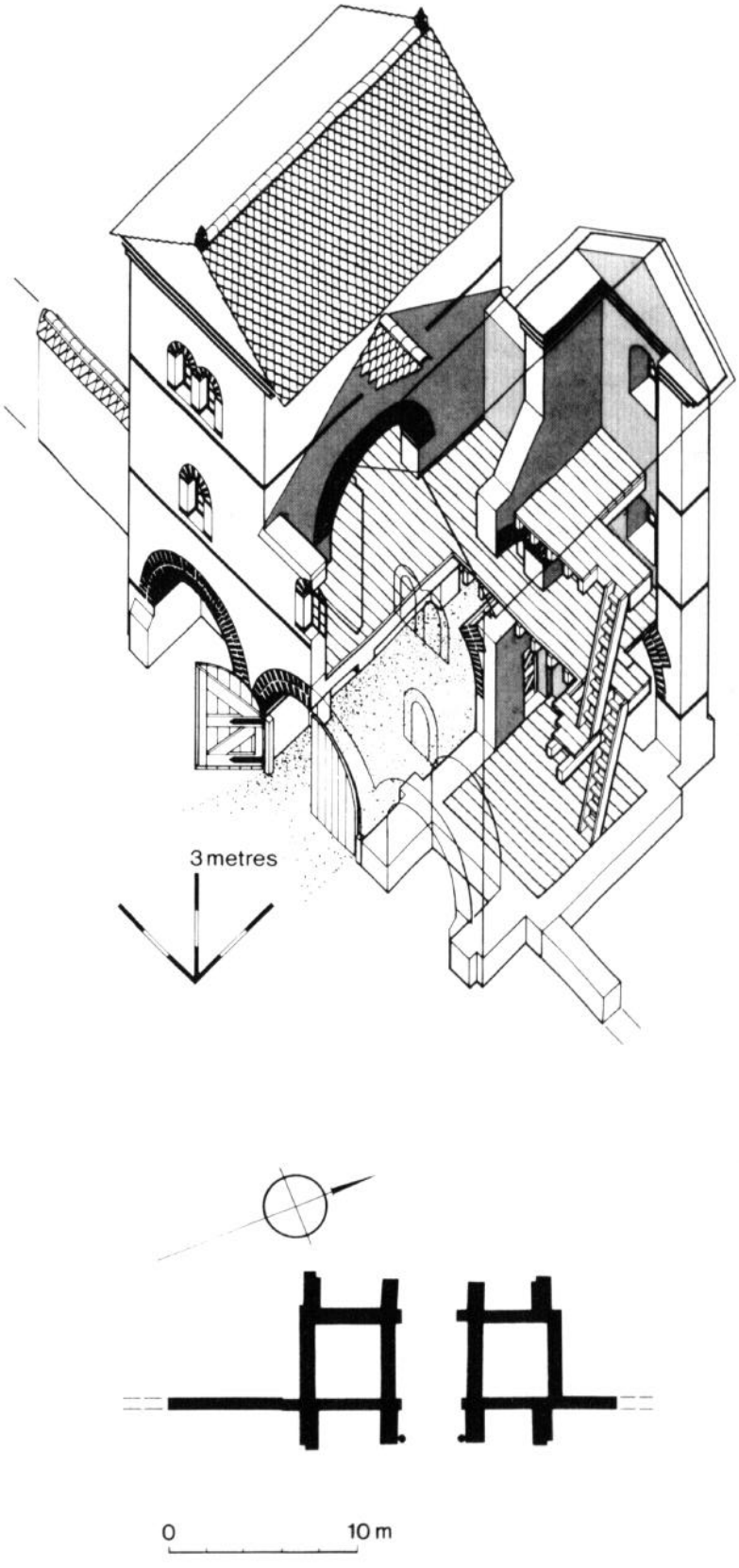

Fig 13.9 Littlecote gatehouse (Luigi J Thompson)

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Notes

1. Page numbers in *italics* indicate pages where an illustration can be found
2. Page numbers followed by n (eg 118n) refer to notes