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Excavations at Portchester Castle

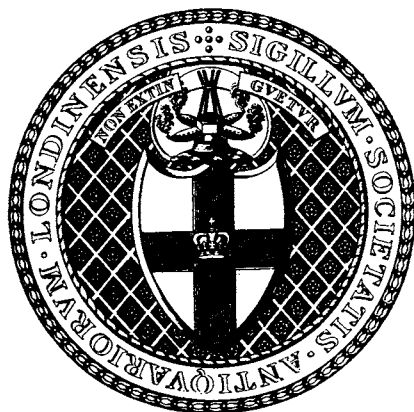
Volume I : Roman

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CONTENTS

	PAGE
List of Figures	vi
List of Plates	x
General Bibliography	xii
 PREFACE	 xv
 I INTRODUCTORY SECTIONS	 I
General Introduction	I
Introduction to the Report	3
The Site and the Environment	3
Pre-Roman Occupation	6
Early Roman Occupation	8
The Nature of the Surviving Late Roman Remains	10
 II THE FORTIFICATIONS	 13
Walls	13
Bastions	21
Postern Gates	26
Main Gates	29
Ditches	37
 III THE INTERIOR AREA: ESTABLISHMENT OF A SEQUENCE	 38
Introduction	38
Area A: The Build-up of Layers against the Fort Wall	38
Area A: The Sequence of Roads and Make-up Layers	49
Area A: Summary List of Stratified Coins as Dating Evidence	59
Area B: Evidence for Phases	61
Area C: Evidence for Phases	62
 IV THE INTERIOR: THE PLAN AND THE STRUCTURES	 63
Introduction	63
Roads and Gravel Spreads	63
Buildings and Associated Structures	65
Structural Evidence out of Position	71
Drainage Gullies	73
Wells	75
Pits	76

	PAGE
V SUBSIDIARY AREAS	180
Area D	180
Trial Trenches in the Centre of the Fort	184
Excavations within the Inner Bailey	185
Excavations within the Priory	185
Excavations outside the Roman Defences	186
VI THE COINS, by Richard Reece	188
Introduction	188
Coin List	188
Method of Study	190
Discussion	194
Summary	197
VII THE FINDS	198
Bronze and Silver, by Janet Webster	198
Bone and Antler, by Janet Webster	215
Shale, by Janet Webster	226
Glass, by Margaret Guido	230
Gemstone, by Martin Henig	231
Lead, by Janet Webster	232
Iron, by Janet Webster	233
Leather, by Timothy Ambrose	247
Wood	262
Miscellaneous, by Janet Webster	262
Whetstones, by David Peacock	265
Querns	267
Bibliography	268
VIII THE POTTERY, by Michael Fulford	270
Introduction	270
Pottery from the Pits and Wells	272
Methods of Study	275
Samian, by Joanna Morris	276
Argonne Ware	278
Other Imports	279
Colour-coated Fabrics	279
Fabric A: Hand-made	286
Fabric B: Black-burnished	292
Fabric C: Grey Wares	293
Fabric D	299

CONTENTS

v

	PAGE
Sources of the Pottery	301
Type Series	301
Bibliography	366
 IX THE GLASS, by Donald Harden	368
Introduction	368
Inventory	369
 X THE HUMAN BONES, by Bari Hooper	375
Discussion	375
Inventory	376
Bibliography	377
 XI THE ANIMAL BONES, by Annie Grant	378
Introduction	378
The Animals Represented	379
Butchery and Analysis of Bones Represented	384
Age Structure.	393
Metrical Analysis	399
Disease and Injury	402
Conclusions	404
The Dog Bones, by R. Harcourt	406
Bibliography	408
 XII THE BIRD BONES, by Anne Eastham	409
 XIII THE CARBONIZED CEREALS, by P. Murphy and J. M. Renfrew	416
 XIV DISCUSSION	419
 Appendix A: the Sections	432
 Appendix B: the Use of Tooth Wear as a Guide to the Age of Domestic Animals, by Annie Grant	437

LIST OF FIGURES

	PAGE
1. Location plan	4
2. Plan of the castle	5
3. Neolithic axes and flints	7
4. Sherd of Iron Age pottery	8
5. Early Roman pottery	9
6. Plan of the Roman fort	14
7. Section of the Roman wall of Pevensey	15
8. Section of the Roman wall of Portchester	16
9. Timbering in the foundation of the south wall	17
10. Timbering in the foundations of Pevensey and Richborough	18
11. Details of bastion foundations	23
12. Plan of bastion 18	25
13. The postern gates	27
14. Elevation of the south postern gate	28
15. The landgate	30
16. Axonometric reconstruction of the landgate	32
17. The watergate	35
18. Plan of the excavated features of all periods	facing 38
19. Simplified sections	39
20. General plan of Roman features	facing 64
21. Painted plaster	73
22. Plan of Area A: early features	} between 76 & 77
23. Plan of Area A: later features	
24. Plan of Area B	
25. Plan of Area C	
26-	
105. Plans and sections of the pits	79-178
106. Plan of Area D	181
107. Trenches in the centre of the fort	185
108. Coin histogram	191
109. Bronze brooches	200
110. Bronze military equipment	202
111. Bronze bracelets	204
112. Bronze bracelets and rings	208
113. Bronze toilet articles and spoons	211
114. Bronze objects: miscellaneous	213
115. Bronze objects: miscellaneous	214
116. Bone pins	217
117. Bone bracelets and combs	219
118. Bone objects connected with spinning and weaving	221
119. Bone handles and miscellaneous objects	223
120. Antler objects	225
121. Shale spindlewhorls and bracelets	227

LIST OF FIGURES

vii

	PAGE
122. Shale bracelets, beads and other objects	229
123. Objects of glass and lead	232
124-	
131. Objects of iron	234-46
132-	
136. Leather shoes and other objects of skin and leather	249-58
137-	
138. Wooden objects	261-3
139. Objects of stone and clay	264
140. Quernstones	267
141. Main fabric trends at Portchester	275
142. Samian stamps	277
143. Argonne ware	279
144. Date ranges of New Forest types	280
145. Date ranges of Oxfordshire types	283
146. Comparison of beaker sources	283
147. Amounts of red colour-coated mortaria, types 57-61, from the New Forest and Oxfordshire	284
148. Amounts of red colour-coated bowls and mortaria, types 28-61, from the New Forest, Oxfordshire, etc.	285
149. Amounts of 'parchment' ware mortaria, types 63-7, from the New Forest, Oxfordshire, etc.	286
150. Amounts of all 'parchment' ware vessels, types 48-67, from the New Forest, Oxfordshire, etc.	287
151. Amounts of New Forest, Oxfordshire and other colour-coated types and fabrics as percentages of the main groups	287
152. Amounts of New Forest and Oxfordshire types and fabrics as percentages of the main groups	288
153. Grog-tempered ware; heavy mineral analysis: zircon, rutile and the rest	288
154. Grog-tempered ware; heavy mineral analysis: kyanite, rutile and garnet	289
155. Grog-tempered ware; heavy mineral analysis: tourmaline, andalusite and garnet	290
156. Distribution map of grog-tempered ware	292
157. Distribution map of Fabric D wares	297
158. Amounts of non-colour-coated ware types and fabrics as percentages of the main groups	298
159. Cluster analysis: heavy mineral analyses of Portchester grey wares	298
160. Cluster analysis: heavy mineral analyses of kiln wasters	299
161. Amounts of pottery compared with distance from source	300
162. Map showing the proportions of pottery originating from known sources	300
163. Diameter variation of flange bowls	301
164. Amounts of flange bowls, types 85-7	302
165. Amounts of dishes, types 107-9	302
166. Rim diameter variation of jars, types 123-32	303
167. Amounts of jars in the three main, non-colour-coated fabrics	303
168. Types 123-7: black-burnished jars and their close imitations in grog-tempered and grey fabrics	304
169. Pottery types 1-2	305

	PAGE
170. Pottery types 3-12	307
171. Pottery types 13-17	309
172. Pottery types 18-22	312
173. Pottery types 23-30	315
174. Pottery types 31-34	317
175. Pottery types 35-36	318
176. Pottery types 36-42	321
177. Pottery types 43-48	323
178. Pottery types 49-54	325
179. Pottery types 55-57	327
180. Pottery types 58-63	329
181. Pottery types 64-66	331
182. Pottery types 67-79	333
183. Pottery types 80-85	335
184. Pottery types 86-88	338
185. Pottery types 89-99	340
186. Pottery types 100-107	342
187. Pottery types 108-118	345
188. Pottery types 119-123	347
189. Pottery types 124-129	349
190. Pottery types 130-136	351
191. Pottery types 137-141	354
192. Pottery types 142-153	356
193. Pottery types 154-159	359
194. Pottery types 160-174	362
195. Pottery types 175-177	364
196. Pottery types 178-180	365
197-	
198. Glass vessels	370-2
199. Window glass	374
200. Animal bones: percentages of species represented	380
201. Animal bones: percentages of bones represented	<i>facing</i> 384
202. Animal bones: beef cuts	390
203. Age structure of cattle jaws	395
204. Age structure of sheep/goat jaws	397
205. Age structure of pig jaws	398
206. Ox metacarpals	402
207. <i>Gavia immer</i> from pit 236	414
208. Summary plan of the Roman periods	424
209. Sections of the landgate: sections 1-3	
210. Sections of the watergate: sections 4-6	
211. Sections of the interior area: sections 7-9	
212. Sections of the interior area: sections 10-12	
213. Sections of the interior area: sections 13-14	
214. Sections of the interior area: sections 15-16	
215. Sections of the interior area: sections 17-20	

} *between*
436 &
437

LIST OF FIGURES

	PAGE
216. Sections of the interior area: sections 21-25	} <i>between</i> 436 & 437
217. Sections of the area against the west wall: sections 26-30	
218. Section across the Roman ditches: section 31	
219. Plan of trenches and sections	
220. Tooth wear: cattle	438
221. Tooth wear: sheep	439
222. Tooth wear: pigs	440

LIST OF PLATES (at end)

- I General view of Portchester Castle from the air
- II The south wall
- III *a* Join of working parties, internal face
b Join of working parties, external face
- IV *a* 1961 excavation facing south
b 1961 excavation facing towards the landgate
- V *a* The south wall, internal face exposed with clay bank
b The south wall, internal face exposed
- VI *a* The clay bank against the south wall
b The clay bank sectioned to expose the south wall
- VII *a* Bastion 16
b Bastion 20
- VIII *a* Bastion 5
b Bastion 5, interior excavation
- IX *a* The site of bastion 9
b The footings of bastion 9
- X *a* The site of bastion 7
b The footings of bastion 7
- XI *a* Pointing within bastion 7
b Bastion 15
- XII *a* Bastion 18, view of excavation
b Bastion 18, internal wall face
- XIII *a* Bastion 18, inner corner of bastion
b North postern gate, general view
- XIV *a* North postern gate, east side
b North postern gate, west side
- XV *a* South postern gate, west side
b South postern gate, general view
- XVI The landgate from the outside
- XVII *a* The landgate, junction of Roman and Norman work inside
b The landgate, junction of Roman and Norman work outside
- XVIII *a* The landgate, south inturned wall and fort wall
b The landgate, south inturned wall
- XIX *a* The landgate, south inturned wall at junction of gate tower
b The landgate, north inturned wall below Norman work
- XX *a* The landgate, south gate tower looking east
b The landgate, south gate tower looking west
- XXI *a* The landgate, north gate tower footing
b The landgate, north gate tower foundation
- XXII *a* The watergate, general view
b The watergate, face of north inturned wall
- XXIII *a* The watergate, south inturned wall
b The watergate, north inturned wall face

LIST OF PLATES

xi

- XXIV *a* The main north-south road facing the south postern gate
b East-west Road 1
- XXV *a* Gravelled area in trench 100
b Gravelled area in trenches 65 and 66
- XXVI *a* Metalling in trenches 100-103
b The clay bank in trenches 107-108
- XXVII *a* The Roman ground surface in trenches 89 and 90
b The Roman ground surface in trenches 88 and 89
- XXVIII *a* Cesspits in trenches 60, 62, 63 and 65
b General view of trenches 77 to 82
- XXIX *a* Beam impression, building R5
b Oven 4
- XXX *a* Pit 103
b Hearth 4
- XXXI Roman tiles
- XXXII *a* Double struck coin of Tetricus I
b Gemstone
- XXXIII Worked antler
- XXXIV *a* Decorated whetstone
b Skin vessel
- XXXV Shoe no. 267
- XXXVI Shoe no. 266
- XXXVII Animal bones, showing disease
- XXXVIII Animal bones, showing butchery
- XXXIX Animal bones, showing butchery
- XL Skull of *Gavia immer*

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(Note: detailed bibliographies will be found with several of the specialist reports)

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PREFACE

THE first phase of excavation at Portchester Castle, which began in June 1961, came to a close in July 1972. This report is the first volume of a series which will cover the development of the site from prehistoric times until the early nineteenth century. Twelve years of excavation have necessarily involved the efforts and goodwill of a large number of people; sadly only a few can be mentioned by name here.

Permission for the excavation was given by the Department of the Environment, the guardians of the site, with the willing co-operation of the landowners, the Southwick Estate and the Fareham Urban District Council. The kindly co-operation of the Department's inspectors responsible for the monument, Messrs R. Gilyard-Beer, S. E. Rigold and A. Saunders, has at all times ensured the smooth and untroubled running of the excavation. With their encouragement and the active assistance of the area superintendent, Mr W. Taylor, and of the successive site foremen, Messrs R. Sanders and A. Pearce, the administrative and practical difficulties which so often accompany large-scale excavation were easily eliminated.

Generous grants towards the cost of excavation were made annually by the Department of the Environment, the Society of Antiquaries, the British Academy, and the Haverfield Trust. Additional financial support came from the Hampshire Field Club, the Libraries and Museums Committee of the Portsmouth City Council and the Joint Archaeological Committee (of South-east Hampshire and South-west Sussex). It need hardly be said that without the support of these bodies the excavation would not have been possible. In all £9950 was spent on excavation between 1961 and 1972.

The work was under my direction with assistance from two or three site supervisors a year. To all of them, Tim Ambrose, David Baker, Brendan O'Connor, Fred Ferguson, Mike Fulford, Patrick Greene, Tony Norton, Mike Parrington, Bill Startin, Nigel Sunter and Alyson Taylor I wish to record my grateful thanks. The debt of every excavation director to the efficiency and accuracy of his supervisors is considerable: the speed with which the first volume was created is a measure of their highly organized site records.

The very large quantity of material which was recovered each year was admirably organized on site by a succession of lady assistants, including Mrs Frances Cunliffe, Miss Alyson Taylor, Miss Pauline Winstanley, Mrs Jo Chaplin and Miss Karen Lawrence, while site photography was in the hands of David Baker, David Leigh, Nick Bradford and Mike Rouillard. Only the writer can have a full appreciation of the importance of their support.

The preparation of this report also involved the efforts of a not inconsiderable team of co-workers. For the last year Mrs Judi Startin has performed the invaluable function of general organizer, at all times knowing where everything was and, even more important, being able to produce any object at a moment's notice. The relative ease with which (I hope) this report can be used owes much to her efficient and understanding organization. Even a cursory examination of the following pages will show how much labour has been expended on illustration. All the pottery was drawn by Miss Jane Holdsworth, all the small finds and diagrams by Mike Rouillard, while the writer has been responsible for plans and

sections. Our great debt to Miss Holdsworth and Mr Rouillard needs no emphasis; their published work will serve as a constant reminder of their invaluable contribution. All the photographs were produced at short notice by Mr R. Wilkins with the assistance of Miss Lorna Llewellyn. The site photographs were printed from the negatives provided by the excavation photographer, but all the object photography was undertaken in Mr Wilkins' department in the Institute of Archaeology at Oxford.

The specialist reports which form such an important part of this volume are all credited to their authors. To single out any particular contribution for comment would be impossible but anyone who has handled quantities of archaeological material will be able to appreciate the immense labour and expertise involved. The good-natured response of all the contributors to my constant, but I hope gentle, pressures to meet deadlines was very gratefully received.

The unstinted efforts of the small team who worked so hard as the deadline for this report approached will remain a vivid memory. Miss Angela Blanch produced the entire typescript in a neat and unbelievably accurate form, from a jumble of scribblings, with the utmost speed and efficiency, while Tim Ambrose, Mike Rouillard, Lorna Llewellyn and Bob Wilkins worked long hours to ensure that everything was ready on time. Without their dedicated efforts this volume would have been long delayed.

The work involved in preparation for publication was no less arduous or costly than the excavation itself. That it could be attempted at all is entirely the result of two generous grants, one from the Pilgrim Trust for conservation work, the other from the Gulbenkian Trust for specialist preparation. The farsighted response of these bodies puts us all firmly in their debt. All the archaeological material from the Roman levels at Portchester is now in the Portsmouth City Museum.

These words are being written as the second phase of excavation at Portchester begins, a programme of excavations designed to explore the medieval castle. The subsequent volumes of this series dealing with the medieval period must necessarily await the completion of the exploration, but in the meantime work is in hand on the second volume covering the Saxon occupation.

Barry Cunliffe

Institute of Archaeology, Oxford
5 July 1973

I. INTRODUCTORY SECTIONS

GENERAL INTRODUCTION

PORTCHESTER CASTLE lies at the head of Portsmouth Harbour (pl. I), an almost landlocked expanse of water, triangular in shape, with its apex providing a narrow exit to the open water of the Solent. The first major structure to be erected on the site was a 8½ acre (3·4 hectare) shore fort of late Roman date, which was occupied from the 280s. Occupation continued throughout the Saxon period and in the early tenth century Portchester was used as a burgh, fortified against threat of Viking attack. Towards the end of the eleventh century, the old Roman enclosure was used once more, this time as the outer bailey of a Norman castle built in the north-west corner. Early in the twelfth century, an Augustinian Priory was established in the south-east quarter, but it was abandoned within a few years, the monks moving to a more congenial site at Southwick, 3 miles (4·8 km.) away. Their church, however, has remained in use as the parish church ever since.

The Norman castle continued to be fortified until the fourteenth century, the last phase being represented by the outer earthwork thrown up to protect the approaches to the castle at the time of the French raids along the south coast in the early fourteenth century. Thereafter, the site declined in military significance with the growth of Portsmouth, lying at the entrance to the harbour.

Towards the end of the fourteenth century, a massive programme of rebuilding was carried out at Portchester, in an attempt to turn the castle into a comfortable fortified residence for Richard II, but the removal of the king from power in 1399 left the new work unfinished. Thereafter, a series of constables continued to maintain the fabric until the building was finally sold by Charles I in 1632. Before then, the site had been used several times as a mustering base for troops. The most famous occasion was in 1415 in the days before Agincourt. There had also been an attempt to turn it into a naval store base early in the sixteenth century by the erection of a vast storehouse, but the castle was too inconveniently sited in relation to Portsmouth and the attempt failed.

In the last phase of its life, Portchester served as a prison camp, first during the Dutch wars in the seventeenth century and later during the wars with France, reaching a peak in the period from 1793 to 1814. After a brief and mercifully unsuccessful attempt to turn the castle into a hospital for veterans from the Crimean war, the site was abandoned to more rural pursuits, and indeed was farmed until the Office of Works assumed responsibility for the monument in 1926.

The early antiquarians took little notice of Portchester, presumably because of its continued use as a military installation until as late as the early nineteenth century. Then followed a number of accounts, many somewhat romantic and most of little value.¹ The

¹ Among the more interesting or amusing descriptions are: E. King, *Munimenta Antiqua*, 2 (1801), 22–35; J. H. Cooke, *Portchester Castle—its Romance in Tradition and History* (Portsmouth, 1928); J. D. Henderson, *Guide and History of Portchester Castle* (Portsmouth, c. 1890); Rev. Canon Vaughan, *A Short History of Portchester Castle* (local, pre-1923); Anon., *Portchester Castle, its Origin, History and Antiquity, interspersed with anecdotes of its occupation during the late French wars* (local, 1845).

first scholarly description was published in the Victoria County History in 1908, covering both the historical and architectural development of the site. The descriptive sections of the work were not superseded until the appearance of the official Guide Book; the historical account remained the standard work until the publication of *The King's Works* in 1963.¹

Before 1961, when the present series of excavations began, little archaeological attention had been paid to the site. The massive clearance works undertaken in the 1920s and 30s were ill recorded and the bulk of the large collection of artifacts recovered was stacked into a cupboard in the site hut, and there remained until it was re-discovered in 1961. Unfortunately, by that time most of the bags and labels had rotted, or had been eaten by rodents, and the individual groups had been reduced to an amorphous heap. A few of the small finds and all of the coins had, however, been removed to the Ministry of Works soon after the excavation, allowing some passing reference to be made to the coin sequence by Bushe-Fox in his general paper on Shore Forts published in 1932 (see General Bibliography).

The watergate received some attention in 1955 when Dr R. M. Butler suggested it to be basically a Roman structure, a view originally hinted at by Sir Mortimer Wheeler 20 years earlier (Wheeler, 1935). Subsequent excavation has suggested that a late Saxon date would be more appropriate. Finally, in 1956, a single trial trench was cut across the outer Roman ditch, south of the road leading to the entrance, by the Ministry of Works at a time when a proposal to build a public lavatory in the area was under discussion.

The present series of excavations was planned in 1960 with two objectives in mind; to examine the nature of the Roman defences and to test the possibility of settlement continuity in the south-west quarter of the fort, but before work could be begun, the need arose to excavate a large area inside the west wall south of the landgate, where it was expected that the public lavatory was to be built. This excavation was carried out in 1961, and exposed part of the Roman west gate.

From 1962-4, the original objectives were reinstated, with the examination of the east and west gates and several of the bastions (Easter 1962-Easter 1963), the sectioning of the Roman ditches (June 1963), the sectioning of the outer earthwork (Easter 1964), and the digging of test trenches in the south-west quarter of the fort (Easter 1964). By 1964 the work on the defences was largely accomplished, but the opportunity was later taken to cut two further sections through the outer earthwork (July 1968 and July 1972).

The test trenches in the interior of the fort had demonstrated the survival of archaeological features spanning the period from the late third to the early nineteenth century, but showing at the same time that limited excavation was less than useless in interpreting the features exposed. It was therefore decided to attempt the large scale stripping of a continuous area in the south-west quarter of the fort. Work began in 1965 and continued annually each summer until 1972, by which time an area measuring some 300 by 150 ft. (91 by 46 m.) had been cleared. The completion of the first stage of this programme presents the occasion for the production of this report.²

In parallel with the area excavation, work began on the examination of the Priory and

¹ H. Colvin, *The King's Works* (1963), 783-92.

² Interim reports have been published from time to time. These include: Cunliffe 1963, 1966, 1969, 1970, 1971, 1972.

the Castle. This project is still in operation, and is expected to take several years to complete. At that stage it will be decided whether or not to undertake a further programme of area excavation.

INTRODUCTION TO THE REPORT

The present volume deals with Roman features and material derived from the excavations of 1961–72, taking note of earlier discoveries. The post-Roman finds will appear in subsequent volumes: Volume 2: Saxon, is to appear shortly, followed by Volume 3, concerning the medieval outer bailey and the Priory.

In the sections to follow, an account is first given of the scattered finds pre-dating the late Roman fort. Then follows a detailed description of structures representing the shore fort, prefaced by a short consideration of the post-depositional history of the Roman levels, necessary to understand the limitation of the evidence. The description is divided into four parts: the fortifications which includes all standing structures, the ditch system, and the results of the excavations relevant to the defences; an introduction to the chronological sequence inside the fort, with a summary of the evidence on which it is based; a description of all features found in the main area excavation; and a description of the results of excavations elsewhere inside the fort.

The rest of the volume is devoted to specialist reports on the material, with a concluding chapter summarizing the results of the work in a historical and regional perspective.

In order to facilitate cross-referencing, several procedures have been adopted. All section illustrations have been relegated to the end of the volume, and are provided with their own commentary. Wherever they are relevant in the text, cross-reference is made. One great advantage of arranging the sections in this way is that they can be folded out beyond the text to facilitate use.

A second procedure concerns the treatment of small finds, including coins. To list them all together would be unnecessary and difficult to use. Here we have given detailed lists only in relation to well stratified features and layers: these lists include all objects recovered, even formless scraps of metal. In the small finds report, only identifiable small finds are dealt with, and then on a typological basis. Both lists are cross-referenced.

Much the same procedure is used for the pottery and bone. Both groups of material are dealt with in their own right, but cross-referenced summaries are attached to the descriptions of individual features.

THE SITE AND THE ENVIRONMENT

(figs. 1 and 2)

Portchester lies at the head of one of a series of harbours formed originally by the drowning of the Hampshire coastal plain in the period following the regression of the last ice sheet. By the Roman period, the relationship of the land to the sea must have been not dissimilar to the present situation, allowing for a retreat of the shore line through erosion. The solid

EXCAVATIONS AT PORTCHESTER CASTLE

geology hereabouts consists of chalk overlaid by thin and often discontinuous marl capped by a consistent layer of fine yellow silty clay, called brickearth. The depth of the chalk below the surface of the brickearth varies from about 1 ft. (0.31 m.) to 5 ft. (1.5 m.), the surface of the chalk being highly irregular and penetrated by pipes and fissures filled with marl. Copious springs can be tapped at a depth of about 10 ft. (3.1 m.).

The promontory upon which the fort was built stands at present at a height of 16 ft. (4.9 m.) above Ordnance Datum. The sea lapped the east wall at high tide until the modern retaining wall was built to prevent damage by undercutting, but extensive erosion can still be

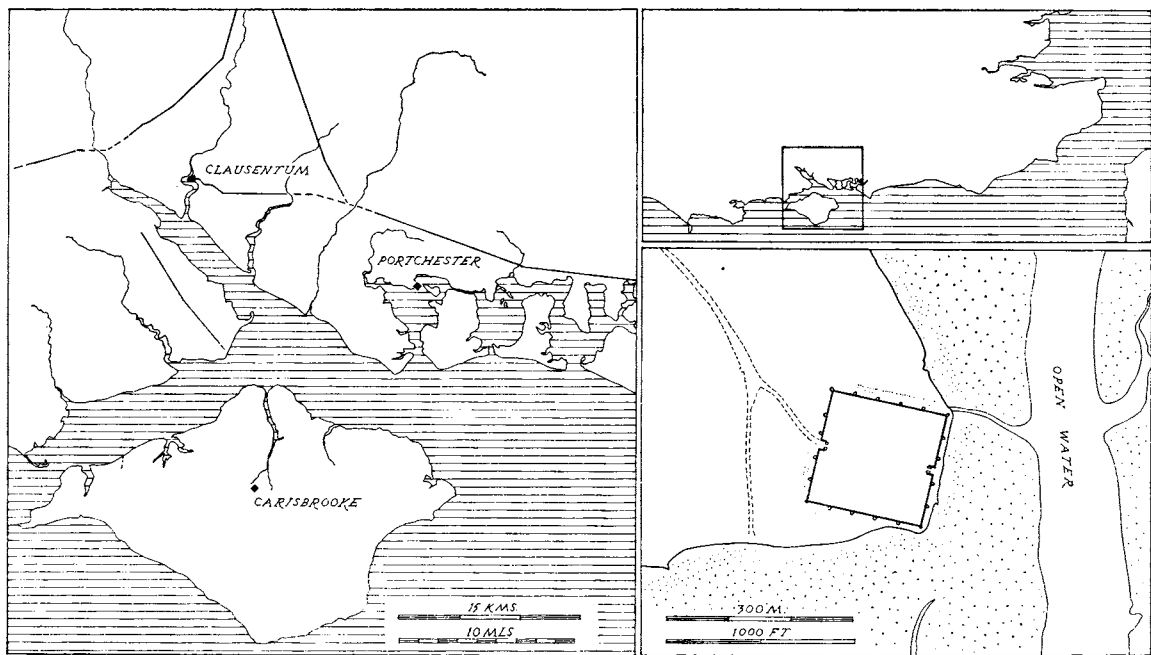


FIG. 1. The situation of Portchester

observed along the south shore of the promontory. Several feet of land have been lost in some places since the excavation began, and it can only be supposed that encroachment by the sea has gone on over a long period of time. Documentary accounts record serious erosion and flooding during turbulent weather in the early decades of the fourteenth century.

The position of the Roman shore line cannot now be established, but to the east it probably lay close to the deep water channel 500 ft. (152 m.) from the east wall, while to the south it could well have lain even further from the present shore. Thus the fort would probably have been sited a little inland, but close to open navigable water represented by the present channel which is unlikely to have changed position substantially.

The fort must once have been linked to the Roman road system. No trace of a service

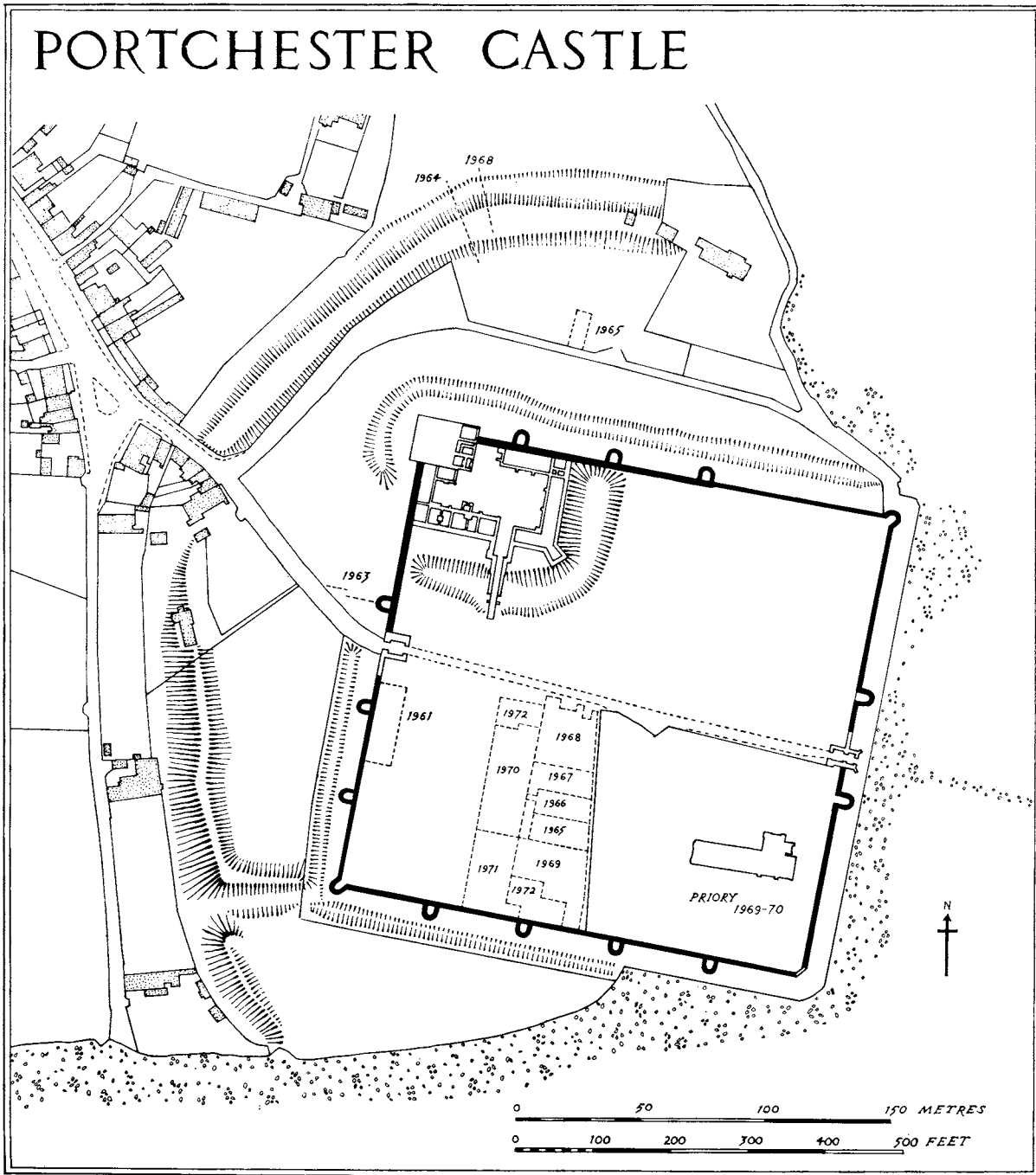


FIG. 2. The castle in its present setting

road survives, but the outline of the main road system is well established with an east–west road from Chichester to *Claesentum*, branching at Wickham to Winchester. Portchester was divided from the east–west road by the ridge of Portsdown which presented a steep ascent. One possible approach to the main road lies west from Portchester along the coast to Fareham and then north to join the system at Wickham, but until positive evidence of the line is produced, the matter must remain open.

Little is known of the Roman settlement pattern around Portchester. The coastal plain does not appear to have been densely settled and villas are absent, a fact which emphasizes the relatively inhospitable nature of the tertiary sands and clays, and the expanses of river gravel, which blanket much of the area to the west. The brickearth and the chalk ridge of Portsdown presented a more congenial environment which appears to have been settled by peasant farmsteads.

Pottery was made at Rowlands Castle, 6 miles (9·7 km.) to the east, while pottery and tiles were made at Botley, 8 miles (12·9 km.) north-west, but neither area appears to have been in major production by the time that Portchester was founded, although a few Rowlands Castle types did find their way to the site. The only other natural commodity produced locally was salt, which was extracted from sea water at a number of sites around the Solent shores. Other attractions would have included shell-fish, marsh birds and fish.

PRE-ROMAN OCCUPATION

The Portchester promontory was sporadically used in the pre-Roman period. The earliest occupation of the area dates to the Mesolithic and Neolithic periods. Several locations have been discovered around the north shores of Portsmouth harbour, where flint debris suggests the presence of camp sites used in the period spanning the seventh to third millennia, possibly by hunting parties engaged in the collection of wild fowl, fish and molluscs from the rich coastal environment.

During the excavation, a number of struck flint flakes were found on the original ground surface, most of them made from iron-stained flint of the kind which occurs in quantity around the shore. No concentrations came to light and the impression gained is that occupation was scattered and sporadic, although the possibility of the existence of more substantial camp sites nearby cannot be ruled out. Only four implements were recovered, including a fragment of a polished flint axe of Neolithic date (fig. 3, no. 2).

A complete polished axe of greenstone (fig. 3, no. 1) was found in the flint metalling of the Roman main N–S road leading to the south postern gate. How it came to be in this position is uncertain, but one possibility is that it was picked up from fields somewhere on the chalk downs along with the flints for the metalling and carted to the fort in the Roman period.

The only evidence of use during the second and first millennia B.C. was provided by a single sherd of pre-Roman Iron Age pottery (fig. 4). The absence of other traces is a reasonable indication that the site, or that part of it which has been excavated, was not occupied during this period.

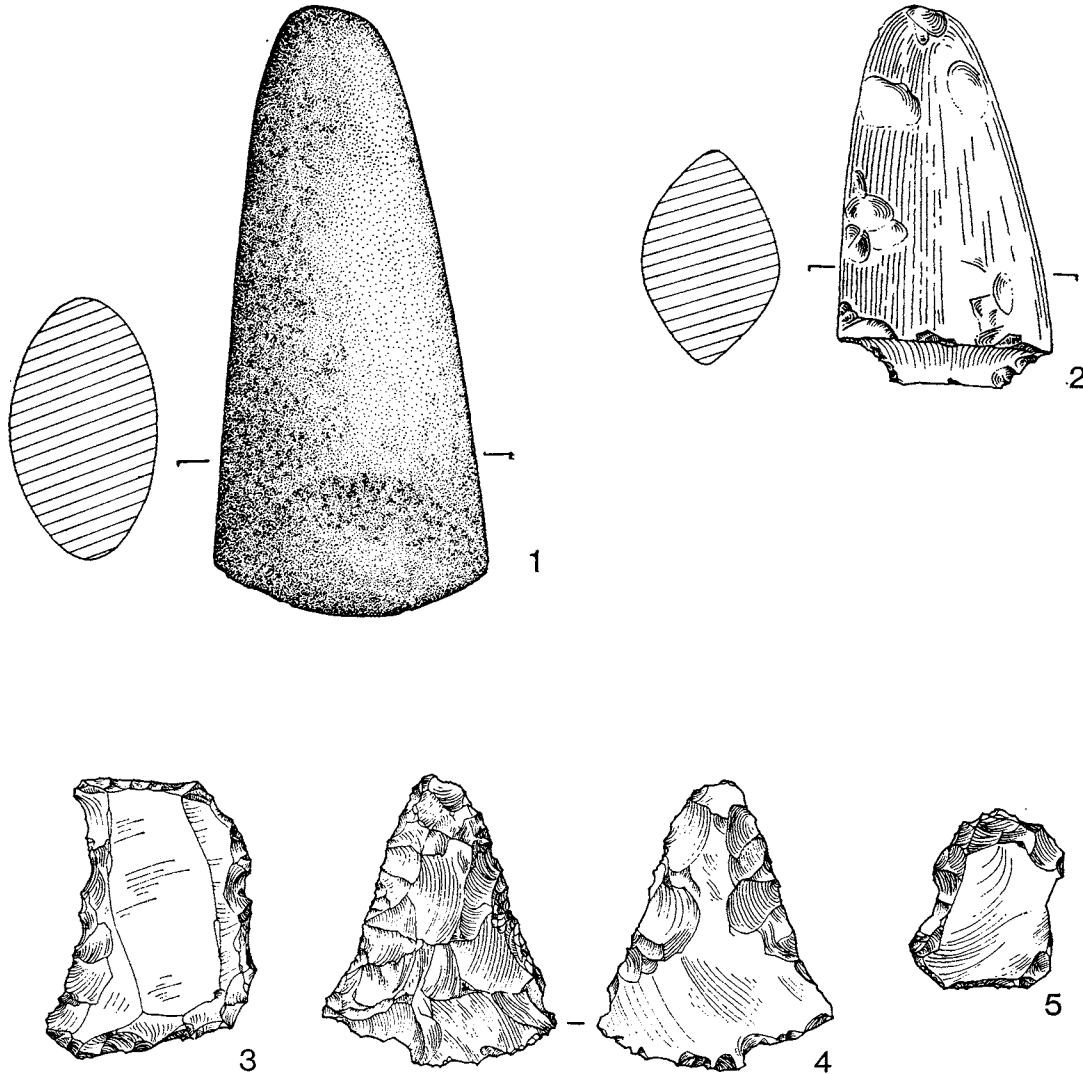


FIG. 3. Neolithic and early Bronze Age finds (pp. 7, 8).
Scales: nos. 1 and 2, $\frac{1}{2}$, nos. 3-5, $\frac{1}{1}$

*Small finds*¹ (fig. 3)

1. Polished stone axe. Greenstone ungrouped.
Trench 91 layer 46 (1315).
2. Polished flint axe. Broken and stained with iron salts.
Trench P₉ layer 12 (1237).²
3. Hollow scraper with abrupt marginal retouch on all edges. The edge working is least steep within the hollow. No clear wear patterns can be seen. The raw material is probably

¹ The description of the flint implements was contributed by Richard Bradley, Dr David Peacock kindly sectioned the greenstone axe.

² Trench P₉ was sited in the Priory grounds in the south-east corner of the fort. The axe was found in a Roman context.

derived from the chalk. The type is one which has a long history and this general form is present on both Mesolithic and late Neolithic sites in the immediate area. In the absence of earlier material here, the later date could be the more likely.

Trench 93 layer 6 (1328).

4. Transverse arrow-head with scale flaking on the upper surface and shallow inverse retouch. Abrasion is confined to the edges and the base and might suggest secondary use as a cutting implement. The raw material is probably derived from the chalk.

The form is closest to Clark's type G (Clark, 1934, especially fig. 12, 45), but the working of either edge and the scale flaking of the whole upper surface are unusual features. The associations discussed by Clark (1934) and by Wainwright and Longworth (1972, 170-3, 257-9) are predominantly late Neolithic and related forms seem to be particularly associated with Grooved Ware.

Trench 54 layer 7 (219).

5. End scraper on small irregular flake with possible wear on the right-hand edge. The raw material is possibly derived from gravel or beach flint. The type is not really dateable, but small irregular scrapers of similar form are often evidenced in Beaker contexts (for example Wainwright, 1972, 61-6).

Trench 54 layer 14 (87).



FIG. 4. Iron Age pot sherd (p. 8). Scale $\frac{1}{4}$

Iron Age pottery (fig. 4)

Single sherd of the rim of a jar in sandy fabric tempered with crushed flint. Fired reddish brown on the surface: surface smoothed.

Trench 97 layer 12.

Vessels of this kind are difficult to date with precision but appear to have been in use during the fourth to third century.

EARLY ROMAN OCCUPATION

A group of early Roman pottery was found in a restricted area of some 200 ft² (18.6 m²) just beyond the west end of the E-W road 1, an area much disturbed by late Saxon buildings. The pottery was found generally scattered in the churned-up Roman occupation level and in several post-Roman features. There was no level which could be identified as pre-late third century, nor is it possible to isolate early Roman post holes from the greater mass of postholes hereabouts.

A few sherds of contemporary material were found close to the main E-W road, and a single coin of Claudius (no. 2072) was recovered unstratified from the same area.

All the material belongs to the middle years of the first century A.D., and is best explained as a temporary settlement representing the transient use of the site by a very small group of people. The total absence of material dating to the period *c.* A.D. 50-280 points to lack of occupation until the late Roman fort was constructed.

Pottery
(fig. 5)

Bead rimmed jars; nos. 1-14

Wheel-turned, made in a variety of grey sandy wares. 2, 6 and 12 contain crushed flint grits. All have a well-smoothed surface which tends to be fired darker grey than the core. 14 is in a hard light grey ware with a light grey slipped surface burnished below the shoulder.

Provenances: 1, 56 layer 8; 2, 98 layer 22; 3, 55 layer 6; 4, 55 layer 6; 5, 58 layer 9; 6, 56 layer 7; 7, 75 layer 25; 8, 34 layer 12; 9, 58 layer 9; 10, 58 layer 9; 11, 55 layer 13; 12, 56 layer 5; 13, 56 layer 6; 14, 63 layer 4.

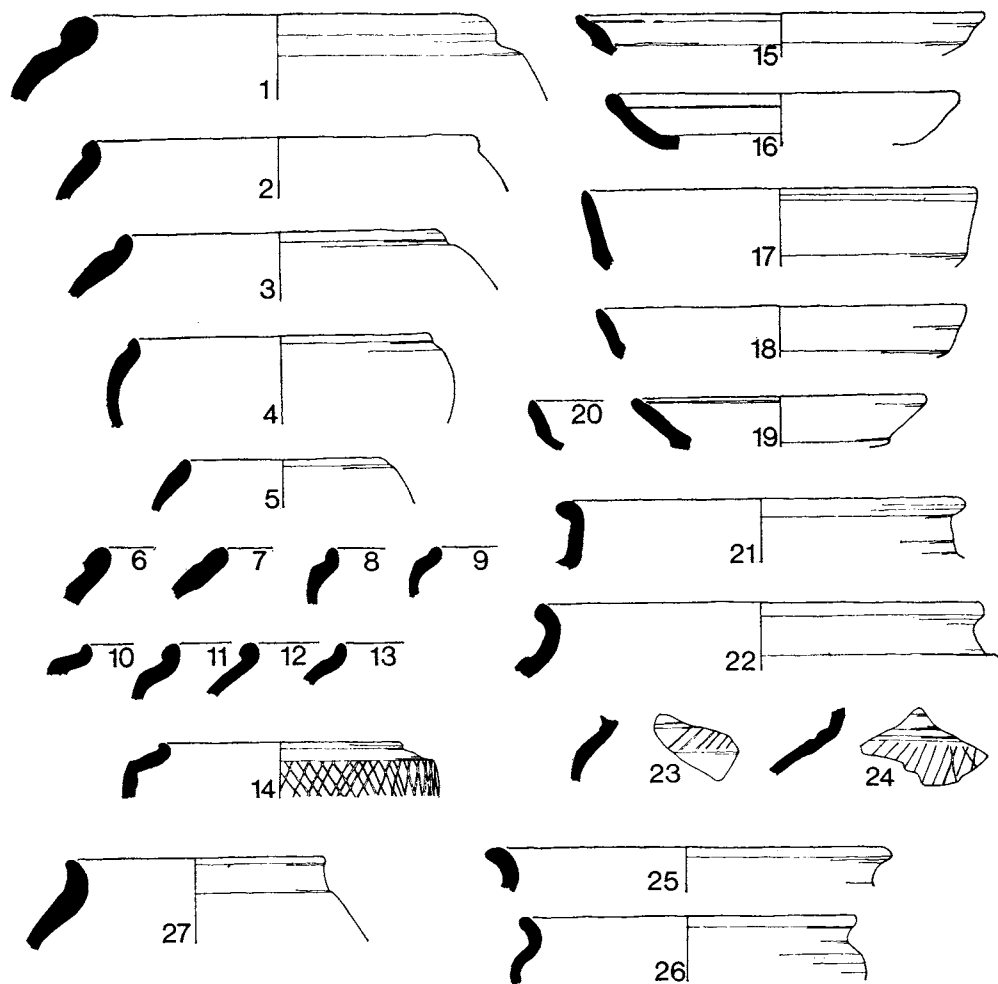


FIG. 5. Early Roman pottery (pp. 9-10). Scale $\frac{1}{4}$

Dishes and/or lids; nos. 15-20

Wheel-turned grey sandy wares with smoothed surfaces.

Provenances: 15, 56 layer 7; 16, 104 layer 8 and 58 layers 3 and 6; 17, 58 layer 7; 18, 55 layer 6; 19, 58 layers 5 and 6; 20, 58 layer 13.

Shouldered jars; nos. 21-24

Wheel-turned grey sandy wares with smoothed surfaces. 21 is a light grey ware, 22 dark grey with black burnished surface, 23 hard light grey with bluish slip, 24 soft light grey.

The basic form is of a jar with upstanding neck, sharp shoulder, sometimes with a cordon at the junction of the neck and shoulder.

Provenances: 21, 98 layer 30; 22, 56 layer 6; 23, 58 layer 9; 24, 58 layer 9.

Miscellaneous jars; nos. 25-27

25: grey flint gritted ware; 26: light grey sandy ware; 27: dark grey sandy ware, all wheel-turned with the possible exception of 25.

Provenances: 25, unstratified; 26, 56 layer 7; 27, 55 layer 5.

Pottery of the types represented above was commonly in use during the first half of the first century A.D., the forms originating in the preceding century. By *c.* A.D. 40 \pm 20 years, the fabrics were usually hard and sandy, the vessels almost invariably being wheel turned. The absence of associated imports prevents a closer dating of the Portchester group.

THE NATURE OF THE SURVIVING LATE ROMAN REMAINS

Towards the end of the third century, part of the Portchester promontory was enclosed by a massive masonry wall fronted by a double ditch system. Within the enclosure lay a series of metalled roads, together with timber buildings and probably isolated masonry structures.

The surviving evidence for the internal layout is discussed in detail below (pp. 38-186): it is derived entirely from excavation, since no trace of the Roman features now survives above ground. After the end of the Roman period, large areas of the fort were subjected to ploughing, which continued sporadically from Saxon times to the post-medieval period, interspersed with periods of intense building activity. The combination of these two processes has ensured that no Roman building survives above the impressions made by their basal timbers. The remaining Roman levels are now buried beneath between 1 and 3 ft. (0.3 and 0.9 m.) of later soil accumulation. While no masonry buildings were discovered in the area excavated, fragments of building material survived, often re-used in Saxon contexts. It seems likely therefore that some Roman masonry buildings existed, but were probably robbed of their re-usable building material in Saxon times.

The enclosing wall, 10 ft. (3.1 m.) wide and 20 ft. (6.1 m.) high, together with its 20 forward projecting bastions and four gates, survived substantially intact into the Saxon period, although the double ditch system had largely silted up by then. During the Saxon

period, part of the gatehouse of the west gate (landgate) was pulled down, leaving only the front wall in position, which was subsequently partly rebuilt using the original greensand blocks set in clay (to be discussed in Vol. 2). The gatehouse of the east gate (watergate) was also removed to its foundation level in Saxon times, probably to provide stone for structures built inside the fort. In the late Saxon period a new, smaller, gate was erected within the gap left by the removal of the Roman structure.

The first major changes to the Roman walls were carried out in the late eleventh and early twelfth century, at the time when the fort was converted into a Norman castle, for which the Roman wall served as the outer bailey. The two Roman postern gates were stripped of their greensand facing and blocked with flint and mortar masonry, while a new gatehouse was built to replace the ruined west gate. An inner bailey was created in the north-west corner of the fort, surrounding a keep which lay over the site of the north-west corner bastion (bastion 3): bastions 2 and 4 were probably heightened and used as integral parts of the Norman fortifications at this time.

The Norman building project required enormous quantities of building material, some of which, e.g. the Binstead limestone used for facing, was imported, while the rest, mainly flint for the rubble cores of the walls, was quarried from the internal face of the Roman fort wall. In most areas, up to 5 ft. (1.5 m.) of the original thickness was removed in this way. Three points of detail suggest that the quarrying was Norman. In the first place, the reduced thickness was exactly matched by that of the new blocking wall attached to the Norman landgate; secondly, the level to which the quarrying was taken was equivalent to the Norman ground surface; and thirdly, the only part of the Roman wall which was allowed to retain its former thickness was that part incorporated in the inner bailey where defensive strength was required.

By the twelfth century the ground surface had risen both inside and outside the walls to about 3 ft. (1 m.) above the Roman offset level, largely as the result of soil accumulation combined with the gradual erosion of the Roman masonry. The effect of this was to protect the original Roman facing. Inside the fort, except in the inner bailey, the post-Roman accumulation remains uncleared, but around the outside, on the berm between the wall and the inner ditch, the overburden was removed in the 1920s to foundation level. A close examination of the outer face often shows the position of the old ground surface as a horizontal line between the original Roman facing below and the refaced wall above.

Throughout the medieval period, the wall was subjected to patching and refacing. Considerable expenditure is recorded on this work in the documentary records and reference to undermining by the sea occurs more than once. It was during this period that bastions 7, 9 and 12 disappeared, and large stretches of the east wall seem to have been substantially rebuilt. Practically the whole length of the wall was heightened, and refaced in characteristic coursed masonry incorporating contrasting bands of flint and limestone rubble.

After the middle of the fourteenth century, little renovation appears to have been carried out, until the castle began to be used on a large scale as a prisoner of war camp throughout the eighteenth and early nineteenth centuries. During this period, extensive patching of the east wall was undertaken, with more limited refacing elsewhere, the new work often incorporating large squared blocks of limestone and bricks.

Finally, after the site was taken into guardianship by the then Office of Works in 1926,

clearance began. The inner Roman ditch was cleared out and the level of the berm lowered approximately to the Roman surface. A concrete sea wall was built around the east side, and the space between it and the Roman wall filled with spoil. Since then, work has been limited to the repointing of weakened areas of the wall face.

The extent of the survival of the Roman levels within the fort was largely conditioned by the Saxon and medieval use to which the area was put. In the north-west corner, for example, the foundation of the medieval castle and the ditch fronting the inner bailey wall have destroyed large areas of the Roman surface. Similarly, in the south-east corner, the early medieval priory and the extensive graveyard which grew up around it have removed virtually all trace of the archaeological levels. The north-east and south-west quarters were however undisturbed. Since the north-east quarter is now used as a cricket pitch, the areas selected for large scale excavation lay in the south-west quarter.

II. THE FORTIFICATIONS

(fig. 6)

THE Roman wall encloses an almost square area measuring internally 600 by 614 ft. (183 by 187·1 m.) — an area of 8·48 acres (3·43 hectares). Major gates were provided in the centres of the east and west walls, with postern gates occupying central positions in the north and south walls. Originally, the walls were protected by 20 forward-projecting hollow D-shaped bastions, of which 14 still survive. Outside the west wall, a pair of closely spaced ditches was discovered. In all probability, such a system once enclosed the fort, but medieval recutting and early twentieth-century excavation have together obscured the original plan.

THE WALLS

(pls. II–VI)

The Roman wall was 10 ft. (3·1 m.) wide above ground and stood to a height of at least 20 ft. (6·1 m.). The outer face was vertical (pl. II). The treatment of the inner face is less certain. It may have been stepped in at intervals to reduce the wall width, but the possibility that it too was vertical cannot be ruled out. The highest remaining section of the back face lies behind bastion 1 where the original facing flints survived to a height of 10 ft. (3·1 m.) above the present ground surface. In view of this it would seem unlikely that any reduction in width was attempted.

The wall is now provided with a parapet and wall-walk, which, where the style of the masonry can be dated, can be shown to be early medieval. Nevertheless there can be little reasonable doubt that the Roman wall was once capped by a wall-walk not dissimilar to the medieval structure. Some idea of the original arrangement can be gained by reference to the better preserved wall of Pevensey where the parapet is reasonably complete in part (fig. 7).

The structure of the wall appears to have been uniform throughout. At one point on the south wall between bastions 16 and 17, where a Saxon pit had undermined the wall, it was possible to examine the footings in some detail. The results of these observations, together with the evidence derived from a trial trench excavated in front of the wall, are incorporated in fig. 8, from which it is possible to work out the processes involved in construction. To begin with, a foundation trench 5 ft. (1·5 m.) deep and 15 ft. (4·6 m.) wide was dug through the brickearth and coombe rock down to the solid chalk. Within the trench, a foundation consisting of tightly packed and rammed layers of flint and chalk was prepared to a thickness of some 2 ft. (0·6 m.). The possibility of the existence of vertical piles within or below the foundation was investigated, but none were found. While piles offered an obvious advantage on sites where the bedrock lacked rigidity, for example at Clausentum and Pevensey,¹ the solidity of the natural chalk at Portchester would have rendered piling unnecessary.

¹ The piles at Clausentum were incorrectly interpreted by the excavator as a stockade; Cotton and Gathercole, 1958, fig. 7. For Pevensey see Bushe-Fox, 1932, fig. 7.

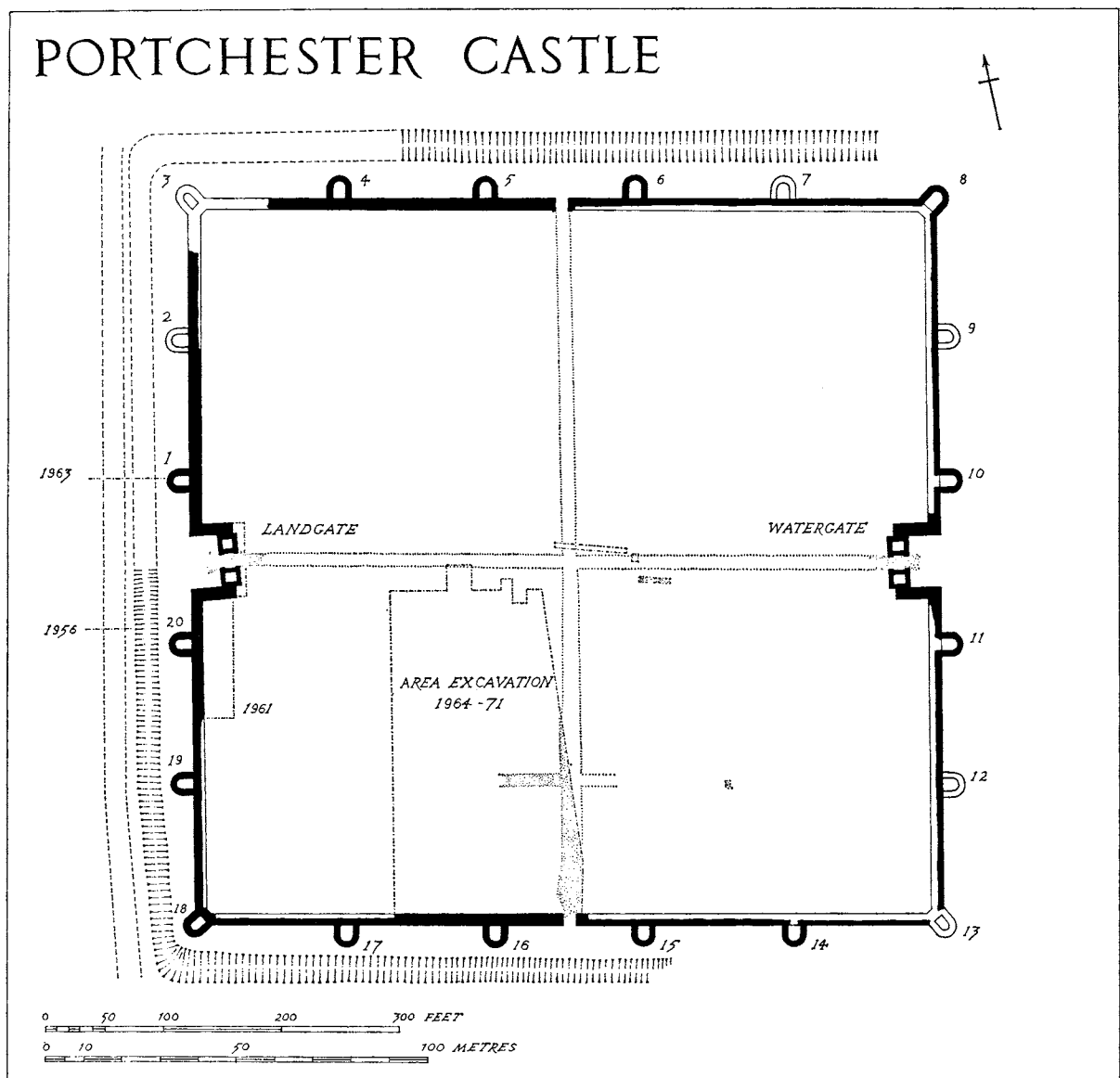


FIG. 6. The Roman fort

The next stage entailed the construction of the basal raft of timber and flint. Timber baulks 1 ft. (0.3 m.) square were laid on a mortar bedding parallel to the wall faces. Cross members were placed at right angles with the intervening spaces cross braced (fig. 9). The spaces between the timbers were filled with flints and mortar, and the lateral timbers were faced externally with 1 ft. (0.3 m.) of flint and mortar masonry. The most extensive exposure of timbers (or more correctly the voids where the timbers once were) was between bastions 14 and 15, where medieval pits and structures in the grounds of the Priory had destroyed part

of the Roman masonry, allowing a section of the Roman footings to be examined. Further traces of timbering appeared in a similar area of destruction immediately to the east of the south postern gate.

Timbering of precisely this kind is recorded from Pevensey and from Richborough (fig. 10), suggesting that it may well have been a normal constructional technique, at least in late Roman defensive architecture. It is difficult to explain functionally, but presumably reflects the same reasoning as is implied by the use of corduroys of horizontal timbers beneath earthen ramparts. The more sophisticated timbering of the masonry forts would have imparted an element of lateral strengthening to the wall, greatly reducing the possibility of subsidence cracks.

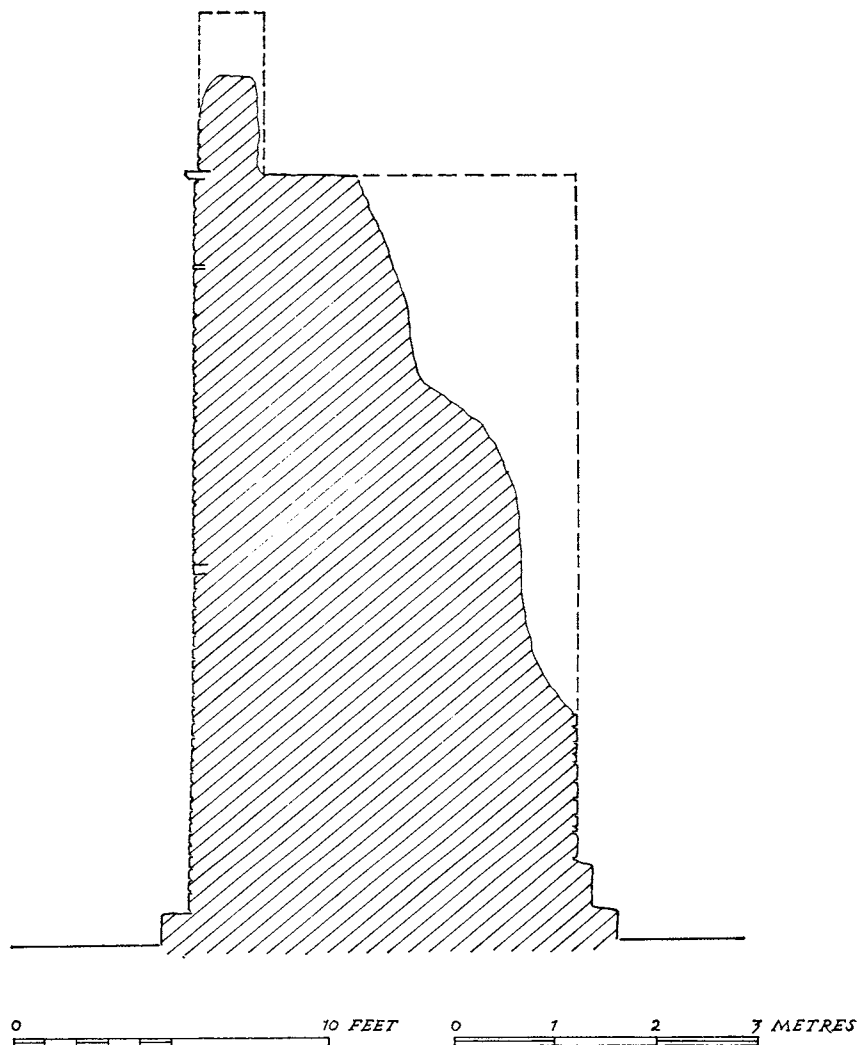


FIG. 7. Section of the Roman wall of Pevensey Castle

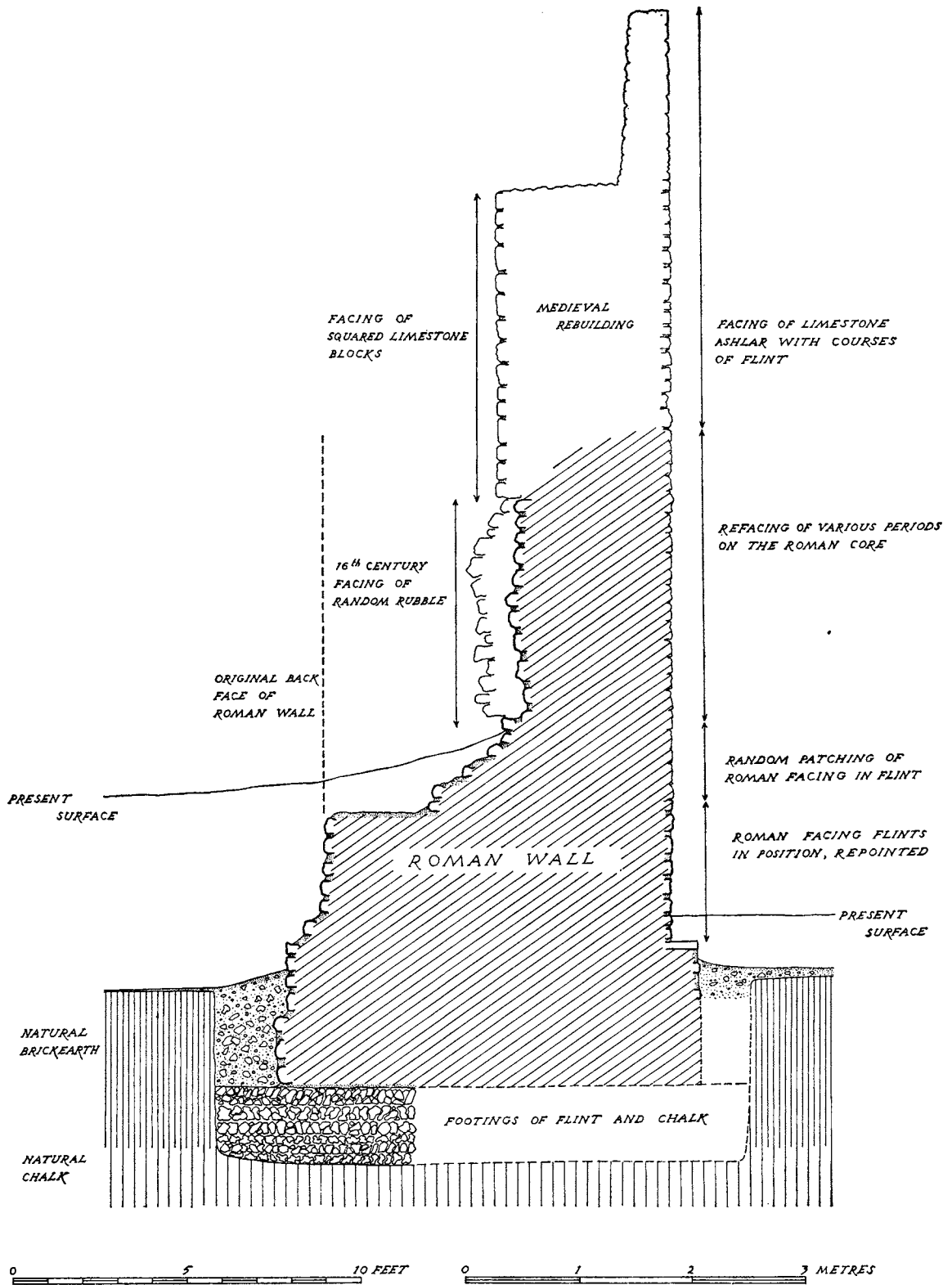


FIG. 8. Section through the south wall of the Roman fort

Upon the strengthened basal course the wall was continued up to the contemporary ground surface at a width of 12 ft. (3·7 m.). At this stage, the front face was set back 9 in. (23 cm.), the resulting offset being faced with limestone slabs. The inner face was reduced in two stages until the wall standing above ground reached a standard thickness of 10 ft. (3·1 m.). The inner offsets were less regularly finished, and were evidently intended to be hidden with banked-up soil.

The faced external offset seems to have been a consistent feature around the entire circuit of the walls. For the most part it can now be seen as the result of soil clearance carried out

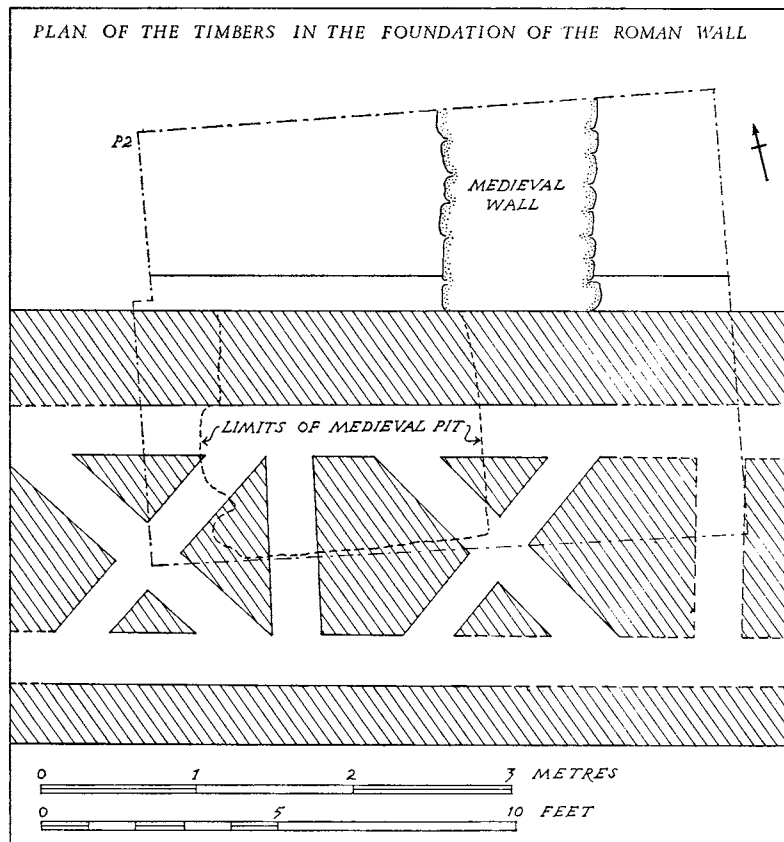


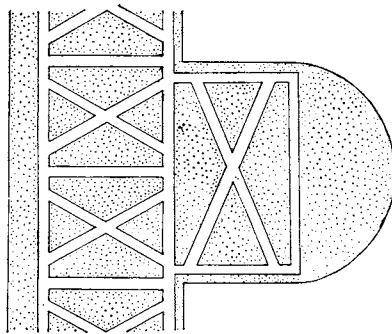
FIG. 9. Roman wall structure as exposed in a trench dug in the grounds of the priory

by the Office of Works in the 1920s, but along some lengths, particularly the east wall, it is still covered by post-Roman overburden. Between bastions the offset maintained an exact horizontal level, but since it was intended to be a ground level offset it was necessary for it to be stepped down along the north wall, so as to conform to the slope of the land, the change of level taking place at the bastions.

The internal offsets are less consistent, but for the most part a 12–15 in.- (30·5–38·1 cm.-) wide offset was created a little above ground level with a second offset varying in width below ground (figs. 211, 212).

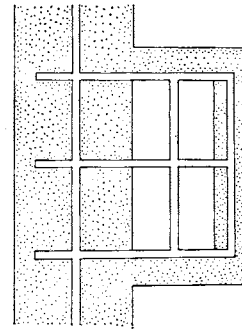
The main body of the superstructure, 10 ft. (3.1 m.) wide and about 20 ft. (6.1 m.) high, was built in horizontal courses of flint and sometimes chalk laid on thick beddings of cream-coloured chalky mortar. The process of construction must have been gradual. First of all, the previous layer of mortar was allowed to dry sufficiently to allow the builders to walk on the surface. (At one point in area D the hobnail impression of a builder's boot was recorded on one of the grouting surfaces.) The builders then laid the next course of flints, packing them closely together, quite often choosing elongated nodules which could be placed at an angle leaning against neighbouring flints. When the placing of the course had been completed, a thick layer of mortar was spread over the surface, the consistency being such that the mortar oozed down into the interstices between the flints; even so air spaces remained.

PEVENSEY (foundation)



0 5 10 15 20 FEET

RICHBOROUGH (superstructure)



0 1 2 3 5 6 METRES

FIG. 10. Timbering in the foundations of a Pevensey bastion and the superstructure of a bastion from Richborough

A building technique of this kind created certain inherent instabilities, not the least of which was that the face was subjected to lateral pressures from the weight of the core. To reduce the problem, the flints chosen for the facing were usually longer, up to 1 ft. (0.3 m.) long, so that they could be more easily bonded back into the core. Additional strength was provided for the outer face by the laying of horizontal bonding courses of tile or limestone extending into the core to a depth of 15–18 in. (38–46 cm.) from the face (see below p. 20). While these measures would ultimately have given sufficient strength to the structure to prevent the facing flints from peeling away from the core, they could not have overcome instabilities in the building stage before the mortar had hardened. Simply stated, the stresses inherent in a vertical-faced construction of this kind would have tended to cause a slumping of the exterior stones all the time that the mortar acted as a fluid. The problem could however have been overcome by strengthening the structure while the mortar was hardening. Evidence for strengthening is provided by the discovery of a number of voids running horizontally through the wall core, representing the positions of wooden poles 2 in. (5.1 cm.) in

diameter. An examination of the largest area of exposed wall core, the interior face between bastions 19 and 20, showed that the poles were inserted during the construction phase in horizontal rows 5 ft. (1.5 m.) apart, the poles in each row being set at a distance of about 5½ ft. (1.68 m.) from each other. Since pole holes never show where the original facing is intact, it must be supposed that either the poles did not penetrate the faces or, if they did, that they were later cut off and the hole plugged with flint. There are two possible explanations for the poles, the simplest being that they were employed to give a rigidity to the structure while it was drying, thus reducing the risk of slumping. An alternative is that the poles projected beyond the wall face and served as points of attachment for shuttering. Against this second explanation it could be pointed out that, wherever the wall faces survived in protected situations, there were signs of careful trowel pointing. Such a finish could not have been achieved had the face been encased in timber shuttering. The Roman work contrasts noticeably with the Norman masonry blocking the south postern gate, where shuttering was used. Here, the mortar had begun to fill up the space between the flints and the timber, giving a characteristic finish. The Roman technique must have entailed the laying and pointing of the facing flints separately, in order to retain the core work. Thus, although the face and core were of the same material, the building technique was similar to that employed in stone-faced, and not in shuttered concrete, construction.

The walls of Portchester, like those of the other shore forts, notably Richborough and Pevensey, were built in sections by different groups of workmen, the junctions between the work of each gang appearing as vertical breaks in the continuity of the facing. At Portchester, the constant refacing and repointing to which the Roman work has been subjected has tended to obscure most of the junctions, but some can still be traced (pl. III), giving the general impression that each gang was responsible for one bastion, most of the curtain wall on one side of their bastion, and a short length on the other. The apportionment must have varied at the gates and on the corners.

The most obvious of the junctions lay on the south side of bastion 20. It was first noticed during the excavation of area D in 1961, appearing as a sloping but nearly vertical discontinuity in the coursing of the flint and mortar core. Not only did the rows of flints not line up, but the actual grouting surfaces could be seen to be on different levels. The section of wall on the north side of the junction had been built first. So that the courses should be level, a stack of limestone blocks had first been mortared into position at the end of the section, presumably to serve as guides for the builders' levelling strings. In the building trade, the blocks would now be referred to as 'dead men'. A similar pile of spacers had been laid at the outer face. Both stacks can still be seen, but those on the outer face are somewhat obscured by later repointing and their significance might not have been recognized had it not been for the exposure of the original inner face by excavation.

As the wall increased in height, it would have been necessary to provide some kind of scaffolding to enable men to reach the working surface with their materials. A series of seven postholes, presumably for scaffolding, were found along the inner face of the south wall west of the postern gate (pl. Va). They would have supported posts some 8–9 in. (20–23 cm.) in diameter, placed in larger holes, packed with flints, dug into the first phase of the lower clay bank (p. 41) which had been thrown up at the time of construction. Additional tips of clay dating to the end of the construction phase were spread around the standing posts.

Although only seven posts were discovered, it seems probable that others once continued the line to the west. Their absence here and in area D can however be explained by the destructive effects of the later pits which concentrate in the area behind the walls.¹

The use of bonding courses of tiles and stones in the outer face of the wall has already been mentioned. Various materials were employed for this purpose, including blocks of limestone up to 5 in. (12.7 cm.) in thickness, slabs of limestone 1½–2 in. (3.8–5.1 cm.) thick, used either in single or double courses, and tiles usually used in double courses but sometimes in single. No great consistency can be traced, except that different materials are not mixed in a single course. Otherwise it would appear that the builders used whatever material came to hand. There are, however, several recurring features which imply that the builders were working to a preconceived design; for example, a course of limestone blocks formed the basal layer immediately above the offset. The next course was normally at about 5 ft. (1.5 m.) above the offset with a third at 10 ft. (3.1 m.). Above the 10 ft. (3.1 m.) level, where the evidence survives, the courses tend to be spaced at 18 in. (46 cm.) intervals. While these generalities are broadly correct, there is much variation in detail, as for example between bastions 3 and 4, where a course at 2 ft. 6 in. (0.76 m.) is interposed. The extent of the refacing to which the wall was subjected has rendered a detailed description of the surviving fragments of dubious value, but some impression of the Roman work can be obtained from the illustrations (pls. V–XI).

The range of building material was limited to flint, chalk, limestone, upper greensand, lower greensand and tile, the greensand being restricted in use to the gates. Flint was by far the commonest material, accounting for about 90% of the bulk of the walls. The nodules used were large and fresh: they showed no sign of rolling or staining and must therefore have been collected from the chalk, either from Portsdown or from the downs further inland. Chalk was used sparingly, but in the core of the wall between bastions 16 and 18 exceptional amounts were substituted for flint. Chalk would however have been consumed in quantity for the production of mortar. In all probability the chalk used was quarried on Portsdown, where a series of old workings, which might well date back to the Roman period, can still be seen a mile (1.6 km.) to the north of the fort. The limestone, of Tertiary origins, would have been brought in by boat from the Isle of Wight, collected from the convenient outcrops which occur along parts of the coast. Some of the blocks have the appearance of having been water worn, but this might be the result of later weathering. Limestone was generally restricted to use in bonding courses, but the north inturned wall of the east gate, bastion 20 and the adjacent wall to the north incorporate quantities of rough lumps in place of flint.

The upper greensand which was used as facing stone in the construction of the guard chamber of the main gates and the jambs of the posterns, does not appear to have been used elsewhere, but a ferruginous sandstone of the lower greensand origin which was probably used in the superstructure of the gates (p. 31) turns up in small quantities in courses between bastions 14 and 15, where it served not as bonding material, but simply as rubble (pl. XIa). The fragments may well be offcuts from the shaping of the gate blocks. Both the upper and

¹ The possibility was considered that these posts formed part of a timber building erected along the wall. This, however, seems unlikely because of the absence of corresponding timbers to form the north side.

lower greensand are of Wealden origin, but extensive outcrops occur in the Isle of Wight as well as the Sussex Weald. The shortness of the distance and the ease with which stone can be transported by boat would favour the Isle of Wight as the source.

THE BASTIONS (pls. VII–XIII)

The fort was originally provided with 20 bastions, one at each corner and four regularly spaced along each side: 14 now survive. One (no. 2) was pulled down soon after 1790, no. 13 was lost at about the same time, no. 3 was removed in the eleventh century when the keep was constructed, while the remaining three, nos. 7, 9 and 12, fell during the medieval period, possibly as the result of undermining by the sea — a process known to have caused considerable damage to the walls in the fourteenth century.

The bastions are all of similar plan, and are built of coursed flint masonry with walls averaging 5 ft. (1.5 m.) thick. Each was bonded with the fort wall, and was built on a rectangular foundation platform which was laid at the same time as the wall footings. They were originally hollow, presumably with a timber fighting platform at wall-walk level. To overcome the problem of rain water accumulation, drains were provided at ground level to allow water to escape on to the berm.

In the descriptions to follow, details derived from visual examination are combined with the results of limited excavation.

Bastion 1

The face of the squared foundation was seen in the trench cut to examine the fort ditches (p. 37). Upon this the foundation course of large squared blocks had been laid, incorporating a tile drain on the north side 3 ft. 8 in. (1.1 m.) from the wall face. The lower 10 ft. (3.1 m.) of the Roman facing survives, but above this the core has been refaced with random limestone. On the south side double tile courses occurred at *c.* 7 ft. and 8 ft. 6 in. (2.1 and 2.6 m.) above foundation. The tiles used were standard 12 by 18 in. (30.5 by 45.7 cm.) type. A hole cut through the south side showed that the bonding course, here of stone slabs, penetrated the thickness of the bastion wall.

Bastion 2 (fig. 11)

The bastion, heightened in the medieval period, was illustrated in an engraving of *c.* 1790, but was subsequently demolished to foundation level. The foundations were exposed by the Ministry of Works in 1950 and carefully repointed.

Within the upper part of the foundation course two baulks of timber 1 ft. (0.3 m.) square had been incorporated on the same level as the timbering beneath the main wall. Although the bastion walls no longer survive, it is evident from the reconstruction that the timbers were so placed as to underly the north and south walls. The possibility of the previous existence of a third timber beneath the front of the bastion cannot be ruled out: destruction has however removed all trace. One block belonging to the lowest course of the bastion superstructure survives in position where the south side joined the fort wall.

Bastion 3

Corner bastion destroyed late in the eleventh century when the keep was built.

Bastion 4

This bastion was extensively refaced above the medieval ground surface 4 ft. (1.2 m.) above the Roman level. Below this the original Roman pointing survives. The bonding courses, where they are visible, are of limestone slabs.

Bastion 5 (pl. VIII)

Well-preserved bastion, retaining much of its original Roman facing. The basal course of stone blocks incorporates a drain on the east side, constructed of two imbrex tiles. The first bonding course of stone slabs occurs after 11 flint courses. Thereafter there are bonding courses of tile and stone at intervals of two or three flint courses.

The well-preserved state of the upper levels suggested that a limited excavation of the earth-filled interior would be of interest. The bastion proved to have been filled to the top with clay and soil in the medieval period (dated on the basis of the stratified pottery). The filling preserved an internal offset to the Roman work some 14 in. (35.6 cm.) wide, sufficient to have supported the joists of a timber floor or fighting platform (pl. VIII*b*). Below the offset the original Roman pointing remained intact.

Bastion 6

This bastion has been extensively refaced, but Roman core-work is exposed to a height of 18 ft. (5.5 m.). No foundation offset is visible, but bonding courses of stone and tile can be seen at intervals.

Bastion 7 (fig. 11 and pls. X–XI*a*)

No trace of the bastion now survives above ground level, but slight irregularities in the refacing of the fort wall indicate its former position.

A single trench (trench 31) 3 ft. (0.9 m.) wide was dug along the wall face to examine the bastion foundations at their point of junction with the wall. Natural brickearth was discovered at a depth of 4 ft. 4 in. (1.3 m.). The foundation offset of the fort wall, capped with limestone slabs, was 1 ft. 6 in. (0.46 m.) above natural and 6 in. (15 cm.) above the level of the flint-built foundation platform of the bastion. One basal stone block survived at the junction of the bastion and wall.

The difference in level between the natural clay and the foundation offset had been made up with tips of mortar and flint surfaced with redeposited natural clay. Such a treatment was necessary to compensate for a fall in the natural ground level towards the sea. If it is assumed that the foundation offset was laid level with the ground surface at the base of bastion 6, the natural slope in this sector must be 1 in 70.

The superstructure of the bastion had been totally removed in the medieval period, but the face of the Roman wall which would have been within the bastion still bears the marks of the original pointing trowel where the Roman work survives below the level of the medieval refacing (pl. XI*a*).

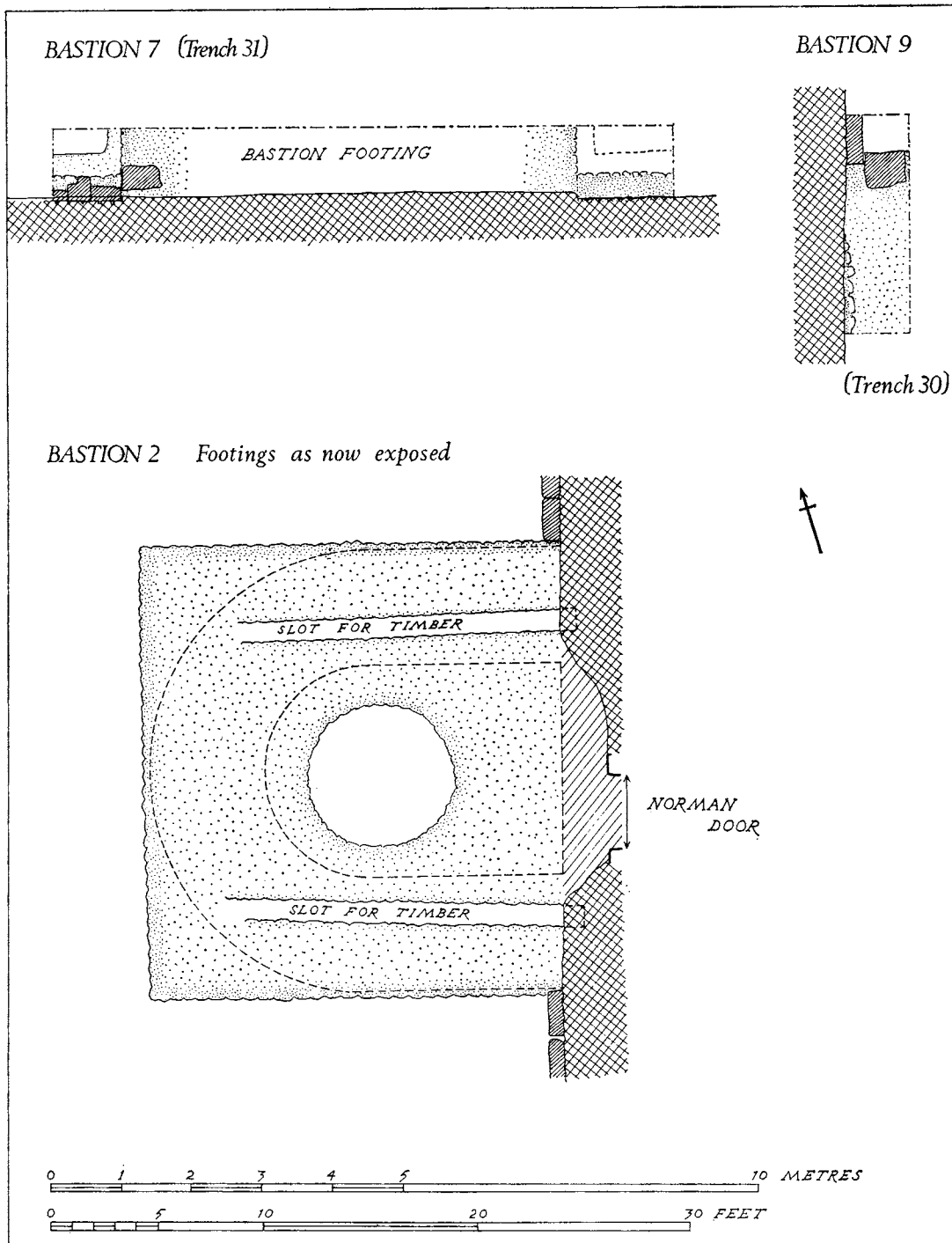


FIG. 11. Details of bastion foundations

Bastion 8

Corner bastion, extensively repointed and refaced in the post-Roman period. Two bonding courses of thick stone blocks appear at 2 ft. 6 in. (0.76 m.) and 4 ft. (1.2 m.) above foundation level.

Bastion 9 (fig. 11, pl. IX)

The bastion was demolished to foundation level in the medieval period and the wall refaced. To test its existence a small trench (trench 30) was dug where the north side of the bastion should have joined the fort wall. The angle was discovered, the edge of the bastion footing being marked by a large limestone block on the same level as the offset of the wall.

The entire overburden derived from the 1920s levelling, and represented infilling behind the newly constructed concrete sea wall. Before then the bastion footings were washed by the sea, as the thin spread of shingle hereabouts shows. Some years after the excavation, a drawing of this junction came to light among the Irvine papers in the Bath Reference Library. It appears that the architect James Irvine visited Portchester in 1875 and faithfully recorded the surviving bastion footing, correctly interpreting it.

Bastion 10

Largely refaced and repointed in the post-Roman period.

Bastion 11

Extensively refaced in the post-Roman period, although the remains of three tile courses are visible on the south side.

Bastion 12

No trace of the bastion now survives above ground.

Bastion 13

The corner bastion was probably destroyed in the late eighteenth century, at which time the gap left by its removal was blocked with masonry.

Bastion 14

The upper levels have been extensively patched, but the basal blocks are Roman. Traces of three double tile courses occur at 18 in. (0.46 m.) intervals above 12 ft. (3.7 m.).

Bastion 15

The Roman work has been repointed and patched, but the basal blocks can be seen together with a bonding course of stone slabs at 5 ft. (1.5 m.) and another at 10 ft. (3.1 m.).

Bastion 16 (pl. VIIa)

Much of the Roman masonry is visible, although in places it has been extensively repointed. A tile drain at ground level can be seen in the west face. Above this, bonding courses of tiles

and stone blocks survive. It would appear that the course of stone blocks had been laid only in the west side, while several of the tile courses seem to be limited in extent to the front curved face, and do not continue far around the sides.

The tiles used for the external facing of the bonding courses were standard bricks of 12 by 18 in. (31-46 cm.) size, but inside the bastion *tegulae* were employed instead.

Bastion 17

The lower courses of the Roman work are well preserved. The basal blocks can be seen, with a bonding course of stone blocks at a height of 5 ft. (1.5 m.); above this traces of two tile courses survive.

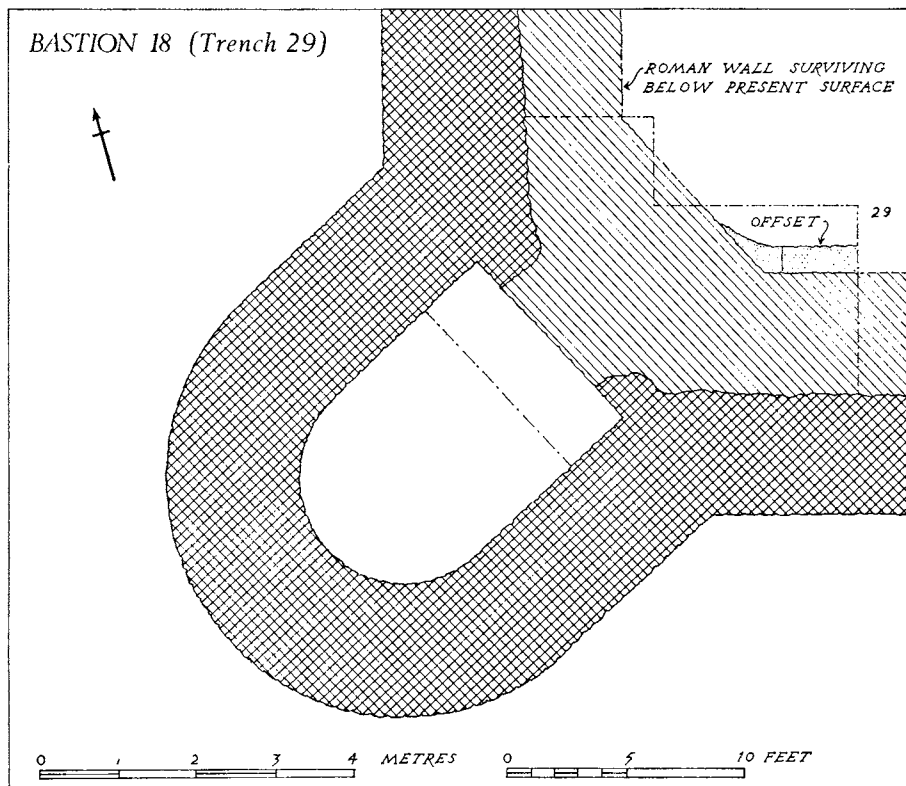


FIG. 12. The south-west corner bastion

Bastion 18 (fig. 12, pls. XII-XIIIa)

Corner bastion almost entirely refaced. Only the basal blocks and part of one tile course can be seen of the original Roman work. Inside, however, the Roman facing is well preserved.

A limited trial trench (trench 29) was dug to examine the treatment of the back face of the wall behind a corner bastion. As the plan will show (fig. 12), the wall continued diagonally, the only difference being that no foundation offset was provided for the diagonal section. A small area was cleared within the bastion down to the mortar surface of the

foundation platform. The 4 ft.- (1.2 m.-) thick accumulation within was entirely of mortar and flints which had eroded from the superstructure. The wall of the bastion was provided with a single tile course at 3 ft. 3 in. (1 m.) above the foundations.

Bastion 19

The repointed and patched Roman work is well preserved, with the basal blocks visible and tile and stone courses showing at intervals.

Bastion 20 (pl. VIIb)

This bastion is one of the best preserved at Portchester. Although the face has been repointed and the uppermost courses rebuilt, the bonding courses still survive largely intact, together with areas of facing flints laid in herring-bone fashion. All the bonding courses are of tile, but the basal blocks are limestone.

POSTERN GATES

Two Roman postern gates have been identified, one in the centre of the north wall, the other in the centre of the south. Both were blocked in the Norman period, but the north postern was partially re-opened in later medieval times and still functions as a gate.

The North Postern Gate (Trenches 20 and 21) (fig. 13, pls. XIIIb, XIV)

The Roman north postern gate consisted of a simple 10 ft.- (3 m.-) wide opening through the thickness of the Roman wall. Originally the walls of the opening were lined with blocks of upper greensand pointed with pink mortar. Although only the basal course now survives, this facing would once have been continued up both sides of the passage and presumably over the top as a vault. Inside the fort, the greensand masonry projected beyond the wall face, on both sides of the passage, for a distance of 15 in. (38 cm.). How this feature was treated visually is uncertain, but the projections could have been made to appear as pilasters supporting an arch. The total destruction of the superstructure and the removal of the greensand blocks prior to blocking in the Norman period prevent further assessment.

Little of the area of the road was exposed by excavation, but where a small area was examined close to the west side of the postern, no metalling survived above the builders' spread of mortar and greensand chippings which lay at a depth of 4 ft. 2 in. (1.3 m.) from the present surface. A layer of grey clayey soil 2-3 in. (5-8 cm.) thick had accumulated over this before the Norman blocking wall was built.

The South Postern Gate (Trenches 28 and 91) (figs. 13, 14, pl. XV)

Limited trial trenching was carried out behind the postern gate in 1962 (trench 28), and the entire area was stripped in 1969 (trench 91).

The gate, like the north postern, was a simple 10 ft.- (3 m.-) wide gap once lined with greensand blocks and presumably once arched. One significant difference, however, is that there were no internal projections, nor was there any evidence of pink mortar rendering.

Most of the greensand blocks had been prised out in the Norman period when the blocking wall was inserted.

Little of the original Roman stratigraphy survived the foundation pit for the Norman blocking, but a thin layer of cobbles representing the Roman road was traced across the footings beneath the Norman building spread. Below the cobbles was found a coin of Gallienus (A.D. 233-68).

Nothing is known of the gate structures themselves, all trace having been obscured in both cases by the Norman masonry, but in all probability the gates opened inwards behind responds.

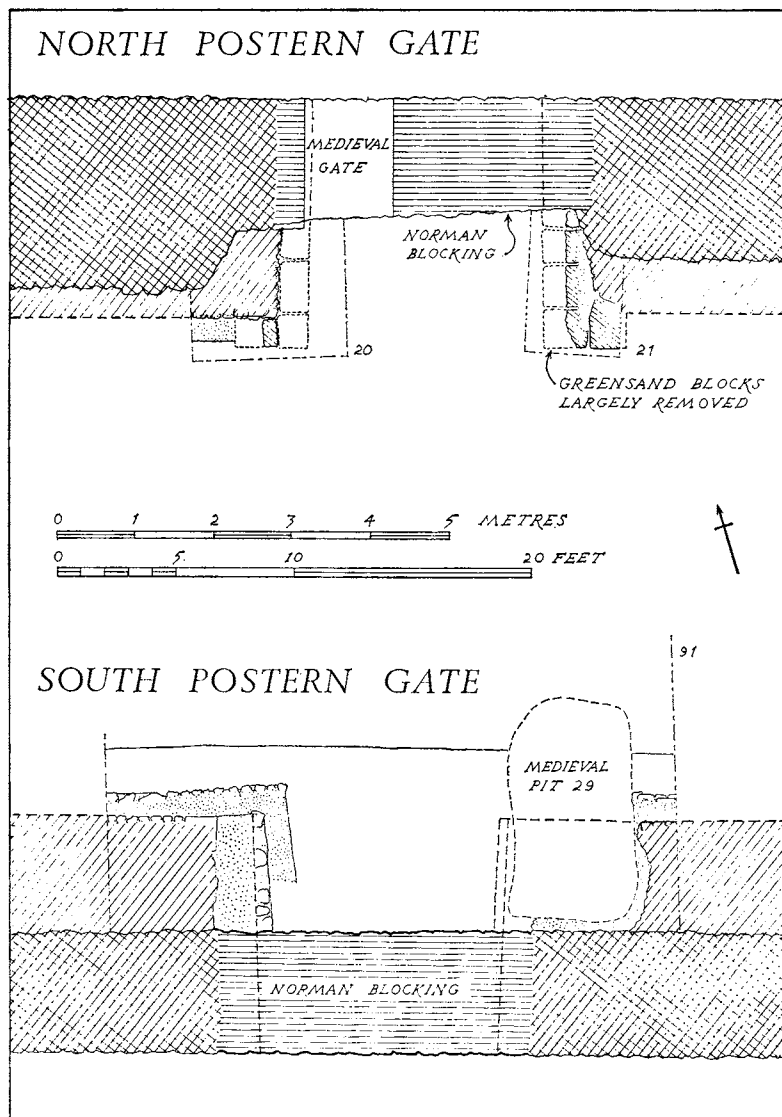


Fig. 13. The postern gates.

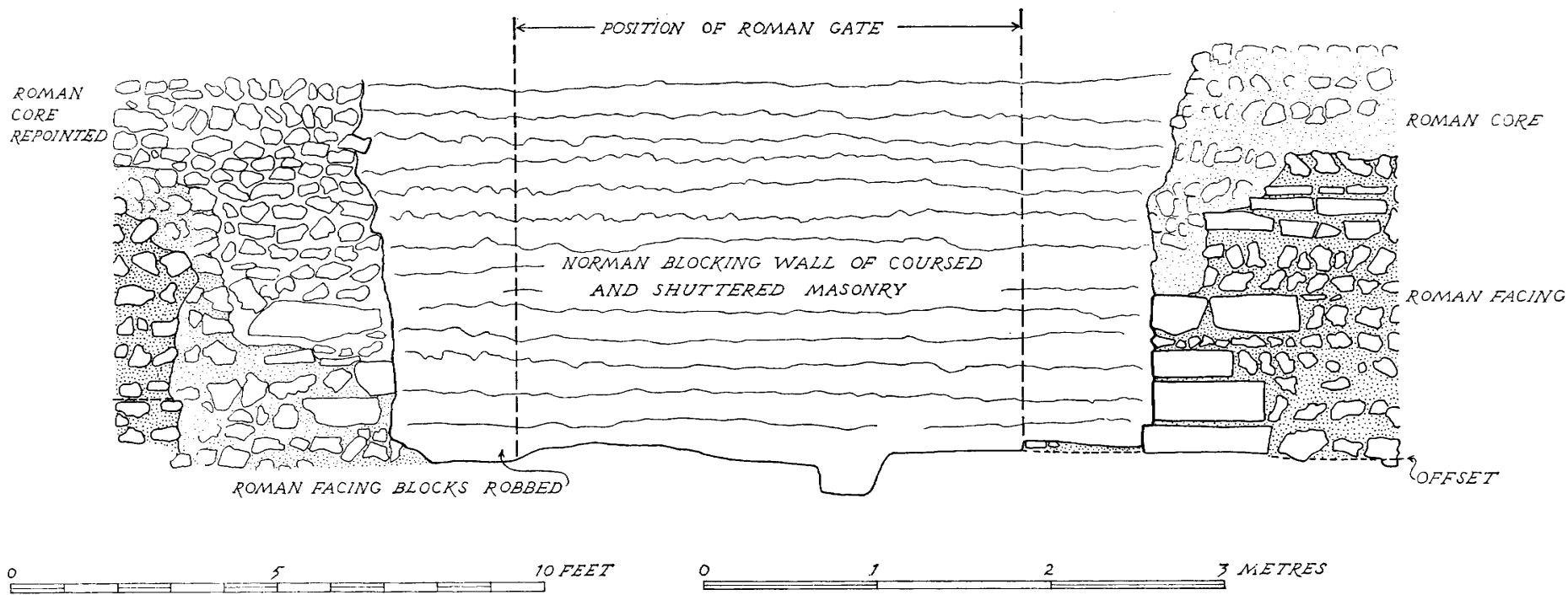


FIG. 14. Elevation of south postern gate, inner face.

THE MAIN GATES

The two main gates lay in the centres of the east and west walls of the fort: both were later incorporated into the medieval gatehouses, serving the outer bailey, and both have continued to be used ever since. Excavation has brought to light a considerable amount of information relevant to all periods from the third to the fourteenth centuries. In the discussion below, only the Roman features are described; the Saxon and medieval phases will be considered in detail in subsequent volumes.

The West Gate (Landgate) (figs. 15, 16, 209, pls. XVI–XXI)

The site of the Roman west gate is now partly occupied by the landgate, a Norman structure with later additions and modifications. The Norman gatehouse covers only part of the site of the Roman gate. A cursory examination of the exterior wall of the gatehouse and its adjacent curtain wall shows a marked vertical change in structure some 30 ft. (9 m.) south of the south jamb of the gate (pl. XVI). This denotes the junction between the original Roman wall and a Norman blocking wall constructed in one with the gatehouse to fill the gap between it and the standing Roman masonry. In 1961 an excavation behind the wall at this point exposed part of the Roman gate and demonstrated for the first time the nature of the relationship between the Roman and Norman work (pl. XVII). In the following year a number of small trial trenches were cut to elucidate further details of the Roman structure. Work, however, was limited by the constant use of the landgate by traffic to and from the church, and by the presence of a public lavatory, which occupied the corner between the gate and the curtain wall. In 1969 the lavatory was demolished, allowing part of the site to be excavated: the work was eventually completed in 1972.

The Roman gate complex consisted of three elements: a gatehouse, a courtyard in front of it measuring 44 ft. 9 in. (13.64 m.) by 22 ft. (6.71 m.), and the walls flanking the courtyard, which were created by inturning the fort wall for a distance of 36 ft. (11 m.). The form of the gate can best be appreciated by reference to fig. 15.

The Inturned Flanking Walls (pls. XVIII, XIX)

The entire length of the southern flanking wall, some 9 ft. 8 in. (2.95 m.) thick, was uncovered in the excavations of 1961, 1962 and 1969. It was built entirely of coursed flint set in cream-coloured mortar surviving now to a height of nine courses above the external offset. The eighth course was a bonding course of stone slabs set into the outer (north) face and the end (east) face. The slabs were only superficial and did not penetrate the core of the wall. The inside face of the wall was provided with two foundation offsets continuous with those of the main curtain wall. The outer face had only one offset at ground level, surfaced with slabs of limestone, which was continuous with the offset at the foot of the main fort wall. The trial trench (trench 6), dug at the junction between the Norman blocking wall with the Roman work, showed that the external angle of the Roman wall was slightly rounded, while the offset slabs were sharply angled (pl. XVII*b*). The offset was continued for the full length of the inturn, beyond the point at which the guard chamber abutted.

PORTCHESTER CASTLE

LANDGATE

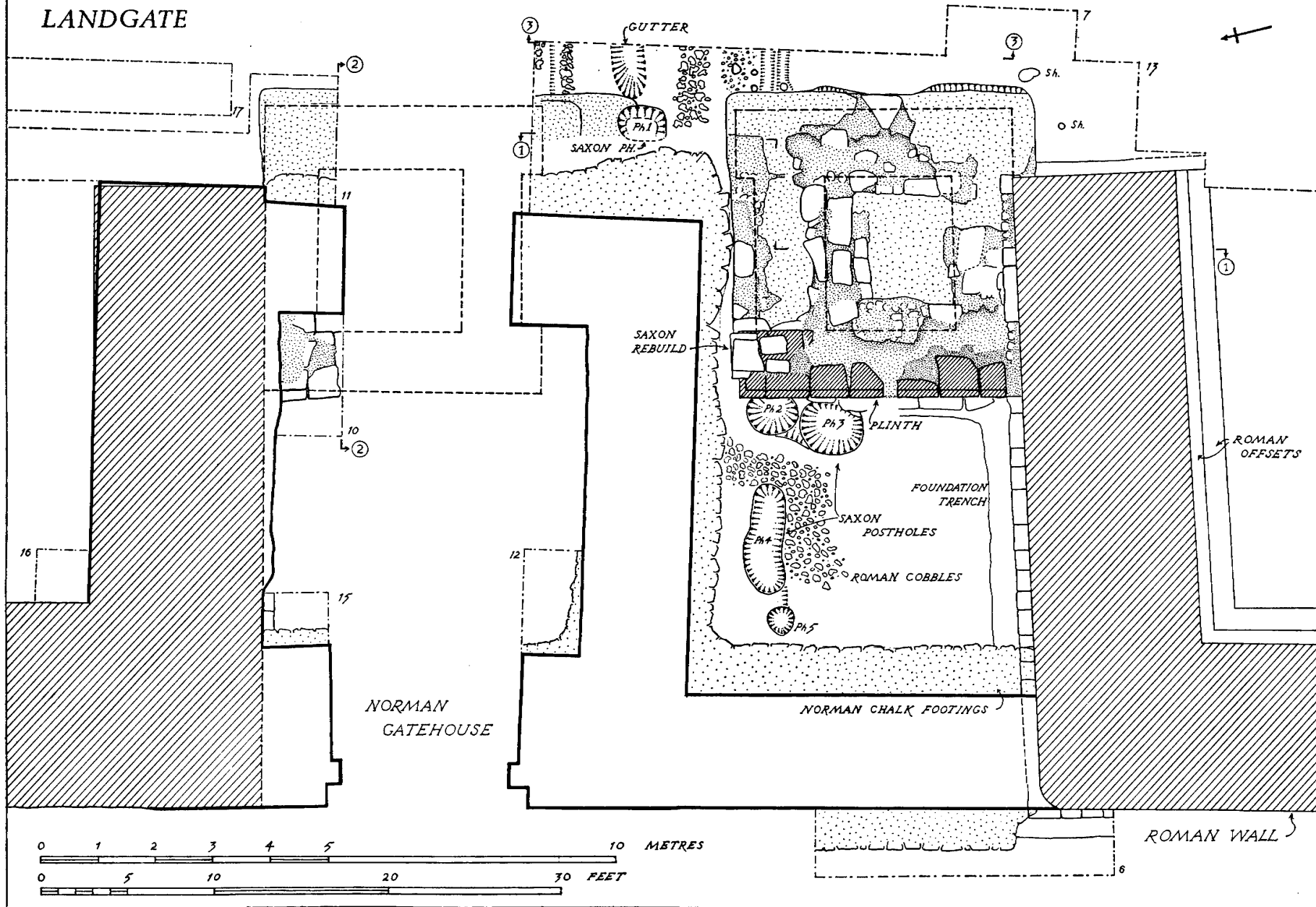


FIG. 15

The northern flanking wall is now incorporated in the north wall of the Norman gate. In the inner corner, the Roman work is still visible several feet above present ground level. A trial trench (trench 16) dug in the corner angle showed that the faces of the original Roman work were well preserved below the recent ground surface. Trench 15 demonstrated the existence of an external slab-surfaced offset at a depth of 3 ft. (0.9 m.) below the modern road. The only other point at which the Roman work was exposed was in trench 11, dug against the east end of the inturn, where six courses of Roman masonry survived below the level of the Norman refacing. The north-east corner of the inturn was built in limestone slabs, but no bonding courses showed in the five now remaining. In all probability the Roman core survives to a considerable height encased within the Norman refacing.

The Gatehouse (pls. XX, XXI)

The gatehouse was set back between the internal flanking walls. It consisted of two rectangular guard-chambers, between which ran a roadway 10 ft. (3.1 m.) wide. The road would have been spanned by a vault which would have allowed a second storey to the gatehouse, providing a fighting platform on its roof.

Each guard-chamber was built on a platform of tightly rammed chalk and clay laid in a foundation pit more than 2 ft. (0.6 m.) deep: the platforms measured approximately 18 ft. (5.5 m.) square, and were finished at a uniform flat surface between 8 and 11 in. (20–28 cm.) below the level of the natural brickearth.

The southern guard-chamber, which was totally excavated, provided details of the next stage of construction. Around the west, north and east side of the platform a wide foundation course was laid, composed of blocks of greensand and chalk set in cream-coloured mortar. The foundation butted up to the inturned wall, and its top was level with the surface of the natural brickearth. The space enclosed was then partially filled with layers of greensand chippings and clay, leaving a gap along the face of the inturned wall which was later packed with greensand rubble and mortar to form a solid base for the south wall of the guard chamber. On the new platform thus created, the first course of the superstructure was laid.

The only part of the superstructure now to survive is the basal course of the west wall of the southern guard-chamber, consisting of neatly cut greensand blocks, with chamfered corners, forming a plinth. The line of the wall face was set back, its position still recognizable by the fact that rain water with iron salts in solution had dripped on to the exposed plinth, discolouring it brown, leaving the area once beneath the wall fresh in colour and unweathered. The observation also implies that ferruginous sandstone was used in the superstructure, presumably to provide a decorative effect. Fragments of sandstone were found in the collapsed rubbish filling the guard-chamber.

The nature of the superstructure is a matter for speculation. It might be supposed, however, that a second storey, provided with windows, was surmounted by an embattled roof, the details being picked out in tiles, while the basic building material was flint. Some idea of how the structure may have appeared is given in fig. 16.

The interior of the guard-chamber was floored with trampled greensand chippings, and was provided with a single hearth. The door leading into the ground floor of the chamber must have been in the east wall, but no trace of it now survives, except for an area of wear on the surface outside. Presumably a ladder provided access to the first floor.

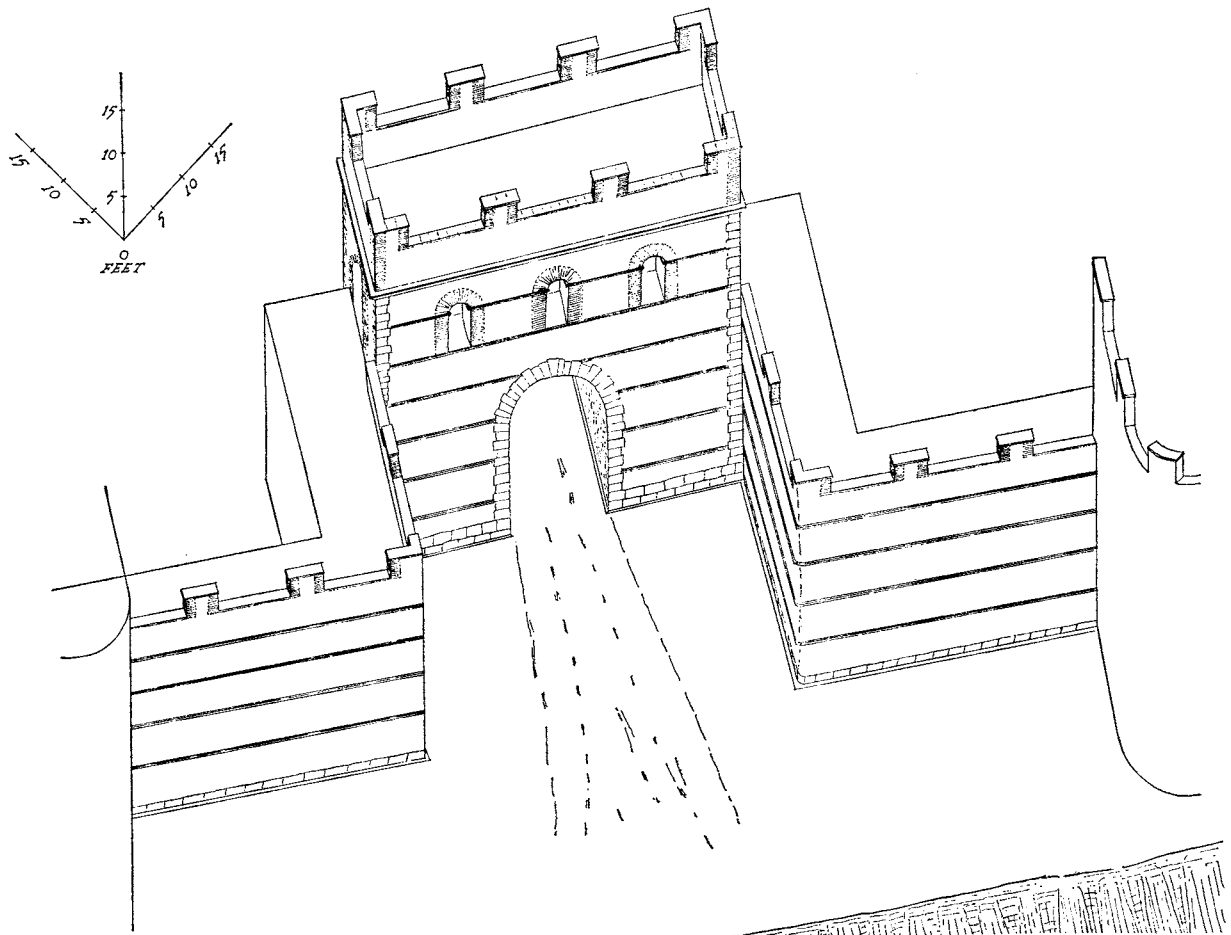


FIG. 16. Roman landgate: axonometric reconstruction.

Only a small part of the northern guard-chamber was available for excavation, but it would appear that much of the superstructure had been robbed, except for the western wall close to the inturned wall where three courses of greensand blocks of the foundation level still survived.

There is little to be said of the form of the gates themselves, although it is clear that projecting responds would have required the front gates to be set back by some 2 ft. (0.6 m.). If similar responds were provided at the rear of the entrance passage, the recesses created would have been of sufficient size to allow half gates to swing back into them, thus providing unimpeded passage.

It will be evident from the above description and from the plan (fig. 15) that the guard-chambers were built after the inturned curtain wall. Several points, however, suggest that no significant period of time elapsed between the two acts. Some element of planning is implied by the fact that the basal blocks in the inturned wall were not continued far beyond

the point at which the guard-chamber was abutted. Since basal blocks were a consistent feature throughout, wherever the wall face was exposed to wear, their deliberate omission might be thought to suggest that the builders were aware of the impending gatehouse construction. A second point of importance is that the foundation trench for both the inturned wall and the south guard-chambers was continuous, while the mortar spills and builders' debris derived from the erection of the guardhouse were indistinguishable from mortar slopping dropped when the inturned walls were built. Had there been a time lag one would have expected an erosion level or even soil accumulation to separate the two phases. A final point suggestive of the same conclusion is that the mortar rendering of the inturned wall, where it was protected by the abutted guard-chamber, was in a completely unweathered condition, in contrast to the exposed wall face, where different degrees of erosion are apparent.

The evidence for a broad contemporaneity is therefore impressive. The most reasonable explanation for the differences both in building technique and phasing is that gate building was reserved for a more specialist group of workmen, who began their task after the wall building gangs had completed the flanking walls. Such a division of labour is well within the realms of credibility.

The Courtyard and the Road

The area around the gatehouse was covered with greensand chippings and spills of mortar dropped and trampled at the time of construction: indeed, so much waste survives that it must be supposed that the greensand blocks for the superstructure of the gatehouse were trimmed on the spot. The courtyard was covered to a thickness of 3-6 in. (7.6-15 cm.), between the gatehouses the depth increased to almost 1 ft. (30 cm.), while on the east side of the gate the thickness averaged 1-3 in. (2.5-7.6 cm.). One obvious advantage of leaving such a layer in position was that it would have improved the drainage of the entrance, at the same time serving as an efficient bonding material for the road metalling spread on top of it.

Very little of the metalling now survives, but between the gates it consists of a single layer of large flint nodules packed in finer gravel. Metalling of a similar kind was spread out across the courtyard, leaving the inner corners unsurfaced. There is no evidence of large scale remetalling, but limited patching may have been undertaken: absence of evidence is not significant in an area so disturbed by later features. Once inside the fort, the road was metalled with large flints, and was provided with a central gutter which ended in line with the inner face of the gatehouse.

Occupation and Destruction Levels associated with the Gate

On the east side of the north guard chamber a thick layer of occupation material had been allowed to accumulate to a depth of about 1 ft. 6 in. (0.46 m.). A similar layer was found to the east of the south guard-chamber associated with two shallow gullies flanking the road and a series of stake holes (fig. 15). Within the south guard-chamber a 9 in.- (23 cm.-) thick layer of grey soil mixed with occupation debris (layer 4) was sealed between the floor and the mortar rubble representing the collapse of the superstructure. A similar layer also occurred in the south-east angle of the courtyard, where rubbish reached a thickness of

8 in. (20.3 cm.). In all three areas, the occupation layer must have formed during the period between the construction of the fort and the time when the superstructure began to disintegrate. It therefore represents a continuous process uninterrupted by any major phase of building activity. Taken together with the absence of any evidence for structural alterations or even reflooring, the strong impression is given that the gate, once built, remained untouched throughout its life.

After a period of time during which the superstructure eroded and partly collapsed, giving rise to a thick layer of mortary rubble, the walls of the gatehouse were robbed of much of the greensand masonry. A sherd of grass-tempered pottery found in the robber trench confirms that the robbing was not undertaken before the Saxon period.

Small Finds from the West Gate

From occupation layers against north face of Roman gate (11 layer 3 and 17 layer 3).

Bronze coin	(31)	Constantius I (A.D. 306-37)
	(32)	Gratian (A.D. 367-87)
Shale bracelet	(33)	decorated, fig. 122, no. 139
Shale spindle whorl	(35)	not illustrated

From collapsed rubble outside east wall of south guard chamber (110 layers 4 and 16).

Bronze coin	(2573)	Valentinian II (A.D. 388-92)
	(2584)	House of Theodosius (A.D. 388-402)
Bronze spoon handle	(2575)	not illustrated
Bronze fragments	(2576, 2586, 2587)	not illustrated

From collapsed rubble in the guard chamber (110 layer 12).

Bronze coin	(2569)	House of Constantine (A.D. 350-60)
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From occupation level in the guard chamber (110 layer 13).

Bronze coin	(2567)	Constantine I (A.D. 330-5).
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The East Gate (Watergate) (figs. 17, 210 and pls. XXII, XXIII)

The site of the Roman east gate is now partly occupied by the watergate, a structure erected first in the late Saxon period and modified in the fourteenth century. The late Saxon gatehouse made use of one wall of the Roman structure, but was otherwise built within the courtyard fronting the Roman gatehouse, a short length of curtain wall being necessary to join the Saxon work to the Roman fort wall.

Above ground, there is little to suggest the existence of a Roman gate, since the junction between the Saxon and Roman work has been obscured by medieval repointing and refacing. It was at one time argued that the late Saxon gatehouse was in fact a standing Roman structure up to the level of the top of the arch (Butler, 1955). The only hint, before excavation, that this was unlikely to be so was provided by a consideration of the spacing of the gate in relation to the bastions. That it was eccentric in an otherwise regular structure might have suggested a post-Roman date.

Excavations carried out in 1962 and 1963 exposed the north guard-chamber of the Roman

PORTCHESTER CASTLE

WATERGATE

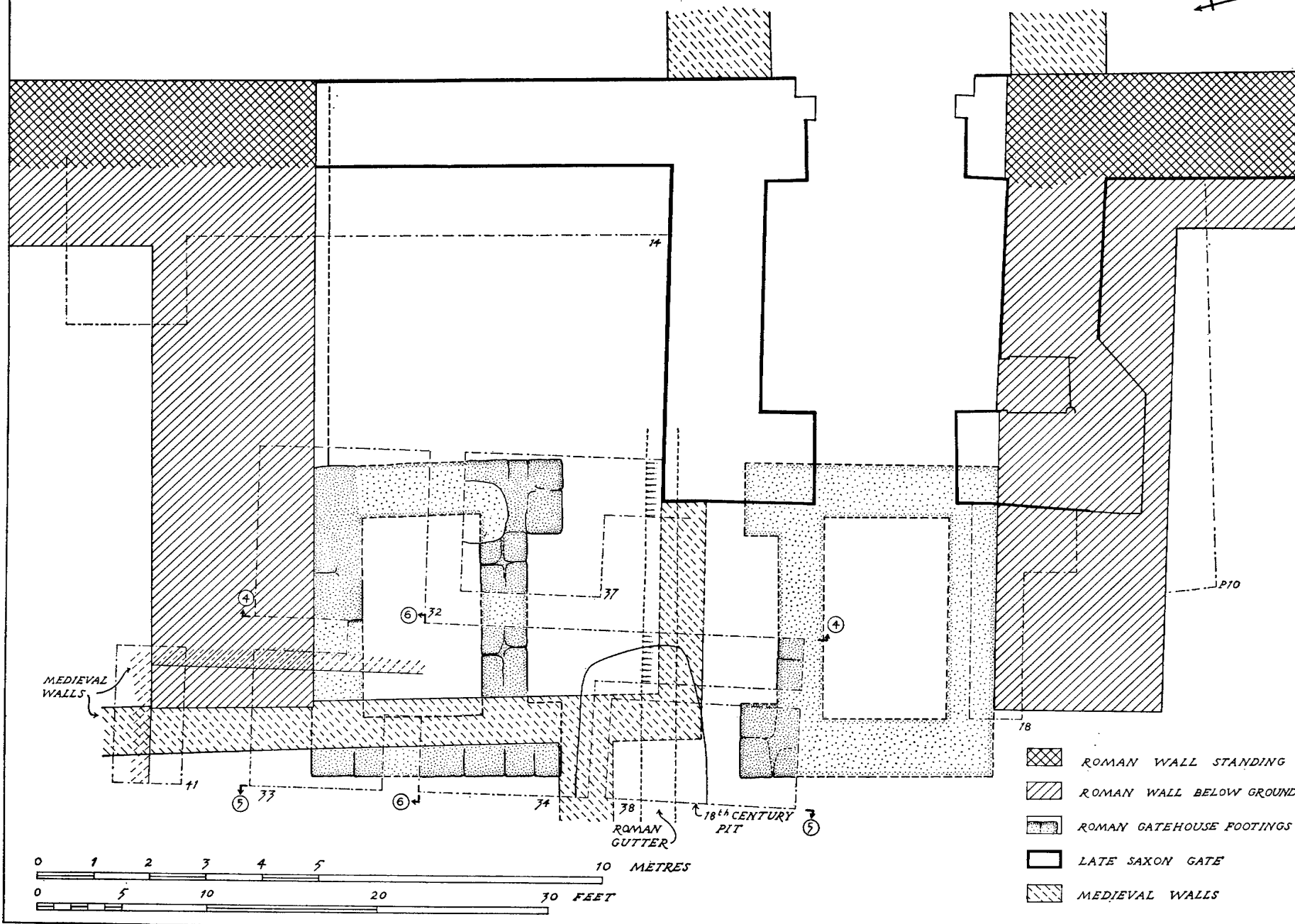


FIG. 17

gate, together with the adjacent inturned wall, and established the position of the south guard chamber. A limited excavation undertaken in the churchyard in 1969 uncovered part of the south inturned wall.

The Roman east gate, like the west gate, consisted of three elements, the gatehouse, a fronting courtyard, and flanking walls inturned at right angles to the fort wall.

The Inturned Flanking Walls (pls. XXII, XXIII)

The full width of the fort wall was inturned into the fort for a distance of 37 ft. (11.3 m.), to form the flanking walls of the courtyard. They were built of coursed flint, chalk and limestone rubble, with a basal layer of limestone blocks and a ground level foundation offset capped with limestone slabs. A double bonding course of flanged roof tiles was provided in the north inturned wall at a height of 6 ft. (1.8 m.) above the offset. The external corners of the inturns were constructed in limestone quoins.

The Gatehouse

The two guard chambers of the gatehouse were built on a continuous platform of rammed chalk blocks, 19 ft. (5.8 m.) wide, running between the flanking walls. The greensand blocks constituting the lowest course of the superstructure were laid directly on the foundation, set in a bedding of cream-coloured mortar. Although subsequent robbing had totally removed the superstructure, the impressions of the blocks could still be traced in their mortar bedding and in places small fragments of greensand were found to be adhering to it. The plan of the guard-houses, thus obtained, showed them to be rectangular with their inner walls recessed so as to accommodate inward swinging gates.

The interior of the northern guard-chamber was made up with a layer of greensand chippings (layer 20), upon which lay a hearth of tiles associated with a thin occupation layer (layer 19). The hearth was later heightened by the addition of clay packing, and another surfacing of tiles (layer 18). Thereafter, soil containing occupation material accumulated (layers 17 and 15), interspersed with a lens of mortary rubble (layer 16).

The presence of a roadway still in use running through the late Saxon gatehouse prevented the excavation of the southern guard-chamber.

Comparison between the East and West Gates

Sufficient will have been said to show that the two gates were closely similar in size, plan and constructional detail. The west gate was, however, built at a slight angle to the wall, possibly as the result of an error in the initial laying out of the inturned walls. Another difference appears in the form of the foundation work for the gatehouses: individual platforms were laid for each of the west gate guard-chambers, whereas a single continuous foundation sufficed at the east gate. At the west gate the top of the foundation platform seems to have been too low, with the result that a foundation course of greensand blocks had to be laid before the basal course. The error was not repeated at the east gate. Apart from these small differences, the gates show striking similarities.

The discovery that ironstone was used at the west gate raises the possibility that the ironstone incorporated in the late Saxon watergate may have been derived from its Roman predecessor. While the possibility must remain, it cannot be proved.

*Small Finds from the East Gate**From occupation layers within the guard chamber*

Bone pin	(37)	fig. 116, no. 81	(32 layer 12)
	(38)	fig. 116, no. 83	(33 layer 9)
	(39)	fig. 116, no. 89	(34 layer 18)

THE DITCHES

(figs. 6 and 218)

The Roman fort is at present defended on the north, south and part of the west sides by a ditch which was dug in the 1930s to follow as closely as possible the line of the Roman ditch. In the region around the keep, however, medieval recutting and realignment had obviously confused the situation.

To test the reliability of the pre-war clearing operations, a single trench was cut across the line of the ditch where its filling was undisturbed in front of bastion 1. The trench (trench 42) showed that the Roman ditch had been recut as a wide flat bottomed structure early in the medieval period, leaving only the lowest 2 ft. (0.6 m.) of the Roman ditch intact. Sufficient survived, however, to demonstrate that the Roman ditch was originally 6 ft. 6 in. (2 m.) deep and 14 ft. (4.3 m.) wide.

The trench was extended (as trench 43) further to the west to reveal a second Roman ditch which had escaped recutting. This outer ditch measured 6 ft. (1.8 m.) deep by 14 ft. (4.3 m.) wide. The primary filling (4 layer 4) consisted of washed-in gravelly clay, overlaid by a soil accumulation (layer 3) containing fragments of greensand, tile, limestone bonding slabs and large flints. Above this came a layer of clayey soil (layer 2) representing a long period of secondary silting. The layer produced two coins (nos. 42 and 43), one of Licinius (A.D. 309-24) and one of Constantius Chlorus (A.D. 293-306).

The outer ditch was sectioned in front of bastion 20 by the Ministry of Works in 1956. The drawn section (unpublished) shows that it had been 14 ft. (4.3 m.) wide, but only 4 ft. (1.2 m.) deep, with a flat bottom. It is possible, however, that the true bottom was not reached. The section was extended sufficiently far west of the outer ditch lip to show that there was no third ditch.

It is not yet known whether the double ditch system extended around the north and south sides of the fort, but in all probability it did. The treatment of the east side remains a problem, for the sea has washed away most of the evidence. Trial trenching on the sea shore was inconclusive, but it seems likely that the fort, as originally designed, was defended by its double ditch system on all four sides, and may indeed have been sited some distance from the contemporary shore line.

No evidence survives to demonstrate the nature of the ditch crossings at the main gates: the presence of a modern road through the landgate rules out the possibility of excavation, but if the 1930s clearance work can be trusted to follow accurately the Roman inner ditch, any exit from the postern gates would have been by bridge. A similar arrangement might well have existed at the main gates.

III. THE INTERIOR AREA: ESTABLISHMENT OF A SEQUENCE

INTRODUCTION

THE largest area to be excavated lay within the south-west quarter of the walled enclosure, immediately adjacent to the Roman street leading from the centre of the fort to the south postern gate. Between 1964 and 1972 some 40,600 ft². (3772 m.²) were cleared, leaving only occasional baulks between one season's work and another. The area had been intensively occupied from the end of the third century until the second decade of the nineteenth century, the post-Roman activity resulting in considerable disturbance of the earlier levels. An indication of the overall complex of features is given by fig. 18 which should be compared with fig. 20, upon which only Roman features are shown.

For ease of description, the area has been divided into three sections: A, B and C. Area A occupies the area adjacent to the fort wall, where the Roman levels are best preserved; Area B has been affected by Saxon ploughing, which has left little of the Roman stratigraphy intact, while Area C, close to the main through road, has suffered considerably from ploughing, pit digging and the destructive effects of wheeled traffic (pl. XXVIII*b*). Thus Area A is of crucial importance for the establishment of a dated sequence within the Roman period, while areas B and C have relatively little to add.

In the sections to follow, the sequence in Area A is described in two parts, first the layers against the wall, and second the roads and make-up layers which can be related to them. After each section a complete list of small finds is given together with details of the stratified pottery: the animal bones are described elsewhere (pp. 378–408). The discussion of Area A is completed with a list of stratified coins and a summary of the dating evidence (p. 59).

The assessments of sequence in areas B and C are much shorter. Since the only stratigraphy is related to individual features rather than to layers, discussion of the stratified finds is reserved for later consideration. Over most of these areas the Roman occupation level, where it survives, is unsealed and often shows signs of disturbance by ploughing and other agricultural activities, as well as by pit digging. Finds and pottery from this general layer are not separately listed, but appear in the specialist discussions.

AREA A: THE BUILD-UP OF LAYERS AGAINST THE FORT WALL

(figs. 22, 23)

The principal evidence for the establishment of a chronological sequence within the Roman period comes from the series of closely stratified layers which accumulated against the inner face of the south wall of the Roman fort. The survival of, in some places, up to 5 ft. (1.5 m.) of undisturbed Roman deposits is due to three factors: the deliberate tipping of clay at certain times during the occupation; the constant spreading of refuse in the area; and the sporadic

PORTCHESTER CASTLE

GENERAL PLAN

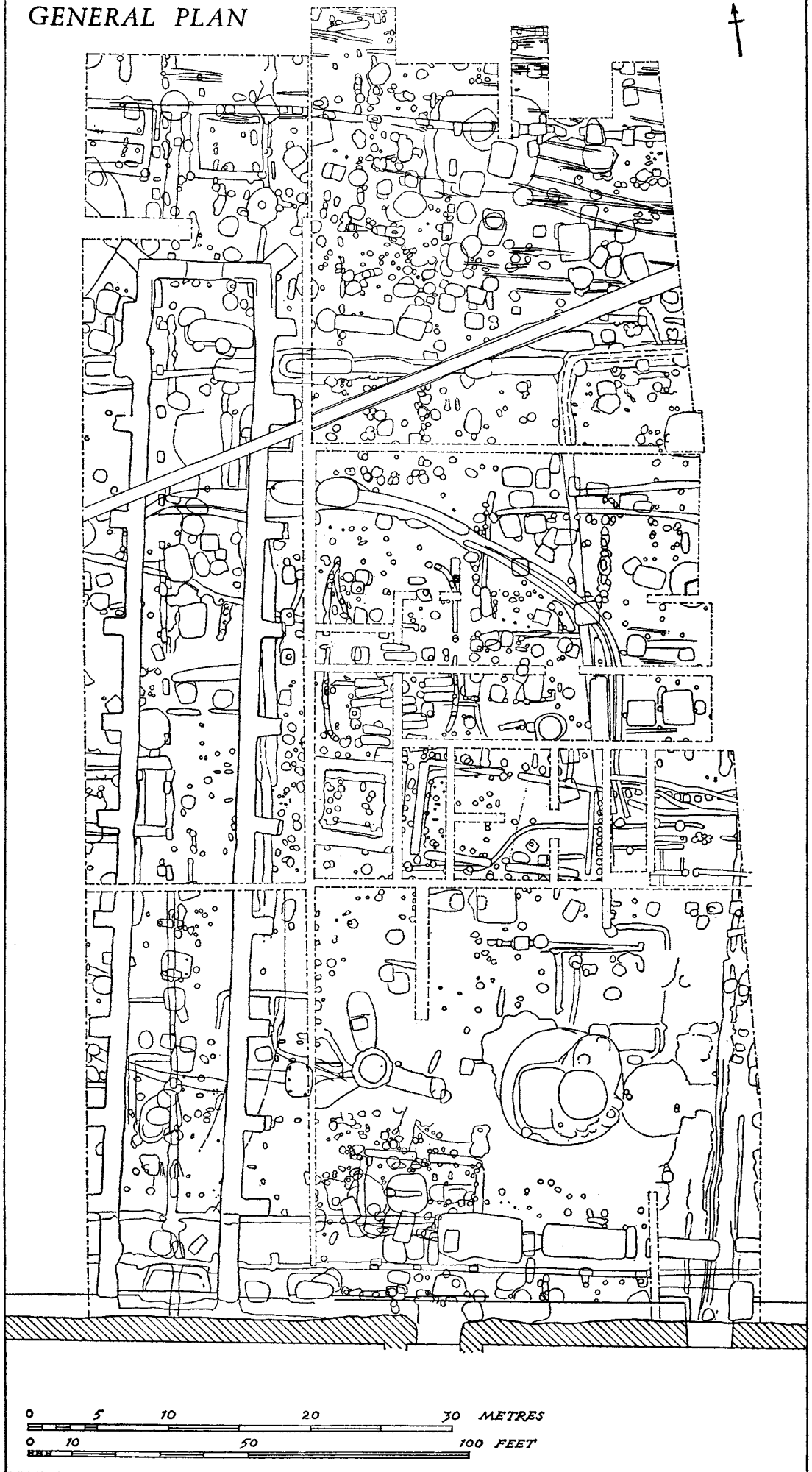


FIG. 18. General plan summarizing features of all dates

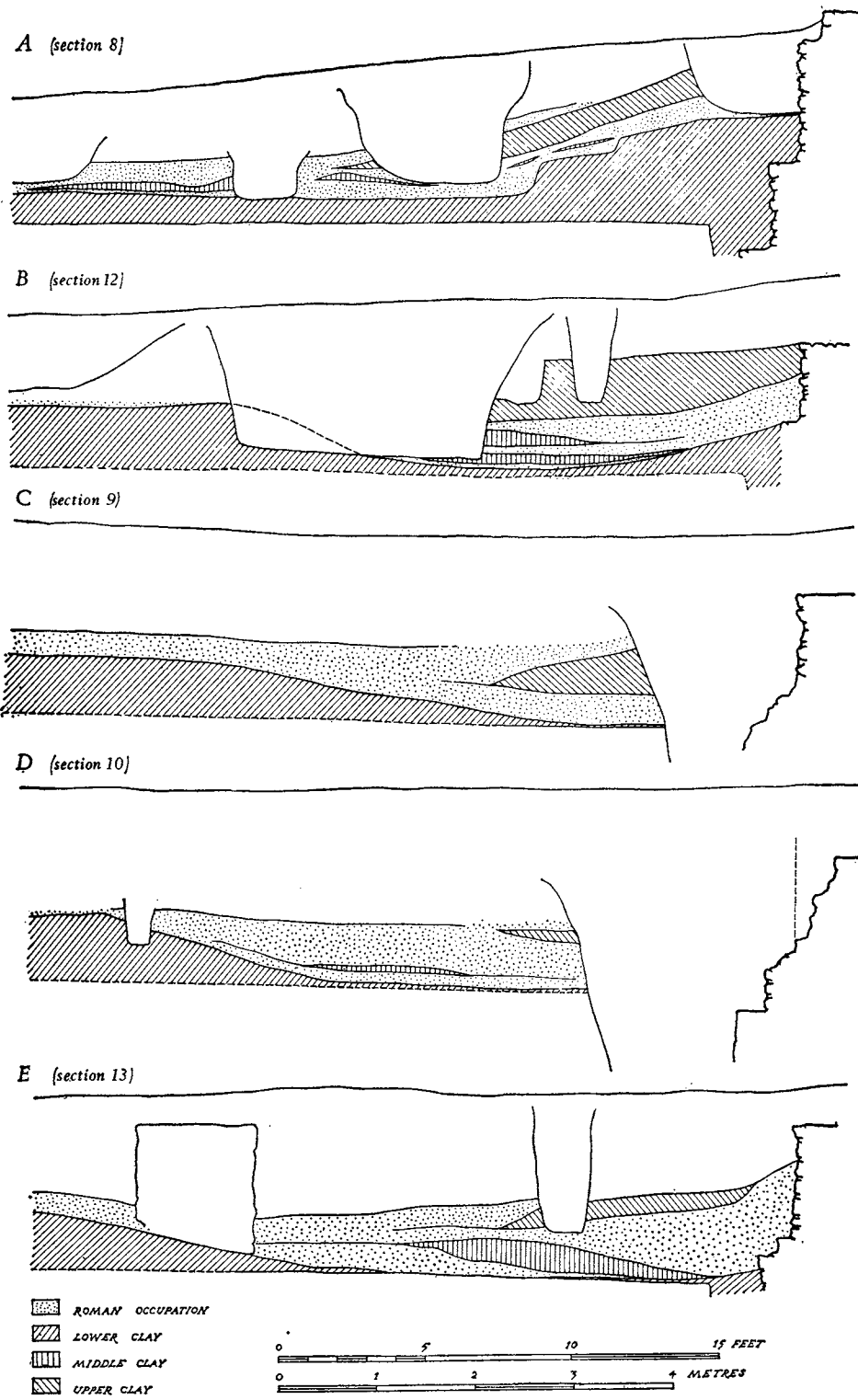


FIG. 19. Diagrammatic sections, greatly simplified, through the deposits against the south wall of the fort

collapse of sections of the wall facing. Added to this is the fact that agricultural activity in the Saxon and medieval period had, of necessity, to leave the area immediately adjacent to the wall unploughed to provide sufficient room for the headlands.

The sequence of levels is best understood by reference to the five simplified diagrammatic sections (fig. 19) which emphasize, above all, the considerable variability over the area excavated. Broadly speaking, there were three periods during which layers of clay were laid down, each followed by a time when occupation rubbish accumulated.

Period 1: the Lower Clay Bank (pl. XXVIb)

A consistent layer of redeposited brickearth and chalk marl covered most of the area. The bulk of this material was presumably derived from the digging of the foundation trench for the wall — a process which would have yielded some 9.3 yd³. of spoil for every linear yard of wall footing. In trenches 102 and 103 this clay was heaped up to form a low bank not exceeding 2 ft. 6 in. (0.76 m.) high and of maximum width 20 ft. (6 m.). To some extent it compensated for the natural slope of the land, creating a level platform which suddenly sloped off towards the wall along its southern extremity. This arrangement was maintained right up to the edge of the road leading to the south postern gate, but closer to the road (in trenches 107 and 91) additional thicknesses of clay and marl were piled up between the initial bank and the back face of the wall so that (in section A for example) the bank, instead of sloping off towards the wall, actually increased in thickness to form a rampart piled against the wall face. Although the nature of the tip lines show that there were two distinct phases in the construction process, there was no significant time gap between them, both being carried out as part of a unified plan. The additional volume of material needed to create this 'rampart' may have been derived from the digging of the ditches, since it could easily have been brought in through the gate.

Wherever the original ground surface was examined beneath the clay layer, it was found to be without trace of disturbance or occupation, with the exception of a single area in trenches 88 and 89. Here the tail of the lower clay was found to overlie an irregular quarry hollow (later substantially destroyed by the Saxon well, pit 135). The quarry consisted of a series of intercut scoops dug to depths averaging 2 ft. 6 in. to 3 ft. 6 in. (0.75–1.1 m.), filled with redeposited brickearth, occasional flints and a few sherds of coarse ware. The simplest explanation of this feature is that it represents an operation aimed at the collection of suitable brickearth for the manufacture of the daub walls of timber and daub buildings erected at the time of the fort's construction.

To summarize, the sequence of work involved in the building programme was:

- (a) the quarrying of clay, probably for building;
- (b) the digging of the foundation trench for the wall and the spreading of the spoil in a low bank;
- (c) the construction of the wall;
- (d) the creation of a low rampart between the bank and the wall close to the postern gate.

As we have said, this work is likely to have been part of a continuous process and to have occupied only a short period of time.

Absolute dating is dependent upon two pieces of direct evidence: the first is a coin of Gallienus (no. 1373) found in the filling of the quarry hollow, thus dating the construction to in or after the bracket A.D. 260–8. The second depends on the interpretation of the layers sealing the clay bank in the area of trench 108 (see section B). Here, in the hollow between the bank and the wall, a very thin layer of soil was allowed to accumulate, representing little more than an erosion surface on which some mortar and occupation material had fallen: in all the layer (108 layer 231) seldom exceeded 2 in. (5 cm.) at its thickest, and for the most part was usually $\frac{1}{2}$ in. (1 cm.) thick. It was sealed by a mass of clean clay (108 layers 225, 230), reaching a maximum thickness of 4 ft. (1.22 m.) in the centre of trench 108, but thinning out to nothing at the east and west edges (in section B it just appears). One observation of some significance is that the clay was deposited around the scaffold posts (p. 19). which were still standing at the time. It is reasonable then to suggest that the clay was tipped into position at a very early stage in the fort's existence, possibly as the last act in the construction process following the completion of the wall. Adding this to the phasing given above, we have:

- (e) completion of construction work;
- (f) deposition of clay to fill part of the hollow against the wall.

Phase (e) (that is, 108 layer 231) produced two coins, one of Tetricus I (2602), the other of Carausius (2603).

Period 2: the Lower Occupation

Following the construction phase, tips of occupation material were allowed to accumulate over the period 1 clay bank, varying in thickness from place to place. It was during this period that pits 222, 223, 230, 234, serving largely as cesspits, were dug into the lower clay. An isolated timber structure belonging to this period was discovered in trench 102. It consisted of two vertical stakes 6 in. (15 cm.) in diameter and 4 ft. (1.22 m.) apart rammed into the clay bank to a depth of 1 ft. (0.31 m.). To the north of them was the seating for two horizontal timbers. If all four are part of the same structure, it may be supposed that the verticals were intended to support the ends of the horizontals. Suitably boarded across, this framework could have functioned as a projecting platform sited so as to facilitate the tipping of rubbish in the immediate vicinity.

Dating depends upon the interpretation of the single coin of Tetricus I found in the general occupation spread together with the coin of Licinius from pit 222, the two coins, one of Crispus and one of Constantine I from pit 223, and the coin of Constantine I from pit 230; the evidence is discussed in some detail on pp. 59–61 in relation to the coin sequences from the other related layers.

Period 3: the Middle Clay

The spread of decaying occupation rubbish and open cesspits which lay at its deepest in the hollow between the clay bank and the fort wall was soon partly sealed by a layer of clean redeposited brickearth averaging 1 ft. to 1 ft. 6 in. (0.31–0.46 m. at its thickest. Its extent can best be appreciated by reference to fig. 19.

The section of clay bank in trench 107 (i.e. approaching the postern gate), where no hollow existed in the preceding period, was covered only with discontinuous lenses of clay of the same period as the main deposit. It was in this area that a simple rectangular timber structure had been erected, terraced partly into the slope of the clay bank (fig. 20). The six posts of which it was built were set in holes varying in depth from 1 ft. to 1 ft. 6 in. (0.31–0.46 m.). Each row of three timbers presumably formed the structure to which some kind of vertical planking was attached. Outside the southern wall, the space between the wall itself and the cut back face of the clay bank was packed with flints and sealed by a layer of clean clay. The area outside the northern wall was spread with an area of similar clay.

The function of the structure is impossible to discern from internal evidence, but its position in relation to the road and postern might suggest that it served as some kind of guard chamber.

Period 4: the Middle Occupation

The period following the deposition of the middle clay saw the accumulation of the greatest quantity of occupation rubbish against the wall. Even in its rotted down and compacted state, in some places it exceeded 1½ ft. (0.46 m.) in thickness. It was in this period that pits 195, 209, 224, 225, 227, 228 and 229 were dug. The content of this massive rubbish accumulation included a great deal of broken pottery, masses of animal bones, oyster shells and occasional fragments of tile. The relative lack of building material and the great preponderance of kitchen debris strongly suggest that the layer represents a period of intensive occupation, but one during which little or no rebuilding was undertaken.

Four coins were recovered from the general layer: one of Carausius or Allectus and three of Constantine I. Pit 227 produced a coin of Constantine I.

Period 5: the Upper Clay

A major tidying up operation followed with the deposition of a considerable volume of clean brickearth forming a seal overlying the rubbish. The general effect of this action was to complete the filling of the hollow against the wall and to create a uniform sloping rampart.

Period 6: the Upper Occupation

After the final attempt to impose some order in this otherwise squalid region of the fort, more occupation material was eventually allowed to accumulate. The extent of this layer will however never be known, since there is likely to have been extensive post-Roman disturbance of the uppermost levels, particularly on the sloping rampart where the natural agencies of rain and weathering would have caused erosion.

The upper occupation material produced no less than 12 coins, including four of the late third century, six dating to A.D. 300–40 and one issue each of Gratian (A.D. 367–75) and the House of Theodosius (A.D. 388–402).

List of Finds from Layers against the Fort Wall

The finds are listed below according to their period. At the beginning of each list a schedule of the component trench and layer numbers is given. The number in brackets is the small find number.

Period 1: occupation lens within the lower clay — trench 108 layer 231.

Bronze coin	(2602)	Tetricus I (A.D. 270-3)	(trench 108 layer 231)
Bronze coin	(2603)	Carausius (A.D. 286-93)	(trench 108 layer 231)

Period 2: the Lower Occupation — trench 91 layers 51, 55
 trench 102 layers 32, 66
 trench 103 layer 87
 trench 107 layer 61
 trench 108 layers 205, 202

Bronze coin	(2484)	Tetricus I (A.D. 270-3)	(107 layer 61)
Bronze fragment	(2585)	not illustrated	(108 layer 205)
Bone pin	(2294)	as nos. 81-5, not illustrated	(103 layer 87)
	(2585)	as nos. 81-5, not illustrated	(108 layer 205)
	(2552)	as nos. 81-5, not illustrated	(108 layer 205)
Iron knife	(2295)	fig. 126, no. 196	(103 layer 87)

Period 3: the Middle Clay — trench 91 layer 50
 trench 102 layers 28, 65
 trench 103 layers 85, 86
 trench 107 layers 53, 73
 trench 108 layers 225, 230, 206, 210

Bone pin	(2123)	shaft only, not illustrated	(102 layer 65)
	(2480)	shaft only, not illustrated	(107 layer 53)
Worked antler	(2436)	roughly shaped tine, pl. XXXIII ^f	(107 layer 53)
Whetstone	(2609)	not illustrated: no. 348	(108 layer 225)

Period 4: the Middle Occupation — trench 91 layers 48, 49
 trench 102 layers 24, 25, 26, 27, 60, 63
 trench 103 layers 77
 trench 107 layers 52, 60
 trench 108 layers 124, 163, 187.

Bronze coin	(2118)	Carausius or Allectus (A.D. 286-96)	(102 layer 63)
Bronze coin	(2457)	Constantine I (A.D. 310-7)	(107 layer 52)
	(2508)	Constantine I (A.D. 321-4)	(108 layer 124)
	(2461)	Constantine I (A.D. 310-7)	(107 layer 52)
Bronze bracelet	(2526)	twisted wire type, not illustrated	(108 layer 163)
	(2531)	twisted wire type, not illustrated	(108 layer 163)
Bronze fragments	(2148)		
	(2150,		
	2117,		
	2149,		
	2158,		
	2116)	not illustrated	(102 layer 60)
	(2119)	not illustrated	(102 layer 63)
	(2463)	not illustrated	(107 layer 52)
	(2555)	not illustrated	(108 layer 163)

EXCAVATIONS AT PORTCHESTER CASTLE

Bone pin	(2598)	as nos. 81-5, not illustrated	(108 layer 163)
	(2551)	as nos. 81-5, not illustrated	(108 layer 163)
	(2455)	as nos. 81-5, not illustrated	(107 layer 52)
	(2443)	as nos. 81-5, not illustrated	(107 layer 52)
	(2439)	as nos. 81-5, not illustrated	(107 layer 52)
	(2456)	as no. 87, not illustrated	(107 layer 52)
	(2553)	fig. 116, no. 95	(108 layer 163)
	(2544)	as above, not illustrated	(108 layer 163)
	Bone bracelet	(2147)	fig. 117, no. 99
Antler object	(2460)	tine cut with basal perforation, pl. XXXIIIb	(107 layer 52)
		Also sawn antler from trench 108 layer 163	
Shale bracelet	(2120)	plain, external dia. 7.7 cm., not illustrated	(102 layer 63)
Iron awl	(2122)	fig. 128, no. 213	(102 layer 60)
Whetstone	(2458)	not illustrated, no. 350	(107 layer 52)
Nails		1, 5.1 cm. +	(102 layer 63)
Daub		see p. 73	(108 layer 163)
Painted plaster		see p. 73	(102 layer 60)

Period 5: the Upper Clay — trench 91 layer 35
 trench 102 layers 22, 62
 trench 103 layers 46, 74
 trench 107 layer 50
 trench 108 layer 111

Bronze spoon	(2450)	bowl only, not illustrated	(107 layer 50)
Bronze bracelet	(2438)	horizontal strip type, not illustrated	(107 layer 50)
Shale bracelet	(2459)	plain fragment, not illustrated	(107 layer 50)
Iron leaf hook	(2520)	fig. 128, no. 217	(108 layer 111)
Whetstone	(2293)	not illustrated, no. 352	(103 layer 74)

Period 6: the Upper Occupation layer — trench 91 layer 26
 trench 102 layers 33, 44, 46, 48
 trench 103 layer 23
 trench 107 layer 21, 31, 41, 44
 trench 108 layers 62, 72, 73, 86, 90, 95, 99, 100, 118

Bronze coin	(2403)	Galerius (A.D. 303-9)	(107 layer 41)
	(2481)	Victorinus (A.D. 268-70)	(108 layer 62)
	(2500)	Constantine I (A.D. 310-17)	(108 layer 62)
	(2521)	Tetricus II (A.D. 270-3)	(108 layer 100)
	(2074)	Carausius (A.D. 286-93)	(102 layer 33)
	(2096)	Carausius (A.D. 286-93)	(102 layer 48)
	(2075)	Constantine I (A.D. 335-7)	(102 layer 33)
	(2098)	Constans (A.D. 335-7)	(102 layer 48)
	(2209)	Constantine II (A.D. 335-7)	(103 layer 23)
	(2222)	Urbs Roma (A.D. 330-45)	(103 layer 23)

	(2477)	Gratian (A.D. 367-75)	(108 layer 86)
	(2105)	House of Theodosius (A.D. 388-402)	(102 layer 48)
Bronze bracelet	(2115)	strip type: not illustrated	(102 layer 48)
	(2483)	strip type: not illustrated	(108 layer 62)
	(2077)	strip type: not illustrated	(102 layer 44)
	(2214)	wire type: not illustrated	(103 layer 23)
Bronze tweezers	(2482)	not illustrated	(107 layer 31)
Bronze buckle	(2106)	fig. 110, no. 21	(102 layer 48)
Bronze pin	(2279)	fig. 114, no. 71	(103 layer 23)
Bronze discs	(2505)	fig. 110, no. 23	(108 layer 99)
Bronze ring	(2407)	fig. 112, no. 47	(107 layer 41)
Bronze strip	(2224)	7 cm. long, plain: not illustrated	(103 layer 23)
Bronze rod	(2411)	5 cm. long: not illustrated	(107 layer 44)
Bronze fragment	(2223)	sheet: not illustrated	(103 layer 23)
Bone pin	(2410)	as no. 84, not illustrated	(107 layer 44)
Bone pin	(2406)	shaft, not illustrated	(107 layer 41)
Bone pin	(2280)	shaft, not illustrated	(103 layer 23)
Bone spindle-whorl	(2405)	fig. 117, no. 106	(107 layer 41)
Antler		sawn fragments from 102 layer 46, 107 layer 31, 108 layers 72, 90 and 99.	
Shale bracelet	(2518)	plain fragment, not illustrated	(108 layer 90)
Iron ring and tie	(2499)	fig. 129, no. 226	(108 layer 62)
Iron chisel?	(2412)	fig. 131, no. 262	(107 layer 44)
Iron spear or arrow	(2104)	fig. 124, no. 179	(102 layer 48)
Iron fragments	(2408)	not illustrated	(107 layer 41)
	(2432)	not illustrated	(107 layer 44)
	(2282)	not illustrated	(103 layer 23)
Iron slag		not illustrated (p. 265)	(108 layer 99)
Lead sheet	(2100)	7.7 by 2.8 cm. with a perforation at each end; not illustrated	(102 layer 48)
Whetstone	(2431)	not illustrated, no. 359	(107 layer 44)
Whetstone	(2097)	not illustrated, no. 349	(102 layer 48)
Whetstone	(2283)	not illustrated, no. 362	(103 layer 23)
Glass vessels		cf. fig. 197, no. 9	(103 layer 23)
Window glass		fig. 199, no. 23	(103 layer 23)

List of Pottery from the Layers against the Fort Wall

by MICHAEL FULFORD

A quantitative assessment of the pottery from the stratified layers behind the fort wall is given below, together with a general comment on each group. The layers constituting each level have been listed above (pp. 43-5). The type numbers in italics indicate sherds drawn in the main type series. For discussions of the fabrics and grouping according to production centre, see pp. 280-301.

*Period 1: from the lower clay bank**New Forest*: 22.1-5; weight, 20 g.; 16.0%.*Oxford*: 15.1.*Hand-made, fabric A*: 123(2); weight, 105 g.; 84.0%.

Total weight: 125 g.

This is the earliest group from the fort, and unfortunately the smallest. It dates from the construction of the fort and is important in that it shows the presence of not only the crude 'grog' tempered wares from the late third century, but also the New Forest and Oxford fabrics.

*Period 2: the lower occupation**New Forest*: Fabric 1: 2/10.18, 2/10.21, 23, 22.1-5(5); weight, 260 g.; 3.10%.

Fabric 2: 43(4); weight, 450 g.; 5.36%.

Fabric 3: 49, 56.2, 66.1; weight, 330 g.; 3.93%.

Total weight: 1040 g.; 12.38%.

Oxford: Fabric 1: 30.2, 43, 58; weight, 90 g.; 1.07%.

Fabric 2: 14.

Fabric 3: weight, 40 g.; 0.48%.

Total weight: 130 g.; 1.54%.

Misc.: 46, 68.1; weight, 15 g.; 0.18%.*Hand-made, fabric A*: 86(7), 88.4, 107(4), 123(8); weight, 2320 g.; 27.62%.*Black-burnished*: 85(3), 107(4), 126(8); weight, 1,540 g.; 18.33%.*Grey fabrics*: 77, 85(6), 86.6, 107(2), 117.2(3), 119, 127(6), 128(2), 129(4), 129.4, 131.3, 132, 133(2), 137.2, 139, 140(2), 145; weight, 3355 g.; 39.94%.

Total weight of all fabrics: 8400 g.

This represents the rubbish accumulation against the wall from *c.* A.D. 300–*c.* A.D. 325, and, with pit 230, is the only pottery that can securely be dated to this phase.

*Period 3: the middle clay**New Forest*: Fabric 1: 2/10.22-25(3), 19.1-3, 22.1-5, 43, sherd of 49; weight, 260 g.; 7.2%.

Fabric 2: 43; Weight, 40 g.; 1.1%.

Fabric 3: weight: 10 g.; 0.27%.

Total weight: 310 g.; 8.57%.

Oxford: 15.1.*Hand-made, fabric A*: 86, 107(2), 123; weight, 1460 g.; 40.9%.*Black-burnished*: 85, 107(2), 126; weight, 375 g.; 10.5%.*Grey fabrics*: 76.6, 85(2), 103.1, 127(2), 129(3), 136, 137.2, 139, 140, 142.1-3(2), 145, 148; weight, 1420 g.; 39.8%.

Total weight: 3565 g.

This group seals the lower occupation and is in turn sealed by the middle occupation.

*Period 4: the middle occupation**TS*: Dr. 33, Central Gaul, Antonine; Central Gaulish fragment, Hadrianic–early Antonine.*New Forest*: Fabric 1: 3.1-2(3), 2/10.16, 2/10.20, 2/10.22-25(2), 13(4), 19.1-3(2), 20.1, 21.1(2), 55.10-11; weight, 1840 g.; 4.63%.

Fabric 2: 29(9), 43(11), 61; weight, 1930 g.; 4.86%.

Fabric 3: 11.1-2(2), 11.3, 48, 49(5), 53.1 (sherds of the same vessel in the layer above make-up and the upper occupation), 64(2), 65(2) (one with a join in upper occupation), 66(4); weight, 1860 g.; 4.68%.

Total weight: 5630 g.; 14.17%.

Oxford: Fabric 1: 35.9, 40(3), 57, 58(4); weight, 650 g.; 1.64%.

Fabric 2: 14(3), 17.10(2); weight, 25 g.; 0.06%.

Fabric 3: 63.4, 63(5); weight, 580 g.; 1.46%.

Total weight: 1255 g.; 3.16%.

Misc.: 1.1, 4, 7.2, 16, 27, 31.7 (with joining sherds in pit 223 and upper clay), 56.2, 55.17, 137.7, 144.2 (sherds of same vessel in upper clay), 144.3 (sherds of same vessel in upper occupation), 144.4; weight, 550 g.; 1.38%.

Hand-made fabric A: 86(30), 107(11), 123(24), 133(5); weight, 11,260 g.; 28.34%.

Black-burnished: 85(13), 107(15), 117(3), 126(18), 175; weight, 8450 g.; 21.27%.

Grey fabrics: 76.2, 76.4, 77.4, 77.8, 85(26), 94(2), 98.2, 100.2, 107(7), 111.3, 117.2(4), 118, 119(3), 120.2-3, 127(22), 128(2), 129(4), 129.4(9), 131.4, 131.6, 134, 136(3), 137.1, 137.2, 138, 139, 140(11), 142.1-3(4), 145(5), 152.2 (sherds of same vessel in upper clay), 153.4, 153.8, 154.6, 157, 158, 159.1-2, 159.4-5(5), 159.10, 159.7-13(2) 169, 172(2), 175(2), 178; Weight, 12,490 g.; 31.44%.

Fabric D: sherds only; weight, 95 g.; 0.24%.

Total Weight: 39,730 g.

These layers represent the accumulation of rubbish between *c.* A.D. 325 and *c.* A.D. 345 at the latest, though an earlier date is possible. The middle occupation is important for the small amounts of both the Oxfordshire and 'D' fabrics, and is crucial for the dating of their types.

Period 5: the upper clay

New Forest: Fabric 1: 2/10.1, 2/10.17, 2/10.20, 21.7, 22.1-5(3); weight, 540 g.; 5.03%.

Fabric 2: 29, 29.6-7, 43(3); weight, 340 g.; 3.17%.

Fabric 3: sherds only; weight, 375 g.; 3.49%.

Total weight: 1255 g.; 11.69%.

Oxford: Fabric 1: 40(3) (sherds of one vessel in the upper occupation), 42, 43, 58(2); weight, 540 g.; 5.03%.

Fabric 2: 15.1-2(2); weight, 80 g.; 0.75%.

Fabric 3: no sherds.

Total weight: 620 g.; 5.78%.

Misc.: 30.7, 31.7, 55.2-3, 144.2 (sherds of same vessel in the middle occupation); weight, 55 g.; 0.51%.

Hand-made, fabric A: 86(4), 107(2), 123(14); weight, 3050 g.; 28.41%.

Black-burnished: 85(6), 107(2), 117.1, 126(9); weight, 2840 g.; 26.46%.

Grey fabrics: 76.2(2), 85(8), 94, 106, 107, 127(6), 129, 129.4(2), 129.6, 137.1, 138, 139(2), 140(5), 142.1-3(2), 142.4-5, 145, 152 (sherds of same vessel in the middle occupation), 154.6, 159.4-5; weight, 2770 g.; 25.80%.

Fabric D: sherds only; 145 g.; 1.35%.

Total weight: 10,735 g.

Period 6: the upper occupation

TS: central Gaulish fragment, C2; Dr. 31, Central Gaul, Hadrianic-Antonine.

Argonne: Chenet 326 and 328.

New Forest: Fabric 1: 2/10.2, 2/10.9, 2/10.17, 2/10.19, 2/10.20, 2/10.22-25(2), 10.2-3, 13(7), 18.7, 19.1-3(2), 21.1(2), 22.1-5(8), 22.8, 52.5, 55.12, 55.20; weight, 1490 g.; 5.84%.

Fabric 2: 29(6), 29.6-7, 39.2, 43.9, 43(16), 44.2, 47, 50.4, 58.4; weight, 1935 g.; 7.58%.

Fabric 3: 49, 53.1 (sherds of same vessel in the layer above the make-up and in the middle occupation), 64(2), 65(2) (one has join in the middle occupation), 66, 105.4; weight, 640 g.; 2.51%.

Total weight: 4065 g.; 15.92%.

Oxford: Fabric 1: 30.6, 30.8, 34.2, 35.6, 35.8, 35.9, 36.2, 36.5, 36.16, 36.17, 42, 43.10-12(2), 43(6), 57(2), 58(6); weight, 1515 g.; 5.93%.

Fabric 2: 17.6, 18.2; weight, 290 g.; 1.14%.

Fabric 3: 63(4), 63.4(3); weight, 460 g.; 1.80%.

Total weight: 2265 g.; 8.87%.

Pevensey: 35.15, 42; weight, 55 g.; 0.22%.

Misc.: 30.2(2), 55.2-3, 56.2, 137.7, 144.3 (sherds of same vessel in middle occupation); weight, 50 g.; 0.20%.

Hand-made, fabric A: 86(15), 88.4, 107(11), 123(44); weight, 6045 g.; 23.68%.

Black-burnished: 85(20), 107(15), 117.1(2), 126(22); weight, 5240 g.; 20.52%.

Grey fabrics: 76.4, 76.5, 80.1, 85(9), 87.1(2), 87.5, 92, 94, 103.2, 107(10), 109.1-3(2), 117(5), 118, 119, 124.2, 127(17), 128(2), 129(5), 129.4(2), 129.5, 131.4(3), 132(2), 133(2), 134.4, 136(2), 137.2, 138, 140(8), 141, 142.1-3(8), 142.4-5, 145(3), 157, 159.3, 159.4-5, 159.11, 159.11-13(2), 160, 166.1, 172(2), 175, 176.2, 176.4, 177.1, 177.6, 179.2; weight, 7445 g.; 29.16%.

Fabric D: 87.2, 137.4-6(4); weight, 365 g.; 1.43%.

Total weight: 25,530 g.

The pottery from this group represents the rubbish accumulating above the upper clay seal after *c.* A.D. 345. It is not a sealed group and while the majority of the coins are not later than *c.* 345, there are two which put the latest date of deposition of rubbish to the very end of the fourth century. This is a surprisingly small number, and raises the possibility that the upper occupation largely represents material deposited soon after 345 rather than a gradual accumulation over half a century. In this respect it should be remembered that the upper part of the layer has been extensively eroded (p. 42). As regards the pottery, the relative quantities of each fabric are not very different from the ratios in the middle occupation and upper clay groups. As has been observed already, the latter have very little Oxfordshire and 'D' fabric types, whereas, a proportion of the pits do have these fabrics and types which fit better with those present in the upper occupation group. Furthermore, the latter group has only a little more than half the amount of material as the middle occupation group, and this would fit better the explanation that the rubbish deposits of the upper occupation largely represent a date range *c.* 340-50, rather than a gradual accumulation extending to the end of the century. From the pottery, therefore, it would be more satisfactory to see the majority of the material against the wall dating up to *c.* 345-50, with the deposition of the upper clay dating before the end of the *c.* 330-45 phase.

AREA A: THE SEQUENCE OF ROADS AND THE MAKE-UP LAYERS

The northern half of Area A produced evidence of a simple stratified sequence which can be linked directly to the phases of the clay bank, to the remetallings of the road running to the south postern gate and to the gravel spread which lies to the west. Since these make-up layers and roads are described in some detail below (pp. 63-5) it is necessary here only to refer to their relationship to the main sequence.

Period 1

The earliest layers, contemporary with the first clay bank, were varied in their characteristics as fig. 22 will show. In the centre was a layer of fine white chalky mortar, usually between $\frac{1}{2}$ and 1 in. (1.3-2.5 cm.) in thickness, lying immediately upon the surface of the natural clay (pl. XXVII). The fact that the mortar is closely similar to that used in the fort wall strongly suggests that the layer represents the remnants of a mortar mixing area in use during the construction period. To the east and south the mortar merged with a layer of clayey gravel and chalk marl which was continuous with the tail of the clay bank in its first phase. It was this layer which sealed the filled-in quarry pits (p. 40). Further east the marl and gravel disappeared save for an occasional scatter of pebbles trampled into the natural brickearth.

In the eastern part of the site two substantial spreads of pebble metalling survived; one stretched along the slope of the clay bank, the other lay to the north of it. These layers were quite thin, consisting of water-worn pebbles, usually up to 1 in. (2.5 cm.) in diameter, trampled into natural brickearth. The layer seldom exceeded $1\frac{1}{2}$ in. (3.8 cm.) in thickness and was normally even thinner.

The main road leading to the postern gate was metalled in a similar material. As it approached the gate the road metalling spread over the slope of the adjacent early period clay bank, showing that the two must be part of the same construction process, there being no time lag between the construction of the bank and the laying of the metalling. Beneath the early metalling, at the point where it ran over the footing of the wall through the gate, a coin of Gallienus was found. At all points where the relationship survived, these layers can be shown to be primary and contemporary with the early bank.

Periods 2-4

Overlying the early make-up and gravel layers was a spread of occupation material associated with pits, gullies, hearths, and other structures described below (pp. 73-187). This activity must be contemporary with the lower occupation, middle clay and middle occupation. Seven coins were found stratified in layers of this period: one of Tetricus II; three of Carausius; one of Diocletian; and two Constantinopolis issues. Thus no coin issued after A.D. 330-5 was recovered in contexts predating period 5.

Period 5

After the phase of occupation represented by the layers and features of periods 2-4, came a phase of constructional activity during which the main N-S road and the metalled areas

lying towards the western part of the site were re-surfaced (p. 64 and fig. 23). To the west of the road were found a series of discontinuous spreads of redeposited brickearth, mortar and gravel, the extent and relationship of which are best illustrated by fig. 23. The chalky mortar immediately adjacent to the road was associated with a timber building (described below p. 67). The rest appear to have limited structural significance: all the layers were thin, usually no more than 1 in. (2.5 cm.) thick, and except where they were cut by later features they were without distinctive edges.

The re-metalling of the road can be shown to be stratigraphically of the same phase as the deposition of the upper clay, and since the adjacent spreads of mortar, chalk marl and clay can similarly be linked to the road resurfacing, it is possible to regard all these elements as part of the same general process of reorganization.

Period 6

The make-up and metalling layers of period 5 were sealed by a deposit of general occupation material which was associated with a number of pits, gullies and minor irregular hollows. This occupation must, by definition, be broadly contemporary with the upper occupation over the clay bank, since both follow the period 5 make-up levels. It will be argued below, on the basis of the coin evidence, that period 5 should be dated to *c.* A.D. 340–5. Of the 26 coins from the period 6 occupation levels, 24 belong to the period up to *c.* 370, with only two, one of Gratian and one of Theodosius I, belonging to the later years of the fourth century. The implication would seem to be that while most of the period 6 activity took place in the 30 years of A.D. 240–70, some later occupation is clearly indicated. It must however be stressed that the period 6 levels are not sealed by distinct early Saxon deposits, although features of the fifth and sixth centuries cut through them. Indeed, over most of the area, ploughing of both the Saxon and medieval period has considerably disturbed the uppermost Roman levels. One further proviso must be added: it is not always possible to distinguish between the occupation levels of periods 2–4 and period 6 in places where the intervening deposits of period 5 are absent. This applies particularly to the western part of the area. In such cases, where only one level of occupation material is distinguishable, the finds from it have been treated with those of period 6. The potential effect of such an unavoidable procedure is to increase the apparent percentage of early material in the latest level. The extent of this is reflected in the list of coins from period 6 (p. 60) which includes six coins minted before 320. The remaining 20 minted after 320 can all reasonably be expected to have been in common use during period 6, from 345 onwards. Even the six early coins could well have remained in circulation after 340. If, then, the coins offer a reasonable guide, the amount of early material assessed with deposits of period 6 is not likely to be excessive.

List of Finds relating to the Roads and Make-up Layers

For the sake of convenience four lists are offered, two relating to the make-up layers and two to the road metallings. The unique small find number of each object is given in brackets first, the trench and layer number appears later.

Periods 2, 3, 4: from layers below the upper road surface (trenches 87 and 91)

Bronze coin	(1354)	Tetricus II (A.D. 270-3)	(87 layer 50)
	(1356)	Carausius (A.D. 286-93)	(91 layer 64)
	(1341)	Carausius (A.D. 286-93)	(91 layer 64)
	(1355)	Diocletian (A.D. 294-305)	(87 layer 48)
	(1106)	Constantinopolis type (A.D. 330-5)	(87 layer 39)
Silver ring	(1270)	fig. 112, no. 49	(87 layer 48)
Bronze fragment	(1347)	nondescript: not illustrated	(87 layer 48)
Iron cleat	(1349)	much corroded: not illustrated	(87 layer 48)
Iron clamp	(1370)	fragment, L-shaped: not illustrated	(87 layer 48)
Iron rod	(1348)	shank? of nail: not illustrated	(87 layer 48)
Iron sheet	(1346)	fragment; not illustrated	(87 layer 48)
Bone pin	(1029)	shank, no head: not illustrated	(87 layer 20)
Bone pin	(1345)	as nos. 81-5: not illustrated	(91 layer 64)
Antler	(1366)	fragment showing cut marks; pl. XXXIII	(91 layer 67)
Whetstone	(1339)	not illustrated, no. 360	(91 layer 65)
Window glass	(1362)	cf. fig. 199, no. 24	(87 layer 50)
Nails		1, 8.25, bent; 1, 5.1, bent; 1, 8.9, bent;	
(measurements in cm.)		1, 6.35; 1, 7.6, bent; 1, 3.8	(87 layer 10)
		1, 7.0; 1, 3.8	(87 layer 39)
		1, 2.55+	(87 layer 50)
		1, 6.35: head 4.453 × .8 shape, 1.25 thick	(91 layer 64)

Periods 2, 3, 4: from layers beneath the upper make-up (trenches 88, 89, 90)

Bronze coin	(1038)	Carausius (A.D. 286-93)	(88 layer 14)
Bronze coin	(1368)	Constantinopolis type (A.D. 330-5)	(88 layer 50)
Bronze buckle	(1036)	fig. 110, no. 15	(88 layer 14)
Bone pin	(1334)	shaft only; not illustrated	(88 layer 67)
Shale bracelet	(1304)	oval section 7 × 5 mm., external diameter 7 cm.;	
		not illustrated	(88 layer 68)
Iron shears	(1317)	not illustrated	(89 layer 58)
Iron horseshoe	(1320)	not illustrated	(89 layer 58)
Iron knife	(1318)	not illustrated	(89 layer 58)
Iron rods	(1319)	two corroded together, one 8.3 cm., the other 4.2 cm.,	
		square cross-section; not illustrated	(89 layer 58)
Nails		1, 6.35; 1, 3.85;	(88 layer 14)
(measurements in cm.)		1, 17.8 +, shaft 1.25 thick; 1, 7.65 +; 1, 7.00;	
		1, 1.25+	(88 layer 67)
		1, 11.45+	(88 layer 17)
		1, 4.45	(89 layer 67)

Period 6: from layers immediately above or cutting into upper road surface (trenches 87 and 91)

Bronze coin	(1096)	Carausius (A.D. 286-93)	(87 layer 27)
	(1019)	Constantine I (A.D. 310-13)	(87 layer 13)
	(1054)	Constantine I (A.D. 319)	(87 layer 27)
	(1081)	Constantine I (A.D. 324)	(87 layer 34)

EXCAVATIONS AT PORTCHESTER CASTLE

	(1290)	Constantine I (A.D. 320-4)	(87 layer 54)
	(1084)	Crispus (A.D. 324)	(87 layer 14)
	(1061)	Constans (A.D. 333-5)	(87 layer 9)
	(1041)	Constantinopolis (A.D. 330-5)	(87 layer 9)
	(1274)	Constantine II (A.D. 330-5)	(91 layer 46)
	(1024)	Constantine II (A.D. 330-5)	(87 layer 9)
	(1023)	Constantius II (A.D. 337-41)	(87 layer 9)
	(1280)	Valens (A.D. 364-78)	(91 layer 46)
	(1006)	Gratian (A.D. 378-83)	(87 layer 9)
Bronze spoon	(1337)	not illustrated	(91 layer 63)
Bronze fish hook	(1293)	fig. 114, no. 63	(91 layer 52)
Bronze ring	(1313)	fig. 112, no. 46	(91 layer 46)
Bronze pin	(1005)	fig. 113, no. 51	(87 layer 9)
Bronze ring	(1042)	made of wire 1 mm. diameter; not illustrated	(87 layer 13)
Bronze comb	(1027)	fig. 115, no. 79	(87 layer 9)
Bronze bracelet	(1305)	fig. 111, no. 24	(91 layer 56)
	(1272)	decorated, fig. 112, no. 35	(91 layer 46)
	(1288)	strip type, as nos. 40-2; not illustrated	(91 layer 46)
	(1289)	two strand twisted wire; not illustrated	(91 layer 46)
	(1296)	two strand twisted wire; not illustrated	(91 layer 52)
	(1062)	two strand twisted wire; not illustrated	(87 layer 34)
Bronze sheet	(1007)	fragment; not illustrated	(87 layer 9)
Bronze sheet	(1282)	fragment; not illustrated	(91 layer 43)
Bronze strip	(1300)	fragment of plain strip 6 cm. wide	(91 layer 46)
Bronze rod	(1316)	10 cm. long; not illustrated	(91 layer 53)
Bronze strip/rod	(1015)	4 cm. long; not illustrated	(87 layer 9)
Bronze wire	(1002)	not illustrated	(87 layer 9)
Bronze rod	(1297)	not illustrated	(91 layer 52)
Bone pin	(1321)	fig. 116, no. 82	(91 layer 46)
Bone pin	(1246)	as nos. 81-5; not illustrated	(91 layer 19)
Bone handle	(1111)	fig. 118, no. 112 associated with much corroded lumps of bronze	(87 layer 27)
Bone handle	(1475)	fig. 119, no. 120	(91 layer 46)
Bone spatula	(1003)	fig. 119, no. 123	(87 layer 9)
Shale vessel	(1389)	small fragment of base angle; not illustrated	(87 layer 9)
Shale bracelet	(1022)	decorated, fig. 122, no. 138	(87 layer 9)
Shale bracelet	(1026)	external diameter 5.0 cm.; circular cross section; not illustrated	(87 layer 9)
Antler		sawn fragment	(91 layer 46)
Glass bead	(1277)	not illustrated, no. 160	(91 layer 46)
Glass beads	(1298)	three, not illustrated, no. 154	(91 layer 52)
Glass bead	(1133)	not illustrated, no. 153	(87 layer 44)
Iron knife	(1351)	fig. 125, no. 186	(87 layer 47)
Iron ladle	(1278)	fig. 131, no. 251	(91 layer 46)
Iron sword tip	(1299)	fig. 124, no. 168	(91 layer 52)
Iron strip or horseshoe	(1032)	fig. 130, no. 241	(87 layer 9)
Iron knife	(1132)	fig. 125, no. 184	(87 layer 41)

Iron ring	(1057)	fig. 131, no. 253	(87 layer 33)
Iron tie	(1033)	fig. 129, no. 228	(87 layer 9)
Iron chopper	(1292)	fig. 126, no. 197	(91 layer 52)
Iron looped terminal	(1275)	fig. 131, no. 257	(91 layer 46)
Iron fragments	(1097)		
	(1134,		
	1021,		
	1058,		
	1273,		
	1291)	miscellaneous, much corroded; not illustrated	(various)
Iron slag		not illustrated	(91 layer 53)
Polished stone axe	(1315)	Neolithic, fig. 3, no. 1	(91 layer 46)
Whetstone?	(1367)	not illustrated, no. 346	(91 layer 73)
Nails		2, 8.85+; 2, 7.6; 1, 7.6+; 1, 5.1+; 2, 5.1	(87 layer 27)
(measurements in cm.)		1, 5.1+	(87 layer 26)
		1, 5.1+	(87 layer 40)
		2, 5.1, one without head	(87 layer 18)
		1, 5.1	(87 layer 34)
		1, 6.35; 2, 3.8; 1, 1.25+; 2, 4.65; 1, 7.6; 1, 1.9+	(87 layer 9)
		1, 3.2	(87 layer 13)
		1, 8.9	(91 layer 43)
		1, 12.75; 1, 8.9; 1, 8.3; 1, 6.4; 11, 5.1; 2, 3.8	(91 layer 46)
		1, 8.3 broken in two; 1, 5.1	(91 layer 53)
		1, 7.6; 1, 8.9; 1, 4.5; 1, 3.75	(91 layer 55)
Glass vessels		cf. fig. 197, no. 6	(87 layer 27)
		cf. fig. 197, no. 9	(91 layer 47)
		fig. 198, no. 20	(91 layer 52)

Period 6: from layers above or cutting into the upper make-up (trenches 88-90)

Bronze coin	(1137)	barbarous radiate (A.D. 270-90)	(89 layer 23)
	(1053)	Carausius (A.D. 286-93)	(88 layer 5)
	(1206)	Licinius (A.D. 310-13)	(90 layer 30)
	(1014)	Constantine I (A.D. 310-13)	(88 layer 10)
	(1044)	Constantine I (A.D. 319-20)	(88 layer 10)
	(996)	Constantine I (A.D. 330-5)	(88 layer 5)
	(1153)	Urbs Roma (A.D. 330-7)	(89 layer 23)
	(1034)	House of Constantine (A.D. 330-45)	(88 layer 10)
	(1129)	Constantine II (A.D. 335-7)	(89 layer 23)
	(1025)	Valens (A.D. 364-78)	(88 layer 10)
	(1180)	Valentinian I (A.D. 364-75)	(89 layer 38)
	(1219)	Valentinian I (A.D. 364-75)	(90 layer 29)
	(997)	Theodosius I (A.D. 388-95)	(88 layer 6)
Bronze penannular brooch	(977)	fig. 109, no. 7	(88 layer 5)
	(1000)	fig. 109, no. 6	(88 layer 6)
Bronze strip bracelet	(1012)	fig. 111, no. 29	(88 layer 6)
	(969)	fig. 111, no. 33	(88 layer 5)

	(1147)	fig. 112, no. 37	(89 layer 21)
	(1204)	fragment, not illustrated	(90 layer 29)
	(1156)	not illustrated	(89 layer 33)
	(1194)	plain; not illustrated	(90 layer 29)
Bronze sheet, decorated	(1168)	fig. 110, no. 18	(89 layer 38)
Bronze bracelet	(1150)	two strand twisted; not illustrated	(89 layer 33)
	(1253)	two strand twisted; not illustrated	(90 layer 30)
	(1140)	two strand twisted; not illustrated	(89 layer 21)
Bronze fibula pin	(1125)	not illustrated	(89 layer 21)
Bronze tweezers	(1209)	not illustrated	(90 layer 30)
Bronze pin	(1052)	fragment, not illustrated	(88 layer 10)
Bronze ring	(1043)	plain, 2 cm. diameter; not illustrated	(88 layer 10)
Bronze sheet	(1269)	fragment, not illustrated	(90 layer 26)
Bronze fragments	(1010,		
	1157,		
	1165)	miscellaneous, not illustrated	
Lead sheet	(1018)	c. 9 cm. square, folded; not illustrated	(88 layer 10)
Bone plaque	(998)	fig. 119, no. 121	(88 layer 5)
Bone spindlewhorl	(1163)	fig. 118, no. 108	(89 layer 21)
	(1141)	fig. 117, no. 107	(89 layer 21)
Bone pin	(1011)	fig. 116, no. 88	(88 layer 6)
	(1294)	as nos. 81-5; not illustrated	(90 layer 30)
	(1332)	fragment, not illustrated	(88 layer 10)
Bone bracelet	(1158)	fragment, not illustrated	(89 layer 36)
Shale bowl	(1390)	fig. 122, no. 143	(88 layer 10)
Shale bracelet	(1388)	fig. 122, no. 137	(89 layer 21)
Shale spindlewhorl	(1030)	fig. 121, no. 127	(88 layer 10)
Iron spur	(990)	fig. 125, no. 180	(88 layer 5)
Iron horseshoe	(991)	fig. 125, no. 183	(88 layer 5)
Iron shears	(1177)	fig. 127, no. 200	(89 layer 38)
Iron knife	(1210)	fig. 125, no. 187	(90 layer 30)
Iron tripod			
? candlestick	(1218)	fig. 131, no. 250	(90 layer 30)
Iron handle	(1095)	fig. 131, no. 260	(88 layer 62)
Iron binding	(1205)	fig. 130, no. 242	(90 layer 30)
Iron split pin	(1127)	fig. 129, no. 223	(89 layer 21)
Iron rod	(1138)	square cross-section, 26 cm. long; not illustrated	(89 layer 21)
Iron rod	(1159)	shank of long nail; not illustrated	(89 layer 21)
Iron plate	(1139)	fig. 131, no. 256	(89 layer 21)
Iron ?tang	(1028)	fig. 131, no. 259	(88 layer 10)
Iron strip	(1605)	fig. 130, no. 239	(88 layer 10)
Iron ring	(1343)	4 cm. diameter; not illustrated	(88 layer 92)
Iron fragments	(999,		
	(1016,		
	1017,		
	1020,		
	1045,		

	1124,	
	1126,	
	1136,	
	1142,	
	1143,	
	1155,	
	1166,	
	1195)	miscellaneous, not illustrated
Iron slag		see p. 265 (89 layer 31)
Whetstone	(1189)	not illustrated, no. 347 (89 layer 38)
	(1009)	not illustrated, no. 340 (88 layer 5)
	(1148)	not illustrated, no. 353 (89 layer 23)
	(1152)	not illustrated, no. 345 (89 layer 21)
	(1187)	fragment; not illustrated, no. 358 (89 layer 35)
Glass vessels		cf. fig. 197, no. 1 (88 layer 10)
		fig. 197, no. 9 (88 layer 6)
		cf. fig. 198, no. 18 (88 layer 10)
Window glass		cf. fig. 199, no. 24 (88 layer 53)
		fig. 199, no. 25 (88 layer 10)
Painted plaster		see p. 73 (88 layer 10)
Nails		1, 11·5+; 1, 7·6; 1, 4·5+; 1, 8·9; 2, 7·6, bent; (88 layer 5)
(measurements in cm.)		1, 5·1; 1, 3·85 (88 layer 20)
		1, 7·6 (88 layer 62)
		1, 10·2; 1, 7·0; 2, 5·1; 1, 3·85
		1, 8·9, no head; 2, 8·25; 2, 7·0; 3, 7·6; 2, 5·75;
		1, 5·1; 1, 5·1, bent; 1, 3·85 (88 layer 10)
		1, 5·75+ (88 layer 46)
		2, 8·25; 1, 5·1; 1, 2·55; 1, 8·9; 1, 7·6; 1, 6·35 (89 layer 38)
		1, 3·85 (89 layer 36)
		1, 8·25; 1, 7·6; 1, 6·35+; 2, 5·75; 1, 5·1; 3, 3·85,
		two without heads (89 layer 21)
		1, 5·75; 1, 7·0; 1, 11·5; 1, 10·2, bent; 1, 7·6, bent (90 layer 29)
		1, 10·2; 1, 10·2, bent (90 layer 30)
		1, 3·2; 1, 1·95 (90 layer 32)

List of Pottery relating to the Roads and Make-up Layers

by MICHAEL FULFORD

A quantitative assessment of the pottery from the stratified layers behind the fort wall is given below, together with a general comment on each group. The layers constituting each level have been listed above (pp. 43-5). The numbers in italics indicate sherds drawn in the main type series. For discussions of the fabrics and grouping according to production centre, see pp. 280-301.

*Periods 2, 3, 4: layers below the upper road surface**Argonne*: Chenet 320, rim only.*New Forest*: Fabric 1: 3.1-2, 2/10.22-25(3), 10.2-3(2), 13, 19.1-3, 20.3, 22.1-5(4); weight, 630 g.; 8.19%.

Fabric 2: 40.2, 43(5); weight, 455 g.; 5.91%.

Fabric 3: 10.1, 55.8-9(2), 65; weight, 410 g.; 5.33%.

Total weight: 1495 g. (19.43%) + 100 g. from a layer where no division was made between individual New Forest fabrics.

Oxford: Fabric 1: 31, 40, 42, 43(3), 57, 58; weight, 380 g.; 4.94%.

Fabric 2: 14, 15.1.

Fabric 3: 63(2); weight, 235 g.; 3.05%.

Total weight: 615 g.; 7.99%.

Misc.: 24, 56.2.*Hand-made, fabric A*: 86(8), 107(6), 114, 123(13); weight, 1765 g.; 22.94%.*Black-burnished*: 85(6), 107(9), 126(10); weight, 1380 g.; 17.93%.*Grey fabrics*: 85(4), 103.1, 109.1-3, 127(4), 129(5), 129.6(2), 132(4), 136(2), 140(6), 142.1-3(3), 143, 145(3), 149.1, 153.8(2), 159.1-5(2); weight, 2340 g.; 30.41%.*Fabric D*: 87.2.

Total weight: 7695 g.

This group has only limited use in dating as it could represent the gradual accumulation of rubbish on the first road surface from *c.* A.D. 300 until the new surface was laid in about 345. But although residual material must be present in the group, it is probable that the majority of the pottery represents rubbish loss in the stages immediately prior to the building of the new road, since it is unlikely that much rubbish would have been allowed to gather whilst it was in general use. Moreover, the sherds do not, in most cases, show that degree of abrasion and wear which both foot and vehicular traffic might cause.

In many respects the variation between the main fabric groups is similar to that in the pottery from the upper occupation, and indeed from above the road surface. This is wholly consistent with the view that the bulk of the rubbish on the lower road does not pre-date period 5 by very long.

*Periods 2, 3, 4: from layers beneath the upper make-up**New Forest*: Fabric 1: 3.1-2, 19.1-3(3); weight, 70 g.; 3.44%.

Fabric 2: 43(2); weight, 50 g.; 2.46%.

Fabric 3: sherds only; weight, 80 g.; 3.93%.

Total weight: 200 g. (9.83%), + 300 g. from layers where no division was made between individual New Forest fabrics; 25.06%.

Oxford: Fabric 1: 40, 43(2); weight, 60 g.; 2.95%.

Fabric 2: 15.1.

Fabric 3: weight, 5 g.; 0.25%.

Total weight: 65 g.; 3.19%.

Hand-made, fabric A: 86, 123(2); weight, 320 g.; 15.72%.*Black-burnished*: 85(2), 107(3), 126; weight, 490 g.; 24.08%.*Grey fabrics*: 127(3), 129.4, 133, 139, 141, 142.1-3; weight, 660 g.; 32.43%.

Total weight: 2035 g.

The same reservations about the group below the upper road surface apply to this. The pottery could represent the gradual accumulation of rubbish up to *c.* A.D. 345 with a large residual element, although it would be more reasonable to see the bulk of the pottery dating from *c.* 330. The ratios of the various fabrics suggests comparability with the middle to upper occupation layers against the wall. Against a firm conclusion should be set the size of the group, which is the same as that of an average pit, and smaller than most of the non-pit groups.

Period 6: from layers immediately above or cutting into the upper make-up

TS: Dr. 31, East Gaul, later second to mid third century A.D.

Argonne: Chenet 320 with stamp nos. 303, 324, 329; weight, 10 g.; 0.07%.

New Forest: Fabric 1: 2/10.17, 2/10.21, 2/10.22-25, 6(2), 6.3, 10.2-3, 13(4), 19.4(2), 19.1-3(2), 21.4-5(2), 22.1-5(7), 22.6-7(2), 22.8, 55.5-7; weight, 970 g.; 7.08%. Another 2060 g. were recorded from layers where no coarse ware body sherds had been kept.

Fabric 2: 29(6), 41.3, 43(15), 57.2, 57.3, 57.4, 60; weight, 1020 g.; 7.44%. Another 1010 g. were recorded from layers where no coarse ware body sherds had been kept.

Fabric 3: 48, 49(3), 53.1 (sherds of same vessel in middle occupation/upper occupation), 64, 65(2), 66, 105.1; weight, 700 g.; 5.11%. Another 710 g. were recorded, as above.

Total weight: 2690 (19.62%) + 3780 g.

Oxford: Fabric 1: 1, 30.9, 33.6, 33.11, 34.7, 35.1, 35.6, 35.10(2), 35.13(2), 35.14 (join in layers above the upper road surface), 36.1, 36.3, 36.9, 36.12, 40(7), 42, 43.10-12(3), 43(12), 53.2, 57(6), 57.5, 58(10), 58.6; weight, 495 g.; 3.61%. Another 3330 g. were recorded, as above.

Fabric 2: 14(3), 15.1(2), 17.7, 17.12; weight, 170 g.; but all from contexts with no coarse body sherds.

Fabric 3: 45(2), 63(4), 63.4(3); weight, 410 g.; 2.99%. Another 910 g. were recorded, as above.

Total weight: 905 (6.60%) + 4410 g.

Pevensey: 35.2, 37, 42, 43(2); weight, 15 g.; 0.11%.

Misc.: 18, 30.2, 31.6, 88.9, 137.7(2); weight, 25 g.; 0.18%.

Hand-made, fabric A: 86(30), 100.1, 107(12), 107.3(2), 107.4(2), 107.5(2), 114(3), 123(79), 125.1; weight, 3280 g.; 23.92%.

Black-burnished: 85(41), 88.2, 107(33), 117(4), 126(44), 154(2); weight, 3195 g.; 23.30%.

Grey fabrics: 76.1, 77(3), 79.1, 84.3, 85(10), 87.1(2), 91, 92, 94, 98.2, 100.3, 101(2), 103.1(4), 106, 107(5), 109.6(3), 109.7, 109.11, 117(10), 118(2), 119(2), 121, 122.2(4), 127(18), 128(3), 129(5), 129.4(7), 129.6(3), 131.1, 131.3, 133(5), 133.3, 134(12), 135(3), 136(6), 137.1, 137.2(7), 137.3, 137.8(6), 139(3), 140(7), 141(2), 142.1-3(4), 142.4-5(3), 145(3), 146, 148.2, 149.2(2), 149.3, 153.5, 153.6(3), 153.8(3), 153.9, 154.6, 157, 159.4-5, 172, 173, 174, 174.3, 175(2), 176.2, 177.1, 177.4, 177.6 (joining sherd in upper occupation), 178(2), 177/179.4; weight, 3560 g.; 25.97%.

Fabric D: 87.2, 109.8, 137.4-6(9), 173; weight 30 g.; 0.22%.

Total weight: 13,710 g. (excluding any pottery from layers where not all sherds were kept).

This group should be considered in the same way as the group from the layers above the upper Roman road surface.

Period 6: from layers immediately above or cutting into upper road surface

TS: Dr. 45, East Gaul, late second to mid third century A.D.

Argonne: Chenet 320 (rims only of two bowls), 328; weight, 5 g.; 0.02%.

New Forest: Fabric 1: 3.1(2), 3.5-6, 2/10.1, 2/10.10-11, 10.2-3, 13(5) 21.1(2), 21.4-5(2), 22.1-5(7), 22.6-7(3), 23.1-2, 24, 55.4, 55.5-7, 55.10-11, 55.13, 55.21; weight, 1510 g.; 5.82%. Another 400 g. were recorded from layers where no coarse ware body sherds were kept.

Fabric 2: 29(9), 32, 33.9, 34.1, 43.9, 43(9), 88.8, 174.4; weight, 670 g.; 2.58%. Another 330 g. were recorded from layers where no coarse ware body sherds were kept.

Fabric 3: 11.1-2, 49(4), 55.8-9, 64(3), 66, 68, 105.5; weight, 530 g.; 2.04%. Another 135 g. were recorded from layers where no coarse ware body sherds were kept.

Total weight: 2710 (10.45%) + 865 g. + 1680 g. from layers where no distinction was made between the individual NF fabrics.

Oxford: Fabric 1: 31, 34.3, 34.4, 34.5, 34.7(2), 35.14 (join in layers above the upper make-up), 36.1(2), 36.7, 40(5), 41, 43(11), 57(2), 58(5); weight, 1485 g.; 5.72%. Another 750 g. were recorded from layers where no coarse ware sherds were kept.

Fabric 2: 14(5), 15.1(2), 15.2, 17.7(3), 17.8, 17.11, 18.8, 26; weight, 50 g.; 0.19%.

Fabric 3: 50.2, 63(5); weight, 430 g.; 1.66%. Another 270 g. were recorded from layers where no coarse ware sherds were kept.

Total weight: 1965 (7.57%) + 1020 g.

Pevensey: 37; weight, 5 g.; 0.02%.

Misc.: 55.2-3, 73, 74, 81, 88.9, 132.3, 134(8); weight, 40 g.; 0.15%.

Hand-made, fabric A: 86(28), 93.1(3), 107(17), 107.4, 107.5(3), 114(2), 123.5, 123.10, 123(81), 174.3; weight, 7440 g.; 28.68%.

Black-burnished: 85(34), 107(32), 117.1(2), 126(36), 175(4); weight, 4995 g.; 19.26%.

Grey fabrics: 76.1, 76.3, 77(2), 85(10), 87.1(2), 87.7, 89.4, 92, 94, 101, 107.12, 107.13, 107.14, 107(6), 109.5(2), 109.6, 117.2(2), 118.3, 118, 119, 120.3, 127(9), 128, 129(6), 129.4(4), 129.6, 131.3, 131.4(2), 131.6, 132(3), 133(5), 133.3, 136(6), 137.2(2), 140(12), 142.1-3(6), 143, 145(2), 149.3, 153.2, 153.8, 154.6, 155, 159.1-2, 159.4-5(5), 159.12, 159.14, 159.7-13(2), 161.1, 162, 163, 172(3), 175(2), 176.3, 177.1, 177.4, 178(2), 179.2; weight, 8490 g.; 32.73%.

Fabric D: 87.2, 137.4-6(8), 173; weight, 290 g.; 1.12%.

Total weight: 25,940 g. + 3565 g. (additional NF and Oxon, see above).

This represents the accumulation of rubbish above the latest Roman road surface from c. A.D. 345 until the close of 'Roman' occupation at Portchester. Since the group will contain pottery brought up by the digging of postholes, etc., into earlier layers, an amount of residual material is to be expected. Equally, as it is the latest Roman group from Portchester, it will, in any case carry proportionally more residual pottery than the preceding groups. It is hoped that this factor can be partly accounted for by the relative percentage of any one type in the post-345 groups, when compared with the earlier ones, provided that the general fabric trend respective to any type is considered as well.

AREA A: SUMMARY LIST OF STRATIFIED COINS
AS DATING EVIDENCE

Before considering the dating of the six periods in detail, it will be convenient to summarize the stratified coins.

Correlation of coins with stratified layers against south wall

<i>Lower clay bank</i> (period 1 phase a)	
	(1373) Gallienus (A.D. 260-8)
(period 1 phase e)	
	(2602) Tetricus I (A.D. 270-3)
	(2603) Carausius (A.D. 286-93)
<i>Lower occupation</i> (period 2)	
	(2484) Tetricus I (A.D. 270-3)
<i>Middle clay</i> (period 3)	
	None
<i>Middle occupation</i> (period 4)	
	(2118) Carausius or Allectus (A.D. 286-96)
	(2457) Constantine I (A.D. 310-17)
	(2461) Constantine I (A.D. 310-17)
	(2508) Constantine I (A.D. 321-4)
<i>Upper clay</i> (period 5)	
	None
<i>Upper occupation</i>	
	(2481) Victorinus (A.D. 268-70)
	(2521) Tetricus II (A.D. 270-3)
	(2074) Carausius (A.D. 289-93)
	(2096) Carausius (A.D. 286-93)
	(2403) Galerius (A.D. 303-5)
	(2500) Constantine I (A.D. 310-17)
	(2222) Urbs Roma (A.D. 330-45)
	(2075) Constantine I (A.D. 335-7)
	(2098) Constans (A.D. 335-7)
	(2209) Constantine II (A.D. 335-7)
	(2477) Gratian (A.D. 367-75)
	(2105) House of Theodosius (A.D. 388-402)

Correlation of coins with stratified 'make-up' and road levels

<i>Below lower road</i> (period 1)	
	(37) Gallienus (A.D. 260-8)
<i>Below upper 'make-up' and road</i> (periods 2, 3, 4)	
	(1345) Tetricus II (A.D. 270-3)
	(1356) Carausius (A.D. 286-93)
	(1341) Carausius (A.D. 286-93)

	(1038)	Carausius (A.D. 286-93)
	(1355)	Diocletian (A.D. 294-305)
	(1106)	Constantinopolis (A.D. 330-5)
	(1368)	Constantinopolis (A.D. 330-5)
<i>Above upper 'make-up' and road (period 6)</i>		
	(1137)	barbarous radiate (A.D. 270-90)
	(1053)	Carausius (A.D. 286-93)
	(1096)	Carausius (A.D. 286-93)
	(1206)	Licinius (A.D. 310-13)
	(1014)	Constantine I (A.D. 310-13)
	(1019)	Constantine I (A.D. 310-13)
	(1044)	Constantine I (A.D. 319-20)
	(1054)	Constantine I (A.D. 319)
	(1081)	Constantine I (A.D. 324)
	(1290)	Constantine I (A.D. 320-24)
	(1084)	Crispus (A.D. 324)
	(996)	Constantine I (A.D. 330-5)
	(1061)	Constans (A.D. 333-5)
	(1153)	Urbs Roma (A.D. 330-7)
	(1041)	Constantinopolis (A.D. 330-5)
	(1034)	House of Constantine (A.D. 330-45)
	(1274)	Constantine II (A.D. 330-5)
	(1024)	Constantine II (A.D. 330-5)
	(1129)	Constantine II (A.D. 335-7)
	(1023)	Constantine II (A.D. 337-41)
	(1025)	Valens (A.D. 364-78)
	(1280)	Valens (A.D. 364-78)
	(1180)	Valentinian I (A.D. 364-75)
	(1219)	Valentinian I (A.D. 364-75)
	(1006)	Gratian (A.D. 378-83)
	(997)	Theodosius I (A.D. 388-95)

Since the other artifacts are not closely datable, any assessment of date must rest entirely upon the coin sequence.

Period 1 (construction period)

The coin of Gallienus found beneath the earliest road where it passes through the postern gate, together with a coin of the same emperor from the quarry hollow, provide a *terminus post quem* of A.D. 260-8 for the construction of the fort. The fact that coins of Tetricus I (270-3) and Carausius (286-93) were recovered from the period 1e occupation layer, which must lie within the first few years of the fort's life, strongly suggests that construction took place in the 270s or early 280s. On balance a date early in the reign of Carausius is preferred.

Periods 2-4

It is most convenient to take the evidence for all three periods together. The latest coins are two Constantinopolis issues of A.D. 330-5, representing the last in a group of only 12 coins.

In view of the range of coins in Period 6, it would be reasonable to suggest that period 4 came to an end soon after the appearance of the Constantinopolis issues, thus dating to about 340-5. The date span of periods 2-4 would therefore be 285/90-340/5.

Apart from a single coin of Tetricus from a Period 2 layer, one coin of Constantine I (310-17) came from the filling of a contemporary pit (pot 230). A coin of Licinius (310-17) was recovered from a period 3 layer in pit 222, while from the layers of silt covering a clay sealing of period 3, low in the filling of pit 223, came two coins, one of Crispus (321-3) and one of Constantine I (320-4). This sequence implies that period 2 continued until about 325, terminating with the deposition of the layer of clay representing period 3 at about that time.

Period 4 is represented by four coins from general layers, two from pit 223 mentioned above, and one from pit 230. Six of the seven were minted between 310 and 324, a fact consistent with a date range of 325-45 for period 4.

Periods 5 and 6

The deposition of clay, make-up and metalling which represents period 5 probably took place, for reasons given above, in about A.D. 345. Thereafter until *c.* 370 occupation seems to have continued at some intensity, being represented by 35 coins. Three coins, one of Gratian (378-83) and two of the House of Theodosius (388-402) hint at the continued use of the site but on a much reduced scale in the closing decades of the fourth century.

The following chronological outline may be offered:

Period 1: construction	A.D. 285/90
Period 2: lower occupation	A.D. 285/90-325
Period 3: middle clay	A.D. 325
Period 4: middle occupation	A.D. 325-45
Period 5: upper clay	A.D. 345
Period 6: upper occupation	A.D. 345-70 (some continuation afterwards)

AREA B: EVIDENCE FOR PHASES

(fig. 24)

The only stratigraphical distinctions which occur in area B relate to the areas of metalling. The main road leading to the postern gate, and the side roads (E-W1) branching from it, shows two distinct phases of metalling; a lower metalling of small pebbles trampled into the surface of the natural brickearth, and an upper metalling, usually composed of large flint cobbles packed tightly together. Where the two layers survive, there is usually a lens of occupation rubbish between them containing quantities of broken pottery and animal bones. E-W road 2 was constructed at the time of the later metalling.

The upper cobbles are discontinuous and vary in quality. In some areas, e.g. between pits 40 and 41, the individual flints are smaller and tightly packed, but the patch immediately to the north of this is much looser, the flints being packed in occupation debris. Beneath this layer was found a coin of Valentinian I (A.D. 364-75) (small find no. 211). Evidently patching took place on more than one occasion. Further evidence of sequence is shown, in this area,

by the two pits 40 and 41, which cut through the metalling, pit 41 being subsequently sealed by two hearths which may well be Roman, since the hearths and the adjacent metalling were together scored by Saxon plough ruts. There is no dating evidence to calibrate the sequence.

The amorphous expanse of gravel metalling which covers much of the western part of the area was also subject to patching, particularly in the region between pits 142 and 210, but no dating evidence was obtained. The metalling was also cut by a series of gullies (gullies 23-6), one of which, gully 25, contained a coin of the House of Constantius (350-60).

AREA C: EVIDENCE FOR PHASES

(fig. 25)

Evidence for phasing on a stratigraphic basis in area C is non-existent. The features are isolated and without direct relationships to general stratigraphy, except where pits can be seen to cut each other or into spreads of gravel. Pit 103, however, deserves mention here: it was probably dug to provide clay for construction purposes and later served as a demolition pit for the remains of dismantled timber buildings (p. 115) early in the life of the fort. It was subsequently sealed by a general occupation layer. No evidence for the absolute dating of this sequence is forthcoming.

IV. THE INTERIOR : THE PLAN AND THE STRUCTURES

INTRODUCTION

IT will be immediately apparent from the simplified plan (fig. 20) that the Roman features are somewhat haphazardly arranged and very incomplete. Three factors contribute to this: the extent of the post-Roman disturbance, the very insubstantial nature of the structural remains (with the exception of the pits and wells, which survived unscathed), and the fact that the activities of 100 years of Roman occupation are superimposed. All three factors must be clearly borne in mind and due allowance made for them.

The post-Roman history of the site has ensured the destruction of most superficial structural remains over the northern two-thirds of the area; thus the likely positions of buildings can only be worked out, and then very tentatively, from the spacing of the pits which seem to leave certain areas clear, possibly because they were occupied. That little trace of structures survives need occasion no surprise when it is realized that the form of construction employed was a sill beam principle, which entailed the use of horizontal timbers into which verticals were slotted. The actual surviving remains of such buildings, even under ideal conditions, (pp. 67-8) are very slight. The different periods represented can be allowed for in the southern part of the site (mainly area A) where it is possible to separate the different phases stratigraphically into primary structures, of period 1, and features relating to the period 5 make-up and remetalling.

The structures and features which constitute the main evidence for Roman occupation include roads and gravel spreads together with their gutters, buildings with associated structures such as hearths, ovens and eavesdrip gullies, wells, cesspits, and drainage gullies. Each of these categories will be described separately.

ROADS AND GRAVEL SPREADS

(pls. XXIV-XXVI)

The Roads: Early Phase

The best preserved of the roads is the main N-S road which runs from the centre of the fort to the south postern gate. In its earliest phase (period 1) it consisted of a 3 in. (7.6 cm.) layer of metalling composed of pebbles, presumably collected from the sea shore, laid directly on the original ground surface. There is no evidence at this stage of a central gutter, but one might have existed only to be subsequently destroyed in the second phase of remetalling.

In the first period one road, E-W road 1, joined the main N-S road at right angles; it was metalled in an identical manner to the main N-S road, and measured 9 ft. 6 in. (2.9 m.) wide, surviving for a distance of 48 ft. (14.6 m.), beyond which late Saxon disturbance had totally destroyed any further trace. The similarity of the primary metalling of the two roads, together with the stratigraphic evidence, leaves little doubt that they were laid out as part

of the same plan. A further point of some relevance is that the western edge of the main N-S road occupies a different line on either side of E-W road 1, giving the impression that the roads were constructed together in relation to standing structures.

The Roads: Late Phase

The first remetalling of the roads probably took place at the same time, equivalent to period 5 dated to *c.* A.D. 345 (p. 61). The metalling varied in quality and extent, but for the most part consisted of flint nodules and occasional fragments of tile packed together on top of the layer of occupation material which had accumulated over the earlier road surfaces.

The main N-S road (pl. XXIVa) seems to have been remetalled throughout its entire length and provided with a central gutter (gully 10).¹ Although the slot in which the gutter had been constructed had been widened and made irregular by subsequent erosion, sufficient survived to show that the gutter, presumably of timber planking, was about 1 ft. wide and 1 ft. deep (0.31 m.). As the road approached the south postern gate, it passed between the ends of the clay bank behind the fort wall. The drainage problems posed by this arrangement were overcome by constructing two side gutters, each some 9 in. (23 cm.) wide, flanking the road for a distance of 40 ft. (12.2 m.), restricting its effective width to 10 ft. (3.1 m.). The metalling, however, extended beyond the side gutters (fig. 22), ending somewhat irregularly.

E-W road 1 (pl. XXIVb) was also remetalled with flints laid over occupation material, on a line exactly following that of the earlier road surface. The late metalling appears to be of one period, but had suffered considerably from Saxon building activity. No gutters were provided.

A new road, E-W road 2, was constructed at about this time. It measured 14 ft. wide (4.3 m.) with a central gutter of the same proportions as that of the N-S road. Two types of metalling were apparent: tightly packed flints averaging 2-3 in. (5-8 cm.) across, which surfaced the southern part of the road, and larger flints more loosely packed, representing much of the northern part, giving the impression of being a patch of later remetalling. Beneath the looser flints was a coin of Valentinian I. The southern part of the road had been cut into by pits 40 and 41, and two hearths (hearths 2 and 3) were later created on its line. How far west the road originally extended must remain unknown.

The evidence for the late fourth-century remetalling of part of E-W road 2 is matched by similar evidence along the line of the main N-S road, where it is clear that hollows forming by wear were being constantly patched with hardcore of flints and tiles. It seems that wherever a puddle formed someone shovelled rubble into it. There is no independent dating evidence for these patchings, but presumably the process was continuous throughout the latter half of the fourth century.

Eventually repair was abandoned, rubbish accumulated over the road surface, and the timber gutters were left to rot and clog up. The latest coins from the area imply that this process of decay followed the 370s, but it may indeed have begun before.

¹ The small finds from this gully are listed together with those from the upper occupation layers (pp. 51-3): they include nos. 1291, 1292, 1293, 1296, 1297, 1298, 1299, 1301.

PORTCHESTER CASTLE

3rd-4th CENTURIES

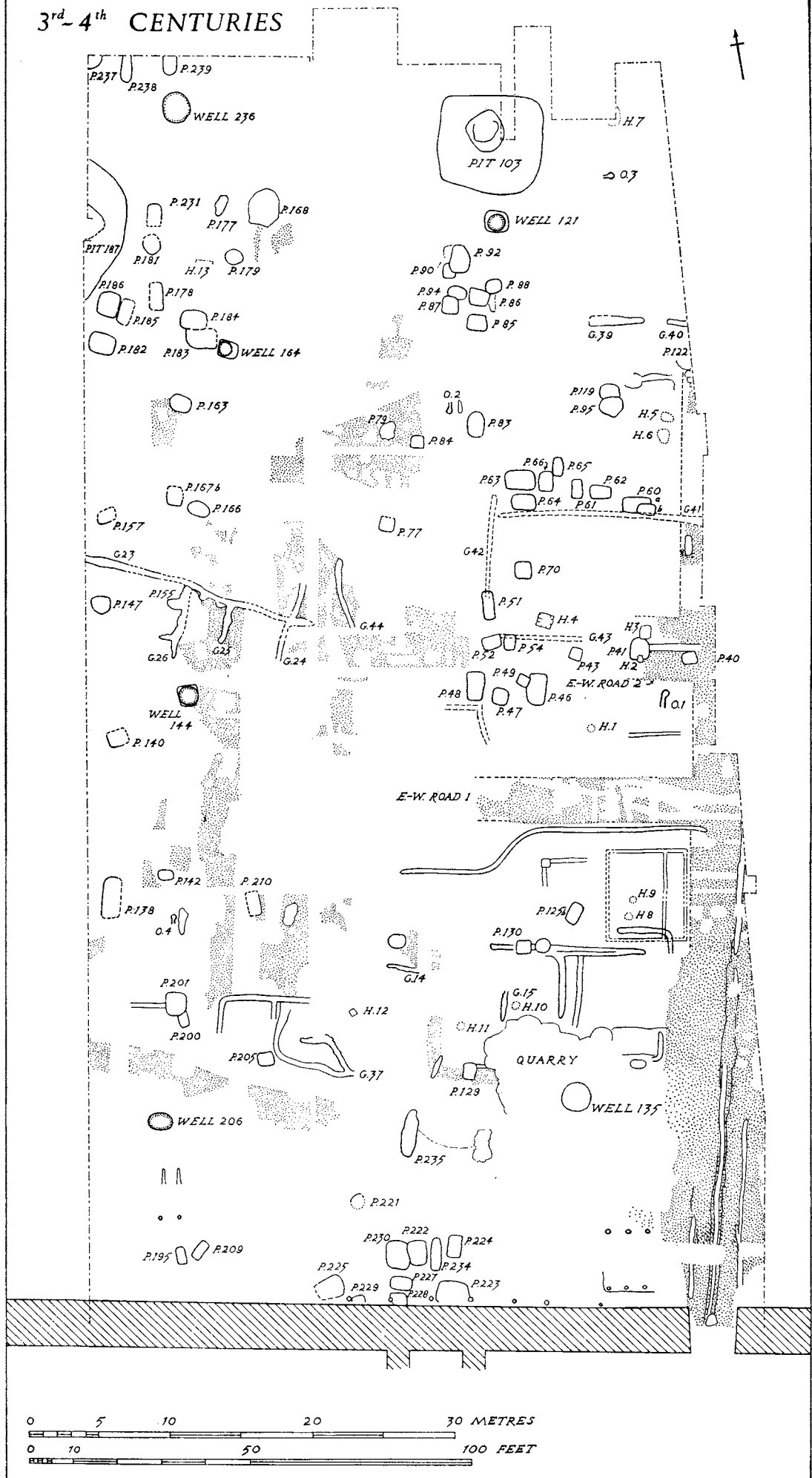


FIG. 20. Plan of all Roman features

The Gravel Spread West of the Roads (pls. XXV–XXVI)

Extensive but discontinuous spreads of gravel metalling blanketed much of the western part of the site, an area of approximately 80 ft. by 200 ft. (24 m. by 61 m.) (figs. 22–4). The discontinuous nature of the spread can best be explained by the destructive effects of post-Roman activity in the area, a point emphasized by the fact that the remaining patches of metalling survive almost wholly in slight hollows where they have escaped disturbance. The nature of the metalling varies from small pebbles and flint cobbles to rather larger flints in the area between pits 77 and 79. In all cases the metalling can be shown to have been laid immediately on the original ground surface, and therefore belongs to the construction phase of the fort. There are, however, several areas which show signs of remetalling, usually with large flints and fragments of tile. One such occurred in area A (fig. 23) and continued into the southern part of area B (fig. 24); another lay to the north of gully 23. How extensive the remetalling originally was it is impossible to say, nor is it possible to be sure on how many separate occasions remetalling took place. In all probability, rubble was laid only when the need arose to fill muddy patches.

The limits of the metalled area are difficult to define with precision. To the south, it may originally have joined with the metalling on the clay bank (see below); its eastern limit seems to extend up to the timber buildings and the three major groups of cesspits; at the northern extremity it presumably joined with the main E–W road, but the point is incapable of proof: the western limit may well lie beyond the excavated area.

The possible function of the metalling will be discussed below (p. 426); here it is sufficient to underline the implication that much of the western part of the site remained an open area throughout the life of the fort, and was maintained as such by occasional remetalling and by the digging of drainage ditches.

The Gravel Metalling on the Clay Bank

The northern slope of the clay bank retains evidence of two phases of metalling, the extent of which is shown on figs. 22 and 23. The northern edge of the metalling appears to mark a deliberate limit, but the southern edge is completely arbitrary, since it has been created by the denuding effects of Saxon ploughing, vivid evidence for which was provided by the discovery of plough ruts scoring the adjacent surface of the clay bank. If, however, it is supposed that the metalling was originally more extensive, perhaps surfacing much of the clay bank, then it could have served as an E–W road joining up with the main N–S road close to the south postern gate.

The two phases of metalling, each of flint cobbles, can be related to the make-up layers of periods 1 and 5 respectively.

THE BUILDINGS AND ASSOCIATED STRUCTURES

(pls. XXVII, XXIX, XXX)

The recognition of buildings poses serious problems, not the least of which is the method of construction employed. Basically it would appear that horizontal sill beams were placed on the unprepared original ground surface to serve as the basis for the superstructure.

Occasionally, e.g. building R₅, the indentation made by the beams on the original surface can be traced. In another case, building R₄, sloppings of mortar dropped during construction mark the positions of timbers in negative, but more often traces of the actual buildings are non-existent, the only indication of their presence being either a clear space uncluttered by pits or gravel metalling, or drainage gullies dug to collect the eavesdrips.

Building R₁ (fig. 22; pl. XXVIIa)

Building R₁ is represented now only by the eavesdrip gullies, which together define two rectangular areas, one measuring approximately 22 by 18 ft. (6·7 by 5·5 m.), the other 25 ft. by approximately 20 ft. (7·6 by 6·1 m.). Beyond this, interpretation is difficult. One of the E-W gullies shows signs of recutting, and it could therefore be argued that the two parallel N-S gullies are similarly of different dates: alternatively, they may represent contemporary drains on either side of an alley-way dividing two separate structures. Difficulty also attaches to the interpretation of the two L-shaped gullies which appear to demarcate the north-east and south-east corners of the building: it may be that they belong to a separate phase. The arrangement, however, was such that free access was allowed from the supposed building to the main N-S street without the necessity of having to step over the gutter.

The drainage gullies were all similar in form, consisting of roughly straight slots of U-shaped sections averaging 4 in. (10 cm.) deep. They were all filled with black soil containing sherds of pottery and animal bones. Their irregular profiles and lack of strict rectangularity in plan prohibit the possibility of their being slots for sill beams.

The form of the structure erected within the drains is even less clear than its plan, but possibly it was of sill beam construction with a raised timber floor.¹ Two postholes (ph 675 and 1087) belong to the early phase and might well have been part of the original structure, but they could be later since their only stratigraphical relationship to the slots is that both features were sealed by the upper make-up. Around the building, particularly on the east and west sides, thin spreads of gravel had been laid: along the southern side was the edge of the clay bank cut by a later well (pit 135).

The dating of the building depends on the fact that the drainage gullies were dug into the natural clay immediately after the construction period and were sealed by the upper make-up which is dated to c. A.D. 345 (p. 61). The upper make-up at this point consists of a spread of broken chalky mortar and daub up to 3 in. (8 cm.) thick, which blankets the area. The nature of the layer is highly suggestive of building debris, and could thus have derived from the decay or demolition of the structure standing there.

Building R₂ (fig. 22)

Building R₂, like the structure just described, is also represented only by its drainage gullies, which define two rectangular areas each approximately 10 by 16 ft. (3 by 5 m.). The gully delimiting the southern side is more substantial than the others, measuring some 1 ft. 6 in. (0·46 m.) across and 9 in. (0·23 m.) deep. The reason for this increased size may

¹ An equally plausible alternative is that the gullies drained the area around tents.

well be that, in such a position, it would have had to collect and contain surface water running off the metallised slope of the adjacent clay bank.

Of the structure itself, there is little to be said. No trace of walls survive, but in the general occupation level sealing the area, a few fragments of daub were recovered. The building butts up to the clay bank on the south side, whilst the area to the north of it is heavily metallised and shows signs of considerable wear.

A date soon after the construction period of the fort is suggested for the erection of building R₂ by the fact that the gullies cut through a builder's mortar spread of the earliest period, and appear to be respected by the gravel metallising laid immediately upon it. One of the gullies is sealed by a gravel metallising equivalent to the upper make-up, while at the same time the site was cut by two of the late gullies (gully 37). The building is therefore likely to have gone out of use by the 340s.

Building R₃ (fig. 22)

The evidence for building R₃ is even more tenuous than that for buildings R₁ and R₂, and indeed the very existence of the structure must be regarded as open to debate. All that survives is a single length of gully roughly aligned with the northern gully of building R₂. To the north of it, however, is an open area devoid of gravel metallising and cesspit digging, but occupied by an oven (oven 4) and an elongated pit associated with it (p. 69). It could be argued that the oven lay within a building sited here, but in the absence of further positive evidence, the problem is best left open.

Building R₄ (figs. 23 and 24)

Building R₄ lies at the junction of the main N-S road and E-W road 1. The ghost of the structure owes its survival to the fact that mortar was dropped at the time of construction between a series of sill beams placed on the original ground surface. The positions of the beams are therefore marked by the absence of mortar. The rear (western) part of the building is indistinct, largely because the mortar spilling did not extend to this area.

The surviving traces show that the beams were almost exactly 1 ft. (31 cm.) wide and defined a structure measuring overall 20 ft. (6 m.) long by about 18 ft. (5.5 m.) wide. Across the front ran a verandah or corridor 5 ft. (1.5 m.) wide. The substantial room behind might have been divided into two by a cross partition. To the west of the building were traces of two further walls set at right angles to each other with a post at the corner.

The nature of the superstructure is purely speculative, but in all probability the sill beams supported walls of wattle and daub. The floor poses a problem, since the mortar spread shows signs of two fires having been lit on it. This could mean either that the mortar served as the floor surface or that the fires pre- or post-dated the construction of a raised timber floor. Both explanations are equally possible.

The northern side of the building is bounded by a shallow V-sectioned gully, 8 in. (20.3 cm.) deep, which bends slightly to negotiate the corner of the structure. This point alone would suggest that the gully was probably contemporary with the building and may have served to drain off surface water accumulating on the street surface.

The relationship of building R₄ to building R₁ is demonstrated by the superimposition of the mortar spread and sill beams of building R₄ on the gully belonging to building R₁. The fact that the remetalling of the main N-S road was evidently carried out in relation to building R₄ further supports the view that building R₄ belongs to a late stage in the history of the fort, and should be correlated with period 5 (*c.* 345). No independent dating evidence survived the extensive disturbance to which this area was subjected in the post-Roman period.

Building R₅ (fig. 24, pl. XXIXa)

The rectangular area created by the remetalling of the main N-S road and E-W roads 1 and 2 could have accommodated a building equivalent in size to building R₄. The area had been very disturbed by Saxon and medieval features, but the position of a single sill beam could still be traced as a shallow indentation in the surface of the natural clay no more than $\frac{1}{4}$ in. (0.6 cm.) deep. In spite of an extremely careful examination of the surrounding areas no further beam positions could be located. The only other features of Roman date in the immediate area were an oven (oven 1) and a hearth (hearth 1), neither of which need necessarily relate to the building.

No dating evidence survives, but the way in which the late metalling of the adjacent roads appears to respect the supposed building would suggest that it too, like building R₄, belonged to the period 5 rebuilding.

Building R₆ (fig. 20)

Close to the south postern gate, fronting on to the main N-S road was a rectangular post-built structure measuring 14 by 11 ft. (4 by 3.4 m.). It was terraced into the lower clay bank and associated with tips of the 'middle clay', which was used as a packing material outside the rows of posts representing the walls. The positions of six posts were recovered, each averaging 8-12 in. (20-31 cm.) in diameter and 1-1½ ft. (31-46 cm.) deep. The nature of the superstructure is otherwise unknown.

From its position, the building might well have served as a guard chamber, controlling passage through the south postern gate. It is dated by its association with the middle clay to *c.* A.D. 325, and was out of use by the time the upper clay was spread over the area, *c.* 345 (pp. 49-50).

Other Possible Buildings

The northern part of the excavated area has been so decimated by later earth-disturbing activities that not the slightest trace of a building survives. The grouping of the pits, however, would allow for the one-time existence of structures fronting on to the main N-S road, the pits being sited either behind or between the buildings. Similarly, it could be argued that gullies 41-3, 39 and 40, defined building plots. In the absence of firm evidence it would be unwise to speculate further, except to say that the existence of buildings here, while likely, is unproven.

Ovens

Within the excavated area four ovens have been found, all of which could in theory have been sited within buildings or in yards close by. That no ovens were found in the area

occupied by the gravel spreads supports the view that domestic activities were restricted to certain well-defined parts of the fort.

Oven 1 (trench 60)

Oven 1 was constructed of clay and set in a shallow excavation cut into the natural brick-earth. A ledge had been provided along one side some 2 in. (5 cm.) above the level of the oven floor. Partially cut away by pit 37.

Oven 2 (trench 74)

Oven 2 was constructed of clay strengthened with fragments of tile. The floor had been cut a few inches below the level of the adjacent natural. Beside it was an elongated trench, 3 ft. long by 1 ft. wide (0.91 by 0.31 m.) cut to a depth of 3 in. (7.6 cm.) into the natural clay. It was filled with black soil (layer 83). The surface of the natural clay around the oven was heavily scorched.

Oven 3 (trench 77)

A small oven constructed of clay. Badly mutilated by a post hole and cut by pit 104. The natural clay nearby was heavily burnt.

Oven 4 (trench 100)

A well-constructed oven, built of tiles set horizontally in a chalky mortar (pl. XXIX*b*). The floor was composed of limestone slabs. It was filled with a mixture of black earth mixed with fragments of collapsed superstructure (layer 51). The stoke hole has been partly cut away by a later posthole. Beside the oven was an elongated trench, 6 ft. long by 1 ft. 6 in. wide (1.83 by 0.46 m.) and 1 ft. 2 in. (0.36 m.) deep. It was filled with grey soil containing fragments of tiles, some bone and an iron ring (2274). The natural clay in front of the slot was heavily burnt.

Hearths

In all, some 13 hearths were found, ranging from well-built tile structures to little more than patches of burning. As with the ovens, the distribution of hearths is closely related to the supposed sitings of buildings, leaving the gravel area totally unencumbered.

Hearth 1 (trench 60)

Patch of burnt natural clay *c.* 1 ft. 6 in. (0.46 m.) across.

Hearth 2 (trench 62)

Patch of burnt clay 1-1½ in. (2.5-3.8 cm.) thick and 1 ft. 6 in. (0.46 m.) across, laid over the filling of pit 41. Possibly early Saxon in date.

Hearth 2 (trench 62)

Rectangular patch of burnt clay 2 ft. 6 in. (0.76 m.) by 3 ft. 3 in. (1 m.), and 3 in. (7.6 cm.) thick. It lies partly on the natural clay surface and partly over the filling of pit 41. It has been cut by a plough furrow. Possibly early Saxon in date.

Hearth 4 (trench 65)

Hearth built largely of complete tiles laid directly on the surface of the natural clay (pl. XXXb). The surface had been subjected to considerable heat.

Hearths 5 and 6 (trench 76)

Two discontinuous patches of burnt clay, inset with fragments of tiles and laid on the surface of the natural brickearth. The hearths had been mutilated by later disturbances.

Hearth 7 (trenches 77 and 78)

Area of burning on the surface of the natural clay, covering an area of 5-6 ft. (1.5-1.83 m.) in diameter. Cut by the Napoleonic fence trench.

Hearth 8 (trench 88)

Area of broken tiles set in clay and laid horizontally on the surface of layer 13, which was burnt in its vicinity.

Hearth 9 (trench 88)

Area of burnt clay laid on the surface of layer 13, which showed signs of burning nearby.

Hearth 10 (trench 89)

Area of burnt clay c. 3 ft. square (0.9 m.) and 2 in. (5 cm.) thick, with a fragment of tile set in it, lying on layer 41 and cut by a posthole.

Hearth 11 (trench 89)

Area of burnt marl with a few tile fragments set into it. This is strictly a continuation of layer 41.

Hearth 12 (trench 90)

Small hearth measuring about 2 ft. by 1 ft. (0.6 by 0.3 m.) composed of tiles set in baked clay, and laid on the surface of the natural clay.

Hearth 13 (trench 99)

Fragmentary remains of a hearth built of complete tiles set in clay and laid on the surface of the natural clay. Mutilated by later features, but originally at least 6 ft. (1.83 m.) wide.

STRUCTURAL EVIDENCE OUT OF POSITION

The description above has been concerned with traces of buildings and their ancillary features found *in situ*. Another class of evidence which throws some light on the problem of the internal buildings is loose finds such as nails, daub, painted plaster, tiles, bricks and window glass.

Bricks and Tiles (pl. XXXI)

Fragments of a wide range of bricks and tiles were found scattered in occupation layers, in pits and re-used in post-Roman structures. The only tiles to be found *in situ* were used in hearths (pp. 69–70) or as bonding courses in the fort walls (pp. 13–20).

Tegulae

The most common type of tile was the tegula made in two fabrics, a hard red sandy ware and a softer orange-red fabric with large inclusions. Size appears to have been uniform, but two standards were adopted for the flanges, one 2 cm. wide and upturned by 2 cm., the other 1.5 cm. wide and upturned by the same amount. The smaller sizes were invariably made in the orange-red fabric.

Finishing was restricted to finger grooving in the angle of the flange and finger drawn arcs at one end. Rarely rough combing in the form of a cross was found in place of the arcs.

Provenance: generally scattered throughout, but particularly numerous in the large pit 103.

Imbrices

Fragments of imbrex tiles were numerous, the only distinctive feature being the comb decorations on the end of one fragment.

Provenance: generally scattered throughout, but occurring in quantity in pit 103 as the result of the demolition of a nearby roof.

Bricks

Standard size Roman bricks were fairly common, measuring 26–30 cm. by *c.* 45 cm. Two thicknesses are recorded, 3.7 cm. and 4.7 cm., the former being the more common. Both the red sandy and orange fabrics were used for bricks.

Two examples were found tapering in thickness; this type would have been made for the construction of arches.

Provenance: from all parts of the site.

Hypocaust tiles

Three types were recovered:

Pilae tiles, measuring 20.5 cm. square. Four, all in orange fabric with inclusions, were recovered from trench 90. Fragments of others may well have passed unnoticed.

Pilae bases. Squarish tiles measuring 26.5 by 28 cm. and 3.5 cm. thick. These were found in various parts of the site. Again, fragments would not have been distinguished. Tiles of

this kind were sometimes used as the base for *pilae* built of the smaller tiles, and sometimes for the capping, helping to span the spaces between *pilae*.

Hypocaust bricks. Large bricks 5.5 cm. thick and approximately 44 cm. square. The upper surface was usually scored with a comb in a simple Union Jack pattern. Tiles of this size were usually employed as a final capping to hypocausts, the *pilae* being so spaced that tiles placed centrally upon them would have butted up to each other.

Provenance: various occupation layers, Roman pits 79, 103 and 147, and Saxon Well (pit 135). Also from layers below and above upper make-up.

Box Tiles (pl. XXXI)

Fragments of box tiles occurred widely; the most common measured 18.5 by 17 cm. in section. Since no complete tiles were found, the length remains unknown. Some examples were provided with rectangular vents in the sides, others with triangular openings. Several were stained with soot internally. The surfaces were decorated with combing in three basic arrangements, roughly vertical, Union Jack fashion, or vertical and wavy.

A fragment of one example of a wedge-shaped voussoir box tile was recovered with rectangular side vents and a combed surface.

Provenance: widely distributed: Roman pits 48, 51, 166, 186, and several post-Roman pits. Also from layers above the upper make-up and road surface.

Circular Tiles

One fragment of a circular tile 5 cm. thick was found. Its upper surface was comb decorated.

Provenance: trench 32 layer 5: watergate.

It will be apparent from the above description that two types of building construction were represented by the tiles: structures with tiled roofs and a building (or buildings) with hypocausts. Since all the relevant material was found out of its original context it is impossible to go further, except to draw attention to the small bath suites found in the shore forts of Richborough and Lympne. That a building of this kind probably existed at Portchester seems likely on the available evidence.

Window Glass

The window glass is discussed in detail by Dr Harden on p. 373. Here it is necessary merely to record that fragments have been found in pits 66, 103, 121, in the layers below the upper road, and in the layers above the upper make-up and the upper occupation, together with a few pieces from general and post-Roman layers. Although the quantity is small, there is sufficient to suggest that glazed windows were not uncommon at Portchester.

Nails

Large numbers of iron nails of different sizes were discovered in most levels reflecting the widespread occurrence of timber structures. Numbers and sizes have been recorded under the individual groups.

Daub

A small quantity of chalky daub was found, much of it showing the marks of wattles, 1.5 cm. in diameter, or laths about 4 cm. wide. Some fragments would have come from timber-framed walls 8–10 cm. thick.

Daub is recorded from the following contexts: pits 47, 61, 62, 65, 86, 92, 119, 121, 130, 187, and from the middle occupation (trench 108 layer 163). Two of the fragments from pit 86 were painted red on their roughly smoothed surfaces (small finds 361 and 640). It is perhaps significant that all the daub belongs to period 4 (325–45) which is therefore likely to be a time when timber structures were being replaced on a substantial scale.

Painted Plaster (fig. 21)

A few fragments of white sandy mortar, 1–3 cm. thick, were found. The outer surface was invariably smooth and either left white or painted in stripes of red or ochre. Plaster has been recovered from:

Pit 103: fragments include some that are coarsely moulded with vertical V-shaped grooves (fig. 21, no. 1).

Pit 195: fragment 2 cm. thick with lath marks on the back: white surface with a red band (fig. 21, no. 3).

Middle occupation (trench 102 layer 60): fragments including a piece from a window embrasure moulded around laths and painted red on the surface (fig. 21, no. 2).

Layer above make-up (trench 88 layer 10): fragment.

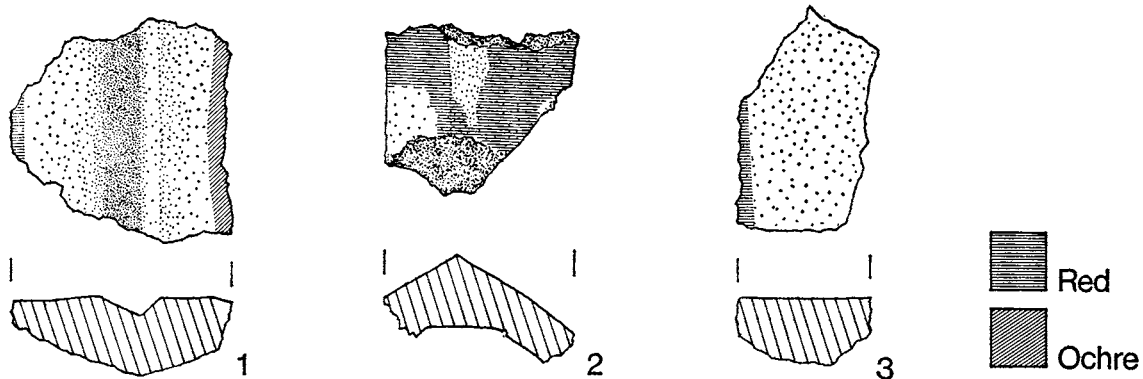


FIG. 21. Painted plaster. Scale $\frac{1}{2}$

DRAINAGE GULLIES

The drainage gullies can be divided into two groups: those related to the buildings described above (pp. 66–8), and those which appear to have been dug to drain the gravel spread. To this latter group belong two major systems: gully 37 draining the southern area of the gravel spread, and gullies 23–6 which run across the centre of the gravel area. In addition, there are a number of isolated lengths in various parts of the site. A third system of

gullies (nos. 41-3) occupying the eastern part of the site are of uncertain date, but since they contain only Roman material they will be described here. It is possible that this group served to drain the environs of timber buildings which have since disappeared.

Gully 14 (90 layer 55)

Short irregular gully dug to a maximum depth of 9 in. (23 cm.) below the top of the upper make-up and cutting into the natural clay to a maximum depth of 5 in. (13 cm.). Filled with black occupation material.

Gully 15 (89 layer 35)

Short length of gully cut through the upper make-up to a depth of 8 in. (20.3 cm.). Filled with black occupation material.

Small finds: Whetstone (1187): not illustrated, no. 358.

Gully 23 (96 layers 26, 47 and 68)

Irregular gully running across the gravelled area. It varies in depth from 5 to 9 in. (13 to 23 cm.). Gullies 24, 25, 26, all appear to be part of the same system, but the relationship of gully 24 cannot be tested because of a later disturbance at the junction. Filled with black occupation material.

Gully 24 (96 layers 53 and 54)

Irregular gully crossing the gravelled area. Its depth averages 5 in. (13 cm.). The relationship to gully 23 has been destroyed. Filled with brown loamy soil.

Gully 25 (96 layer 72)

Short length of gully, running into gully 23. Cut through cobbles to a depth of 2 in. (5 cm.). Filled with black soil.

Small finds: Bronze coin (1808): House of Constantine (A.D. 350-60).

Gully 26 (96 layer 61)

Very irregular gully expanding into a shallow hollow (pit 155). Filled with occupation debris mixed with brickearth.

Gully 37 (90 layers 73, 74; trench 101 layers 122, 123, 141)

Two irregular gullies running into each other. They are cut through the upper make-up and appear to be laid out so as to drain the upper layer of cobble metalling. The maximum depth to which they are dug below the contemporary surface is 4 in. (10 cm.). Filled with black soil mixed with occupation material.

Gully 39 (76 layer 28)

Short length of gully 8 in. (20.3 cm.) deep. Filled with grey-brown loamy soil.

Small finds: Iron ring (534): not illustrated; lead cuttings (535): not illustrated.

Gully 40 (76 layer 11)

Gully on the same alignment as gully 39. Filled with dark grey loamy soil.

Gully 41 (65 layer 7 and 70 layer 10)

Long regular gully cut through the top filling of pit 60 and through the surface of the main N-S road. The depth below the top of natural brickearth averages 8 in. (20.3 cm.).

Filled with greenish-grey loam mixed with some occupation material. Because of its relationship to pit 60 the gully is likely to belong to the second half of the fourth century or later. Since it produced only Roman material it is described here, but a date in the early Saxon period cannot be totally overlooked.

Small finds: Iron fragment (372): not illustrated.

Gully 42 (70 layer 11)

Long regular gully dug to a depth of 8 in. (20.3 cm.) below the original ground level. Filled with greenish-grey loam mixed with some occupation material. The relationship of the gully to pit 51 could not be determined. The gully appears to belong to the same system as gully 41. A further length of gully on the same alignment occurs, after a gap, to the south.

Gully 43 (65 layer 15)

Straight length of gully 3 in. (7.6 cm.) deep. Filled with greenish-grey soil with some oyster shells and bones. It is possibly part of the system to which gullies 41 and 42 belong.

Gully 44 (71 layer 16)

Curved section of gully dug to a depth of 4 in. (10 cm.). Filled with greenish-grey marl containing pottery and oyster shells. The gully was cut through the cobbled surface.

Gully 45 (89 layer 60)

Short length of gully dug to a depth of 3 in. (7.6 cm.) below the top of the upper make-up. Filled with occupation rubbish.

WELLS

Altogether, six wells of Roman date were found. In the site recording system they were numbered together with the pits since the distinction between pits and wells was not apparent at the surface clearing stage. The wells are therefore recorded as pits 121, 135, 144, 164, 206 and 236.

The siting of the wells appears to have been planned. None was constructed within the zone occupied by the buildings, but nos. 135 and 121 lay close to the extremities of the area. The rest were arranged in a north-south line across the gravelled area.

All showed certain characteristics in common: they were constructed in circular or sub-rectangular well pits and must all have been lined with timber to retain the clay packed between the lining and the edge of the well pit. Nothing of the timber lining now survives,

but since the actual shafts were all circular in section, the lining must have been of vertical planking, perhaps a series of barrel-like structures set one upon the other.¹

The subsequent history of the wells varies. No. 135 continued in use into the Saxon period, no. 206 was deliberately filled with flints and clay, and no. 164 was also deliberately filled with soil and clay. The remaining three, nos. 121, 144 and 236, were allowed to fill up with occupation rubbish, of which they contained prolific amounts. Datable material from the shafts shows that there is no reason why the deliberate filling should not be Roman, although it cannot be closely dated. The coins from no. 121 would allow the tipping of rubbish to have filled the shaft by the 330s or 340s. The filling of no. 144 was not completed until a decade or two later, if the coin evidence can be taken as a reasonable guide. No. 236 was largely filled by the 340s to 350s, the uppermost soil accumulation probably forming in the 360s.

Summary of Coins from the Wells

Well (pit) 121	(816)	Constantine I (A.D. 308-17)	layer 36
	(868)	Crispus (A.D. 322-4)	layer 36
	(879)	Constantine I (A.D. 308-17)	layer 53
	(883)	Galerius (A.D. 295-305)	layer 58
	(937)	follis (?) (c. A.D. 295)	layer 68
Well (pit) 144	(1665)	Constans (A.D. 337-41)	layer 92
	(1711)	corroded, 3rd-4th century	layer 92
	(1745)	Helena (A.D. 324-30)	layer 134
Well (pit) 236	(2619)	Constantinopolis (A.D. 330-5)	layer 91
	(2620)	Constantinopolis (A.D. 330-5)	layer 91
	(2618)	Constantine II (A.D. 353-6)	layer 91
	(2617)	Constantine II (A.D. 337-40)	layer 105
	(2616)	House of Constantine (A.D. 322-4)	layer 109
	(2615)	Carausius (A.D. 286-93)	layer 115

THE PITS

(pls. XXVIII, XXX)

Altogether some 83 Roman structures have been recorded as pits. Within this general category, six turned out on excavation to be wells (p. 75) and at least 42 were cesspits, the remainder being a miscellaneous group, composed largely of shallow scoops or hollows filled with occupation debris. It is evident that the majority of the cesspits fall into five distinct groups:

Group A: pits 178, 182, 183, 184, 185, 186, 231.

Group B: pits 85, 86, 87, 88, 90, 92, 94.

Group C: pits 60a, 60b, 61, 62, 63, 64, 65, 66.

Group D: pits 43, 46, 47, 48, 49, 52, 54.

Group E: pits 222, 223, 224, 225, 227, 228, 229, 235.

¹ Well 236, however, may have been lined with flints, although it is a distinct possibility that the flints were packed behind a timber lining.

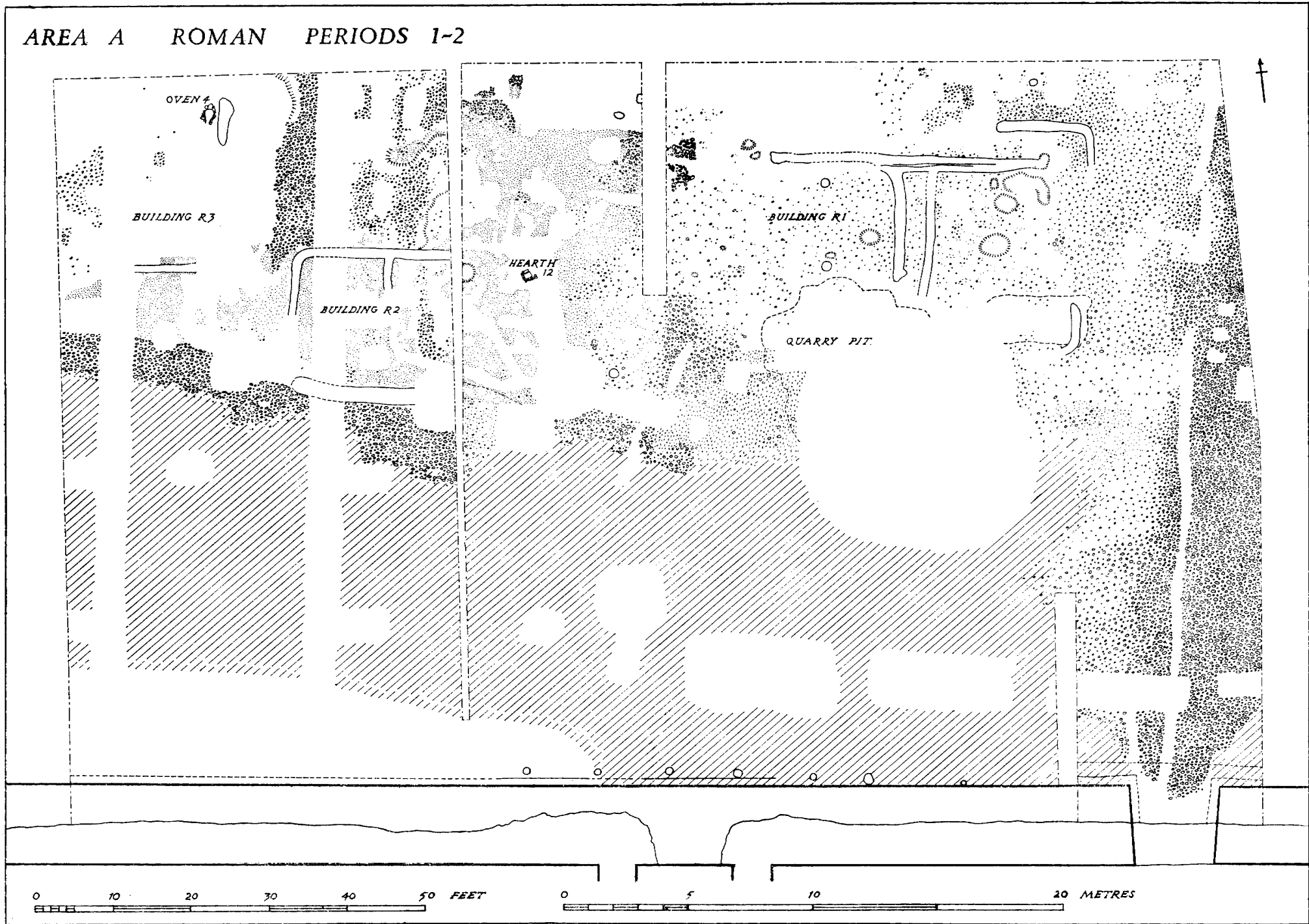


FIG. 22. Layers of periods 1 and 2. The cross-hatching represents a clay deposit

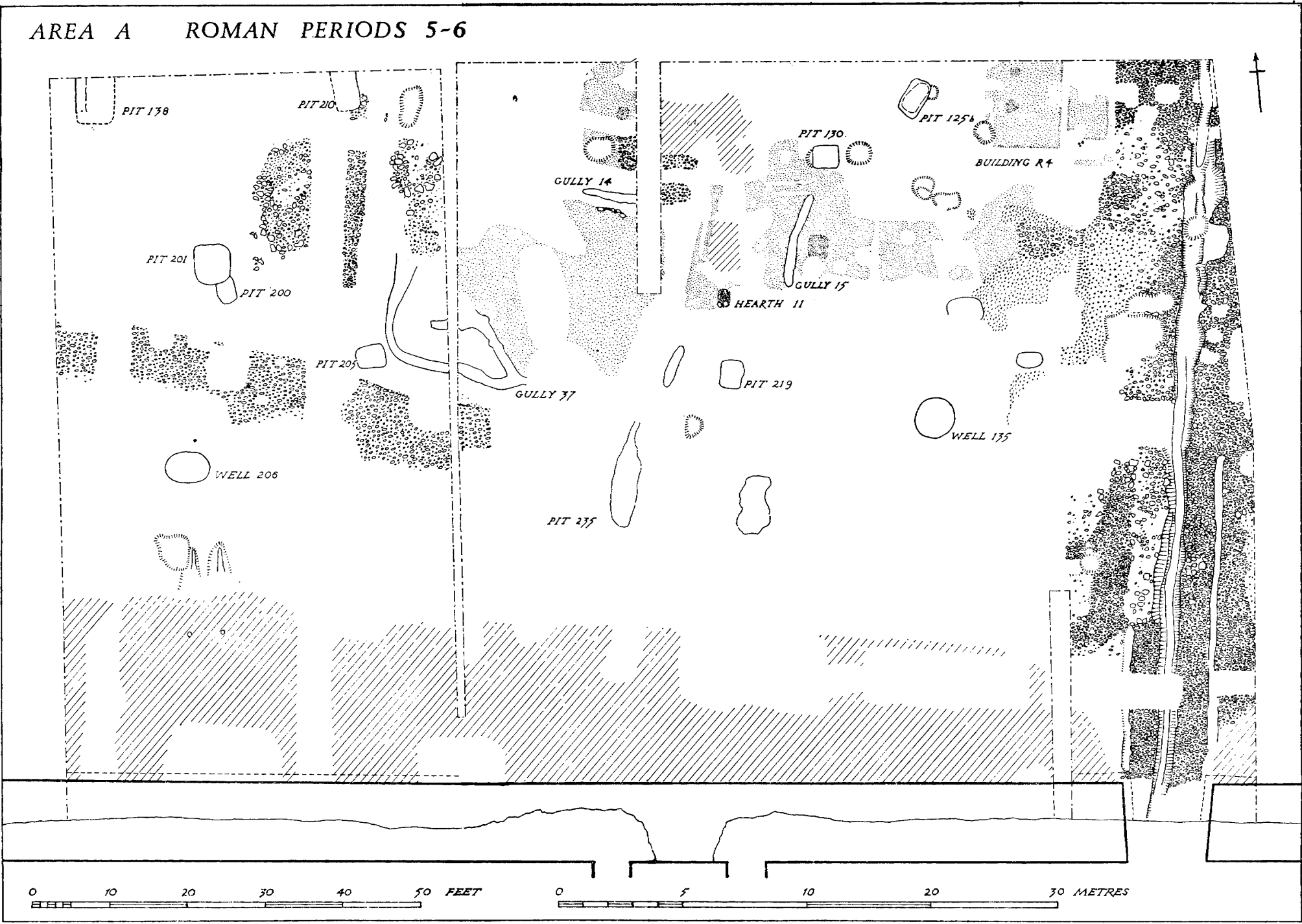


FIG. 23

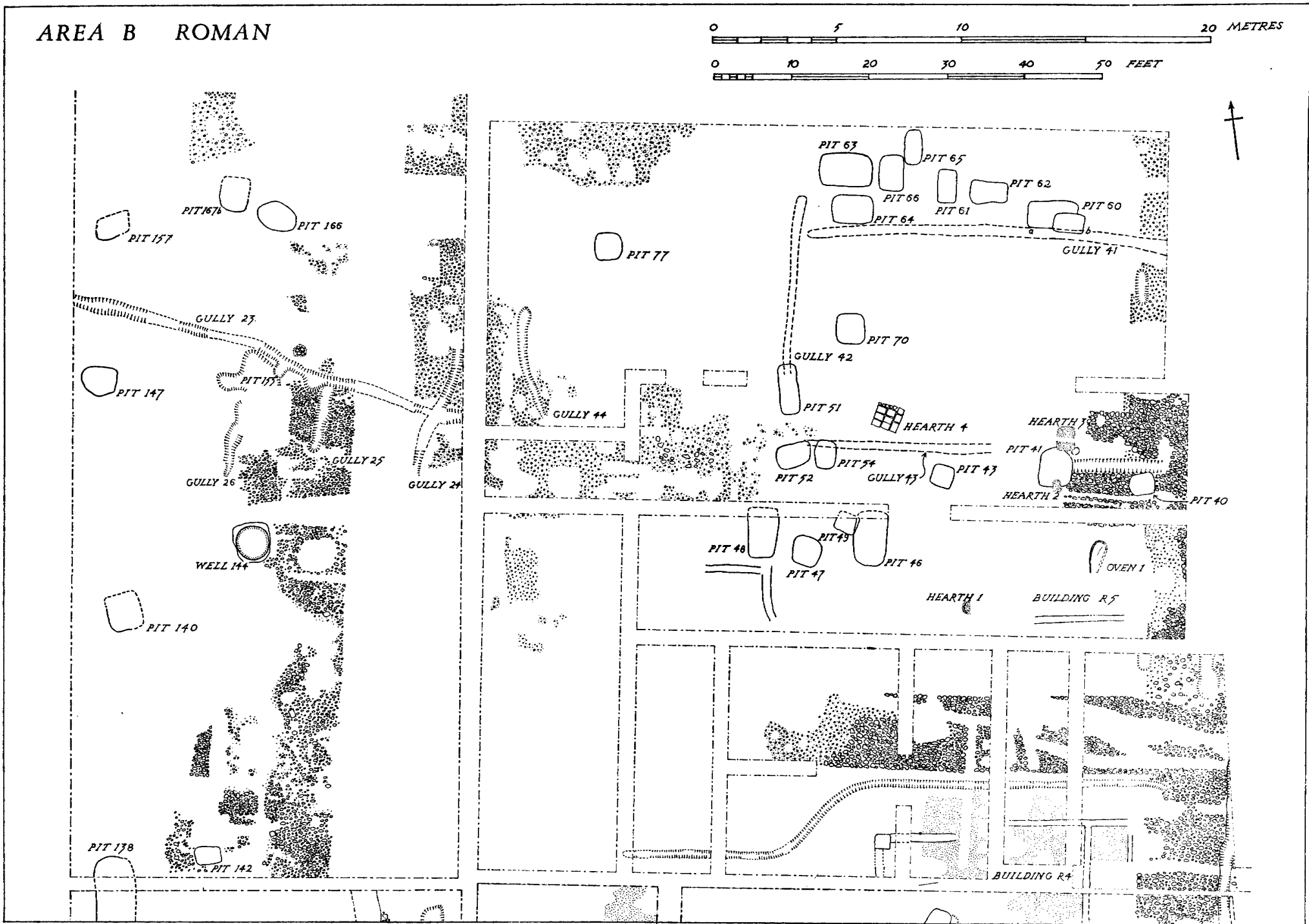


FIG. 24

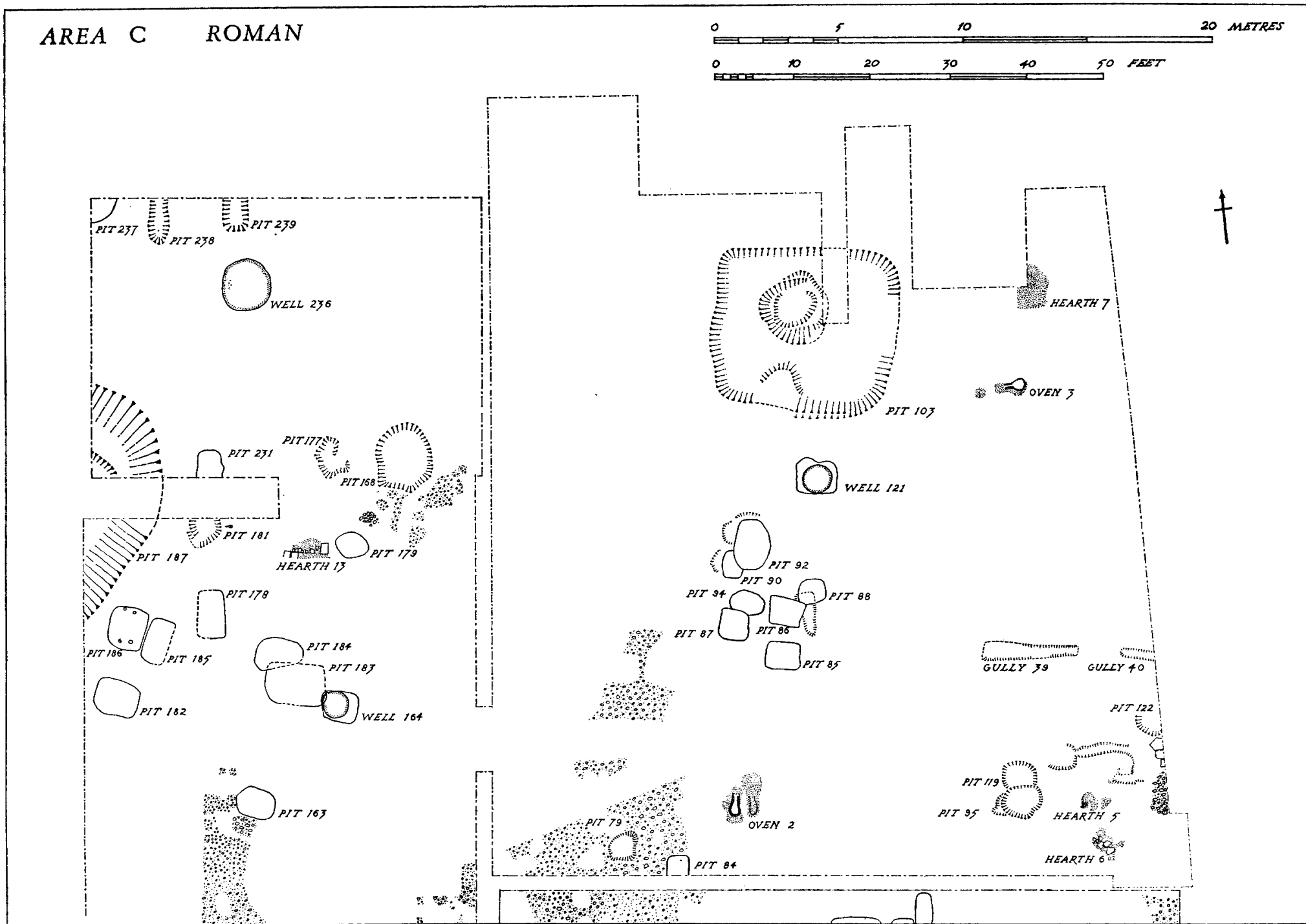


FIG. 25

Each group occupies a well-defined area and each comprises between six and nine pits dug in a restricted series of almost standard sizes. The implication would seem to be that each group of pits was dug over a limited period of years in distinct areas, set aside for such purposes quite probably between and behind contemporary buildings. The apparent adherence to a series of standards, including $3\frac{1}{2}$ by $3\frac{1}{2}$ ft. (1.07 by 1.07 m.), 3 by 5 ft. (0.91 by 1.52 m.) and 4 by 7 ft. (1.22 by 2.13 m.) goes some way towards hinting at an element of military precision. In simple functional terms the small square pits could have served as single seat latrines, while the larger elongated structures were more suitable for two-seaters.

Most of the cesspits were allowed to fill practically to the top before being sealed by a thick deposit of clay and marl. How often, if at all, they were emptied before the final sealing it is impossible to say, but on balance it is more likely that a new pit was dug each time the old pit was filled. In theory it would be possible, by simple mathematics, to work out the capacity of each group in terms of man days, but such an exercise would be open to many variables. It is simpler to suppose that the life of each group was short, but not so short as to prevent the occasional accident of a new pit being cut into the side of an old one.

The dating of the cesspit groups depends upon the coins found in them. These may conveniently be summarized:

Group A:	pit 178	(1972)	Constantine I (A.D. 310-13)	
Group B:	pit 86	(629)	Constantine I (A.D. 308-17)	
	pit 92	(671)	Constantine I (A.D. 307-17)	
		(707)	Constantine I (A.D. 317-22)	
		(661)	House of Constantine (A.D. 335-45)	
Group C:	pit 60a	(278)	Constantine I (A.D. 308-17)	
		(375)	Constantine I (A.D. 317-23)	
	pit 62	(259)	Carausius (A.D. 286-93)	
		(275)	Constantine I? (c. A.D. 300-17)	
		pit 63	(418)	Constantine I (A.D. 308-17)
	(319)		Constantine I (A.D. 323-30)	
	(393)		Gratian (A.D. 367-78)	
	(395)		Gratian (A.D. 367-78)	} From the uppermost fill of the pit, from late occupation rubbish
	(404)		Valentinian (A.D. 364-75)	
	Group D:	pit 66	(297)	Valentinian I (A.D. 364-75)
pit 46		(197)	Tetricus I (A.D. 270-3)	
		(174)	Crispus (A.D. 317-24)	
Group E:	pit 222	(2538)	Licinius (A.D. 310-17)	
	pit 223	(2532)	Crispus (A.D. 321-3)	
		(2534)	Constantine I (A.D. 320-4)	
		pit 227	(2550)	Constantine I (A.D. 310-17)
	pit 230	(2565)	Constantine I (A.D. 310-17)	

The evidence speaks for itself. Apart from the late fourth-century coins from the very top of pits 63 and 66, from layers representing late rubbish accumulations, all the coins fall within a group which might reasonably have been in circulation in the 330s and 340s. This is precisely the period which the coin evidence in general indicates to be one of unusual activity (p. 196).

Three of the isolated pits outside the main groups produced coins:

- Pit 103 (825) unidentifiable
- Pit 138 (1621) Constantine II (A.D. 337-40)
- Pit 187 (1982) Carausius (A.D. 286-93)
- (983) Constantine I (A.D. 319-22)

This group is also consistent with a dating in the 330s and 340s.

While it must be admitted that the evidence is not conclusive, the strong impression given by the above coin lists is that pit digging was restricted to a limited period of time and presumably therefore represents a particular kind of usage in one phase of the fort's life.

One further group of pits deserves mention, the two large pits close to the main E-W road, pits 103 and 187. As the detailed accounts will show, both were large and sub-rectangular, with irregular bottoms. Pit 103 had been filled with tips of building material derived from the demolition of timber buildings, but it had not necessarily been dug primarily as a demolition pit, although this explanation is possible. Pit 187 was of similar form, but the filling was largely of soil accumulation. Both show signs of having been left open for some time. While their purpose must remain unproven, various explanations are possible. It could be argued that they were quarry pits to provide brickearth for building. Another alternative is that the pits were dug as ponds. Both were close to wells, and conveniently sited for the watering of livestock. Such an explanation might at first sight appear far-fetched for a military installation, but the possible context for it and further implications will be examined in more detail below.

In the pages to follow, details of the filling and contents of each pit will be given. All small finds are listed, together with a simple statistical assessment of the pottery and comments on the animal bones.

The figures for the pottery are the work of Michael Fulford, whose general consideration of the pottery from the pits appears on pp. 272-5. The numbers given in italics refer to sherds illustrated in the type series.

The assessment of the animal bones is by Annie Grant. A detailed discussion of the bones appears below. The number following the name of the species is the percentage of the total number of fragments identified, excluding ribs and skull fragments (but including upper jaws with teeth present and horn cores). The main bone report includes a discussion of different methods for determining percentages of species represented and an assessment of their relative values. Where no percentage is given the animal forms less than 0.5% of the total. Percentages are generally corrected to the nearest whole number (and consequently do not always add up to 100). Where no percentages are given for a pit, it was considered that too few fragments were found for such an analysis to be meaningful. It should be noted that the significance of the percentages is proportional to the number of fragments identified, and percentages of species in pits where relatively few bones have been identified should be treated with caution. In all cases the order of species given is the order of their importance in the pit.

Pit 40 (PC 66, trench 62, layer 7, Pit A)

Rectangular pit 3 by 2 ft. 9 in. (0.9 × 0.84 m.) at the top, with almost vertical sides, 4 ft deep (1.22 m.).

The upper fill consisted of black occupation soil containing quantities of large flint nodules, tiles and bones. The lower fill of crumbly brown soil, with oyster shells, bones and tiles thrown in, represented the original cesspit filling.

The pit was cut through the adjacent layer of cobbles.

PIT 40

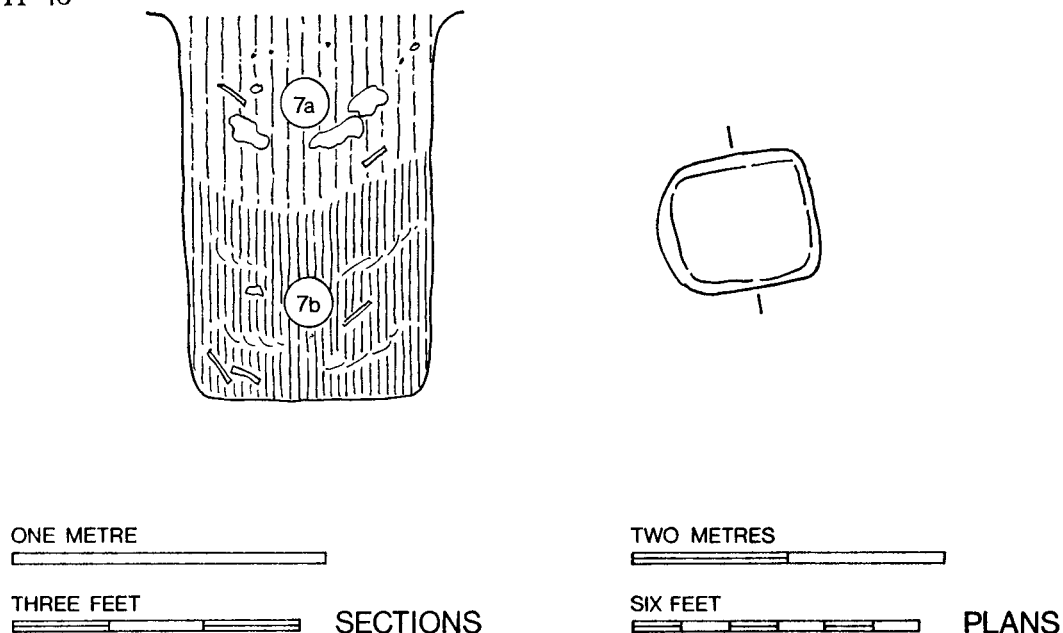


FIG. 26

Nails (measurement in cm., as also for pits below)

From layer 7:

1, 8.9; 1, 8.9 +; 1, 8.25; 4, 6.35; 1, 10.2 +; 1, 5.1 +; 1, 2.55.

Pottery

From layer 7:

New Forest; body sherds in fabrics 1, 2 and 3; weight, 60 g.; 2.51%.

Oxford; as 63.7, and body sherds of ?Oxford beakers; weight, 40 g.; 1.67%.

Hand-made fabric A; 86 (5), 123 (5); weight, 1200 g.; 50.21%.

Black-burnished; 85, 107, 126 (3); weight; 680 g.; 28.45%.

Grey fabrics: as 76.1, 119, 133 (2), 140, 148, 159.3; weight, 370 g.; 15.48%.

Fabric D: 40 g.; 1.67%.

Total weight: 2390 g.

Animal Bones

457 fragments identified (including 145 ribs and 54 skull fragments).

Species represented: ox, 60; sheep, 18; pig, 16; bird, 2; dog, 1; red deer, 1; horse, 1; cat, 1.

Pit 41 (PC 66, trench 62, layer 12, Pit B)

Approximately rectangular pit measuring 4 ft. 3 in. by 5 ft. (1.30 × 1.52 m.). The sides sloped in gradually to a flat bottom 1 ft. (0.3 m.) below the level of the natural.

The uniform filling consisted of black soil mixed with oyster shells and animal bones.

The pit was cut through the adjacent layer of cobbles but was sealed by two Roman hearths.

PIT 41

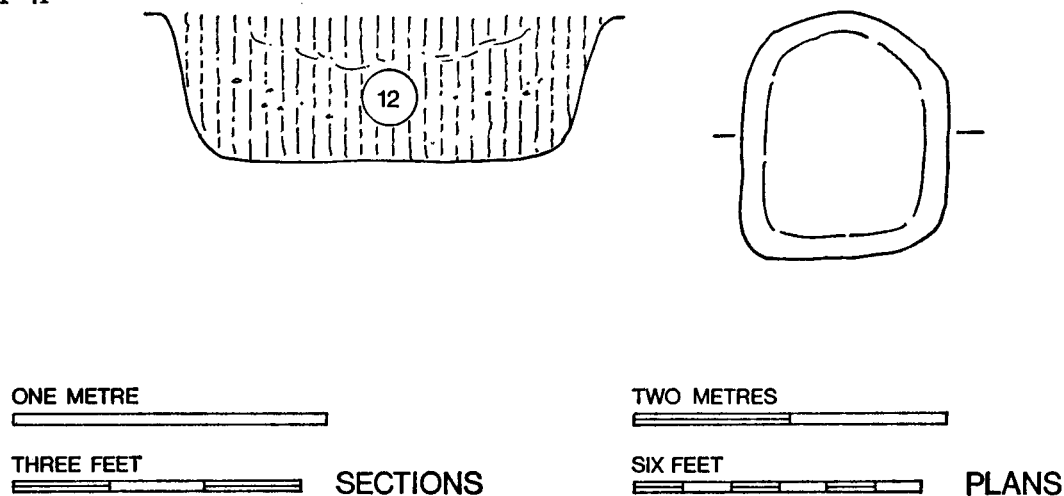


FIG. 27

Nails

From layer 12:

1, 10.2, bent; 2, 5.1 +; 1, 5.1; 1, 7.6; 1, 3.85.

Pottery

From layer 12:

TS: Dr. 31R, Central or East Gaul, second to mid third century.

New Forest: 2/10.10 and 11, 22.1-5 (2); 43 (2); weight, 150 g.; 7.69%.

Oxford: 15.4, 17.4, as 31 and? Oxford 30.4; weight, 225g; 11.54%

Hand-made, fabric A: 86 (2), 123, 123.7; weight, 810 g.; 41.54%.

Black-burnished: 85, 107 (2), 117.1, 126 (2); weight, 460 g.; 23.59%.

Grey fabrics: as 109.6, 129 (2), 159.1; weight, 305 g.; 15.64%.

Total weight: 1950 g.

Animal Bones

177 fragments identified (including 47 ribs and 22 skull fragments).

Species represented: ox, 62; pig, 18; sheep, 15; bird, 6.

Pit 43 (PC 66, trench 62, layer 14, Pit D)

Square pit 2 ft. 9 in. by 2 ft. 10 in. (0.84 × 0.86 m.) cut to a depth of 2 ft. 2 in. (0.66 m.). The filling contained some oysters and was of a uniform greenish clayey soil, representing its use as a cesspit.

Pit 43 was cut by pit 42 (late Saxon).

PIT 43

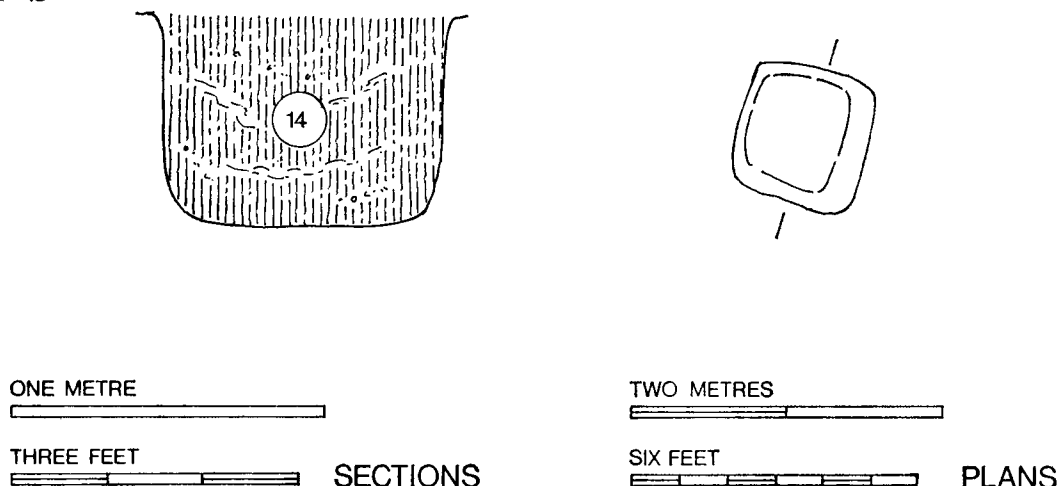


FIG. 28

Animal Bones

58 fragments identified (including 16 ribs and 7 skull fragments).

Species represented: ox, 48; pig, 29; sheep, 20; dog, 3.

Pit 46 (PC 66, trench 63, layers 7, 7a, 7b, Pit A)

Rectangular pit with sloping sides measuring 4 ft. 3 in. by 7 ft. 4 in. (1.30 × 2.24 m.) at the top decreasing to 2 ft. 3 in. by 5 ft 0 in. (0.69 × 1.52 m.) at the bottom; 5 ft. (1.52 m.) deep.

Lowest fill (layer 7b) was of crumbly green-grey soil representing its use as a cesspit. The upper fill (layer 7a) was similar but contained more lenses of charcoal, oyster shells and roof tiles.

The pit post-dated pit 59 which was sealed by layer 7a. It was cut by the wall slot of a Saxon building.

Small Finds

From layer 7:

Bronze coin (174)	Crispus (A.D. 317-24)
Bronze coin (197)	Tetricus I (A.D. 270-3)
Shale board (198)	curved fragment, fig. 122, no. 150
Skin vessel (200)	no. 321; pl. XXXIVb

PITS 49 and 46

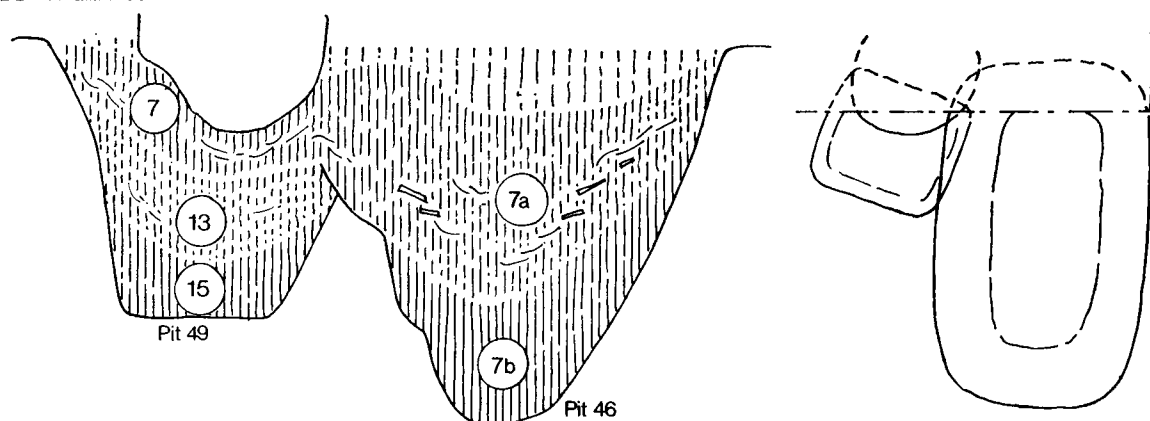


FIG. 29

- Crucible (199) fragment, fig. 139, no. 336
 Lead sheet (204) $\frac{1}{8}$ in. thick, $1\frac{3}{4}$ in. wide, rolled into rough cylinder: not illustrated.
 cf. fig. 123, no. 167.

Nails

From layer 7:

- 1, 8.9+; 2, 11.5; 1, 7.6, head 3.85 dia.; 1, 9.95+; 1, 7.6+; 1, 8.9; 1, 10.2; 2, 6.35; 2, 6.35+;
 1, 7.0; 4, 5.1+; 3, 3.85; 4, 3.85+; 1, 7.6; 2, 2.55.

Pottery

From layer 7:

New Forest: as 2/10.21, 13 (2), 19.1-3, 20.2, 22-1-5 (2), 32, 43, 43.8; weight, 360 g.; 4.26%.

Oxford: 17.11, 18.9, as 34.6, 35.4, 36.8, 40.3, 43, 58, 63 (2); weight, 880 g.; 10.41%.

Hand-made, fabric A: 86 (3), 107 (2), 107.5, 123 (8), 123.8; weight, 3085 g.; 36.49%.

Black-burnished: 85 (7), 107 (6), 117.1, 126.3, 126 (10); weight, 2810 g. 33.23%.

Grey fabrics: 85, 127 (2), 129, 131.3, 142.1, 159.7, 159.8, 159.9, 178; weight, 1300 g.; 15.38%.

Fabric D: 20 g.; 0.24%.

Total weight: 8455 g.

Animal Bones

291 fragments identified (including 87 ribs and 19 skull fragments).

Species represented: ox, 54; pig, 16; sheep, 13; bird, 8; cat, 4; dog, 2; horse, 2; fish, 1; red deer, 1.

Two almost complete ox skulls were found in this pit.

The pig bones included part of a young animal.

Human Bones

Part of one infant burial.

Pit 47 (PC 66, trench 63, layers 8, 9, 9a, Pit B)

Square pit, 3 ft. 9 in. (1.14 m.) across with almost vertical sides, 5 ft 2 in. (1.57 m.) deep.

The lowest fill (layer 9a) consisted of crumbly green-brown cesspit fill together with a quantity of animal bone. Above this (layer 9) came a thick deposit of the same material but with lenses of charcoal and oyster shells. The pit was sealed by a layer of burnt clay (8) mixed with lenses of soil and other burnt material. Fragments of daub were recovered from layer 9.

The pit was cut by a Saxon or medieval posthole.

PIT 47

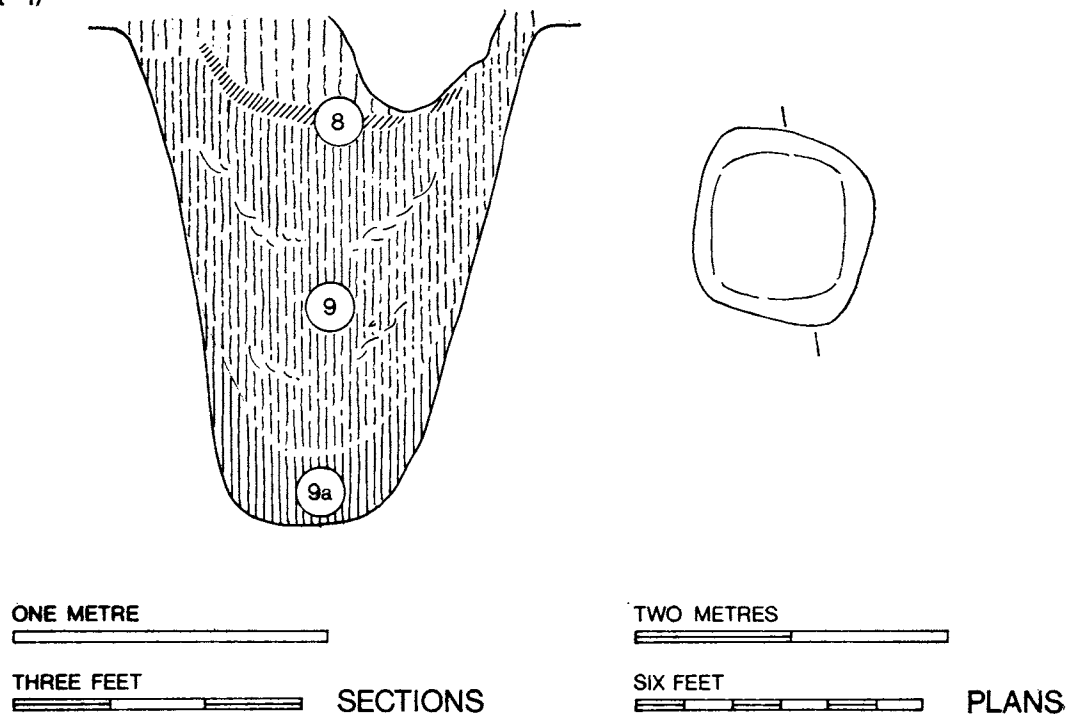


FIG. 30

Small Finds

From layer 9:

- Bronze stylus (168) decorated, fig. 114, no. 64
- Bronze sheet (179) three fragments; not illustrated
- Bone spindlewhorl (195) decorated, fig. 118, no. 109
- Lead, melted but not re-formed.

Glass Vessels

From layer 9:

fig. 198, no. 12.

Nails

From layer 9:

1, 8.25; 2, 6.35; 1, 7.6 +; 1, 7.6 +, bent; 1, 4.5 +, bent; 1, 3.2 +; 1, 3.85; 2, 5.11.

Pottery

From layer 9:

New Forest: 2/10.5, 22.1-5 (2), 29.2; weight, 180 g.; 6.50%.

Oxford: 31, other sherds of fabric 4; weight, 75 g.; 2.70%.

Hand-made, fabric A: 86 (2), 107, 123; weight, 850 g.; 30.70%.

Black-burnished: 85 (2), 107 (2), 126; weight, 850 g.; 30.70%.

Grey fabrics: 85 (2), 92, 94, 119.1 (sherds of same vessel in pit 48) 127, 132, 140 (2), 154.5; weight, 785 g.; 28.50%.

Fabric D: 69; weight, 25 g.; 0.90%.

Total weight: 2765 g.

Animal Bones

309 fragments identified (including 50 ribs and 36 skull fragments).

Species represented: ox, 37; cat, 30; bird, 14; pig, 9; sheep, 8; red deer, 2; dog; fish.

This pit contained a higher than usual percentage of cat and bird bones. The cat bones included one almost complete animal and part of at least three others.

The pig bones included part of a new-born animal.

Human Bones

Infant tibia.

Pit 48 (PC 66, trench 63, layers 14 and 14a, Pit D)

Rectangular pit 6 ft. 7 in. by 4 ft. (2.0 × 1.22 m.) with slightly insloping sides, 4 ft. 2 in. (1.27 m.) deep.

The lowest layer (layer 14a) was of crumbly green-brown cesspit filling containing quantities of animal bones. Above this was a greenish-grey soil of similar texture mixed with flints, oyster shells and lenses of charcoal.

The pit was cut by a shallow late Saxon feature.

Small Finds

From layer 14:

Bone bracelet	(183)	fragment, fig. 117, no. 101
Bone handle	(177)	fragment, fig. 119, no. 118
Ceramic object	(175)	fig. 139, no. 334
Ceramic spindle whorl	(176)	fig. 139, no. 332
Lead, net weight	(2655)	fig. 123, no. 167
Lead, melted but not re-formed.		

PIT 48

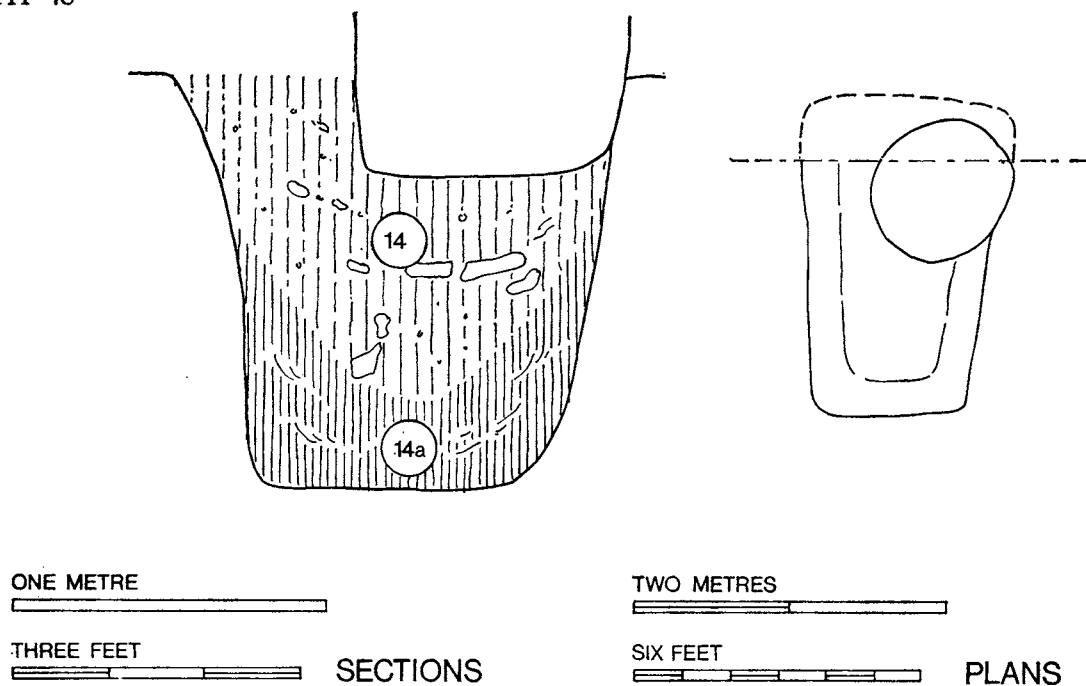


FIG. 31

Nails

From layer 14:

1, 10.2 +; 1, 8.9 +; 2, 5.1 +; 3, 3.85.

Pottery

From layer 14:

New Forest: 3.6, 2/10.22-25, 11, 22.1-5, 38.2, 43, 49.6; weight, 400 g.; 6.20%.*Oxford*: 15.1, sherds of fabric 4; weight, 50 g.; 0.78%*Hand-made fabric A*: 86 (3), 107, 123 (11); weight, 1850 g.; 28.68%.*Black-burnished*: 85 (4), 107 (2), 126 (5); weight, 2300 g.; 35.66%.*Grey fabrics*: 85 (2), 92, 119.1 (sherds of same vessel in pit 47), 127 (6), 129, 129.4 (3), 141 (2), 153.2, 175.2; weight, 1840 g.; 28.53%.*Fabric D*: 137; weight, 10 g.; 0.16%.

Total weight: 6450 g.

Animal Bones

351 fragments identified (including 144 ribs and 10 skull fragments).

Species represented: ox, 49; sheep, 21; pig, 20; bird, 9; cat, 1.

The ox bones included part of an animal less than one year old.

Pit 49 (PC 66, trench 63, layers 13 and 15, Pit E)

Rectangular pit 3 ft. (0.91 m.) across and 2 ft. 9 in. (0.84 m.) deep.

The lowest layer (layer 15) was a crumbly green-grey cesspit filling. It was sealed by a layer

of chalk marl and soil (layer 13) presumably to act as a deliberate seal. Above this was layer 7, which represented the lateral extension of the filling of the adjacent pit 46.

Pit 49 pre-dated pit 46 on stratigraphical grounds.

Pottery

From layer 13:

New Forest: 22.1-5; weight, 40 g.; 7.02%.

Hand-made, fabric A: 123 (2); weight, 270 g.; 47.37%.

Black-burnished: 85 (2) 126 (2); weight, 200 g.; 35.09%.

Grey fabrics: 129, 132; weight, 60 g.; 10.53%.

Total weight: 570 g.

Animal Bones

45 fragments identified (including 18 ribs).

Species represented: ox, sheep, bird, pig, cat, vole.

Pit 51 (PC 66, trench 65, layer 11, Pit B; PC 67, trench 69, layer 19)

Rectangular pit 2 ft. 6 in. by 6 ft. 6 in. (0.76 × 1.98 m.), 1 ft. 7 in. deep (0.48 m.).

The filling was of a uniform grey soil mixed with quantities of charcoal.

The pit had been subjected to intense heat which scorched the sides and bottom, baking the clay red to a depth of 1 in. (2.5 cm.). It is possible that the pit was constructed for a process of some kind requiring heating: on abandonment it was filled with rubbish.

PIT 51

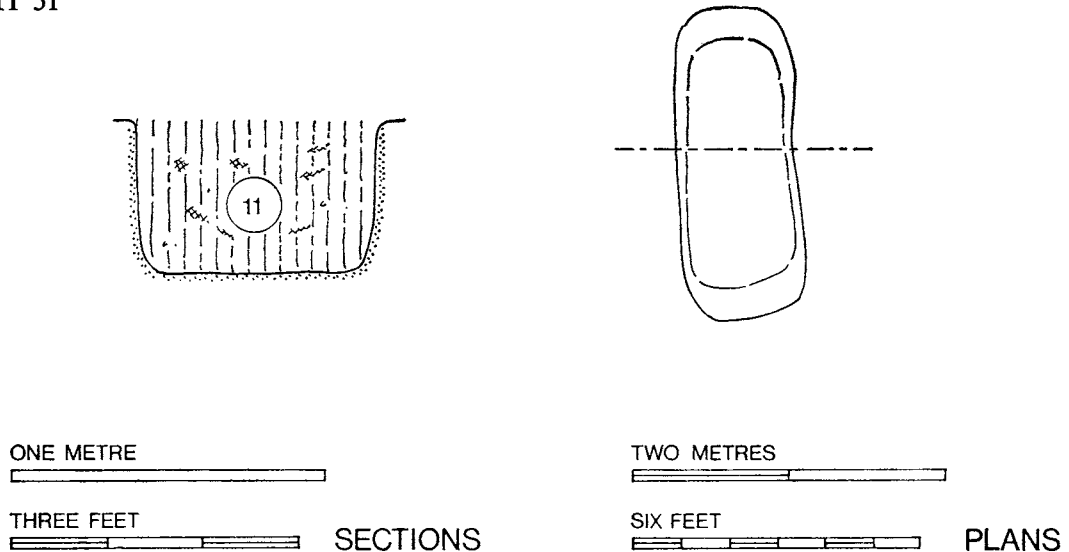


FIG. 32

Small Finds

From layer 11:

Bronze penannular brooch (212): much corroded, broken and distorted: the terminals do not survive and the object is without distinctive characteristics: not illustrated.

Glass Vessel

From layer 11:

fig. 198, no. 14.

Nails

From layer 11:

1, 7.6.

Pottery

From layer 11:

New Forest: 3.1-2, 43; weight, 120 g.; 13.72%.

Oxford: 43; weight, 10 g.; 1.14%.

Hand-made, fabric A: 123; weight, 140 g.; 16.0%.

Black-burnished: 107; weight, 80 g.; 9.14%.

Grey fabrics: 109.1 and 2; weight, 240 g.; 27.43%.

Fabric D: 97, 109.8; weight, 225 g.; 25.71%.

Misc.: 156; weight, 60 g.; 6.86%.

Total weight: 875 g.

Animal Bones

57 fragments identified (including 8 ribs and 1 skull fragment).

Species represented: ox, 44; sheep, 40; pig, 10; bird, 4; cat, 2.

Pit 52 (PC 66, trench 65, layer 12, Pit C)

Oval shaped pit 3 ft. by 4 ft. 6 in. (0.91 × 1.37 m.) dug to a depth of 2 ft 5 in. (0.74 m.). Uniform filling of grey soil, flints and occupation debris.

The pit was cut by pit 53 (late Saxon) and by the post pit of late Saxon date.

Nails

From layer 12:

1, 8.9; 1, 5.1; 1, 6.35.

Pottery

From layer 12:

TS: base, Dr. 31, Central Gaul, Antonine.

New Forest: 29, 43; weight, 60 g.; 2.63%.

Oxford: 31 (probably the same vessel as in pit 54), 57; weight, 200 g.; 8.77%.

Hand-made, fabric A: 107, 123.4, 123 (3); weight, 960 g.; 42.11%.

Black-burnished: 85 (2), 126 (2); weight, 550 g.; 24.12%.

Grey fabrics: 85.1, 85, 127, 134, 142; weight, 500 g.; 21.95%.

Fabric D: 87.2; weight, 10 g.; 0.44%.

Total weight: 2280 g.

Animal Bones

96 fragments identified (including 41 ribs and 1 skull fragment).

Species represented: ox, 54; sheep, 20; pig, 18; red deer, 4; dog, 2; bird, 2.

PIT 52

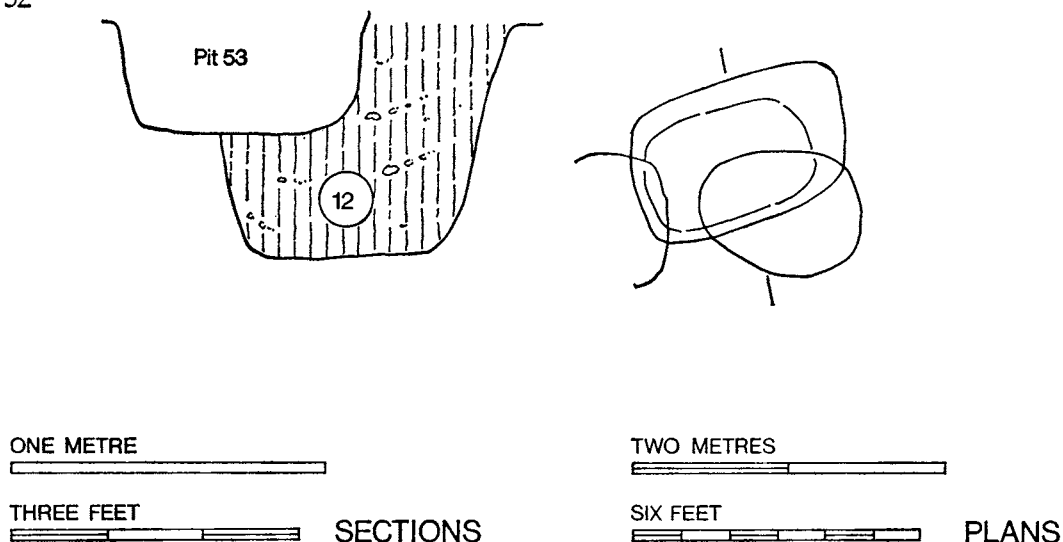


FIG. 33

Pit 54 (PC 66, trench 65, layers 14 and 18, Pit E)

Roughly rectangular pit 2 ft. 9 in. by 3 ft. 9 in. (0.84 × 1.14 m.), 4 ft. 5 in. (1.35 m.) deep.

The lowest layer (layer 18) was of greenish-grey crumbly cesspit filling containing bones and oyster shells. The upper layer (layer 14) was grey soil containing occupation debris including charcoal.

Small Finds

From layer 18:

Iron key (181): fig. 129, no. 221.

Nails

From layer 14:

1, 7.6; 2, 5.1.

From layer 18:

1, 10.2 +; 1, 5.1.

PIT 54

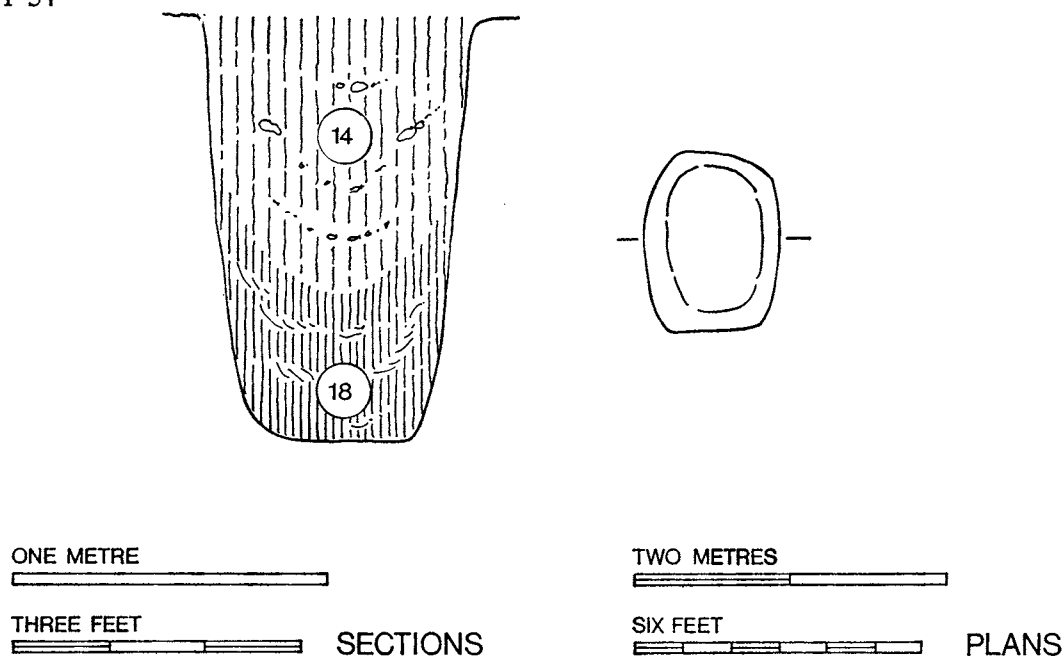


FIG. 34

Pottery

From layer 14:

New Forest: sherd of fabric 2; weight, 10 g.; 1.39%.

Hand-made, fabric A: 123 (3); weight, 170 g.; 23.61%.

Black-burnished: 107, 126 (3); weight, 180 g.; 25.0%.

Grey fabrics: 85, 127, 129, 145; weight, 250 g.; 34.72%.

Fabric D: 87.2; weight, 110 g.; 0.44%.

Total weight: 720 g.

From layer 18:

New Forest: sherds of fabric 1; weight, 20 g.; 1.53%.

Oxford: 31.4 (probably the same vessel as in pit 52), 63; weight, 190 g.; 14.50%.

Hand-made, fabric A: 86, 123; weight, 440 g.; 33.59%.

Black-burnished: 85 (4), 107.8, 126; weight, 310 g.; 23.66%.

Grey fabrics: 127.3, 127, 129, 131.2, 140, 176.3; weight, 350 g.; 26.72%.

Total weight: 1310 g.

Animal Bones

95 fragments identified (including 30 ribs and 3 skull fragments).

Species represented: ox, 47; sheep, 26; pig, 16; bird, 11.

Pits 60a and b (PC 67, trench 68, layers 8a and 8b)*Pit 60a*

Rectangular pit 6 ft. by 3 ft. 6 in. (1.83 × 1.07 m.), 2 ft. 10 in. (0.86 m.) deep.

The filling was completely uniform consisting of grey soil, flints and wads of yellow brick-earth all apparently thrown in at the same time.

The pit seems to have cut away most of the earlier pit 60b.

PIT 60 A and B

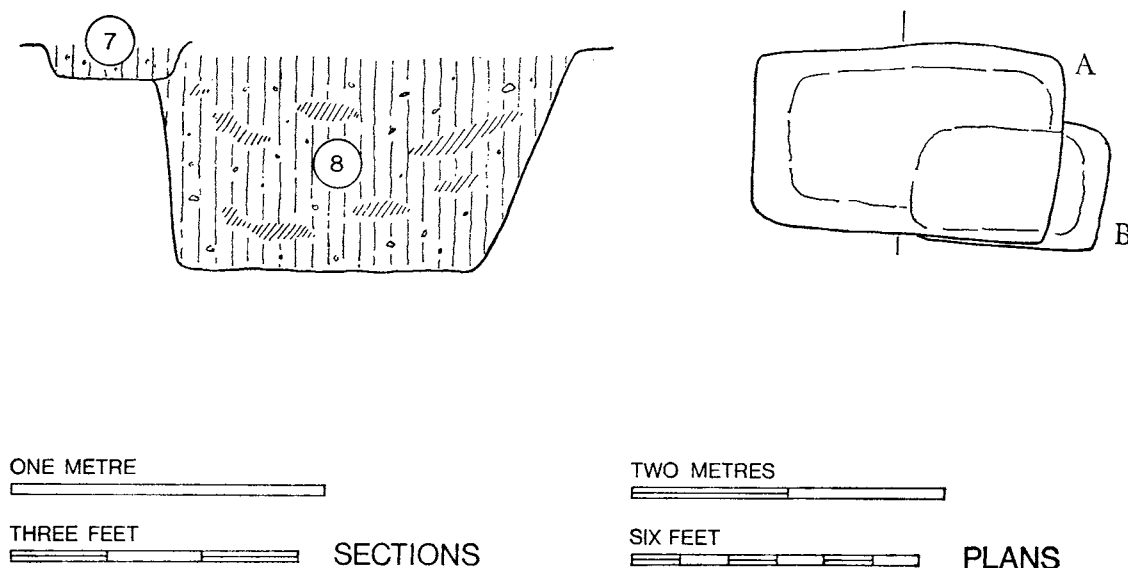


FIG. 35

Pit 60b

Rectangular pit 4 ft. by 2 ft. 6 in. (1.22 × 0.76 m.), 3 ft. (0.91 m.) deep.

The filling (layer 8b) consisted of dark grey soil and some lenses of clay difficult to distinguish from the filling of pit 60a. Pit 60b was apparently earlier than 60a but the relationship was not indisputable. Pit 60b was cut by a gully of early medieval date.

One possible explanation for this group of pits is that pit 60b had been dug and filled before pit 60a was laid out. After 60a had been begun it was realized that it was cutting through the unconsolidated filling of an earlier structure and was accordingly abandoned and refilled.

Since there was difficulty in distinguishing between the two fillings it is better to regard all finds as belonging to the later pit.

*Pit 60a**Small Finds*

From layer 8:

Bronze coin	(278)	Constantine I (A.D. 308-17)
Bronze coin	(375)	Constantine I (A.D. 317-23)
Iron stylus	(273)	fig. 130, no. 243.

Pottery

From layer 8:

New Forest: 19, 29, 43; weight, 110 g.; 2.59%.

Oxford: sherds of fabrics 4 and 5; weight, 25 g.; 0.59%.

Misc.: 15.

Hand-made, fabric A: 86 (2), 107.5, 123 (6); weight, 1660 g.; 39.01%.

Black-burnished: 85 (2), 107 (2), 117.1, 126 (3); weight, 1060 g.; 24.91%.

Grey fabrics: 77, 85, 87.3, 119, 127, 129 131.5, 141, 159.7-13, 162, 172; weight, 1350 g.; 31.73%.

Fabric D: 50 g.; 1.18%.

Total weight: 4255 g.

Animal Bones

219 fragments identified (including 73 ribs and 10 skull fragments).

Species represented: ox, 54; sheep, 16; pig, 15; cat, 6; bird, 5; red deer, 2; dog, 1.

The pig bones included part of a new-born animal.

Human Bones

Infant humerus.

Pit 61 (PC 67, trench 68, layers 12, 23 and 24)

Rectangular pit 4 ft. by 2 ft. 6 in. (1.22 × 0.76 m.), 3 ft. (0.91 m.) deep.

The lower level (layer 24) was a greenish-grey crumbly soil representing the original filling of the cesspit. It was sealed by a thick layer of clean chalky marl (layer 23) which contained some flints. Above this was a layer of occupation rubbish (layer 12) consisting of grey soil, flints, chalk, oyster shells, bones and tile fragments. Fragments of daub were recovered from layer 23.

The pit was cut by a medieval gully.

Small Finds

From layer 12:

Bronze bracelet (245) fragment, two-strand twisted wire; not illustrated.

Shale bracelet (244) fragment, plain, external diameter 5.4 cm.; not illustrated.

Iron knife (272) fig. 126, no. 190

Pottery

From layer 12:

New Forest: sherd fabric 2; weight, 50 g.; 3.91%.

Oxford: 14, 43, 58.3, 63.7; weight, 250 g.; 19.53%.

Hand-made, fabric A: 123; weight, 560 g.; 43.75%.

Black-burnished: 107, 126; weight, 70 g.; 5.47%.

Grey fabrics: 92, 119, 120.2, 127, 140; weight, 350 g.; 27.34%.

Total weight: 1280 g.

PIT 61

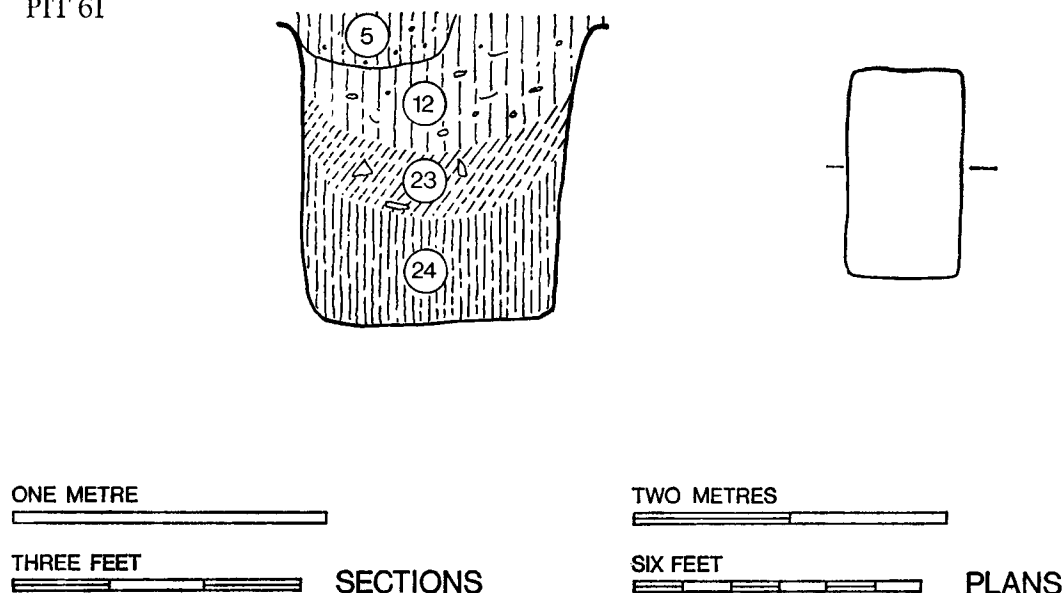


FIG. 36

From layer 23:

Oxford: sherds of 14, as in 12; weight, 15 g.; 4.23%.

Hand-made, fabric A: weight, 240 g.; 67.6%.

Black-burnished: 126; weight, 10 g.; 2.82%.

Grey fabrics: 127, 148.2; weight, 80 g.; 22.54%.

Fabric D: 10 g.; 2.82%.

Total weight: 355 g.

From layer 24:

New Forest: 29; weight, 10 g.; 10.0%.

Black-burnished: weight, 20 g.; 20.0%.

Grey fabrics: 84.1; weight, 70 g.; 70.0%.

Total weight: 100 g.

Weight from all the layers: 1735 g.

Animal Bones

195 fragments identified (including 61 ribs and 15 skull fragments).

Species represented: ox, 63; sheep, 21; pig, 14; badger, 2.

Pit 62 (PC 67, trench 68, layers 13 and 22)

Rectangular pit 4 ft. 3 in. by 2 ft. 3 in. (1.29 × 0.69 m.), 3 ft. (0.91 m.) deep.

The lowest layer (layer 22) was a green-grey crumbly cesspit filling mixed with bones, oyster shells and some charcoal. This was sealed by a filling of grey soil (layer 13) which contained masses of bones, oyster shells and other occupation debris. At the bottom of this layer, sealing layer 22, was a discontinuous mass of yellow clay thrown in as shovelfuls to serve as a seal to the cesspit. Fragments of daub were recovered from layer 13.

The pit was cut by a medieval gully.

PIT 62

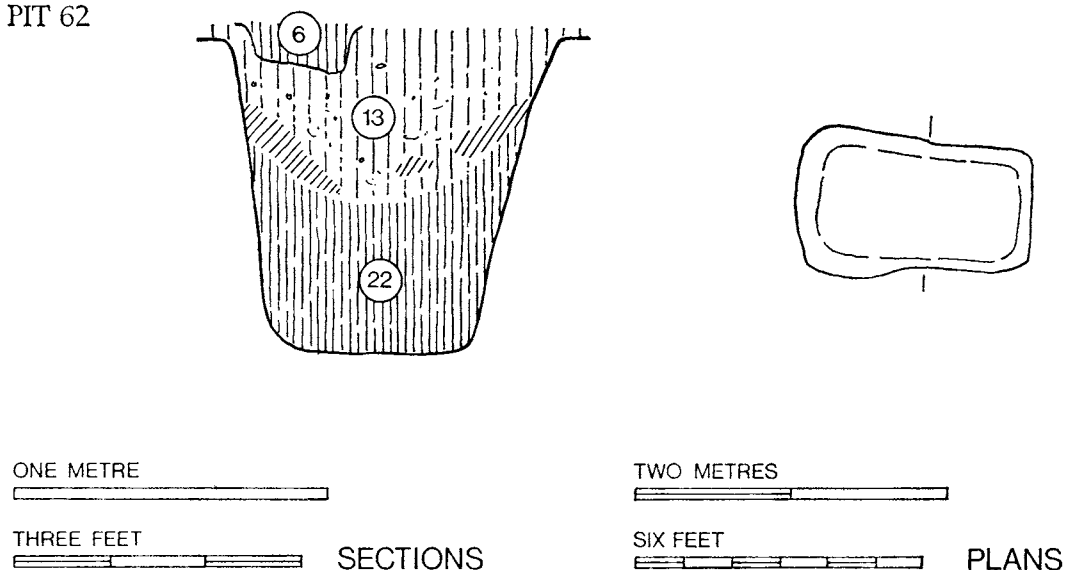


FIG. 37

Small Finds

From layer 13:

- Bronze coin (259) Carausius (A.D. 286-93)
 Bronze coin (275) ?Constantine I (c. A.D. 300-17)

Pottery

From layer 13:

- New Forest*: sherd of fabric 2; weight, 5 g.; 0.48%.
Hand-made, fabric A: 86 (2), 123; weight, 620 g.; 59.90%.
Black-burnished: 85; weight, 100 g.; 9.66%.
Grey fabrics: 136 (2), ?175; weight, 300 g.; 28.99%.
Mayen Ware: 151; weight, 10 g.; 0.97%.
 Total weight: 1035 g.

Animal Bones

- 227 fragments identified (including 65 ribs and 8 skull fragments).
 Species represented: ox, 60; pig, 20; sheep, 16; bird, 3; cat, 1.

Pit 63 (PC 67, trench 70, layers 14, 29, 29a, 29b, 32, 35, 41, 42, 43, 44)

Large rectangular pit, 7 ft. by 4 ft. 6 in. (2.13 × 1.37 m.): 6 ft. 10 in. (2.08 m.) deep.

There were some traces of a timber lining composed of horizontal planking showing up against the face of the clay packing (layer 41) which survived in places around the upper levels of the pit. Originally this packing would have extended at least halfway down the pit sides, but following the removal or rotting of the lower planks during the Roman period it had eroded inwards (layers 42 and 43). In layer 41 carbonized remains of wood, possibly

from the planking, still survived. An alternative explanation is that the lower part of the pit was unlined, layers 42 and 43 representing the eroded sides rather than packing.

The lowest layer (layer 44) was a thin cesspit deposit of green-grey silt sealed by a similar material containing some pottery, bones and oyster shells (layer 35). Above this was a thick deposit of marl (layer 32) thrown in to seal the lower filling of the cesspit. On top of the marl lay a deposit of charcoal (layer 29b).

The next layers (29 and 29a) were of greenish-brown cesspit filling with lumps of flint, animal bones and oyster shells. Layer 29a contained more charcoal which had presumably been derived from the layer beneath (layer 29b). These cesspit fills were covered by a thick deposit of occupation rubbish (layer 14) containing tiles, bones, oysters, pottery, flints, etc., in a lens of black soil.

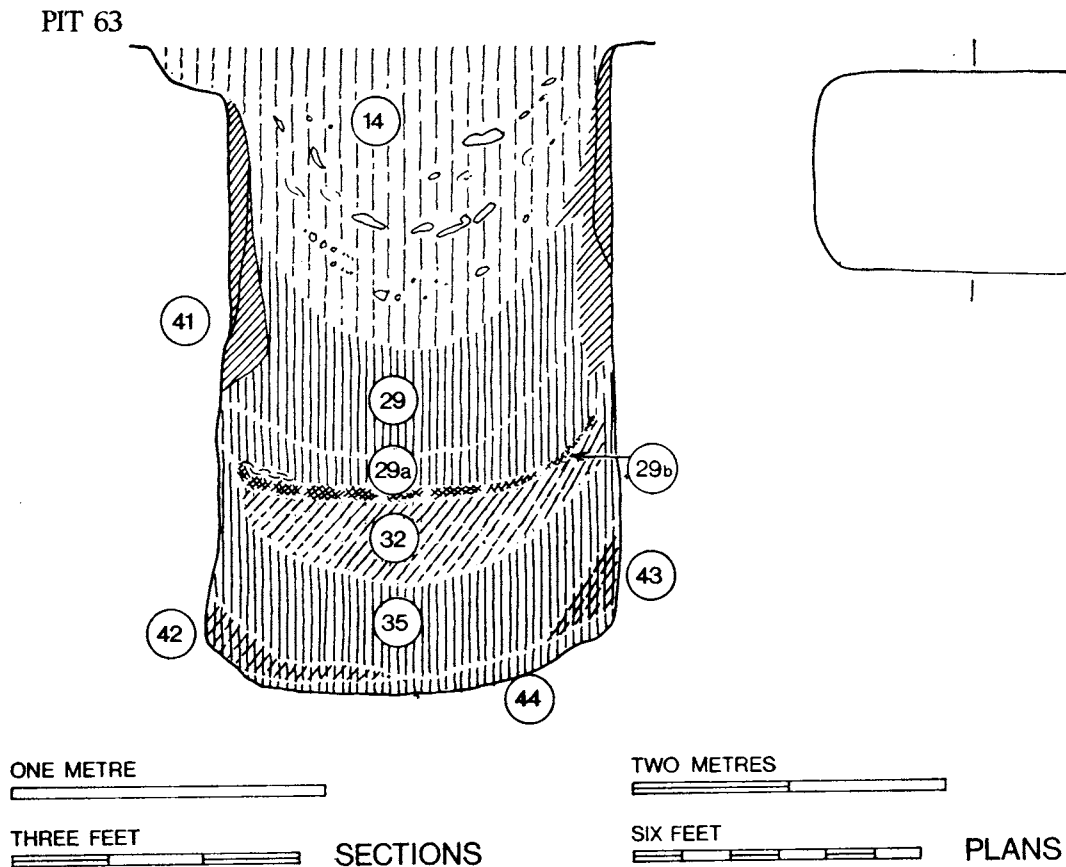


FIG. 38

Small Finds

From layer 14:

Bronze coin	(393)	Gratian (A.D. 367-78)
Bronze coin	(395)	Gratian (A.D. 378-83)
Bronze coin	(404)	Valentinian (A.D. 364-75)
Bronze bracelet	(306)	single strand twisted: fig. 111, no. 25

Bronze bracelet	(309)	single strand twisted; not illustrated
Bronze nail cleaner	(311)	fig. 113, no. 56
Bronze bracelet	(411)	fragment of strip type; not illustrated
Bronze fragments	(312, 381, 382, 390, 394)	small nondescript corroded fragments; not illustrated
Iron object	(403)	fragment, not illustrated
Iron stylus	(296)	fig. 130, no. 244
Iron nails	(407, 409, 410)	very fragmentary; not illustrated
Glass bead	(414)	not illustrated, no. 163
Bone bracelet	(305)	fragment, not illustrated
Shale spindle whorl	(412)	not illustrated
From layer 28:		
Whetstone	(295)	not illustrated, no. 356
From layer 32:		
Bronze coin	(319)	Constantine I (A.D. 323-30)
Bronze coin	(418)	Constantine I (A.D. 308-17)
From layer 35:		
Bronze fragment	(420)	corroded and nondescript; not illustrated

Nails

From layer 14:

1, 7.6; 1, 7.6 +; 1, 5.75; 1, 3.85.

Pottery

From layer 14

(no weights are given for this layer as no body sherds were kept):

New Forest: 2/10.13, 29 (2), 32 (2), 41.3, 43.

Oxford: 34.6, 36.3, 43 (3), 58 (2)

Hand-made, fabric A: 86 (2), 107, 123 (4)

Black-burnished: 85 (2), 126

Grey fabrics: 76, 85, 124 (3), 129 (3), 159.

Fabric D: 137.4-6.

From layer 29:

New Forest: 3.6, 10.1; weight, 120 g.; 19.83%.

Oxford: 17.11; weight, 5 g.; 0.83%.

Hand-made, fabric A: 107 (2), 107.5, 123 (3); weight, 180 g.; 29.75%.

Black-burnished: 107; weight, 100 g.; 16.53%.

Grey fabrics: 77, 85 (2), 140, 148, 162.1; weight, 200 g.; 33.06%.

Total weight: 605 g.

From layer 35:

New Forest: 2/10.4-5, 43, 66; weight, 100 g.; 8.93%.

Hand-made, fabric A: 86, 123; weight, 320 g.; 28.57%.

Black-burnished: 85 (3), 126; weight, 420 g.; 37·5%.

Grey fabrics: 129 (3), 129·4, 132, 140 (2); weight, 280 g.; 25·0%.

Total weight: 1120 g.

From layer 41:

New Forest: 49, sherds of fabric 1; weight, 15 g.; 3·9%.

Oxford: sherd of fabric 4.

Hand-made, fabric A: 123 (2); weight, 70 g.; 18·18%.

Black-burnished: 107; weight, 50 g.; 12·99%.

Grey fabrics: 129, 132, 140; weight, 250 g.; 64·94%.

Total weight: 385 g.

Weight from all the layers: 2110 g.

Animal Bones

From layers 29a, 29, 32, 35:

292 fragments identified (including 69 ribs and 14 skull fragments).

Species represented: ox, 55; sheep, 16; pig, 13; bird, 12; red deer, 1·5; dog, 1; hare, 0·5; roe deer, 0·5; cat, 0·5.

Parts of a very young sheep and pig were recovered from this pit.

Human Bones

Infant ulna.

Pit 64 (PC 67, trench 70, layers 19, 33 and 34)

Rectangular pit 5 ft. by 3 ft. 6 in. (1·52 × 1·07 m.), 3 ft. 1 in. (0·94 m.) deep.

The lowest level (layer 34) was a greenish-grey cesspit fill containing some pottery, bones and oyster shells with a lens of charcoal towards the top. It was sealed by a thick layer of clayey marl (layer 33) above which lay a deposit of occupation debris (layer 19) consisting of black soil, tiles, bones, oysters and pottery.

Small Finds

From layer 19:

Shale bracelet	(302)	undecorated fragment, external diameter 7·6 cm.; not illustrated.
Iron spear or arrow head	(299)	fig. 124, no. 177.
Iron key	(320)	fig. 129, no. 220.
Iron rod	(307)	?part of a stylus handle; not illustrated.
Iron hook	(397)	fig. 130, no. 234.

Pottery

From layer 19:

New Forest: 54·1; weight, 110 g.; 9·40%.

Misc.: 15·1.

Hand-made, fabric A: 123 (2); weight, 320 g.; 27·35%.

Black-burnished: 107, 126 (2); weight, 150 g.; 12·82%.

Grey fabrics: 85 (2), 129·4, 140, 153·8; weight, 550 g.; 47·01%.

Fabric D: 40 g.; 3·42%.

Total weight: 1170 g.

PIT 64

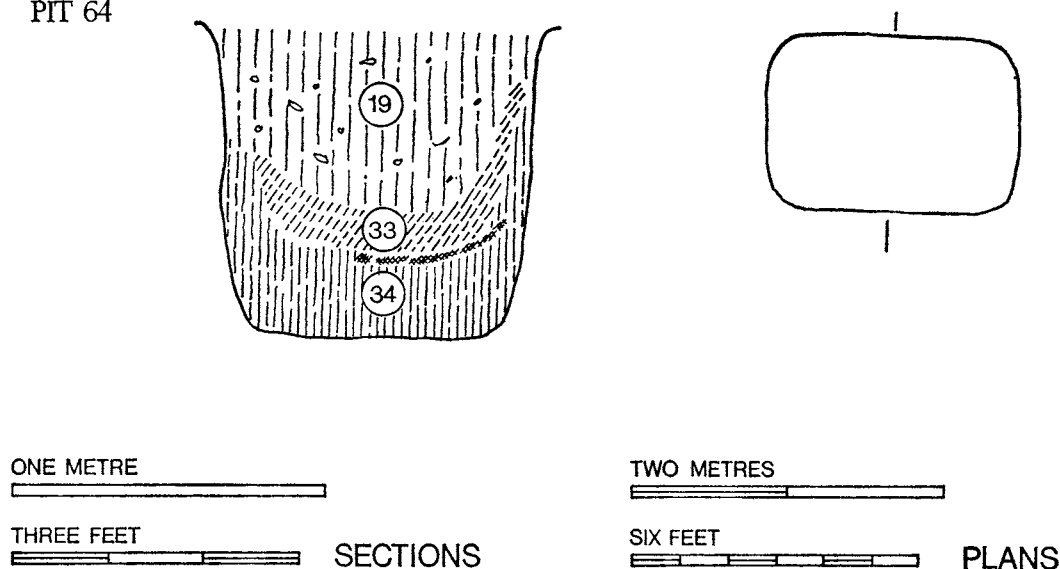


FIG. 39

From layer 33:

Hand-made, fabric A: 107; weight, 10 g.; 33.33%.

Black-burnished: weight, 20 g.; 66.67%.

Total weight: 30 g.

From layer 34:

New Forest: fabric 1; weight, 10 g.; 2.17%.

Hand-made, fabric A: 86, 107, 123; weight, 150 g.; 32.61%.

Black-burnished: 126; weight: 50 g.; 10.87%.

Grey fabrics: weight, 250 g.; 54.35%.

Total weight: 460 g.

Weight from all the layers: 1660 g.

Animal Bones

225 bones identified (including 55 ribs and 13 skull fragments).

Species represented: ox, 50; sheep, 29; pig, 13; cat, 4; bird, 3; horse, 1.

The sheep and pig bones both include a high percentage of young animals.

Human Bones

Infant burial.

Pit 65 (PC 67, trench 70, layers 22, 36 and 37)

Rectangular pit 4 ft. 6 in. by 2 ft. 6 in. (1.37 × 0.76 m.): 4 ft. (1.22 m.) deep.

The lowest level (layer 37) was typical green-grey cesspit filling containing quantities of bone, pottery and oyster shells. It was sealed by a thick layer of marl (layer 36) above which was grey occupation soil (layer 22) mixed with bones, flints, oysters, pottery and charcoal. The charcoal was denser towards the bottom. Fragments of daub were recovered from layer 22.

PIT 65

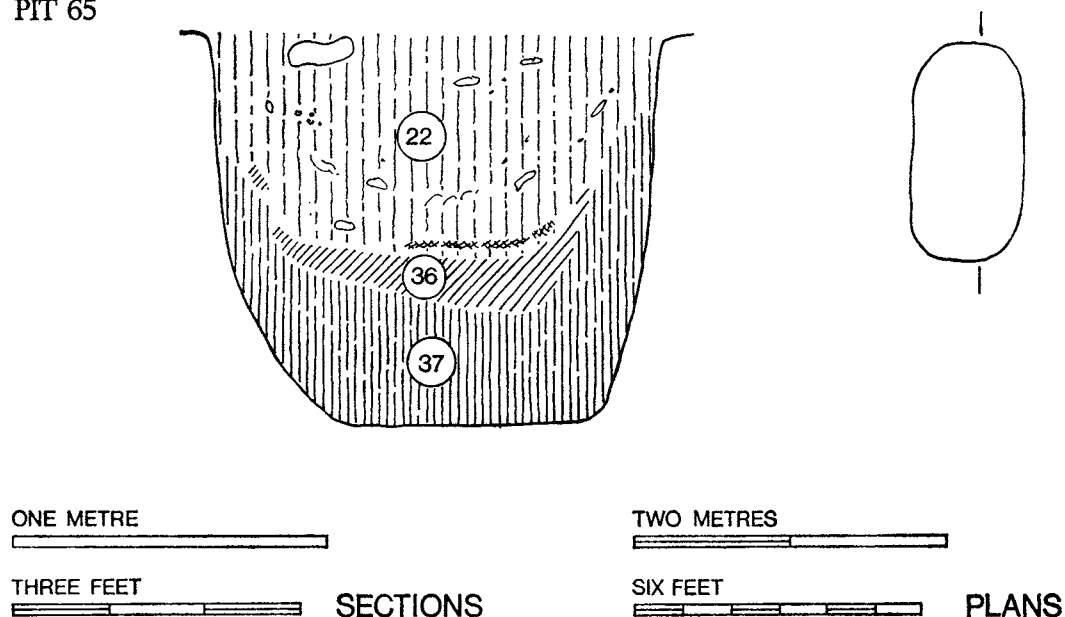


FIG. 40

Small Finds

From layer 37:

Bone pin (323): fig. 116, no. 90.

Pottery

From layer 22:

New Forest: 13.4; 43, weight, 50 g.; 3.64%.

Oxford: 40.4, 43.12, 58, 58.2; weight, 70 g.; 5.09%.

Handmade, fabric A: 86 (2); weight, 875 g.; 63.64%.

Black-burnished: 126, ?175; weight, 170 g.; 12.36%.

Grey fabrics: 107, 117.2, 127, 129 (2), 140; weight, 210 g.; 15.27%.

Total weight, 1375 g.

From layer 36:

Black-burnished: sherds.

From layer 37:

New Forest: 22.1-5.

Hand-made, fabric A: 123, weight, 60 g.; 11.11%.

Black-burnished: 126.2; weight, 360 g.; 66.67%.

Grey fabrics: 129.4, 140; weight, 120 g.; 22.22%.

Total weight: 540 g.

Weight from all the layers: 1915 g.

Animal Bones

274 fragments identified (including 78 ribs and 22 skull fragments).

Species represented: ox, 35; dog, 34; pig, 15; sheep, 13; bird, 2; red deer, 1.

The high percentage of dog bones recovered from this pit included one mature animal and one young animal of less than one year old. A large goat horn core was also found.

Pit 66 (PC 67, trench 70, layers 23, 30 and 31)

Rectangular pit 4 ft. 6 in. by 3 ft. (1.37 × 0.91 m.), 3 ft. (0.91 m.) deep.

The lowest level (layer 31) was typical green-grey cesspit filling mixed with oyster shells and bone and interleaved with lenses of charcoal and clay. It was sealed by a thick layer of clayey marl (layer 30). Above this was occupation rubbish (layer 23) consisting of grey soil with flints, bone, tiles, oysters, etc.

PIT 66

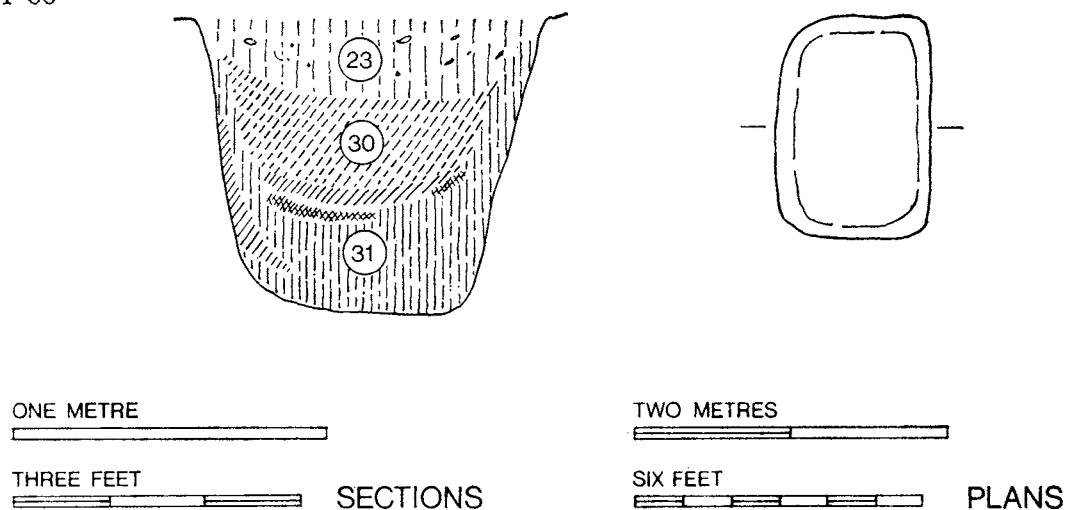


FIG. 41

Small Finds

From layer 23:

Bronze coin (297) Valentinian I (A.D. 364-75)

From layer 31:

Bronze fragment (382) not illustrated.

Window Glass

From layer 23:

Fragment, cf. fig. 199, no. 24.

Nails

From layer 23:

1, 3.85.

Pottery

From layer 23:

New Forest: 29, 43; weight, 50 g.; 4.50%.

Pevensy: 37, weight, 20 g.; 1.80%.

Hand-made, fabric A: 86, 107, 123 (3); weight, 480 g.; 43·24%.

Black-burnished: 85, 107, 126; weight, 270 g.; 24·32%.

Grey fabrics: 107, 129, 136, 140; weight, 290 g.; 26·13%.

Total weight: 1110 g.

From layer 30:

Hand-made, fabric A: sherds only; weight, 10 g.; 50·0%.

Black-burnished: 126; weight, 10 g.; 50·0%.

Total weight: 20 g.

From layer 31:

New Forest: 29; weight, 80 g.; 19·51%.

Hand-made, fabric A: 107, 123 (2); weight, 100 g.; 24·39%.

Black-burnished: 126; weight, 70 g.; 17·07%.

Grey fabrics: 140·5; weight, 160 g.; 39·02%.

Total weight: 410 g.

Weight from all the layers: 1540 g.

Animal Bones

From layers 30 and 31:

81 fragments identified (including 39 ribs and 2 skull fragments).

Species represented: ox, 65; pig, 18; sheep, 12; bird, 5.

From layer 23:

82 fragments identified (including 34 ribs and 4 skull fragments).

Species represented: ox, 61; sheep, 20; pig, 11; bird, 9.

Pit 70 (PC 67, trench 69, layer 29)

Rectangular pit 3 ft. 6 in. by 4 ft. (1·07 × 1·22 m.), 1 ft. 7 in. (0·48 m.) deep.

The filling (layer 29) was uniform throughout consisting of black soil mixed with quantities of burnt clay and marl.

PIT 70

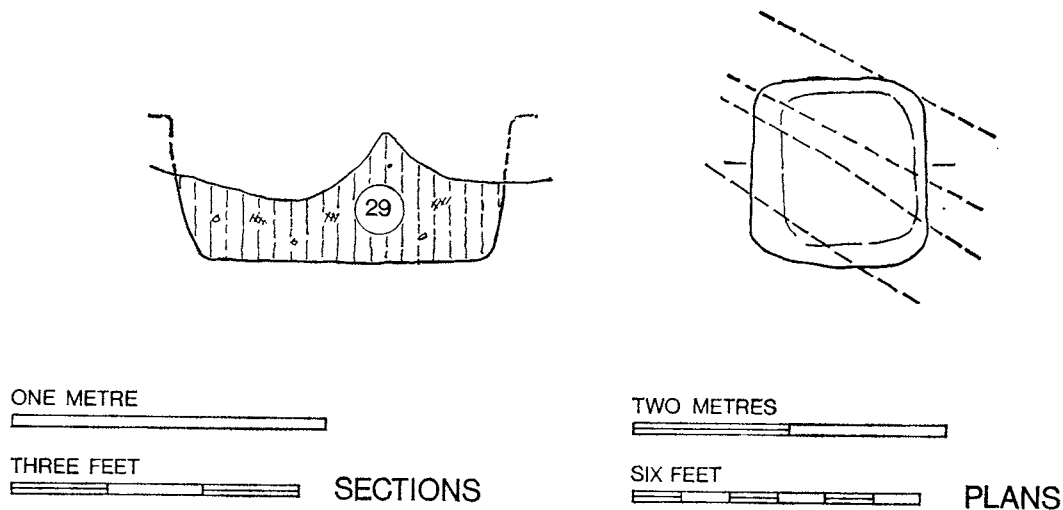


FIG. 42

Small Finds

From layer 29:

- | | | |
|---------------|-------|---|
| Iron nail | (315) | large nail, head 3.5 cm. diameter; not illustrated. |
| Iron nail | (316) | not illustrated. |
| Iron hobnails | (314) | 22 dome-headed hobnails, presumably from the sole of a shoe; not illustrated. |

Pottery

From layer 29:

New Forest: base of fabric 2; weight, 70 g.; 17.95%.

Misc.: 74.

Hand-made, fabric A: weight 30 g.; 7.69%.

Black-burnished: 107; weight, 110 g.; 28.21%.

Grey fabrics: 107; weight, 180 g.; 46.15%.

Total weight: 390 g.

Animal Bones

74 fragments identified (including 12 ribs and 7 skull fragments).

Species represented: ox, 53; pig, 27; sheep, 14; bird, 2; cat, 2; red deer, 2.

Pit 77 (PC 67, trench 71, layer 32)

Sub-rectangular pit 3 ft. 6 in. (1.07 m.) across and 1 ft. (0.31 m.) deep.

The filling was uniform consisting of grey soil mixed with chalky marl.

The pit appears to have been cut by the medieval drainage gullies.

Small Finds

From layer 32:

Bone comb (353); fragment, fig. 117, no. 102.

PIT 77

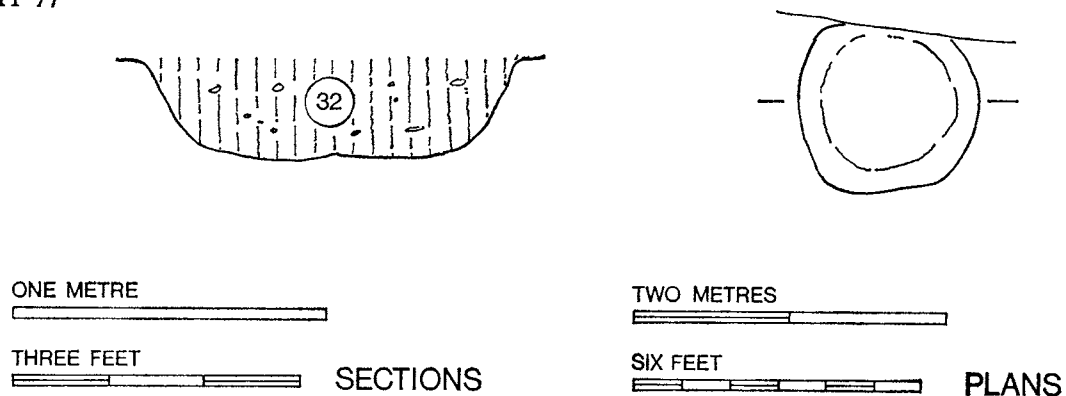


FIG. 43

Pottery

From layer 32:

New Forest: 2/10.4-5, 22.1, 43, 49; weight, 50 g.; 6.37%.

Oxford: sherds of fabric 4; weight, 5 g.; 0.64%.

Hand-made, fabric A: 86, 123 (4); weight, 300 g.; 38.22%.

Black-burnished: 126; weight, 120 g.; 15.29%.

Grey fabrics: 107, 129 (2); weight, 300 g.; 38.22%.

Fabric D: 137, 4-6; weight, 10 g.; 1.27%.

Total weight: 785 g.

Animal Bones

57 fragments identified (including 20 ribs and 1 skull fragment)

Species represented: ox, 36; sheep, 33; pig, 31.

Pit 79 (PC 68, trench 73, layer 14)

Irregular oval shaped pit dug to a maximum depth of 1 ft. 4 in. (0.41 m.) through a layer of Roman cobbles.

The filling was a uniform layer of black soil containing charcoal, oysters, cockles, winkles, animal bones and a few lumps of greensand.

PIT 79

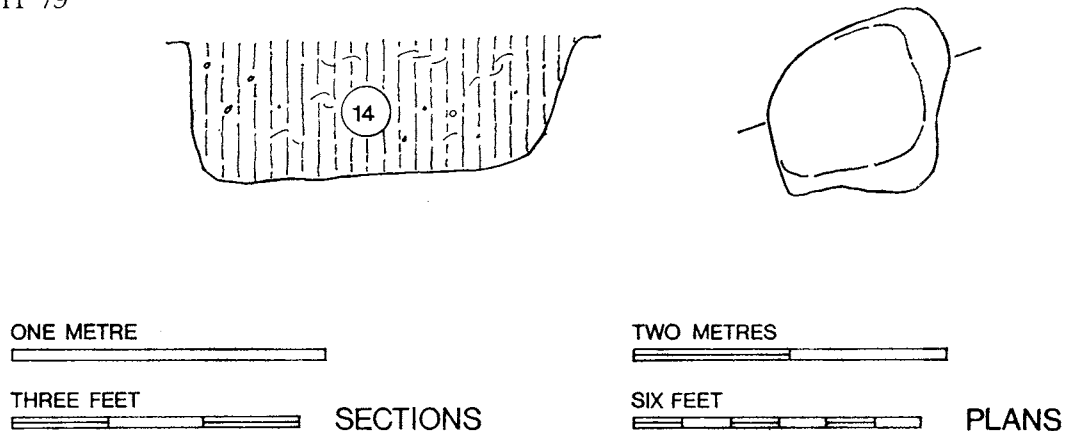


FIG. 44

Small Finds

From layer 14:

Iron cleat (513) fig. 129, no. 229.

Iron fragments (514) two corroded fragments; not illustrated.

Iron slag (522) p. 265.

Nails

From layer 14:

1, 6.35.

Pottery

From layer 14:

- New Forest*: 38, 49.1; weight, 110 g.; 61.11%.
- Misc.*: 144.2; weight, 10 g.; 5.56%.
- Hand-made, fabric A*: 86, 123, weight, 20 g.; 11.11%.
- Black-burnished*: 85, 107; weight, 20 g.; 11.11%.
- Grey fabrics*: 129, 129.3, 85; weight, 20 g.; 11.11%.
- Total weight: 180 g.

Animal Bones

42 fragments identified (including 15 ribs and 1 skull fragment).
 Species represented: ox, sheep, pig.

Pit 83 (PC 68, trench 74, layer 19)

Sub-rectangular pit 4 by 3 ft. (1.22 × 0.91 m.), 2 ft. 8 in. (0.81 m.) deep.

The filling was of green-grey soil typical of cesspits. A discontinuous lens of charcoal and oyster shells occurred about halfway up the filling. A few flints had been thrown into the top.

PIT 83

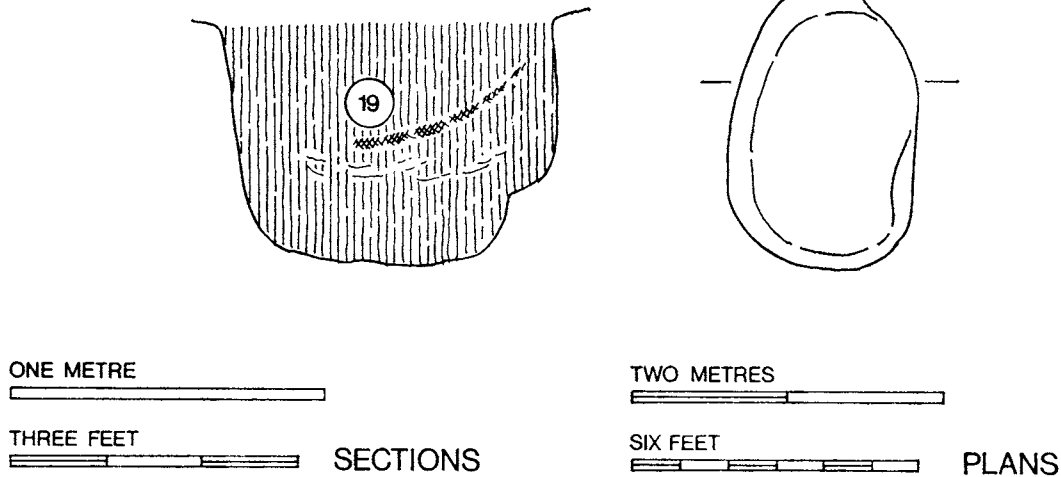


FIG. 45

Small Finds

From layer 19:

- Shale bracelet (618) 4 by 5 mm. in cross-section, external diameter 6.8 cm.; not illustrated.
- Bronze fragments (617, 619) nondescript; not illustrated.

Glass Vessel

From layer 19:

not illustrated, but similar to fig. 198, no. 14.

Nails

From layer 19:

1, 8.9; 1, 6.36 +, 1, 6.35, bent; 1, 11.5; 1, 10.2 +; 1, 7.6 +; 1, 7.0 +; 1, 5.75; 2, 5.1 +; 2, 5.1; 2, 3.85 +; 1, 3.85; 2, 2.55.

Pottery

From layer 19:

New Forest: 22.1-5; weight, 100 g.; 9.52%.

Oxford: 40; weight, 20 g.; 1.90%.

Misc.: 159.15.

Hand-made, fabric A: 107.5, 123 (2); weight, 350 g.; 33.33%.

Black-burnished: 107, 126 (2); weight, 180 g.; 17.14%.

Grey fabrics: 85, 98, 129 (2), 172; weight, 200 g.; 19.05%.

Fabric D: 137.5, 137; weight, 200 g.; 19.05%.

Total weight: 1050 g.

Animal Bones

43 fragments identified (including 14 ribs and 1 skull fragment).

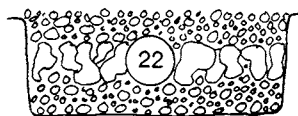
Species represented: ox, sheep, bird, pig, cat.

Pit 84 (PC 68, trench 74, layer 22)

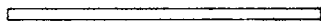
Square pit 2 ft. 9 in. (0.84 m.) across, 1 ft. (0.31 m.) deep.

The pit was completely filled with stones: small water-worn pebbles on top with large flints in the middle and pebbles in the bottom. The feature presumably represents a deliberately constructed base to support some kind of superstructure.

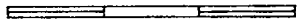
PIT 84



ONE METRE



THREE FEET



SECTIONS

TWO METRES



SIX FEET



PLANS

FIG. 46

Pit 85 (PC 68, trench 74, layers 24, 44 and 45)

Rectangular pit 4 ft. by 3 ft. 3 in. (1.22 × 0.99 m.) with inward sloping sides up to 5 ft. 10 in. (1.78 m.) deep.

The lowest level (layer 45) was of grey soil intermixed with chalky marl derived from the erosion of the pit sides and representing a typical cesspit filling. It was sealed by a layer of

PIT 85

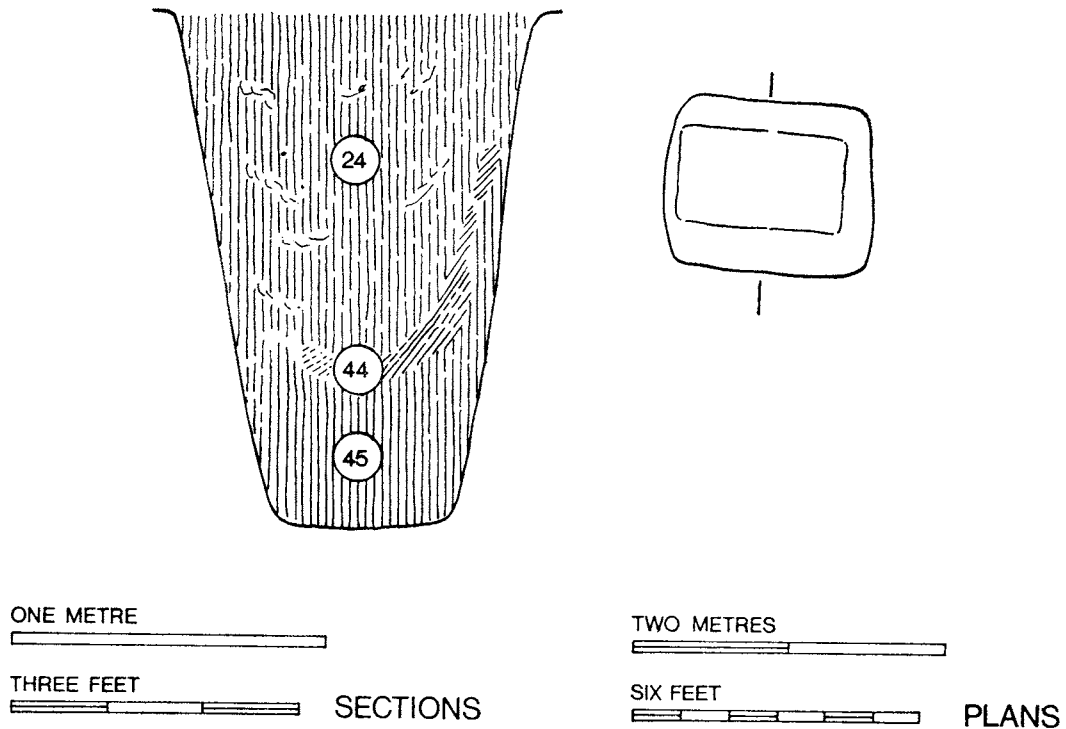


FIG. 47

marl (layer 44) above which was another layer of greenish-grey cesspit filling mixed with charcoal, oysters and bone.

Small Finds

From layer 24:

- | | | |
|------------------|----------------------|-------------------------------|
| Bronze fragments | (623, 625, 626, 648) | nondescript; not illustrated. |
| Iron bucket rim | (646) | fig. 128, no. 208. |
| Iron hook | (647) | fig. 130, no. 233. |

Glass Vessel

From layer 44:
fig. 198, no. 13.

Pottery

From layer 24:

- New Forest*: 29, 52, 67, base in fabric 2, with an incised cross on the outside; weight, 325 g.; 8.93%.
- Oxford*: 31.5, 50.1 (sherd of same vessel in pit 86); weight, 25 g.; 0.69%.
- Misc.*: 15, metallic, grey-brown fabric with purple slip, not New Forest.

Hand-made, fabric A: 107, 107.6, 123 (5); weight, 1550 g.; 42.58%.

Black-burnished: 85 (3), 107, 126.1, 126.4, 126 (4); weight, 1120 g.; 30.77%.

Grey fabrics: 107 (2), 127, 129 (2), 153.8 (possibly the same vessel as in pit 64); weight, 620 g.; 17.03%.

Misc.: 179.1.

Total weight: 3640 g.

From layer 44:

Black-burnished: weight, 50 g.; 22.73%.

Grey fabrics: 140; weight, 170 g.; 77.27%.

Total weight: 220 g.

From layer 45:

Black-burnished: 126; weight, 170 g.; 32.69%.

Grey fabrics: 128; weight, 350 g.; 67.31%.

Total weight: 520 g.

Weight from all the layers: 4380 g.

Animal Bones

229 fragments identified (including 90 ribs and 16 skull fragments).

Species represented: ox, 57; sheep, 22; pig, 14; bird, 5; horse, 1; red deer, 1.

The sheep and pig bones both included parts of animals of less than one year old.

Pit 86 (PC 68, trench 74, layers 27, 46, 47, 53 and 54)

Rectangular pit 4 ft. by 3 ft. 6 in. (1.22 × 1.07 m.), 4 ft 6 in. (1.37 m.) deep.

The lowest filling (layer 54) was a fine light grey-brown cesspit filling sealed by a thick lens of charcoal with some bone and pottery (layer 53). Above this lay a thick brown cesspit fill (layer 47) mixed with quantities of occupation material, including oyster shells, bones and pottery. The layer was capped with a sealing of chalky brickearth (layer 46). Above this was a grey silty layer (layer 27) containing flints, oysters, pottery and bone.

Fragments of daub were recovered from layers 27, 46 and 47.

Small Finds

From layer 27:

Bronze coin (629) Constantine I (A.D. 307-17).

Iron candle-holder (652) fig. 131, no. 249.

From layer 47:

Bone pin (639) as nos. 81-5; not illustrated.

Painted daub (631, 640) clay-marl daub roughly faced and painted red.

Nails

From layer 27:

1, 7.6; 1, 5.1 +.

From layer 46:

1, 2.55.

From layer 47:

1, 3.85.

PIT 86

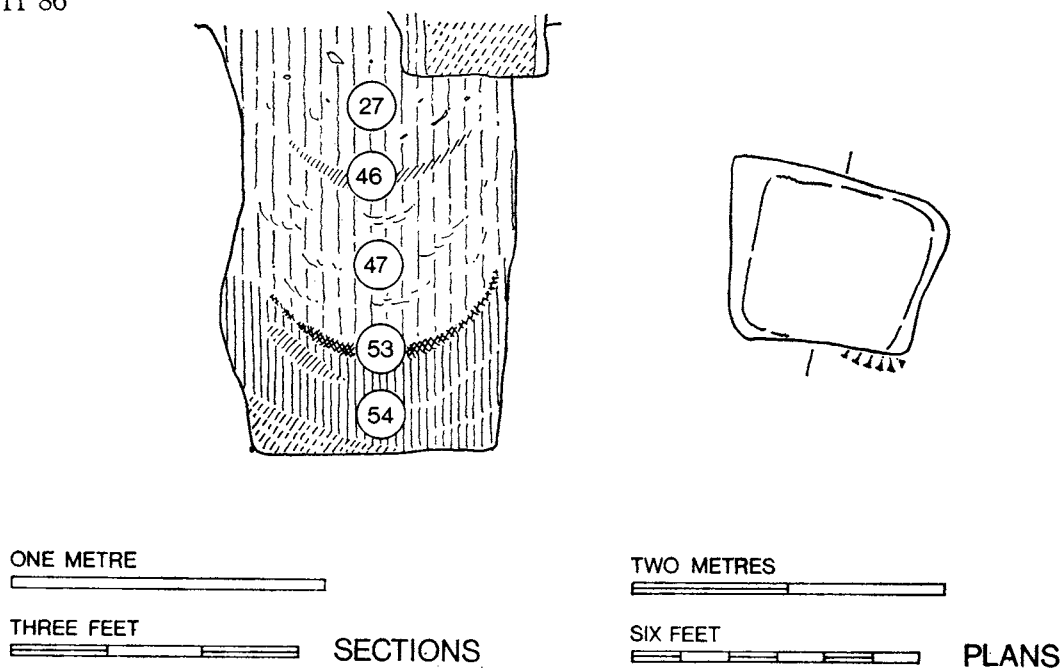


FIG. 48

Glass Vessel

From layer 46:
fig. 197, no. 6.

Pottery

From layer 27:

New Forest: sherds of fabrics 1-3; weight, 120 g.; 6.86%.

Oxford: 50.1 (sherd of same vessel in pit 85) 58; weight, 160 g.; 9.14%.

Misc.: 15.4.

Hand-made, fabric A: 107 (2), 123 (2); weight, 620 g.; 35.43%.

Black-burnished: 85, 126 (3); weight, 650 g.; 37.14%.

Grey fabrics: 129, 159.4-5; weight, 200 g.; 11.43%.

Total weight: 1750 g.

From layer 46:

New Forest: sherd of fabric 1, 64; weight, 140 g.; 9.24%.

Hand-made, fabric A: weight, 200 g.; 13.20%.

Black-burnished: weight, 210 g.; 13.86%.

Grey fabric: 85, 85.9, 107, 129; weight, 965 g.; 63.70%.

Total weight, 1515 g.

From layer 47:

New Forest: sherd of fabric 3; weight, 15 g.; 2.63%.

Oxford: 15.1.

Hand-made, fabric A: 107; weight, 100 g.; 17.54%.

Black-burnished: 117, 123; weight, 400 g.; 70.18%.

Grey fabrics: 117.2; weight, 55 g.; 9.65%.

Total weight: 570 g.

Weight from all the layers: 3835 g.

Animal Bones

296 fragments identified (including 101 ribs and 9 skull fragments).

Species represented: ox, 41; bird, 17; cat, 16; sheep, 12; pig, 12; horse, 2; dog, 1.

The pig bones included part of a young animal. The cat bones included one whole skull and at least two fairly complete animals. Like pit 47, this pit contained a higher than usual percentage of cat and bird bones.

Human Bones

Infant radius.

Pit 87 (PC 68, trench 74, layers 28a, 31a, 31b, 31c, 32, 58, 59, 60)

Square pit 4 ft. across (1.2 m.) dug to a depth of 4 ft. 6 in. (1.4 m.).

The lowest level (layer 60) consisted of typical green-grey cesspit fill above which (layer 59) was a deposit of dark occupation material containing charcoal, bone and pottery. This was sealed by a layer of redeposited brickearth (layer 58). Then followed a mass of occupation rubbish (layer 32) sealed by another lens of brickearth (layer 31c). Above this the sequence was repeated with more occupation rubbish (layer 31b) and another seal of brick-earth (layer 31a). In the top of the pit was a further layer of occupation material (layer 28a).

PIT 87

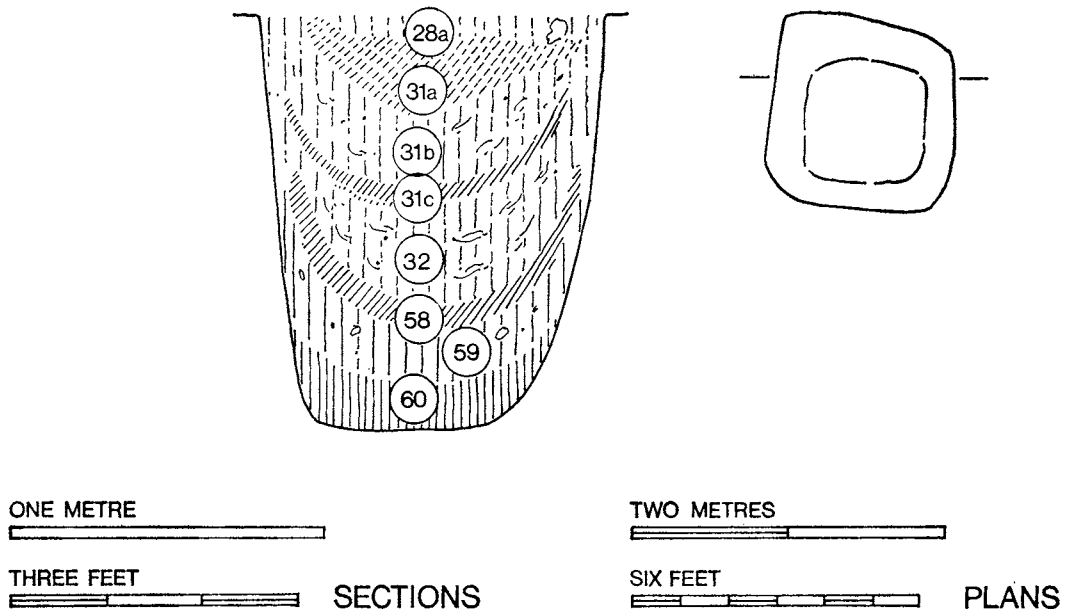


FIG. 49

Pottery

From layer 28a:

New Forest: sherd of fabric 2; weight, 50 g.; 38·46%.

Oxford: 59.1; weight, 80 g.; 61·54%.

Total weight: 130 g.

From layer 31:

Hand-made: weight, 10 g.; 9·52%.

Black-burnished: weight, 60 g.; 57·14%.

Grey fabrics; 145.2; weight, 35 g.; 33·33%.

Total weight: 105 g.

From layer 32:

New Forest: sherds of fabrics 1 and 2; weight, 70 g.; 18·91%.

Hand-made, fabric A: weight, 50 g.; 13·51%.

Black-burnished: weight, 110 g.; 29·72%.

Grey fabrics: 140, 145.2 (sherds of the same vessel as in 74/31); weight; 140 g.; 37·83%.

Total weight: 370 g.

Weight from all the layers: 605 g.

Animal Bones

107 fragments identified (including 14 ribs and 6 skull fragments).

Species represented: dog, 74; ox, 18; pig, 5; sheep, 3.

The dog bones are all from one mature animal which was probably complete when placed in the pit.

Pit 88 (PC 68, trench 74, layer 42)

Circular pit 3 ft. 6 in. (1·07 m.) in diameter and 9 in. (0·23 m.) deep.

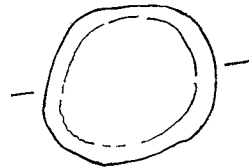
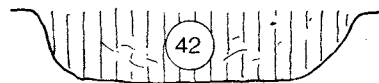
The filling was uniform consisting of greenish-grey soil mixed with occupation debris.

Nails

From layer 42:

1, 6·35.

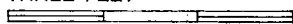
PIT 88



ONE METRE

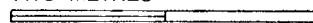


THREE FEET



SECTIONS

TWO METRES



SIX FEET



PLANS

FIG. 50

Animal Bones

23 fragments identified (including 12 ribs).

Species represented: ox, bird, sheep, pig, horse.

Pit 90 (PC 68, trench 74, layer 48)

Rectangular pit 3 ft. 6 in. by 2 ft. 6 in. (1.07 × 0.76 m.) cut to a depth of 2 ft. (0.61 m.). The filling consisted of black soil mixed with quantities of bone and pottery. The lower levels were slightly more clayey.

Pit 90 was cut by pit 91.

PIT 90

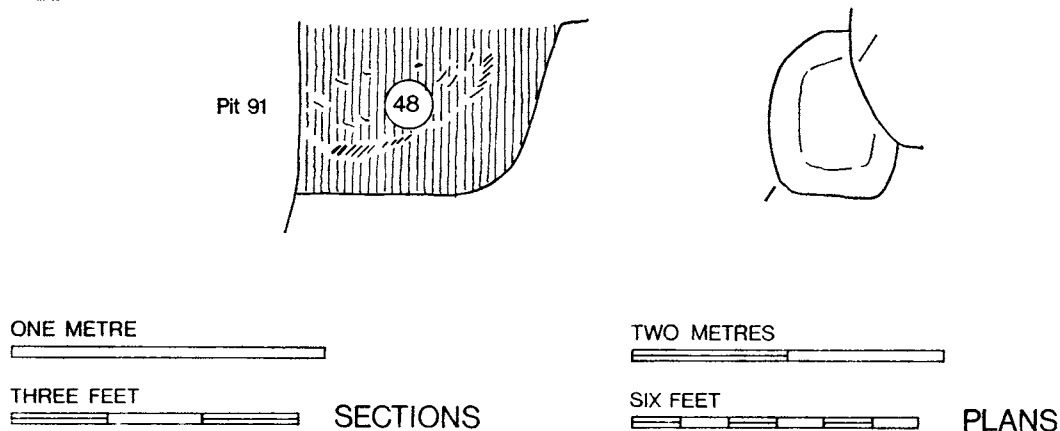


FIG. 51

Small Finds

From layer 48:

Lead trimming (660); not illustrated.

Pottery

From layer 48:

New Forest: sherd of fabric 1; weight, 10 g.; 3.08%.

Hand-made, fabric A: 123; weight, 220 g.; 67.69%.

Black-burnished: 126; weight, 40 g.; 12.31%.

Grey fabrics: 75.1; weight, 55 g.; 16.92%.

Total weight: 325 g.

Animal Bones

22 fragments identified (including 11 ribs).

Species represented: ox, sheep, pig.

Pit 92 (PC 68, trench 74, layers 64, 65, 68, 70 and 71)

Rectangular pit 4 by 6 ft. (1.22 × 1.83 m.) with sloping sides, 4 ft. 6 in. (1.37 m.) deep. The lowest level (layer 71) consisted of a typical green-grey cesspit filling which, towards

the top, was intermixed with more occupation material. This was sealed by a layer of orange brickearth (layer 70). Above came another thick deposit of greenish-brown soil (layer 68) containing marl, clay, stones and quantities of occupation material. The upper part of the pit (layer 65) was filled with black occupation soil which was cut by a shallow scoop filled with a similar black occupation deposit (layer 64). Fragments of daub were recovered from layer 64.

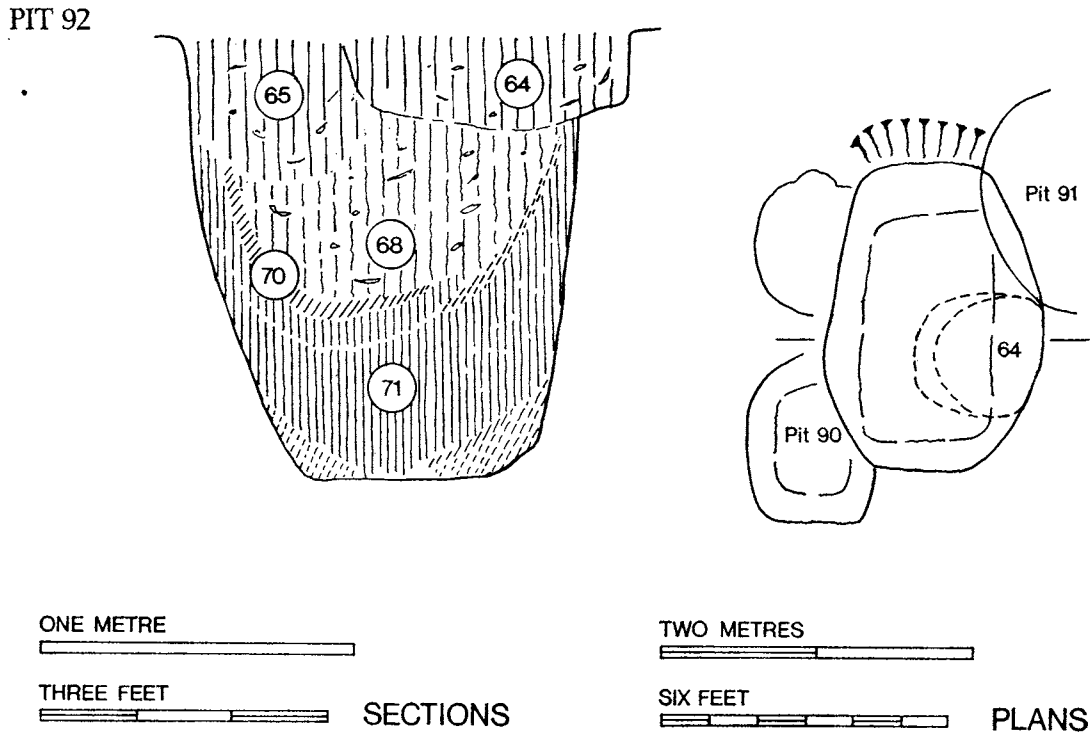


FIG. 52

Small Finds

- From layer 65:
 - Bronze coin (661) House of Constantine (A.D. 335-45).
- From layer 68:
 - Bronze coin (671) Constantine I (A.D. 308-17).
 - Bronze coin (707) Constantine I (A.D. 317-22).
 - Shale bracelet (689) diam. uncertain; not illustrated.

Nails

- From layer 64:
 - 1, 10.2; 1, 2.55.
- From layer 68:
 - 3, 7.0, one bent; 1, 2.55 +; 1, 2.55; 1, head only; 1, 5.1, broken.

Pottery

From layer 64:

New Forest: 2/10.15, 2/10.17; weight, 30 g.; 2.80%.

Oxford: 58; weight, 20 g.; 1.87%.

Misc.: 24.

Hand-made, fabric A: 123 (3); weight, 620 g.; 57.94%.

Black-burnished: 107, 126 (2); weight, 180 g.; 16.82%.

Grey fabrics: 129; weight, 200 g.; 18.69%.

Fabric D: weight, 20 g.; 1.87%.

Total weight: 1070 g.

From layer 68:

New Forest: 22.8, ?25; weight, 70 g.; 4.05%.

Oxford: 17.10; weight, 10 g.; 0.58%.

Hand-made, fabric A: 107, 123 (2); weight, 660 g.; 38.15%.

Black-burnished: 107, 126; weight, 320 g.; 18.50%.

Grey fabrics: 129, 142.2, 145, 175; weight, 670 g.; 38.73%.

Total weight: 1730 g.

From layer 71:

New Forest: 52.4; weight, 50 g.; 8.47%.

Oxford: 15.1; weight, 10 g.; 1.69%.

Hand-made, fabric A: 123 (same as in 74/68); weight, 300 g.; 50.85%.

Grey fabrics: 132, 142.2 (sherds of same as in 74/68); weight, 230 g.; 38.98%.

Total weight: 590 g.

Weight from all the layers: 3390 g.

Animal Bones

414 fragments identified (including 102 ribs and 14 skull fragments).

Species represented: bird, 43; ox, 26; pig, 15; sheep, 8; cat, 7; red deer, 1; dog.

This pit contained a high percentage of bird bones. The sheep bones included part of a young animal, the pig bones one almost complete animal of about three weeks and part of another young animal, and the cat bones recovered were all from one young animal.

Human Bones

Infant burial.

Pit 94 (PC 68, trench 74, layer 69)

Oval-shaped pit 4 ft. 6 in. by 3 ft. (1.37 × 0.91 m.), 1 ft. 6 in. (0.45 m.) deep.

The filling consisted of dark green-grey soil with a few large flints. Towards the top there were patches of redeposited marl.

Cut by pit 87.

Small Finds

From layer 69:

Shale spindlewhorl (679) fig. 121, no. 128.

PIT 94

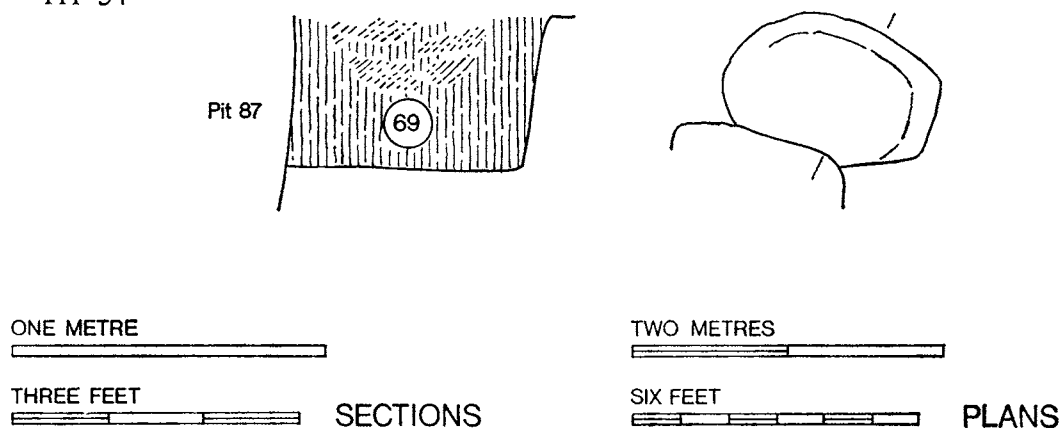


FIG. 53

Pottery

From layer 69:

Oxford: 59.1 (same vessel as in pit 87); weight, 5 g.; 1.61%.*New Forest*: 95.2; weight, 5 g.; 1.61%.*Hand-made, fabric A*: weight, 180 g.; 58.06%.*Black-burnished*: weight, 20 g.; 6.45%.*Grey fabrics*: 87.7; weight, 100 g.; 32.26%.

Total weight: 310 g.

Animal Bones

24 fragments identified (including 11 ribs and 2 skull fragments).

Species represented: ox, sheep, pig.

Pit 95 (PC 68, trench 75, layers 22, 49 and 50)

Irregular pit 5 ft. 6 in. (1.68 m.) across, dug to a depth averaging 2 ft. (0.61 m.).

The lowest filling (layer 50) consisted of washed-in lenses of brickearth containing some pot sherds. Above this came the main filling of fine black soil containing occupation rubbish (layer 49). In the top of the pit (layer 22) the occupation rubbish was distinguished by more charcoal and oyster shells.

Pit 95 was cut by pit 119.

Small Finds

From layer 22:

Bronze fragments	(847, 873)	not illustrated
Iron ring	(848)	not illustrated.
Iron spearhead	(844)	fig. 124, no. 171.
Iron slag		p. 265.

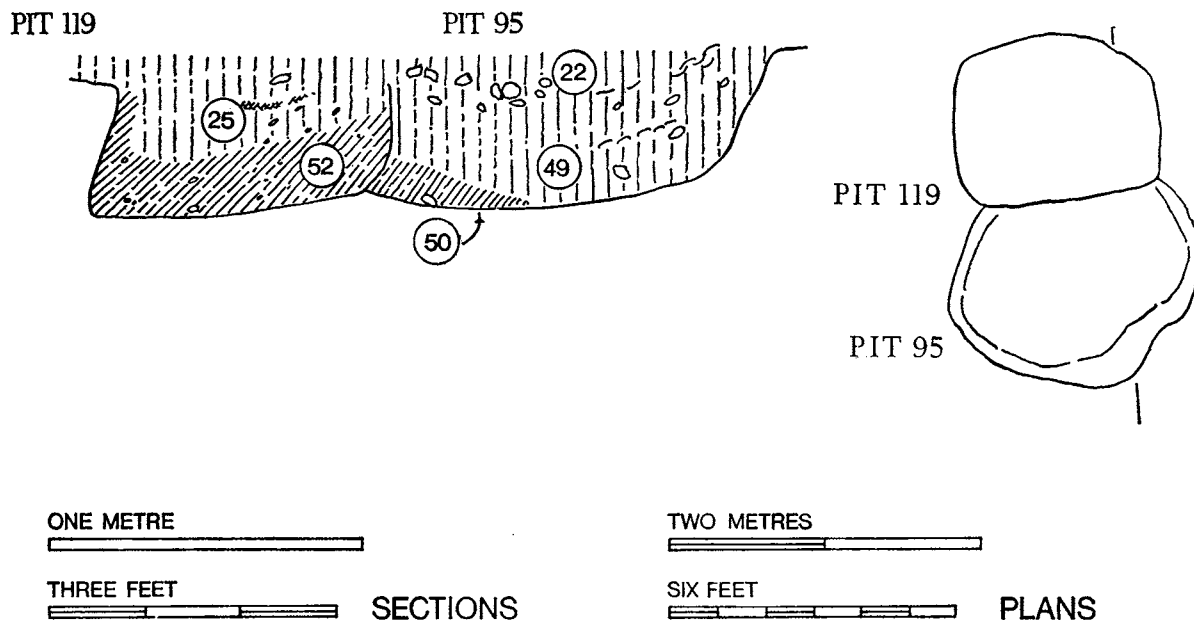


FIG. 54

From layer 50:

Bronze bracelet

(850) strip variety with ribbed decoration. Fragment only; not illustrated.

Nails

From layer 22:

1, 6.35.

From layer 49:

1, 8.9; 1, 4.5 +.

From layer 50:

1, 6.35; 1, 3.85.

Pottery

From layer 22:

New Forest: 22.1-5 (3); weight, 110 g.; 5.67%.

Oxford: 15.1, sherds of fabrics 4 and 5; weight, 160 g.; 8.25%.

Hand-made, fabric A: 86 (2), 123 (4); weight, 750 g.; 38.66%.

Black-burnished: 126, 85 (3); weight, 300 g.; 15.46%.

Grey fabrics: 129 (2), 142.1-3, 153.7, 159.4-5; weight, 620 g.; 31.96%.

Total weight: 1940 g.

From layer 49:

New Forest: 49; weight, 5 g.; 1.82%.

Hand-made, fabric A: weight, 120 g.; 43.64%.

Black-burnished: 85; weight, 40 g.; 14.55%.

Grey fabrics: weight, 110 g.; 40.0%.

Total weight: 275 g.

From layer 50:

New Forest: 64.2; weight, 30 g.; 5.08%.

Hand-made, fabric A: 123 (2); weight, 240 g.; 40.68%.

Black-burnished: 85, 107, 126; weight, 120 g.; 20.34%.

Grey fabrics: 131.4; weight, 200 g.; 33.90%.

Total weight, 590 g.

Weight from all the layers: 2805 g.

Animal Bones

162 fragments identified (including 35 ribs and 11 skull fragments).

Species represented: ox, 59; sheep, 27; pig, 11; red deer, 2; bird, 1.

Pit 103 (PC 68, trench 78, layers 14, 15, 16 and 17; trench 79, layers 27, 28, 29, 33, 44)

Very large rectangular pit approximately 23 ft. (7 m.) square (pl. xxx). The bottom was irregular averaging 2-3 ft. (0.6-0.9 m.) deep but increasing to 4 ft. 3 in. (1.3 m.) in the centre.

The deepest part was filled with tips of brown soil and flints containing mortar and broken roof tiles together with lenses of charcoal (layer (79) 44). Above this and discontinuously covering the entire pit bottom was a layer of brown clayey soil composed largely of decomposed daub with occasional lumps of moulded wall plaster and thin films of white paint (layers (78) 17 and (79) 33). This layer must represent the decayed remains of painted daub walls. Above this were tips of Roman building rubble mixed with brown clayey soil (layers (78) 16 and (79) 29). The rubble was composed largely of fragments of broken roof tiles of tegula and imbrex type together with the fillets of mortar which would have joined the two. This rubble must originate from the systematic demolition of roofs from which all usable tiles had been carefully removed. Above this came layers of black soil mixed with daub (layers (78) 15 and (79) 28) which were sealed by black occupation rubbish containing flints, oyster shells and bones (layers (78) 14 and (79) 27). Fragments of painted plaster were recovered from (78) 17 and (79) 29, 33.

Small Finds

From 79 layer 27:

Iron hook? (797) fig. 130, no. 232.

Cut stone (784) not illustrated.

From 79 layer 28:

Marble (831) not illustrated; fragment of a sheet of white marble with green/grey veins.

Iron rod (859) 25 cm. long, square cross-section 5 mm. across; not illustrated.

From 79 layer 33:

Bronze coin (825) unidentifiable.

Worked antler (2290) fig. 120, no. 124.

Window Glass

From 78 layer 14:

cf. fig. 199, no. 25.

Nails

From 78 layer 14:

1, 14.0; 1, 8.25; 1, 11.5, bent.

From 79 layer 27:

1, 11.5 +; 1, 6.35 +; 1, 3.85 +; 1, 3.85, bent; 1, 3.85; 1, 4.5; 1, 5.1 +.

From 79 layer 28:

1, 4.5.

Pottery

From 78 layer 15:

New Forest: 2/10.20, 58.1; weight, 110 g.; 32.35%.

Hand-made, fabric A: 107; weight, 150 g.; 44.12%.

Grey fabrics: weight, 80 g.; 23.53%.

Total weight: 340 g.

From 78 layer 16:

New Forest: sherds of fabric 1 and 2; weight, 20 g.; 8.70%.

Hand-made, fabric A: weight, 50 g.; 21.74%.

Black-burnished: weight, 50 g.; 21.74%.

Grey fabrics: 127 (2); weight, 110 g.; 47.83%.

Total weight: 230 g.

From 79 layer 27:

New Forest: 3.2, 2/10.5, 2/10.17, 18.4, 22.1-5, 33.5, 43 (2); weight: 320 g.; 9.04%.

Oxford: 34, 35.1, 40, 43.10-12, 58 (2), 63; weight, 200 g.; 5.65%.

Hand-made, fabric A: 86 (2), 107, 123 (6); weight, 1400 g.; 39.55%.

Black-burnished: 85 (2), 107 (3); weight, 300 g.; 8.47%.

Grey fabrics: 75.2, 98.1, 107 (2), 127 (2), 129 (2), 154.6, 161.3; weight, 1200 g.; 33.90%.

Fabric D: 137.4-6; weight, 120 g.; 3.39%.

Total weight: 3540 g.

From 79 layer 28:

TS: Dr. 36, Central Gaul, C2.

New Forest: 2/10.16, 2/10.22, 22.1-5 (2), 43, 55.9; weight, 550 g.; 10.68%.

Oxford: 26, 40; weight, 25 g.; 0.49%.

Misc.: 24.1.

Hand-made, fabric A: 86 (4), 107, 123 (3); weight, 1825 g.; 35.44%.

Black-burnished: 85 (2), 107 (3), 126 (3); weight, 840 g.; 16.31%.

Grey fabrics: 98.1 (same as that in 79/27), 107 (2), 118.1, 127.1, 127 (2), 137 (2), 139, 140; weight, 1870 g.; 36.31%.

Fabric D: 137.4-6; weight, 40 g.; 0.78%.

Total weight: 5150 g.

From 79 layer 33:

New Forest: 3.1-2; weight, 150 g.; 3.94%.

Oxford: 17.7, 63.4; weight, 30 g.; 0.79%.

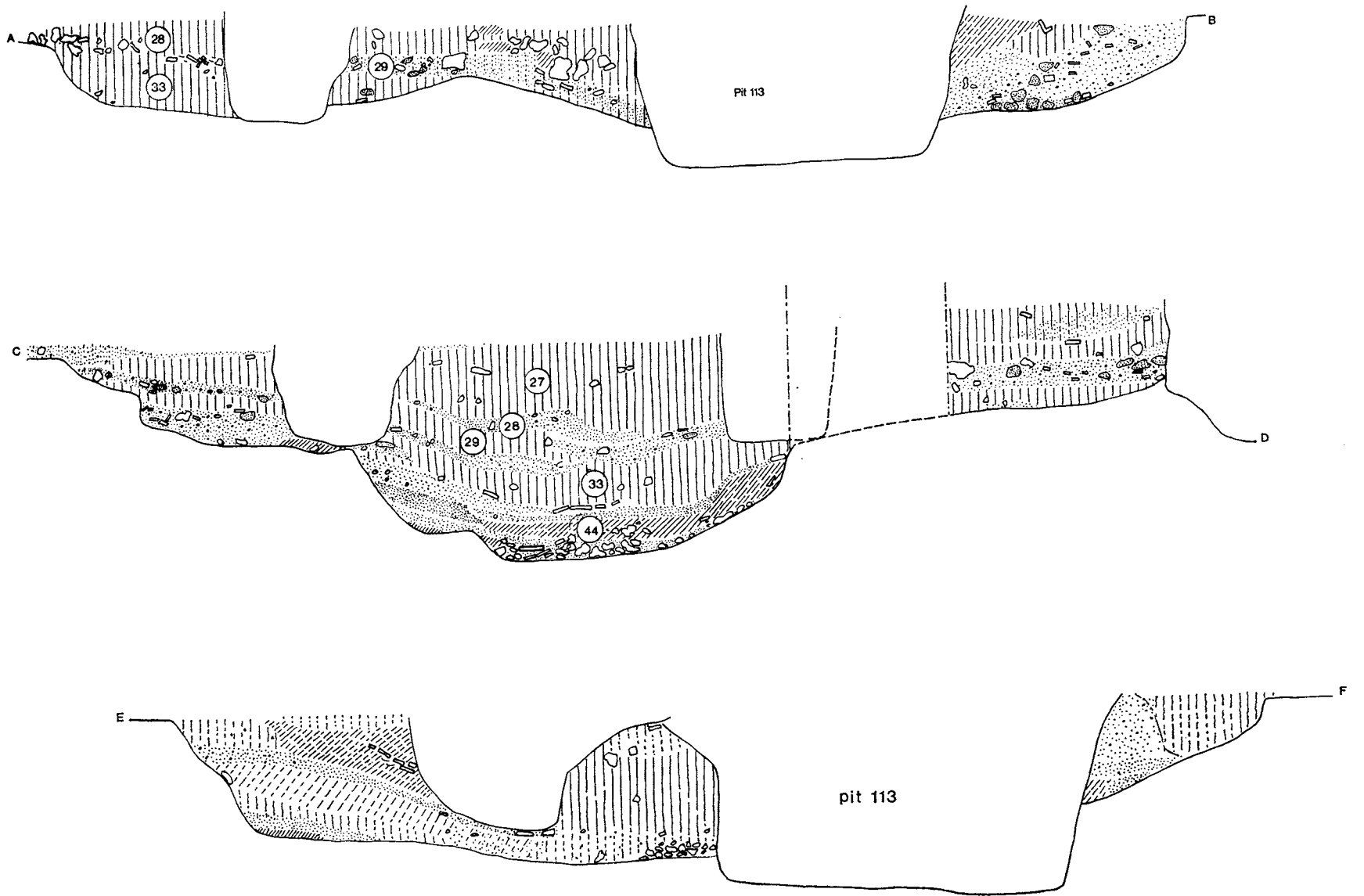
Hand-made, fabric A: 86, 107 (2), 123 (3); weight, 800 g.; 21.0%.

Black-burnished: 85, 107.7, 126; weight, 350 g.; 9.19%.

Grey fabrics: 85, 107.11, 127 (3), 140.3, 159.5, sherds of a storage jar; weight, 2480 g.; 65.09%.

Total weight: 3810 g.

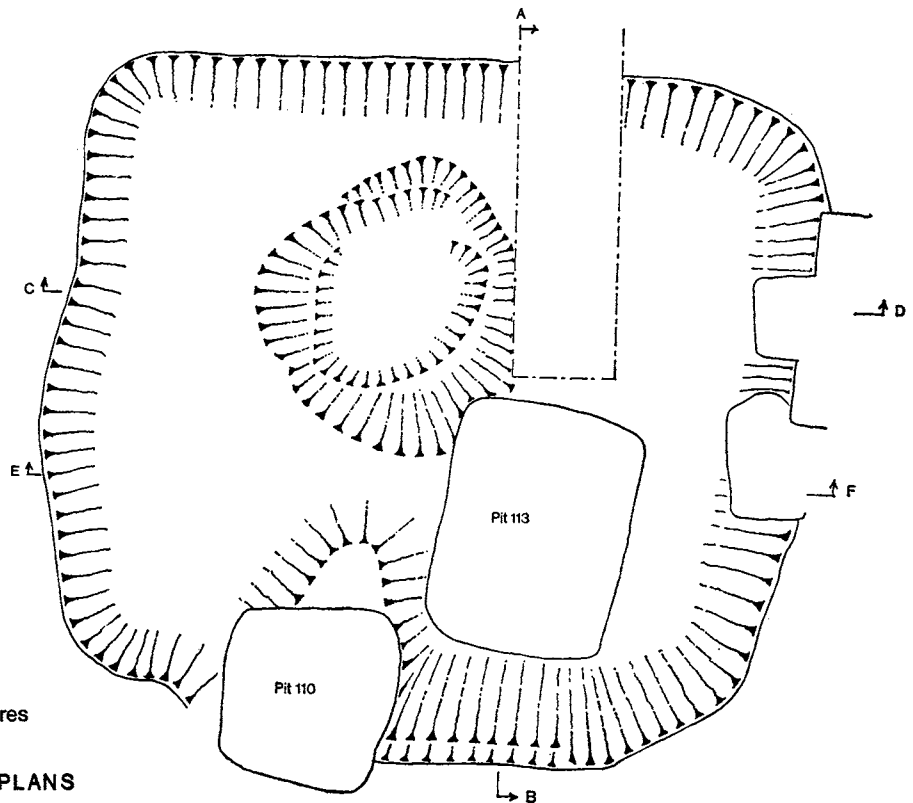
PIT 103



0 1 2 3 4 Metres

0 5 10 15 Feet

SECTIONS



0 1 2 3 4 5 Metres

0 5 10 15 Feet

PLANS

FIG. 55

From 79 layer 44:

New Forest: 2/10.21, 22.1-5 (3); weight, 250 g.; 8.22%.

Misc.: sherds and base in an orange sandy fabric; a join in pit 170; weight, 120 g.; 3.95%.

Hand-made, fabric A: 123 (2); weight, 1050 g.; 34.54%.

Black-burnished: 107, 126 (2); weight, 600 g.; 19.74%.

Grey fabrics: 85 (2), 127 (5), 129, 140.3 (sherds from 79/33), 149.1; weight, 1020 g.; 33.55%.

Total weight: 3040 g.

Weight from all the layers: 16,110 g.

Animal Bones

756 fragments identified (including 356 ribs and 29 skull fragments).

Species represented: ox, 55; pig, 18; dog, 13; sheep, 9; bird, 2; red deer, 2; fox, 1; horse, badger.

The sheep bones included part of a young animal, and the pig bones included part of at least one very young animal. The fairly high percentage of dog bones comprised part of at least four individuals.

Pit 119 (PC 68, trench 75, layers 25 and 52)

Roughly circular pit 4 ft. (1.22 m.) across and up to 3 ft. 6 in. (1.07 m.) deep.

The lower filling (layer 52) consisted of a layer of redeposited clay sealed by an upper layer (layer 25) of dark grey occupation soil. Fragments of daub were recovered from layer 25.

Pit 119 cut into pit 95.

Small Finds

From layer 25:

Bronze fragments (863) not illustrated.

Nails

From layer 25:

1, 3.85 +; 2, heads only.

Pottery

From layer 25:

New Forest: sherds of fabrics 1 and 2; weight, 140 g.; 9.66%.

Oxford: 58; weight, 20 g.; 1.38%.

Hand-made, fabric A: 107, 123 (2); weight, 580 g.; 40.0%.

Black-burnished: 107.10, 123; weight, 150 g.; 10.34%.

Grey fabrics: 107, 118.2, 127, 160; weight, 360 g.; 24.83%.

Fabric D: 137.4-6; weight, 200 g.; 13.79%.

Total weight: 1450 g.

From layer 52:

New Forest: sherds of fabrics 1 and 2; weight, 20 g.; 6.45%.

Oxford: sherd of fabric 4; weight, 20 g.; 6.45%.

Hand-made, fabric A: 123; weight, 130 g.; 41.94%.

Black-burnished: 85; weight, 50 g.; 16.13%.

Grey fabrics: weight, 90 g.; 29.03%.

Total weight: 310 g.

Weight from both layers: 1760 g.

Animal Bones

57 fragments identified (including 11 ribs and 2 skull fragments).

Species represented: ox, 43; sheep, 32; pig, 25.

Human Bones

Infant clavicle.

Well (pit) 121 (PC 68 trench 79 layers 36, 37, 53, 58, 60, 61, 66, 67, 68)

Pit 121 is a circular well with a shaft diameter of 3 ft. 5 in. (1.04 m.). It had been constructed, presumably with a timber lining, in a pit some 4 ft. 6 in. (1.37 m.) across. Only the shaft of the well was excavated, the packing being left in position. The bottom was not reached at a depth of 13 ft. (4.0 m.): thereafter excavation was abandoned for reasons of safety. No trace of the original timber lining survived, but the instability of the clay and marl through which it had been dug leaves little doubt that some kind of lining must once have been provided. The narrow diameter and the considerable depth meant that no vertical sections could be retained, but depth measurements were taken at each change of layer. A summary of layers, with measurements taken from the surface of the natural clay is offered here.

PIT 121

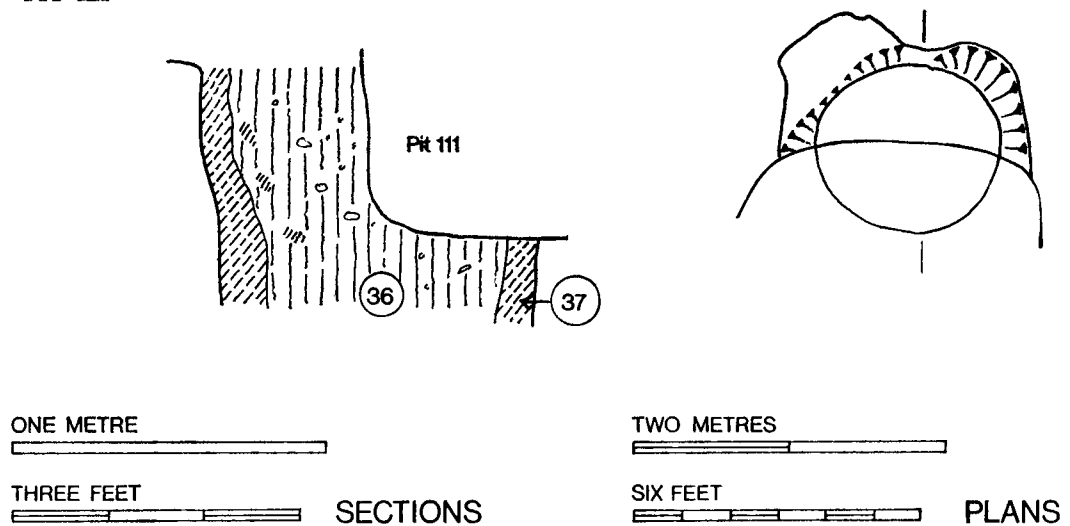


FIG. 56

Layer 68: 12 to 13 ft. (3.7-4.0 m.)

Thick black clayey soil rich in occupation material (probing revealed that the layer continued for a further 3 ft. (0.91 m.) at least).

Layer 67: 11 ft. 10 in. to 12 ft. (3.61-3.66 m.)

Thin lens of light grey clay.

Layer 66: 11 to 11 ft. 10 in. (3.35-3.61 m.)

Black soil with occupation rubbish.

Layer 60: 8 to 11 ft. (2.44–3.35 m.)

Light grey chalky clay containing oyster shells and other occupation material.

Layer 58: 6 to 8 ft. (1.83–2.44 m.)

Brown clayey soil containing much brickearth eroded from the packing, together with occupation rubbish.

Layer 53: 4 to 6 ft. (1.22–1.83 m.)

Light brown marly soil intermixed with quantities of occupation rubbish.

Layer 36: 0–4 ft. (0–1.22 m.)

Black soil containing much occupation rubbish.

In addition to the filling of the shaft, the vertical packing between the sides of the well pit and the original lining was numbered as layers 37 and 61. Although this packing was not deliberately excavated, it began to fall away, particularly below about 8 ft. (2.44 m.), and had therefore to be partly removed. Fragments of daub were recovered from layer 60.

Small Finds

From layer 36:

- | | | |
|-------------|-------|------------------------------|
| Bronze coin | (816) | Constantine I (A.D. 308–17). |
| Bronze coin | (868) | Crispus (A.D. 322–4). |
| Bronze pin | (815) | <i>cf.</i> nos. 50, 51. |

From layer 53:

- | | | |
|-----------------|-------|------------------------------|
| Bronze coin | (879) | Constantine I (A.D. 308–17). |
| Bronze fragment | (880) | not illustrated. |

From layer 58:

- | | | |
|-------------|-------|--------------------------|
| Bronze coin | (883) | Galerius (A.D. 295–305). |
|-------------|-------|--------------------------|

From layer 60:

- | | | |
|-----------------|-------|--------------------------------|
| Bronze seal box | (891) | fragmentary; not illustrated. |
| Bronze chain | (893) | fig. 114, no. 65. |
| Bronze fragment | (892) | not illustrated. |
| Bone plaque | (898) | fig. 119, no. 122. |
| Bone pins | (894, | not illustrated. As nos. 81–5. |
| | 900, | |
| | 905) | |

Lead sheet	(896)	fragment of sheet: not illustrated.
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Iron key	(899)	fig. 129, no. 222.
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Iron knife	(920a)	not illustrated, no. 188.
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Iron paring chisel	(919)	fig. 128, no. 211.
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Iron fragments	(901,	not illustrated.
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	902)	
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Whetstone	(908)	not illustrated, no. 357.
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From layer 68:

Bronze coin	(937)	corroded, either first or second century A.D. or a follis.
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Iron ring	(911)	fragment 4.7 cm. external diameter: not illustrated.
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Iron knife	(932)	fig. 126, no. 194.
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Iron key	(917)	fig. 129, no. 219.
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Iron binding	(918)	fig. 130, no. 240.
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Iron spike loop	(912)	fig. 129, no. 224.
Iron eyelet spike	(920b)	fig. 129, no. 225.
Iron ring and tie	(922)	fig. 129, no. 227.
Bone pins	(909, 910, 923, 931, 936, 938, 940)	fig. 116, no. 84.
	(938, 910, 940)	are types 3; not illustrated.
Lead trimming	(924)	not illustrated.

Glass Vessels

From layer 60:

Fragment not illustrated but similar to fig. 197, no. 6.

From layer 68:

fig. 198, no. 11.

fig. 198, no. 17.

Window Glass

From layer 68:

fig. 199, no. 24.

Nails

From layer 36:

2, 10.2; 1, 7.6, bent; 1, 5.1; 1, 3.85, 1, 3.2 +; 1, 3.85 +.

From layer 58:

1, 1.3 +.

From layer 60:

3, 5.1, one bent; 2, 3.85 +; 2, 3.85; 1, 7.6; 2, heads only.

From layer 68:

1, 9.55; 1, 8.9 +; 2, 8.9; 2, 7.6 +; 2, 7.6; 1, 7.0; 3, 6.35 +; 2, 6.35; 4, 5.1 +; 13, 5.1; 2, 5.75; 5, 4.5; 3, 3.85 +; 12, 3.85; 8, 3.2; 2, 2.55 +; 5, 2.55; 2, 1.95; 4, 1.3 +; 4, heads only.

Pottery

From layer 36:

New Forest: 13, 32, 39.3; weight, 150 g.; 5.42%.

Oxford: 17, 11, sherds of fabric 4; weight, 200 g.; 7.22%.

Hand-made, fabric A: 86 (2), 106, 107.5, 107, 123 (5); weight, 1050 g.; 37.91%.

Black-burnished: 85 (3), 126 (4); weight, 630 g.; 22.74%.

Grey fabrics: 85, 107, 127, 129 (2), 137, 159.3, 172.2, 175.1; weight, 740 g.; 26.71%.

Total weight: 2770 g.

From layer 58:

Hand-made, fabric A: 123 (2); weight, 160 g.; 19.16%.

Black-burnished: 107 (2), 117, 126 (2); weight, 450 g.; 53.89%.

Grey fabrics: 85; weight, 225 g.; 26.95%.

Total weight: 835 g.

From layer 60:

New Forest: 43; weight, 250 g.; 11.36%.

Oxford: 14.3, 63.6; weight, 100 g.; 4.55%.

Hand-made, fabric A: 86, 123 (3); weight; 580 g.; 26.36%.

Black-burnished: 85, 85.4, 117; weight, 550 g.; 25.0%.

Grey fabrics: 107; weight, 720 g.; 32.73%.

Total weight: 2200 g.

From layer 66:

New Forest: sherds of fabric 2; weight, 20 g.; 11.11%.

Hand-made, fabric A: 123, 123.2; weight, 100 g.; 55.56%.

Black-burnished: weight, 50 g.; 27.78%.

Grey fabrics: weight, 10 g.; 5.56%.

Total weight: 180 g.

From layer 68:

TS: Dr. 36, Central Gaul, second century.

New Forest: 2.2, 3.1-2 (2), 3.5-6, 22.1.5 (2), 32, 43, 66; weight, 950 g.; 7.06%.

Oxford: 15.1, 18.1, 58; weight, 700 g.; 5.20%.

Hand-made, fabric A; 123.1, 123.3, 123.9, 123 (8); weight, 4600 g.; 34.20%.

Black-burnished: 85 (4), 107 (5), 126 (8); weight, 4750 g.; 35.32%.

Grey fabrics: 76.2, 77.5, 94.1, 113, 127 (3), 128, 129 (2), 145, 159.13, 175; weight, 2450 g.; 18.22%.

Total weight: 13,450 g.

Weight from all the layers: 19,435 g.

Animal Bones

1343 fragments identified (including 463 ribs and 76 skull fragments).

Species represented: ox, 35; pig, 29; sheep, 24; dog, 4; bird, 4; cat, 3; red deer, 1; roe deer, badger, horse.

The sheep bones included part of at least two young animals, one under ten months and one under three months. The pig bones included a complete skull of an immature sow, and part of a new-born animal. The cat bones are from two animals, one mature and one immature, and include two whole skulls. A complete dog skull was also found. The red deer bones include a large skull fragment and both antlers of a mature animal. A very large number of pig jaws were found in this pit. 39% of all pig bones identified were jaws, compared with 18% of sheep bones (also fairly high), but only 10% of ox bones.

Pit 122 (PC 68, trench 76, layer 39)

An irregularly shaped scoop 5 ft. (1.52 m.) across and up to 1 ft. (0.31 m.) deep.

The filling was a uniform greenish-grey soil mixed with flints and occupation debris.

The pit was cut by medieval gully 3.

PIT 122

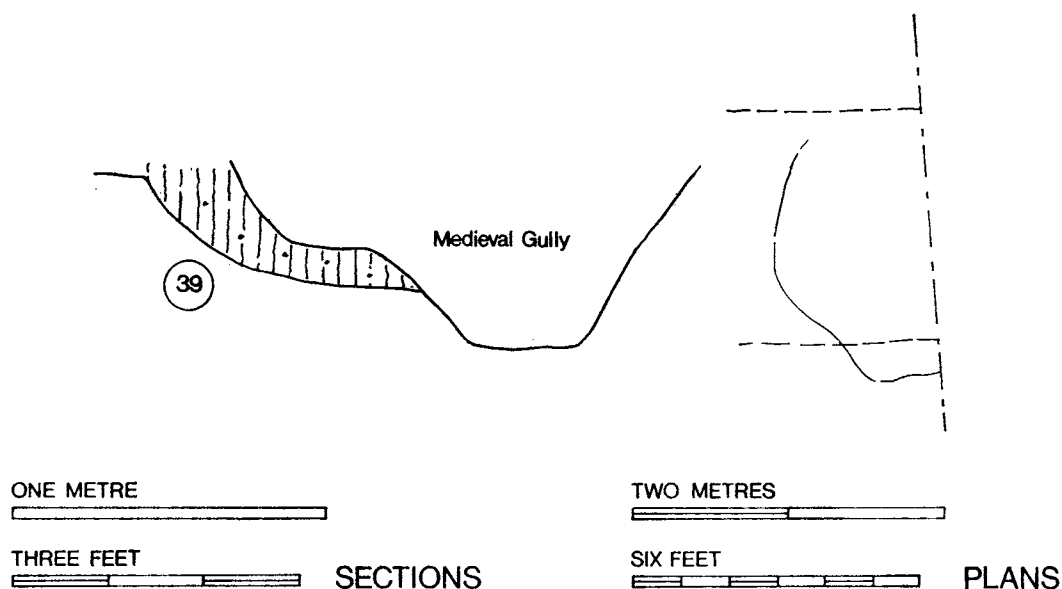


FIG. 57

Pottery

From layer 39:

Oxford: 31; weight, 10 g.; 4.35%.

Hand-made, fabric A: 86, 123 (2); weight, 180 g.; 78.26%.

Black-burnished: weight, 20 g.; 8.70%.

Grey fabrics: weight, 20 g.; 8.70%.

Total weight: 230 g.

Animal Bones

10 fragments identified (including 4 ribs).

Species represented: sheep, pig, ox.

Pit 125B (PC 69, trench 88; layers 35, 36, 37, 38, 87)

Rectangular, 5 ft. by 2 ft. 9 in. (1.52 × 0.84 m.), dug to a depth of 3 ft. 3 in. (0.99 m.).

The lowest layer (layer 87) was typical greenish cesspit filling containing animal bones. Above this (layer 38) was a similar layer mixed with chalk, a few flints and quantities of animal bones. This was sealed by a deposit (layer 37) of occupation rubbish including bones, shells, pottery and charcoal mixed with large flints and greyish soil. Next came a thin layer of small chalk lumps sealing the whole pit (layer 36), which was in turn covered by a mass of occupation rubbish in greenish-grey soil (layer 35).

Small Finds

From layer 35:

Bone plate

(1055) fig. 117, no. 105.

PIT 125b

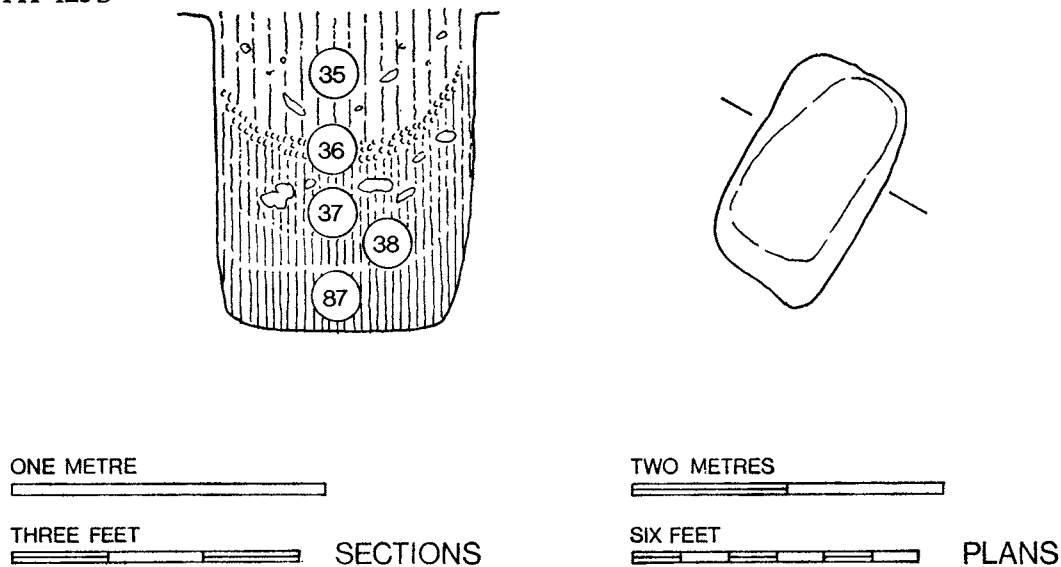


FIG. 58

Pottery

From layer 35:

New Forest: weight, 30 g.; 7.14%.
Oxford: 18.3, 58; weight, 250 g.; 59.52%.
Hand-made, fabric A: weight, 40 g.; 9.52%.
Black-burnished: weight, 20 g.; 4.76%.
Grey fabrics: 94; weight, 80 g.; 19.05%.
 Total weight: 420 g.

From layer 37:

New Forest: 43; weight, 20 g.; 3.13%.
Oxford: 35.1, sherds of beaker in 88/35; weight, 20 g.; 3.13%.
Hand-made, fabric A: 86, 107 (2), 123 (2); weight, 350 g.; 54.69%.
Black-burnished: 85, 107 (2); weight, 150 g.; 23.44%.
Grey fabrics: 149.1; weight, 60 g. 9.38%.
Fabric D: 137.4-6; weight, 40 g.; 6.25%.
 Total weight: 640 g.

From layer 38:

New Forest: 2/10.21; weight, 30 g.; 3.75%.
Oxford: 17.5, 33.3; weight, 20 g.; 2.50%.
Hand-made, fabric A: 86, 107, 123; weight, 450 g.; 56.25%.
Black-burnished: 126; weight, 160 g.; 20.0%.
Grey fabrics: 107; weight, 140 g.; 17.50%.
 Total weight 800 g.
 Weight from all the layers: 1860 g.

Animal Bones

239 fragments identified (including 24 ribs and 12 skull fragments).

Species represented: ox, 69; pig, 17; sheep, 12; bird, 1; horse, 1; cat, 1.

Pit 129 (PC 69, trench 89, layer 44)

Small rectangular pit 3 ft. by 3 ft. 6 in. (0.91 × 1.07 m.) dug to a depth of 1 ft. 1 in. (0.33 m.) through the layer of make-up.

The filling was of black soil mixed with charcoal, pottery, bones and a few large flints.

PIT 129

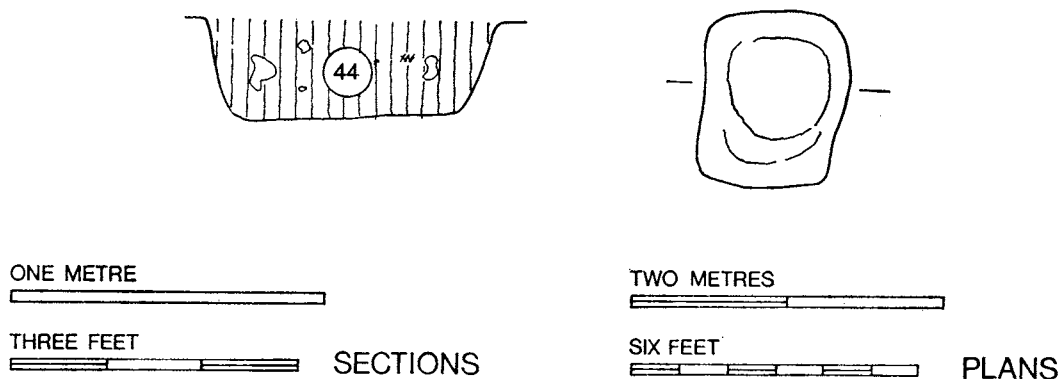


FIG. 59

Pottery

From layer 44:

New Forest: sherds of fabric 1; weight, 100 g.; 9.71%.

Oxford: 42, 57, 58, 63.4; weight, 250 g.; 24.27%.

Hand-made, fabric A: 86, 123; weight, 250 g.; 24.27%.

Black-burnished: 85; weight, 160 g.; 15.53%.

Grey fabrics: 87.1, 137.2; weight, 170 g.; 16.50%.

Fabric D: 137.4-6; weight, 100 g.; 9.71%.

Total weight: 1030 g.

Animal Bones

107 fragments identified (including 14 ribs and 14 skull fragments).

Species represented: ox, 62; sheep, 18; pig, 14; horse, 3; bird, 1; red deer, 1; dog, 1.

The pit contained one almost complete ox skull.

Human Bones

Part of an infant burial.

Pit 130A (PC 69, trench 89, layers 50, 81 and 82)

Small rectangular pit 3 ft. by 3 ft. 3 in. (0.91 × 0.99 m.) dug to a depth of 2 ft. 3 in. (0.69 m.).

The lowest fill (layer 82) consisted of occupation rubbish including charcoal, chalk, flints, bones, shells, tiles and pottery mixed up in black soil. This was sealed by a layer of orange clay (layer 81) above which was another deposit of occupation rubbish (layer 50). Fragments of daub were recovered from layer 82.

The pit cut through a drainage gully.

PIT 130a

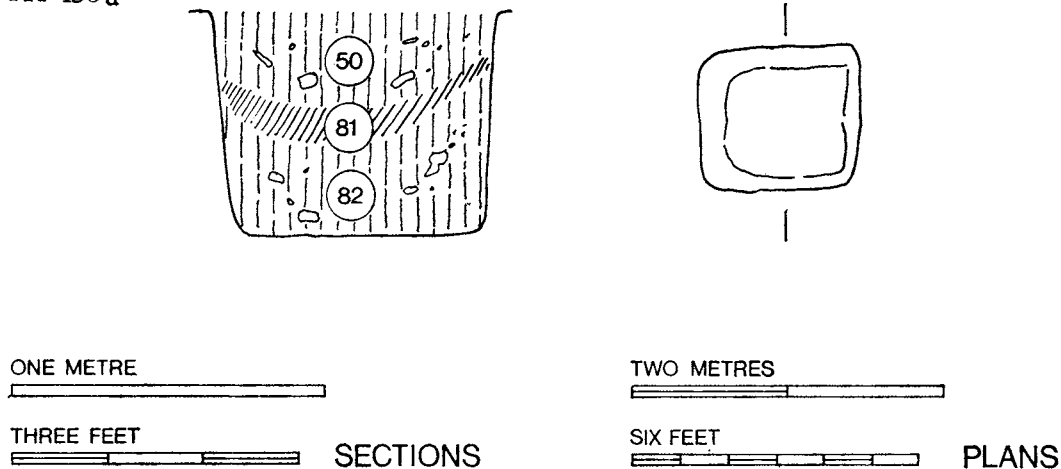


FIG. 60

Small Finds

From layer 82:

- | | | |
|--------------------|--------|---|
| Shale spindlewhorl | (1229) | fig. 121, no. 129. |
| Bone bracelet | (1314) | 22 cm. in circumference, held together with small bronze rivet, now opened out into strip; not illustrated. |
| Bronze rivets | (1238) | corroded mass; not illustrated. |
| Iron fragment | (1239) | piece of a flat sheet; not illustrated. |

Pottery

From layer 50:

- New Forest*: 22.1-5, 43; weight, 50 g.; 9.71%.
Pevensy: 37; weight, 5 g.; 0.97%.
Hand-made, fabric A: 86, 107, 123 (2); weight, 270 g.; 52.43%.
Black-burnished: 85, 126; weight, 100 g.; 19.42%.
Grey fabrics: 127, 137; weight: 90 g.; 17.48%.
 Total weight: 515 g.

From layer 81:

- Hand-made, fabric A*: weight, 120 g.; 48.0%.
Black-burnished: 85; weight, 130 g.; 52.0%.
 Total weight: 250 g.

From layer 82:

- New Forest*: 2/10.17, 2/10.20, 22.1-5, 43 (2), 64, 66.5; weight, 560 g.; 17.83%.
Oxford: 15.1, 15.2, 58 (2), 63; weight, 250 g.; 7.96%.

Misc.: 170.

Hand-made, fabric A: 86 (3), 107, 123 (2); weight, 750 g.; 23·89%.

Black-burnished: 85, 107 (2), 126 (3); weight, 400 g.; 12·74%.

Grey fabrics: 98, 107, 129 (3), 132 (2), 139, 139.5; weight, 1180 g.; 37·58%.

Total weight: 3140 g.

Weight from all the layers: 3905 g.

Animal Bones

392 fragments identified (including 104 ribs and 16 skull fragments).

Species represented: ox, 54; sheep, 22; pig, 19; bird, 2; dog, 1; horse, 1; fallow deer, 1; red deer, vole.

The pit contained a fairly complete sheep skull.

Well (pit) 135 (PC 68, trench 88, layer 104)

Well 135 remained in use for a considerable period of time, probably starting as a Roman circular shaft, eroding out in the fifth century to become a muddy water-pit, and finally being redug and timber lined in the seventh century before being allowed to fill with rubbish. Most of the development lies within the Saxon period, and is therefore appropriate to volume 2, but the earliest phase must be considered here.

PIT 135

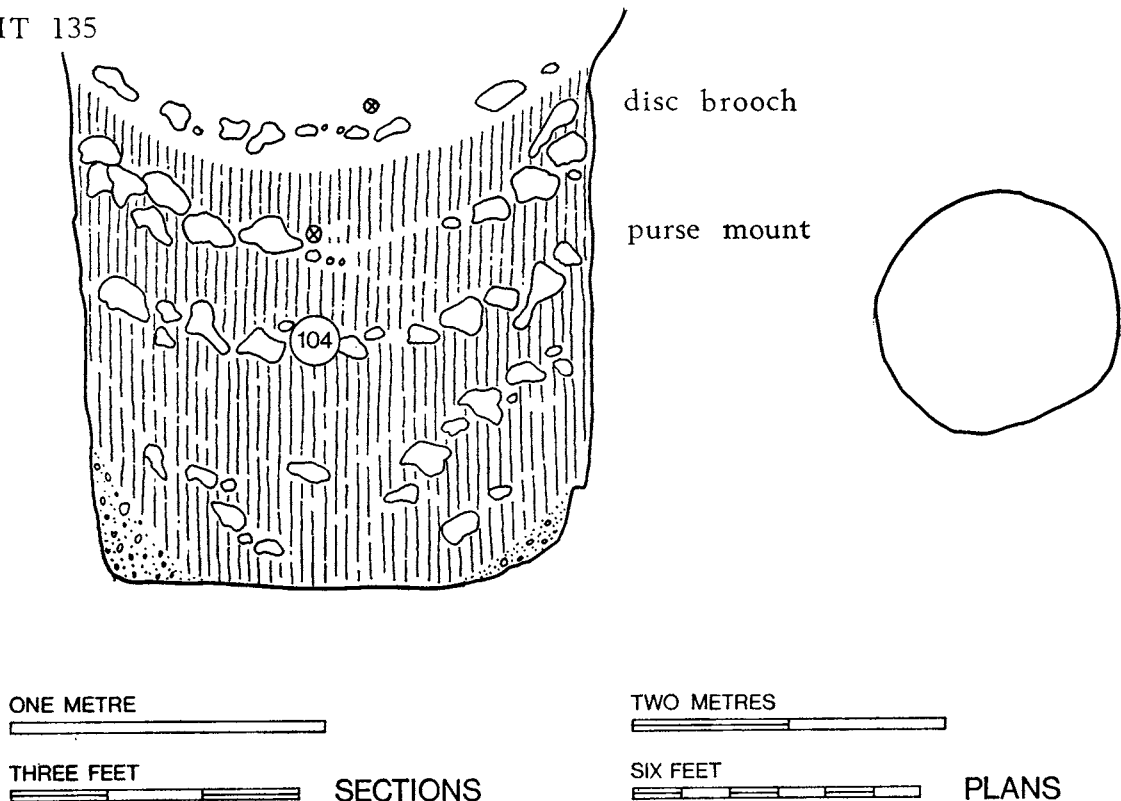


FIG. 61

The first well was constructed in a circular shaft 5 ft. 6 in. (1.68 m.) in diameter. No trace of lining existed but it is possible that the original lining collapsed together with the packing behind it and was cleared out at some stage during or soon after the Roman period. Then followed a time during which black organic silt and flints were allowed to accumulate to a depth of 4 ft. 6 in. (1.37 m.), at which stage an iron purse mount of fifth-century date was dropped in. Thereafter mud continued to accumulate. It seems possible, but by no means certain, that the lowest level of silt belongs to the Roman period since it produced only Roman material, but the possibility must always remain that even the initial phases of the structure might date to the fifth century, the Roman finds being residual.

Small Finds

From layer 104:

Iron hook	(1869)	not illustrated.
Bone bracelet	(1946)	plain, as fig. 117, no. 99; not illustrated.
Iron slag		p. 265.

Animal Bones

103 fragments identified (including 8 ribs and 7 skull fragments).

Species represented: ox, 69; sheep, 10; pig, 10; red deer, 10.

Three large red deer antlers were found in the bottom layer of the well.

Pit 138 (PC 70, trench 94, layers 91, 97, 98, 99, 100 and PC 71, trench 100, layers 33 and 46)

Rectangular pit in excess of 8 ft. 6 in. by 3 ft. 6 in. (2.59 × 1.07 m.), cut to a depth of 4 ft. 3 in. (1.29 m.).

Relatively little of the pit was excavated because a 2 ft. baulk had been left across the centre and a substantial part of it had been cut away by the foundations of the sixteenth-century storehouse.

The lowest layer (layer 99) consisted of a typical brownish cesspit filling mixed with charcoal and oyster shells. Layer 98 was a tip of black soil which extended down the west side of the pit and merged with the top of layer 99. Then came a sealing layer (layer 100) of yellow clay above which was a mass of general occupation debris (layer 97, and trench 100 layer 46), mixed with wads of redeposited natural brickearth which merged with layer 91 — a more clayey version of layer 97. The top of the pit was sealed by a mass of flints (trench 100 layer 33).

Small Finds

From layer (100) 33:

Bronze coin	(1621)	Constantius II (A.D. 337-40)
Iron drill	(2067)	fig. 128, no. 216.

Pottery

From layer (94) 91:

Argonne: Chenet 328.

Oxford: sherds of fabric 4; weight, 25 g.; 10.64%.

PIT 138

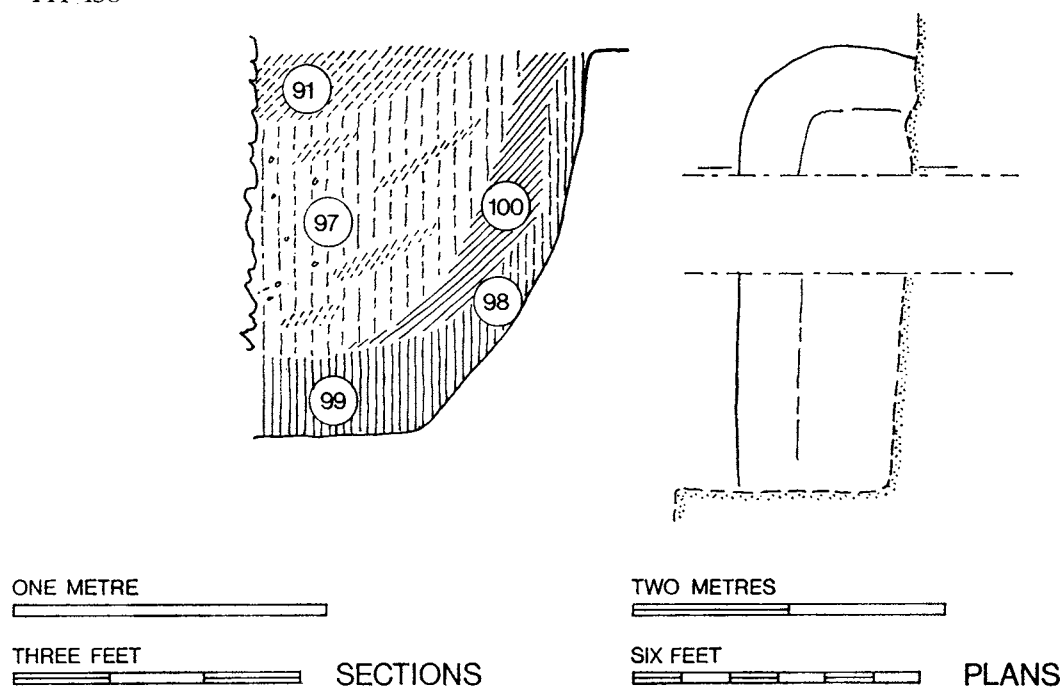


FIG. 62

Pevensey: sherds.

Hand-made, fabric A: 123; weight, 60 g.; 25.53%.

Grey fabrics: 85, 129, 146; weight, 150 g.; 63.83%.

Total weight: 235 g.

From layer (94) 97:

New Forest: sherds of fabric 1; weight, 5 g.; 2.56%.

Hand-made, fabric A: weight, 20 g.; 10.26%.

Grey fabrics: sherds of a storage jar; weight, 150 g.; 76.92%.

Fabric D: weight, 20 g.; 10.26%.

Total weight: 195 g.

From layer (100) 33:

New Forest: sherds of fabric 2; weight, 30 g.; 21.43%.

Oxford: 40; weight, 50 g.; 35.71%.

Hand-made, fabric A: 123; weight, 40 g.; 28.57%.

Grey fabrics: 84.4; weight, 5 g.; 3.57%.

Fabric D: 137.4-6; weight, 15 g.; 10.71%.

Total weight: 140 g.

From layer (100) 46:

Oxford: sherds of fabric 5; weight, 25 g.; 33.33%.

Grey fabrics; weight, 50 g.; 66.67%.

Total weight: 75 g.

Weight from all the layers: 645 g.

Animal Bones

10 fragments identified (including 2 ribs and 1 skull fragment).
 Species represented: pig, ox, sheep.

Pit 140 (PC 70, trench 95, layers 78, 104, 105, 106, 107 and 108)

Rectangular pit cut by the footings of the sixteenth-century storebuilding. Dug to a depth of 4 ft. 5 in. (1.35 m.).

The lowest level (layer 107) was a typical greenish-grey cesspit filling. It was sealed by layers 106 and 108 which consisted of deposits of occupation debris, including burnt clay, bone, pottery and shells. These levels were sealed by a thick layer of marl (layer 105) above which was a deposit of brown soil with charcoal, burnt clay and tile fragments (layer 104), which was in turn sealed by another capping of marl (layer 78).

PIT 140

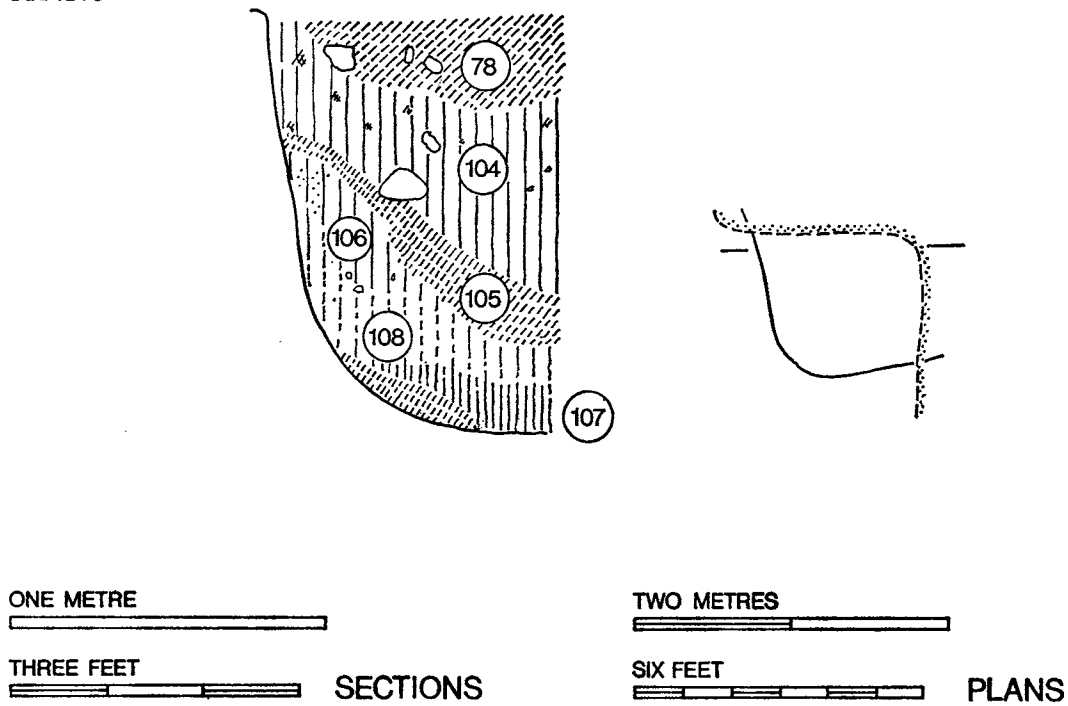


FIG. 63

Small Finds

From layer 78:
 Iron strip (1650) not illustrated.

Pottery

From layer 78:
New Forest: sherds of fabric 2; weight, 5 g.; 3.23%.
Hand-made, fabric A: 107; weight, 20 g.; 12.90%.

Black-burnished weight 10 g.; 6.45%.

Grey fabrics: weight, 80 g.; 51.61%.

Fabric D: weight, 40 g.; 25.81%.

Total weight: 155 g.

Animal Bones

2 fragments identified.

Species represented: ox, sheep.

Pit 142 (PC 70, trench 94, layer 109)

Irregular pit or scoop, 3 ft. 6 in. by 2 ft. 3 in. (1.07 × 0.69 m.), cut to a depth of 10 in. (0.25 m.).

Filled with black soil containing bone, shells, brick, tile and pottery

PIT 142

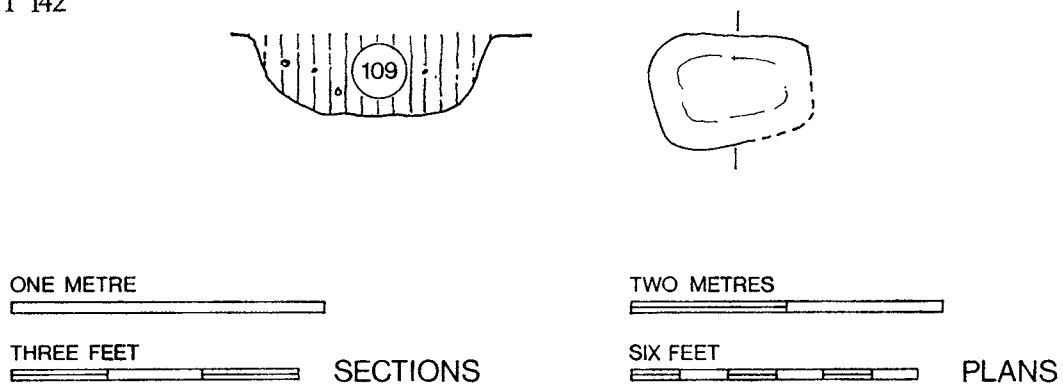


FIG. 64

Pottery

From layer 109:

New Forest: sherds of fabric 3; weight, 5 g.; 1.30%.

Hand-made, fabric A: weight, 70 g.; 18.18%.

Black-burnished: 85; weight, 70 g.; 18.18%.

Grey fabrics: 85, weight, 240 g.; 62.34%.

Total weight, 385 g.

Animal Bones

23 fragments identified (including 5 ribs).

Species represented: ox, sheep, pig, red deer.

Well (pit) 144 (PC 70, trench 95, layers 92, 134, 141, 142, 148, 150, 151, 152)

A circular well shaft 3 ft. 6 in. (1.07 m.) in diameter set in a roughly rectangular well pit 4 ft. 6 in. (1.37 m.) across. The shaft would once have been lined with timber to retain the clay and marl packing between the lining and the pit edge. The bottom of the well lay at

17 ft. (5.2 m.) below the surface of the natural clay. The shaft was completely excavated, but the clay packing was left in position.

The lowest filling (layers 148, 150, 151, 152) consisted of black organic mud interleaved with chalk lenses, from the bottom of the well at 17 ft. (5.2 m.) to 14 ft. (4.27 m.). Next came layer 142, between 13 and 14 ft. (3.96–4.27 m.): it consisted of grey clay containing large flints, masses of animal bone, oyster shells and pottery, together with well-preserved organic material.¹ Above, from 12 to 13 ft. (3.66–3.96 m.), was a similar layer (layer 141) but without the organic content preserved. From 10 to 12 ft. (3.05–3.66 m.) the same grey clay continued but contained quantities of crushed oysters (layer 134). The lowest 4 ft. (1.22 m.) of filling (layers 134, 141, 142) represent silting resulting from disuse with some sporadic tipping of rubbish. The upper 10 ft (3.05 m.) (layer 92) were a completely uniform tip of occupation rubbish consisting of loosely packed black soil containing tile, pottery, bone and shell. It appears to have been thrown in as part of a single act of refilling.

Small Finds

From layer 92:

- | | |
|-----------------|--|
| Bronze coin | (1665) Constans (A.D. 337–41). |
| Bronze coin | (1711) third or fourth century A.D.; very corroded. |
| Bronze bracelet | (1716) fragment of strip type, plain; not illustrated. |
| Bronze bracelet | (1651) two-strand twisted wire type; not illustrated. |
| Bronze sheet | (1674) fragment, perforated; not illustrated. |
| Iron strip | (1672) pointed, possibly shank of a nail; not illustrated. |
| Iron strip | (1673) not illustrated. |
| Iron chisel | (1736) fig. 128, no. 215. |

From layer 134:

- | | |
|-------------|------------------------------|
| Bronze coin | (1745) Helena (A.D. 324–30). |
|-------------|------------------------------|

From layer 142:

- | | |
|---------------|--|
| Bone strip | (1990) 1.1 cm. wide, 0.4 cm. thick, 5 cm. long (broken at both ends); not illustrated. |
| Leather shoes | (2280–2287) fig. 136, nos. 367–74. |

From layer 148:

- | | |
|-----------|---|
| Whetstone | (1988) laminated sandy limestone; not illustrated, no. 343. |
|-----------|---|

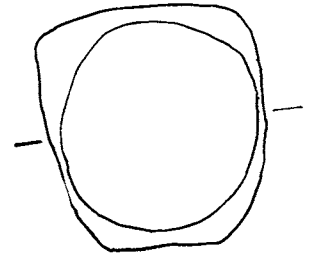
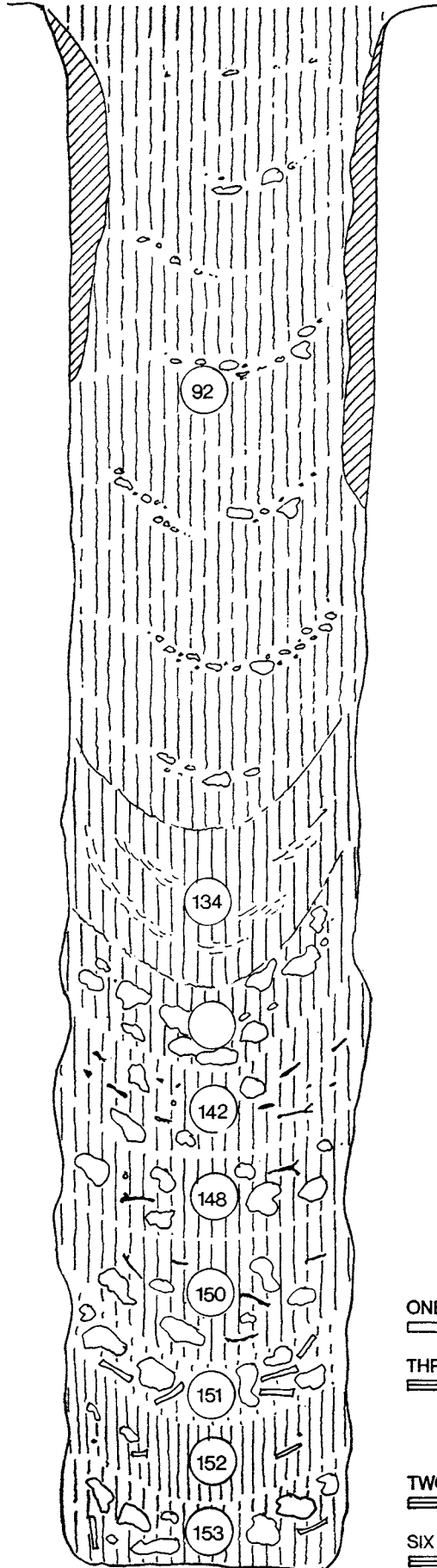
From layer 150:

- | | |
|---------|----------------------------------|
| Leather | (2660) fig. 132, no. 264. |
| | (2676) not illustrated, no. 280. |
| | (2678) not illustrated, no. 281. |
| | (2714) fig. 135, no. 318. |
| | (2715) fig. 135, no. 319. |
| | (2716) not illustrated, no. 320. |

From layer 151:

- | | |
|---------------|--|
| Antler ring | (2649) roughly cut, fig. 120, no. 126. |
| Glass bead | (2650) not illustrated, no. 155. |
| Wooden comb | (2651) fig. 137, no. 322. |
| Wooden handle | (2652) fig. 138, no. 329. |

¹ The faunal material preserved in the wells will be considered together with the Saxon evidence in volume 2.



ONE METRE

THREE FEET

TWO METRES

SIX FEET

SECTIONS

PLANS

FIG. 65

Wooden handle	(2653) fig. 138, no. 328.
Wooden block	(2654) fig. 137, no. 325.
Leather shoes	(2288-2294) fig. 136, nos. 375-81

Nails

From layer 150:
1, 7·6 +.

Pottery

From layer 92:

New Forest: 2/10, 1-2, 2/10.7, 6.1, 13, 13.2, 20.1, 22.1-5, 32 (2), 41.3, 43.8, 43 (2), 58 (2), 66.7;
weight, 1000 g.; 9·78%.

Oxford: 14, 15.3, 30.9, 40, 43, 57, 58; weight, 280 g.; 2·74%.

Misc.: 11.4.

Hand-made, fabric A: 86 (6), 107 (2), 123 (6); weight, 2580 g.; 25·24%.

Black-burnished: 85 (4), 107 (2), 117.1, 117, 126 (3); weight, 3550 g.; 34·74%.

Grey fabrics: 80.2, 85, 103, 107 (2), 127 (3), 129 (4), 132 (2), 137.1, 137 (2), 141, 142.4, 148, 174.2;
weight, 2760 g.; 27·01%.

Fabric D: 109.8; weight, 50 g.; 0·49%.

Total weight: 10,220 g.

From layer 134:

New Forest: 2/10.5, 43.6, 43; weight, 640 g.; 27·06%.

Oxford: 43, 58; weight, 200 g.; 8·46%.

Hand-made, fabric A: weight, 250 g.; 10·57%.

Black-burnished: 85, 107 (2); weight, 875 g.; 37·00%.

Grey fabrics: 127.2, 127, 134.2, 142, 159.4-5; weight, 390 g.; 16·49%.

Fabric D: weight, 10 g.; 0·42%.

Total weight: 2365 g.

From layer 141:

TS: Dr. 31, Central Gaul, Antonine.

New Forest: 3.1-2, 2/10.8, 10.2, 43 (2); weight, 350 g.; 13·46%.

Oxford: 40, 58; weight, 15 g.; 0·58%.

Hand-made, fabric A: 123; weight, 170 g.; 6·54%.

Black-burnished: 85 (sherd of same as in 134), 107 (2), 117, 126 (3); weight, 1270 g.; 48·85%.

Grey fabrics: 107 (2), 127, 175; base sherd with join in Pit 46; weight, 795 g.; 30·58%.

Total weight: 2600 g.

From layer 142:

New Forest: 29.5, 43; weight, 150 g.; 4·49%.

Oxford: 15 (possibly the same vessel as 15.3), 17.3; weight, 40 g.; 1·20%.

Hand-made, fabric A: 86, 123 (4); weight, 930 g.; 27·84%.

Black-burnished: 85 (2), 126 (3); weight, 1020 g.; 30·54%.

Grey fabrics: 76, 129, 129.4, 141.4; weight, 250 g.; 7·49%.

Misc.: sherds of type 179; weight, 950 g.; 28·44%.

Total weight: 3340 g.

From layer 148:

New Forest: 43; weight, 10 g.; 2·06%.

Oxford: more sherds of 15 and 17.3, as in 142, 15; weight, 10 g.; 2·06%.

Hand-made, fabric A: 123 (2); weight, 350 g.; 72·16%.

Black-burnished: 107, 126, weight, 100 g.; 20·62%.

Grey fabrics: weight, 15 g.; 3·09%.

Total weight: 485 g.

From layer 150:

New Forest: sherds of fabric 1; weight, 120 g.; 13·41%.

Oxford: sherds of 17·3, as above; weight, 5 g.; 0·56%.

Hand-made, fabric A: 123 (2); weight, 270 g.; 30·17%.

Black-burnished: 126; weight, 250 g.; 27·93%.

Grey fabrics: weight, 250 g.; 27·93%.

Total weight: 895 g.

From layer 151:

Oxford: 58; weight, 70 g.; 21·88%.

Hand-made, fabric A: weight, 80 g.; 25·0%.

Black-burnished: 126; weight, 150 g.; 46·88%.

Grey fabrics: 103.1; weight, 20 g.; 6·25%.

Total weight: 320 g.

From layer 152:

TS: Dr. 33, East Gaul, later second to mid third century A.D.

Oxford: 15.1.

Hand-made, fabric A: 107, 123; weight, 120 g.; 37·50%.

Black-burnished: weight: 10 g.; 3·13%.

Grey fabrics: 85, 159.6; weight, 190 g.; 59·38%.

Total weight: 320 g.

Weight from all layers: 20,545 g.

Animal Bones

1265 fragments identified (including 261 ribs and 142 skull fragments).

Species represented: ox, 47; dog, 22; sheep, 11; pig, 11; cat, 5; red deer, 3; horse, 1; roe deer, bird.

11 fairly complete ox skulls and more fragmentary remains of at least 6 others were found in this pit. The large number of dog bones included four complete skulls. The sheep bones included part of a very young, probably new born animal. The pig bones also included part of a young animal. The cat bones were the remains of two individuals and included two skulls.

Pit 147 (PC 70, trench 96, layers 27 and 32)

Irregular shaped pit c. 4 ft. 6 in. by 3 ft. 6 in. (1·37 × 1·07 m.) dug to a maximum depth of 1 ft. 10 in. (0·56 m.).

The lowest level (layer 32) consisted of greenish soil, mixed with charcoal and shells. Above (layer 27), the filling was of occupation rubbish, including shells, charcoal and bones mixed with brown soil.

Small Finds

From layer 27:

Bone strip

(1746) flat strip of bone, 1·7 cm. wide, 7·6 cm. long, and 0·4 cm. thick, complete; not illustrated.

PIT 147

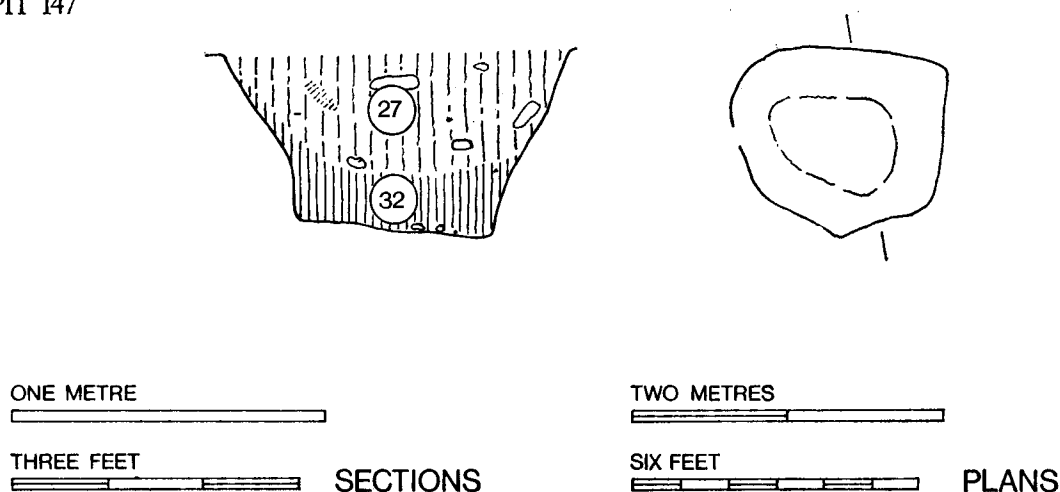


FIG. 66

Pottery

From layer 27:

New Forest: sherds of fabric 1, ?2/10. 15; weight, 80 g.; 4.88%.

Oxford: 36.5, 43, 57, 58, 63; weight, 270 g.; 16.46%.

Pevensey: 35.15, 37, weight, 10 g.; 0.61%.

Hand-made, fabric A: 86, 123 (3); weight, 420 g.; 25.6%.

Black-burnished: weight, 240 g.; 14.63%.

Grey fabrics: 87.6, 109.4, 132, 137.8; weight, 500 g.; 30.49%.

Fabric D: weight, 120 g.; 7.32%.

Misc.: 179.2.

Total weight: 1640 g.

From layer 32:

New Forest: sherd of fabric 1.

Hand-made, fabric A: weight, 50 g.; 71.43%.

Black-burnished: weight, 20 g.; 28.57%.

Total weight: 70 g.

Weight from both layers: 1710 g.

Animal Bones

69 fragments identified (including 11 ribs and 2 skull fragments).

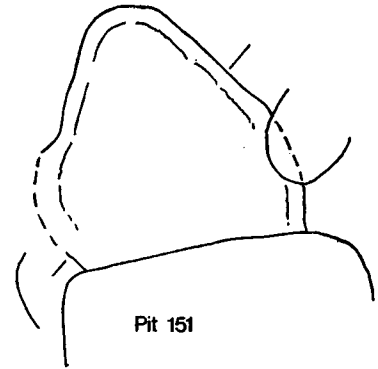
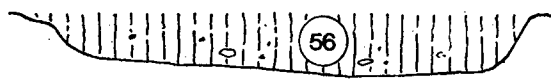
Species represented: ox, 66; pig, 18; sheep, 11; horse, 3; bird, 2.

Pit 155 (PC 70, trench 96, layer 56)

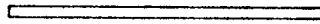
Irregular pit about 5 ft. (1.52 m.) across and up to 8 in. (0.20 m.) deep.

Filled with black soil containing occupation debris. It was cut by pit 151 and posthole (layer 62) but appears to be later than the shallow scoop (layer 57).

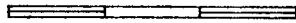
PIT 155



ONE METRE



THREE FEET

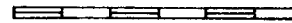


SECTIONS

TWO METRES



SIX FEET



PLANS

FIG. 67

Pottery

From layer 56:

Hand-made, fabric A: weight, 30 g.; 20.0%.*Black-burnished*: 85, weight, 70 g.; 46.67%.*Grey fabrics*: 141 (possibly the same vessel as in pit 144); weight, 50 g.; 33.33%.

Total weight: 150 g.

Pit 157 (PC 70, trench 97, layer 28)

Rectangular pit of uncertain size largely cut away by the foundation of the sixteenth-century storehouse and the Napoleonic sewer; cut to a depth of 1 ft. 9 in. (0.53 m.).

The filling was uniform consisting of black soil containing occupation debris including charcoal, pottery, tile, oyster shells, etc.

Pottery

From layer 28:

New Forest: 52.1-2; weight, 120 g.; 11.11%.*Oxford*: 18.1, 57; weight, 40 g.; 3.70%.*Hand-made, fabric A*: 123 (2); weight, 330 g.; 30.56%.*Black-burnished*: 85, 126; weight, 270 g.; 25.0%.*Grey fabrics*: 85 (2), 107, 127 (2), 140; weight, 320 g.; 29.63%.

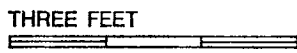
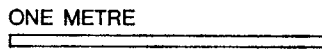
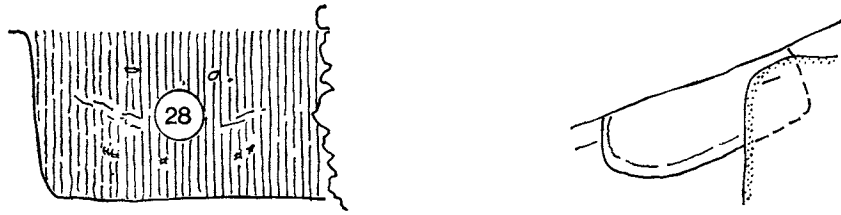
Total weight: 1080 g.

Animal Bones

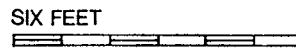
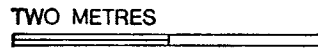
81 fragments identified (including 31 ribs and 3 skull fragments).

Species represented: ox, 68; sheep, 15; pig, 11; horse, 4; dog, 2.

PIT 157



SECTIONS



PLANS

FIG. 68

Pit 163 (PC 70, trench 98, layer 34)

Sub-rectangular pit 5 ft. by 4 ft. (1.52 × 1.22 m.) dug through the cobbles to a depth of 1 ft. 10 in. (0.56 m.).

The filling was uniform consisting of black soil containing fragments of tile and animal bones.

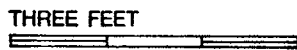
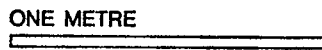
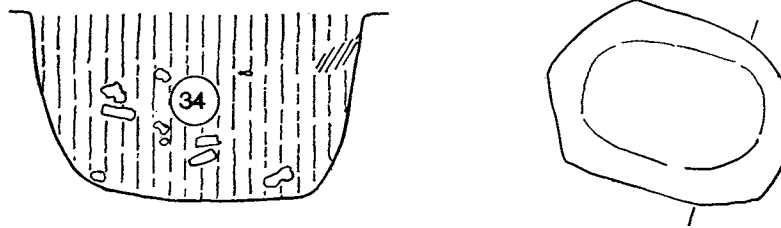
Small Finds

From layer 34:

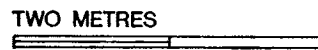
Bone pin

(1969) fig. 116, no. 98.

PIT 163



SECTIONS



PLANS

FIG. 69

Pottery

From layer 34:

New Forest: 43; weight, 150 g.; 7·94%.

Hand-made, fabric A: 107 (3), 123 (4); weight, 950 g.; 50·26%.

Black-burnished: 85, 107 (2), 126; weight, 320 g.; 16·93%.

Grey fabrics: 85, 107, 127 (4), 149·4, 172; weight, 470 g.; 24·87%.

Total weight: 1890 g.

Animal Bones

10 fragments identified — all were ribs.

Well (pit) 164 (PC 70, trench 98, layers 50–54 and 69–75)

Circular well-shaft 3 ft. 3 in. (0·99 m.) in diameter set in a rectangular well pit about 5 ft. (1·52 m.) across. The well would originally have been lined with timber, the space between the lining and the edge of the well pit being packed with clay and marl. Excavated to a depth of 12 ft. (3·66 m.) but the bottom was not revealed.

The lowest levels reached (layers 69–75) consisted of dark brown soil mixed with occupation debris and interleaved with lenses of brickearth which had eroded in from the sides. Above the top of the layer 69, at 6 ft. (1·83 m.), the filling was uniform, consisting of brown soil mixed with flints, shells and charcoal. Above this came a layer of orange clayey soil containing patches of chalk marl (layer 52): this appeared to represent a deliberate packing. On top of this was a thickness of brown soil with some occupation debris (layer 51) which was eventually capped by a layer of brown soil containing pockets of redeposited material and lumps of mortar (layer 50).

The upper levels of the filling were cut by a later pit dug against one side of the well and filled with brown soil, mortar and wads of brickearth (layer 53).

Small Finds

From layer 50:

Iron joiner's dog (1981) fig. 129, no. 230.

Glass Vessels

From layer 73:

fig. 198, no. 19.

From layer 75:

cf. fig. 198, no. 17.

Pottery

From layer 54:

New Forest: sherd of fabric 1; weight, 5 g.; 1·33%.

Oxford: 43; weight, 120 g.; 32·0%.

Misc.: 82; weight, 40 g.; 10·67%.

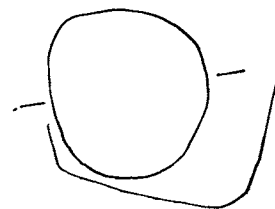
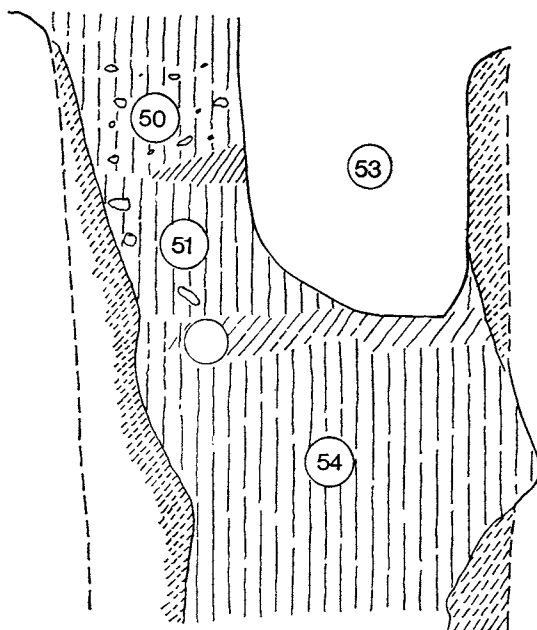
Hand-made, fabric A: 123 (2); weight, 100 g.; 26·67%.

Black-burnished: 107, 126; weight, 60 g.; 16·0%.

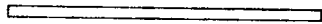
Grey fabrics: sherd with lightly scored chevron decoration; weight, 50 g.; 13·33%.

Total weight: 375 g.

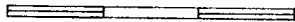
PIT 164



ONE METRE



THREE FEET



SECTIONS

TWO METRES



SIX FEET



PLANS

FIG. 70

From layer 69:

New Forest: sherds of fabric 1; weight, 5 g.; 8.33%.*Black-burnished*: 126; weight, 50 g.; 83.33%.*Grey fabrics*: weight, 5 g.; 8.33%.

Total weight, 60 g.

From layer 70:

New Forest: 43; weight, 10 g.; 1.85%.*Hand-made, fabric A*: 123; weight, 160 g.; 29.63%.*Black-burnished*: weight, 230 g.; 42.59%.*Grey fabrics*: 129, 119; weight, 140 g.; 25.93%.

Total weight: 540 g.

From layer 71:

New Forest: sherds of fabrics 1 and 2; weight, 130 g.; 9.49%.*Hand-made, fabric A*: weight, 140 g.; 10.22%.*Black-burnished*: 107; weight, 250 g.; 18.25%.*Grey fabrics*: 77.3, 117.2, 129 (2), 148 (2), 159.4-5, 172.4; weight, 850 g.; 62.04%.

Total weight: 1370 g.

From layer 72:

New Forest: sherd of fabric 1; weight, 5 g.; 2.44%.

Hand-made, fabric A: weight, 80 g.; 39.02%.

Black-burnished: 85; weight, 120 g.; 58.54%.

Total weight: 205 g.

From layer 73:

New Forest: 2/10.20, 23.1 (2), 43; weight, 130 g.; 4.92%.

Oxford: 58.5; weight, 120 g.; 4.55%.

Misc.: 9.1, 18; weight, 10 g.; 0.38%.

Hand-made, fabric A: 86, 107, 123 (2); weight, 1250 g.; 47.35%.

Black-burnished: 85 (2), 107, 126; weight, 800 g.; 30.30%.

Grey fabrics: 103.1, 127, 139, 160, 175; weight, 320 g.; 12.12%.

Fabric D: weight, 10 g.; 0.38%.

Total weight: 2640 g.

From layer 74:

New Forest: sherds of fabrics 1 and 2; weight, 5 g.; 0.41%.

Hand-made, fabric A: 123; weight, 640 g.; 53.11%.

Black-burnished: 126 (3); weight, 350 g.; 29.05%.

Grey fabrics: 129, 139; weight, 210 g.; 17.43%.

Total weight: 1205 g.

From layer 75:

Hand-made, fabric A: 86, 107; weight, 400 g.; 68.97%.

Grey fabrics: 129, 142, 177-9.3; weight, 180 g.; 31.03%.

Total weight: 580 g.

Weight from all the layers: 6975 g.

Animal Bones

473 fragments identified (including 104 ribs and 40 skull fragments).

Species represented: ox, 75; sheep, 13; pig, 7; red deer, 2; bird, 1; dog, 1; cat, 1.

The pig bones included part of a new-born pig. The dog bones include a completed skull.

Human Bones

Infant burial (4 bones).

Pit 166 (PC 70, trench 97, layer 58)

Oval shaped pit, 5 ft. by 3 ft. 6 in. (1.52 × 1.07 m.), dug to a depth of 2 ft. (0.61 m.).

The filling consisted of dark brown soil containing redeposited brickearth, oyster shells, tile fragments and charcoal. The northern side of the pit was discoloured to a greenish colour.

Cut by gullies 19 and 21.

Pottery

From layer 58:

New Forest: sherds of fabrics 1 and 2; weight, 50 g.; 20.0%.

Hand-made, fabric A: 86, 123; weight, 70 g.; 28.0%.

Black-burnished: 107; weight, 50 g.; 20.0%.

Grey fabrics: 107, 127; weight, 80 g.; 32.0%.

Total weight: 250 g.

PIT 166

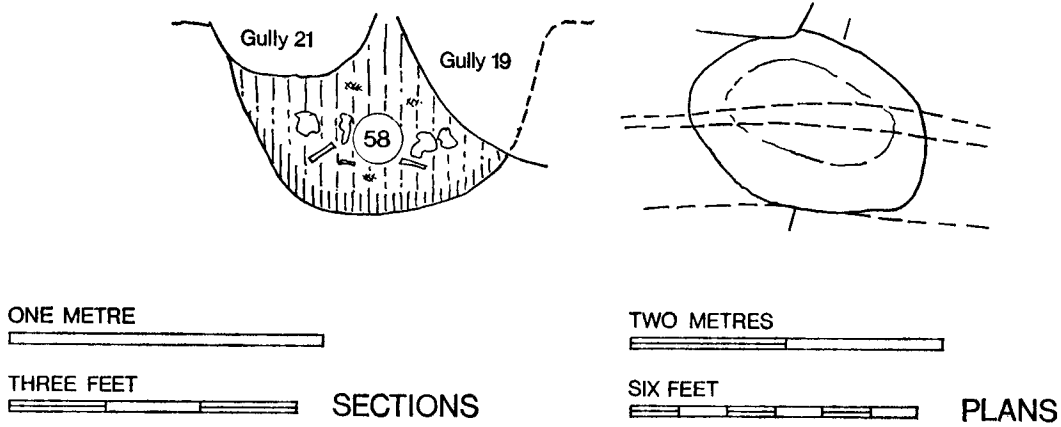


FIG. 71

Pit 167A (PC 70, trench 97, layer 67)

Sub-rectangular pit 3 ft. 6 in. (1.07 m.) wide and 2 ft. (0.61 m.) deep. Partially cut away by pit 167B and by the Napoleonic sewer.

The filling consisted of black soil mixed with redeposited brickearth, charcoal, oysters and fragments of tile.

PIT 167a

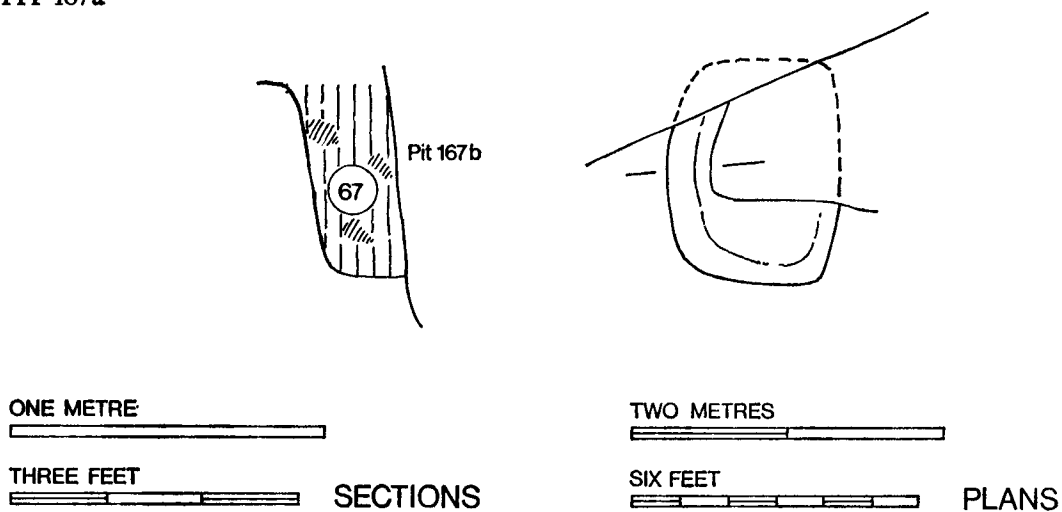


FIG. 72

Pit 168 (PC 70, trench 99, layer 40)

Irregular pit 7 ft. (2.13 m.) across by 1 ft. 2 in. (0.36 m.) deep.

The filling consisted of brown soil mixed with wads of redeposited natural clay and flints together with some occupation debris.

Cut by pit 169.

PIT 168

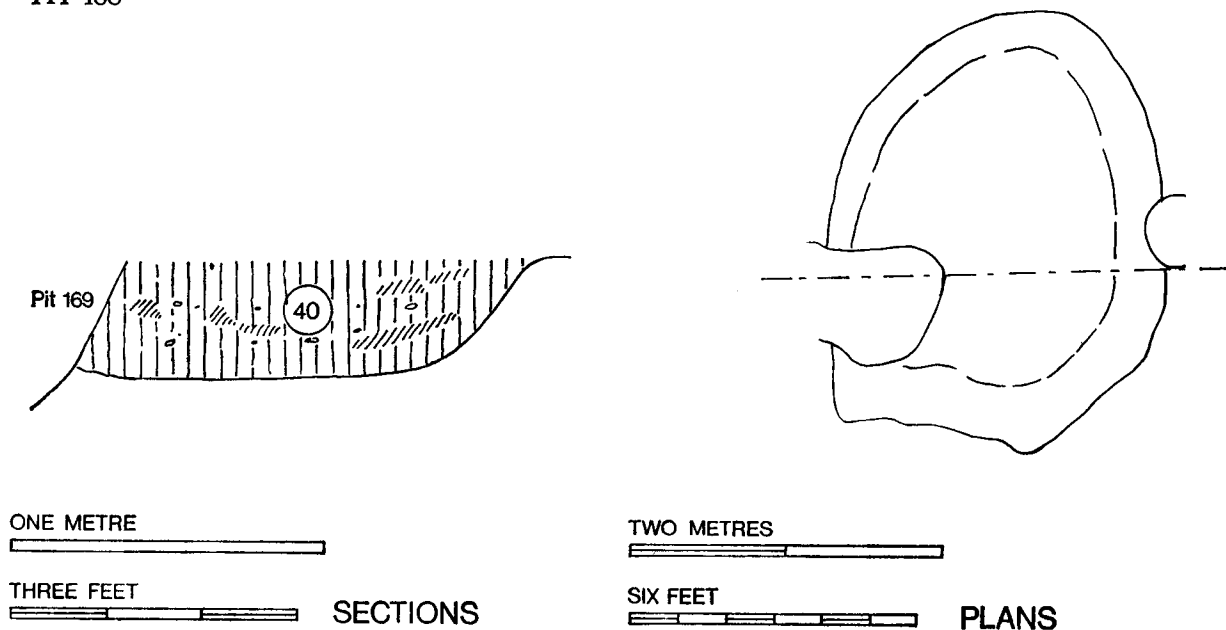


FIG. 73

Pottery

From layer 40:

New Forest: 2/10. 15, 6, 43; weight, 100 g.; 20.41%.

Oxford: 35.4, 35.12; weight, 50 g.; 10.20%.

Misc.: 108.

Hand-made, fabric A: 86, 123; weight, 160 g.; 32.65%.

Black-burnished: 85, 107, 126; weight, 80 g.; 16.33%.

Grey fabrics: 107, 129 (2); weight, 100 g.; 20.42%.

Total weight: 490 g.

Animal Bones

12 fragments identified (including 2 ribs).

Species represented: ox, sheep, pig, bird, red deer.

Pit 171 (PC 70, trench 99, layer 43)

Irregular pit 4 ft. (1.22 m.) across and 8 in. (0.20 m.) deep.

The filling consisted of black soil containing flints.

PIT 171

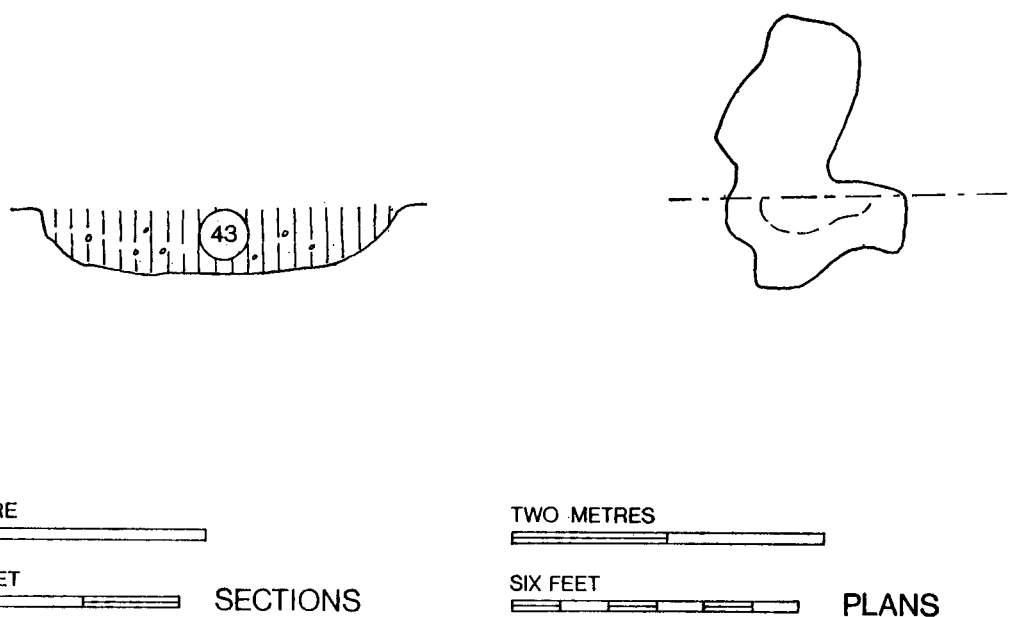


FIG. 74

Pottery

From layer 43:

New Forest: 29; weight, 10 g.; 4.55%.*Hand-made, fabric A*: 123; weight, 140 g.; 63.64%.*Black-burnished*: weight, 70 g.; 31.82%.

Total weight: 220 g.

Animal Bones

14 fragments identified (including 3 ribs).

Species represented: ox, sheep, pig.

Pit 178 (PC 70, trench 99, layer 76)

Rectangular pit 6 ft. (1.83 m.) long, partially cut away by the footings of the sixteenth-century storehouse; cut to a depth of 3 ft. 10 in. (1.17 m.).

The filling was uniform consisting of brown soil mixed with charcoal, flints, tile fragments, pottery, bone and shells. The natural clay around the edges of the pit had been stained green.

Small Finds

From layer 76:

- | | |
|-----------------------|---|
| Bronze coin | (1972) Constantine I (A.D. 310-13). |
| Shale bracelet | (1962) rectangular cross-section 8 by 5 mm., 8.0 cm. in external diameter; not illustrated. |
| Shale bracelet | (1968) rectangular cross-section 6 by 5 mm., 7.6 cm. in external diameter; not illustrated. |
| Bronze strip bracelet | (1970) decorated, fig. 111, no. 31. |

PIT 178

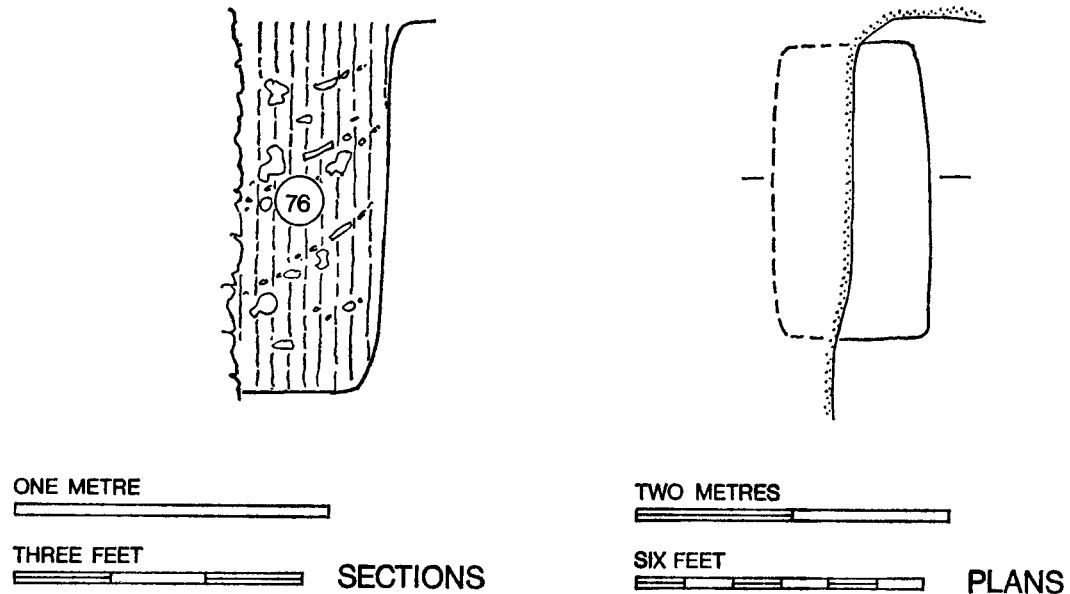


FIG. 75

Pottery

From layer 76:

Argonne: Chenet 313 (possibly the same vessel as in pit 236).

New Forest: 19.1-3, 43, 52.3; weight, 60 g.; 6.25%.

Oxford: sherds of ?flagon; weight, 30 g.; 3.13%.

Hand-made, fabric A: 123 (2); weight, 460 g.; 47.92%.

Black-burnished: 85, 107, 126; weight, 260 g.; 27.08%.

Grey fabrics; 141.2, 145, 148; weight, 150 g.; 15.63%.

Total weight: 960 g.

Pit 179 (PC 70, trench 99, layers 77, 86 and 87)

Oval shaped pit 4 ft. by 3 ft. 3 in. (1.22 × 0.99 m.), cut to a depth of 1 ft. 8 in. (0.51 m.).

The lowest filling (layer 87) consisted of typical greenish-grey cesspit filling. It was sealed by a layer (layer 86) of redeposited brickearth above which was a deposit of occupation debris mixed with brown soil (layer 77).

Pottery

From layer 77:

Hand-made fabric A: 123 (2); weight, 70 g.

Total weight: 70 g.

PIT 179

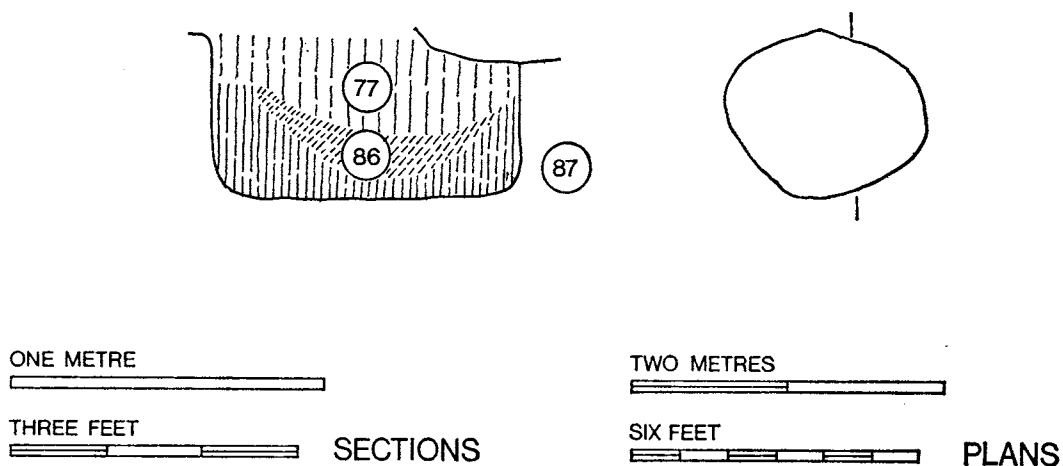


FIG. 76

Pit 181 (PC 70, trench 99, layers 79 and 82)

Oval shaped pit 4 ft. (1.22 m.) wide and 1 ft. 9 in. (0.53 m.) deep.

The lowest filling (layer 82) consisted of a layer of brown soil containing charcoal and quantities of pottery. Above (layer 79) the soil was blacker and was mixed with charcoal, pottery and shells.

Pottery

From layer 79:

New Forest: 43; weight, 20 g.; 4.40%.

Oxford: 40; weight, 25 g.; 5.49%.

Hand-made, fabric A: weight, 170 g.; 37.36%.

PIT 181

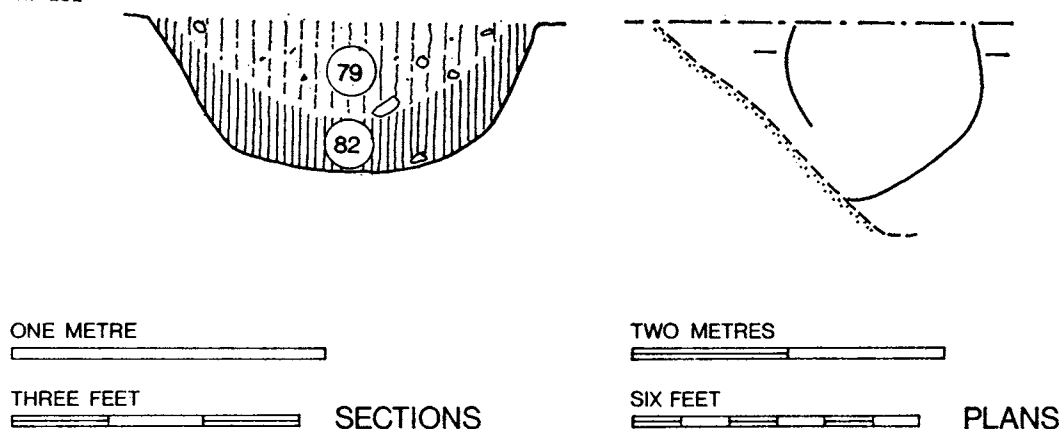


FIG. 77

Black-burnished: weight, 70 g.; 15.38%.

Grey fabrics: 137.1; weight, 170 g.; 37.36%.

Total weight: 455 g.

Pit 182 (PC 70, trench 98, layer 60)

Rectangular pit 6 ft. by 4 ft. 6 in. (1.83 × 1.37 m.), cut to a depth of 2 ft. 1 in. (0.63 m.).

The filling was uniform, consisting of brown-black soil mixed with flints, oysters, and tiles representing occupation debris.

PIT 182

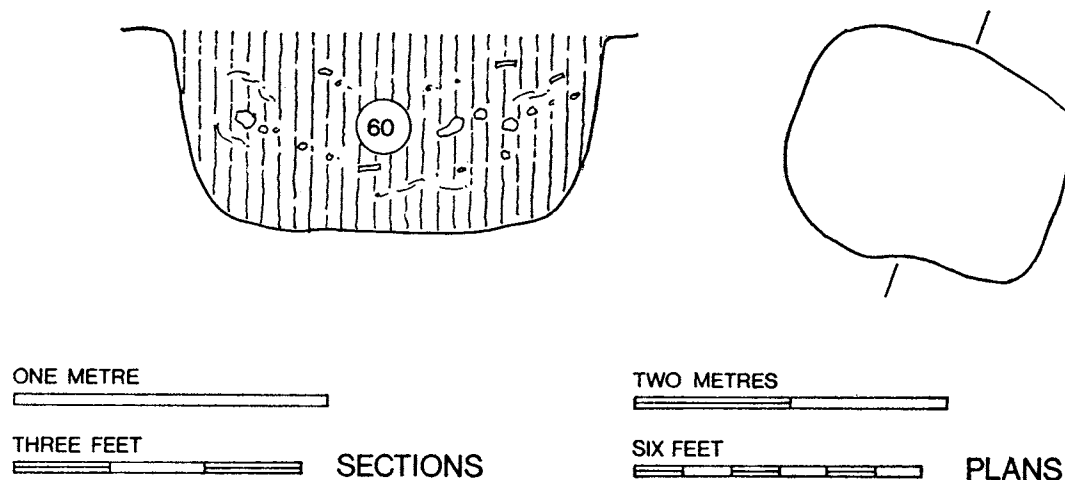


FIG. 78

Small Finds

From layer 60:

Bronze bracelet (1930) twisted rod type, fig. 111, no. 27.

Pottery

From layer 60:

New Forest: 2/10.20, 13.6, 22.1-5, 88.8; weight, 200 g.; 5.42%.

Oxford: 26, 35.1, 40, 42, 43, 58; weight, 170 g.; 4.61%.

Pevensy: 37.1; weight, 60 g.; 1.63%.

Hand-made, fabric A: 123 (3); weight, 360 g.; 9.76%.

Black-burnished: 85, 107 (2), 126 (2), 175.5; weight, 190 g.; 5.15%.

Grey fabrics: 85, 129 (2), 131.1, 149.3 (2), 153.8; weight, 1440 g.; 39.02%.

Fabric D: 137.4-6; weight, 320 g.; 8.67%.

Misc.: 179; weight, 950 g.; 25.75%.

Total weight: 3690 g.

Pit 183 (PC 70, trench 98, layer 66)

Rectangular pit 7 ft. 6 in. by 5 ft. (2.29 × 1.52 m.) largely cut away by pit 162, except for the few inches of filling against its west and south sides; dug to a depth of 1 ft. 5 in. (0.43 m.). The pit was also cut by a posthole (layer 67). The relationship between pits 183 and 184 was not defined.

The surviving part of the filling consisted of occupation debris mixed with brown soil.

PIT 183

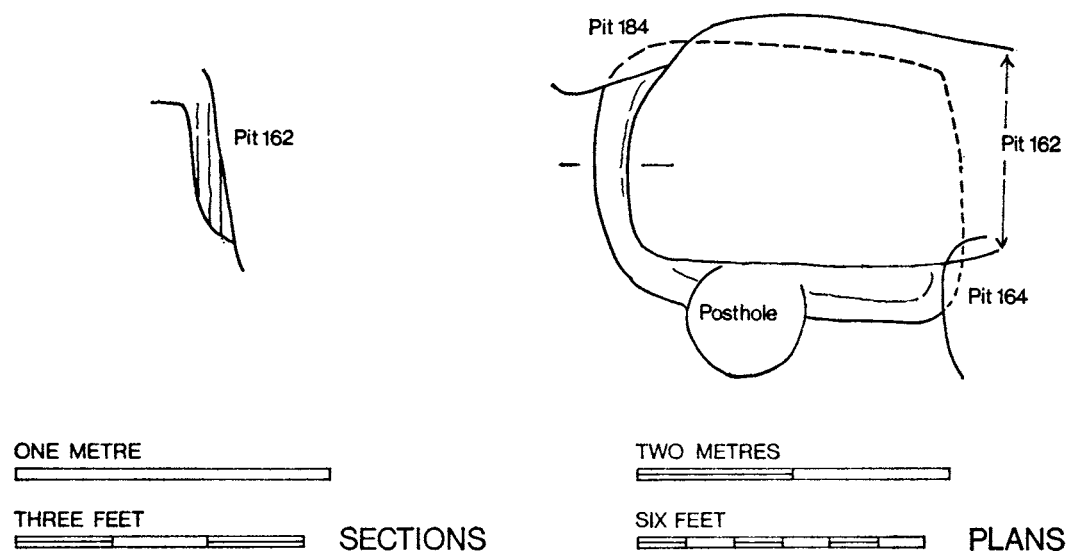


FIG. 79

Pit 184 (PC 70, trench 99, layers 80 and 81)

Oval shaped pit 6 ft. by 4 ft. (1.83 × 1.22 m.) cut to a depth of 1 ft. 6 in. (0.46 m.).

The lowest layer (layer 81) was typical brown cesspit filling containing bones and shells. Above (layer 80) was a deposit of occupation rubbish, shells and tiles mixed with black soil.

The pit was cut by pit 162; its relationship to pit 183 was not defined.

Pottery

From layer 80:

New Forest: 22, 1-5, 43.9; weight, 50 g.; 5.95%.

Hand-made, fabric A: 86, 107; weight, 270 g.; 32.14%.

Black-burnished: 107; weight, 90 g.; 10.71%.

Grey fabrics: 85, 130, 141; weight, 430 g.; 51.19%.

Total weight: 840 g.

From layer 81:

Hand-made, fabric A: weight, 20 g.; 7.41%.

Grey fabrics: sherds of storage jar; weight, 250 g.; 92.59%.

Total weight: 270 g.

Weight from both layers; 1110 g.

PIT 184

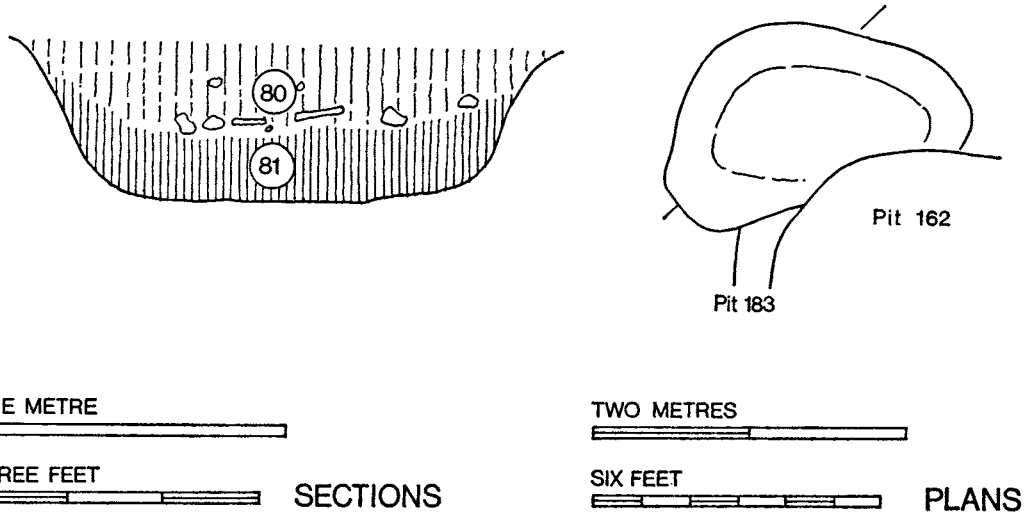


FIG. 80

Pit 185 (PC 70, trench 99, layer 84)

Rectangular pit 6 ft. by 3 ft. 6 in. (1.83×1.07 m.), dug to a depth of 3 ft. 8 in. (1.12 m.). It had been largely removed by the footings of the sixteenth-century storehouse.

The filling consisted of dark brown soil containing flints, and quantities of oysters and tile fragments.

PIT 185

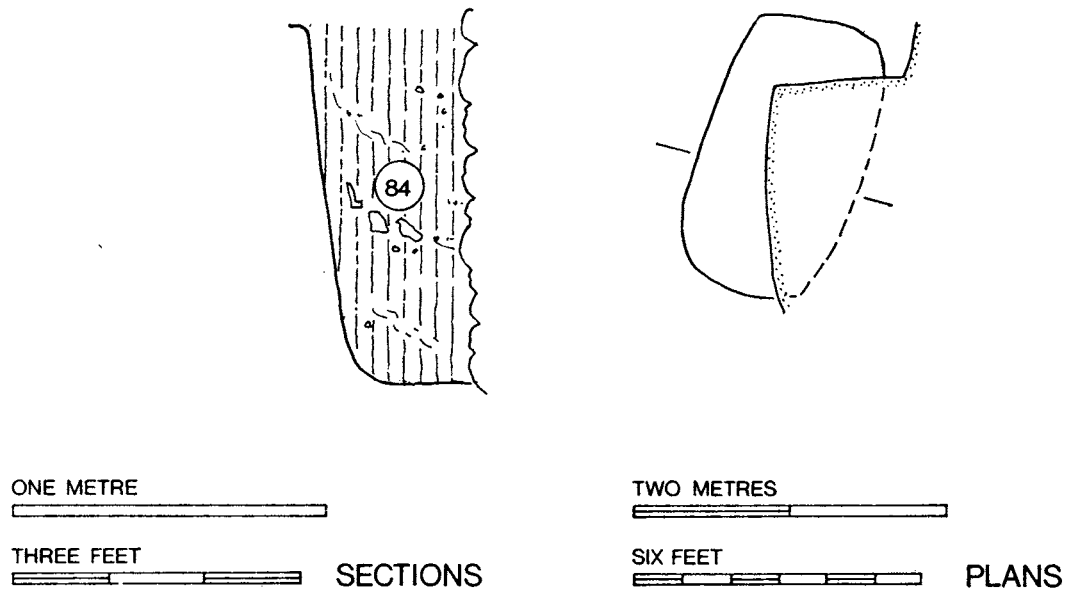


FIG. 81

Small Finds

From layer 84:

Shale bowl

(1985) fragment, fig. 122, no. 147.

Pottery

From layer 84:

Argonne: Chenet 326.*New Forest*: 2/10.5, 66; weight, 100 g.; 6.45%.*Hand-made, fabric A*: 86, 107, 123 (5); weight, 850 g.; 54.84%.*Black-burnished*: 85, 107, 126 (2); weight, 350 g.; 22.58%.*Grey fabrics*: 85, 127, 129; weight, 250 g.; 16.13%.

Total weight: 1550 g.

Pit 186 (PC 70, trench 99, layer 85)

Rectangular pit 5 ft. 6 in. by 4 ft. 9 in. (1.68 × 1.45 m.), cut to a depth of 1 ft. 8 in. (0.51 m.). In the bottom of the pit were found the holes for four stakes each 5 in. (0.13 m.) in diameter and driven into the clay to a depth of 9 in. (0.23 m.). It seems probable that the stakes supported a seat above the cesspit.

The filling was uniform, consisting of black soil mixed with charcoal, and roof tile fragments.

PIT 186

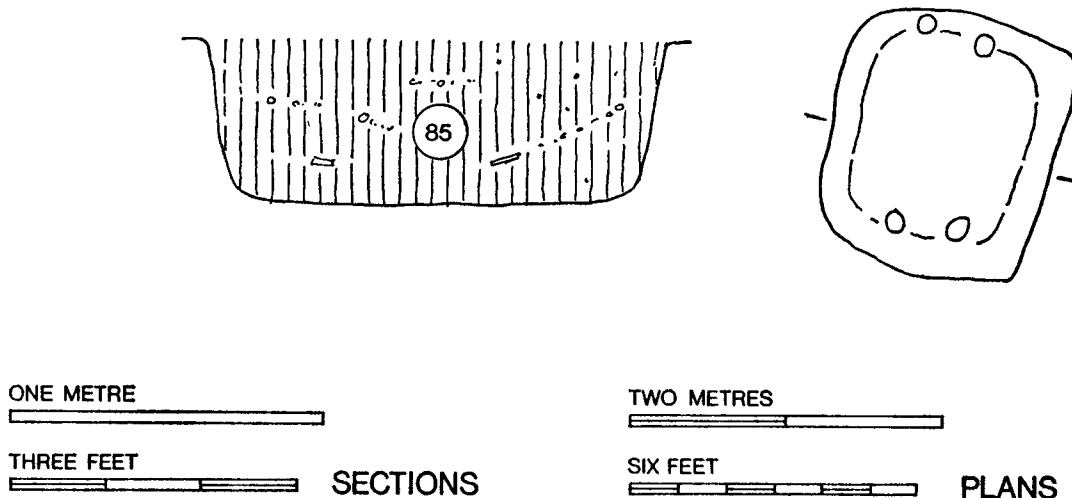


FIG. 82

Pottery

From layer 85:

New Forest: 22.1-5; weight, 90 g.; 8.53%.*Oxford*: sherds of fabric 4; weight, 15 g.; 1.42%.*Misc.*: 24.3.

Hand-made, fabric A: 123 (2); weight, 350 g.; 33·18%.

Black-burnished: 85 (2), 107, 126; weight, 250 g.; 23·70%.

Grey fabrics: 85, 107, 127; weight, 350 g.; 33·18%.

Total weight: 1055 g.

Pit 187 (PC 70, trench 99, layers 83, 98 and 99; PC 72, trench 109, layers 16, 17 and 67)

Pit of unknown size but exceeding 15 ft. (4·57 m.) across.

The lowest layer (99 layer 99 and 109 layer 67) consisted of a light brown, slightly clayey soil containing occasional large flints, together with bones, tiles and oyster shells. It was sealed by a discontinuous lens of redeposited natural clay and marl (99 layer 98 and 109 layer 17), above which was a thick deposit of occupation debris (99 layer 83 and 109 layer 16), incorporating charcoal, pockets of marl, oyster shells, bone, pottery and fragments of roof tile. Fragments of daub were recovered from 109 layer 16.

Small Finds

From trench 99, layer 83:

- | | | |
|-----------------|--------|---------------------------------------|
| Bronze coin | (1982) | Carausius (A.D. 286–93) |
| Bronze coin | (1983) | Constantine I (A.D. 319–22). |
| Bronze bracelet | (1984) | <i>cf.</i> nos. 40–2 not illustrated. |

From trench 99, layer 99:

- | | | |
|--------------|--------|----------------------------|
| Bronze sheet | (1991) | fragment; not illustrated. |
|--------------|--------|----------------------------|

Pottery

From trench 99, layer 83:

New Forest: 22, 1–5, 49, 55. *II*; weight, 170 g.; 8·06%.

Oxford: 58; weight, 60 g.; 2·84%.

Hand-made, fabric A: 86, 123; weight, 470 g.; 22·27%.

Black-burnished: 85, 107 (3), 126; weight, 580 g.; 27·49%.

Grey fabrics: 85, 106, 127 (2); weight, 310 g.; 14·69%.

Misc.: 179; weight, 520 g.; 24·64%.

Total weight: 2110 g.

From trench 99, layer 98:

Hand-made, fabric A: weight, 20 g.; 14·29%.

Grey fabrics: 142, 148; weight, 120 g.; 85·71%.

Total weight: 140 g.

From trench 99, layer 99:

Hand-made, fabric A: 86; weight, 30 g.; 13·04%.

Black-burnished: 85, 126; weight, 80 g.; 34·78%.

Grey fabrics: 127, 129; weight, 120 g.; 52·17%.

Total weight: 230 g.

From trench 109, layer 16:

Oxford: 42; weight, 5 g.

Hand-made, fabric A: weight, 5 g.

Total weight: 10 g.

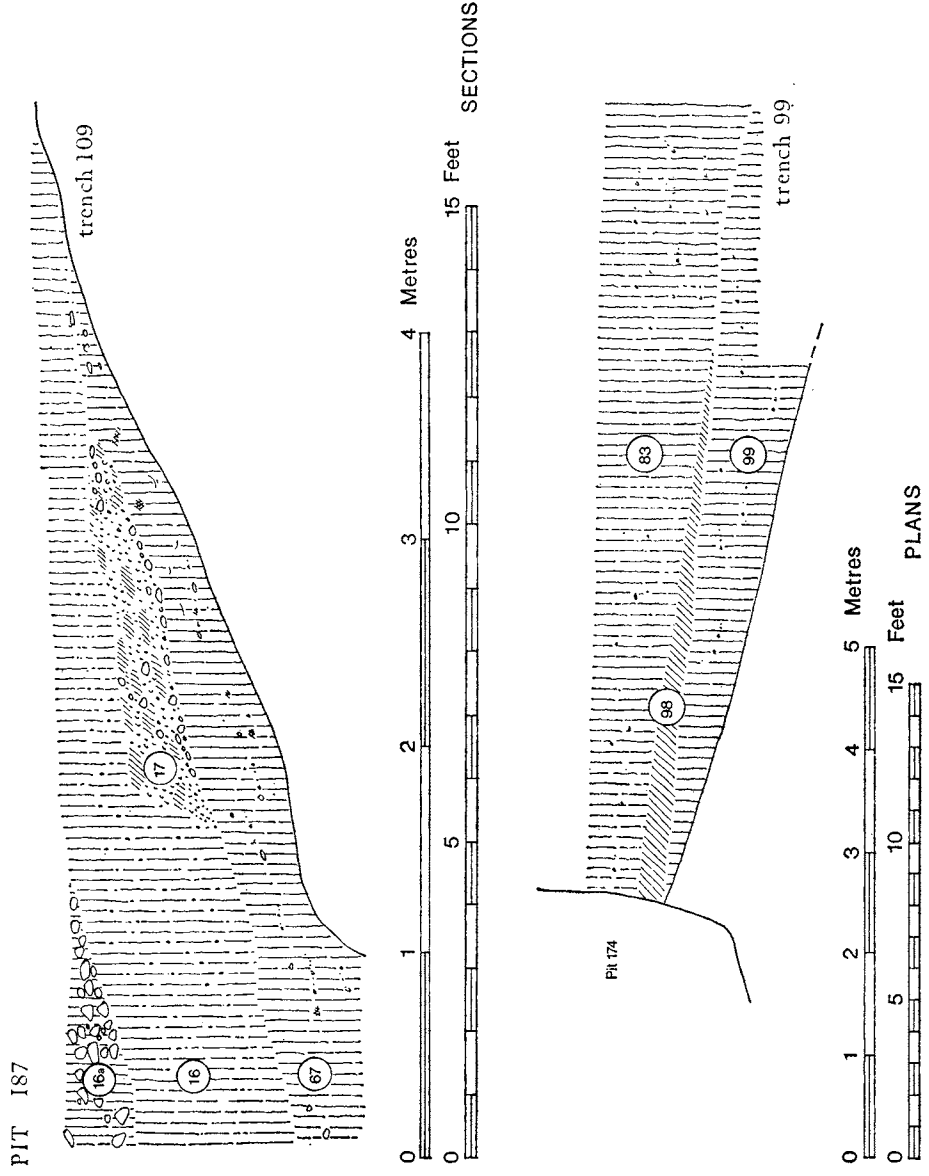
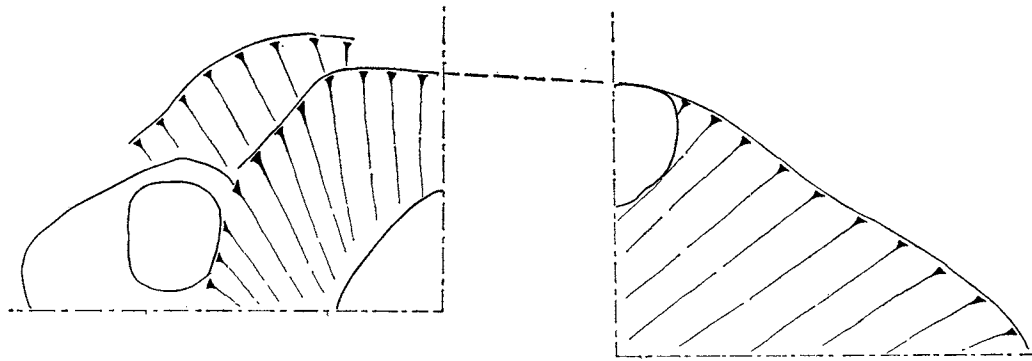


Fig. 83

From trench 109, layer 17:

New Forest: 43; weight, 50 g.; 12.35%.

Oxford: 63.4; weight, 25 g.; 6.17%.

Hand-made, fabric A: 123; weight, 170 g.; 41.98%.

Black-burnished: weight, 70 g.; 17.28%.

Grey fabrics: 107, 141, 148.2, 157; weight, 90 g.; 22.22%.

Total weight: 405 g.

From trench 109, layer 67:

New Forest; 19.1-3, 22.1-5, 43, 55.9; weight, 30 g.; 1.81%.

Oxford: 14, 15.1, 17.2; weight, 30 g.; 1.81%.

Misc.: 88.9; weight, 40 g.; 2.41%.

Hand-made, fabric A: 86 (2), 123; weight, 630 g.; 37.95%.

Black-burnished: 85, 107, 117.1; weight, 250 g.; 15.06%.

Grey fabrics: 85, 96, 107, 127 (2), 140 (2), 142; weight, 680 g.; 40.96%.

Total weight: 1660 g.

Weight from all the layers: 4555 g.

Animal Bones

167 fragments identified (including 60 ribs and 3 skull fragments).

Species represented: ox, 59, sheep, 23; pig, 15; cat, 1; bird, 1; horse, 1.

Pit 195 (PC 71, trench 102, layers 79 and 80)

Rectangular pit 4 ft. by 2 ft. 3 in. (1.22 × 0.68 m.), cut to a maximum depth of 2 ft. 3 in. (0.69 m.) below the top of the adjacent clay make-up.

The lowest level of filling (layer 80) was of black soil with quantities of charcoal, oyster shells, bones and tiles. Above (layer 79), the soil was a lighter colour mixed with wads of clay, lumps of plaster, some of which were painted, and a mass of broken tiles.

The pit was cut through layer 66.

PIT 195

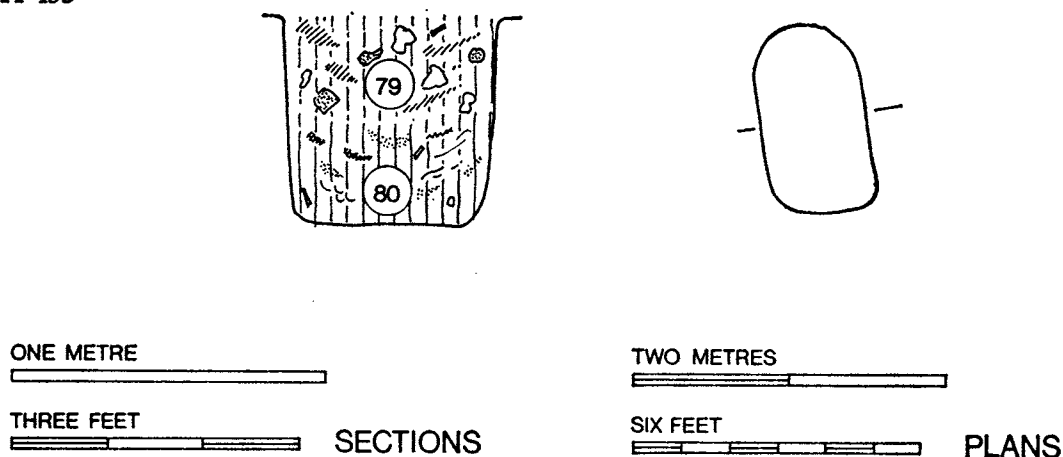


FIG. 84

Small Finds

From layer 79:

- Bronze binding (2137) U-shaped binding 3 mm. wide in much corroded fragments; not illustrated.
- Bone pin (2136) fig. 116, no. 94.

Pottery

From layer 79:

- New Forest*: 19.1-3, 32, 43 (2), 66; weight, 300 g.; 14.08%.
- Oxford*: 14, 18.10, 43; weight, 170 g.; 7.98%.
- Misc.*: 31.2, probably Oxford, but rather orange fabric; weight, 10 g.; 0.47%.
- Hand-made fabric A*: 123 (2); weight, 520 g.; 24.41%.
- Black-burnished*: 85, 126; weight, 570 g.; 26.76%.
- Grey fabrics*: 85 (2), 98, 107 (2); weight, 540 g.; 25.35%.
- Fabric D*: weight, 20 g.; 0.94%.
- Total weight: 2130 g.

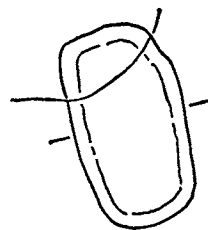
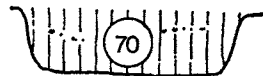
From layer 80:

- New Forest*: sherd of fabric 3; weight, 5 g.; 2.86%.
- Hand-made, fabric A*: 107; weight, 170 g.; 97.14%.
- Total weight: 175 g.
- Weight from both layers: 2305 g.

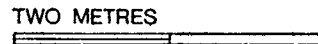
Pit 200 (PC 71, trench 101, layer 70)

Rectangular pit 4 ft. by 2 ft. 3 in. (1.22 × 0.69 m.) and 8 in. (0.20 m.) deep.
 Filled with black soil containing some fragments of tile and bones.

PIT 200



SECTIONS



PLANS

FIG. 85

Pottery

From layer 70:

New Forest: sherds of fabric 2; weight, 20 g.; 22·22%.

Hand-made, fabric A: 123; weight, 20 g.; 22·22%.

Grey fabrics: 107; weight, 50 g.; 55·56%.

Total weight: 90 g.

Animal Bones

2 fragments identified.

Species represented: ox.

Pit 201 (PC 71, trench 100, layers 83 and 84)

Square pit 4 ft. 6 in. (1·37 m.) across and 3 ft. 6 in. (1·07 m.) deep.

The lowest filling (layer 84) was a complex deposit of grey clayey soil becoming darker towards the top and mixed with ash and large flints. Above this (layer 83) was a series of tips of grey soil, oyster shells, bones, ash and flints.

The pit was cut by pit 200.

Small Finds

From layer 84:

Bone pin (2202) fig. 116, no. 93.

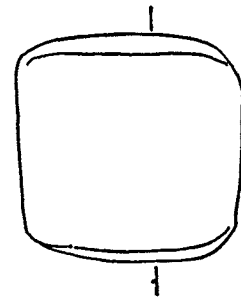
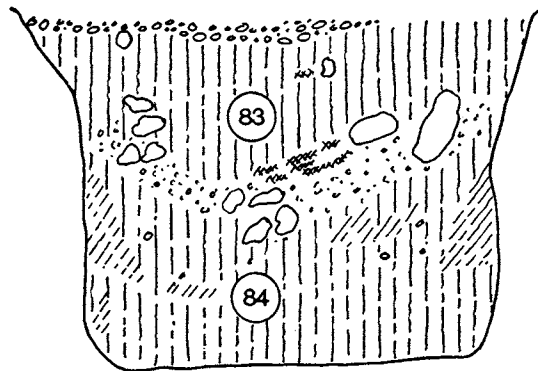
Pottery

From layer 83:

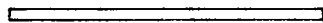
New Forest: 19.1-3; weight, 50 g.; 8·93%.

Oxford: weight, 50 g.; 8·93%.

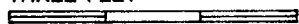
PIT 201



ONE METRE

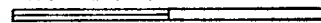


THREE FEET



SECTIONS

TWO METRES



SIX FEET



PLANS

FIG. 86

Hand-made, fabric A: 86, 123; weight, 150 g.; 26.79%.

Black-burnished: 85, 126; weight, 50 g.; 8.93%.

Grey fabrics: 107, 127, 136.1; weight, 260 g.

Total weight: 560 g.

From layer 84:

New Forest: 19.1-3; weight, 20 g.; 5.41%.

Oxford: sherds of fabric 4; weight, 50 g.; 13.51%.

Hand-made, fabric A: 86, 123 (2); weight, 100 g.; 27.03%.

Black-burnished: 85 (2), 126 (2); weight, 140 g.; 37.84%.

Grey fabrics; 109.9, 107; weight, 60 g.; 16.22%.

Total weight: 370 g.

Weight from both layers: 930 g.

Animal Bones

44 fragments identified (including 8 ribs and 2 skull fragments).

Species represented: ox, pig, red deer.

Pit 205 (PC 71, trench 101, layer 99)

Rectangular pit 4 ft. by 3 ft. (1.22 × 0.91 m.), cut to a depth of 8 in. (0.20 m.).

The filling consisted of grey soil with flecks of charcoal, bone and tile.

PIT 205

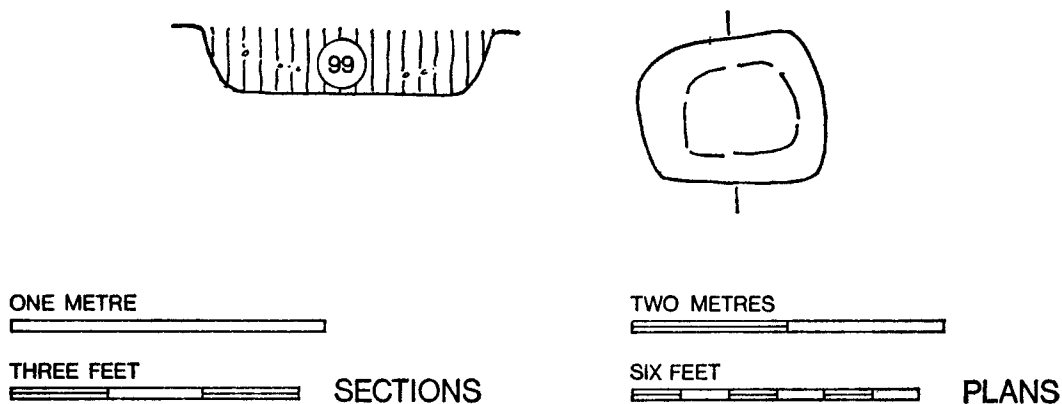


FIG. 87

Pottery

From layer 99:

Black-burnished: 107; weight, 60 g.

Total weight: 60 g.

Animal Bones

15 fragments identified (including 10 ribs).

Species represented: ox, sheep, pig, bird.

Well (pit) 206 (PC 71, trench 102, layers 85, 86, 87 and 88)

Well shaft oval in plan, 5 ft. 6 in. by 4 ft. (1.7 by 1.2 m.) across. The shaft had originally been lined with timber to revet the packing of clay which filled the space between the well pit and the open shaft. The packing was not excavated. The filling of the shaft was excavated for a depth of 10 ft. (3.05 m.) from the top of the clay bank through which the well had been cut: thereafter excavation was abandoned.

PIT 206

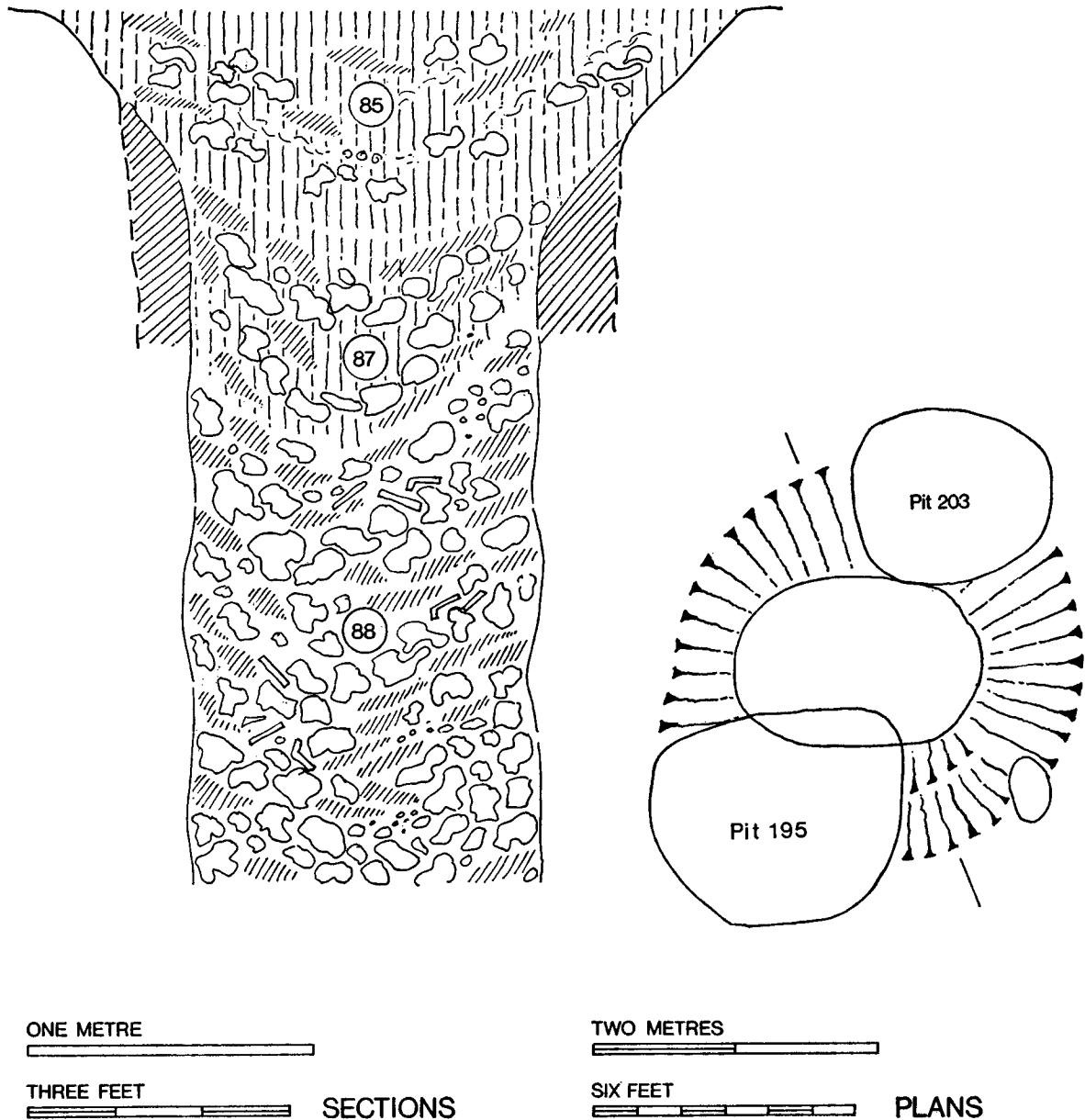


FIG. 88

The lowest level (layer 88) from 10 to 5 ft. (3·1–1·5 m.) consisted of a deliberate fill of tips of clay and gravel mixed with large fragments of brick and tile and bone refuse. Above, from 5 to 2 ft. (1·5–0·6 m.), was a similar deposit (layer 87) but with more soil and fewer flints. The uppermost 2 ft. (0·6 m.) were filled with clayey brown soil (layer 85) containing charcoal and very large numbers of flints together with oyster and winkle shells and fragments of brick and tile. It is evident, therefore, that the well had been deliberately and rapidly filled largely with clay and flints.

The upper part of the shaft had been cut into by two Saxon pits 203 and 195.

Small Finds

From layer 85:

Shale bracelet (2228) D-shaped section, 0·9 mm. wide, 8·4 cm. in external diameter; not illustrated.

From layer 88:

Antler (2251) tine sawn and pointed; pl. XXXIIIa.

Pottery

From layer 85:

New Forest: 29, and sherds of fabric 1; weight, 150 g.; 13·27%.

Hand-made, fabric A: 86 (2), 123 (3); weight, 280 g.; 24·78%.

Black-burnished: 85 (2), 117, 126 (2); weight, 460 g.; 40·72%.

Grey fabrics: 103·1, 107, 129, 140, 177·2; weight, 210 g.; 18·58%.

Fabric D: 137·4–6; weight, 30 g.; 2·65%.

Total weight: 1130 g.

From layer 86:

Argonne: Chenet 326; weight, 50 g.; 13·51%.

New Forest: sherds of fabrics 1 and 2; weight, 50 g.; 13·51%.

Hand-made, fabric A: 123 (2); weight, 80 g.; 21·62%.

Black-burnished: 85, 107; weight, 120 g.; 32·43%.

Grey fabrics: 85; weight, 70 g.; 18·92%.

Total weight: 370 g.

From layer 87:

New Forest: 43, 58; weight, 150 g.; 21·28%.

Oxford: 31; weight, 25 g.; 3·55%.

Hand-made, fabric A: 107, 123 (2); weight, 150 g.; 21·28%.

Black-burnished: 85, 126; weight, 200 g.; 28·37%.

Grey fabrics: 77, 107, 109·5; weight, 180 g.; 25·53%.

Total weight: 705 g.

From layer 88:

Hand-made, fabric A: 123; weight, 130 g.

Weight from all the layers: 1335 g.

Animal Bones

143 fragments identified (including 28 ribs and 2 skull fragments).

Species represented: ox, 58; sheep, 15; pig, 13; dog, 12; horse, 1; red deer, 1.

The pig bones include one fairly complete young animal.

Pit 209 (PC 71, trench 103, layer 66)

Rectangular pit 4 ft. 6 in. by 2 ft. 3 in. (1.37 × 0.69 m.), dug to a depth of 6 in. (15 cm.) below the top of the clay bank. The pit was cut through the general layers 64 and 65.

The filling was of dark brown soil containing wads of clay and occupation rubbish.

PIT 209

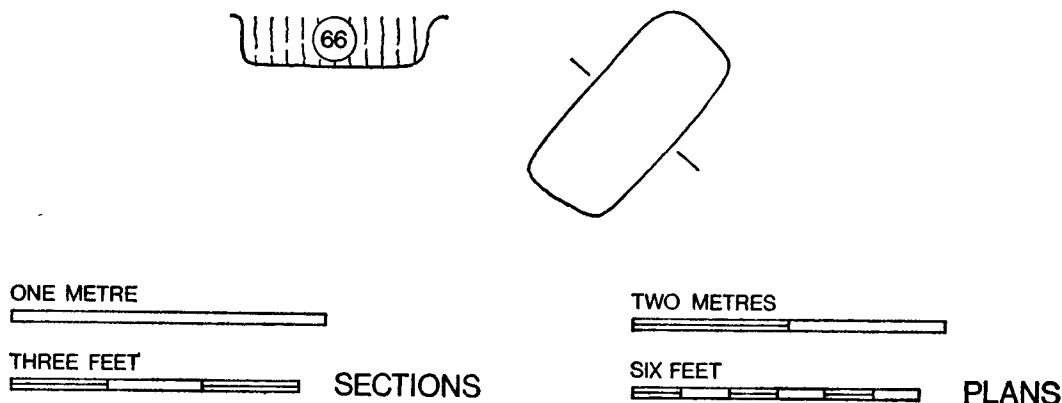


FIG. 89

Pottery

From layer 66:

Hand-made, fabric A: 123; weight, 220 g.; 47.83%.

Black-burnished: 85; weight, 90 g.; 19.57%.

Grey fabrics: 76.I, 107, 134, 175; weight, 150 g.; 32.61%.

Total weight: 460 g.

Animal Bones

18 fragments identified (including 2 ribs and 1 skull fragment).

Species represented: ox, sheep, bird, pig.

Pit 210 (PC 71, trench 100, layer 67)

Rectangular pit, more than 5 ft. (1.52 m.) long, largely cut away by the footings of the sixteenth-century building. The pit was excavated to a depth of 1 ft. 10 in. (0.56 m.) but was originally deeper.

The filling was of black occupation soil containing shells and bone.

Animal Bones

22 fragments identified (including 4 ribs and 3 skull fragments).

Species represented: sheep, ox and horse.

Pit 221 (PC 72, trench 108, layer 91)

Roughly circular pit 2 ft. 9 in. (0.84 m.) in diameter, dug to a depth of 1 ft. 3 in. (0.38 m.).

The filling was of large flints packed together with wads of clay and some occupation debris.

PIT 210

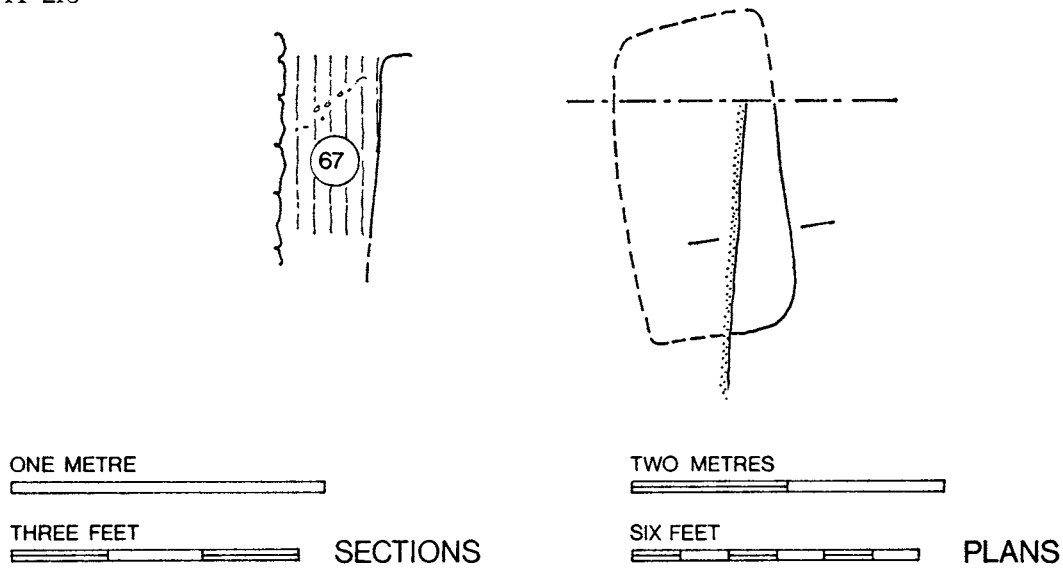


FIG. 90

PIT 221

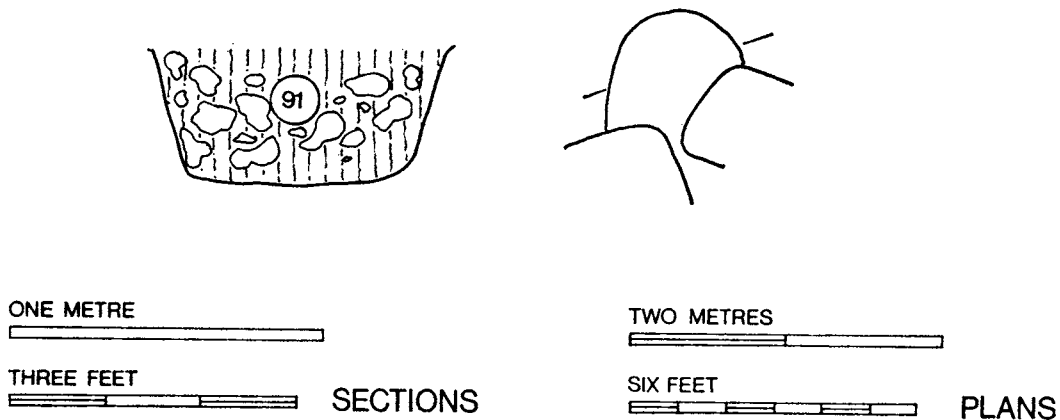


FIG. 91

The pit was cut into by a Saxon posthole, the late Saxon pit 214, and was truncated by the Saxon *Grubenhaus*.

Pit 222 (PC 72, trench 108, layers 183, 193)

Rectangular pit 4 ft. 3 in. by 5 ft. 2 in. (1.30 × 1.57 m.), dug to a depth of 1 ft. 7 in. (0.48 m.), with sloping sides.

The lower layer (193) was typical cesspit fill containing some fragments of charcoal, oyster shells and occasional pieces of tile. Above this was a uniform packing of wads of brickearth (layer 183), mixed with some occupation material.

PIT 222

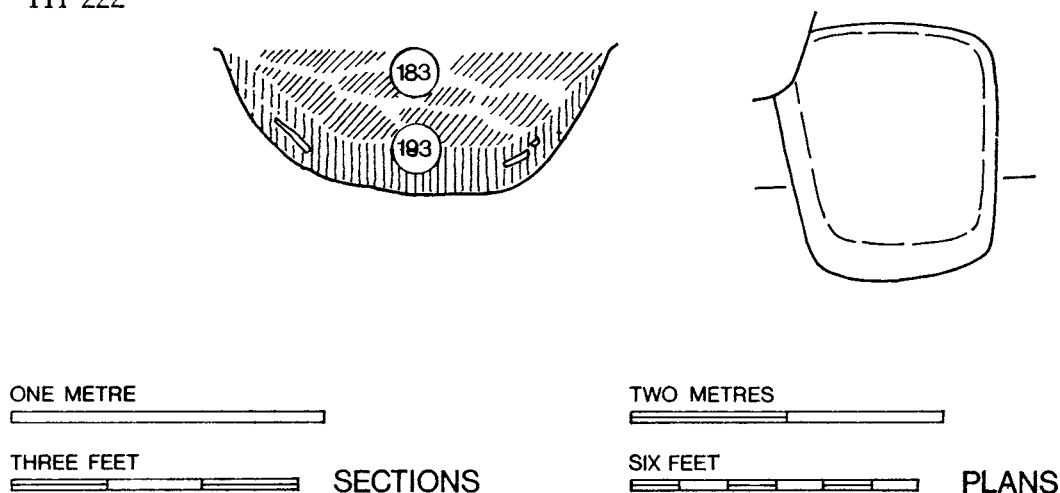


FIG. 92

The pit was cut through the lower clay bank and is contemporary with the lower occupation. It was also cut through the edge of Roman pit 230 and was cut by late Saxon pit 219.

Small Finds

From layer 183:

- | | | |
|-----------------|--------|---|
| Bronze coin | (2538) | Licinius I (A.D. 310-17). |
| Bronze bracelet | (2537) | fragment, three-strand type; not illustrated. |
| Bronze 'chain' | (2540) | two pairs of two joined loops each made of twisted wire; not illustrated. |

From layer 193:

- | | | |
|------------------|--------|------------------|
| Fragment of lead | (2564) | not illustrated. |
|------------------|--------|------------------|

Pottery

From layer 183:

- New Forest*: 19.4, 43; weight, 45 g.; 6.57%.
Hand-made, fabric A: weight, 120 g.; 17.52%.
Black-burnished: 85, 126; weight, 430 g.; 62.77%.
Grey fabrics: 129, 134, 140; weight, 90 g.; 13.14%.
 Total weight: 685 g.

From layer 193:

- New Forest*: 64, sherd of ?11; weight, 100 g.; 20.83%.
Oxford: 15.1.
Hand-made, fabric A: 86, 123.10; weight, 180 g.; 37.50%.
Black-burnished: 85, 107; weight, 80 g.; 16.67%.
Grey fabrics: 85, 140 (2), 141; weight, 120 g.; 25.0%.
 Total weight: 480 g.
 Weight from both layers: 1165 g.

Animal Bones

251 fragments identified (including 43 ribs and 37 skull fragments).

Species represented: ox, 75; pig, 11; sheep, 9; bird, 2; horse, 2; dog, 1; red deer, 1.

Pit 223 (PC 72, trench 108, layers 185, 186, 206, 207)

Rectangular pit 7 ft. 5 in. by 5 ft. (2.26 × 1.52 m.), dug to a depth of 5 ft. (1.52 m.) against the back face of the Roman wall. The sides slope inwards to a bottom measuring 3 ft. 3 in. (0.99 m.) by 1 ft. 8 in. (0.53 m.).

The lower part of the pit (layer 207) was filled with interleaved tips of occupation debris, brickearth and flints, the brickearth deriving from the erosion of the pit sides, while the flints resulted from the gradual collapse of the Roman wall face against which the pit was dug. After the pit had filled up almost to the top, a thick layer of brickearth (layer 206), equivalent to the middle clay, was spread, partly sealing the filling. This was overlaid by two successive tips of occupation rubbish (layer 186 and 185) which are equivalent to middle occupation levels.

The pit was cut through the lower clay bank and was substantially filled during the time when the middle occupation layer was accumulating.

PIT 223

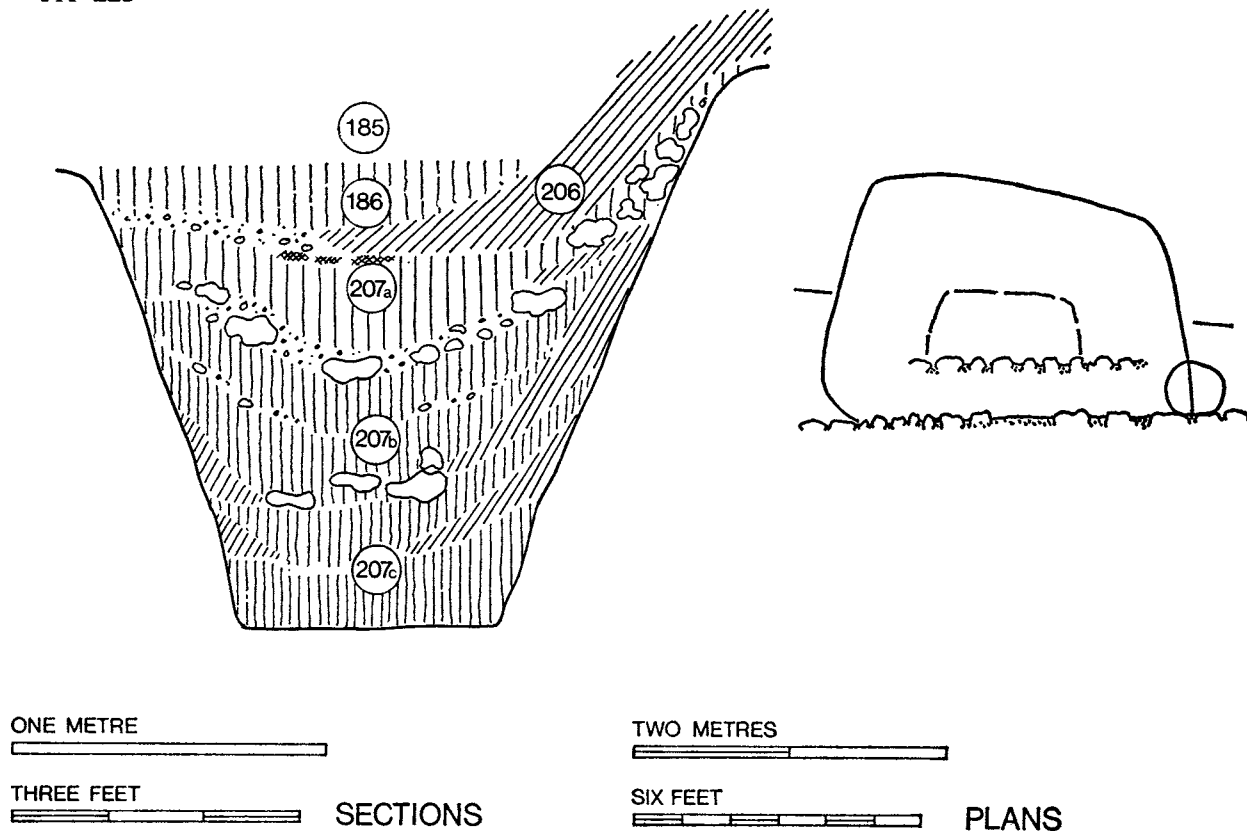


FIG. 93

Small Finds

From layer 185:

- Bronze fragment (2541) not illustrated.
 Bone pin (2543) disc-headed; not illustrated.

From layer 186:

- Bronze coin (2532) Crispus (A.D. 321-3)
 Bronze coin (2534) Constantine I (A.D. 320-4)
 Iron object (2562) L-shaped clamp 4 cm. long; not illustrated.

From layer 207:

- Bronze fibula pin (2558) hinged pin; not illustrated.

Pottery

From layer 185:

- TS*: Dr. 18/31 or 31, East Gaul, later second to third century A.D.
New Forest: 43, 13, 43; weight, 25 g.; 2.13%.
Misc.: 31.6; weight, 10 g.; 0.85%.
Hand-made, fabric A: 86, 107 (2), 123; weight, 650 g.; 55.32%.
Black-burnished: 85, 126; weight, 150 g.; 12.77%.
Grey fabrics: 85 (2), 127 (2), 129.4, 129, 140, 141, 159.4-5, 175; weight; 340 g.; 28.94%.
 Total weight: 1175 g.

From layer 186:

- New Forest*: 2/10.20; weight, 5 g.; 0.33%.
Oxford: 14, sherds of fabric 4; weight, 30 g.; 1.99%.
Misc.: 31.7, joining sherds of same vessel in middle occupation and upper clay; weight, 5 g.; 0.33%.
Hand-made, fabric A: 107 (2), ?as in 185, 123; weight, 600 g.; 39.74%.
Black-burnished: 107, 126, 175; weight, 580 g.; 38.41%.
Grey fabrics: 77, 94, 127, 131.3, 136.2, 137.8, 140; weight, 290 g.; 19.21%.
 Total weight: 1510 g.

From layer 206:

- New Forest*: 19.4, 43, 55.8; weight, 200 g.; 50%.
Hand-made, fabric A: 86, 123; weight, 120 g.; 30%.
Black-burnished: sherds; weight, 20 g.; 5%.
Grey fabrics: sherds; weight, 60 g.; 15%.
 Total weight: 400 g.

From layer 207:

- New Forest*: 10.2-3, 18.6, 49, 49.10, 52.2; weight, 360 g.; 16.40%.
Oxford: 14; weight, 80 g.; 3.64%.
Misc.: 55.18, 144.3, sherds of ?same vessel in pit 235, middle occupation and upper occupation; weight, 5 g.; 0.23%.
Hand-made, fabric A: 107 (2), 123 (2); weight, 730 g.; 33.26%.
Black-burnished: 85, 107, 126 (2); weight, 670 g.; 30.52%.
Grey fabrics: 85, 107, 132, 136.2, 137.8, 140; weight, 350 g.; 15.95%.
 Total weight: 2195 g.
 Weight from all the layers: 5280 g.

Animal Bones

701 fragments identified (including 168 ribs and 54 skull fragments).

Species represented: ox, 66; sheep, 15; pig, 12; bird, 4; dog, 1; cat, 1; hare, 1; red deer, 1; roe deer; fox.

Pit 224 (PC 72, trench 108, layers 188, 189, sealed by 163 and 111)

Rectangular pit 4 ft. 10 in. by 3 ft. (1.47 × 0.91 m.), cut to a depth of 3 ft. (0.91 m.).

The lower filling (layers 188, 189) consisted of typical cesspit filling, containing flecks of charcoal and occasional pockets of brickearth which had eroded in from the side. This was sealed by a general occupation layer (1063) continuous with the middle occupation.

The pit was cut through the middle and lower clay bank and was sealed by the upper clay spread (layer 111). The upper levels of the northern part of the pit were cut away by the early nineteenth-century pit 212.

PIT 224

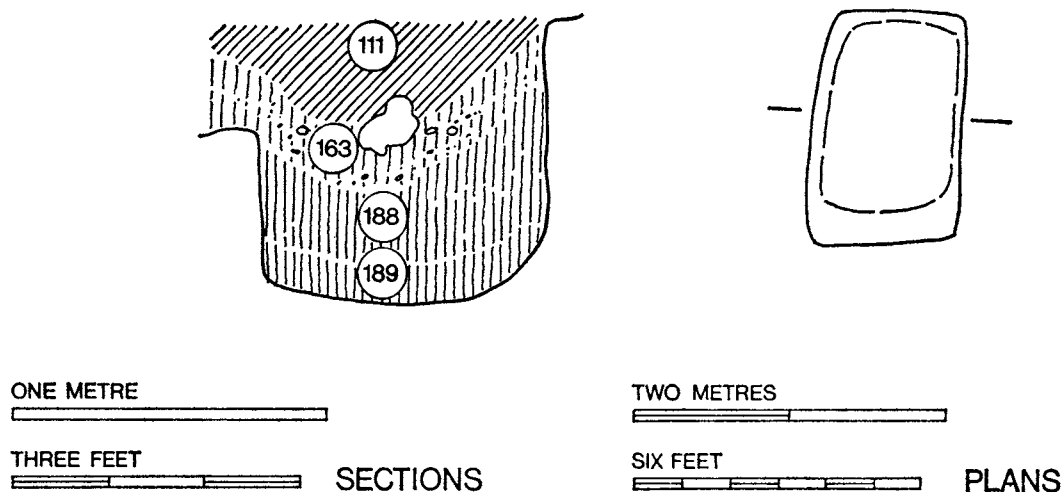


FIG. 94

Pottery

From layer 188:

New Forest: 13.1, sherds of same vessel as in pit 234; weight, 70 g.; 5.38%.

Oxford: sherds of fabric 5; weight, 10 g.; 0.77%.

Hand-made, fabric A: 123 (3); weight, 870 g.; 66.92%.

Black-burnished: 85, 107, 117; weight, 270 g.; 20.77%.

Grey fabrics: 85, 107, 127, 129.4, 140; weight, 80 g.; 6.15%.

Total weight: 1300 g.

From layer 189:

Hand-made, fabric A: weight, 40 g.; 44.44%.

Black-burnished: weight, 20 g.; 22.22%.

Grey fabrics: weight, 30 g.; 33.33%.

Total weight: 90 g.

Weight from both layers: 1390 g.

Animal Bones

85 fragments identified (including 35 ribs and 3 skull fragments).

Species represented: ox, 62; sheep, 15; pig, 11; bird, 11; red deer, 2.

Pit 225 (PC 72, trench 108, layers 194, 208, 209, 211)

Rectangular pit 5 ft. 9 in. by 4 ft. 6 in. (1.75 × 1.37 m.), cut to a depth of 2 ft. 6 in. (0.76 m.), with gradually sloping sides.

The lower filling (layer 209) was of grey-brown cesspit filling, mixed with occupation rubbish including quantities of oyster shells and some pottery and bone. Occasional thin lenses of clay represent the erosion of the pit sides. On top of the lower fill was a lens of charcoal (layer 208) which was in turn sealed by a layer of brickearth (layer 211). The upper part of the pit was filled with grey soil (layer 194) containing occupation material. The pit was finally sealed by the upper clay.

The pit was cut by the mid-late Saxon pit.

PIT 225

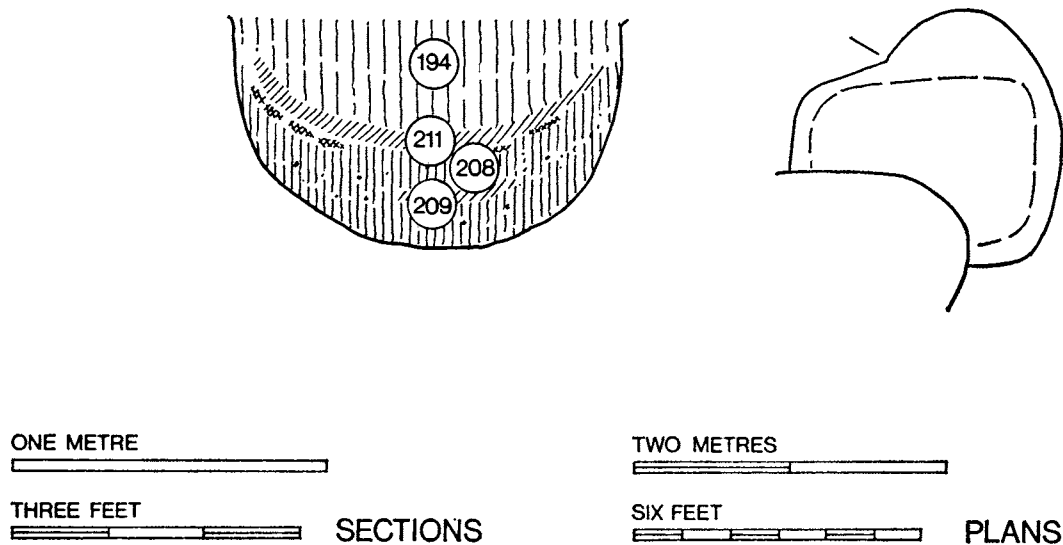


FIG. 95

Small Finds

From layer 194:

Bone bracelet (2557) fig. 117, no. 100.

Pottery

From layer 194:

New Forest: 13, 19.1-3, 20.1, 49; weight, 140 g.; 13.86%.

Misc.: 30.7; weight, 10 g.; 0.99%.

Hand-made, fabric A: 123; weight, 170 g.; 16.83%.

Black-burnished: 85, 126, 175; weight, 300 g.; 29.70%.

Grey fabrics: 86.6, 107, 117, 127 (2), 148.2, 161; weight, 390 g.; 38.61%.

Total weight: 1010 g.

From layer 208:

New Forest: 43; weight, 10 g.; 3.33%.

Hand-made, fabric A: 123; weight, 170 g.; 56.67%.

Black-burnished: 175, ?the same as in 194; weight, 70 g.; 23.33%.

Grey fabrics: weight, 50 g.; 16.67%.

Total weight: 300 g.

From layer 209:

New Forest: 43, as in 208, 49; weight, 265 g.; 34.19%.

Hand-made, fabric A: 123; weight, 130 g.; 16.77%.

Black-burnished: 175, ?as in 208; weight, 10 g.; 1.29%.

Grey fabrics: 107, 127, 136, 137.8; weight, 370 g.; 47.74%.

Total weight: 775 g.

From layer 211:

Black-burnished: 126; weight, 10 g.; 40%.

Grey fabrics: 98, 107; weight, 15 g.; 60%.

Total weight: 25 g.

Weight from all the layers: 2110 g.

Animal Bones

188 fragments identified (including 91 ribs and 7 skull fragments).

Species represented: ox, 64; pig, 18; sheep, 14; dog, 2; cat, 1.

Pit 227 (PC 72, trench 108, layers 201, 212)

Rectangular pit 5 ft. by 3 ft. (1.52 × 0.91 m.), cut to a depth of 2 ft. (0.61 m.).

The lower layer (layer 212) was cesspit fill sealed with a discontinuous lens of charcoal. The upper part of the pit (layer 201) was filled with grey soil containing flints, charcoal and other occupation rubbish.

The pit was cut through the middle clay and was sealed by the upper clay.

Small Finds

From layer 201:

Bronze coin (2550)

Bone pin (2560) type as no. 94; not illustrated.

Bone pin (2561) type as no. 93; not illustrated.

PIT 227

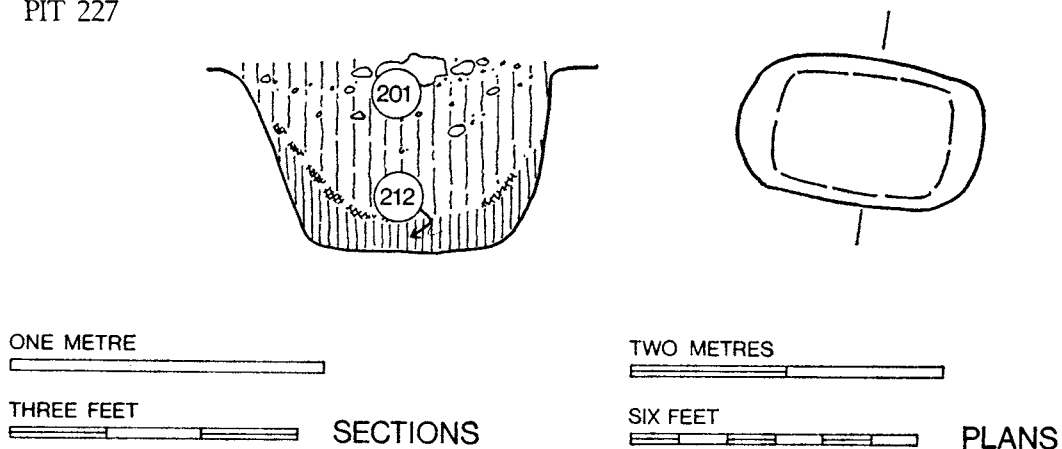


FIG. 96

From layer 212:

Bone pin (2549) type 7; fig. 116, no. 96.

Pottery

From layer 201:

New Forest: 18.6, sherd joining that in pit 223, 43; weight, 30 g.; 2.91%.

Hand-made, fabric A: weight, 200 g.; 19.42%.

Black-burnished: 85; weight, 240 g.; 23.3%.

Grey fabrics: 77, 175.3; weight, 560 g.; 54.37%.

Total weight: 1030 g.

From layer 212:

New Forest: 29, 66.7; weight, 75 g.; 18.99%.

Oxford: 63; weight, 85 g.; 21.52%.

Hand-made, fabric A: 123 (3); weight, 50 g.; 12.66%.

Black-burnished: 85, 107 (2); weight, 180 g.; 45.57%.

Grey fabrics: 175; weight, 5 g.; 1.27%.

Total weight: 395 g.

Weight from both layers: 1425 g.

Animal Bones

146 fragments identified (including 54 ribs and 6 skull fragments).

Species represented: ox, 60; sheep, 20; pig, 14; bird, 4; horse, 1; dog, 1.

Pit 228 (PC 72, trench 108, layer 213)

Small rectangular pit: maximum size 4 ft. by 3 ft. (1.22 × 0.91 m.), but with sloping sides; cut to a depth of 1 ft. 1 in. (0.33 m.).

The uniform filling of this small pit (layer 213) consisted of grey soil mixed with a variety of occupation rubbish.

The pit was dug after the adjacent scaffold post had been removed or had rotted. It was dug through the middle clay and was sealed by the upper clay (layer 111).

PIT 228

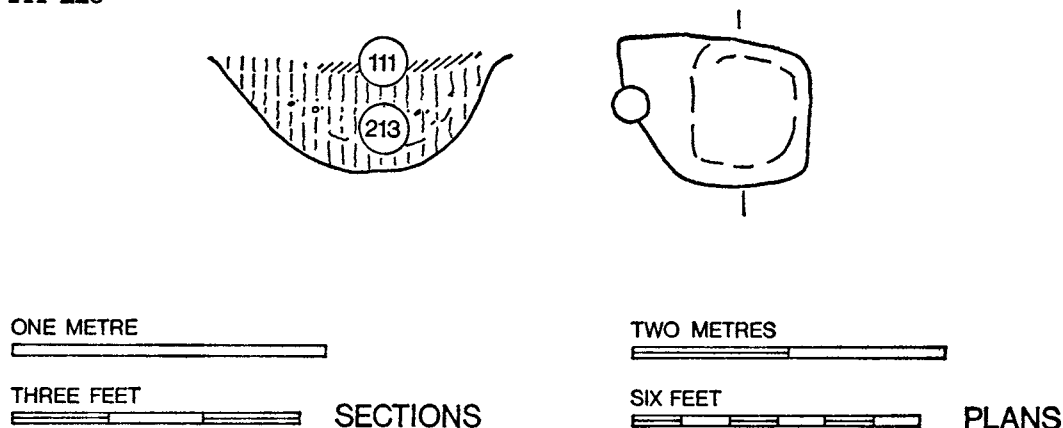


FIG. 97

Pottery

From layer 213:

- New Forest*: 22.1-5, 43; weight, 40 g.; 10.26%.
- Hand-made, fabric A*: weight, 10 g.; 2.56%.
- Black-burnished*: 107, 126, weight, 170 g.; 43.59%.
- Grey fabrics*: 85, 140; weight, 170 g.; 43.59%.
- Total weight: 390 g.

Animal Bones

108 fragments identified (including 25 ribs and 5 skull fragments).
 Species represented: ox, 44; sheep, 23; pig, 18; bird, 3.
 The sheep bones included part of an animal of less than ten months.

Pit 229 (PC 72, trench 108, layers 217, 221, 222)

Small rectangular pit 3 ft. by 1 ft. 6 in. (0.91 × 0.46 m.) dug against the back face of the Roman wall to a depth of 1 ft. 3 in. (0.38 m.).

The pit appears to have been left open for a short while, during which time a thin layer of clay washed in from the sides and was mixed with a little cesspit fill (unnumbered on section). Then the pit was sealed by a thick lens of charcoal (layer 222). The lowest filling consolidated rapidly, forcing the charcoal lens to slump violently. A thin deposit of brick-earth was then thrown in (layer 221), after which the pit was filled with grey soil mixed with occupation debris.

The pit had been cut through the middle clay, but was sealed by the upper clay.

Small Finds

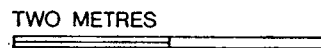
From layer 217:

- Bronze sheet (2556) fragment only; not illustrated.
- Iron hobnails (2559) not illustrated.

PIT 229



SECTIONS



PLANS

FIG. 98

Pottery

From layer 217:

New Forest: 18.6, sherd joining in pits 223 and 227; weight, 5 g.; 1.11%.

Hand-made, fabric A: weight, 40 g.; 8.89%.

Black-burnished: weight, 5 g.; 1.11%.

Grey fabrics: 78, joining with sherds in middle occupation, 85, 127 (2), 129; weight, 400 g., 88.89%.

Total weight: 450 g.

From layer 222:

New Forest: 43; weight, 5 g.; 5.26%.

Grey fabrics: sherds joining 85 in 217; weight, 90 g.; 94.74%.

Total weight: 95 g.

Weight from both layers: 545 g.

Animal Bones

105 fragments identified (including 45 ribs and 10 skull fragments).

Species represented: ox, 50; sheep, 20; pig, 18; dog, 8; bird, 2; red deer, 2.

Pit 230 (PC 72, trench 108, layers 184, 224)

Sub-rectangular pit 6 ft. 6 in. by 5 ft. (1.98 × 1.52 m.), cut to a depth of 2 ft. 2 in. (0.66 m.).

The lower filling (layer 224) was of redeposited brickearth with occasional flecks of charcoal, bones and pot sherds. It was sealed by tips of brickearth mixed with rather more occupation material.

The pit had been cut through the lower clay bank and was sealed by the middle clay. Its filling pre-dated the digging of Roman pit 222 and it was also cut by the late Saxon pit 219.

PIT 230

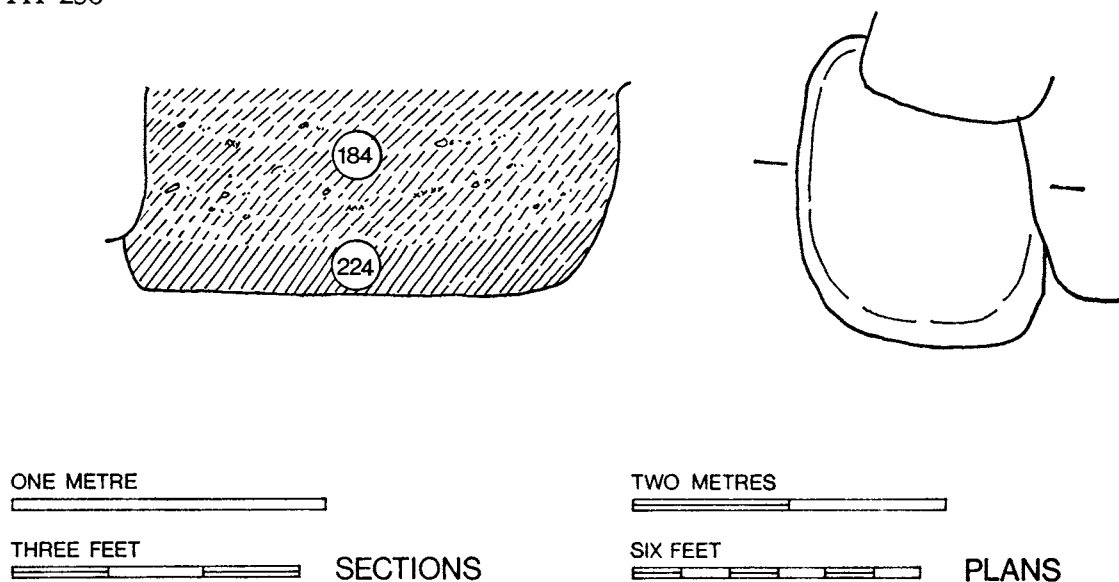


FIG. 99

Small Finds

From layer 184:

- Bronze coin (2565) Constantine I (A.D. 310-17).
Whetstone (2577) not illustrated, no. 363.

Pottery

From layer 184:

- New Forest*: 13, 49, 55.16; weight, 50 g.; 7.25%.
Hand-made, fabric A: weight, 110 g.; 15.94%.
Black-burnished: 85, 126; weight, 240 g.; 34.78%.
Grey fabrics: 77, 85 (2), 129.4, 140; weight, 290 g.; 42.03%.
Total weight: 690 g.

From layer 224:

- Oxford*: 57; weight, 10 g.; 20%.
Hand-made, fabric A: 123; weight, 40 g.; 80%.
Total weight: 50 g.
Weight from both layers: 740 g.

Animal Bones

- 87 fragments identified (including 18 ribs and 4 skull fragments).
Species represented: ox, 69; pig, 18; sheep, 9; dog, 2; red deer, 2.

Pit 231 (PC 72, trench 109, layer 46)

Rectangular pit 3 ft. 6 in. (1.07 m.) wide and of unknown length, cut to a depth of 2 ft. 6 in. (0.76 m.).

The filling (layer 46) was uniform, consisting of grey-brown cesspit filling mixed with lenses of charcoal, oyster shells, and fragments of tile, pottery and bone.

PIT 231

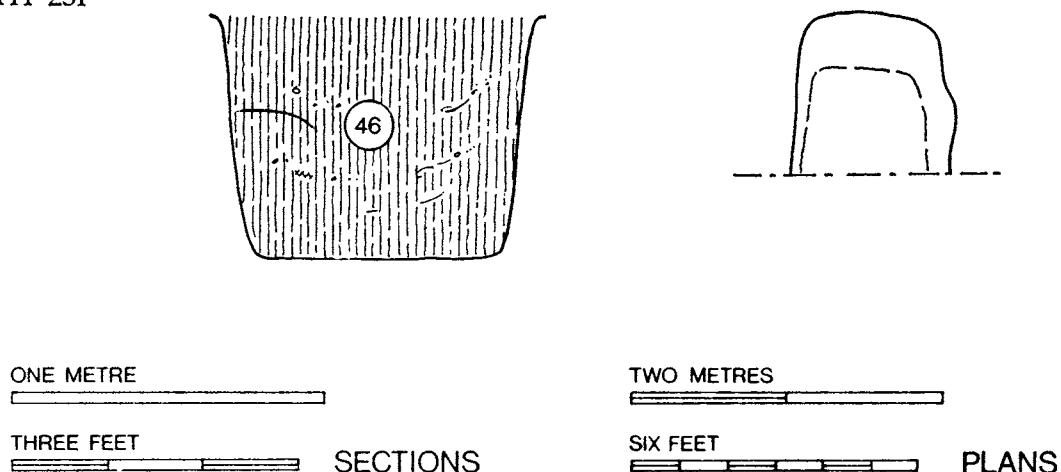


FIG. 100

Pottery

From layer 46:

Oxford: 18.10.

Hand-made, fabric A: weight, 90 g.; 33.96%.

Black-burnished: 126; weight, 80 g.; 30.19%.

Grey fabrics: weight, 95 g.; 35.85%.

Total weight: 265 g.

Animal Bones

42 fragments identified (including 18 ribs).

Species represented: ox, sheep, pig, bird.

Pit 234 (PC 72, trench 108, layer 214)

Elongated rectangular pit 7 ft. 4 in. by 2 ft. 4 in. (2.24 × 0.71 m.), cut to a depth of 1 ft. 8 in. (0.51 m.).

The filling of the pit was uniform, consisting of a grey-brown clayey soil containing some occupation material. The pit had been filled before the main thickness of middle occupation (layer 163) had accumulated. It was cut through the lower clay bank.

Pottery

From layer 214:

New Forest: 13.1, 22.1-5 (2); weight, 420 g.; 20.39%.

Oxford: sherds of fabric 4; weight, 90 g.; 4.37%.

Hand-made, fabric A: 123 (3); weight, 580 g.; 28.16%.

Black-burnished: 126; weight, 230 g. 11.17%.

Grey fabrics: 85, 92.2, 127 (2), 129.4, 137.8, 140, 177.5; weight, 740 g.; 35.92%.

Total weight: 2060 g.

PIT 234

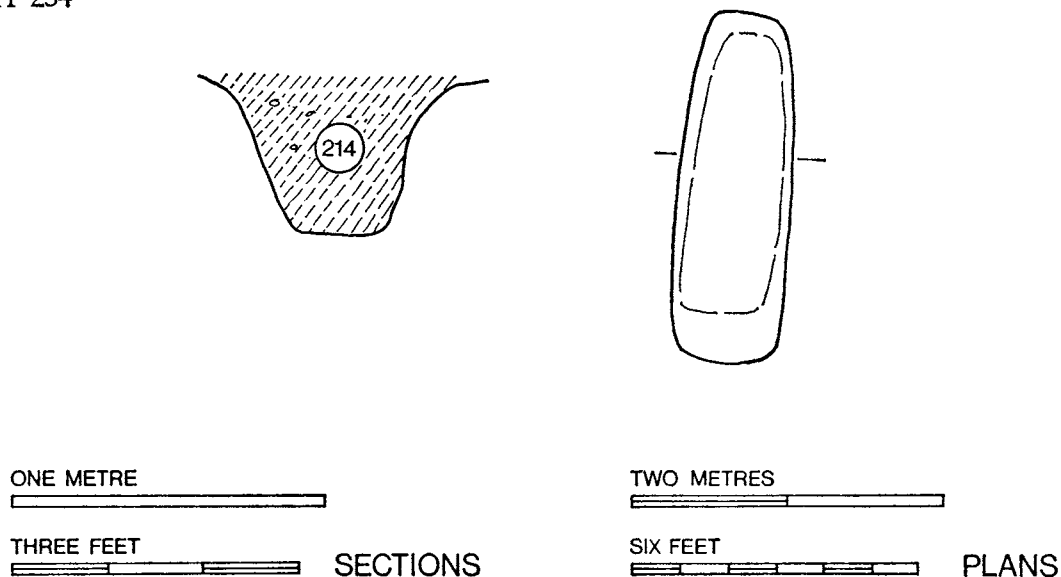


FIG. 101

Animal Bones

205 fragments identified (including 24 ribs and 17 skull fragments).

Species represented: ox, 34; dog, 34; pig, 13; sheep, 12; bird, 5; hare, 1; red deer, 1.

The dog bones recovered from this pit were all from the same animal, aged between 12 and 15 months.

Pit 235 (PC 72, trench 108, layers 120, 232)

Irregular hollow measuring overall 7 ft. 2 in. by 3 ft. 6 in. (2.18 m. × 1.07 m.). The depth varied from 4 to 11 in. (10–28 cm.).

Filled uniformly with occupation debris mixed with some redeposited brickearth. Both layers are the same; the different numbering resulted from the order in which the pit was excavated.

PIT 235

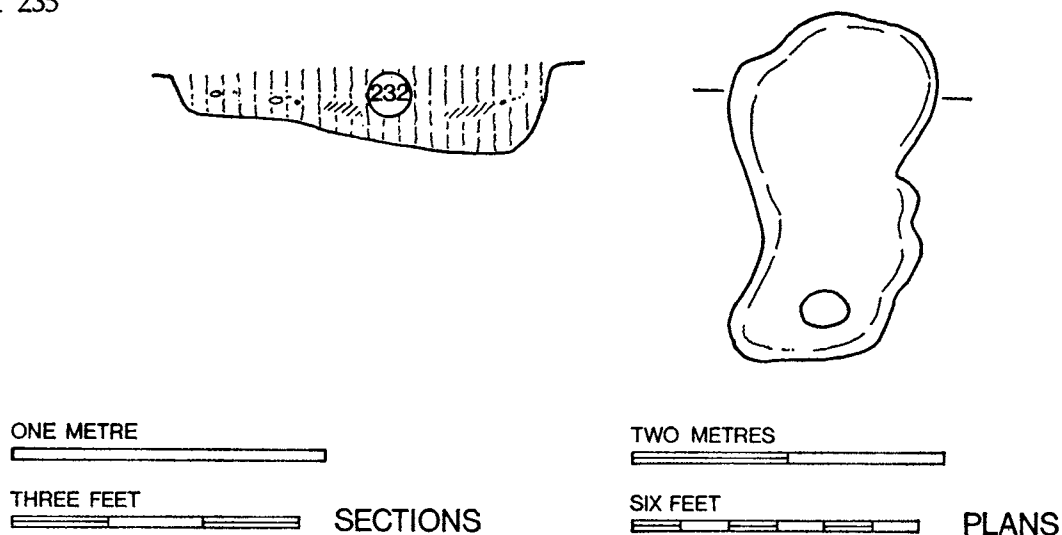


FIG. 102

Small Finds

From layer 120:

Shale bracelet (2608) fragment, plain, external diameter 7.6 cm.; not illustrated.

From layer 232:

Bone pin (2612) shaft fragment only; not illustrated.

Pottery

From layer 232:

New Forest: 22.1–5, 43, 105.3; weight, 200 g.; 24.39%.

Misc.: 15.5, 144.3; weight, 10 g.; 1.22%.

Hand-made, fabric A: 86; weight, 70 g.; 8.54%.

Black-burnished: 107, 175; weight, 170 g.; 20.73%.

Grey fabrics: 85, 127, 129, 129.4, 139, 140 (2), 142.3; weight, 370 g.; 45.12%.

Total weight: 820 g.

Animal Bones

108 fragments identified (including 45 ribs and 5 skull fragments).

Species represented: ox, 45; sheep, 14; pig, 38; dog, 2; bird, 2; fallow deer, 2.

Human Bones

Infant burial and one tibia of another infant.

Well (pit) 236 (PC 72, trench 109, layers 51, 91 and 105-121)

The well was constructed in a circular well pit 6 ft. (1.83 m.) in diameter, the shaft diameter being 3 ft. 9 in. (1.43 m.). Only the shaft of the well was excavated, leaving the packing in position. The bottom was eventually reached at a depth of 19 ft. 2 in. (5.84 m.) from the surface. The shaft was lined with flints, the lining surviving up to a height of 7 ft. (2.13 m.) from the bottom. No attempt was made to draw a half section of the filling, but detailed records were kept of each layer, a summary of which is offered here, with measurements taken from the surface of the natural brickearth.

Layer 121: 17 ft. 10 in. to 19 ft. 2 in. (5.44-5.84 m.)

Grey chalky silt containing large lumps of chalk and flints.

Layer 120: 16 ft. to 17 ft. 10 in. (4.88-5.44 m.)

Chalk eroded from the sides of the shaft with a central core of grey-black silt containing organic material.

Layer 119: 12 ft. 8 in. to 16 ft. (3.86-4.88 m.)

Thick black organic silt containing large flints and fragments of tile, together with quantities of shellfish remains (oysters, cockles, winkles, mussels, and whelks). Much other domestic rubbish including leather, bone and pottery.

Layer 118: 11 ft. 11 in. to 12 ft. 8 in. (3.63-3.86 m.)

Layer of clay and chalk marl.

Layer 117: 11 ft. 9 in. to 11 ft. 11 in. (3.58-3.63 m.)

Lens of occupation rubbish.

Layer 116: 11 ft. 5 in. to 11 ft. 9 in. (3.48-3.58 m.)

Layer of chalk and clay.

Layer 115: 10 ft. 11 in. to 11 ft. 5 in. (3.33-3.48 m.)

Dark grey soil and occupation rubbish.

Layer 114: 10 ft. 8 in. to 10 ft. 11 in. (3.25-3.33 m.)

Clay layer with patches of chalk and marl.

Layer 113: 10 ft. 4 in. to 10 ft. 8 in. (3.15-3.25 m.)

Occupation rubbish.

Layer 112: 9 ft. 10 in. to 10 ft. 4 in. (3.00-3.15 m.)

Clay layer with patches of chalk and marl.

Layer 111: 9 ft. 8 in. to 9 ft. 10 in. (2.95-3.00 m.)

Occupation rubbish rich in animal bones.

Layer 110: 9 ft. 2 in. to 9 ft. 8 in. (2.79-2.95 m.)

Clay layer with patches of chalk and some tile.

- Layer 109: 8 ft. 10 in. to 9 ft. 2 in. (2.69–2.79 m.)
 Grey-black occupation rubbish containing quantities of shellfish.
- Layer 108: 8 ft. 1 in. to 8 ft. 10 in. (2.46–2.69 m.)
 Clay layer containing some flints and tile fragments.
- Layer 107: 7 ft. 6 in. to 8 ft. 1 in. (2.29–2.46 m.)
 Clayey soil mixed with large numbers of flint nodules and blocks of chalk, and quantities of occupation rubbish.
- Layer 106: 6 ft. 6 in. to 7 ft. 6 in. (1.98–2.29 m.)
 Pinkish-grey ashy layer mixed with charcoal, quantities of flints and tile and occupation debris.
- Layer 105: 5 ft. 11 in. to 6 ft. 6 in. (1.80–1.98 m.)
 Grey-brown soil with flints and chalk lumps, mixed with occupation debris.
- Layers 91 and 51: surface to 5 ft. 11 in. (surface to 1.80 m.)
 Black silty soil representing a soil accumulation over a considerable period of time.

From the above summary it will be seen that from the bottom to a depth of 11 ft. 11 in. (3.63 m.) the well was filled with an accumulation of occupation rubbish. Above this, up to 8 ft. 1 in. (2.46 m.), the sides had begun to erode so that lenses of clay were interspersed with the rubbish. Then followed further deliberate tips of rubbish and ash up to 5 ft. 11 in. (1.80 m.) after which the silting seems to have been natural.

Small Finds

- From layer 91:
 Bronze coin (2619) Constantinopolis (A.D. 330–5).
 (2620) Constantinopolis (A.D. 330–5).
 (2618) Constantine II (A.D. 353–6).
 Bronze sheet (2627) fragment; not illustrated.
 Iron rod (2634) fig. 131, no. 261.
 Iron chain (2642) fig. 131, no. 252.
 Iron fragment (2643) not illustrated.
- From layer 105:
 Bronze coin (2617) Constantine II (A.D. 337–40).
- From layer 108:
 Bronze bracelet (2628) fig. 111, no. 24a.
- From layer 109:
 Bronze coin (2616) House of Constantine (A.D. 322–4).
- From layer 111:
 Bronze bracelet (2626) strip type; not illustrated.
- From layer 113:
 Iron sheet (2622) fragment, not illustrated.
- From layer 115:
 Bronze coin (2615) Carausius (A.D. 286–93).
 Iron knife (2636) fig. 126, no. 198.
 Tile disc (2637) disc *c.* 2 $\frac{3}{4}$ in. (7.5 cm.) diam., perforated; not illustrated.
- From layer 118:
 Iron bucket handle mount (2641) fig. 127, no. 207.

From layer 119:

Bronze fragment	(2647)	not illustrated.
Iron shears	(2623)	fig. 127, no. 202.
Iron shears	(2644)	fig. 127, no. 203.
Iron fragment	(2638)	not illustrated.
Iron clamp	(2645)	fig. 128, no. 210.
Iron tie	(2646)	fragment of above; not illustrated.
Bronze bracelet	(2648)	fragment of twisted wire type; not illustrated.
Perforated wooden disc	(2630)	fig. 137, no. 327.
Wooden comb	(2631)	fig. 137, no. 323.
Leather shoes	(2661-2675)	figs. 132-4, nos. 265-79.
	(2679-2713)	figs. 134-5, nos. 283-317.
	(2716)	not illustrated, no. 320.

From layer 120:

Iron bucket handle mount	(2640)	fig. 127, no. 205.
Wooden peg	(2656)	fig. 137, no. 324.
Wooden disc	(2657)	fig. 137, no. 326.

From layer 121:

Stone bead	(2621)	bead, diam. 6 mm. with central perforation.
Iron handle	(2633)	fig. 128, no. 209.
Leather fragments	(2295-2300)	fig. 136, nos. 382-7.

Pottery

From layer 51:

New Forest: 22.7, 43, 64; weight, 200 g.; 32.26%.
Oxford: base of fabric 4; weight, 25 g.; 4.03%.
Hand-made, fabric A: 86, 107, 123 (3); weight, 300 g.; 48.39%.
Black-burnished: weight, 5 g.; 0.81%.
Grey fabrics: 141, 142.1-3, 148; weight, 85 g.; 13.71%.
Fabric D: weight, 5 g.; 0.81%.
 Total weight: 620 g.

From layer 91:

New Forest: 2/10.15, 29, 32, 32 (with a spiralling 'rosette' stamp), 43 (2), 55.5; weight, 310 g.; 12.68%.
Oxford: 15.1, ?34, 35.1, 42, 63.7; weight, 125 g.; 5.11%.
Hand-made, fabric A: 86, 107.5, 123 (6); weight, 1030 g.; 42.13%.
Black-burnished: 85 (3), 107, 126; weight, 360 g.; 14.72%.
Grey fabrics: 118.1, 129, 131.4, 132, 135, 153.3-4 (the only freshly broken sherd in this fabric); weight, 470 g.; 19.22%.
Fabric D: sherds of ?137; weight, 150 g.; 6.13%.
 Total weight: 2445 g.

From layer 105:

New Forest: 43; weight, 110 g.; 39.29%.
Hand-made, fabric A: weight, 80 g.; 28.57%.
Black-burnished: weight, 50 g.; 17.86%.

Grey fabrics: weight, 40 g.; 14.29%.

Total weight: 280 g.

From layer 106:

New Forest: a joining sherd to 55.5 in 91; weight, 60 g.; 12.77%.

Hand-made, fabric A: 86, 107, 123 (2); weight, 270 g.; 57.45%.

Black-burnished: weight, 40 g.; 8.51%.

Grey fabrics: 127; weight, 100 g.; 21.28%.

Total weight: 470 g.

From layer 107:

New Forest: 13, 43; weight, 180 g.; 18.95%.

Hand-made, fabric A: 86, 107 (2), 123; weight, 390 g.; 41.05%.

Black-burnished: 85, 126, 175; weight, 270 g.; 28.42%.

Grey fabrics: 92.1, 107, 140.3; weight, 90 g.; 9.47%.

Misc.: 179; weight, 20 g.; 2.11%.

Total weight: 950 g.

From layer 109:

New Forest: sherds of fabrics 1 and 2; weight, 100 g.; 17.24%.

Oxford: 14, sherd of ?58; weight, 100 g.; 17.24%.

Hand-made, fabric A: 86; weight, 70 g.; 12.07%.

Black-burnished: 85 (3), 117, 126; weight, 310 g.; 53.45%.

Total weight: 580 g.

From layer 110:

Argonne: Chenet 304 and 313 (probably the same vessel as in pit 178); weight, 60 g.; 13.64%.

Hand-made, fabric A: 123; weight, 320 g.; 72.73%.

Grey fabrics: weight, 60 g.; 13.64%.

Total weight: 440 g.

From layer 111:

New Forest: sherds of fabrics 1 and 3; weight, 10 g.; 1.94%.

Misc.: 17.3.

Hand-made, fabric A: 86, 123 (4); weight, 430 g.; 83.50%.

Black-burnished: 85; weight, 40 g.; 7.77%.

Grey fabrics: weight, 35 g.; 6.80%.

Total weight: 515 g.

From layer 112:

Hand-made, fabric A: weight, 5 g.

Black-burnished: 126; weight, 5 g.

Total weight: 10 g.

From layer 115:

Argonne: Chenet 313 (sherds joining those in 110); weight, 65 g.; 2.16%.

New Forest: 13.2, 43, 66.10, 105.6; weight, 335 g.; 11.15%.

Oxford: base of 50; weight, 60 g.; 2.0%.

Hand-made, fabric A: 86 (2), 107 (2), 123 (5) weight, 1490 g.; 49.58%.

Black-burnished: 85 (2), 107 (2), 126; weight, 495 g.; 16.47%.

Grey fabrics: 76.1, 107, 129.4, 172.2; weight, 560 g.; 18.64%.

Total weight: 3005 g.

From layer 117:

New Forest: sherd of fabric 3; weight, 10 g.; 3.13%.

Oxford: 40; weight, 5 g.; 1.56%.
Hand-made, fabric A: 86; weight, 95 g.; 29.69%.
Black-burnished: 85, base of ?117; weight, 140 g.; 43.75%.
Grey fabrics: weight, 70 g.; 21.88%.
 Total weight: 320 g.

From layer 119:

New Forest: sherds of ?19 and 22; 21.6, 29, 43 (2), 48, 49 (2), 64.3; weight, 1475 g.; 12.66%.
Oxford: 14, 15 (3), 40, sherds of 57 or 58; weight, 270 g.; 2.32%.
Misc.: base (c. 100 mm. diameter) of a very large ?flagon in a hard vesicular, brown, sandy fabric, grey to the core. The pot is covered in a black slip and there are two raised bands of rouletting above the base; no other parallel at Portchester.
Hand-made, fabric A: 86 (3), 107, 123 (3); weight, 4320 g.; 37.07%.
Black-burnished: 85 (4), 107, 117, 126 (5), ?175; weight, 3155 g.; 27.07%.
Grey fabrics: 77, 85 (3), 94, 129 (2), 145, 154.4-6; weight, 2335 g.; 20.03%.
Misc.: 179 (possibly the same as in 107); weight, 100 g.; 0.86%.
 Total weight: 11,655 g.

From layer 120:

New Forest: 32, 49; weight, 40 g.; 7.6%.
Hand-made, fabric A: weight, 80 g.; 15.24%.
Black-burnished: 126; weight, 390 g.; 74.29%.
Grey fabrics: weight, 15 g.; 2.86%.
 Total weight: 525 g.

From layer 121:

New Forest: 43 (2), almost intact, at 650 and 370 g. respectively; weight, 1020 g.
 Total weight: 1020 g.
 Weight from all the layers: 22,835 g.

Animal Bones

2335 fragments identified (including 585 ribs and 169 skull fragments).

Species represented: ox, 54; sheep, 22; pig, 8; bird, 8; dog, 5; red deer, 1; cat, 1; roe deer, horse, mouse, hare, fish, unidentified small mammal.

A large number of nearly complete skulls were recovered from this pit. They are: ox, 13 nearly complete and at least 8 others in a more fragmentary state; sheep, 3 fairly complete, and at least 4 others; pig, approximately half the skull of one animal; horse, part of one skull; bird, one complete skull; dog, 2 complete skulls; red deer, one almost complete skull of a female.

The sheep bones included parts of several young animals, and 27% of the sheep mandibles were from animals of under one year old.

The pig bones also included at least two very young animals, and the ox bones at least one very young animal. The cat bones came from one mature and one immature individual.

Pit 237 (PC 72, trench 109, layer 82)

Circular pit of uncertain diameter (only partly excavated): depth 3 ft. (0.91 m.).

The filling (layer 82) was a uniform deposit of occupation debris intermixed with grey stony soil.

PIT 237

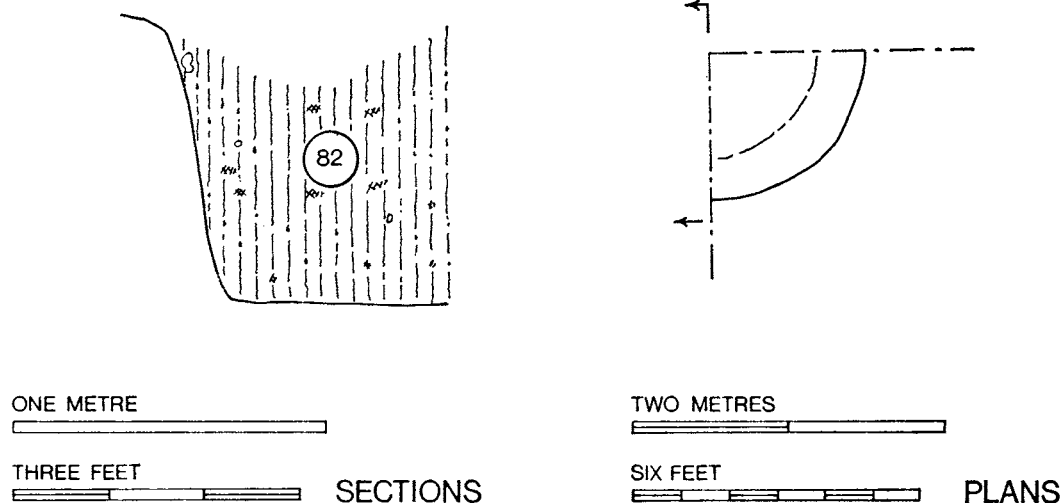


FIG. 103

Small Finds

From layer 82:

Iron slag; p. 265.

Pottery

From layer 82:

Oxford: 43; weight, 10 g.; 5.56%.

Hand-made, fabric A: 86; weight, 10 g.; 5.56%.

Black-burnished: weight, 5 g.; 2.78%.

Grey fabrics: 142.4-5, 145, 175; weight, 150 g.; 83.33%.

Fabric D: 137.4-6; weight, 5 g.; 2.78%.

Total weight: 180 g.

Animal Bones

10 fragments identified (including 5 ribs).

Species represented: sheep, ox, pig, bird.

Pit 238 (PC 72, trench 109, layer 83)

Shallow elongated pit (or gully?), 2 ft. 9 in. (0.84 m.) wide and length exceeding 6 ft. (1.83 m.); maximum depth 5 in. (13 cm.).

Filled with brown earth mixed with some clay, flints and occupation material.

Pottery

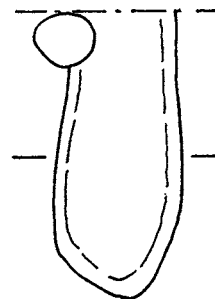
From layer 83:

Hand-made, fabric A: weight, 5 g.

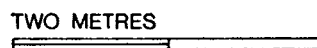
Grey fabrics: 127; weight, 5 g.

Total weight: 10 g.

PIT 238



SECTIONS



PLANS

FIG. 104

Animal Bones

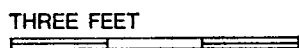
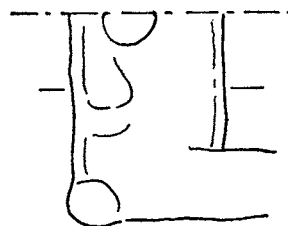
1 fragment identified, probably ox.

Pit 239 (PC 72, trench 109, layer 84)

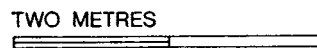
Elongated pit (or gully) 3 ft. wide (0.91 m.) and exceeding 4 ft. 6 in. (1.37 m.) in length; maximum depth 9 in. (23 cm.).

Filled with brown soil mixed with occupation debris.

PIT 239



SECTIONS



PLANS

FIG. 105

Small Finds

From layer 84:

Struck flint flake (2606) not illustrated.

Pottery

From layer 84:

Hand-made, fabric A: 123; weight, 20 g.; 80%.

Black-burnished: weight, 5 g.; 20%.

Total weight: 25 g.

Animal Bones

4 fragments identified (including 7 ribs).

Species represented: sheep, pig.

V. SUBSIDIARY AREAS

ROMAN levels came to light in several subsidiary excavations within and immediately adjacent to the fort. Area D, against the west wall south of the west gate, covered an area of some 3000 ft.² (280 m.²) and was excavated to the natural subsoil. Elsewhere the areas of the Roman levels exposed were limited in extent and were uncovered as a consequence of excavations designed primarily to examine post-Roman features.

AREA D (1961) (fig. 106)

Area D is situated against the inner face of the west wall of the fort, immediately to the south of the landgate. The area extended for a distance of 30 ft. (9.1 m.) from the surviving, refaced, wall, and overall measured 100 ft. (30.5 m.) in length. The excavation was undertaken because of the impending construction of a public lavatory and changing room — a project which was subsequently abandoned. The area was cleared in five trenches (1–5) with 2 ft. (0.6 m.) baulks between, thus providing continuous sections up to the wall (fig. 218). The baulks were eventually removed.

The Constitution of the Roman Wall and Gate

All five trenches exposed the back face of the Roman wall which is described above (p. 19). Trench 1 also contained the southern inturn wall of the Roman landgate (above pp. 29–34). At the time of construction a dump of gravelly clay was heaped up on the original ground surface to a maximum depth of 1 ft. 3 in. (0.38 m.) in a single restricted area (trench 3 layer 8). This material presumably derived from the digging of the foundation trench. As construction proceeded a mortar spill, representing the mortar-mixing processes carried out by the Roman masons, accumulated on the original ground surface, spreading up and over the heap of clay. The mortar spill was continuous over all five trenches (1 layer 8, 2 layer 5, 3 layer 4, 4 layer 5, 5 layer 5), but seldom reached a thickness in excess of 1 in. (2.5 cm.). The only finds from within or beneath it were a single sherd of coarse grey pottery and a coin of Salonus (A.D. 255–8), providing a convenient *terminus post quem* of c. 260 for the construction of the fort.

Immediately after the wall had been erected, a layer of gravelly clay (which had probably been piled inside the fort when the foundation trench was dug) was spread out somewhat discontinuously over the area, reaching a thickness of 1 ft. 6 in. (0.45 m.) in trench 4. In the angle between the fort wall and the inturned gate wall the clay was piled up in a low bank to cover the foundation offsets, presumably to protect them from weathering. Once the levelling had been completed the area was left free of buildings.

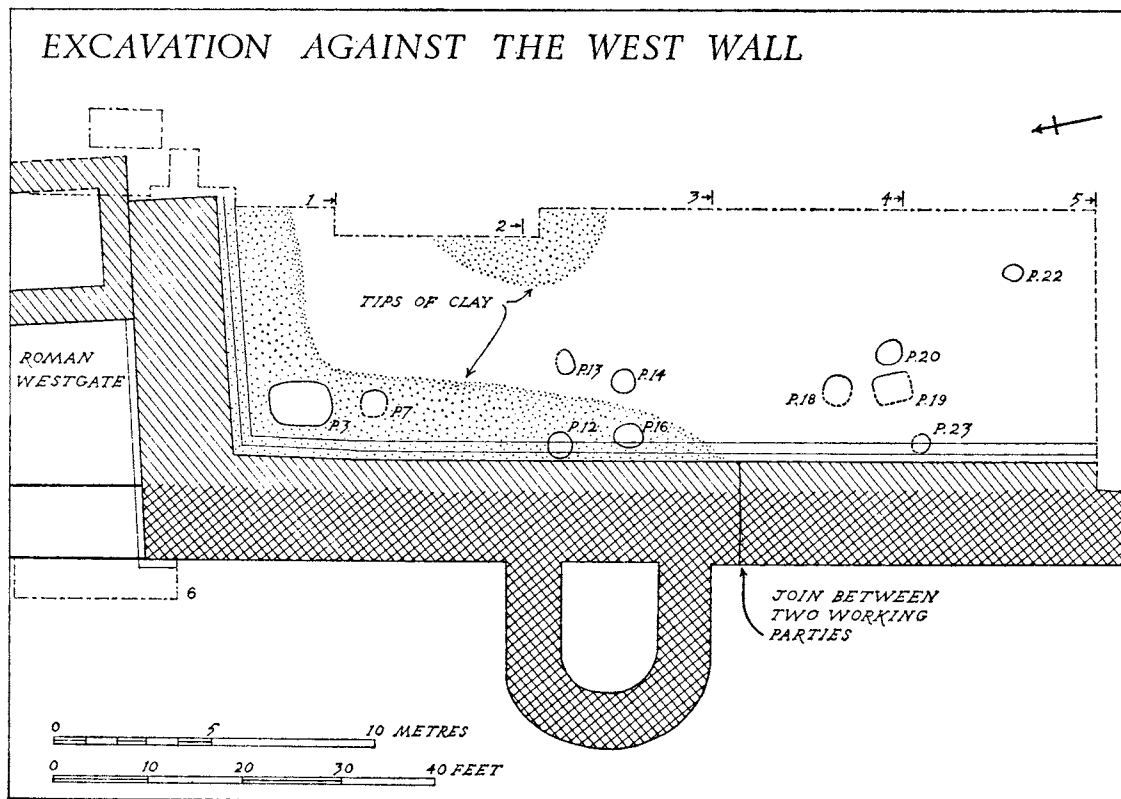


FIG. 106

Rubbish Tipping behind the Wall

During the Roman period, the area behind the wall was used for rubbish tipping, which eventually resulted in a 2 ft. (0.6 m.) thick layer consisting of grey-brown soil mixed up with quantities of pottery, animal bones and oyster shells. Of the six coins recovered, the four legible examples spanned the period *c.* A.D. 320–70 (below, p. 183), suggesting a date late in the history of the fort for this surprisingly unhygienic practice.

Together with the tipping of rubbish, some individual pits were dug for the disposal of waste. With the exception of pits 3 and 19, which were rectangular, all the others were circular and sometimes as little as 2 ft. (0.6 m.) in diameter. It was impossible to tell from what depth the individual pits had been dug, since they were filled with the same occupation debris as that through which they had been cut; but pit 20, which reached a depth of 2 ft. 6 in. (0.76 m.) below the level of natural, and was only 2 ft. 3 in. (0.69 m.) in diameter, can hardly have been dug from much higher, while conversely pit 12, a mere 6–9 in. (15–23 cm.) deep, is likely to have been cut after the accumulation of some thickness of rubbish. The fact that it produced a coin of Valentinian or Theodosius is a further indication of its late date.

After rubbish tipping had ceased, soil accumulation, accentuated by the erosion of the back face of the wall, gave rise to a thickness of mortar soil which produced a few sherds of early

Saxon pottery (vol. 2). Erosion of an earlier date is also apparent in the section of trench 5 which shows lenses of mortar and flints interlaced with the Roman rubbish deposits. Presumably the wall had started to crumble before the end of the Roman period.

The Pits (fig. 106)

A summary of the pits in area D is given below. Since the pits were small and of uniform fill, no half sections are illustrated.

Pit 3 (PC 61 1 Pit C)

Roughly oblong pit, 6 ft. by 4 ft. 6 in. (1.8 × 1.4 m.), cut through the Roman builders' spread to a depth of 3 ft. 3 in. (0.99 m.) below natural.

The contents were uniform, consisting of grey crumbling soil mixed with animal bones and oyster shells. The pit was cut into by pits 1 and 2.

Small Finds

Iron spearheads (2658,
2659) fig. 124, nos. 172-3

Pit 7 (PC 61 2 Pit D)

Small circular pit 2 ft. 3 in. (0.69 m.) in diameter, cut through the builders' spread to a depth of 8 in. (20 cm.).

The filling was uniform, consisting of grey soil mixed with charcoal. The pit was cut by pit 1.

No small finds.

Pit 12 (PC 61 3 Pit D)

Small circular pit 3 ft. 2 in. (0.97 m.) in diameter, cut through the builders' spread to a maximum depth of 9 in. (0.23 m.) below the top of natural.

The filling was uniform, consisting of grey-brown soil containing quantities of animal bones.

Small Finds

Bronze coin (17) House of Valentinian or of Theodosius

Pit 13 (PC 61 3 Pit E)

Small oval pit measuring 1 ft. 9 in. by 2 ft. (0.53 × 0.61 m.), cut through the builders' spread to a depth of 1 ft. 3 in. (0.38 m.).

Filled with grey-brown occupation rubbish together with quantities of animal bones.

No small finds.

Pit 14 (PC 61 3 Pit F)

Small circular pit 2 ft. 3 in. (0.69 m.) in diameter, cut through the builders' spread to a depth of 4 in. (10 cm.) into natural.

The filling consisted of grey-brown occupation rubbish.

No small finds.

Pit 16 (PC 61 3 Pit H)

Circular pit 3 ft. 9 in. (1.14 m.) in diameter, largely cut away by pit 9, but remaining to a depth of 4 in. (10.2 cm.) below the bottom of the later pit, i.e. it was originally 2 ft. (0.61 m.) deep below the natural ground surface.

Filled with grey-brown occupation rubbish.

No small finds.

Pit 18 (PC 61 4 Pit B)

Small circular pit 2 ft. 8 in. (0.81 m.) in diameter, cut to a depth of 1 ft. 6 in. (0.46 m.) below the top of natural.

Filled with grey-brown occupation soil. Cut by pit 17.

No small finds.

Pit 19 (PC 61 4 Pit C)

Small oblong pit 4 ft. (1.22 m.) long but partially cut away by pit 17. Cut to a depth of 1 ft. 5 in. (0.43 m.) below the top of natural.

Filled with grey-brown occupation rubbish.

No small finds.

Pit 20 (PC 61 4 Pit D)

Small circular pit 2 ft. 3 in. (0.69 m.) in diameter, cut to a depth of 2 ft. 6 in. (0.76 m.) below the top of natural.

Filled with grey-brown occupation soil.

No small finds.

Pit 22 (PC 61 5 Pit B)

Small circular pit 2 ft. 6 in. (0.76 m.) in diameter, dug to a depth of 1 ft. 8 in. (0.51 m.) below the top of natural.

Filled with grey-brown occupation soil.

No small finds.

Pit 23 (PC 61 5 Pit C)

Small circular pit 2 ft. (0.61 m.) in diameter, dug to a depth of 5 in. (13 cm.) into natural.

Filled with grey-brown occupation soil. Cut by pit 17.

No small finds.

*Small Finds from Area D**From occupation deposits against back face of Roman wall*

Bronze coins	(5) Crispus (A.D. 317-26)	(1 layer 5)
	(4) Constantine II (A.D. 317-40)	(1 layer 5)
	(13) Constantius II (A.D. 324-61)	(3 layer 3)
	(21) Valentinian I (A.D. 364-75)	(4 layer 3)
	(20) Radiate; late third century	(4 layer 3)
	(12) illegible; fourth century	(2 layer 3)

Bronze bracelet	(28)	as no. 26; not illustrated	(1 layer 5)
Bronze bracelet	(10)	as no. 26; not illustrated	(2 layer 3)
Bronze spoon	(2)	fig. 113, no. 58	(3 layer 3)
Bronze disc	(24)	fig. 115, no. 80	(5 layer 3)
Bronze plaque	(26)	fig. 110, no. 16	(5 layer 3)
Bone pin	(1)	as nos. 81-5; not illustrated	(3 layer 3)
Shale bracelet	(14)	7.0 cm. diam., D-section; not illustrated	(3 layer 3)
Shale bracelet	(15)	6.0 cm. diam., D-section; not illustrated	(3 layer 3)
Shale bracelet	(11)	6.0 cm. diam., D-section; not illustrated	(2 layer 3)

From Pit 3

Iron spearheads	(2658, 2659)	fig. 124, nos. 172-3
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From Pit 21

Bronze coin	(17)	House of Theodosius
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From builders' spread contemporary with construction of wall

Bronze coin	(16)	Saloninus (A.D. 255-8)	(2 layer 5)
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TRIAL TRENCHES IN THE CENTRE OF THE FORT

(fig. 107)

In 1966 four narrow trial trenches (trenches 59, 61, 64, 67) were cut in the centre of the fort close to the churchyard gate, in advance of a road widening scheme which was never implemented.

The features discovered are summarized in fig. 107. Trench 59 was largely disturbed in the post-Roman period, particularly by late eighteenth-century features. Where they survive, the lowest pre-eighteenth-century occupation levels lying above natural contained Saxon and medieval pottery mixed up with Roman sherds. Nine postholes were found but none need be Roman.

Trench 61 sectioned a series of recut gullies probably dug to drain the main east-west road in its various periods. The earliest gully contained only Roman sherds. It was filled with brownish clayey silt, and was dug to a depth of about 1 ft. (0.3 m.) below the surface of natural clay.

Trenches 64 and 67 produced evidence of a continuous spread of tightly packed cobbles, trampled into the natural clay 3 ft. (0.9 m.) below the present ground surface. Two shallow slots each containing postholes ran across the area in a N-S direction: they were cut through the gravel. Since the only finds from within were a few Roman sherds it is possible, but by no means certain, that they represent Roman features.

Interpretation of so small an area is impossible. It is however certain that no substantial masonry structures occurred here. The probability is that the road between the two main gates continued straight across the area.

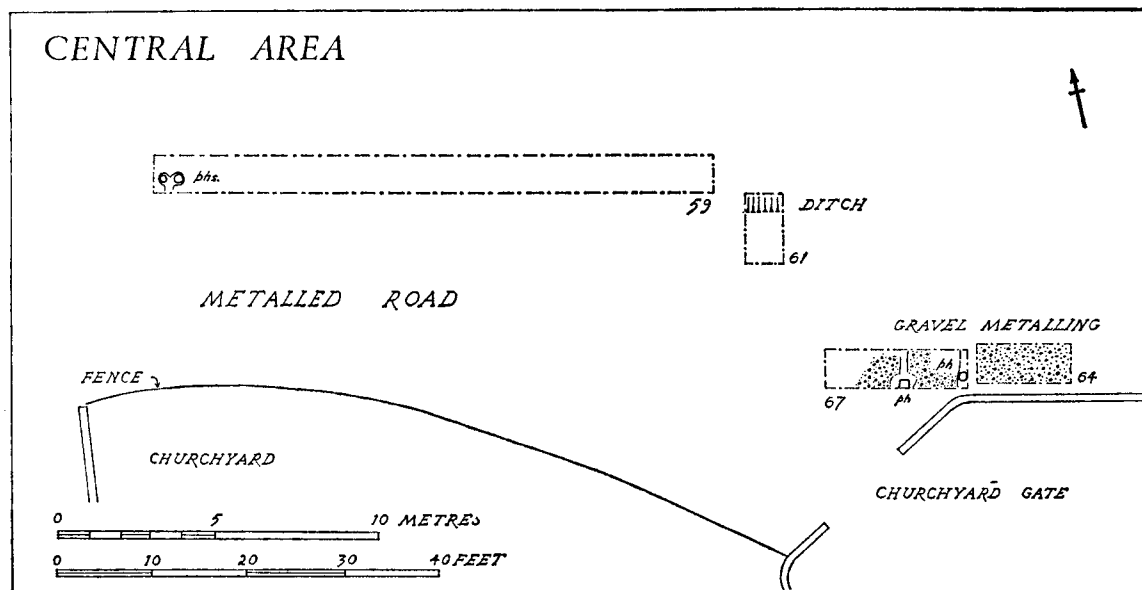


FIG. 107

EXCAVATION WITHIN THE INNER BAILEY

A number of trenches were dug within the inner bailey to examine details of the medieval structure. Since the work is still in progress and the areas of the Roman ground surface examined are small, description is best left for a later volume. It is sufficient here to say that where the Roman levels survive they consist of between 1 and 2 ft. (0.3–0.6 m.) of black occupation rubbish lying on the surface of the natural clay. A trench (trench 83) cut across the berm between the south wall of the inner bailey and the medieval ditch sectioned an undisturbed Roman occupation layer 2 ft. (0.6 m.) thick.

EXCAVATIONS WITHIN THE PRIORY

The south-east quarter of the Roman fort was once occupied by an Augustinian Priory of which the church, less its south transept, still survives surrounded by a cemetery. A programme of limited excavation was undertaken by Mr D. Baker in 1968–9, to elucidate the structural history of the Priory. This work, which will be reported in detail in volume 3 of the Portchester reports, incidentally discovered traces of Roman occupation material usually restricted to black occupation rubbish extensively cut away by medieval and later disturbances. Several features, however, deserve discussion.

The Roman Watergate

Trench P10 which lay against the south face of the Saxon Watergate exposed part of the Roman south inturned wall immediately below the post-medieval levels. The details are incorporated in fig. 17.

The Roman Fort Wall

Trenches P2 and P8 were dug against the south wall of the Roman fort. In trench P2 a large medieval pit had cut into the wall exposing details of the internal timbering described on pp. 14-15 and illustrated in fig. 9. Trench P8 provided a section through the levels against the back face of the wall. Layer 24 represented the back filling of the foundation trench. It was sealed by a builders' mortar spread, layer 27, and a tip of clay, layer 25, above which lay a thick spread of Roman occupation material, layer 23.

Cobbled Surface

In trench P5, dug against the south face of the church against the north-west pier of the south transept a layer of hard packed flint cobbles (layer 13), 5 in. (12.7 cm.) thick was found to overly the natural brickearth at a depth of 3 ft. 6 in. (1.07 m.). Above this was a black occupation layer (layer 12) 1 ft. 5 in. (0.4 m.) thick.

EXCAVATIONS OUTSIDE THE ROMAN DEFENCES

On four separate occasions, trenches were cut through the area outside the Roman wall. Three were sections through the outer rampart: trenches 44 and 48 (1964), trench 81 (1968) and trench 106 (1972); one was an area excavation on the site now occupied by the public lavatory, trench 51 (1965).

All four excavations exposed a layer of black turfy soil up to 1 ft. (0.3 m.) thick, lying on the natural clay, containing quantities of Roman pottery and a few sherds of late Saxon wares. When the layer was removed in trench 81, clear traces of ploughing could be seen in the surface of the natural subsoil. The slightly abraded state of the pottery and the nature of the soil layer were consistent with the area having been ploughed some time between the third and fourteenth century, the upper limit being given by the construction date of the sealing rampart. Greater precision in dating is impossible.

The amount of Roman material recovered suggests that quantities of rubbish were tipped outside the walls during the use of the fort. Little sign of Roman structural activity was found, with the exception of a gully beneath the medieval rampart in trench 106, sealed by the black turfy soil. The gully was flat bottomed, 4 ft. (1.2 m.) wide and 3 ft. 6 in. (1.07 m.) deep, and was filled with a uniform grey silty soil (layer 36). Two coins were recovered from the upper part of the filling (layer 35): one (2303) was illegible, the other (2302) was of Constans (A.D. 348-50).

Roman Small Finds from Trenches outside the Fort Wall

Trench 44 layer 6:

Bronze pin (44) fragment only; not illustrated.

Trench 51 layers 6 and 7:

None.

Trench 81 layer 11:

Bronze bracelet (858) not illustrated, as no. 26.

Bronze twisted wire (881) fragment, not illustrated, as no. 26.

SUBSIDIARY AREAS

187

Bronze ring	(878)	not illustrated.
Bronze coin	(870)	Constantine II (A.D. 335-7)
	(888)	Constantius II (A.D. 330-5).
Trench 106, post-Roman, layers 4, 20, 21:		
Bronze coins	(2316)	Constantine I (A.D. 321-4).
	(2307)	Constantine I (A.D. 330-5).
	(2308)	Constantinopolis (A.D. 330-45).
	(2309)	Magnentius (A.D. 350-3).
Roman soil, layers 10, 34:		
Bronze coins	(2310)	Constantine I (A.D. 324-6).
	(2305)	Constantine II (A.D. 324-30).
	(2306)	Constantine I (A.D. 326-30).
	(2311)	Urbs Roma (A.D. 330-45).
	(2300)	House of Constantine (A.D. 330-45).
	(2315)	Constantine I (A.D. 335-7).
	(2313)	House of Constantine (A.D. 335-45).
	(2301)	Constantius II (A.D. 337-41).
	(2298)	Helena (A.D. 337-41).
	(2312)	House of Constantine (A.D. 350-60).
	(2299)	Illegible, third to fourth century A.D.
Gully, layer 35:		
Bronze coins	(2302)	Constans (A.D. 348-50).
	(2303)	Illegible, fourth century A.D.
Bronze pin	(2304)	not illustrated.

VI. THE COINS

by RICHARD REECE

INTRODUCTION

THE coin list comprises all the coins found in the current excavations together with those found in the Ministry of Works excavations in the 1930s, some of which are now in the Portsmouth City Museum (though others have unfortunately disappeared), and a few coins found on the site and now in private possession. The coins of the earlier excavations were listed by the late B. H. St J. O'Neil, and the coins from the current excavations up to 1966 were identified by D. W. Phillipson; A. S. Esmonde Cleary helped in the identification of the coins from the last two seasons.

References in the list are to the relevant volumes of the standard corpus, *Roman Imperial Coinage*, ed. Mattingly, Sydenham, Sutherland and Carson, or to the two parts of *Late Roman Bronze Coinage*, Carson, Hill and Kent, in which HK refers to part I and CK to part II. Where the coin could not be assigned without doubt to a single reference number the word 'as' has been used, e.g. as RIC 67, meaning that all that can be seen on the coin suggests RIC 67 but other references would be possible. Where reference is made to a mint it should be understood that 'as London 54' means that the mint is not known, but the type is the same as that of London number 54, whereas 'London as 54' means that the mint is certainly London though the precise reference number is in doubt. Similarly, coins which have been copied from regular coins may be quoted as 'copy as HK 48', meaning that the coin copies the type shown on HK 48 but nothing else, e.g. the mint-mark, whereas 'copy of HK 105' means that all the features expected on HK 105 can be seen in the copy. All coins from sealed deposits have been quoted in the appropriate part of the text by the same reference as is used here; the remainder are from mixed deposits.

COIN LIST

1	Claudius I	As RIC 66
1	Saloninus	9
1	Gallienus	(Joint reign) 169
11	Gallienus	(Sole reign) 176, 179, 193, 207, 256, 267, 325, rev. illeg. (4)
7	Claudius II	10, 18, 105, 261, (2) rev. illeg. (2)
1	Quintillus	33
1	Aurelian	Rev. illeg. (1)
3	Victorinus	116, as 116, 118
14	Tetricus I	As 80, 100, 126, 136, as 145, rev. illeg. (9)
6	Tetricus II	260, 264, 270, as 270, 273, rev. illeg.

- 50 Carausius As 34, 56, 81, 91, as 91, 98, as 98 but IM CM CARAVSIVS . . ., 101 (3), as 101 (3), copy of 101 with * to left, as 110, 118, 121, 155, 295, 320, 324, as 330 but mm. XX, as 353, 478, 484, 487, 604, 791, as 878 (8), as 880, 893, as 893, 927, as 1037, 1038, Pax type overstruck on Gallienus obv. on obv., rev. illeg. (6)
- 2 Allectus As 55, 86
- 15 Radiates Regular but illegible (4); barbarous obv. of Victorinus (1), reverse Invictus (2), Pax (2), Securitas (1), rev. illeg. (5)
- 2 Diocletian RIC 5. Lyon 26, 28
- 10 RIC 6 Lon 6a, as 6a but PFAG, as Lon 6a (2), Lon 10, Lon 77a; Trier 151a, 170a; Alex as 14a; rev. illeg. (1)
- 4 Maximianus Herc. RIC Lon 77b; Tr 676b; Ro 100b; Cart as 27b
- 2 Constantius I RIC 6 Lon 20; Tr 527a but not cuirassed
- 6 Galerius RIC 6 Tr 213b, 532, 536b (2), 594b; Lyon 164b
- 4 Maximinus II RIC 6 Lon 209b (2); Tr 667b; Lyon 194a
- 1 Divo Claudio RIC 7 Tr 203
- 5 Licinius I RIC 6 Lon 209c, 249; 7 Lon 3; Tr 58, as 210
- 31 Constantine I RIC 6 Lon 121a (3), 153 (2), 234, as Lon 234, as 263 but bust 1gR of p. 134, 280 (3), 281; Tr 870, 872, 873 (3), 890, 893, 897, 899 (3); Lyon 291, 307 (3), 310; rev. illeg. (3)
- 53 RIC 7 Lon 10 (3), 27 (2), 73, 90, 91, 92, 93, 154, as Lon 154, Lon as 154 but AG, 185, as Lon 222, 240, 271, as Lon 289; Tr as 40, 45, 130, 159, 209 (2), 213 (3), copy as 213 (2), 221 (2), 303 (2), 341 (2), as Tr 341, 368 (2), 389, 429 (2), Tr as 430 probably irregular, 449, 475, 504, 509; Lyon 4, 32, 107; Tic 140; Sis 93; Thess 153; Con 22
- 18 HK 60, 61, 62 (3), 72, as 87, 106, as 106, 180 (2), 202, 207 (2), 367, 398, 537 (2)
- 10 Crispus RIC 7 Lon 230, 291, as Lon 291; Tr 308, 347 (2), 348; Tic 156, 159; Thess 125
- 8 Helena RIC 7 Tr 481; HK 112 (3), 128 (3), 1046
- 8 Theodora HK 113 (6), as 113 (2)
- 10 Constantine II RIC 7 Lon 145, 181, 255 (2), 292; Tr 415; Lyon 148, 211, 221, 231
- 19 HK as 49 (3), 68, 88 (2), as 88 (2), 93 (4), 107, 187 (3), 226, 229, 379
- 25 Urbs Roma HK 51, as 51 (4), copies as 51 (5), 58 (3), 65 (4), copy of 65, 85, copy of 190, 200, 205, 382, 389, 546
- 27 Constantinopolis HK 52 (3), as 52 (4), copy of 52 (2), copies as 52 (6), 59 (3), 66 (3), copy of 66, 86 (2), copy as 185, 191, 196
- 30 Constans HK 84 (2), 90 (2), as 90 (2), 95, as 102, 133 (3), copy of 133, 138 (2), as 138 (5), 140, 148, 150 (2), 155, 160 (2), as 227, as 419, 557, 711
- 7 CK 33 (2), as 33, 41, 178, 607, 888
- 2 Constantius II RIC 7 Tr 490; Ar 316
- 18 HK 50, 89 (2), 108 (3), 126, 132, 139, 182, 210, 242, 354 (2), 400, 441 (2)
- 2 CK 254, 256
- 3 House of Constantine RIC 7 as Lon 158, as Lon 208a, as Lon 291
- 28 HK as 48, copies as 48 (5), copies as 49 (3), as 87 (3), copies as 87 (10), copy as 102, as 137 (2), copy of 181, copy as 187, hybrid with obv. as 51 and rev. as 52

22		CK copies as 25 (9), copy as 202, copy as 253, illegible copies (11)
6	Magnentius	Copies as CK 8 (2), 23, 55, 212, 439
1	Decentius	CK 6
2	Julian	Silver rev. VOTIS V MVLTI X mm. illegible; bronze reverse illegible
26	Valentinian I	CK as 96 (5), as 275 (2), 286, 290, as 296, 330, 479, as 479, 481 (2), 485, 527 (2), 984, 1003, 1020, 1350 (2), 1393, as 1414
30	Valens	As 97 (7), 276, as 280 (2), as 301, 309, 315, 348, 352, 480, 483, 507, 510, 520, 526 (2), 528, 722, as 967, 1029, as 1303, 1417 (2), 2335
17	Gratian	297, as 320, 371 (4), 378, 511 (2), 517, 529 (3), 531, 540, 1013, 1421
10	House of Valentinian	As 96 (6), as 275 (2), rev. illegible (2)
2	Valentinian II	389, 1105
1	Magnus Maximus	Silver RIC 9 Trier 84b
1	Theodosius I	565
5	Arcadius	167, 392 (2), 1107 (2)
1	Honorius	As 806
5	House of Theodosius	As 162 (2), as 796 (2), reverse illegible (1)
28	Fourth century	Worn, corroded or illegible

METHOD OF STUDY

There are two main ways in which coin lists may yield information; through the dates when the coins were minted and supplied, or through the dates when the coins were lost. Only a small proportion of the coins from Portchester were found in sealed deposits so we have little knowledge of when most of the coins were lost. We are therefore left with an assemblage of mass-produced artifacts which reached the site more or less in a known sequence, and all information we can hope to gain must come from a study of the rate of supply rather than anything else. Unfortunately, we have no knowledge at all of the production of coins so far as absolute numbers per year, or even relative numbers or volumes at different times, are concerned. Such knowledge may one day be available, but until the study of Roman imperial coinage in the fourth century is very much further advanced, the only way forward in interpreting site finds lies in the comparison of one chosen site with other sites. First, we can compare Portchester with other sites in Britain, then, as a first and woefully incomplete essay, we can compare Portchester with a few military and civil sites in Italy, the Rhine, and France.

Comparative material in Britain lies to hand in a survey of the coinage found on 14 varied, if not random, sites, recently published.¹ No doubt some of the sites have numismatic defects such as the presence of scattered hoards, the insertion of collectors' material, or the selection of coins for display. Thus Richborough is said to owe its large numbers of coins to hoards which were scattered at some unspecified date uniformly throughout the fort; in the totals published all known hoards have been excluded — a point true for all other sites — and the spectre of unknown hoards has been ignored since no serious answers have yet been advanced

¹ R. Reece, 'A Short Survey of the Roman Coins found on Fourteen Sites in Britain', *Britannia*, iii (1972), 269-76.

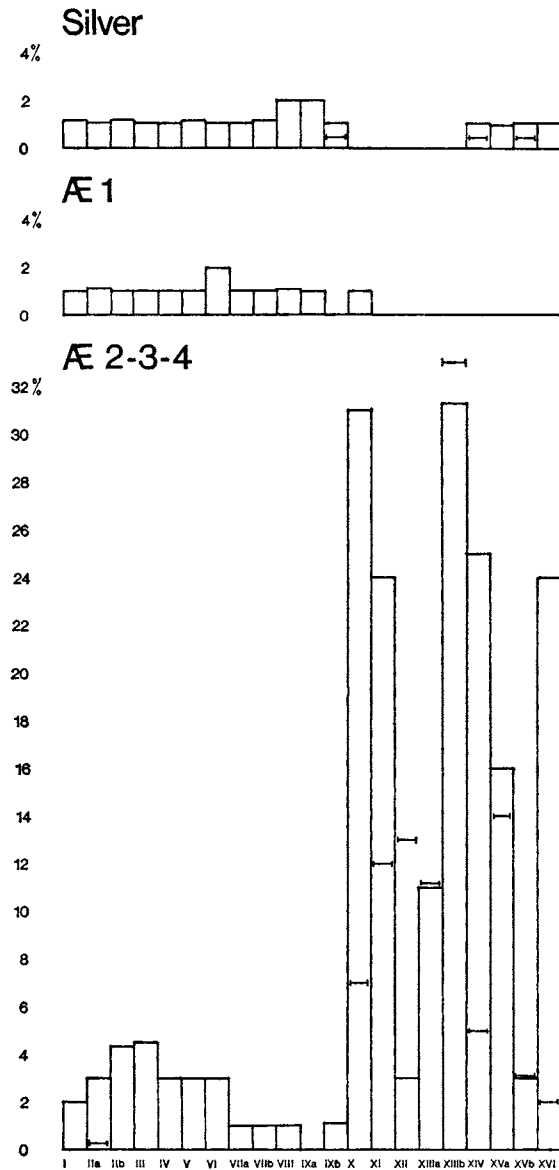


FIG. 108. Coin histogram

to my exorcism in the fifth Richborough report.¹ Individual sites have individual numismatic quirks at isolated dates, but these can be spotted satisfactorily, and give no reason to avoid using the coins for comparative studies.

The coins found on the 14 British sites (which include Portchester) can be reduced to a single diagram such as fig. 108. This has been constructed by dividing the total coins from

¹ R. Reece, 'Summary of the Roman Coins from Richborough', in B. W. Cunliffe (ed.), *Fifth Report on the Excavations of the Roman Fort at Richborough, Kent* (1968), 200-16.

each site into three categories of silver, large, and small bronze coins — each of which is given a separate bar diagram — and 20 periods, which provide the horizontal axis. The periods are roughly 20-year spans which reflect, in the early empire, reigns such as Hadrian (period V) or Marcus Aurelius (period VIIa), and, in the later Empire, coherent issues of coins of similar weight, size and metal. The dates of these periods are: I, up to A.D. 41; IIa, 41 to 54; IIb, 54 to 69; III, 69 to 96; IV, 96 to 117; V, 117 to 138; VI, 138 to 161; VIIa, 161 to 180; VIIb, 180 to 193; VIII, 193 to 222; IXa, 222 to 238; IXb, 238 to 259; X, 259 to 275; XI, 275 to 294; XII, 294 to 317; XIIIa, 317 to 330; XIIIb, 330 to 348; XIV, 348 to 364; XVa, 364 to 378; XVb, 378 to 388; XVI, 388 to 402.

Each value, e.g. silver coins of Hadrian at Canterbury, could be plotted as a percentage of the total coins at the site which would produce a diagram with a scatter of points. Instead, fig. 108 shows for each period a solid bar which shows the spread of values taken over all sites. Single, abnormal figures have been ignored in drawing the bar so that it represents the 'normal' spread of values over the 14 sites. Thus most values of sestertii of Antoninus Pius (AE1 in period VI) lie between 0 and 2%, and the bar therefore runs from 0 to 2%. Small bronze coins of 317 to 330 (AE 2-3-4 of period XIIIa) form from 0 to 11% of the coins on any site, and this bar therefore runs from 0 to 11%. Against this background of vertical bars the values for Portchester can be shown as horizontal lines. Fig. 108 therefore shows the coins found at Portchester in relation to the coins found on a selection of other sites in Britain.

Any comparative study ought to extend beyond the borders of one individual province or diocese, for Portchester might be a particular type of site rather than a particular British site, and the type of site to which it belongs may have more influence on its coin list than may its geographical position. Ideally we should compare Portchester with the groups of coins collected together for the N. of France and the Rhine,¹ S. France² and N. Italy.³ At present there are two good reasons for postponing such comparisons; the groups are not yet studied in enough detail to allow any fundamental comparisons, and most of the groups come from sites of little known historical background. Any resulting comparison would therefore be lacking in detail, and historically uninformative. As a temporary measure, for the detailed comparison is now under active consideration, we may select three military sites — Speyer (Rhine), Mainz (Rhine), and Vindonissa (Fundmünzen, published by T. Pekary, 1972), and three civil sites which have produced good coin lists, but are otherwise disparate, Pachten (Rhine), Dijon ('S.' France), and Aquileia (N. Italy). To these European sites can be added a military site in Britain, Richborough, and the towns nearest to Portchester and Richborough, Winchester and Canterbury. If we restrict our enquiry to the period when Portchester actually has numbers of coins, the later third and fourth centuries, the result is shown in Table I.

Little progress can be made by the comparison of crude numbers, as the presence of Richborough in the group amply demonstrates, so Table II shows the same values expressed as percentages of the totals in Table I.

¹ R. Reece, 'Roman Coins in N. France and the Rhine Valley', *Num. Chron.* (1972), 159-65.

² R. Reece, 'Roman Coinage in Southern France', *Num. Chron.* (1967), 91-105.

³ R. Reece, 'Roman Coinage in Northern Italy', *Num. Chron.* (1971), 167-79.

TABLE I

Numbers of Coins A.D. 259 to 402

	<i>Win.</i>	<i>Port.</i>	<i>Cant.</i>	<i>Richb.</i>	<i>Speyer</i>	<i>Pachten</i>	<i>Mainz</i>	<i>Vindon.</i>	<i>Dijon</i>	<i>Aquil.</i>
X	186	43	514	4759	64	52	201	190	787	1404
XI	188	69	265	4099	13	8	38	70	296	933
XII	13	75	31	351	47	15	68	94	167	976
XIIIa	24	67	30	855	68	35	107	142	130	1201
XIIIb	160	188	377	10127	80	71	114	381	80	1357
XIV	51	31	317	3156	25	11	65	167	39	932
XVa	55	78	84	2821	59	28	36	283	33	590
XVb	5	5	1	1084	19	7	14	106	20	412
XVI	61	14	92	22750	2	3	4	83	3	323

TABLE II

Percentages of Coins A.D. 259 to 402

	<i>Win.</i>	<i>Port.</i>	<i>Cant.</i>	<i>Richb.</i>	<i>Speyer</i>	<i>Pachten</i>	<i>Mainz</i>	<i>Vindon.</i>	<i>Dijon</i>	<i>Aquil.</i>
X	25	7.3	29	9.5	18	24	32	12	49	17
XI	25	12	15	8.2	3.5	3.8	5.8	4.5	25	11
XII	1.7	13	1.8	0.7	13	7.2	11	6.2	11	12
XIIIa	3.0	11	1.7	1.7	19	17	17	9.4	8	14
XIIIb	21	32	21	20	21	34	18	24	5.1	15
XIV	6.8	5.3	18	6.3	6.7	5.2	10	11	3.1	12
XVa	7.4	14	5.0	5.6	15	13	5.5	19	2.1	7.3
XVb	0.7	0.8	0.1	2.2	5.0	3.3	2.1	7.0	1.3	5.1
XVI	8.2	2.4	5.4	45	0.6	1.4	0.6	5.4	0.2	4.0
Dev.	75	—	82	93	47	43	69	44	103	51

The last line in Table II gives the total difference of each site from Portchester, i.e. the arithmetic sum of the variations from the Portchester value for each site. This helps to show which sites have values near to the Portchester values, and which are further away. The other English sites quoted have values more often further away than the continental sites, particularly Pachten and Vindonissa, though Speyer and Aquileia follow fairly close. The ideal site with which to compare Portchester in greater detail would seem to be Pachten, but unfortunately that site has only produced a total of 230 coins of the relevant period. Fortunately the second choice, Vindonissa, has the great advantage not only of a total of 1516 of the relevant coins, but the recent publication, in excellent detail, and most usable form.

If only a few arbitrary judgements are made it is possible to make out a list in which most of the coins found on the two sites are assigned to a reasonably short period of minting. This list is shown in Table III.

It might be thought that the best way to present the information in Table III would be in a diagram of coins lost per year. I have avoided this *because* I accept the superior impact which

TABLE III

<i>Date A.D.</i>	<i>Port.</i>	<i>Vind.</i>	<i>Date A.D.</i>	<i>Port.</i>	<i>Vind.</i>	<i>Date A.D.</i>	<i>Port.</i>	<i>Vind.</i>
259-68	11	61	313-17	16	35	348-50	7	25
268-70	11	98	317-20	20	38	350-53	6	20
270-75	21	31	320-24	36	76	353-60	17	113 (1AR)
275-86	13	52	324-26	6	18	360-64	1 (1AR)	8
286-93	54	15	326-30	5	10	364-67	15	61
293-96	2	3	330-33	46	62	367-75	61	216
296-300	5	8	333-35	19	43	375-78	2	6
300-03	13	6	335-37	19	41	378-83	5	78
303-05	1	2	337-40	31	41	383-88	— (1AR)	27 (1AV)
305-07	5	5	340-41	7	36	388-95	12	82
307-10	9	8 (1AR)	341-45	48	19	395-402	2	1
310-13	26	29	345-48	18	139			

diagrammatic presentation holds. The impression left on a viewer by such a diagram would be a statement of the periods of the fourth century in which coins were small, low in face value, and commonly lost; this, though valuable in itself, is not the object of the present exercise. On any coin diagram devoted to 'number' the period 330 to 333 (46 coins) would far outshadow the period 300 to 303 (13 coins), yet the latter is considerably more noteworthy, important, and deserving of comment. Coins of the earlier period are probably more than four times the face value and intrinsic value of the later coins, so that the *value* of coinage lost in the two periods is contradicted by sheer statement of numbers. Whatever the relative monetary significance of the two types of coin, the earlier coins are far less commonly found on sites than the later, and a figure of 13 is remarkably high. As no diagram can at present be drawn which would accommodate these points I prefer not to mislead readers by providing a diagram which will inevitably be misused by many as a quick summary of pages of turgid prose.

The comparative machinery has been assembled; it is now time to see if it can be used.

DISCUSSION

Fig. 108 makes the first clear and obvious point that, although coinage before the later third century is to be expected on 'normal' sites in Britain, at Portchester it is absent. The only exception is a single coin of Claudius I which fits well with a small scatter of early pottery found (pp. 8-10).

The archaeological evidence makes it quite clear that apart from a slight Claudian occupation there was no activity on the site before the building of the stone walls, so the coin evidence merely adds confirmation. The values in periods X and XIV are low, but well within

the 'normal' range; in periods XIIIa, XIIIb, and XVa they are high, but again within the normal range. In period XII (294-317) however, Portchester is highly abnormal, and certainly holds the record for England, if not for archaeological sites in N.W. Europe.

The Late Third Century A.D.

The coins from Portchester, minted before the reign of Carausius, are comparatively few in number, and worn in condition. The irregular copies of such coins, known as Barbarous Radiates, are similarly poorly represented, but the coins of Carausius are abundant, and often in freshly minted condition. The majority of Carausius' coins seem to belong to the early part of the reign, with few of the fully developed later mint-marks, and, following on from this, there are only two coins of Allectus. While Allectus is less common, in general, than Carausius (Winchester 25 to 4, Canterbury 66 to 13, Richborough 1324 to 292), the ratio of 54 Carausius to 2 Allectus is the lowest such ratio known to me at present.

The best interpretation of the evidence at present seems to be as follows: there is not enough evidence to suggest that any coins reached the site before the reign of Carausius; the worn, earlier, radiate coins enter the site with new Carausian coinage from about 286 to 290, after which very few coins reached the site for perhaps ten years. The low numbers of barbarous radiates, which I would date from 273 to 285, strongly supports this line of reasoning, for if there were continuous provision of coin to the site from *c.* 265 onwards, reaching a peak under Carausius, then the irregular coinage should be far better represented.

The Period of the Follis, A.D. 294-303

In the four short periods from 305 to 313, there is astonishingly close agreement in the numbers of coins from Portchester and Vindonissa. Whatever this may mean in terms of supply and activity, it at least gives reason to hope that the discrepancy in the numbers from 296 to 300 and 300 to 303 may represent a real difference between the sites. Portchester, as compared with Vindonissa, is low on coins from 296 to 300 and high in the next group. This suggests that the gap noticed under Allectus continued until about 300, that there was then a sudden influx of new coinage, and that some coins already in circulation came in at the same time.

The whole period of 294 to 317 is one in which Portchester is highly abnormal when judged against all other sites in Britain (see fig. 108). At Vindonissa there seems little doubt that this is a period of garrison by regular troops. The convergence of Vindonissa and Portchester, tied in with the complete divergence of Portchester from Britain, might argue for a garrison at Portchester. It may be noted from Table II that this burst of activity is markedly absent at Richborough, which seems to follow what might be called the 'civilian British pattern'.

The House of Constantine, A.D. 313-64

From about 313 to about 345 Portchester follows Vindonissa in fluctuations from period to period, but usually with about half the actual number of coins. The variations apparent from 340 onwards are partly artificial in that the copies of coins of the House of Constantine which are far more common in Britain than the continent, have been grouped in the table in between the issues of 337 to 341 and the new issues (with the legend VICTORIAE DD AVGG Q NN) which probably belong to 345 to 348. The great change comes around 345

with the new issues just mentioned, which are few in number at Portchester. In the rest of Britain they are common, and at Vindonissa they form a definite peak of activity, so the small numbers at Portchester may mean a drop in coin supply. This suggestion is enhanced by the comparative rarity of the 'Fel Temp Reparatio' coinage of 348 to 356, and its attendant copies. These coins often form a high proportion of the total coinage of the fourth century on any site in England, so their absence at Portchester is almost certainly not accidental. A tentative explanation could be that the intensive coin-using occupation of the site finished in about 345 and only began again around 364. Alternatively, the period 345 to 364 could have been one of comparative cleanliness and organization in which less coins were lost and less rubbish left lying about the interior of the fort.

The Later Fourth Century, A.D. 364 to 402

From 364 to 378 there is a definite intensification of coin loss, compared to the preceding decades. The relative numbers in the three subdivisions of this period are satisfyingly similar at Portchester and Vindonissa, suggesting that the variations are in general coin supply rather than specific instances of coin loss. The English variation from continental uniformity from 378 to 388 comes through very clearly, and reference to fig. 108 will show that this occurs on every site in England. In this context the silver coin of Magnus Maximus provides an intriguing contrast.

The last phase of coin use in Britain is represented at Portchester, though many British sites show more substantial activity. If the coinage of the House of Theodosius (378-88 +) really represents a drop from the House of Valentinian (364-78) the virtual gap around 380 makes it very difficult to fix on any date for a sudden change, or even to decide between sudden change or gradual decline. My feeling is that the coins of Gratian of 378 to 383, which are distinctly rare on English sites, represent a similar level of activity to that of 364 to 378; the silver of Maximus seems to indicate some official sort of activity: I would therefore look for a break in occupation in the decade 387 to 397.

This forms a complete contrast with the coinage at Richborough which reaches an all-time peak of supply between 388 and 402 and even has a few silver coins of Constantine III (c. 407) to extend its activity into the fifth century. As there seems to have been an almost complete cessation of the large-scale minting of copper coins in the West around 402, it is pointless to hope for much help on the subject of fifth-century occupation from coin evidence. To this warning must be added a second, that the peak in coinage at Richborough in the last years of the fourth century is abnormal by both British, and European standards. The typical picture at this time is one of decline in coin loss, coin supply, or coin use, in military and some civil sites which contrasts strangely with the documentation on late fourth- or early fifth-century military dispositions provided by the *Notitia Dignitatum*. If the contrast is true at this one period when we have literary evidence to compare with the coin evidence, the dangers of distributing military presences by means of coin lists at earlier dates will be apparent. What is obviously needed is a critical survey of the coin lists of undoubted military sites to determine any particular features which there happen to be of military coin use. Whatever future research might produce on this subject it would seem most unsafe now to accept the decline in coinage at Portchester after 378 as an index of military abandonment. Before 378 there does not even seem to be an arguable decline.

SUMMARY

When compared with other sites in Britain and the continent the coins from Portchester suggest an initial occupation in the decade 280–90, a period of abandonment from 290 to 300, and a period of intensive occupation from about 300 to 345. From 345 to about 360 there are surprisingly few coins, but, from 360 onwards the site shows a coin list which compares well with other sites occupied until the end of the fourth century. The coins demonstrate no positive occupation continuing into the fifth century, so that if the pottery shows an absence of the latest types round about 400, there would seem to be some possibility of a gap in occupation in the early fifth century.

VII. THE FINDS

THE manufactured objects, other than coins, glass vessels, building materials or pottery vessels are listed and described below by a number of writers. Janet Webster has kindly contributed the descriptions of the objects of bronze, silver, bone, antler, shale, lead and iron; Timothy Ambrose describes the leather; David Peacock, the whetstones; Margaret Guido, the glass beads; and Martin Henig, the gemstone. A consolidated bibliography is offered at the end (pp. 268-9).

In the case of each object, the trench and layer number is given, together with a brief description of its stratigraphical position. Lists of objects from each situation will be found in the relevant parts of sections II to V. In the case of objects listed as coming from 'general layers' we refer to unsealed Roman soil accumulations which in some areas were disturbed by post-Roman ploughing and other activities. Each object described is given a unique publication number, but the original 'small finds' number is also published in brackets after the trench location. Dates are A.D. unless otherwise stated.

The objects are listed according to material, in the following order:

Bronze and silver
Bone and antler
Shale
Glass (excluding vessels, for which see section IX)
Gemstone
Lead
Iron
Leather
Wood
Pottery, clay and chalk
Metal working activity
Whetstones
Quernstones

OBJECTS OF BRONZE AND SILVER

by JANET WEBSTER

Brooches (all the brooches are of bronze)

1. Nauheim derivative. The bow is sturdy and of round cross-section; it kicks forward sharply from the head and contracts suddenly at its lower end to form a knife-edge foot; the bow is very straight in profile and the angle of the foot is reversed; the catch-plate is solid. At the head of the brooch, the wire of the bow is flattened into a broad ribbon which forms the three coil spring with internal chord. Cf. *Richborough V*, pl. XXVI, 6. For the type in general cf. *Camulodunum*, 312ff. Type VII; *Richborough V*, 77ff. First century.

Trench 108 layer 16 (2354): general layer.

2. Nauheim derivative? The bow is flat and tapers gradually from the sharp kick near the head to a knife-edge foot. The upper half of the bow is ornamented with two longitudinal incised lines running approximately down the centre, while the lower half of the bow, above the knife-edge foot, is decorated with horizontal incised lines. The small catch-plate is solid but now damaged and the angle of the foot breaks the curve of the bow profile. At the head of the brooch the bronze tapers into a narrow strand to form the now lost spring and pin.

Trench 63 layer 5 (165): general layer.

3. Enamelled plate brooch of common type. The central circle of the brooch has lost its enamel setting; it is separated from a further band of enamel, now of yellowish-green colour, by a broad raised band of bronze. The star-pattern is defined by bronze walls, each pair terminating, at its inner point, in a raised dot of bronze. The colour of the triangular cells of enamel is now lost. Cf. *Richborough IV*, pl. XXIX, 45; *Newstead*, pl. LXXXIX, 10; *Nor'nour*, fig. 21, 191 and 192. Second century.

Trench 90 layer 52 (1266): general layer.

4. Part of a cross-bow brooch. The head and cross-bar are missing. The upper part of the bow presents a narrow edge to the front but is broad in profile. The foot has a slight transverse moulding at its lower edge. The pin-slot does not extend down the full length of the tubular catch-plate; although the latter is hollow throughout, the bronze forms a continuous casing at its lower edge. Third to fourth century.

Trench 96 layer 18 (1732): general layer.

5. The lower part of a cross-bow brooch comprising the lower bow incorporating the tubular catch-plate and foot. The front of the bow is faceted and there is a projecting foot. As in the previous example the pin-slot does not extend all the way down the tubular catch-plate but in this instance the lower portion of the catch-plate is solid. Third to fourth century.

Trench 62 layer 24 (216): general layer.

6. Penannular brooch with milled knob terminals and a slight ridged collar moulding below each terminal. The ring of the penannular is of circular cross-section. The broad ribbon strip of the pin remains coiled round the ring but the narrow lower portion of the pin is lost. The brooch belongs to Fowler's Type A2, first to fourth century in date, but has the additional collar mouldings. Cf. Fowler 1960, 152 and 174.

Trench 88 layer 6 (1000): layer above make-up.

7. A small penannular brooch of circular cross-section with the terminals flattened into broader ribbon strips and coiled round to form spirals at right angles to the plain of the ring. The pin is straight. The brooch belongs to Fowler's Type C; it is current from the first century B.C. and occurs in Anglo-Saxon graves. Cf. Fowler 1960, 152 and 175.

Trench 88 layer 5 (977): layer above make-up.

8. Penannular brooch. The ring is of circular cross-section flattened above and below. The terminals are folded back at right angles to the plane of the ring. Each terminal is notched in the centre of its fold line. On the right-hand terminal the line of this notch is continued to cross, a fraction below its centre, the incised saltire decoration and terminates at the transverse grooving which precedes slight irregular markings at the end of the terminal. On the left-hand terminal the line of the notch is continued a shorter distance and terminates before the incised saltire; there is no transverse moulding here but two incised lines form a sideways V-ornament at the end of the terminal. The ring of the brooch is ornamented on the upper side only with irregular groups of incised lines, sometimes slanted and occasionally formed into a cross by a reverse slant line; groups are separated by plain panels. The narrow straight pin is extant. The brooch seems to be an aberrant form of Fowler's Type D3 of possibly second to fourth century date. Cf. Fowler, 1960, 152 and 176.

Trench 72 layer 6 (364): general layer.

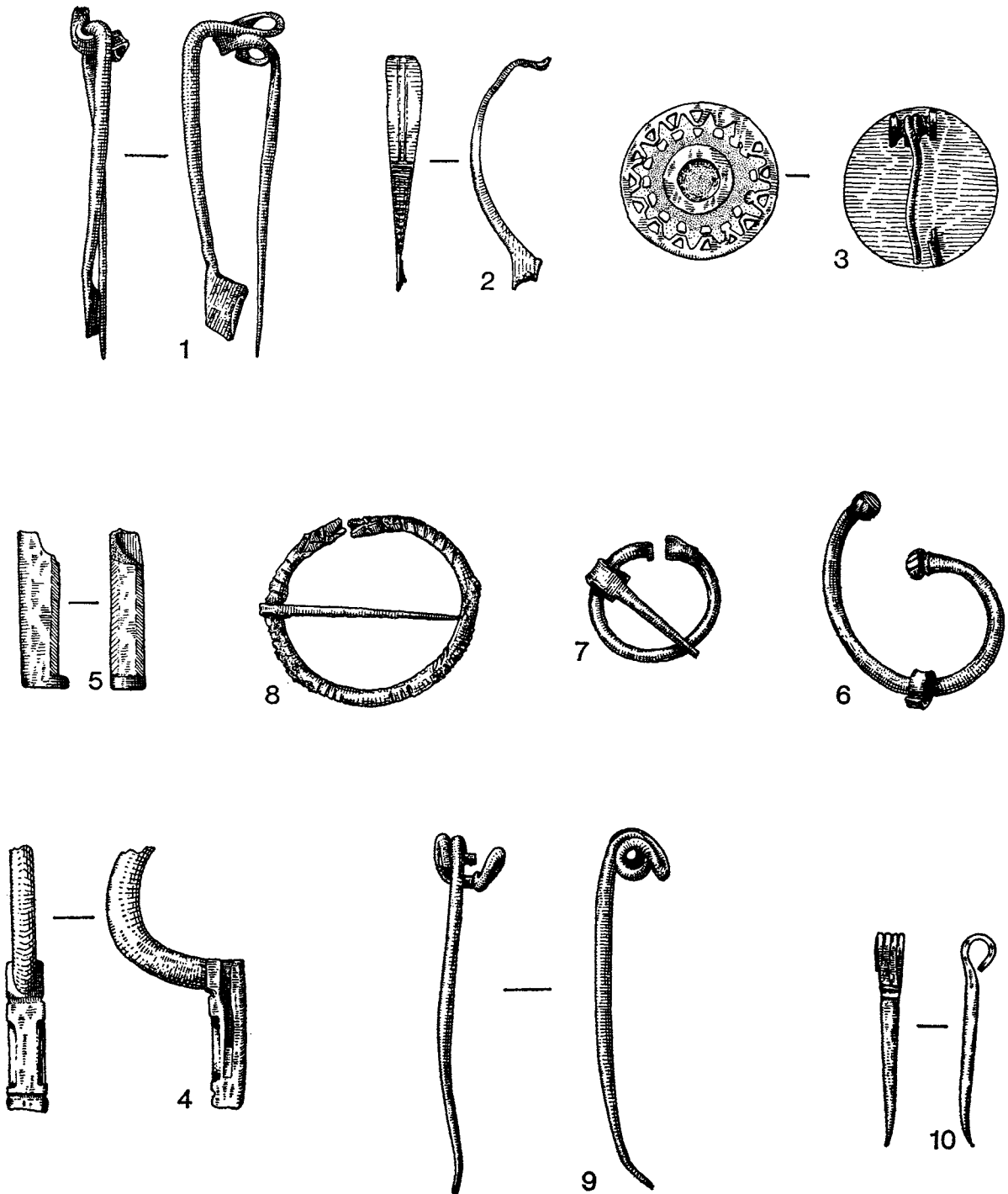


FIG. 109. Bronze brooches (pp. 198-201). Scale $\frac{2}{3}$

9. Spring and pin from a brooch. The spring has an internal chord. An axial bar of bronze passes through the spring. This combination of spring, pin and internal chord is likely to have come from a one-piece first century brooch such as a La Tène or Nauheim derivative.
Trench 94 unstratified (1867).
10. The pin of a penannular brooch. The flattened strip which was looped round the ring has traces of indented line ornament.
Trench 96 layer 23 (1722): general layer.

Military Equipment

11. Gilded bronze acorn terminal. The back is hollow. The lower part of the acorn is ornamented with raised curvilinear triangles, a few of which have additional striated line decoration. Cf. *Trans. Birmingham Arch. Soc.* lxxviii (1962), 36 and fig. 5, 4.
Trench 80 layer 8 (824): general layer.
12. Leaf-shaped bronze fitting with four rivet holes; perhaps a decorative fitting from a scabbard. Cf. for instance *Germania*, xlvii (1969), 112, pls. 19 and 25.
Trench 98 layer 19 (1831): general layer.
13. Buckle of sub-ovoid shape with a straight hinge-bar cast in one piece with the loop. The back surface of the buckle is flat, the front is curved. The buckle is ornamented with two confronted stylized dolphin heads. The buckle belongs to Hawkes and Dunning Type I A. Buckles of this type are thought to have begun to be made only towards the end of the fourth century and to have still been in use in the mid-fifth century. Cf. Hawkes and Dunning, 1961, in particular pp. 21-34 and 41-5.
Trench 99 layer 56 (1935): general layer.
14. Buckle fragment.
Trench 100 layer 18 (2070): general layer.
15. Buckle. This type with loops at right angles to the plane of the buckle to secure the hinge-bar of the belt-plate is common from the Conquest period onwards (cf. *Hod Hill I*, fig. 4, A81, A91, A93 for example) and continues in use into the late Roman period, being copied in barbaric military belt fittings (cf. Hawkes and Dunning, 1961, pp. 53-4, figs. 17, 18). Whether early or late, however, the terminals are usually curved back more or less elaborately and the Portchester buckle is noteworthy for the abrupt finishing of its terminals.
Trench 88 layer 14 (1036): layer below upper make-up.
16. Rectangular strip of sheet bronze with two rivet holes. The ornament consists of a panel of incised wavy line decoration running down the centre, with similar decoration, composed of two rows of short semi-circular lines, running down the sides of the strip and one such similar row running across the top above the rivet holes. At the bottom of the plate the metal shows the faint trace of a curve and the rectangular cut to accommodate the hinge of the buckle-tongue can be seen at the bottom of the central wavy line panel. The ornament has been so deeply pressed into the front of the metal that it is revealed in slight raised lines on the back. The strip is a belt-plate of the type associated with buckles of Hawkes and Dunning Types I A and B. Cf. Hawkes and Dunning, 1961, in particular 21-34 and 41-60.
Trench 5 layer 3 (26): occupation against west wall of fort.
- Nos. 17-19 are similar fragments of sheet bronze but without assured military connections.
17. Fragments of a narrow strip of very thin sheet bronze with repoussé ornament consisting of a row of small dots down each edge with two rows of outward pointing 'horse-shoes' in the field with some interspersal of dots. An ornamental attachment.
Trench 95 layer 37 (1585): general layer.

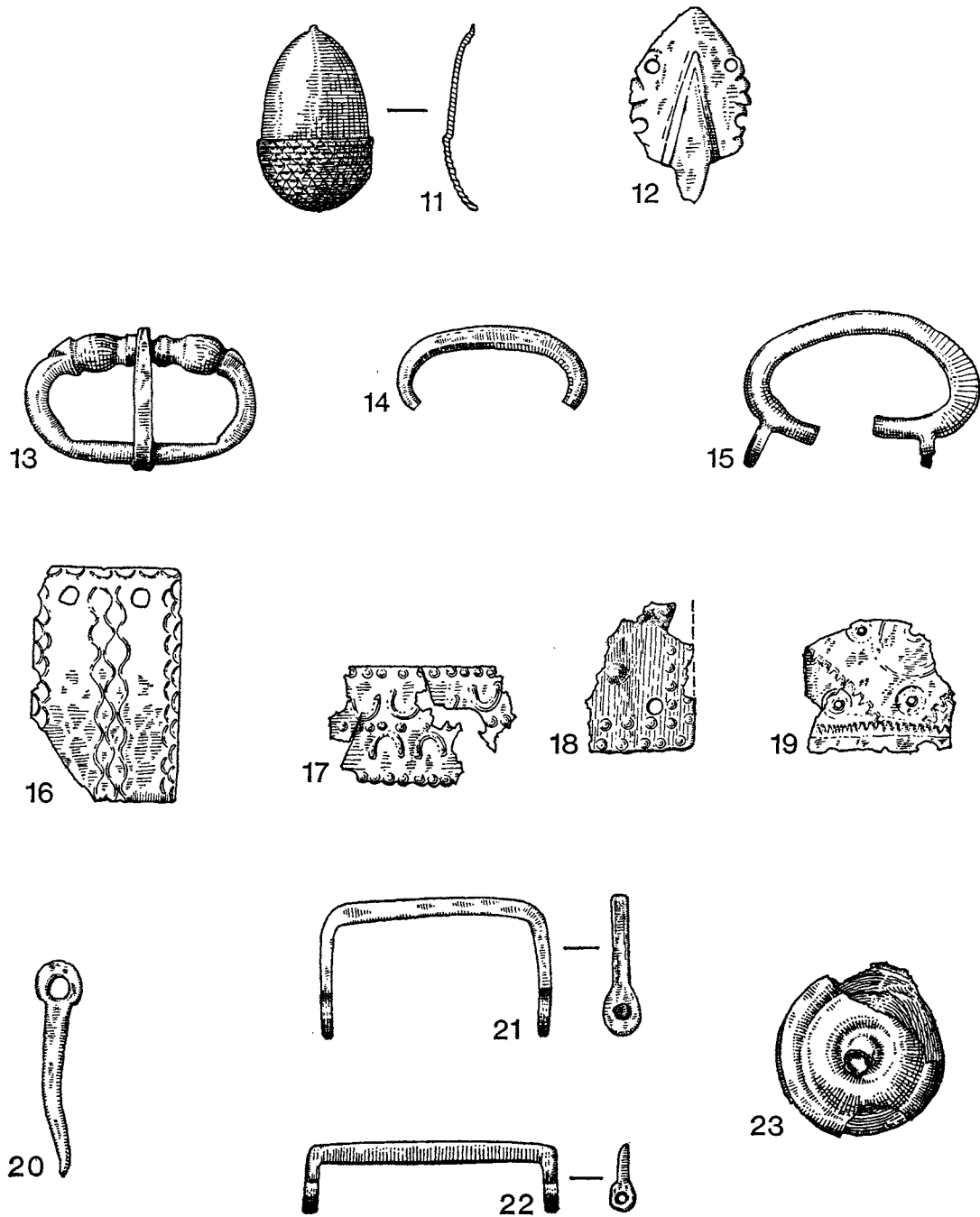


FIG. 110. Bronze military equipment (pp. 201-3). Scale $\frac{2}{3}$

18. Similar fragment of very thin sheet bronze with repoussé ornament. One rivet hole remains and there is a trace of another. The decoration consists of two rows of repoussé dots flanking the two remaining original edges with one large dot in the field. An ornamental attachment.
Trench 89 layer 38 (1168): layer above make-up.

The two decorated strips 17 and 18, while similar in size, ornament and, in the latter case, in the position of the rivet holes, to the belt plates of Hawkes and Dunning Type I A and B, are of sheet bronze too thin to have served such a purpose.

19. Fragment of thin sheet bronze. The fragment is decorated with zig-zag line ornament and with one large and three smaller pierced ring-and-dot motifs. An ornamental attachment.
Trench 54 layer 6 (58): general layer.

Nos. 20–23: harness fittings.

20. A pendant; cf. *Hod Hill II*, fig. 56, 6.
Trench 95 layer 32 (1588): general layer.
21. Square buckle, perhaps from a girth strap; cf. *Hofheim*, pl. XIV, 21, 23 and 26, also p. 176, note 16.
Trench 102 layer 48 (2106): upper occupation.
22. Square buckle in silver, similar to no. 21 above.
Trench 101 layer 36 (2163): general layer.
23. Two circular discs of bronze, attached to each other by means of a ribbon strip of bronze twisted through a central opening in the upper disc. The upper disc is moulded. Probably a piece of horse-harness.
Trench 108 layer 99 (2505): upper occupation.

Bracelets

(a) Bracelets of bronze wire. Four examples, other than of twisted bronze wire, were found:

24. A single strip of bronze wire, one end of which terminates in a hook for a simple fastening, the other end of which is lost. There is no decoration.
Trench 91 layer 56 (1305): layer above upper road.
- 24A. Bracelet of thin bronze wire with each terminal coiled twice round the body of the bracelet forming an expanding fastening. The bracelet can only have been worn by a child. Cf. *Camerton*, fig. 57, 4B.
Trench 109 layer 108 (2628): pit 236.
25. A single strand of bronze wire of square cross-section into which a slight twist has been put at regular intervals. The fastening is simple; at the remaining terminal the wire is drawn out into a thinner strand and turned back on itself to form a hook.
Trench 70 layer 14 (306): pit 63.
26. Twisted bronze wires (not illustrated).
Only fragments have been found. The type is always composed of two strands of wire twisted together with simple ring and hook terminals. The wire varies in gauge.
Twenty-six have been found: (245) pit 61; (1651) pit 144; (10), (28) from 1961 occupation layers; (2526), (2531) from middle occupation, (2214) upper occupation; (1140), (1150), (1253) from layers above upper make-up; (1062), (1296), (1289) from layers above upper road.

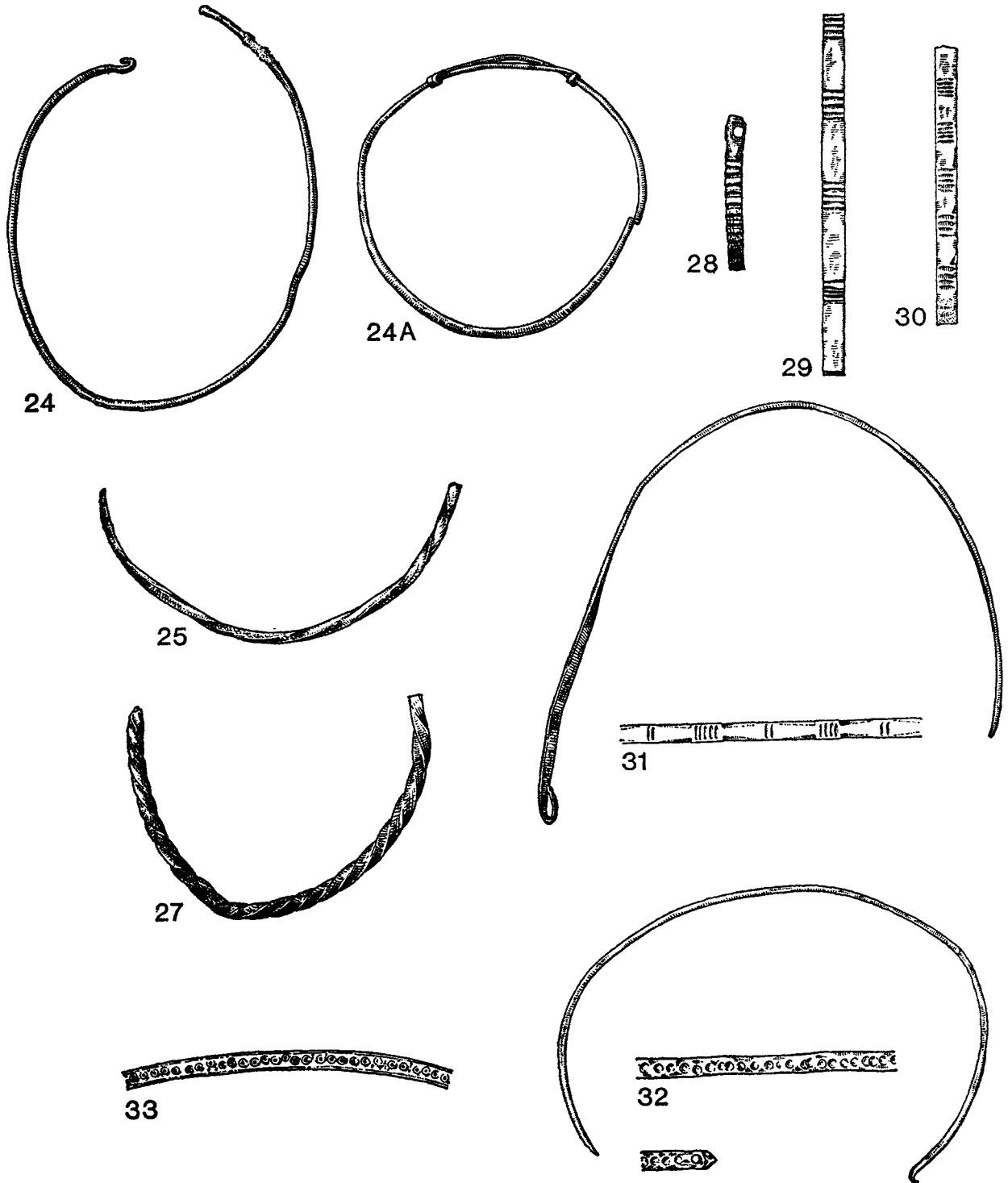


FIG. 111. Bronze bracelets (pp. 203-6). Scale $\frac{2}{3}$

In addition to those listed from pits and closely stratified levels, fragments have also been recovered from general layers (134, 188, 258, 261, 288, 347, 422, 858, 887, 1230, 1420, 1625, 2219).

27. Bracelet of solid bronze, of square cross-section at its remaining terminal, twisted tightly to produce an appearance similar to that of a bracelet composed of several strands of bronze wire twisted together.

Trench 98 layer 60 (1930): pit 182.

(b) Ribbon strip bracelets:

These bracelets are of flat rectangular or of flattened D-shaped cross-section and will have been worn with the flat face resting on the wearer's arm. All the bracelets are ornamented only on the side that showed in use. Altogether some 28 examples have been recovered of which 12 are described and illustrated below. The remaining 16 are from the following provenances: (411) pit 63; (850) pit 95; (1716) pit 144; (1156), (1194), (1204) from above upper make-up; (2438) from the upper clay; (2077), (2115), (2483) from upper occupation; (264), (298), (379), (1222), (1884), (2035) from general layers.

(i) Ribbon-strip bracelets with transverse line ornament:

28. Only a small fragment remains. It is of flat rectangular cross-section. At one end is a circular hole for fastening. The ornament consists of transverse mouldings separated by deep wide grooves. The final transverse moulding is defined on the side of the fastening, not by a deep transverse groove, but by two notches on each side of the bracelet, which taper away laterally to form two indented elongated triangles; an incised line runs from the fastening hole to cross the first transverse moulding.

Trench 76 layer 29 (829): general layer.

29. Bracelet of rounded D-section. The ornament comprises groups of five indented transverse lines, separated by four transverse mouldings, each such panel being separated from the next by a longer plain panel.

Trench 88 layer 6 (1012): layer above upper make-up.

30. This is of rounded rectilinear cross-section. The ornament comprises groups of four or five indented transverse lines, each such panel being separated from the next by a shorter plain panel. It is very similar to no. 29 above; the ornament is more degenerate, now only indented lines instead of indented lines and transverse mouldings.

Trench 63 layer 5 (213): general layer.

31. This is of flat rectangular cross-section. As in the previous examples the decoration is based on groupings of indented transverse lines. Here groups of four or five such lines are separated from each other by long plain panels, each interrupted at its centre by a small group of two or three similar lines. An attempt has been made to create the impression of an oval form for each of the intervening plain panels with central line ornament; this has been done by cutting shallow elongated triangular notches at each corner of the plain panel ornaments.

The ornament of this bracelet suggests that it may have been decorated to imitate a bead bracelet with long ovoid beads with central ribbing, alternating with closely ribbed beads. The end of the bracelet narrows and is hooked inwards for the fastening.

Trench 99 layer 76 (1970): pit 178.

For bracelets nos. 29–31 cf. *Lydney*, fig. 17, P and S (although as noted above, no. 31 has the notched elaboration). The Lydney bracelets are assigned a date in the later part of the fourth century.

(ii) Ribbon-strip bracelets with dot decoration:

32. Bracelet of flat rectangular cross-section; at one end the bronze strip narrows and is bent back to form a hook, at the other terminal is a circular hole for the fastening. The bracelet is ornamented with a hollowed dot decoration along its length. Close to the hook terminal the dot decoration gives way to an indented transverse line decoration; at the other end the dot decoration terminates closer to the hole and there is only one transverse line; this terminal has a pointed end with an irregular incised cross between the hole and the point. Cf. *Lydney*, fig. 17E, latter part of fourth century.

Trench 89 layer 37 (1154): general layer.

33. Gilt bronze bracelet of flat rectangular cross-section. An incised line defines a narrow margin along each edge of the bracelet; the central field is then ornamented with closely placed ring-and-dot decoration. Cf. *Lydney*, fig. 17E, latter part of fourth century.

Trench 88 layer 5 (969): above upper make-up.

(iii) Ribbon-strip bracelet with panels of ring-and-dot decoration:

34. Flat rectangular cross-section. The decoration consists of larger panels with a central ring-and-dot motif alternating with narrower panels each of which has two ring-and-dot ornaments. The corners of the panels are cut away in notches, to throw each panel into relief.

Trench 107 layer 42 (2402): general layer.

(iv) Ribbon-strip bracelet with ring-and-dot and zig-zag ornament:

35. This is of flat rectangular cross-section and tapers to form a simple hook at one end. The ornament consists of an incised zig-zag line interspersed with ring-and-dot decoration. The strokes of the zig-zag have been individually formed and there is some overlapping of lines. To either side of each ring-and-dot is an elongated triangular hollowing, which throws the ring-and-dot into greater prominence (cf. no. 31 above for the notched hollowing technique). The bracelet has some affinities with *Lydney*, fig. 17F (latter part of fourth century).

Trench 91 layer 46 (1272): above upper road surface.

(v) Ribbon-strip bracelets with ring-and-dot and linear ornament:

36. This is of flat rectangular cross-section. Only a small portion of the bracelet remains and the full decorative element may not be represented. On the extant fragment a panel of linear ornament is flanked on one side by a single panel containing ring-and-dot decoration and on the other side by two such ring-and-dot panels; each panel of the design is separated from its neighbour by a group of three indented transverse lines. The linear ornament consists of a deep groove running along the centre of the bracelet parallel to the sides and flanked by notches on the edges of the bracelet. The ring-and-dot decoration is placed centrally within its panel and triangular notches in each corner of the panel throw the ornament into greater prominence; cf. nos. 31 and 35 above. Cf. *Lydney*, fig. 17D and H for linear groove and notches used with ring-and-dot ornament and *Lydney*, 17D for transverse grooving (latter part of fourth century); also *Richborough II*, pl. XXI, 51; *Shakenoak I*, fig. 30, 20 (of late fourth century date). Note that the cutaway section of the Shakenoak example emphasizes the fact that unless the complete bracelet is extant, the design element as a whole cannot be assured.

Trench 54 layer 9 (69): general layer.

37. Again only a portion of the bracelet survives and the full design of the ornament may not be represented. The linear decoration is similar to that of no. 36, consisting of a central groove running parallel to the sides of the bracelet and flanked by notches on the edges of the bracelet; three transverse grooves separated by slight mouldings lie between the linear ornament and a plain panel which precedes a panel decorated with two rows of five ring-and-dot motifs; this panel is defined on one side by an indented transverse line and on the other by a wide shallow groove and a transverse moulding beyond which is a further plain panel. The bracelet has been gilded and is of flat rectangular cross-section. Cf. *Lydney*, fig. 17D and H for the linear groove and notch ornament and H for the use of a panel comprising two rows of ring-and-dot (latter part of fourth century); also *Richborough II*, pl. XXI, 51.
- Trench 89 layer 21 (1147): above upper make-up.

Two further ribbon-strip bracelets

38. This is of round D-section. It tapers towards the end and is bent back to form a hook. There are two panels of line ornament separated by a pair of indented transverse lines. Close to the hook are indented transverse lines; behind these an indented groove runs down the centre of the bracelet parallel to the sides and flanked along about half its length by notched edges; this line fades before the transverse division is reached but there are faint traces of resumed notchings close to the transverse division. The second panel of line ornament comprises a similar groove, a little off-centre; on one side only this is flanked on the edge of the bracelet by broad notches with forked 'tails' alternating with tiny incised dots.
- Trench 63 layer 5 (140): general layer.
39. This is of rounded D-section. The terminal is in the form of an animal head with short snout and partly open mouth; the eye is represented on one side by an indented circle, on the other by a small circle set in an oblong hollow; on the latter side there are further hollowings, perhaps denoting ears. The bracelet widens behind the animal head terminal and is ornamented with a central indented groove running parallel to the sides, flanked by diagonal incised lines, the whole giving a stylized mane effect. This ornament terminates at two transverse grooves which occur a short way from the break.
- Trench 72 layer 59 (424): general layer.

(c) Bracelets of oblong cross-section with narrow ornament and wear facets:

A total of 13 examples have been found of which three are illustrated and described. The remainder come from the following contexts: (1984) pit 187; (1288) above upper road; (2438) upper clay; (156), (189), (361), (368), (595), (1425), (2263), (2561) general layers.

40. Only the outer, narrow facet is ornamented. The decoration consists of simple notches evenly spaced. Cf. *Caerleon: Myrtle Cottage Orchard*, fig. 8, 34 (of similar general type and fourth century date); *Leicester: Jewry Wall*, fig. 83, 2.
- Trench 69 layer 3 (251): general layer.
41. Again only the outer narrow facet is ornamented. The decoration consists of rounded-square notches cut alternately from each side leaving a raised wavy line. The notching is irregular in some parts and the alternating pattern is lost. Cf. *Caerleon: Myrtle Cottage Orchard*, fig. 8, 34 (similar in general type and fourth century in date); *Shakenoak II*, fig. 48, 73 and 77 (later third century).
- Trench 62 layer 5 (127): general layer.
42. Once more only the narrow outer facet is ornamented. The decoration consists of raised plain panels each separated from the next by four indented and three lightly ridged transverse mouldings.



34



35



36



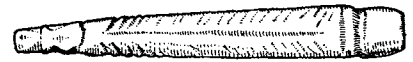
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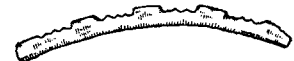
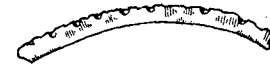
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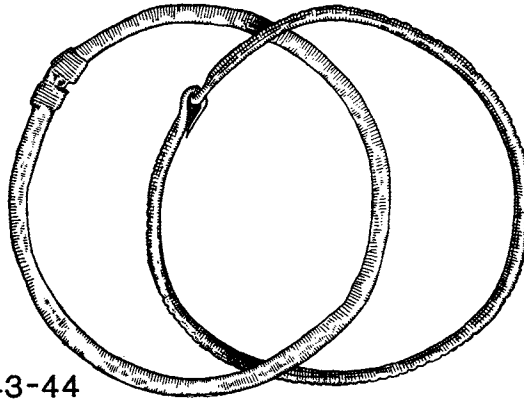
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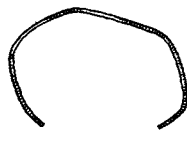
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43-44



45



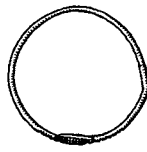
46



48



49



47



FIG. 112. Bronze bracelets and rings: no. 49 is silver (pp. 206-10). Scale $\frac{2}{3}$

Cf. *Leicester: Jewry Wall*, fig. 83, 3; *Lydney*, fig. 17, 58 (latter part of fourth century); *Shakenoak II*, fig. 49, 104 appears to be a fragment of a similar bracelet and is dated to the later third century; *Verulamium* 1934, fig. 2, 4 (late fourth century).

Trench 76 layer 30 (595): general layer.

Bracelets nos. 40–2 are similar to those illustrated in *Richborough II*, pl. XXII, 61–2, and may originally have been annular.

(d) Other bracelets:

43–44. A pair of interlocked bracelets, probably for a child because of their small size. One bracelet is plain with narrow wear and exterior facets; at the fastening two ribbon-strips of thin bronze are folded around the bracelet. The second bracelet is of circular cross-section; it is ornamented on the outer side only with panels of transverse indented line decoration separated by plain panels; each panel of transverse lines comprises between 8 and 12 indentations with rounded mouldings between; the alternating plain panels are also rounded and the whole once again gives a bead-like impression, as though rows of small beads with larger beads interspersed had been threaded together. One terminal of this bracelet is bent inwards to form an enclosed hook with a circular hole, the other terminal is hooked to pass through this hole.

Trench 90 layer 30 (1265): general layer.

General comments on the bracelets

The simple hook and eye fasteners of the Portchester bracelets can be paralleled in bracelets of a similar late date (cf. *Lydney*, fig. 17, 56 and 58; *Shakenoak I*, fig. 30, 32; all of late fourth century date).

On the ribbon-strip bracelets motifs seem to be largely interchangeable with linear groove and notch, ring-and-dot, and transverse indented line motifs being used in a variety of combinations. Where only a fragment of a bracelet remains it cannot be assumed that the extant decorative motif is repeated in the same form throughout; examples of bracelets similar to the Portchester ones, from Shakenoak (*Shakenoak I*, fig. 30, 20) and Richborough (*Richborough V*, no. 158) show that a focal panel of different design was sometimes incorporated and the Richborough example also shows that the ribbon-strip bracelets with transverse line ornament sometimes had further more elaborate enrichments, as was probably the case with some of the Portchester examples.

Bracelets were clearly a popular form of ornament from the late third century onwards and particularly in the later part of the fourth century, as the hoard (*Richborough IV*, pl. XLIX, 177), the Lydney finds (*Lydney*, fig. 17, 82–3), and the Portchester examples indicate.

Imitations of other forms of jewellery seem to be a feature in the decoration of bracelets and imitation of threaded beads seems particularly popular. Similarly, the use of notching in order to highlight specific panels of ornament is predominant in this late period.

Finger Rings

45. Finger ring of flat ribbon-strip of bronze with overlapping terminals. The ring broadens gradually from the narrow underlying terminal to the broad overlapping end.

Trench 78 layer 45 (935): general layer.

46. A flat ribbon-strip of bronze. The central ornamental panel of the ring is lost but a little of the flanking decoration remains. This decoration consists of rectangular hollowings at the edges of the ring which throw into relief the narrow plain panels left in between the hollowings.
Trench 91 layer 46 (1313): layer immediately above upper Roman road surface.
47. Thin bronze wire with overlapping terminals. Each terminal is flattened to a point and close to each the ring is decorated with light transverse ridging.
Trench 107 layer 41 (2407): upper occupation.
48. A flat bronze strip with the ends overlapping. The ring is decorated with a central groove flanked by diagonal indentations. At the underlying terminal, however, the central groove fades and transverse indented lines supersede the diagonal line ornament.
Trench 39 layer 3 (41): general layer.
49. Silver finger ring. The bezel is ovoid in shape and is inscribed with a zig-zag line each point of which is further embellished with an indented dot. The zig-zag line seems to form the letters AM with the letter A lacking its cross-bar; the letters are presumably an abbreviation for the words *Anima Mea* (drawing inverted). The bezel is flanked on either side by a panel of ornament with incised line and ring-and-dot decoration. The ring has plain overlapping terminals to be worn at the back of the finger. Cf. for example, *Lydney*, fig. 16, 53, for similar ornament flanking the bezel and a ring of similar general style; *Verulamium 1934*, fig. 47, 75 for a ring with a similar inscribed zig-zag line.
Trench 87 layer 48 (1270): layer immediately below upper Roman road surface.

Pins and Toilet Articles

50. Pin with faceted knob. The head is in the form of a cube with the corners cut off to leave four main lozenge-shaped facets with four triangular facets above and below. One of the lozengic facets has split and reveals that the pin and knob were made separately and the knob threaded on to the pin at a secondary stage of manufacture. The pin itself tapers towards the knob and towards the point. Cf. *Maiden Castle*, fig. 96, 8; *Richborough IV*, pl. LIII, 199.
Trench 100 layer 29 (2066): general layer.
51. Similar pin with faceted knob.
Trench 87 layer 9 (1005): layer immediately above or cutting into upper Roman road surface.

Five similar pins have been recovered in addition to the two illustrated: (815) from pit 121, (1207), (1338), (2083), (2206) from general layers.

52. Spatula-probe/cosmetic spoon, probably the latter, with spiral ornament.
Trench 101 layer 86 (2235): general layer.
53. Silver scoop.
Trench 90 layer 26 (1254): general layer.
54. Tweezers. There is no decoration. Cf. *Fishbourne II*, fig. 42, 61-6.
Trench 103 layer 54 (2276): general layer.
55. A small pair of tweezers, without decoration.
Trench 63 layer 5 (164): general layer.

Four other pairs of tweezers have been found: (289), (1934) from general layers; (1209) above the upper road; (2482) upper occupation.

56. Nail cleaner with a hole in the head indicating that it was part of a toilet set. At the narrowing below the head is an impressed cross; below this three lines are scored across the object, with an

THE FINDS

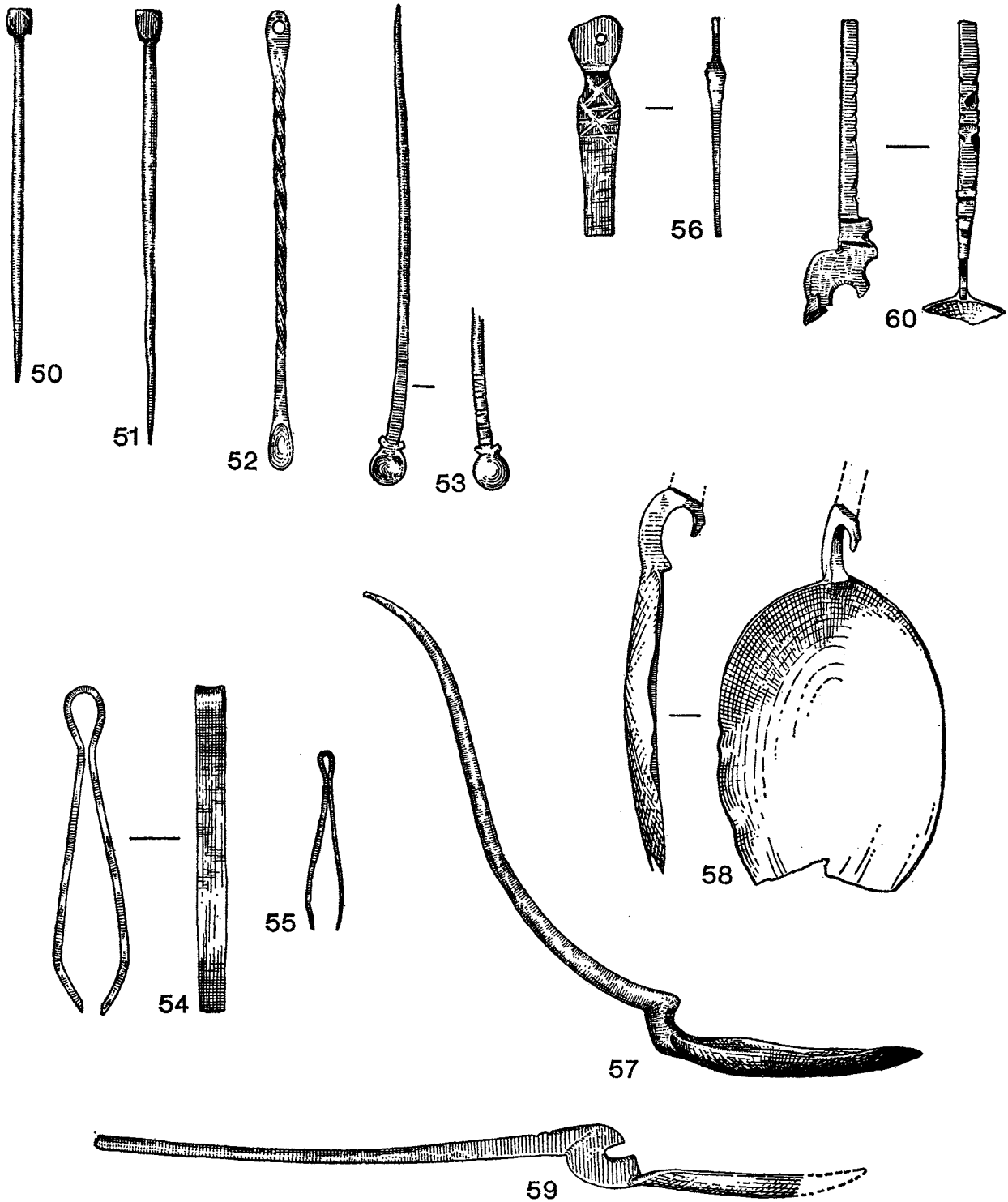


FIG. 113. Bronze objects (pp. 210-12). Scale $\frac{2}{3}$

incised cross superimposed on them. The functional tip of the object is lost. The loop is in the same plane as the blade. Cf. *Richborough V*, pl. XLIII, no. 176.

Trench 70 layer 14 (311): pit 63.

Spoons

57. Simple bronze spoon with a silvered bowl. The bowl is oval and the greater wear appears to be at the end and suggests a shovelling action on the part of a right-handed user. There is a roughly incised X on the back of the bowl.

Trench 73 layer 10 (505): general layer.

58. The oval bowl of a bronze spoon.

Trench 3 layer 3 (2): general layer behind west wall.

59. Bronze spoon with the bowl in a fragmentary state. The handle is decorated with transverse mouldings.

Trench 63 layer 6 (162): general layer.

60. Fragment of a bronze spoon, comprising the lower part of the handle and a small part of the bowl. The handle is ornamented with transverse and lozengic mouldings.

Trench 107 layer 15 (2343): pit 213 (post-Roman).

For spoons with oval bowls cf. *Fishbourne II*, fig. 47, 122-3; *Lydney*, fig. 19, 89; *Shakenoak I*, fig. 39, 39 (late fourth/early fifth century); for an example in silver, see *British Museum Guide to the Antiquities of Roman Britain*, 1964, fig. 18, 8.

In addition to the four illustrated examples, eight others have been recovered: (2450) upper clay; (2203) general layer; (421) general layer; (1337) layer immediately above or cutting upper Roman road surface; (700) general layer; (269) general layer; (2575) general layer.

Miscellaneous Objects

61. Bronze bucket mount in the form of an ox-head. Above the head extends a large bronze ring to secure the handle, while behind it is a heavy flange of bronze to fit over the bucket rim; below the snout is a smaller bronze ring whereby the mount was riveted to the bucket. The ox-head itself is somewhat stylized. The unknobbed horns project forward from the brow and are curved upwards almost at right angles to stand straight up. A fillet or band around the animal's head just below the horns is represented by a light ridge of bronze defined by incised lines. Immediately below this fillet are the oval raised eyes, each with a pierced hole representing the pupil. The slender snout widens slightly at the nose and two pairs of diagonal indented lines represent the nostrils. An ox-head bucket mount from Shakenoak was found in association with late fourth-century material (*Shakenoak I*, p. 83, fig. 27, 1). For a general discussion of ox-head bucket mounts see Hawkes, 1951 and Toynbee, 1964, 21-2.

Trench 89 layer 8 (1117): general layer.

62. Cross-bar and suspension handle of a small weighing scales. One end of the cross-bar is lost and the whole is bent badly out of shape. Cf. *Richborough II*, pl. XXI, fig. 2, 56.

Trench 99 layer 18 (1885): general layer.

63. Fish hook. Cf. *Wroxeter III*, pl. XXI, fig. 2, 5.

Trench 91 layer 52 (1293): layer above upper road.

64. Stylus with the point and scraper lost. The panel of ornament consists of a longitudinal groove

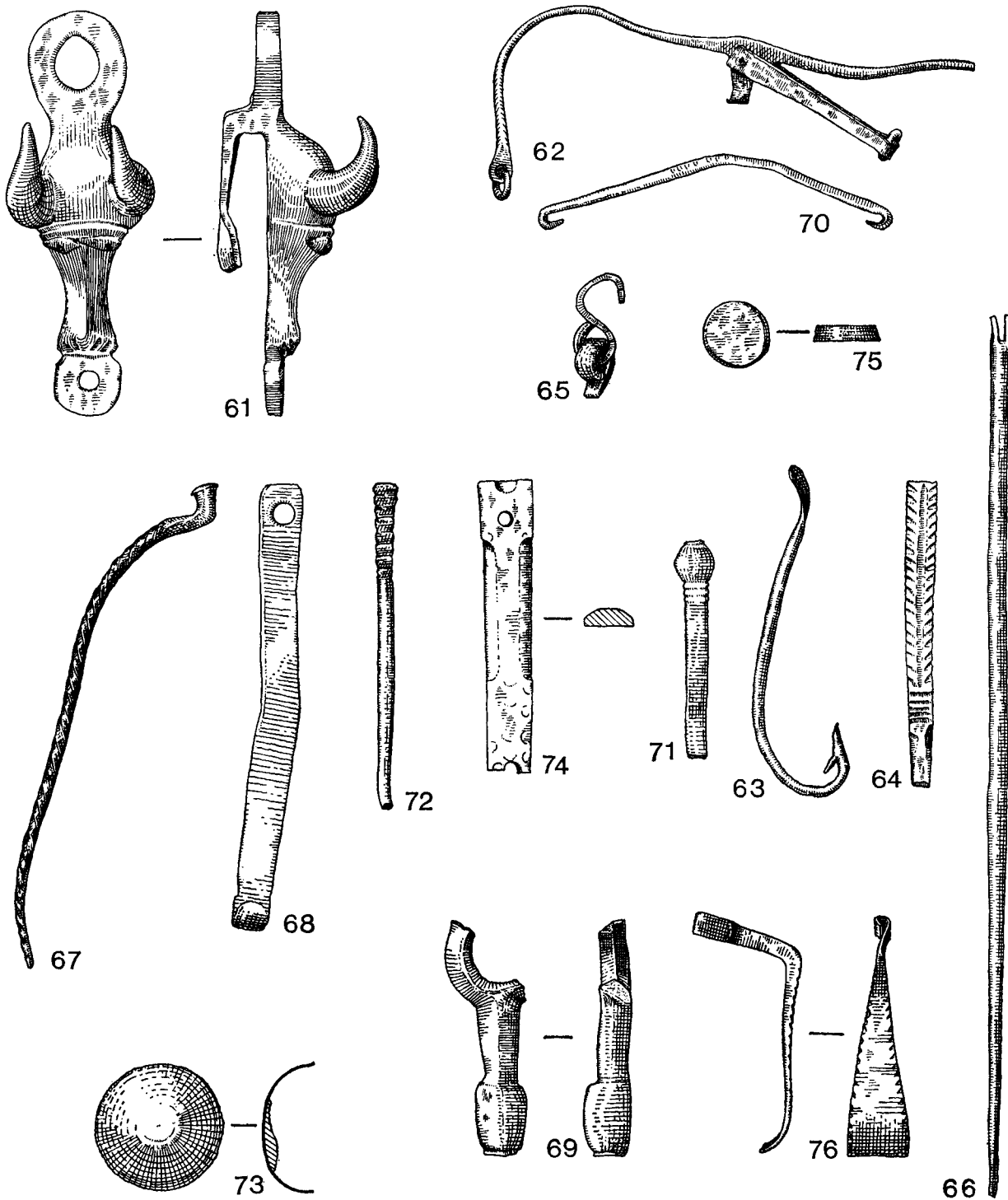


FIG. 114. Bronze objects (pp. 212-15). Scale $\frac{2}{3}$

flanked by diagonal indented lines down the edges of the stylus. The panel terminates in a series of transverse indented grooves.

Trench 63 layer 9 (168): pit 47.

65. Two links from a bronze chain; each link is beaten into a flat strip and formed into an S-shape. Cf. *Richborough IV*, pl. XXXV, 91, although the Portchester chain links are more substantial than the Richborough necklace and may have served a functional purpose.

Trench 79 layer 60 (893): pit 121.

66. A needle of stout construction and considerable length; the eye now comprises two prongs and may always have been so. Cf. *Leicester: Jewry Wall*, fig. 89, 18 which, it is suggested, was probably a netting needle; also *Fishbourne II*, fig. 52, 177.

Trench 63 layer 5 (144): general layer.

67. A handle of cast bronze, worked in imitation of twisted strands of bronze and having a knobbed terminal.

Trench 99 layer 64 (1940): general layer.

68. A bronze fitting, a narrow strip of cast bronze with a rivet hole at one end, the other folded.

Trench 66 layer 5 (221): general layer.

69. A bronze fitting broken at both ends, perhaps originally a key.

Trench 69 layer 7 (417): general layer.

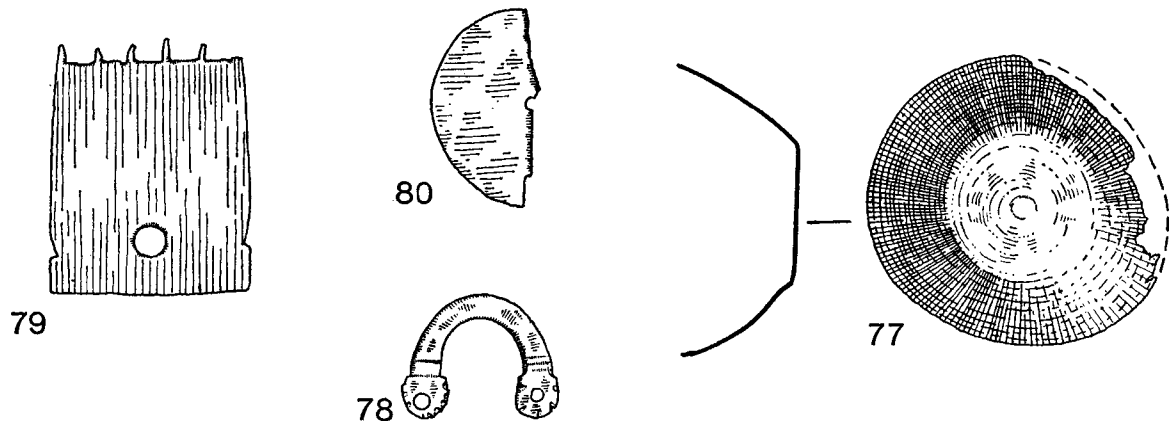


FIG. 115. Bronze objects (p. 215). Scale $\frac{2}{3}$

70. A bronze strip ornamented in the centre with transverse grooving and with each end turned back to form a hook. It is perhaps a staple.

Trench 71 layer 6 (400): general layer.

71. A pin or nail with flattened ovoid cross-section. The head is knobbed and there are traces of triple-ridged mouldings at the collar. The pin/nail is crude and was perhaps more functional than decorative. Cf. for example, *Leicester: Jewry Wall*, fig. 89, 6.

Trench 103 layer 23 (2279): upper occupation.

72. Pin? with a shaft of rounded rectilinear cross-section, flattened at the head, which is ornamented with transverse ridged mouldings.

Trench 76 layer 4 (484): general layer.

73. Hollow boss.

Trench 99 layer 44 (1924): general layer.

74. Bronze fitting.
Trench 100 layer 28 (2081): general layer.
75. Bronze disc.
Trench 108 layer 138 (2504): general layer.
76. Bronze fitting decorated with notched ornament along the external edges.
Trench 74 layer 4 (609): general layer.
77. Hollow boss of thin bronze.
Trench 101 layer 94 (2244): general layer.
78. Bronze link.
Trench 108 + (2597): unstratified.
79. Rectangular panel of bronze with the remains of five teeth projecting from one of the two shorter sides; the plate is pierced with a circular hole close to the centre of the opposite shorter side and level with this piercing on each of the two longer sides is a notch. A hoard of similar objects was found at Chalton, Hants, in a pot of fourth century date. It is possible that they represent the end of either a specialized form of weaving comb or a leather pricker.
Trench 87 layer 9 (1027): layer above upper Roman road surface.
80. Half a bronze disc with a central piercing.
Trench 5 layer 3 (24): occupation against the west wall of the fort.

OBJECTS OF BONE AND ANTLER

by JANET WEBSTER

The Pins

(a) Pin with a plain cone-shaped head:

81. The knobbed head of the pin is drawn up to a pointed tip. The pin has irregular facets and a shank swelling. The shaft is abruptly cut away to form the pin. Cf. for example: *York: The Mount*, p. 306, fig. 14, 90 h, j; *Shakenoak IV*, p. 143, fig. 72, 122.
Trench 32 layer 12 (37) in guard chamber of east gate. Similar example: (104) general layer.

(b) Pins with a plain cone-shaped head and single collar moulding:

82. The bulbous head is shaped up to a pointed tip and is separated from the pin itself by a flanged collar. The knob has no detailed ornamentation. The body of the pin is faceted irregularly and there is a swelling in the shank.
Trench 91 layer 46 (1321): above upper road.
83. Similar to the last. The pin lacks a shank swelling.
Trench 33 layer 9 (38): occupation layer associated with west gate.
84. Similar to nos. 82-3 but the head is longer and thinner. There is no swelling in the shank of the pin and the whole has been fashioned from a curved bone.
Trench 79 layer 68 (936): pit 121.
85. Similar to nos. 82-4 but the collar moulding is wider and is ornamented with diagonal cuts. Cf. *Shakenoak II*, p. 125, fig. 53, 24, 25.
Trench 99 layer 64 (1943): general layer.

This is by far the most prolific type of bone pin from Portchester. Altogether 27 are recorded including the four listed above: (639) pit 86; (894), (900), (905), (910), (938), (940) from pit 121; (2294), (2552), (2585) lower occupation; (2439), (2443), (2455), (2551), (2598) middle occupation; (2410) upper occupation; (1345) below upper road; (1246) above upper road; (1294) above upper make-up; (1) occupation behind west wall; (267), (1961), (2207), (2275) general layers. The head may vary from the very bulbous form rising only to a slight tip, as in no. 82 above, to the much more elegant, elongated form of no. 84. At Richborough the type is noted as common (see *Richborough II*, pl. XIX, 23) and further parallels can be quoted from Gatcombe, Somerset (*Gatcombe* 1965-6, fig. 41, 13) with a fourth-century date and from Leicester (*Leicester: Jewry Wall*, fig. 90, 11). See also *Shakenoak I*, p. 111, fig. 37, 7-10 and *Shakenoak II*, p. 125, fig. 53, 20-5, for pins of the same general type but with collar mouldings less pronounced than the Portchester examples. From the numbers in which this type of pin occurs at Portchester it seems likely to have been of local manufacture and indeed pit 121 seems to include the deposited remnant of such activities.

Bone pins frequently have shanks which swell out in profile centrally or in their upper or lower portions; it seems curious that this 'hipping' of pin shanks which presumably derives naturally from the technique of manufacture of bone pins (as well as jet ones) and which is common in late Roman Britain, should not appear in other materials such as bronze, for example, until the seventh century.

(c) Pins with a cone-shaped head and multiple collar mouldings:

86. This is similar to the pins with plain cone-shaped head and single collar moulding, but the pin has two transverse mouldings at the collar. The grooves separating the cone and the mouldings from each other have not been cut to an equal depth all round and at one point there is no division between the moulding and the cone. Cf. *Leicester: Jewry Wall*, p. 265, 1; *Shakenoak I*, p. 111, 10 (third century) and 9 (fourth century).

Trench 67 layer 4 (225): general layer.

87. A somewhat debased form of the type. The cone is small and rounded and below it are three large transverse mouldings. The cone and mouldings are not circular, as in the other examples, but the mouldings in particular are drawn out and have an oblong cross-section. Cf. *Leicester: Jewry Wall*, p. 265, 3.

Trench 100 layer 39 (2089): general layer.

One other example is recorded: (2456) middle occupation.

(d) Pins with a cuboid faceted-knob head:

88. The knob of the pin takes the form of a rough cube from which the corners have been cut away to leave four lozenge-shaped facets interspersed above and below by triangular facets.

Trench 88 layer 6 (1011): above upper make-up.

89. Similar to the last. The knob is broader in one direction than the other and as a result two of the lozenge-shaped facets are broad, while the other two are narrow. The pin is faceted.

Trench 34 layer 18 (39): in guard chamber of east gate.

90. Similar to nos. 88-9.

Trench 70 layer 37 (323): pit 65.

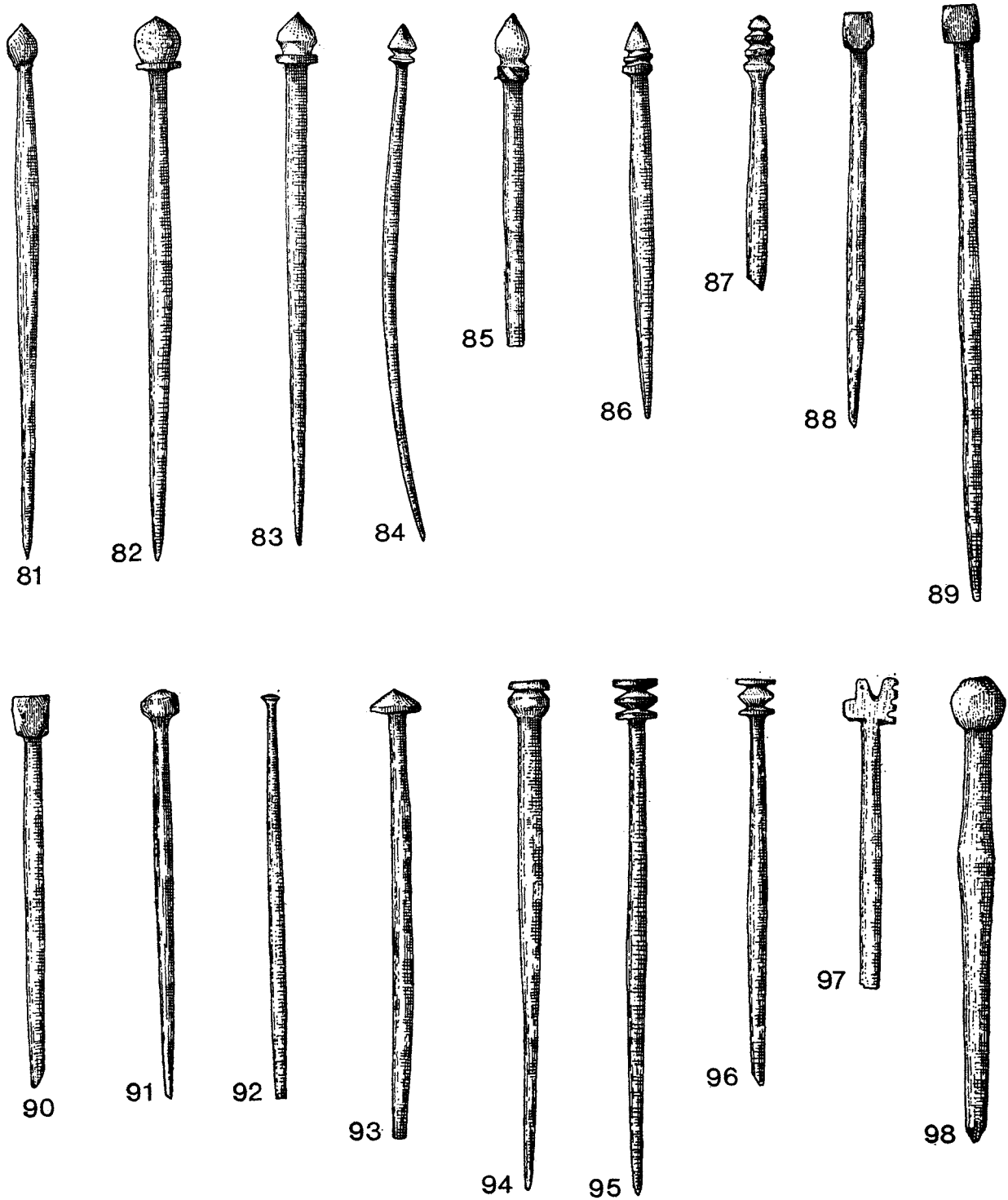


FIG. 116. Bone pins (pp. 215-18). Scale $\frac{2}{3}$

Pins similar to nos. 88–90 occur on other sites, e.g. *Lydney*, p. 85, fig. 18, 70–4 (jet, shale and bone parallels); *Richborough IV*, pl. LIII, nos. 199 and 201 (in bronze); *Eboracum*, pl. 69, 11 and 16 (in jet).

Three similar pins are not illustrated: (132), (1361), (2166) from general layers.

91. Pin with a knobbed head, not dissimilar from those with cuboid faceted knobs.
Trench 88 layer 74 (1101): general layer.

(e) Nail-headed pins:

92. The pin has a tiny, flat head. Cf. *Shakenoak I*, p. 111, fig. 37, 12.

Trench 65 layer 5 (193): general layer.

93. Similar to the last but the broad head rises to a point.

Trench 100 layer 84 (2202): pit 201.

Two other examples are recorded: (2543) pit 223; (2561) pit 227.

(f) Pins with heads comprising transverse mouldings:

94. The head comprises a bulbous moulding surmounted by a narrow flat moulding.

Trench 102 layer 79 (2136): pit 195.

95. The head comprises three narrow transverse mouldings of graduated size.

Trench 108 layer 163 (2553): middle occupation.

96. Two narrow transverse mouldings are separated by a broader similar moulding to form the head of this pin. Cf. *Shakenoak I*, p. 111, 13.

Trench 108 layer 212 (2549): pit 227.

Two other examples are recorded: (2544) middle occupation; (2560) pit 227.

Other pins:

97. Bone pin with flat carved head. Cf. *Leicester: Jewry Wall*, p. 265, 15 and 17.

Trench 71 layer 8 (362): general layer.

98. Pin with a large rounded knob, with some faint traces of faceting and with a marked shank swelling. The pointed lower tip of the pin is cut away very sharply on one side, with very minor shaping on the other faces.

Trench 98 layer 34 (1969): pit 163.

Bracelets

99. Curved strip of bone. Each end of the fragment is pierced by a hole, one hole occurring in the midst of the decoration, the other in a plain panel, the latter coloured green from contact with corroding bronze. The cross-section of the bone is of round D-form and the rounded face is ornamented with two rows of indented line notches alternating one with the other from the outer edges. The fragment may be part of a fairly large bracelet; this was perhaps made up in sections with at least one bronze link or perhaps the bracelet broke in wear and was repaired by means of a fastening secured through the holes in the ornamented section.

Trench 102 layer 63 (2147): middle occupation.

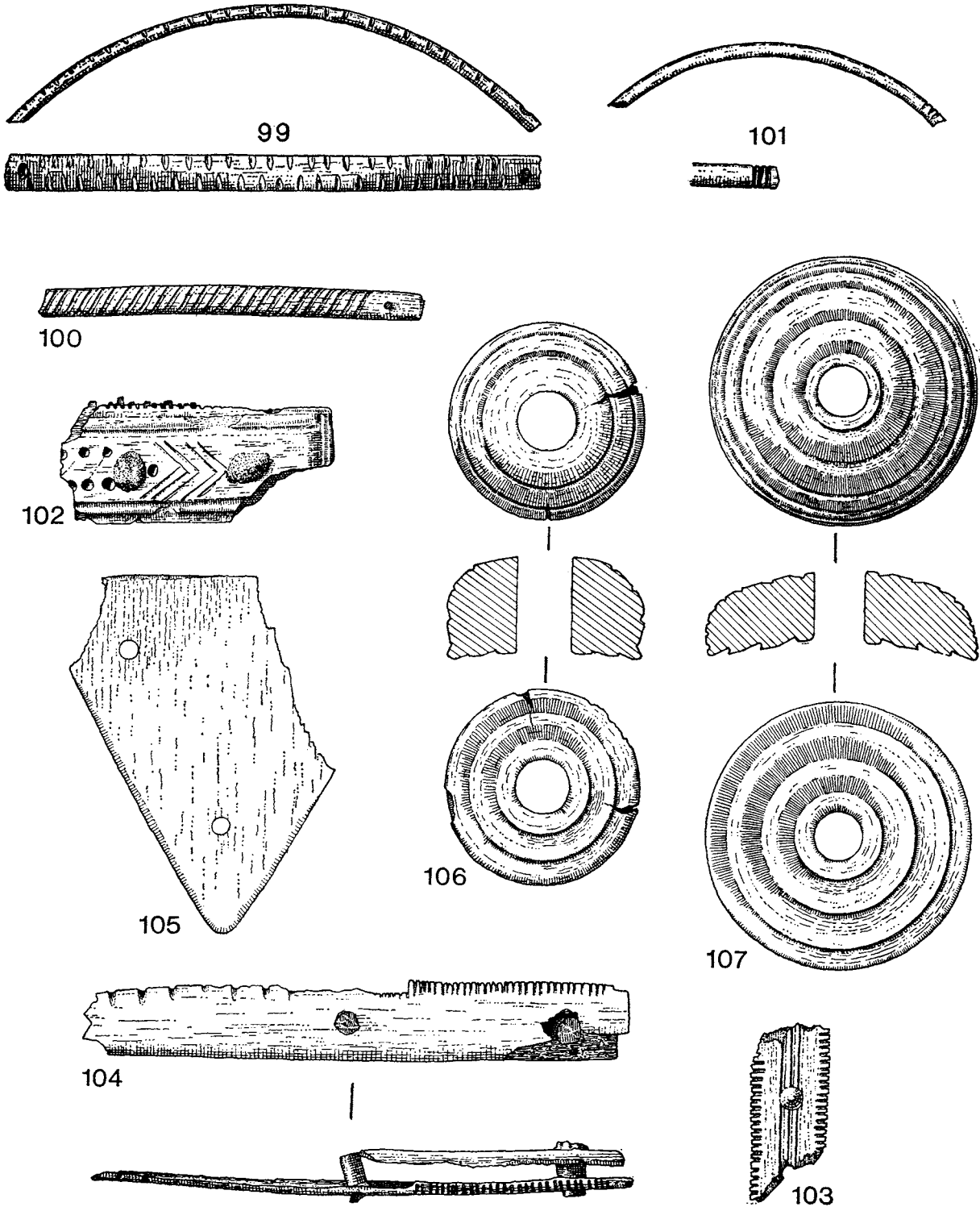


FIG. 117. Bone objects (pp. 218-20). Scale $\frac{2}{3}$

100. Fragment of a bone bracelet of rounded D cross-section. The curved outer face is ornamented with diagonal incised lines throwing into relief diagonal ridges. The whole gives an effect similar to a spirally twisted bronze wire bracelet. One end of the fragment terminates in a plain oblong panel pierced by a hole by means of which a bronze fastening was secured to the terminal; part of this bronze clasp remains extant.
Trench 108 layer 194 (2557): pit 225.
101. Fragment of bone bracelet, plain except for two transverse ridged mouldings with flanking and intervening indentations.
Trench 63 layer 14 (183): pit 48.

Fragments of three others are recorded: (305) pit 63; (1158) layer above upper make-up; (1314) pit 130a.

Combs

102. The remaining part of the comb comprises part of an outer decorated strip of bone pierced by two iron rivets which secure the only two remaining bone tooth panels. The corresponding outer rectangular strip to secure the tooth panels from the other side is lost and the teeth are missing. Each of the tooth panels afforded teeth to either side of the medial panel. The decoration on the remaining outer strip comprises drilled dot and incised diagonal line ornament on the central panel between the rivets while the edges have carved linear margins. Cf. *Richborough III*, pl. XIII, 42; *Richborough IV*, pl. LIV, 216 (c. A.D. 400 and described as 'a normal late Roman type').
Trench 71 layer 32 (353): pit 77.
103. Similar in construction to the last. Only one tooth panel remains and again only one decorative outer strip. The lines of the teeth were continued on to the medial panel in the form of cuts along its edges, presumably implying that the comb was assembled before the teeth were cut (cf. *Dinas Powys*, p. 154). The centre of the panel was decorated with line ornament.
Trench 101 layer 46 (2218): general layer.
104. A similar comb to those above but in several fragments. The two outer panels remain, the tooth panels are lost. One of the outer panels has along one edge only the cut marks made when the teeth were cut out. These cut marks seem to show that in this instance a panel of widely spaced teeth and a panel of closely spaced teeth lay adjacent to each other on the same side of the comb.
Trench 73 layer 10 (503): general layer.

Objects connected with Spinning and Weaving

105. Part of a triangular bone plate pierced with a hole in each of the remaining two angles. Used for the tablet weaving of braids. Cf. *Verulamium I*, p. 153, fig. 55, 204 (an example dated A.D. 360-70); *Richborough IV*, pl. LVI, 267; Wild, 1970, 73ff. and figs. 63 and 66.
Trench 88 layer 35 (1055): pit 125b.
106. Spindlewhorl with concentric incised line ornament on the domed surface and sides and with further similar decoration on its flat face. Cf. Wild, 1970, pl. IIIb and pp. 32ff. for a discussion of spindlewhorls.
Trench 107 layer 41 (2405): upper occupation.
107. Spindlewhorl decorated with concentric incised lines, widely spaced on its domed surface and closely spaced on the sides. Similar rings on the concave under-surface of the whorl throw into high relief intervening strips of bone.
Trench 89 layer 21 (1141): layer above make-up.

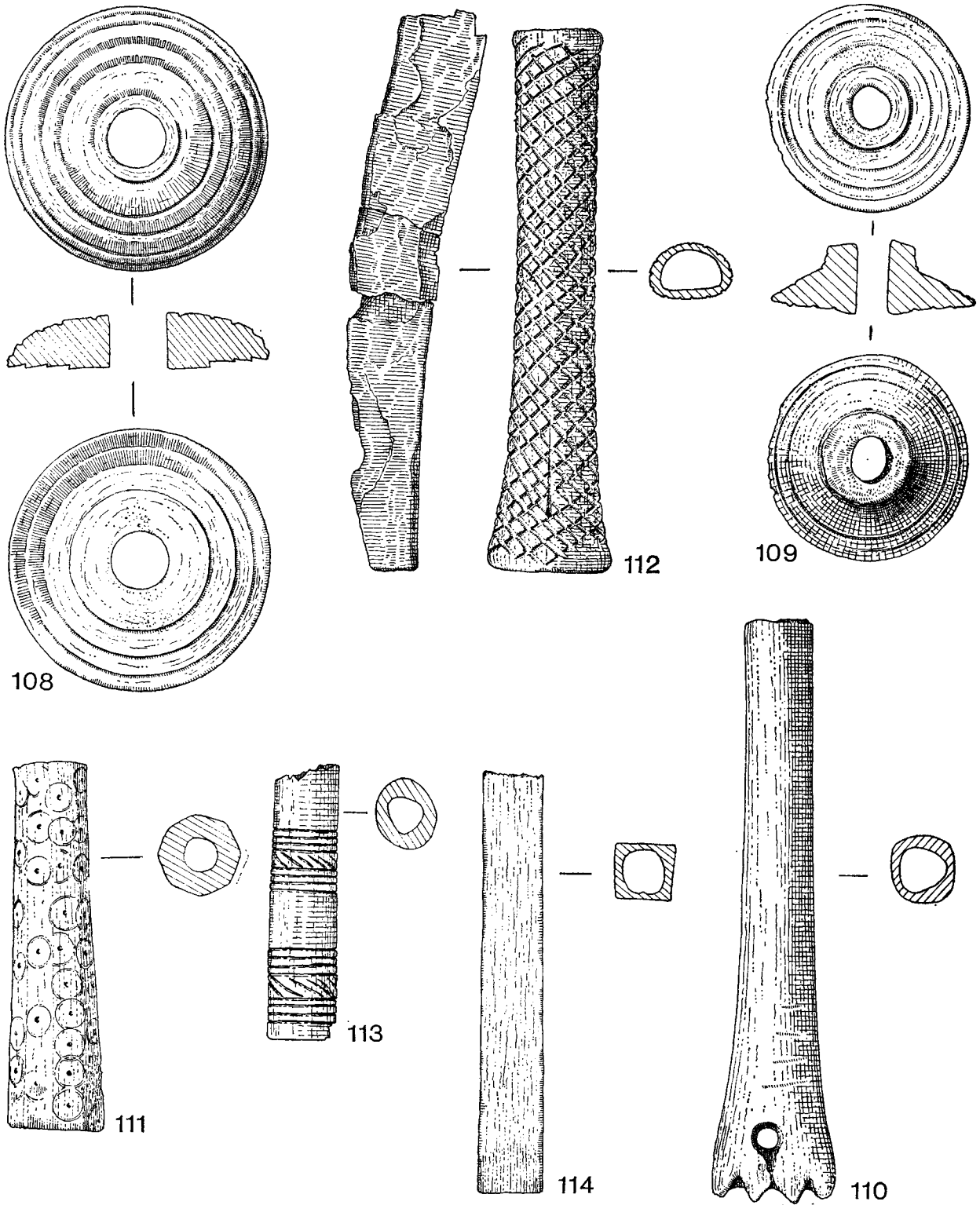


FIG. 118. Bone objects (p. 222). Scale $\frac{2}{3}$

108. Similar to the above but the lower surface is flat with projecting circular panels of bone.
Trench 89 layer 21 (1163): layer above make-up.
109. Spindlewhorl. It is flat underneath and rises to a central cone above. Incised circular line decoration.
Trench 63 layer 9 (195): pit 47.
110. Metapodial of a sheep or goat, hollowed longitudinally at the proximal end to receive some sort of implement, and pierced transversely at the other end with a circular hole. The object seems closely related to bone bobbins of Iron Age type. Cf. *Glastonbury II*, pp. 421ff.; *Maiden Castle*, pl. XXXV A, pp. 306-7. For the interpretation of such an object as a bobbin used to carry thread between spinning and warping see Wild, 1970, 34. Such an interpretation would require the insertion of a pin into the longitudinal hollowing of the bone, the circular piercing serving to secure the end of the thread. For a closely similar example of unidentified use see *Bourton-on-the-Water*, p. 118, fig. 10, 7.
Trench 71 layer 8 (345): general layer.

Handles

111. Tapering handle of approximately circular cross-section. The handle is faceted lengthwise and each facet bears ring-and-dot decoration.
Trench 92 layer 20 (1398): general layer.
112. The handle is decorated by means of intersecting diagonal lines which throw lozenge shapes into relief. It was found in contact with fragments of considerably corroded bronze and the whole is perhaps the fragmentary remains of a clasp knife. Cf. *Richborough V*, pl. XLIX, 235-6 for bone handles similarly decorated.
Trench 87 layer 27 (1111): above upper road surface.
113. The decoration on this handle comprises panels of straight transverse and diagonal incised lines, the panels being separated from each other by plain areas. Cf. *Richborough V*, pl. XLIX, 237, for a bone handle with similar ornament.
Trench 62 layer 9 (151): general layer.
114. Handle of square external and circular internal cross-section tapering slightly.
Trench 71 layer 7 (354): general layer.
115. Half a handle. The decoration consists of bands of incised lines.
Trench 69 layer 8 (276): general layer.
116. Part of a handle. Fragments of iron adhere to the inside of the handle. The bone is grooved close to the end and fragments of a band of metal remain in the groove. Adjacent to this groove on one side is a raised panel of bone with deep diagonal incisions widely spaced; a wide shallow groove separates this panel from a slight marginal ridge at the end of the handle. Adjacent to the filled groove on the opposite side from the raised panel is slight indented line ornament.
Trench 94 layer 93 (1643): general layer.
117. Probably part of a handle. The decoration consists of panels widely spaced between double ring-and-dot decoration, separated by lengthwise bands ornamented by short diagonal lines in the form of inverted Vs; one such lengthwise band has an additional incised line dividing it longitudinally.
Trench 91 layer 32 (1669): general layer.
118. Probably a fragment of a handle. The decoration consists of evenly spaced shallow transverse grooves separated by light ridges.
Trench 63 layer 14 (177): pit 48.
119. Very similar to the last.
Trench 62 layer 5 (153): general layer.
120. Half a handle with incised line ornament at one end.
Trench 91 layer 46 (1475): above upper road surface.

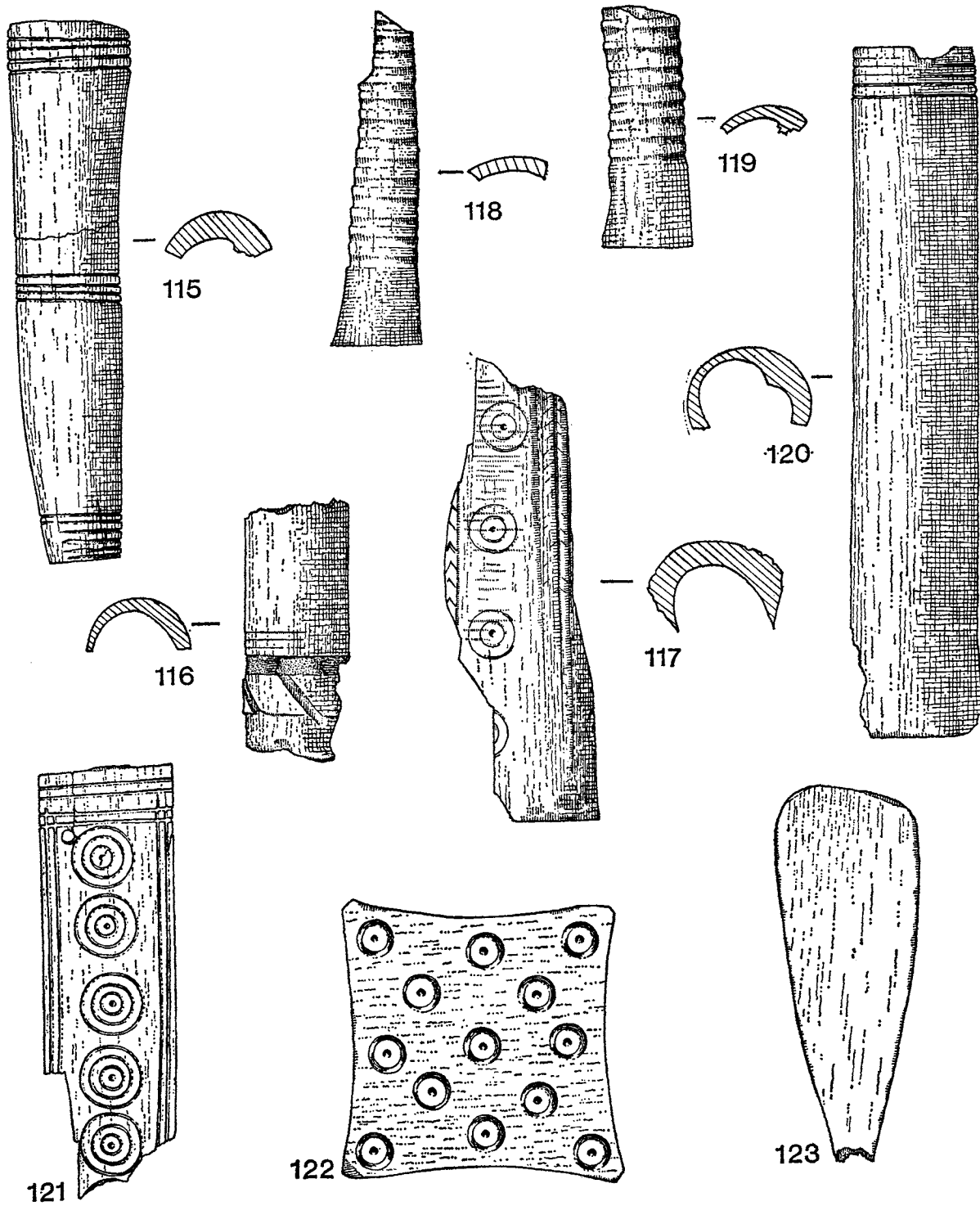


FIG. 119. Bone objects (pp. 222-4). Scale $\frac{2}{3}$

Miscellaneous Bone Objects

121. A rectangular strip of thin bone, ornamented with a row of triple ring-and-dot decoration in the centre and with narrow double margins along the long edges defined by incised lines; the extant short end has further margins similarly defined. A hole is pierced through the strip close to the beginning of the ring-and-dot decoration and this will have housed a small bone peg for attachment. It is part of the inlay of a box or casket. Cf. *Richborough IV*, pl. LVII, 276; *Richborough V*, pls. LXI-LXII, 225.

Trench 88 layer 5 (998): above upper road surface.

122. Plaque of lozenge shape ornamented with incised ring-and-dot arranged with one motif in each corner, one in the centre and the rest grouped to form a rough square around the central ring and dot. There is no means of attaching this piece of rather thick bone to any other object. It may have been a gaming counter.

Trench 79 layer 60 (898): pit 121.

123. Fragment of shaped bone.

Trench 87 layer 9 (1003): above upper road surface.

Objects of Antler

124. A large curved handle which presumably once supported a substantial iron knife blade. A slot was cut into the antler to accommodate the tang of the knife blade and this tang was secured to the handle by means of rivets. The handle is broken close to the innermost point of the tang, at the rivet hole, and beyond this point only half of the handle remains, the other half and the implement it secured being lost.

Trench 79 layer 33 (2290): pit 103.

125. Fragment of deerhorn, faceted and polished. A similarly shaped piece of solid bone occurs at Richborough (*Richborough IV*, pl. LVI, 273) but it is ornamented with ring-and-dot decoration and fitted with rings for suspension. It has been suggested that the Richborough object may have served as a talisman in the form of a pendant and that it may be akin to the crescentic ornaments formed of boars' tusks united by bronze mountings which were a feature of the horse trappings of the late Romano-barbarian cavalry. If the Portchester example is another instance of the Richborough pendant-type it must be thought of as unfinished. Cf. *Richborough IV*, 151; Hawkes and Dunning, 1961, 29-30.

Trench 95 layer 148 (1989): general layer.

126. Ring cut from an antler tine: roughly whittled.

Trench 95 layer 151 (2649): pit 144.

Other objects of antler not drawn but shown in pl. XXXIII include:

- (a) Pair of tines cut from the skull below the burr. The burr end has been perforated. Both tines show signs of wear.

Trench 98 layer 75: general layer.

- (b) Tine sawn from shaft and cut roughly to a square section. Possibly it was intended to be a pick-like tool.

Trench 102 layer 88 (2251): pit 206.

- (c) Tine sawn from a shaft. The shaft stub is perforated obliquely. The tine partly squared, its tip showing signs of wear.

Trench 107 layer 52 (2460): middle occupation.

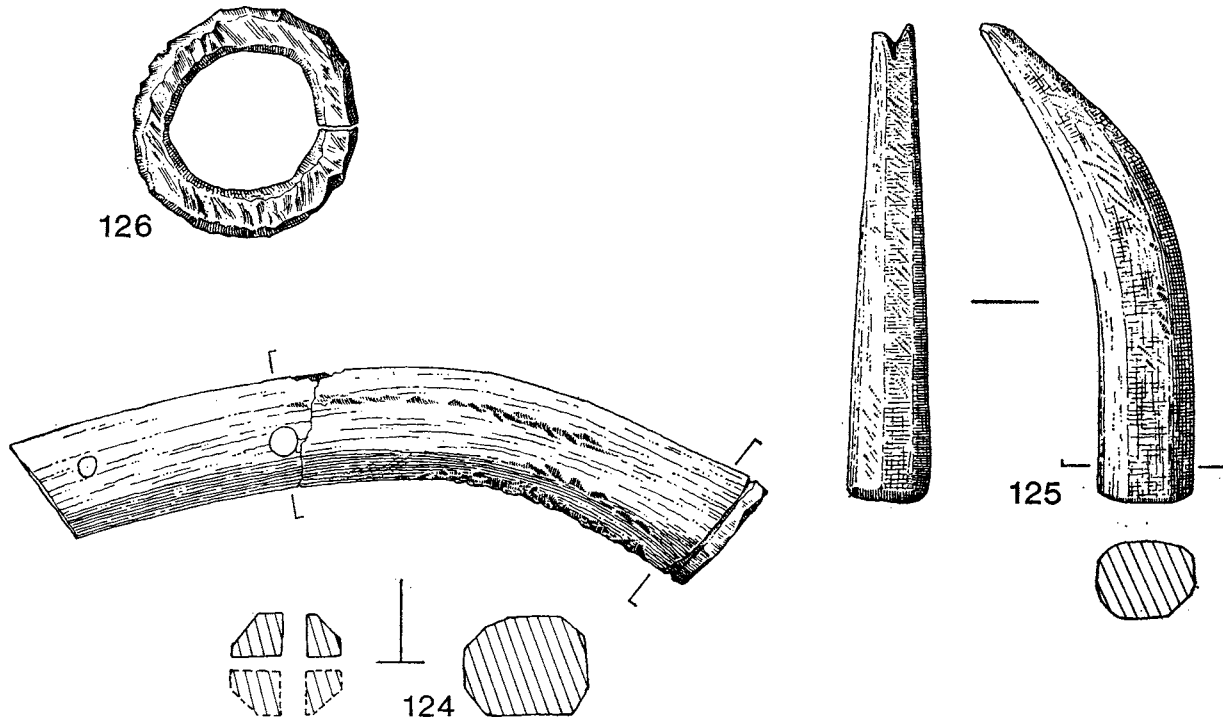


FIG. 120. Antler objects (p. 224). Scale $\frac{2}{3}$

- (d) Strip cut from an antler.
Trench 91 layer 67 (1366): layer below upper road surface.
- (e) End of a tine smoothed by use.
Trench 91 layer 46: layer immediately above road surface.
- (f) End of a tine showing some signs of wear.
Trench 107 layer 53 (2436): middle clay.
- (g) End of a tine whittled and notched at the end.
Trench 88 layer 103: pit 135.
- (h-k) Fragments of tines showing signs of sawing and whittling.
Trench 102 layer 46: upper occupation.
Trench 107 layer 31: upper occupation.
Trench 98 layer 74: general layer.
Trench 88 layer 100: general layer.

Not illustrated are fragments of antler showing marks of sawing and cutting from:

- Trench 108 layer 163: middle occupation.
Trench 89 layer 38: layer above make-up.
Trench 78 layer 15: pit 103.
Trench 108 layer 72: upper occupation.
Trench 88 layer 103: pit 135.
Trench 91 layer 46: layer immediately above road surface.
Trench 108 layer 90: upper occupation.
Trench 108 layer 99: upper occupation.

OBJECTS OF SHALE

by JANET WEBSTER

Spindlewhorls

127. An undecorated example.
Trench 88 layer 10 (1030): above upper make-up.
128. An incised line describes a circle concentric with and a short way from the central drilled hole on each face.
Trench 74 layer 69 (679): pit 94.
129. A circle similar to that described above (see no. 128) occurs on both faces of this spindlewhorl and each face is slightly concave within the area thus defined. The point of maximum girth is ornamented with two incised lines encircling the object. Cf. *Maiden Castle*, p. 320, fig. 111, 21 for no. 129 and nos. 130-2 below.
Trench 89 layer 82 (1229): pit 130a.
130. The whorl has similar incised circles as those described above (nos. 128-9) with dished areas within those circles. Again two incised lines encircle the whorl at the point of maximum girth. See no. 129 above.
Trench 91 layer 63 (1344): general layer.
131. Similar to no. 130 but without the concavity about the central piercing and without lines at the maximum girth point. The whorl is in poor condition. Traces of cutting radiate out from the drill hole on one face. It has been in contact with fire. See no. 129 above.
Trench 79 layer 68 (929): general layer.
132. The spindlewhorl has only one face extant; the other has been severely damaged. A lightly incised line describes a circle on the one remaining face; within this line is a lightly ridged margin with a central depression. See no. 129 above.
Trench 62 layer 5 (163): general layer.

In addition to the six examples illustrated a further six have been recovered: (35) occupation near landgate; (412) from pit 63; (337), (582), (1415), (1972) general layers.

Bracelets

133. Plain bracelet, probably for a child, or perhaps a hair-ring. Cf. *Maiden Castle*, p. 320, fig. 111, 17-19 (late Roman); *Verulamium I*, p. 155, fig. 57, 225 (early fourth century). For a selection of shale bracelets of late third- to early fifth-century date see *ibid.*, pp. 153-5.
Trench 98 layer 70 (1992): pit 164.
134. Plain bracelet.
Trench 99 layer 59 (1923): general layer.
135. Plain, heavy bracelet.
Trench 88 layer 10 (1037): general layer.
136. Bracelet with central grooving and corresponding faceting.
Trench 88 layer 10 (1031): general layer.
137. The ornament here comprises two markedly ridged mouldings defined and separated from each other by incised lines.
Trench 89 layer 21 (1388): above upper make-up.

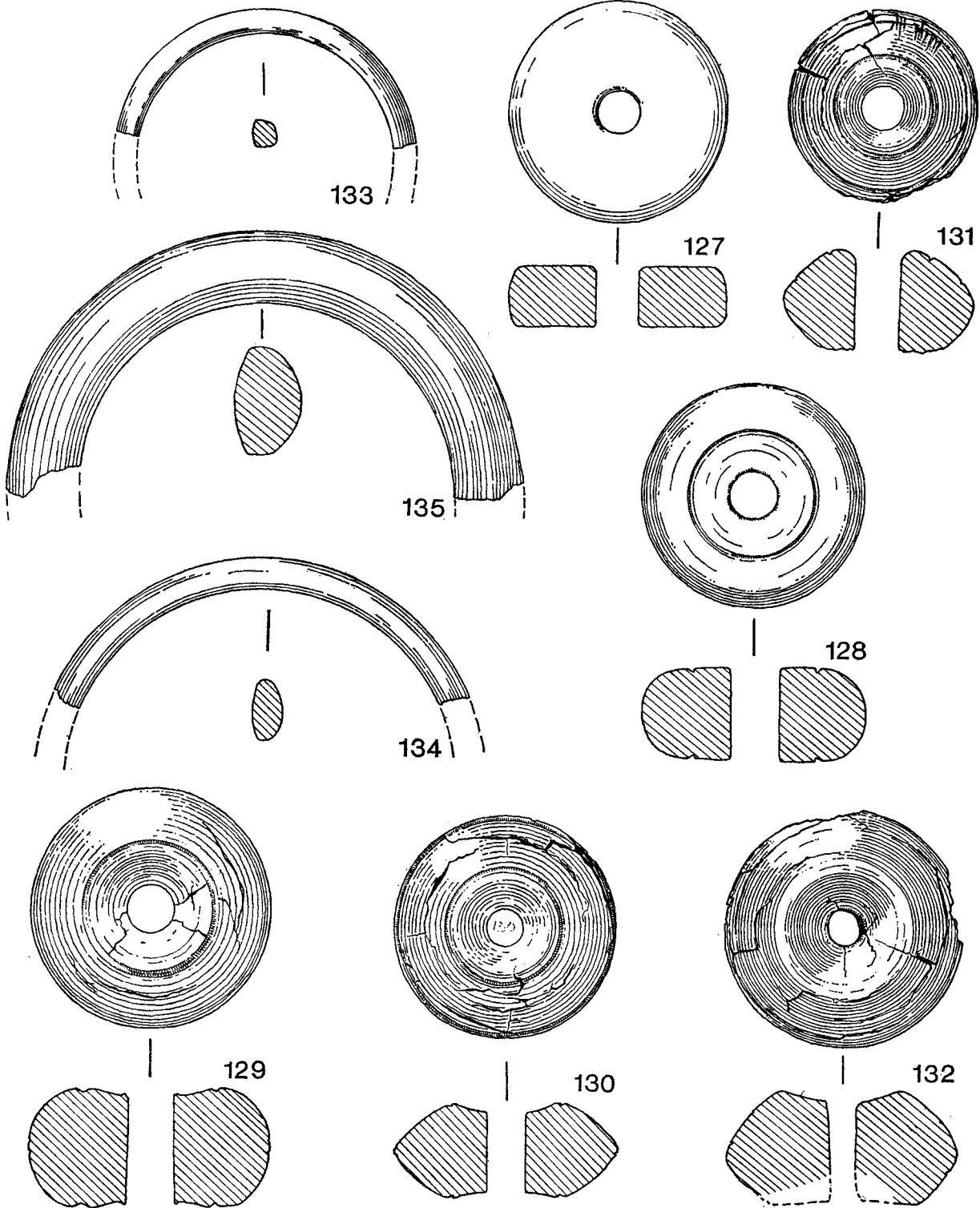


FIG. 121. Shale objects (p. 226). Scale $\frac{2}{3}$

138. The underside and side surfaces of the bracelet are faceted. The upper side is rounded and has a lightly incised groove running along its centre. From each edge, pairs of short, diagonal, incised lines form corresponding chevron patterns on each side of the central line.
Trench 87 layer 9 (1022): above upper road surface.
139. Heavy, curved, ornamented fragment of shale. The object would be readily interpreted as a bracelet but for the smooth flat facet curiously placed so as not to correspond with that facet of a bracelet which would be worn next to the skin. It is in fact placed so that it would be exposed on the side of the bracelet when in use. The flat facet would be more appropriate if the fragment were of sufficiently large curvature to have been part of a necklet. It is possible that the object may have been a handle. The ornament comprises two sets of diagonal incised lines extending from the flat facet over the rounded part of the object but not meeting in the centre. Between each pair of diagonal lines a broad ridge of shale remains which widens into a lozenge between the tips of the diagonal cuts; the rounded profile of the object is flattened along these lozenges.
Trench 11 layer 3 (33): occupation layer near landgate.

Shale bracelets are particularly common at Portchester: altogether fragments of 37 examples have been found. With the exception of the illustrated specimens all were plain and of circular or D-shaped cross-section. Where it was possible to assess diameter they varied from 5 to 8 cm. internally.

(244) pit 61; (302) pit 64; (618) pit 83; (1962), (1968) pit 178; (2228) pit 206; (2608) pit 235; (11), (14), (15) layers against the west wall; (2120) middle occupation; (1304) below upper make-up; (2518) upper occupation; (2459) upper clay; (1026) above upper road; (142), (157), (277), (380), (501), (519), (928), (1308), (1358), (1855), (2079), (2284), (2519), (2546), (2578) general layers.

Beads

140. Shale bead.
Trench 69 layer 8 (274): general layer.
141. Bead pierced with two holes, flat underneath and with a circular incised line ornament on the front face separating the rounded outer margin from the central domed area. Cf. *Lydney*, fig. 18, 77 and p. 84.
Trench 108 layer 93 (2496): general layer.

Vessels

142. A fragment of a bowl with a footring. There is a small hollowed circle in the base close to the footring; this hole will be one of the several whereby the bowl was fixed to the lathe by means of a pronged chuck (cf. *Cranborne Chase I*, p. 139). On the inside of the bowl there are rough widely spaced grooves encircling the base. The bowl will have had a total diameter of approximately 17 cm. with a base of 8 cm. diameter.
Trench 77 layer 5 (743): general layer.
143. Wide mouthed jar or bowl. Diameter 16 cm.
Trench 88 layer 10 (1390): above upper make-up.
144. Bowl or wide-mouthed jar. Diameter 20 cm.
Trench 69 layer 28 (308): general layer.
145. Part of the circular base with abraded footring of a shale vessel. The outer side of the footring is grooved. The diameter of the base is about 8 cm.
Trench 71 layer 8 (338): general layer.

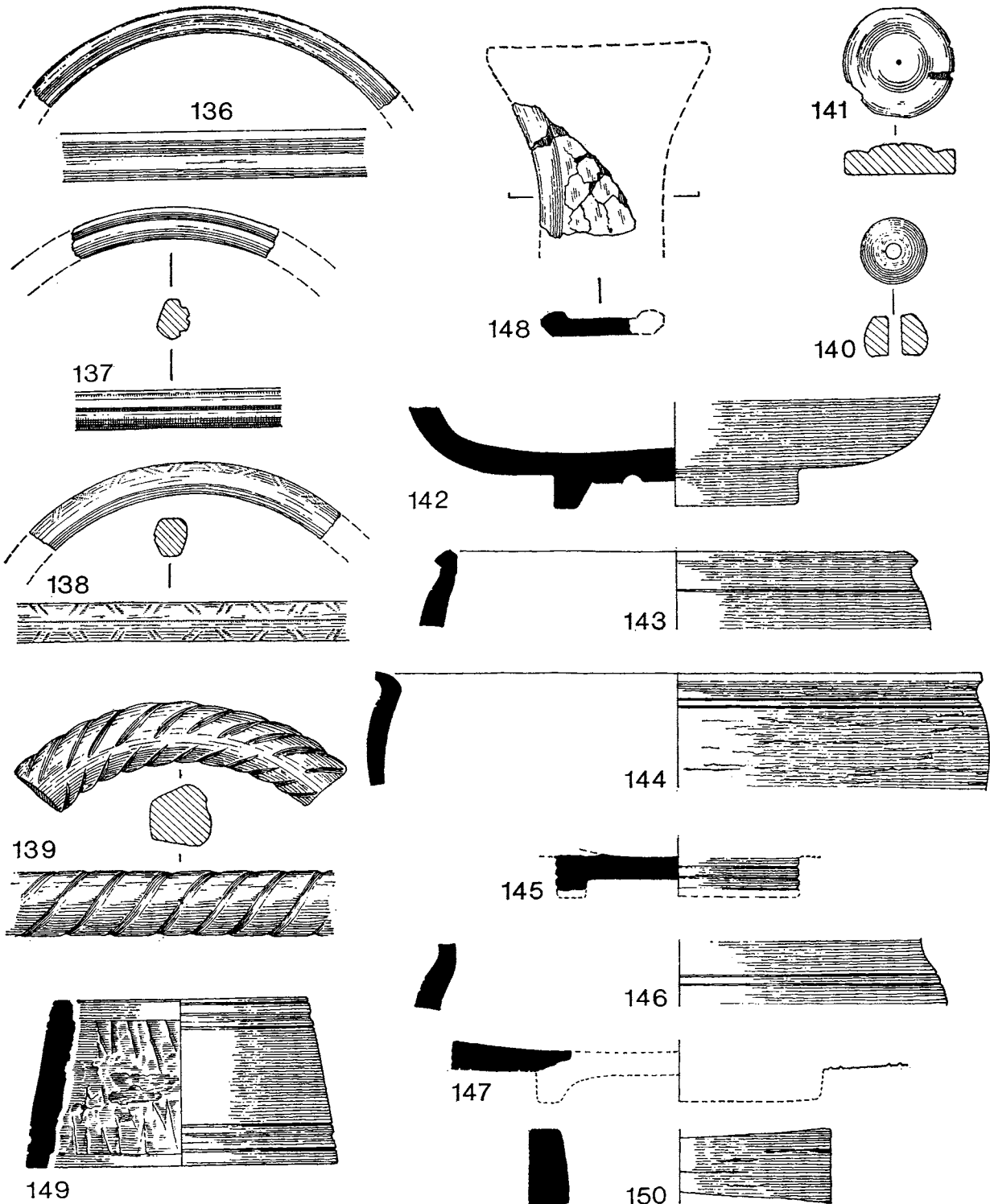


FIG. 122. Shale objects (pp. 226-30). Scale $\frac{2}{3}$

146. Fragments of shale from the shoulder of a vessel.
Trench 58 layer 8 (222): general layer.
147. Base of a shale vessel. The underneath surface is decorated with encircling incised lines. The rough surface adjacent to the innermost set of incised lines seems likely to represent the position of a footing of *c.* 9 cm. diameter.
Trench 99 layer 84 (1985): pit 185.
148. Fragment of a patera/skillet handle. The radius of the curve is *c.* 6.5 cm. Cf. *Cranborne Chase I*, pl. XLVIII, 5-6.
Trench 62 layer 9 (141): general layer.

Other Objects of Shale

149. Fragment of a circular band of shale. The object seems likely to have served as a slightly conical collar or binding, perhaps on a piece of furniture. The external surface is smooth and polished and close to the outer edge is a panel of ornament comprising a groove flanked by incised lines encircling the object. The radii of the two rims differ to the extent of 1 cm., being 4 and 5 cm. respectively. The interior of the object has a smooth upper and lower margin (each 0.50 cm. wide) at the rim but for the rest is very roughly cut, leaving a jagged uneven surface which can never have been intended to be seen, and has the appearance of being left rough deliberately to provide adhesion.
Trench 63 layer 6 (161): general layer.
150. Curved fragment of shale broad at one end and tapering to a point.
Trench 63 layer 7 (198): pit 46.

OBJECTS OF GLASS (EXCLUDING VESSELS)

by MARGARET GUIDO

Glass counters

151. Counter of green glass.
Trench 45 layer 3 (51): general layer.
152. Half counter of blue glass.
Trench 65 layer 5 (192): general layer.

Glass Beads

The beads are all characteristic late Roman types well known from other sites in the country.

153. Bluish-green segment of a small round segmented bead.
Trench 87 layer 44 (1133): above upper road surface.
154. Three segments, now in three parts, of a similar bead.
Trench 91 layer 52 (1298): above upper road surface.
155. As above but darker green and one segment only.
Trench 95 layer 151 (2650): pit 144.
156. As above; two segments of another, originally green.
Trench 89 layer 48 (1413): general layer.

157. Bead of three irregular segments; greenish-blue.
Trench 101 layer 46 (2171): general layer.
158. Two irregular segments; green.
Trench 86 layer 11 (939): general layer.

These are all parts of small segmented beads of common late Roman type. The hill top site on Cold Kitchen Hill, Brixton Deverill, Wilts, produced several hundred of these and they are widely represented on late Roman sites.

- 159, 160. Both bluish-green, originally perhaps translucent cylinder beads. 159: length 11 mm., dia. 2 mm.; 160: somewhat larger. This again is a common Roman form.
Trench 101 layer 86 (2240): general layer.
Trench 91 layer 46 (1277): above upper road surface.
161. Almost opaque cobalt blue. This small bead has a diamond shaped section and appears still to retain a piece of wire.
Trench 70 layer 4 (292): general layer.
162. Long biconical bead *c.* 10 mm. long in dull, almost opaque, blue glass. A common late Roman type.
Trench 71 layer 8 (346): general layer.
163. As above.
Trench 70 layer 14 (414): pit 63.
164. Small annular blue bead: diameter 10 mm., height 3 mm., perforation diameter 5 mm. A long-lasting type.
Trench 75 layer 7 (691): general layer.

GEMSTONE

by MARTIN HENIG

165. (pl. XXXII*b*) Red jasper intaglio, in good condition apart from chipping on left side of upper surface and around sides. The stone retains a high polish and cannot have sustained heavy wear. Flat, oval. 16.5 by 2 mm. The subject is Mercury standing towards the front and facing left.¹ He is nude apart from a drape over his left forearm. In his left hand he holds a caduceus and in his right a money-bag. The type is a very common one on intaglios.² The gem is boldly cut, although the workmanship is rather coarse. One is reminded of the products of the later Aquileian 'Officinae', notably the *Officina del Diaspri Rossi* and the *Officina delle Linee Grosse*.³ The 'patterned' texture of the god's hair and the stylized musculature of the chest are characteristic of intaglios cut at the end of the second century and in the third century A.D.⁴ Certainly the stone is not likely to date much later than the foundation of the Saxon Shore fort and it may, indeed, be earlier. The late Saxon

¹ Cast described.

² Cf. Henig in Cunliffe, *Fishbourne II*, 85, Type C; also *Archaeol. Ael.* 4th ser., xlviii (1970), 147 and pl. XVI, no. 2. Note the Mercury facing right on a gem from Richborough; *Richborough I*, 46 and pl. XIV, no. 24.

³ G. Sena Chiesa, *Gemme del Museo Nazionale di Aquileia*

(Aquileia, 1966), 60-3 and pls. xci-xciii. As the name of the first 'Officina' suggests, red jasper was especially common in late Antonine and Severan times.

⁴ Henig in *Archaeol. Ael.* 4th ser., xlix (1971), 223-6. Note the Mercury from Richborough cited above.

plough soil in which it was found contained much redeposited Roman material, and there is nothing to suggest that the gem was re-used at this period.¹

Trench 90 layer 26 (1186): general layer.

OBJECTS OF LEAD

by JANET WEBSTER

166. Steelyard weight of lead with an iron attachment at the top for suspension. The weight is pear-shaped and shows considerable signs of damage and frequent use. It now weighs approximately 1 lb. 13 oz. and will have originally represented $2\frac{1}{2}$ Roman pounds.

Trench 65 layer 5 (182): general layer.

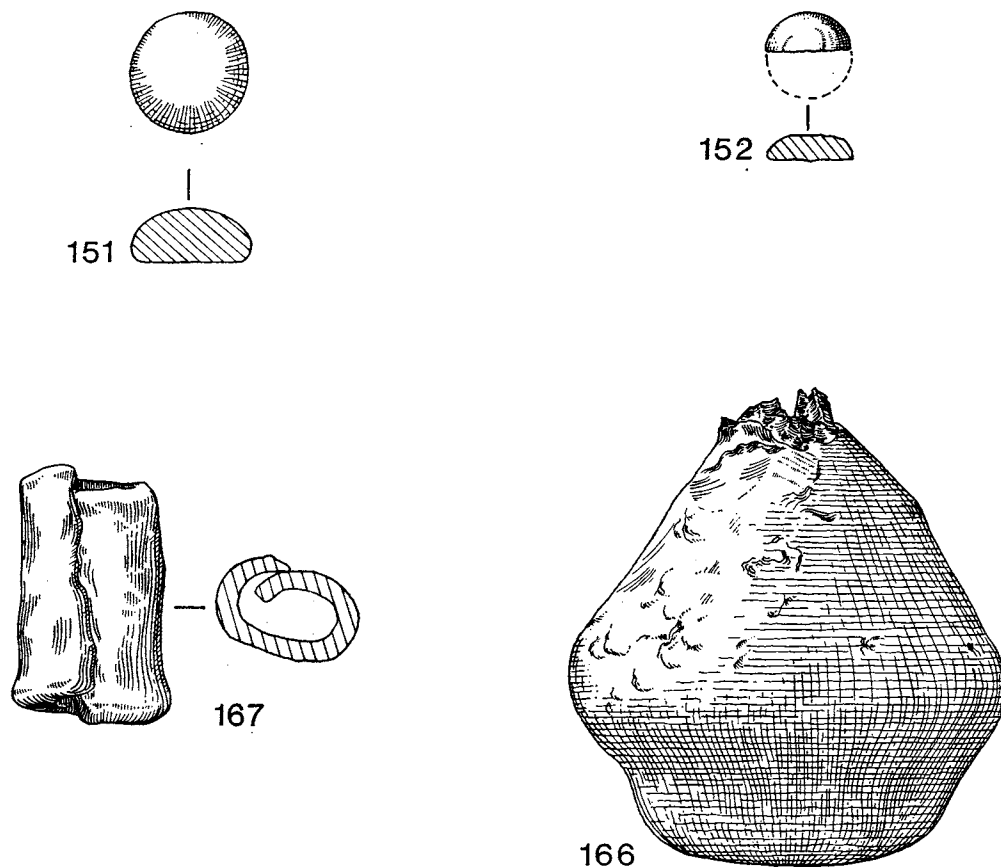


FIG. 123. Objects of glass and lead (pp. 230-3). Scale $\frac{2}{3}$

¹ For Roman gems in Saxon settings, cf. *Report of the Proceedings of the Annual Meeting of the Trustees and Guardians of Shakespeare's Birthplace* (24th April 1935): square-headed brooch from Alveston set with a cornelian intaglio depicting a cupid milking a goat; *Arch. Cant.* lxi; (1955), 24 and pl. ix, 3: kidney-shaped attachment plate from Lyminge with a red jasper intaglio showing Ceres (not Athene [*sic*] as

stated); *Archaeometry* ix (1966), 104-5 and fig. 1, no. L, 9: gold pendant found at Canterbury set with a cornelian cut with the figure of Minerva; *Archaeologia* I (1887), 404: nicolo intaglio from Anglo-Saxon cemetery at Sleaford, showing Minerva. This gem was found in the grave of an adult and was *not* set.

167. Net weight made from a folded sheet of lead.
Trench 63 layer 14 (2655): pit 48.

OBJECTS OF IRON

by JANET WEBSTER¹

Swords

168. Sword tip.
Trench 91 layer 52 (1299): gully 10 (cut through upper road).
169. Sword tip.
Trench 90 layer 52 (1271): general layer.

Ballista-bolt, Spear- and Arrow-heads

170. Ballista bolt.
Trench 79 layer 18 (768): general layer.
171. Spearhead with midrib and cleft socket. Cf. *Richborough I*, pl. XVI, no. 36.
Trench 75 layer 22 (844): pit 95.
172-3. Spearheads.
Trench 1: pit C (2658), (2659): pit 3.
174. Spearhead. For small spearheads in general see *Richborough IV*, pl. LVIII and LIX, pp. 152-4.
Trench 101 layer 126 (2266): general layer.
175. Lightweight spearhead.
Trench 62 layer 5 (150): general layer.
176. (Not illustrated.) Lightweight spearhead.
Trench 103 layer 21 (2211): general layer.
177. Small spearhead. Cf. *Richborough IV*, pl. LIX, no. 290.
Trench 70 layer 19 (299): pit 64.
178. Small spearhead or ballista arrow-head. Cf. *Richborough IV*, pl. LIX, nos. 297 and 299; *Maiden Castle*, p. 282, fig. 93, no. 3.
Trench 69 layer 8 (270): general layer.
179. Small spear- or arrow-head.
Trench 102 layer 48 (2104): upper occupation.

Spurs

180. Rivet spur. Enlarged plates at the ends of the arms each house two rivets to secure the spur to leather straps. The prick is long; it swells out half-way along its length, adopting a lozengic cross-section, and runs in four triangular facets to a sharp point. There is no heel-hook, usually a feature of the Roman rivet-spur (see Shortt, 1959). The spur was found in a Roman occupation level and although there is a possibility of later contamination, it is probable that the spur is of Roman date. Cf. a portion of a spur from Fishbourne (*Fishbourne II*, p. 135, fig. 60, no. 52; from the third period, A.D. 100-280). There is also a close parallel to the Portchester spur from Lydney Park, Gloucs., unpublished but displayed in the museum among the ironwork from the Roman

¹ I should like to thank Dr W. H. Manning for his help in the preparation of the iron report and for reading through the draft and making many helpful suggestions.

EXCAVATIONS AT PORTCHESTER CASTLE

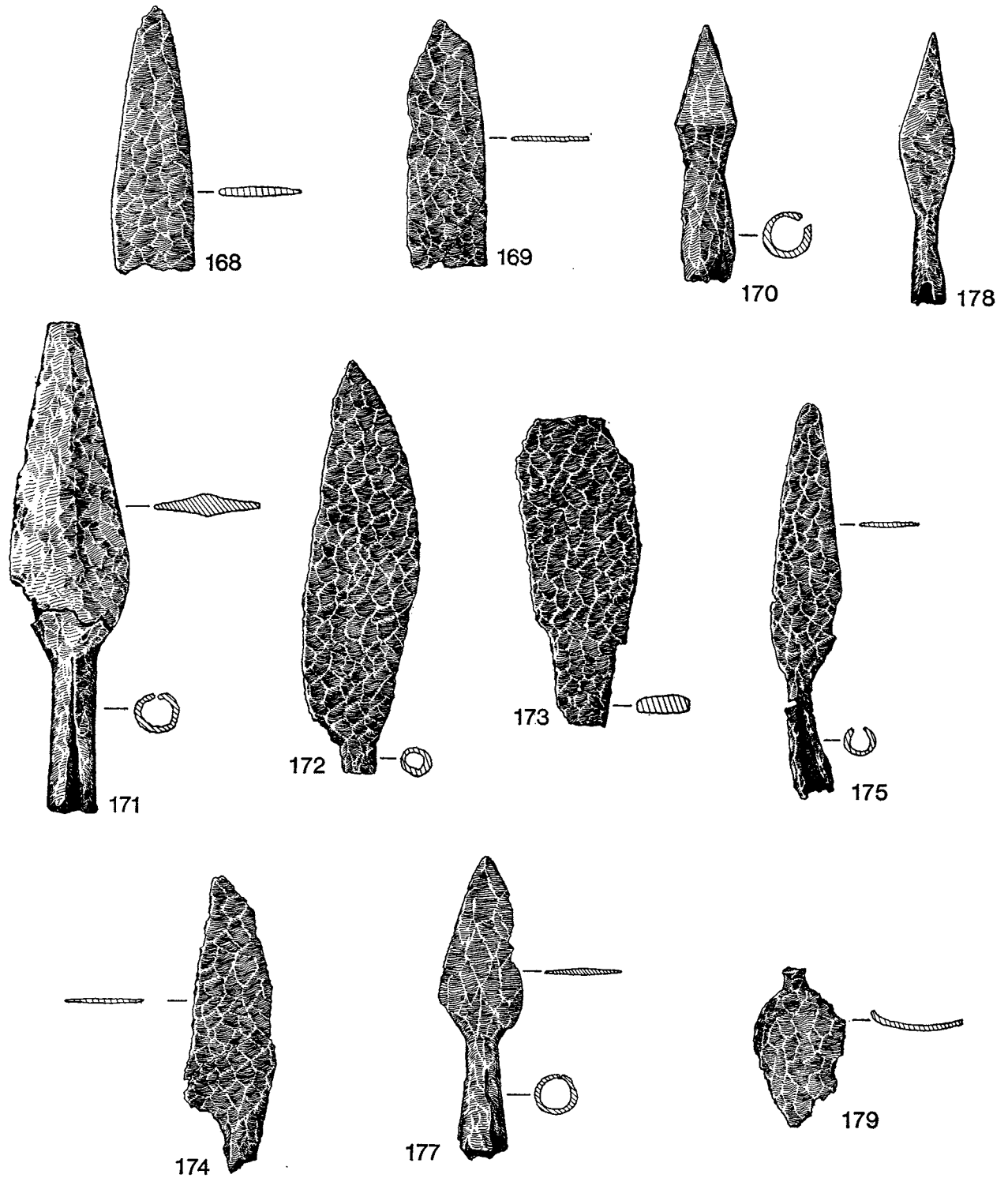


FIG. 124. Iron objects (p. 233). Scale $\frac{2}{3}$ except 168, 169 and 177, $\frac{1}{3}$

site. If the Lydney example is from the Roman site it would probably have a late fourth- to early fifth-century date, although there is always a possibility that it may be a stray from the medieval castle on the adjacent hill.

Trench 88 layer 5 (990): layer above make-up.

181. Rivet spur. Again secured to leather straps by two rivets at the end of each arm. The arms are curved. There is a long prick, similar in shape to no. 180 above but with a shorter tip. Again there is no heel-hook. From a Roman context but with the possibility of being a later intrusion.

Trench 73 layer 10 (531): general layer.

Horseshoes

182. Complete horseshoe with regular curved outline. The ends are bent back to form calkins and there are three oblong nail holes on each side of the shoe, three with fragments of nails remaining in them. The shoe is from a Roman occupation level, possibly contaminated by later material, but a Roman date is acceptable for the shoe. Cf. late fourth- to early fifth-century stratified horseshoes from Maiden Castle (*Maiden Castle*, p. 290, pl. XXX, B).

Trench 68 layer 4 (260): general layer.

183. Complete horseshoe. The outline of the shoe expands slightly opposite each nail hole, to give a wavy outline. Cf. *Maiden Castle*, pl. XXX, B, no. 12 and p. 290. There are very slight calkins.

Trench 88 layer 5 (991): layer above make-up.

Another example, unillustrated, from trench 89 layer 58 (1320): below upper make-up; see also no. 241.

Knives

184. Narrow-bladed knife with a solid handle.

Trench 87 layer 41 (1132): layer above upper road surface.

185. Knife with the blade and handle made in one piece. The end of the handle is curved round to form a loop. The cutting edge of the blade is curved but the line of the curve is not continued as far as the handle; the blade terminates at the handle in a diagonal line. The knife probably served as a small chopper.

Trench 63 layer 5 (210): general layer.

186. Knife with large tang. The cutting edge and the back of the blade are both straight.

Trench 87 layer 47 (1351): layer above upper road.

187. The tip of the blade is missing. There is a long tang. The cutting edge of the blade is straight.

Trench 90 layer 30 (1210): layer above make-up.

188. (Not illustrated.) Knife with straight cutting edge.

Trench 79 layer 60 (920a): pit 121.

189. Knife with straight cutting edge, curved back, and tang.

Trench 63 layer 5 (143): general layer.

190. Knife blade with a short portion of the tang missing.

Trench 68 layer 12 (272): pit 61.

191. Narrow knife blade with a straight cutting edge curving sharply upwards at the tip.

Trench 101 layer 41 (2234): general layer.

192. Small knife with a portion of the tang. The cutting edge describes a full curve from the tip of the blade to the tang. It is presumably a chopper.

Trench 88 layer 95 (1419): general layer.

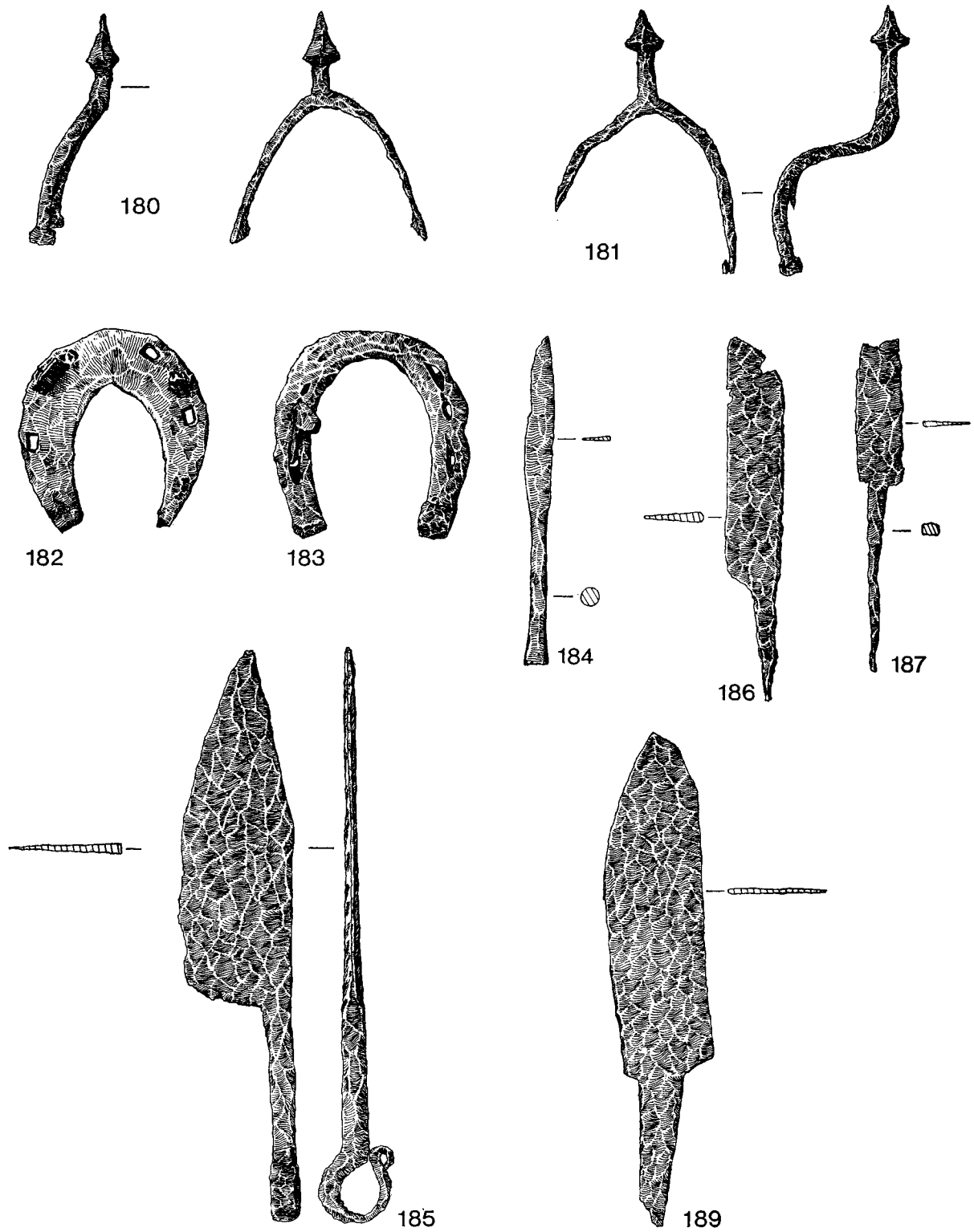


FIG. 125. Iron objects (pp. 233-5). Scale $\frac{1}{3}$ except 185 and 189, $\frac{2}{3}$

193. Small knife with the tip of the blade missing.
Trench 72 layer 35 (405): general layer.
194. The blade has a straight cutting edge with the back of the blade curved sharply to the tip. A considerable section of the tang remains. This may possibly be part of a pair of shears.
Trench 79 layer 68 (932): pit 121.
195. Small knife.
Trench 96 layer 37 (1771): general layer.
196. Knife, perhaps of a similar type to nos. 186 and 187 above, although it could also be a dagger.
Trench 103 layer 87 (2295): lower occupation.
197. Perhaps a small chopper.
Trench 91 layer 52 (1292): layer above upper make-up.
198. Knife.
Trench 109 layer 115 (2636): pit 236.

Cleaver

199. Socketed cleaver with the blade missing. Cf. Wheeler, 1946, pl. XXXIV, nos. 1 and 2.
Trench 101 layer 94 (2245): general layer.

Shears

For a brief discussion of Roman shears see *Verulamium I*, p. 176, nos. 44-5, fig. 65.

200. Fragment of shears, consisting of one blade and part of the spring.
Trench 89 layer 38 (1177): layer above make-up.
201. Half a pair of shears comprising one blade and part of the spring. The length of the cutting blade is some 13 cm. and it is, therefore, not inconceivable that these were a sheep-shearing tool. Cf. Wild, 1970, 22-3.
Trench 101 layer 94 (2212): general layer.
202. Fragment of shears comprising part of the shaft, the upper part of the blade and the lower pointed tip of the blade.
Trench 109 layer 119 (2623): pit 236.
203. Further fragments of the same shears as no. 202, comprising the U-shaped spring and the upper part of the other blade.
Trench 109 layer 119 (2644): pit 236.
204. The blade, shaft and beginning of the spring of half a pair of shears.
Trench 71 layer 7 (325): general layer.

Bucket Fittings

205. Bucket-handle mount, rounded and thickened at the top and tapering to a sharp point at the bottom where the tip bends inward at a right-angle to the plate itself, and served to secure the lower end of the mount to the bucket instead of the more normal nail. The top of the plate is pierced by a hole for the bucket handle, and a short way below this hole a substantial nail pierces the plate to bend upwards, on the inner side of the mount, at a right angle. The nail had in fact been partially withdrawn, hence the head is no longer flat against the outer side of the mount. The withdrawal of the nail was not successfully accomplished, however, and the fitting, although it must have been extracted from the abandoned bucket, was thrown away down the well. Cf. *Verulamium I*, p. 179, fig. 66, nos. 53-4; *Newstead*, pl. LXIX, no. 4.
Trench 109 layer 120 (2640): pit 236.

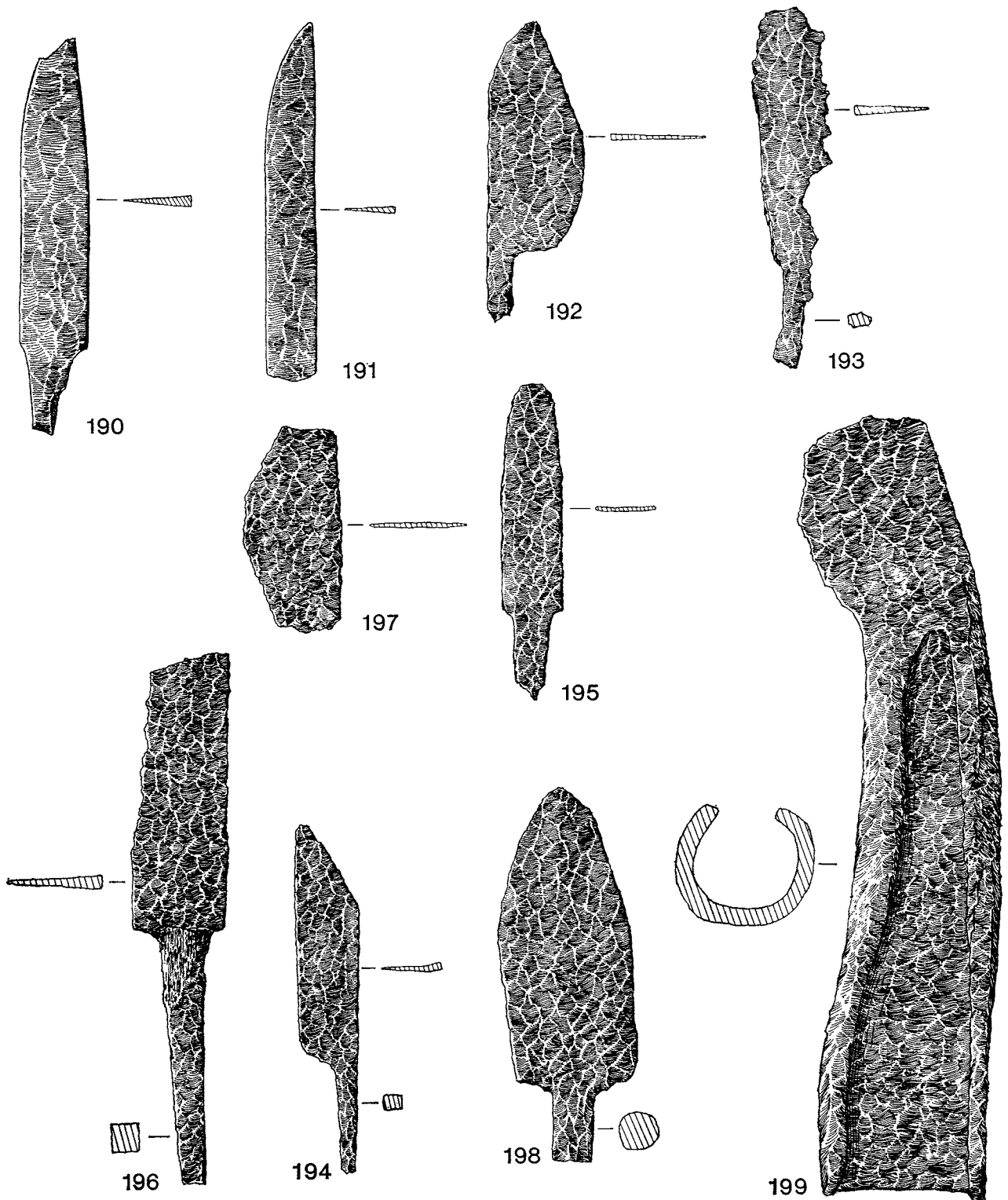


FIG. 126. Iron objects (pp. 235-7). Scale $\frac{2}{3}$

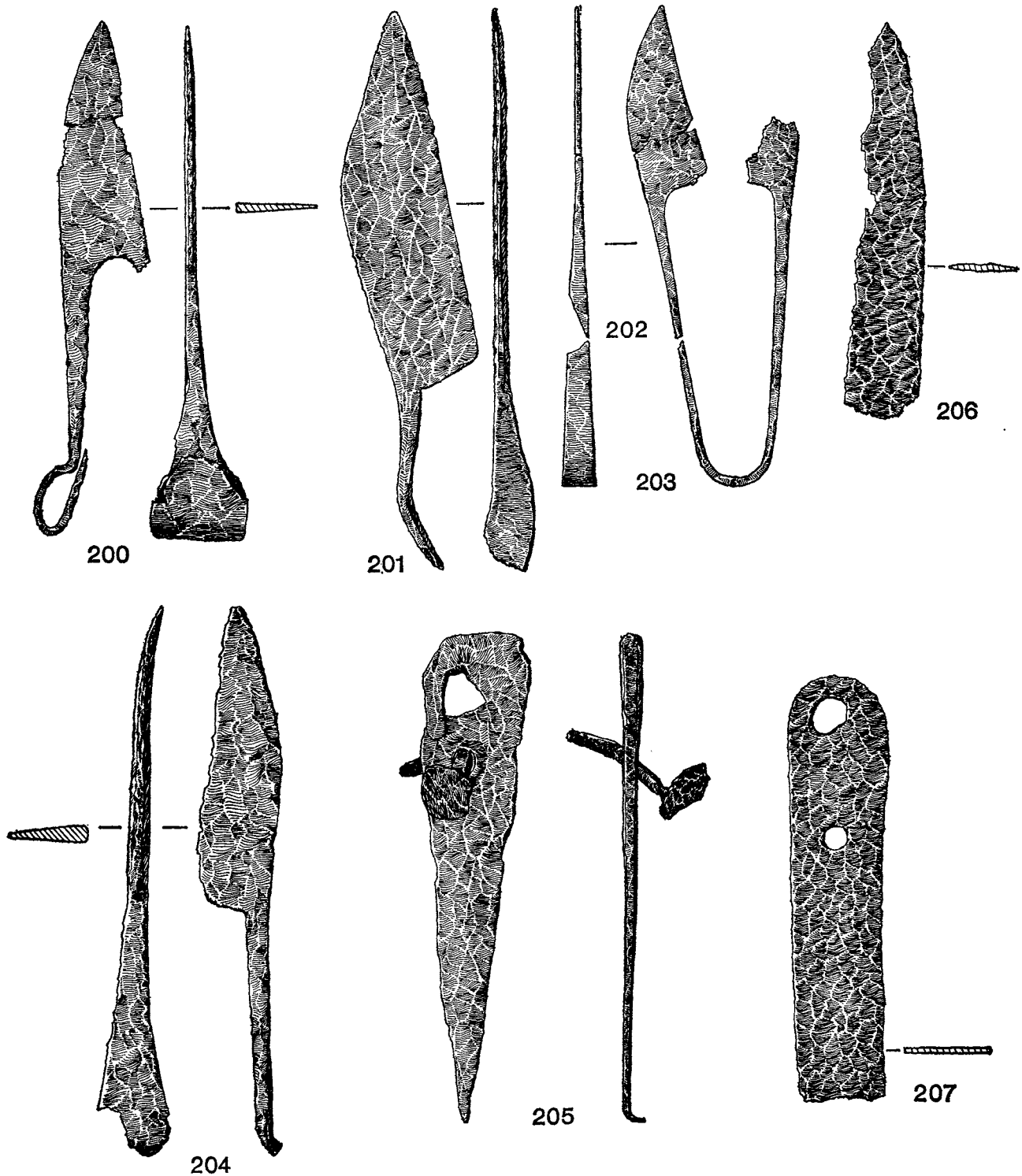


FIG. 127. Iron objects (pp. 237-40). Scale $\frac{2}{3}$ except 200, $\frac{1}{3}$

206. Bucket-handle mount.
Trench 91 layer 44 (1260): general layer.
207. Bucket-handle mount.
Trench 109 layer 118 (2641): pit 236.
208. Rim of a bucket with a loop for the handle. It is probably from a leather bucket.
Trench 74 layer 24 (646): pit 85.
209. Bucket handle with a hook at the lower end for attachment to the bucket. It widens out towards the top centre of the handle to provide a grip.
Trench 109 layer 121 (2633): pit 236.
210. Iron tie for use in carpentry. Two plates, of rectangular form with rounded ends, were pierced by two nails, each driven in from the opposite side and close to the ends of the plates. Only one plate now remains intact with a fragment of the other extant. It seems likely that this was a device used for securing a joint between two pieces of wood; cf. the method suggested for securing the joint of a wheel (*Newstead*, pl. LXIX, fig. 2 and 2*b*) although the Portchester tie suggests the use of a plate to front and back of the joint, not merely on one face as the *Newstead* diagram suggests. The size of the Portchester tie suggests that it was for use on a small object although the thickness of the wood must have been in the vicinity of 1.8 cm. It is not inconceivable that this object may too be associated with the construction or repair of a bucket.
Trench 109 layer 119 (2645): pit 236.

Tools

211. Paring chisel.
Trench 79 layer 60 (919): pit 121.
212. Awl, with the point intact. The other end will have been set into a handle.
Trench 100 layer 66 (2134): general layer.
213. Awl.
Trench 102 layer 60 (2122): middle occupation.
214. Draw knife.
Trench 80 layer 7 (834): general layer.
215. Iron bar with a wide head. The upper part of the shaft is of rectangular cross-section while, at the lower end, the shaft flattens and widens slightly. It is probably a chisel. Cf. *Newstead*, pl. LIX, no. 4.
Trench 95 layer 92 (1736): pit 144.
216. Drill. Cf. *Cranborne Chase I*, pl. XXIX, no. 9 and p. 89.
Trench 100 layer 33 (2067): pit 138.
217. Leaf hook.
Trench 108 layer 111 (2520): upper clay.

Locks and Keys

218. The mechanism of a barb-spring padlock. The three teeth are extant and spring barbs remain on two of the teeth and will have been attached to the third also. The hasp has been squashed down. For the workings of this type of lock see *Verulamium I*, p. 181 and the British Museum *Guide to the Antiquities of Roman Britain*, 1964, fig. 41, lower. The barb-spring padlock is common. Compare, for instance, five examples from Shakenoak: *Shakenoak I*, p. 103, fig. 34, nos. 1 and 2; *Shakenoak II*, p. 121, fig. 51, no. 93; *Shakenoak IV*, p. 119, fig. 56, nos. 354-5.
Trench 71 layer 8 (340): general layer.

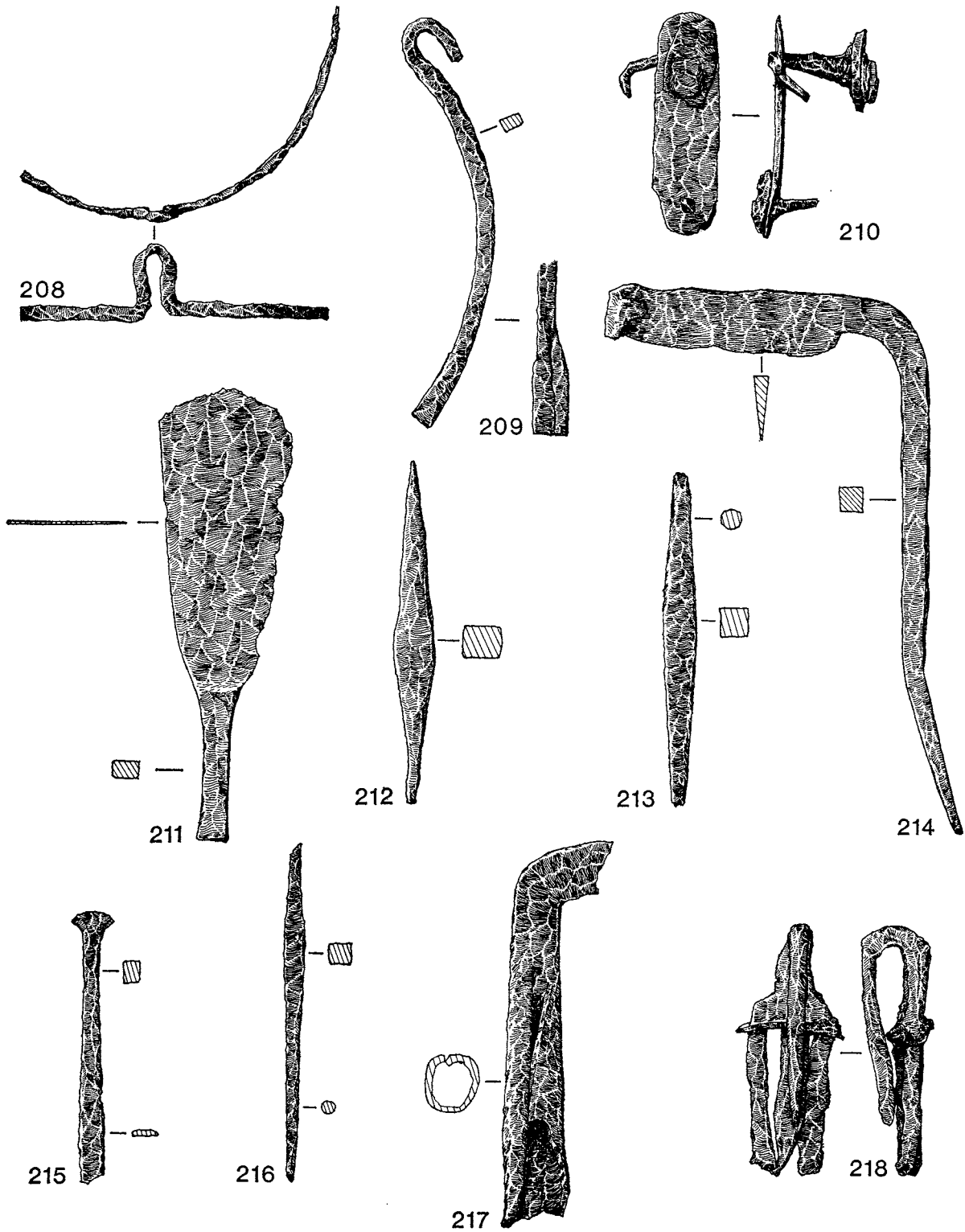


FIG. 128. Iron objects (p. 240). Scale $\frac{2}{3}$ except 208, 211 and 215, $\frac{1}{3}$

219. L-shaped tumbler-lock lift key. The bit has three teeth. The shaft has a marked swelling below the loop at the top. For the workings of this type of key, see *Verulamium I*, p. 181 and the British Museum *Guide to Greek and Roman Life*, 1920, pp. 149-50 and fig. 184.
Trench 79 layer 68 (917): pit 121.
220. L-shaped tumbler-lock lift key, similar to the last. The bit has the remains of two teeth. The shaft has an enlarged rectangular section below the looped top.
Trench 70 layer 19 (320): pit 64.
221. Another L-shaped tumbler-lock lift key. The bit is damaged and only one tooth remains, although there were originally three. The top is looped.
Trench 65 layer 18 (181): pit 54.

For other tumbler-lock lift keys see *Shakenoak IV*, p. 119, fig. 56, nos. 356 and 358.

222. Lever lock rotary key. The bit has three teeth to the front and two to the back. The shaft, of circular cross-section, terminates level with the three forward teeth. The ring at the end of the key is separated from the shaft by a ridged collar.
Trench 79 layer 60 (899): pit 121.

Structural Fittings

223. Split-spike loop with arms bent outwards. Cf. *Verulamium I*, p. 185, fig. 68, no. 90, for a parallel to this example and a general discussion of the type and its uses.
Trench 89 layer 21 (1127): layer above make-up.
224. Split-spike loop with straight arms. Cf. for example, *Verulamium I*, p. 185, fig. 68, no. 91.
Trench 79 layer 68 (912): pit 121.
225. Eyelet spike. Cf. for example, *Cranborne Chase I*, p. 88, pl. XXIX, no. 16.
Trench 79 layer 68 (920b): pit 121.
226. Eyelet spike with a ring passing through it.
Trench 108 layer 62 (2499): upper occupation.
227. Another ring and tie (drawn from an X-ray photograph).
Trench 79 layer 68 (922): pit 121.
228. Iron tie. The tie consists of a shaft with a circular head at one end and a lozenge shaped plate at the other. It was probably used in carpentry. Cf. *Fishbourne II*, p. 127, fig. 55, nos. 6-7.
Trench 87 layer 9 (1033): layer above upper road surface.
229. Cleat or staple. Cf. *Shakenoak IV*, p. 128, fig. 62, no. 450.
Trench 73 layer 14 (513): pit 79.
230. Joiner's dog. Cf. *Verulamium I*, p. 185, fig. 68, nos. 84ff.
Trench 98 layer 50 (1981): pit 164.
231. Hook with a ring for suspension.
Trench 89 layer 55 (1184): general layer.
232. Hook.
Trench 79 layer 27 (797): pit 103.
233. Hook or bracket.
Trench 74 layer 24 (647): pit 85.
234. Hook.
Trench 70 layer 19 (397): pit 64.

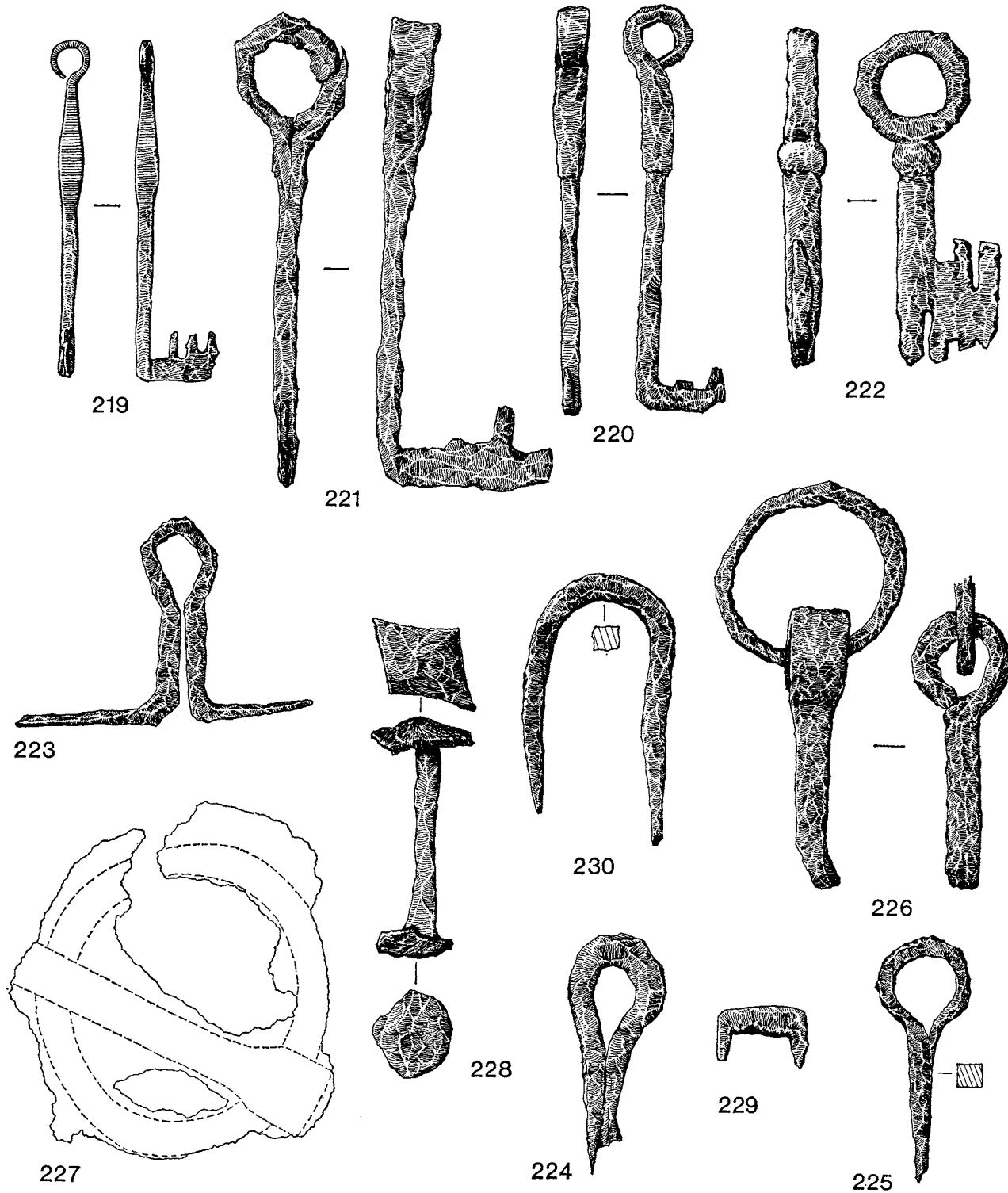


FIG. 129. Iron objects (p. 242). Scale $\frac{2}{3}$ except 219, $\frac{1}{3}$

235. Hinge.
Trench 88 layer 42 (1120): general layer.
236. ? Nail head.
Trench 69 layer 7 (262): general layer.

Boot Fittings

237. A collection of hob-nails from a leather boot.
Trench 89 layer 58 (1319): .
Also another group from trench 108 layer 217 (2559): pit 229.
238. Staple for the toe of a boot or shoe.
Trench 101 layer 46 (2231): general layer.

Bindings

For a discussion of iron bindings in general, see *Verulamium I*, p. 188, 190.

239. Piece of iron binding with rounded end and pierced by two rivet holes.
Trench 88 layer 10 (1605): general layer.
240. Binding pierced with one rivet hole.
Trench 79 layer 68 (918): pit 121.
241. Flat ring binding with three rivet holes, possibly part of a horseshoe. Cf. a much larger but similar object, *Verulamium I*, p. 192, fig. 71, no. 148.
Trench 87 layer 9 (1032): layer above upper road.
242. Iron binding rod with a flattened end pierced by a rivet, the other end describing a sharp bend before the break. The whole binding is slightly curved over its length.
Trench 90 layer 30 (1205): layer above make-up.

Styli

For styli in general see, for example: *Verulamium I*, p. 176, fig. 65, no. 49; *Newstead*, pl. LXXX; *Richborough IV*, pl. LIX, nos. 304-16; *Shakenoak IV*, p. 122, fig. 58, nos. 401-03.

243. The pointed tip is lost.
Trench 68 layer 8 (273): pit 60a.
244. A complete but bent stylus.
Trench 70 layer 14 (296): pit 63.
245. The pointed tip is missing.
Trench 101 layer 22 (2157): general layer.
246. The pointed tip is lost. It is stepped. Cf. *Cranborne Chase III*, pl. CLXXXIII, nos. 13-14 for stepped styli.
Trench 100 layer 66 (2135): general layer.
247. (Not illustrated.) A bent stylus.
Trench 108 layer 109 (2506): general layer.
248. Stylus with a square-shaped eraser and a long pointed tip, separated from the shank by a marked step.
Trench 66 layer 5 (214): general layer.

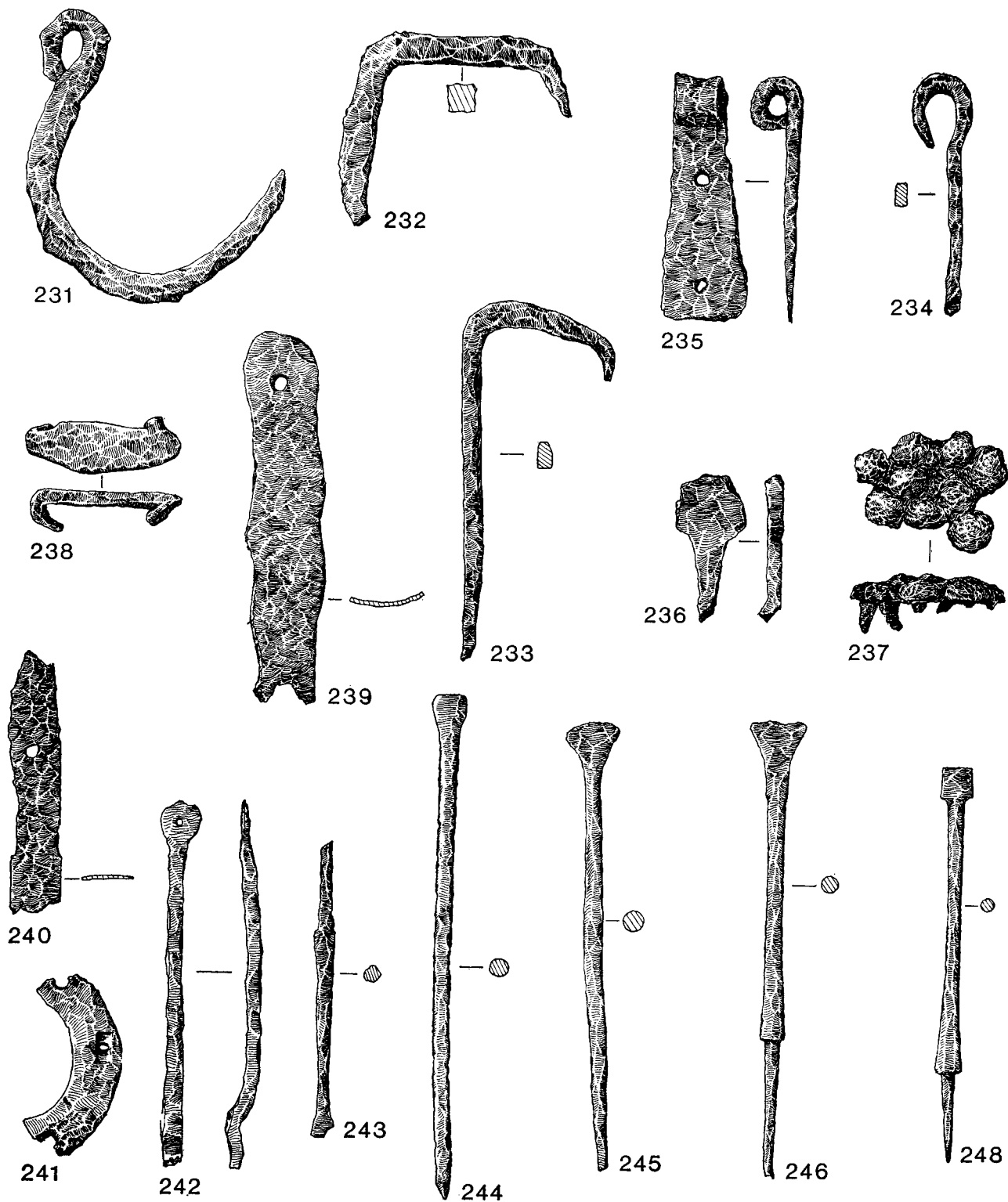


FIG. 130. Iron objects (pp. 242-4). Scale $\frac{2}{3}$ except 235, 240, 241 and 242, $\frac{1}{3}$

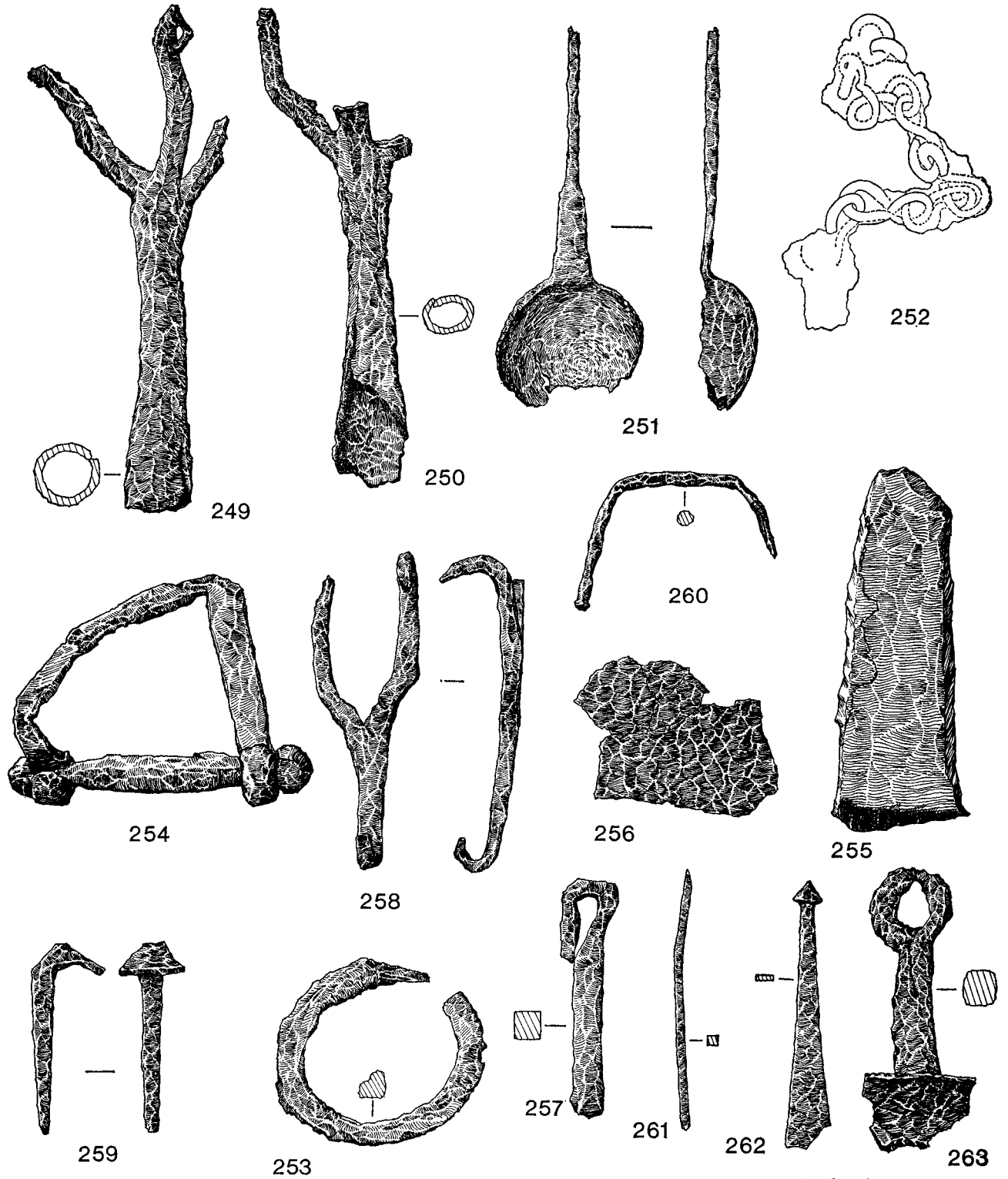


FIG. 131. Iron objects (p. 247). Scale $\frac{2}{3}$ except 251, 256, 260, 261 and 262, $\frac{1}{3}$

Candlesticks

249. Tripod candlestick. Two of the legs are extant and have turned out feet, the third leg is broken (drawing inverted). Cf. *Verulamium I*, p. 177, fig. 65, no. 51.
Trench 74 layer 27 (652): pit 86.
250. Tripod candlestick (drawing inverted).
Trench 90 layer 30 (1218): layer above make-up.

Miscellaneous

251. Iron ladle. The bowl is almost complete. Behind the bowl the handle is broad and flat and tapers into a tang of rectangular cross-section. Cf. *Shakenoak I*, p. 105, no. 23.
Trench 91 layer 46 (1278): layer above upper road.
252. A much corroded length of iron chain (drawn from an X-ray photograph). Cf. for example, *Cranborne Chase I*, p. 97, pl. XXXI, no. 1.
Trench 109 layer 91 (2642): pit 236.
253. Ring of ovoid form. Cf. *Shakenoak IV*, p. 131, fig. 64, no. 503.
Trench 87 layer 33 (1057): above upper road.
254. Large buckle. There are unpublished examples of this type in the Newport Museum, Monmouthshire, from Roman Caerwent.
Trench 71 layer 5 (398): general layer.
255. Piece of iron stock bar.
Trench 89 layer 55 (1174): general layer.
256. Piece of iron plate, apparently with two parallel sides and one rounded end.
Trench 89 layer 21 (1139): layer above make-up.
257. Looped terminal.
Trench 91 layer 46 (1275): layer above upper road.
258. Fork or two-pronged hook; the single prong was probably bent accidentally and represents the tang.
Trench 95 layer 64 (1646): general layer.
259. A tang?
Trench 88 layer 10 (1028): layer above make-up.
260. Handle of squarish form. One knobbed terminal remains.
Trench 88 layer 62 (1095): layer above make-up.
261. Iron rod of square cross-section and unknown purpose.
Trench 109 layer 91 (2634): pit 236.
262. A tapering piece of flat iron broken at the broad end and terminating in a knob at the narrow end. Perhaps a very thin paring chisel.
Trench 107 layer 44 (2412): upper occupation.
263. Part of a two-link snaffle bit.
Trench 101 layer 94 (2250): general layer.

THE LEATHER

by TIMOTHY AMBROSE

264. Left foot shoe — bottom unit, quarters and heel quarters. Overall length 20.4 cm., width at waist 5 cm., width at ball 6 cm., width at heel, 4.5 cm. Insole complete except for some deterioration along edges, thonged to middle-sole filling section (thong, 4–5 mm. wide; filler, length 18 cm.,

width 3.5–2.5 cm., thickness 2 mm.). Indentations of bracing threads across filler indicate that the upper has been string lasted. Fragment of middle sole with indentations of central line thonging and bracing threads. Parallel indentations either side of the central line thonging indicate further thonging along bottom unit. Heel quarters, deteriorated around lasting margin and right hand top edge. Round gimped decoration on top edges, rising to a central peak on heel quarters. Peak: height 8 mm., width 1.2 cm. Top edge of quarters folded over and stitched inside. Inside stiffener complete although slightly laminated, with skived upper edge. The stud arrangement is standard with a row running along the centre line, and a row running around both edges. Estimated number of studs: centre line row 8, heel end 2, left hand row 10, right hand row 11.

Trench 95 layer 150 (2660): pit 144.

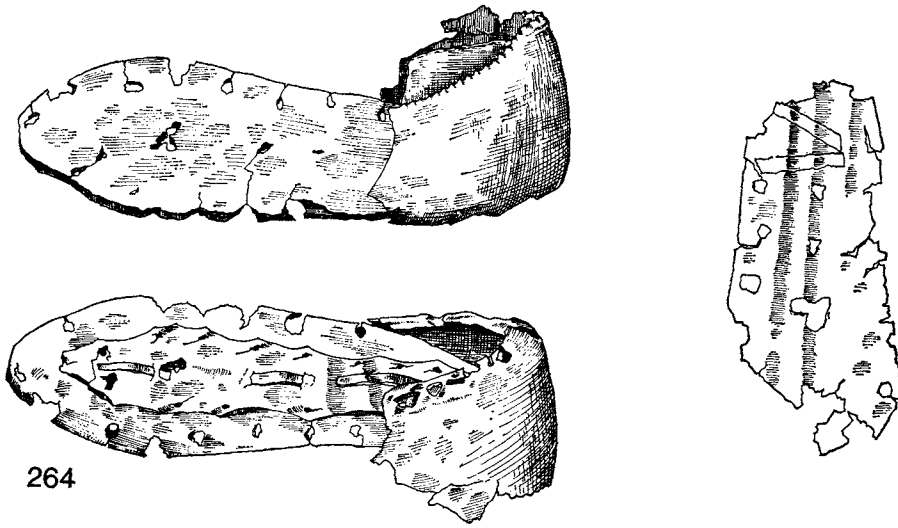
265. Right foot shoe — bottom unit, upper lasting margins and stiffener. Bottom unit much deteriorated. Overall length 28 cm. (estimated original length *c.* 31 cm.), width at waist 7 cm., width at ball 10 cm. Insole much deteriorated at heel end and along edges. Middle sole filler with thonging holes, terminated at waist by a diagonal cut. There is no indication of further filling towards heel. Middle sole layer below filler much deteriorated, showing stud holes and side-thonging holes along edges. Sections of upper lasting margins run along the left hand edge and right forward edge, showing stud holes. The upper has been lasted between the bottom middle sole layer and the insole, although there is a possibility that an upper middle sole layer was placed below the insole. Sole, greatly deteriorated, with some studs in position (1 cm. diameter). The studs are rather worn. Inside stiffener, deteriorated slightly, with lasting margins showing stud holes (see also no. 284).

Trench 109 layer 119 (2661): pit 236.

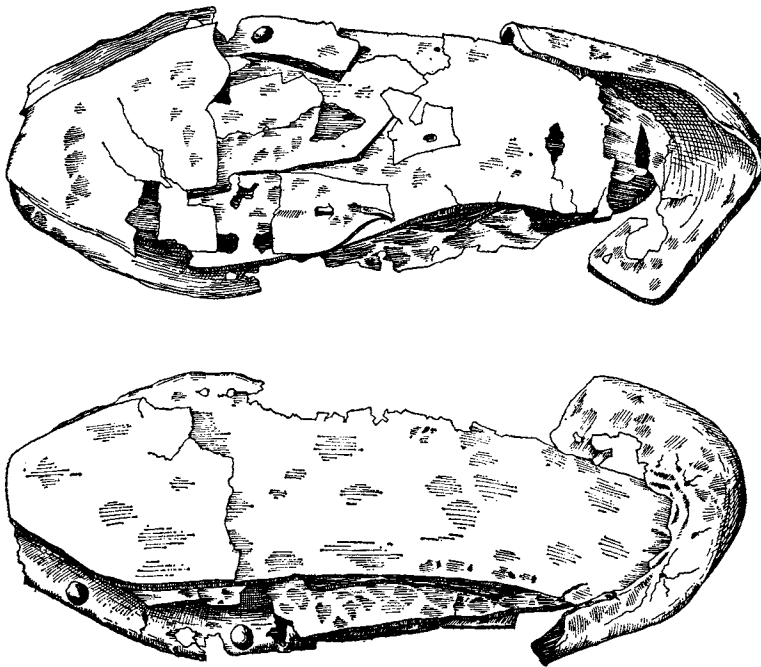
266. Right foot shoe — part of bottom unit, upper and heel quarters, and upper toe piece (pl. XXXVI). Overall length 21 cm., width at waist 5.5 cm., width at ball 6.5 cm., width at heel 4.5 cm. Upper is whole cut. Insole complete except for some deterioration at heel end. Middle sole filling section thonged to insole along central line: the thonging is still in position (thong 4–5 mm. wide). The sole and middle sole layers survive only at the front of the shoe. Twelve studs are in position along the central line and the right hand edge of the sole. The studs show a certain amount of wear. Upper lasting margin *in situ* along the edges of the forepart, with indications of string lasting. The upper toe piece is decorated.

A plain margin, 7–8 mm. wide, running down its centre line divides the toe piece into two roughly triangular panels. Each of these panels is decorated with seven short lines of impressed wave pattern motif, 5–6 mm. apart, running at right angles from the central margin. They increase in length from 1 to 3 cm. as they move up the toe piece, emphasizing the curve of the sides of the toe. These lines of wave pattern are alternated with parallel lines of light scoring, also at 5–6 mm. intervals, which run from the central margin to the extreme edges of the toe. The uppermost line of scoring has a short line of wave pattern, wrongly aligned by the craftsman, cutting across it. It may be that these scored lines were applied first to provide guidelines for the lines of wave pattern. The upper edge of the toe piece has a row of incised three-quarter circles along it, broken at the central margin.

Both the right hand upper lasting margin and the torn end of the central margin indicate the presence of a vamp, but how this was decorated and what form it took can only be guessed at. The top edges are in good condition and are decorated with round gimping, which runs from the back tie-loop to the peak on the heel quarters. Parallel with the top edges and some 4 mm. below them are two parallel lines of shallow grooving 4 mm. apart, which run around the heel between the tie loops. Below the lines of grooving, on both sides of the quarters, is a panel of square lattice cut-out decoration. The cut-outs are some 4 × 4 mm. and the overcuts at their corners show that a sharp, narrow-bladed chisel, *c.* 3 mm. in width, has been used to create them. The bottom edge of the



264



265

FIG. 132. Shoes (pp. 247-8). Scale $\frac{2}{3}$

panel curves upwards with the line of the heel, forming as it does a lower row of triangular cut-outs. Along the strips of leather left between the rows of cut-outs are shallow grooved lines, running both horizontally and vertically. The horizontal grooves terminate at the line of the triangular cut-outs on the one hand, and a vertical groove running down the centre of the back tie-strap on the other. The vertical groove stops at the lower horizontal channel below the top edge. As with the scored lines on the toe pieces, this network of grooved lines may represent a system of guidelines for the craftsman.

In front of the panel of cut-out work, on both sides of the shoe, is an instep tie-strap (the back tie-strap) which forms the forward edge of the panels. The back tie-straps have curved tie-loops with crescent-shaped tongues. Around the inside of the top edge is a length of horizontal lacing (lacing holes at *c.* 9 mm. apart). The lacing may have originally come through the tie-loops from the inside to tighten the top edges around the ankle. In front of the back tie-strap is a second instep tie-strap, separated from it by a vertical gap cut in the upper. The forward edge has round gimped decoration similar to that of the top edges, while the back edge is plain. Two lines of light scoring run up the sides of the forward tie-strap to meet at a point at the top end. The ends of both forward tie-straps are torn and their tie-loops are missing. Running from the sides of the toe piece around the lower sides of the shoe are two parallel lines of light scoring. These join a third at the heel quarters below the panels of cut-out work, and all three lines curve upwards to the peak on the heel. The inside stiffener is complete and cut much lower than usual so as not to block the inside of the cut-out work. Both the size and the decoration suggest that this is a woman's shoe. The decoration and the fact that it is whole cut (with a side seam) indicate that it is a high-grade example (Charlesworth and Thornton, 1973).

Trench 109 layer 119 (2662): pit 236.

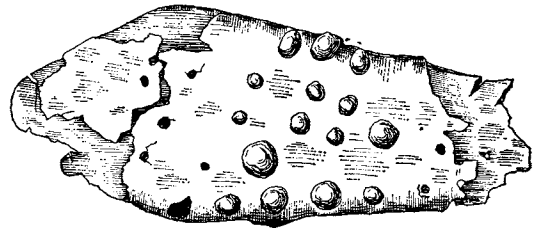
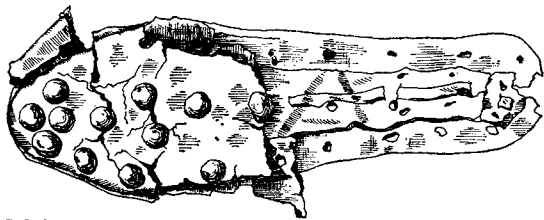
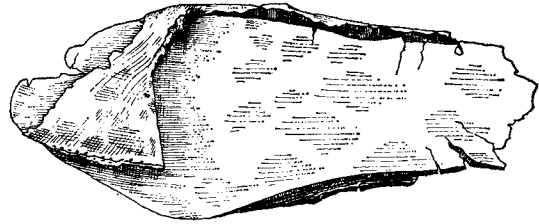
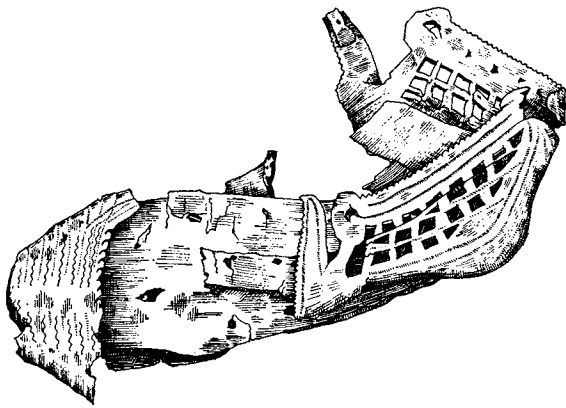
267. Left foot shoe — upper complete except for some deterioration around the top edge and quarters of the right-hand side, insole, ? filling and sole intact (pl. XXXV). Overall length 19 cm. (modern child's size 11), width at waist 5 cm., width at ball 7 cm., width at heel 5 cm. Upper is whole cut (see no. 266) with a cross-laced vamp seam. The lower 4 cm. of the seam are stitched. The vamp seam has been turned inside and the lacing holes are on average 1.2 cm. apart. There are lacing marks running along each line of lacing holes. The shoe has an inside side seam with part of the lacing arrangement still *in situ*, the lacing actually being cut from the upper and then stranded. The lacing holes along the side seam are *c.* 5 mm. apart. The top edges of the quarters are plain and have been folded over inside the shoe and stitched down *c.* 5 mm. below the edge. The sole is complete and except for one missing stud the nailing pattern is intact. The centre row has nine studs along it, the two side rows eight (diam. 6–14 mm.). The shoe shows little sign of wear (see below p. 260).

Trench 109 layer 119 (2663): pit 236.

268. Left foot shoe — incomplete bottom unit, insole, ? filler, sole, upper fragments heavily deteriorated. Present length 20 cm., estimated original length 25–26 cm., width at waist 6 cm., width at ball 8 cm. Insole (or perhaps upper middle sole layer) complete except for the heel end. Upper lasting margins *in situ* along most of the edges, with part of the forepart vamp surviving. Part of the vamp seam has survived on this last fragment. The stitching holes are at 4 mm. intervals. The sole is much deteriorated, and the heel end is not preserved. It has some 16 studs intact (diam. 6–14 mm.) and the original pattern would appear to have been five parallel rows, at least from the waist to the toe.

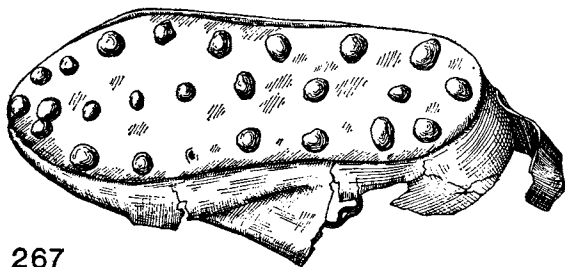
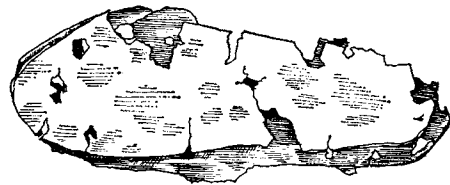
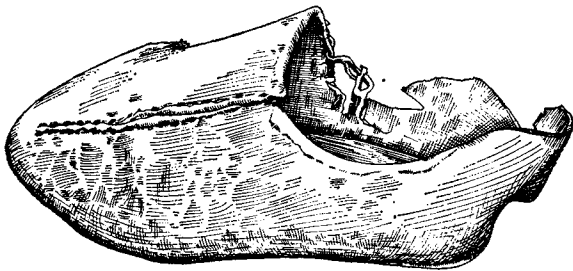
Trench 109 layer 119 (2664): pit 236.

269. Right upper shoe — bottom unit much deteriorated, with fragment of upper lasting margin at toe end. Overall length 18 cm., width at ball 7 cm., width at waist 5 cm. Insole deteriorated along both edges, thonged to middle sole filling sections, thong *c.* 4 mm. wide. Lower filling layer below filling sections greatly deteriorated. Sole, much deteriorated along right edge and across forepart. Two



266

268



267

269

FIG. 133. Shoes (pp. 248-50). Scale $\frac{2}{3}$

studs remain *in situ*, diam. *c.* 1 cm. Fragment of upper lasting margin around toe end has traces of the grooves worn by string lasting. The upper lasting margin is *in situ* along the left-hand edge of the sole to the waist, and there are slight traces of a lacing arrangement for a side seam at this point.

Trench 109 layer 119 (2665): pit 236.

270. ? Right foot shoe, part of bottom unit; insole, middle sole filling section and fragments of ? lower middle sole layer or sole. Length at present 21–22 cm., width at waist 6 cm., width at heel 5 cm. Insole complete at heel and waist, but forepart missing. Middle sole filling section runs the whole length of the insole and has the customary diagonal cut at the toe end. A row of thonging holes runs along the central line of the filler section, *c.* 3 cm. apart.

Trench 109 layer 119 (2666): pit 236.

271. Right foot shoe — fragment of bottom unit deteriorated. Length at present 13 cm., width at waist 8 cm. Fragment of middle sole layer, filler and fragment of upper lasting margin. The filling section has a straight cut at the waist and is thonged along the central line (thong, 6 cm. wide). The filling section is unusual in that it is thonged to the upper lasting margin (thongs, 3–4 mm. wide). The lasting margin is very narrow. The middle sole layer has a row of stud holes around its outer edges and indications of a central line. (Compare with no. 267 and see below.)

Trench 109 layer 119 (2667): pit 236.

272. (Not illustrated.) Left foot shoe — bottom unit, much deteriorated. Length 26 cm., width at ball *c.* 9 cm., width at waist *c.* 7 cm. Middle sole layers and middle sole filling section. The middle sole layers have stud holes showing along their central lines and around their edges and toe ends; the heel end is deteriorated. The middle sole filling section (3–4 cm. wide) runs the whole length of the middle sole and is slightly curved along its right hand edge, with a small nick out of the centre of its left hand edge. It has a thong still *in situ c.* 3–4 mm. wide. Above the filler is a second middle sole layer much deteriorated along its edges and heel end.

Trench 109 layer 119 (2668): pit 236.

273. (Not illustrated.) ? Right foot shoe, greatly deteriorated fragments of bottom unit. Middle sole fragments showing torn stud holes (3–4 layers). One fragment has a short length of thong *in situ* (thong 3–4 mm. wide).

Trench 109 layer 119 (2669): pit 236.

274. (Not illustrated.) Heel quarters and right-hand quarters, fragment of sole and upper lasting margin and stiffener (greatly deteriorated). Fragment of sole with thin strip of upper lasting margin held in position by one stud (diam. *c.* 9 mm.). Fragment of leather from ? quarters. The heel quarters, right-hand quarters and stiffener are badly deteriorated, and distorted. The quarters have a plain top edge and a finished, vertical forward edge (7 cm. high) with a line of stitch holes running down it and some 2 cm. behind it (stitch-holes at 5–6 mm. intervals, stitching *c.* 2 mm. wide). A fragment of upper lasting margin is stitched along the outside of this line. This construction differs from the previous examples. It would appear that the heel quarters and quarters have been stitched to the forepart of the shoe along a vertical instep side seam.

Trench 109 layer 119 (2670): pit 236.

275. (Not illustrated.) Much deteriorated forepart of bottom unit — sole, middle sole and insole fragments. The edges of these pieces are very torn and deteriorated, making accurate measurement impossible.

Trench 109 layer 119 (2671): pit 236.

276. (Not illustrated.) Description as above.

Trench 109 layer 119 (2672): pit 236.

277. (Not illustrated.) Description as above.

Trench 109 layer 119 (2673): pit 236.

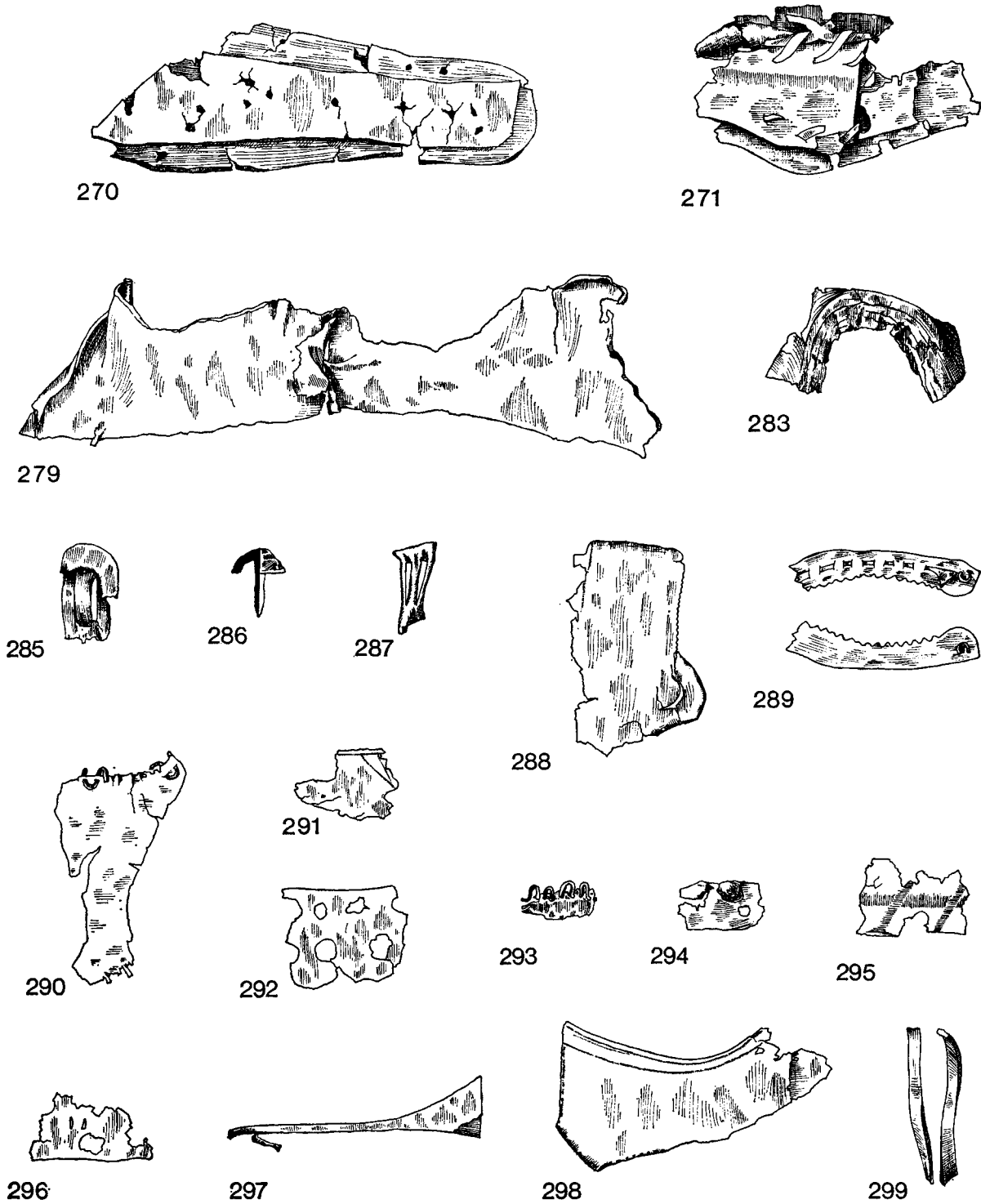


FIG. 134. Leather (pp. 252-5). Scale $\frac{2}{3}$

278. (Not illustrated.) Much deteriorated forepart section of bottom unit — sole, middle sole fragments. Width at ball, 9 cm.
Trench 109 layer 119 (2674): pit 236.
279. Heel quarters and quarters. Top edges, lasting margins and heel much deteriorated. Top edges appear to have been folded over and stitched down, and ? undecorated. Traces of a tie loop on left quarters.
Trench 109 layer 119 (2675): pit 236.
280. (Not illustrated.) Fragment of inside stiffener, much deteriorated, with stud holes showing on bottom lasting edge.
Trench 95 layer 150 (2676): pit 144.
281. (Not illustrated.) Piece of soft leather, 8 cm. in length, 2.4 cm. wide, narrowing to a point. Perhaps an offcut as there are no stitching holes along the margins and the edges are clean cut.
Trench 95 layer 150 (2678): pit 144.
283. Leather fragment, semi-circular shape. Possibly the toe piece of a moccasin type shoe. Large stitch holes/thong holes at 6 mm. intervals along the upper edge. Lower edge, although much deteriorated, also has traces of stitching.
Trench 109 layer 119 (2679): pit 236.
284. (Not illustrated.) Heel-stiffener, much deteriorated. Found inside a larger stiffener (see no. 265). Lasting margin shows stud holes. It is possible that this is a secondary inner stiffener for 265, although the size suggests that this is unlikely.
Trench 109 layer 119 (2680): pit 236.
285. Tie loop with torn bottom edge. Possibly from no. 268. Formed by cutting a double slot through the end of the tie strap leaving a central rectangular tongue 9 mm. wide. Upper edge curved and folded over.
Trench 109 layer 119 (2681): pit 236.
286. Sole stud. Iron sole stud, included to illustrate how the point of the stud has been turned on a shoe-maker's last.
Trench 109 layer 119 (2682): pit 236.
287. Tie loop with torn bottom edge. A more delicate example than no. 285, but fashioned in the same way. The central continuous tongue is 4 mm. wide. Probably from a woman's shoe.
Trench 109 layer 119 (2683): pit 236.
288. Fragment of right-hand quarters. Deteriorated along line of lasting margin and forepart. Round gimped decoration on top edge. Tie loop attached to quarters, round tongued with slightly curved upper edge.
Trench 109 layer 119 (2684): pit 236.
289. Left tie strap, 9.5 cm. long. Forward edge has round gimped decoration, back edge is plain. The strap terminates in a tongued tie loop and is torn at the bottom end. Running along the centre line on the inside of the strap is a narrow thong (c. 2 mm. wide). The end has been cut in a rough triangle to prevent the thong from being pulled out (see no. 266 for similar gimped decoration on a tie strap).
Trench 109 layer 119 (2685): pit 236.
290. Fragment of left ? quarters, much deteriorated (drawing shows reverse side). Upper edge deteriorated. Three parallel impressed lines 4 mm. apart run below the upper edge. A side seam runs down the back edge with two short lengths of lacing still in position (lacing 2 mm. wide — lacing holes at 4 mm. intervals). On the forward edge are the remains of a tie piece, with narrow thongs alternating with round gimps (thongs 2 mm. wide). Running from the top of the back edge seam to the centre of the lower edge is a raised stitched seam c. 3 mm. wide (stitching holes 3-4 mm. apart). (See no. 274 for similar side seam.)
Trench 109 layer 119 (2686): pit 236.

291. Fragment of leather deteriorated around the edges, although upper edges suggest a top edge. An impressed line runs parallel with the upper edge and some 2 mm. below it. Hanging from this line is an impressed triangle.
Trench 109 layer 119 (2687): pit 236.
292. Fragment of sole showing stud holes and thonging.
Trench 109 layer 119 (2688): pit 236.
293. Fragment of seam. Lacing *in situ* (lacing 2-3 mm. wide; lacing holes at 5-6 mm. intervals).
Trench 109 layer 119 (2689): pit 236.
294. Fragment of sole with stud in position. Stud 1.2 cm. diameter.
Trench 109 layer 119 (2690): pit 236.
295. Fragment of upper lasting margin showing indentations of middle sole thonging and string lasting.
Trench 109 layer 119 (2691): pit 236.
296. Fragment of middle sole showing thonging holes and stud holes.
Trench 109 layer 119 (2692): pit 236.
297. Thong/? offcut. As with no. 289, the thong has been cut with a triangular shaped end to prevent the thong from being pulled out. It seems too large to belong to a shoe.
Trench 109 layer 119 (2693): pit 236.
298. Piece of leather, 5 mm. thick. Upper edge has two parallel lightly impressed lines below it, 6-8 mm. apart. There are indications of a thong hole on the right-hand edge. Around the left-hand edge and part of the bottom edge are stitching holes 3-4 mm. apart. The rest of the bottom edge is deteriorated. Function uncertain.
Trench 109 layer 119 (2694): pit 236.
299. Two strips of leather, length 7.5 cm., width 6-7 mm., thickness 2 mm. (fig. 135).
Trench 109 layer 119 (2695): pit 236.
300. Fragment of heavy leather (2-3 mm. thick). The fragment has a raised, stitched seam (stitch holes at 4-5 mm. intervals). The seam divides into two, but there is deterioration at this point. Function uncertain.
Trench 109 layer 119 (2696): pit 236.
301. Two pieces of leather joined by a heavy inside turned seam. Stitch holes at 5-6 mm. intervals.
Trench 109 layer 119 (2697): pit 236.
302. Fragment of left quarters. Two parallel lightly impressed lines 5-6 mm. apart run below the deteriorated top edge. Edges much deteriorated (compare with no. 279).
Trench 109 layer 119 (2698): pit 236.
303. Fragment with folded upper edge. ? Part of shoe upper.
Trench 109 layer 119 (2699): pit 236.
304. Fragment, slightly laminated. Perhaps an offcut.
Trench 109 layer 119 (2700): pit 236.
305. Fragment. Slightly distorted in centre. Saw tooth decoration along upper edge. Decoration is impressed and consists of two narrow triangles hanging from an upper horizontal line. There is a semi-circular cut-out between the bases of the triangles (diam. 8 mm.).
Trench 109 layer 119 (2701): pit 236.
306. (Not illustrated.) Thong, length 17 cm., width 2 mm.
Trench 109 layer 119 (2702): pit 236.
307. Fragment 9.5 by 4-5 cm. Thonging hole with short length of thong in position (thong 2 mm. wide). Perhaps part of middle sole filling section.
Trench 109 layer 119 (2703): pit 236.
308. Fragment of right upper quarters. Round gimped decoration on top edge. Three parallel bands of decoration 5 mm. apart below the top edge. Upper band — two parallel grooves 6 mm. apart

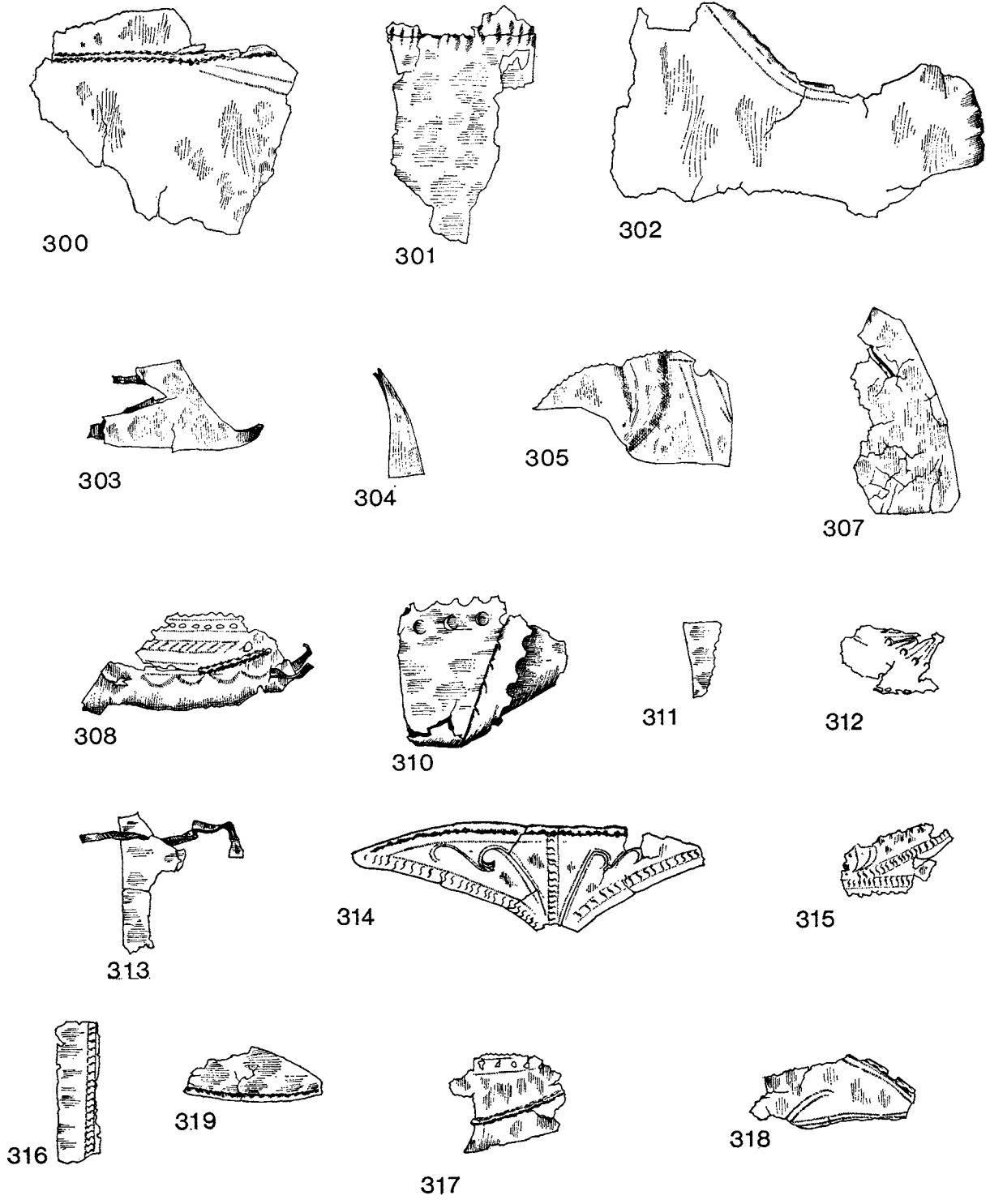


FIG. 135. Leather (pp. 255-8). Scale $\frac{2}{3}$

containing a row of elliptical cut-outs at 6 mm. intervals. Middle band — two parallel grooves 5 mm. apart containing a row of diagonal hatches at 4 mm. intervals, terminated by a ? lacing hole (diam. 4 mm.). Lower band — two parallel grooves 5 mm. apart containing a raised stitched seam (stitching holes at 5 mm. intervals). Hanging from this band are four grooved double loops. On the right hand edge, under the lower band, are traces of a lacing arrangement. The bottom edge is stitched (stitching holes at 5 mm. intervals).

Trench 109 layer 119 (2704): pit 236.

309. (Not illustrated.) Fragment of left quarters. Round gimped decoration on top edge. Three parallel grooves 5–6 mm. apart below the top edge. The upper and middle grooves contain a row of cut-out holes 7 mm. apart. The middle and lower grooves contain a row of wide triangles. Below these three grooves and curving upwards towards the top of the heel run two parallel channelled lines containing a raised stitched seam some 3 mm. wide.

Trench 109 layer 119 (2705): pit 236.

310. Rectangular fragment 7 by 8 cm. Semi-circular cut-outs along top edge. Below this is a line of three-quarter circular tongued cut-outs at 1.5 cm. intervals (diam. 6 mm.). Repeated on bottom edge. The fragment is folded along the lower line of cut-outs and along the left edge. Function uncertain.

Trench 109 layer 119 (2706): pit 236.

311. Fragment. Saw tooth decoration along right hand edge.

Trench 109 layer 119 (2707): pit 236.

312. Decorated fragment. Four incised lines radiate from a common point and terminate at three-quarter circular cut-outs. Between these lines are lightly impressed parallel lines of the same length. There are indications of a stitching seam along the lower edge.

Trench 109 layer 119 (2708): pit 236.

313. Fragment with 4 mm. wide thong running through it.

Trench 109 layer 119 (2709): pit 236.

314. Decorated panel. Upper edge and right-hand corner slightly deteriorated. The upper edge is folded over and stitched (stitching holes at 1.1 cm. intervals). There are no stitching holes on the lower edge. Two parallel impressed lines (4 mm. apart) containing S stamp decoration divide the panel in half. The lower edges of the panel have similar lines of impressed and stamped decoration. The S stamp decoration has not been very accurately applied. The spacing of the S stamps is not constant and at times the stamps cut across the guide lines. The open areas either side of the central division are decorated with double cresting wave motifs springing from the middle point of the lower edge. The wave motifs are formed from two lightly scored parallel lines with a central line of heavier scoring. The heavier scoring allows greater flexibility in the panel. The middle point of the lower edge is torn and suggests that the panel is but one part of a larger unit. Panels of similar shape and decoration come from saddles found at Valkenburg (Groenman-van Waateringe, 1967, p. 111). (See also nos. 315 and 316.)

Trench 109 layer 120 (2710): pit 236.

315. Decorated fragment. Decoration as no. 314. Lower edge torn along seam. Probably from same unit as no. 314.

Trench 109 layer 120 (2711): pit 236.

316. Rectangular fragment 7 by 2 cm. Decoration as nos. 314 and 315.

Trench 109 layer 119 (2712): pit 236.

317. Fragment 4 by 4 cm. Two parallel impressed lines 6 mm. apart contain a row of small holes (2 mm. diam.). Traces of gimping along the upper edge. Raised stitched seam runs across the middle of the fragment (stitching holes at 5–6 mm. intervals). (See nos. 308 and 309 for similar decoration.)

Trench 109 layer 119 (2713): pit 236.

318. Fragment 7 by 3 cm. Stitching along right hand edge (stitching holes at *c.* 6 mm. intervals). Impressed parallel lines 3 mm. apart run along lower and right-hand edges. Function uncertain.
Trench 95 layer 150 (2714): pit 144.
319. Fragment 6 by 3 cm. Upper edge folded over and stitched (stitching holes at 5 mm. intervals). Right-hand edge deteriorated. Left-hand edge clean cut. Function uncertain.
Trench 95 layer 150 (2715): pit 144.
320. (Not illustrated). Other fragments of shoes, showing no diagnostic features.
Trench 109 layer 119: pit 236 and trench 95 layer 150: pit 144 (2716).

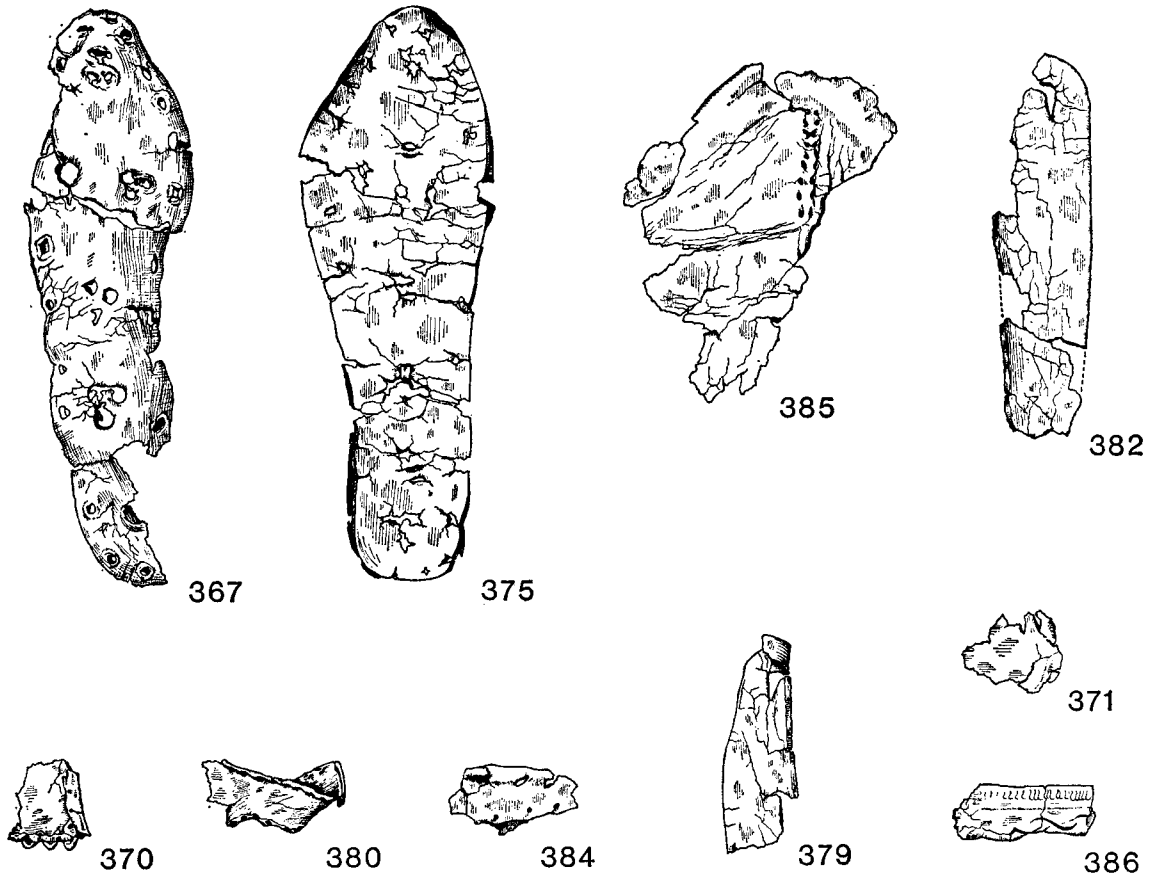


FIG. 136. Leather (pp. 258-9). Scale $\frac{2}{3}$

321. (Pl. XXXIV*b*). Fragments of dried, shaped skin, perhaps a skin vessel.
Trench 63 layer 7 (200).
367. Left foot shoe — sole. Edges and heel end deteriorated. Overall length 22 cm., width at ball 7.5 cm., width at waist 5 cm. A row of stud holes runs around both edges, but instead of the normal central row, four clusters of three stud holes run along the centre line with two further clusters on the ball. Estimated number of studs: right hand row 13, left hand row 13.
Trench 95 layer 142 (2280): pit 144.

368. (Not illustrated.) Fragment of insole. Broken across ball. Width at ball 6.5 cm., width at heel 4 cm. Three pairs of thonging holes survive at 4.5 cm. intervals. Fragment of thonging *in situ* (6 mm. wide). Perhaps originally attached to no. 369.
Trench 95 layer 142 (2281): pit 144.
369. (Not illustrated.) Middle sole filling section. Width at ball 5 cm., width at waist 3.5 cm., overall length 17 cm. Central row of *c.* 12 stud holes, with further stud holes around toe end, much deteriorated. Short strips of thonging in position at waist and toe end (5–6 mm. wide). (See no. 368.)
Trench 95 layer 142 (2282): pit 144.
370. Fragment of seamed leather. Lacing *in situ* (lacing 2–3 mm. wide; lacing holes at 5 mm. intervals). Top edge of fragment has been folded over inside and stitched down 5 mm. below the edge. Possibly part of a side seam (see no. 293).
Trench 95 layer 142 (2283): pit 144.
371. Fragment of tie loop. Much deteriorated, with torn edges.
Trench 95 layer 142 (2284): pit 144.
372. (Not illustrated.) Fragment of heel quarters. Central peak along upper edge. The piece has been folded and is heavily deteriorated.
Trench 95 layer 142 (2285): pit 144.
373. (Not illustrated.) Eight fragments, greatly deteriorated and torn. All have stud holes, and are either pieces of torn lasting margin or middle sole filler.
Trench 95 layer 142 (2286): pit 144.
374. (Not illustrated.) Fragment of leather, length 12 cm., width 8 cm. Edges much deteriorated. A row of 9 lacing holes, at 5 mm. intervals, runs along one edge. Function uncertain.
Pit 95 layer 142 (2287): pit 144.
375. Left foot shoe — sole. Deteriorated along both edges. Length 23 cm., width at ball 7.5 cm., width at waist 6 cm., width at heel 5 cm. The stud arrangement is similar to that of no. 367. There are 12–13 stud holes along either edge and four clusters of 2–3 stud holes along the centre line, with two more clusters on the ball. A single thong also runs along the centre line, with thonging holes at 3–5 cm. intervals.
Trench 95 layer 151 (2288): pit 144.
376. (Not illustrated.) Fragment of middle sole, heavily deteriorated. Indentations of bracing threads and centre line thonging present. A short strip of bracing thread is *in situ*. Stud holes at 12 mm. intervals.
Trench 95 layer 151 (2289): pit 144.
377. (Not illustrated.) Fragment of heel quarters and inside stiffener. Both heavily deteriorated and distorted. Inside stiffener shows traces of a lasting margin.
Trench 95 layer 151 (2290): pit 144.
378. (Not illustrated.) 12 fragments of middle sole filler sections, showing stud holes and thonging indentations. Heavily deteriorated.
Trench 95 layer 151 (2291): pit 144.
379. Tie strap. Torn along side and bottom edge. Length 8 cm.
Trench 95 layer 151 (2292): pit 144.
380. Fragment. Width 5 cm., length 7 cm. Right hand edge stitch at 3 mm. intervals. Left hand edge and lower edge have lacing holes at 4–5 mm. intervals. Top edge torn. Possibly part of a tie strap.
Trench 95 layer 151 (2293): pit 144.
381. (Not illustrated.) Two pieces of leather. 11 cm. × 3 cm. and 9 cm. × 2 cm. Edges torn and deteriorated.
Trench 95 layer 151 (2294): pit 144.

382. Tie strap? Length 15 cm., width 5 cm. The bottom and left hand edges are torn. (Compare with no. 379).
Trench 109 layer 121 (2295): pit 236.
383. (Not illustrated.) Two fragments of middle sole. Heavily deteriorated.
Trench 109 layer 121 (2296): pit 236.
384. Piece of folded leather. Three stitching holes run along the bottom edge at 12 mm. intervals. Along the top edge are three lacing holes at 1 cm. intervals. Function uncertain.
Trench 109 layer 121 (2297): pit 236.
385. Fragment of leather, heavily deteriorated and torn along edges. The fragment has a raised stitched seam, which terminated before reaching the forward edge. (Stitch holes at 4–5 mm. intervals.) Possibly part of an upper with a vamp seam. One of the edges is turned over and appears to show torn stud holes (see nos. 300 and 267).
Trench 109 layer 121 (2298): pit 236.
386. Strip of leather. Length 5.5 cm., width 2.5 cm. Bottom and side edges torn. Decorated along upper edge with a row of vertical reverse S stamp decoration, *c.* 3 mm. in height. Below this is a shallow channelled line. Under this line occurs a band of larger horizontal S stamps. The motifs are formed with a single incised line (see nos. 314–316, 318).
Trench 109 layer 121 (2299): pit 236.
387. (Not illustrated.) Piece of leather, *c.* 25 cm. × 28 cm. Much deteriorated and distorted. Two edges are cut at right angles. There are no stitching or lacing holes. The folding on the piece suggests that the leather has been stretched over some form of framework. It is possible that the piece is part of a tent, although the absence of stitching holes along the edges seems to make this unlikely. It is perhaps best viewed as either part of a garment or part of military equipment.
Trench 109 layer 121 (2300): pit 236.

Discussion

The leather finds from the excavations at Portchester Castle are not indicative of on-site leather working. Except for one or two examples, the shoes are all badly deteriorated and worn, and are best interpreted as cast-offs. The associated finds are mostly of domestic refuse (see pits 144 and 236 — contents). Three points, however, are worthy of note.

Except for three examples (nos. 268, 367, and 375), the shoes from Portchester have a simple three-row stud arrangement. The nailing pattern was one of the criteria used on the large deposit of Roman shoes from Saalburg for differentiating men's shoes from women's and children's shoes (Busch, 1965, p. 175). The sample from Portchester is too small and in too fragmentary a condition for this criterion to be used effectively. However, both its size and decoration suggest that no. 266 is a woman's shoe. Nos. 264, 267 and 269 are of very similar size to no. 266, and may also have belonged to women or children. Size alone suggests that nos. 265 and 272 are men's shoes. The presence of women and children within the fort is further attested by the large number of personal finds recovered (see p. 427).

Secondly, no. 267 is of especial interest in the context of a Saxon shore fort. It seems to show something of a marriage between Roman and Germanic shoemaking traditions. The stud arrangement is of normal Roman type, whereas the upper illustrates features later to become common on Anglo-Saxon shoes. The vamp seam is cross-laced for most of its length and the right hand side seam has a lacing arrangement cut from the upper. There are no tie straps. One other fragment (no. 271) has similar features. The upper lasting margin is thonged

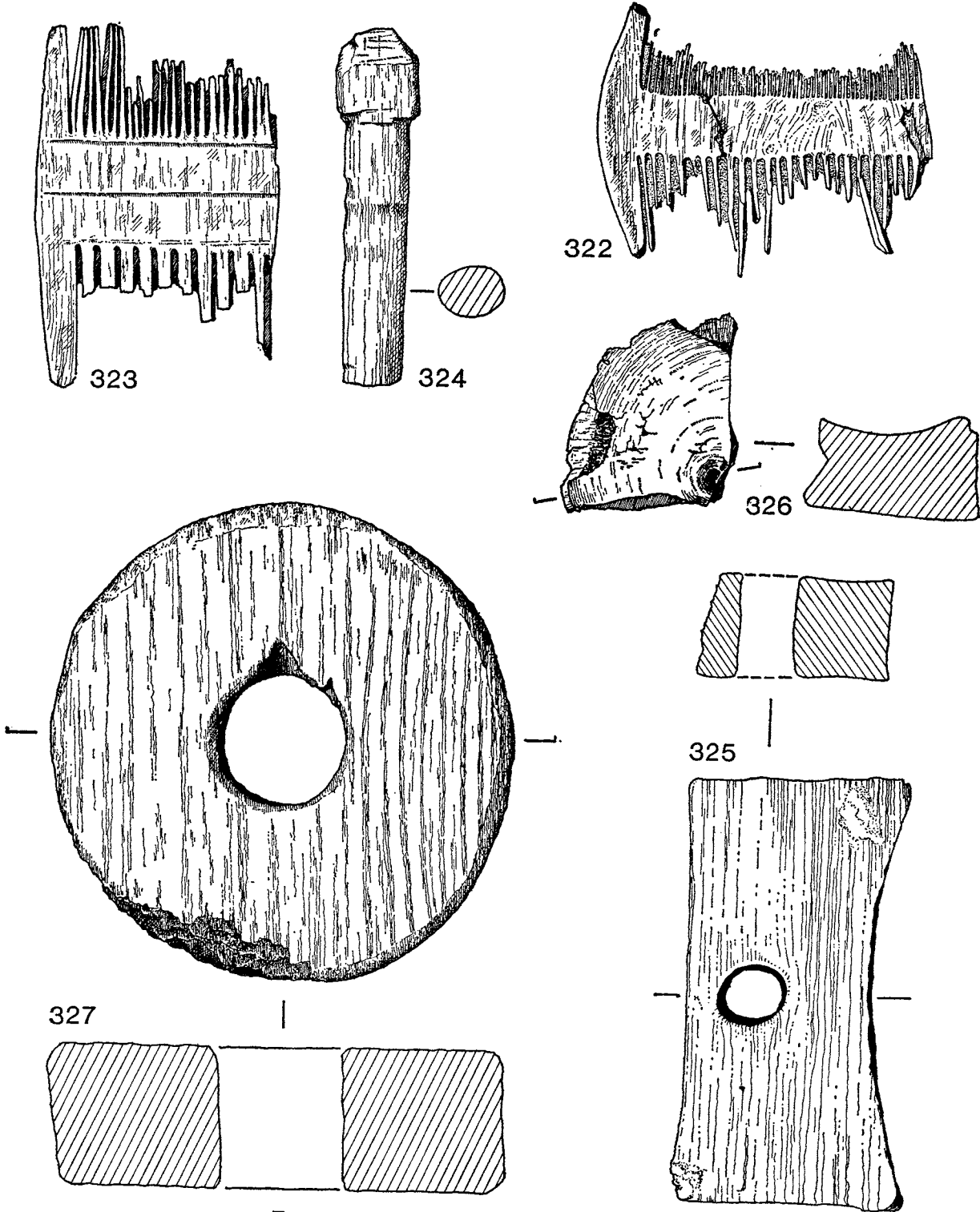


FIG. 137. Wooden objects (p. 262). Scale $\frac{2}{3}$

to the middle sole filling section along its edge in much the same way as on a Saxon shoe in Winchester Museum.¹ Further finds from Portchester may provide more positive evidence for this merging of shoemaking traditions.²

Thirdly, certain fragments do not appear to come from shoes. It has been tentatively suggested that nos. 314 and 315 are part of an appliqué panel from a saddle. The identification of nos. 281, 291, 300 and 310 remains uncertain, but it is not impossible that they are parts of clothing.

OBJECTS OF WOOD

- 322. Comb; undecorated, with teeth of two different sizes.
Trench 95 layer 151 (2651): well 144.
- 323. Comb: the stem is decorated with three shallow grooves. The teeth are of two different sizes.
Trench 109 layer 119 (2631): well 236.
- 324. Peg: oval in section with roughly cut head.
Trench 109 layer 120 (2656): well 236.
- 325. Block with perforation showing signs of wear as if by cord.
Trench 95 layer 151 (2654): well 144.
- 326. Part of a disc with central depression. Signs of wheel turning suggest that it may be from the base of a container.
Trench 109 layer 120 (2657): well 236.
- 327. Disc with central perforation.
Trench 109 layer 119 (2630): well 236.
- 328. Bung with an expanded head.
Trench 95 layer 151 (2653): well 144.
- 329. Peg with an expanded head: the shank is sawn half across and perforated.
Trench 95 layer 151 (2652): well 144.

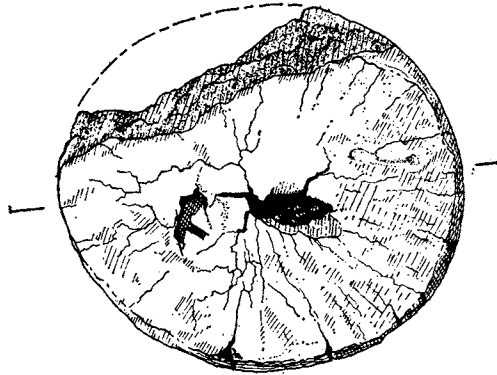
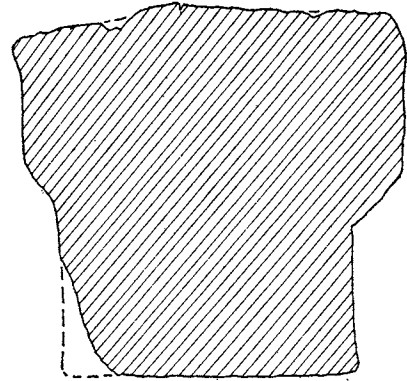
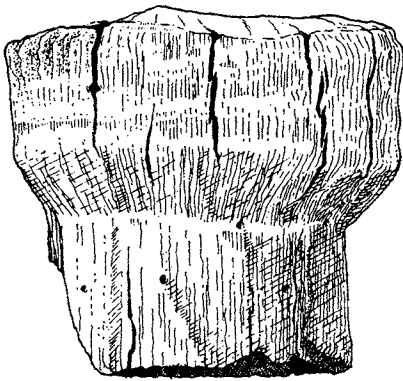
OBJECTS MADE FROM POTTERY, BAKED CLAY, AND CHALK

- 330. Spindlewhorl of baked clay, undecorated.
Trench 73 layer 10 (606): general layer.
- 331. Spindlewhorl cut from a pottery vessel of black-burnished ware.
Trench 100 layer 81 (2182): general layer.
- 332. Spindle whorl cut from a sherd of coarse pottery.
Trench 63 layer 14 (176): pit 48.
- 333. Domed spindlewhorl of chalk.
Trench 80 layer 7 (819): general layer.
- 334. Pottery counter, grey on the external grooved surface, orange-buff on the internal flat surface.
Trench 63 layer 14 (175): pit 48.
- 335. Sherd from a black-burnished dish with a scratched symbol on the exterior. It is presumably an owner's mark. I should like to thank Mr R. P. Wright for commenting on this piece.
Trench 90 layer 71 (1327): general layer.

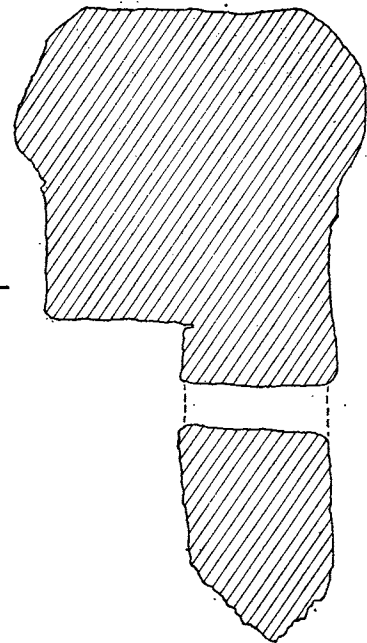
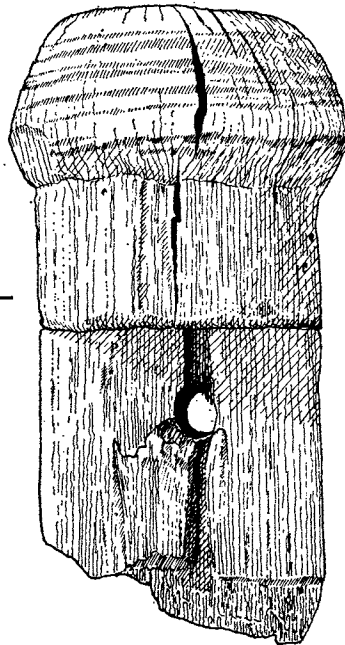
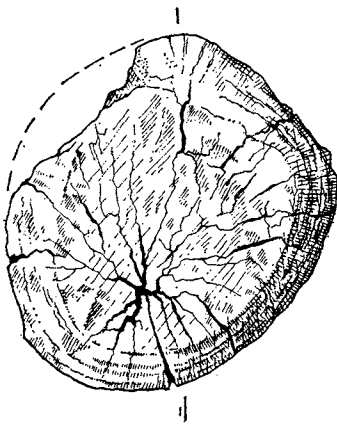
¹ Winchester City Museum Accession No. EUB/59.

² I am indebted to Miss J. M. Swann and Mr J. H.

Thornton for bringing this point to my notice and for their kind attention during the preliminary stages of this report.



328



329

FIG. 138. Wooden objects (p. 262). Scale $\frac{2}{3}$

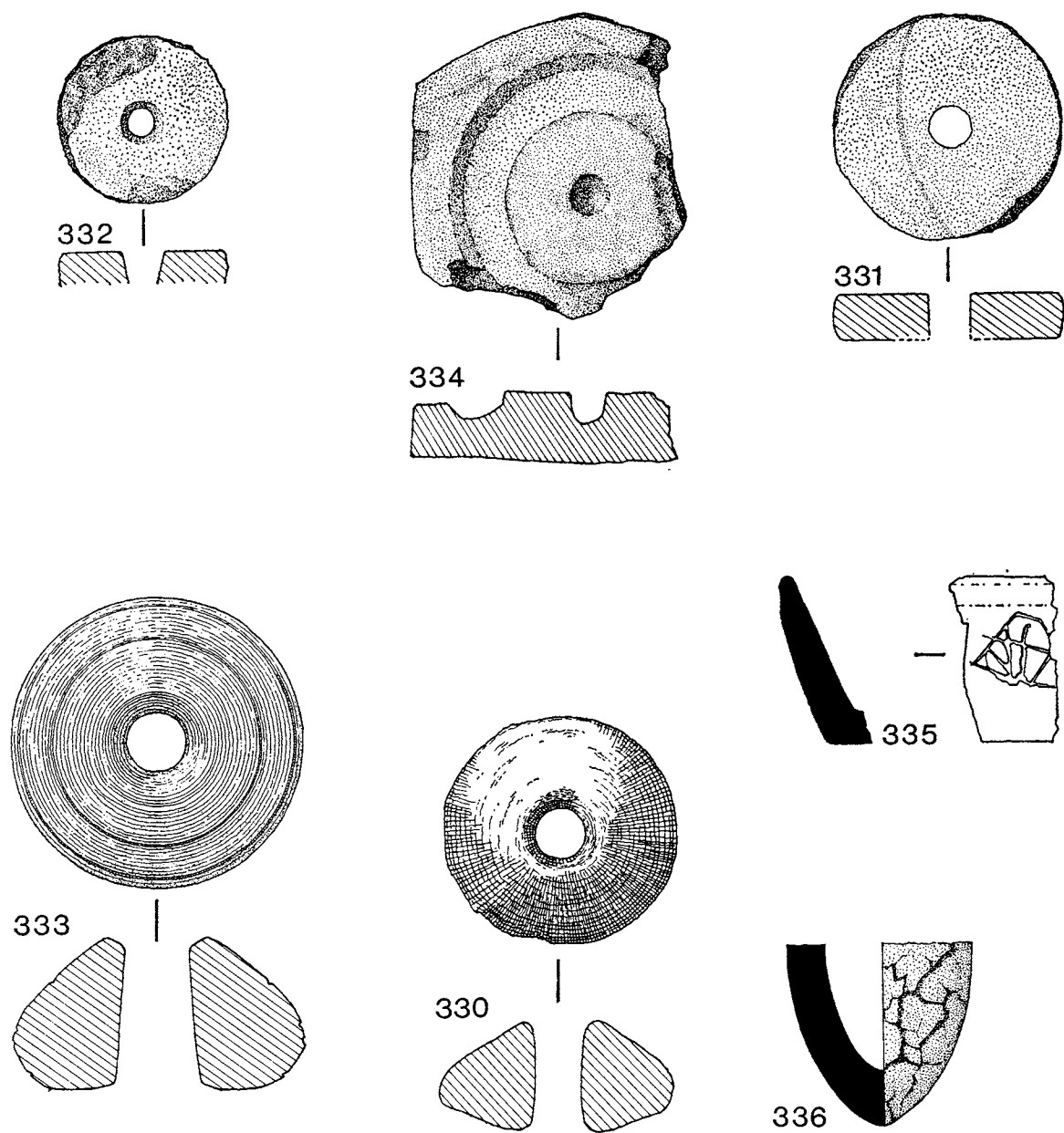


FIG. 139. Objects of stone and clay (pp. 262, 265). Scale $\frac{2}{3}$

METAL WORKING ACTIVITY

Evidence for the working of bronze, lead and iron, has been found in various phases of the Roman occupation.

Bronze

336. Fragment of a crucible. A small piece of bronze survives in an internal crack.

Trench 63 layer 7 (199): pit 46.

Not illustrated. Small angular fragment of copper ore about 40 mm. across. Identified by Dr Peacock as bornite/chalcocite, probably from Devon or Cornwall.

Trench 5 layer 3 (25): general layer.

Lead

Samples of lead which have been melted and not re-formed have been found in pits 47, 48 and in trench 62 layer 5 and 63 layer 14 in general layers.

Iron

Iron slag has been recovered from the following contexts: well 135; pits 79, 95, 237; from upper occupation layers and layers above the make-up in trenches 89 layer 21, 91 layer 53 and 108 layer 99, and from Roman general layers, trench 72 layer 7 and 66 layer 5.

WHETSTONES

by DAVID PEACOCK

The whetstones recovered from Roman levels are described in the schedule below. Of these, 17 have a distinct rectangular shape, modified to varying degrees by usage, and none is complete, suggesting that they were discarded after breakage. The remaining ten whetstones appear to be utilized pebbles.

The source of raw materials is difficult to determine without more work, but it is reasonable to assume that the pebble whetstones would have a distinctly local origin. However, the possibility of specific gravel beds being deliberately worked for usable pebbles must not be ignored, and under such circumstances trade might be envisaged. The shaped whetstones may have come from further afield, and eleven rock types are present, perhaps implying as many sources. Nos. 337-41 are very similar, in the hand specimen, to certain third-century whetstones from Fishbourne, ascribed to the Hythe beds of Kent (*Fishbourne II*, 155): they may well come from this source. Nos. 347-50 appear to be Palaeozoic rocks, perhaps from western Britain or Brittany.

Shaped Whetstones (not illustrated)

337. Grey sandy limestone (140 × 60 × 8 mm.).

Trench 69 layer 8 (268): general layer.

338. Grey sandy limestone ($45 \times 15 \times 11$ mm.).
Trench 76 layer 30 (840): general layer.
339. Grey sandy limestone: groove on two faces ($80 \times 20 \times 15$ mm.).
Trench 79 layer 60 (908): pit 121.
340. Grey sandy limestone ($50 \times 13 \times 13$ mm.).
Trench 88 layer 5 (1009): above upper make-up.
341. Grey sandy limestone: groove on one face ($100 \times 20 \times 20$ mm.).
Trench 100 layer 36 (2084): general layer.
342. Fine grey laminated sandy limestone: rhomb shaped ($90 \times 50 \times 12$ mm.).
Trench 95 layer 151 (1995): pit 144.
343. Fine grey laminated sandy limestone: broad depression on one face ($70 \times 20 \times 14$ mm.).
Trench 95 layer 148 (1988): pit 144.
344. Blue limestone with some shell ($70 \times 20 \times 40$ mm.).
Trench 79 layer 28 (831): pit 103.
345. Grey argillaceous limestone; groove down one side ($44 \times 30 \times 17$ mm.).
Trench 89 layer 21 (1152): above upper make-up.
346. Reddish-brown laminated shelly limestone: little used ($100 \times 17 \times 17$ mm.).
Trench 91 layer 73 (1367): above upper road surface.
347. Greywacke sandstone ($80 \times 60 \times 15$ mm.).
Trench 89 layer 38 (1189): above upper make-up.
348. Greywacke sandstone ($55 \times 44 \times 25$ mm.).
Trench 108 layer 225 (2609): lower occupation.
349. Hard indurated black mudstone ($90 \times 18 \times 13$ mm.).
Trench 102 layer 48 (2097): upper occupation.
350. Hard buff indurated mudstone; good polish on surfaces ($65 \times 27 \times 15$ mm.).
Trench 107 layer 52 (2458): middle occupation.
351. Greenish-grey micaceous sandstone ($75 \times 45 \times 17$ mm.).
Trench 71 layer 8 (363): general layer.
352. Buff-grey micaceous sandstone; U-shaped indentation on one side ($56 \times 50 \times 10$ mm.).
Trench 103 layer 74 (2293).
353. Grey-buff laminated micaceous sandstone ($50 \times 40 \times 20$ mm.).
Trench 89 layer 23 (1148): above upper make-up.

Pebble Whetstones (not illustrated)

354. Quartz mica granulite; fragment (40 mm. long).
Trench 57 layer 9 (96): general layer.
355. Bluish-grey indurated mudstone; used as end rubber; circular scratch marks on unabraded surfaces (pl. XXXIVa); broken (85 mm. long).
Trench 60 layer 5 (115): general layer.
356. Grey argillaceous limestone; fragment (45 mm. long).
Trench 70 layer 28 (295): pit 63.
357. Blue-grey sandy limestone (85 mm. long).
Trench 79 layer 60 (908): pit 121.
358. Fine grey-black micaceous sandstone; small chip.
Trench 89 layer 35 (1187): above upper make-up.
359. Grey micaceous sandstone (80 mm. long).
Trench 107 layer 44 (2431): upper occupation.

360. Compact grey siltstone, weathering purplish-brown (150 mm. long).
Trench 91 layer 65 (1339): below upper make-up.
361. Compact grey siltstone, weathering purplish-brown (135 mm. long).
Trench 107 layer 52 (2454): middle occupation.
362. Dark grey micaceous sandstone; fragment (85 mm. long).
Trench 103 layer 23 (2283): upper occupation.
363. Grey micaceous metamorphosed sandstone (100 mm. long).
Trench 108 layer 184 (2577): pit 230.

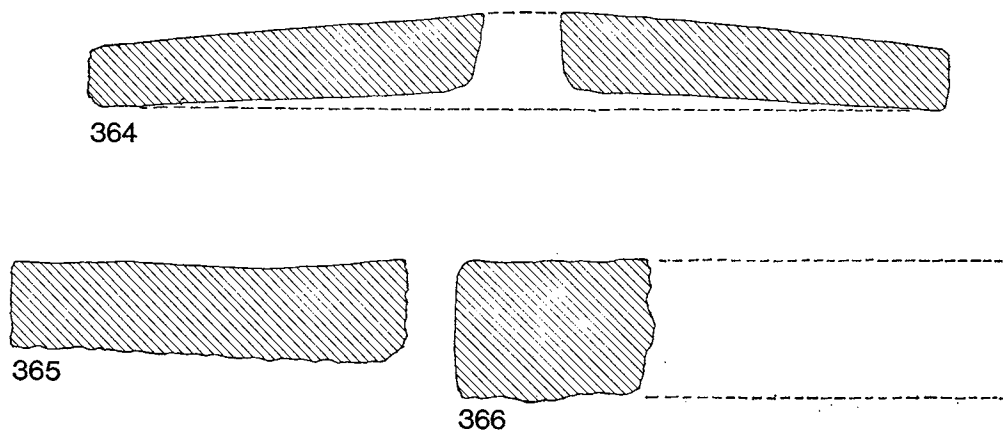
QUERNSTONES

(fig. 140)

Quernstones are surprisingly rare in the Roman levels of Portchester. Altogether only 11 fragments of stone similar to that used for quernstones were recovered; one from the middle occupation level, two from layers above the make-up, the rest from general occupation levels. Three examples are illustrated.

364. Lower stone of quern with rectangular central perforation; greensand.
Trench 63 layer 6: general layer.
365. Fragment of lower stone of quern, probably re-used as a sharpening stone; greensand.
Trench 89 layer 55: general layer.
366. Segment of stone of circular shape. Possibly a quern but since no working surface survives it could have been part of a column drum constructed of segments; ferruginous sandstone.
Trench 74 layer 4 (624): general layer.

All the other fragments were of greensand with the exception of one from trench 108 layer 124, which was of a coarse sandy conglomerate.

FIG. 140. Querns (p. 267). Scale $\frac{1}{4}$

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VIII. THE POTTERY

by MICHAEL FULFORD

INTRODUCTION

MORE than 350 kg. of Roman pottery were recovered from pits and stratified layers at Portchester. Most of the pottery dates within the bracket, *c.* A.D. 280–*c.* 400, and, with the exception of a few residual sherds, like the samian, presumably brought in when the fort was built, and some first/second-century material (pp. 8–10), it can, in the broadest terms, be seen as a late third/fourth-century group. For this reason unstratified types have been incorporated in the type series. However, pit and stratified groups make it possible to divide the pottery into four main periods:¹

1. A small group belonging to the construction phase, *c.* 280–90.
2. Some rubbish layers and pits dating from *c.* 280–90 to *c.* 325.
3. More rubbish layers and most of the pits, dating *c.* 325 to *c.* 345.
4. More rubbish layers dating from *c.* 345.

The layers above the Roman road surface (p. 50) probably reflect the latest Roman pottery brought into the fort.

It is very difficult to date the end of the 'Roman' occupation in terms of pottery, because of a lack of large, distinctive groups within the post-345 material, which might pinpoint ceramic trends within that group as a whole. The latest layers have suffered most from subsequent activity on the site and what is left accounts for only about 20% of the total stratified material from the fort. If drastic changes are to be expected in the latest Roman period, there is no evidence of this in the latest Portchester groups. The Oxfordshire colour-coated fabrics increase, and there is no sign of significant fall-off in the black-burnished fabrics from Dorset. If the phasing out of black-burnished in the north after 367 is reflected in the south (Gillam, 1957; Farrar, 1969), then the Portchester group shows little indication of it. The only changes are a decline in the wheel-thrown grey wares, but this is more a mirror of the growth of the Oxfordshire colour-coated industry than of increase in more local, 'crude', hand-made pottery. New Forest fine wares were possibly beginning to decline after 350. If any conclusions can be drawn from these threads of evidence, then they are that the latest groups at Portchester consist largely of pottery dating pre-*c.* 380. Occupation after that, which the coin evidence attests, is perhaps not great enough to influence the trends already present. The latest group from the fort was deposited after 378 (pit 63). This does not mean that pottery dating later than *c.* 380 is not present in the latest layers, but it is not distinguishable as such.

¹ Details of the types and quantities found in each stratified layer are given above in the relevant sections of parts III and IV.

The importance of the Portchester groups lies in their size. For the first time on a fourth-century site it is possible to make comparisons within the various groups and to detect significant trends in both fabrics generally and types in particular. Not only is the presence of a type important, but so also its absence from a layer, or group of layers. Comparison of large groups also allows for more precise dating of types. Fabric weight has been added as a further quantifiable variable, to balance somewhat inaccurate estimations based only on the possible minimum number of vessels represented by rims or sherds.

Detecting trends in types and fabrics is dogged by the vital, but unknown, 'residual factor'—that is the rate at which vessels will continue to be used and discarded after their production has ceased. In plotting the number of occurrences of any type against time, there is no formula which can predict at what point on the resulting curve that type ceased to be manufactured. Without other sites in the south to compare with Portchester, dating assessments must be treated with caution. Lack of groups to cover the first decades of the fourth and the last of the third century means that the starting dates for many types are probably put too late. Similarly, where doubt exists concerning the end date of a type, more well-stratified groups from the end of the fourth century would provide a narrower range. Equally the residual problem becomes greatest with the latest groups.

Whatever deductions can be made about trends in the pottery must be qualified, not only with provisos about the residual element, but also with some cautions expressed about the nature of the occupation and how far it is unique or comparable with other fourth-century sites in southern Britain. The possibility that the pottery merely reflects the consumption of an army unit cannot be ruled out until more comparative material is available. But there is yet no evidence from the south for the existence of a contract situation between the army and the production centres at this period, as there is likely to have been in the first and second centuries. The ratios in terms of fabrics and types from Portchester is closely comparable with those from Winchester, Clausentum and Dorchester (Dorset). In certain respects trends detectable at Portchester (particularly the growth of the Oxfordshire industry) can be paralleled at Leicester, London, Verulamium (see p. 285) and at Richborough. By the fourth century it is unlikely that considerable differences existed between the requirements of civilian and military populations in terms of pottery: fashion or social habits would be the main regulator.

If, however, the possibility of different kinds of occupation at Portchester is envisaged, with perhaps civilian settlement following on after an initial military phase, then it is instructive that over 70% of the stratified pottery probably lies in a bracket of *c.* 325–45, which may be a period of civil occupation. If this is the case, then the military contract problem is irrelevant. Indeed the possibility that during military occupation all rubbish was scrupulously cleared out of the fort cannot be discounted. Certainly there is very little stratified pottery for the period *c.* 280–*c.* 325.

Despite all qualifications, Portchester remains important to our understanding of the development of both the New Forest and Oxfordshire colour-coated industries, as well as in elucidating the relationship between these and non-colour-coated fabrics, of both hand-made and wheel-made types.

THE POTTERY FROM THE PITS AND WELLS

The pottery from the pits and wells accounts for over 55 % of the total pottery assemblage at Portchester which has been considered in this report as having a stratified context. Only 18 pits have coins in them to provide *termini post quos* for the layers in which they occur and for those layers above. The problem with the rest is whether or not they can be grouped together as part of one phase of occupation, or whether their filling can straggle over the whole period of Roman occupation, *c.* 280–*c.* 400. Whatever conclusion is reached in this respect influences the value that may be placed on each, or all, of the pits, and on the presence or absence of types and fabrics in the fills, particularly with regard to the dating of individual types.

There are three ways of examining the date ranges possible for the pits: by looking at the coin evidence for individual pits; by looking at the pottery types present or absent when compared with the other groups within the fort; or by taking account of a set of variables (in this case the ratios of the main fabrics present) and determining whether they can be sorted meaningfully.

1. *Coins*

- (a) Pits with coins pre-*c.* 325: pits 46, 60, 62, 86, 121, 178, 222, 223, 227 and 230 (which stratigraphically must be pre-*c.* 325).
- (b) Pits with coins *c.* 325–*c.* 340: pits 63, 92, 138, 144 and 236.
- (c) Pits with coins later than *c.* 340: pits 63, 66 and 236 (upper layers only).

In all these cases the coins need not strictly define the date of fill, rather a lower limit. With the well pits, in particular, it is possible that deliberate back-filling may confuse the issue with the likelihood of both coins and the pottery being earlier than the real date of filling.

2. *Pottery Types and Fabrics*

The pottery itself can only be of limited value if comparisons are made with the other large groups against the wall up to the upper clay seal (accounting for only about 22 % of the pottery from the fort) or with those in the interior which accumulated before *c.* 345. The presence or absence of different types and fabrics between these and the pits may serve as an indication of the upper limit of the filling of the pits. Several colour-coated types, particularly red-slipped bowls, in both Oxfordshire and New Forest fabrics tend to occur only in pits and later non-pit groups, e.g. types 2/10.7–12, 6, 18, 30, 33, 34, 35 (with one exception), 36, 37, 52 and 55 (some fabrics). Some other types occur commonly in pits, e.g. 2/10.4–5, 31 (two exceptions), 38, etc. Among the coarse wares, fabric D types are more common in pit groups and later, with only a few occurring in layers below the upper clay seal. These differences may be only a reflection of the greater size of the total pit assemblage compared with the other layers which allows the possibility of a wider range of types to be present in the pits. However, it is equally possible that some of the pits were being filled (and the pits with the late coins are excepted here) after *c.* 345/50, depending on when one places the date of the upper clay seal.

This comparative argument cannot be pursued in the period before 325/30 because of the lack of good, non-pit groups. Absence of a type in any one pit cannot be used as an indicator, since, compared with the large non-pit groups, too little material is available to make a valid reference.

3. *Single-link Cluster Analysis: Program and Application to Portchester by N. G. Gammer*

A third approach to the problem of dating the pits was made using a single link cluster program (Hodson, 1970) to determine whether the ratios of the main, individual fabric groups, both between separate pits and layers within pits, might produce any distinct clusters of pits that could then be related back to the coins and other external evidence. The computer program used for the Portchester data employs the single-link method of clustering, based on similarities derived from Euclidean distance. It produces a hierarchical division of the set of items into groups, sub-groups, sub-sub-groups, and so on, and presents the results in the form of a dendrogram. This can be regarded as a family tree of the relationships between the groups. For each layer at Portchester, the program was provided with the weights of each of seven types of pottery (New Forest; Oxfordshire; miscellaneous colour-coated; hand-made, fabric A; black-burnished; grey fabrics; and fabric D) expressed as a percentage of the total weight of pottery found in the layer or pit. A total of 129 pits and or layers was included in the analysis.

Most of the pits tended to cluster together and it was only a very few (many of which were layers within well pits) which were grouped apart. However, the analysis has probably not found all the useful groupings that exist because the results appear to suffer to some extent from a shortcoming of the single-link method, namely chaining. The shortcoming is noticed when there are some items that are intermediate in type between two groups. One of the groups can then appear on the dendrogram as a chain of single items rather than as a group. At any given level on the dendrogram the items can best be divided into a main group plus a number of ungrouped single items. It is hoped to reprocess the data using a program, now in the course of preparation, that implements the method that Hodson calls k-means, which does not suffer from the tendency towards chaining. Although the formation of chains does result in some loss of information, the fact that many of the items may be of intermediate type could well be of archaeological significance. It is not necessary to reproduce the dendrogram, because of the lack of good clusters, but those pits and layers that did not fit in to the main 'family' group are as follows:

Group 1: Pit 125, layer 35; large percentage of colour-coated fabrics against coarse wares.

Among the types are some which do not otherwise appear pre-c. 330-40.

Group 2: Pit 79; a small total amount with high percentage of colour-coated fabrics.

Pit 236, layers 120 and 121 combined; lowest layer of the well pit, likely to be pre-330; a very high percentage of colour-coated fabrics.

Pit 182; high percentage of miscellaneous, mostly due to the large part of one pot (type 179).

Pit 164, layers 54 and 69 combined; small sample of colour-coated and miscellaneous fine fabrics in large amount (well pit).

Group 3: Pit 206, layer 86; well pit; no Oxfordshire, but high percentage of New Forest and Argonne fabrics.

Pit 144, layer 142; well pit; high percentage of miscellaneous, probably one example of type 179; low colour-coated fabrics.

Pit 187; layer 83; again distortion due to large amount of one type 179.

These exceptions can be explained firstly by the small amounts of pottery in each case, and

hence by the possibility of distortion due to the presence of one or two vessels which, if almost complete when discarded, will drastically alter the ratios of the fabrics. It is interesting that several well pits have atypical layers in this respect. The dating, however, of all these 'rogues' need not be affected or considered separate from the rest of the pits which belong together in one 'family'.

Group 4: The remaining pits; these will not be listed although there are one or two clusters within this family.

Single-link analysis has not been able to divide the pits in any meaningful way, in terms of dates suggested by coins. Within the main group (4) both early and late pits (on coin evidence) and upper and lower well pit fills are clustered together. Although the results are not spectacular, they do suggest that the pits were not being filled over such a length of time as to produce distinct clusters for different periods. Perhaps a new analysis using a seriation program and taking into account more variables, such as the types in the pits, the shape and volume of the latter, animal bones, etc. may produce improved results.

Conclusions

Any conclusions about the range of date of the pit fills must be tentative. It is likely that some pits were dug and filled after the deposition of the middle occupation and upper clay seal layers against the wall, although only a very few (those pit layers with late coins) appear not to have been completely filled by *c.* 350–60 at the latest. Although pits 222, 223 and 230 were all dug before *c.* 325, on stratigraphical grounds, it is difficult to be certain about others even when the coin evidence is suggestive. While only four pits have coins that can be no later than 319, it is still possible for all the cesspits to have been dug and sealed by *c.* 325, with later rubbish gradually accumulating on their sagging clay seals.

In no case was enough material gathered from beneath the clay cess seal of any pit to help determine a pre-325 date for the use of the pit for cess. However, if the middle and upper clay layers against the wall represent spoil from the pit digging this would imply that most pits were not dug until *c.* 325. The evidence, therefore, for the beginning of cesspit use within the fort is ambiguous. As for establishing the date of currency of any particular pottery type, the evidence of the pits cannot be used without great caution, and it is best to use only those pits with coins to provide *termini post quos*. More generally, on the basis of comparisons with the larger non-pit groups of pottery, a tentative suggestion might be that the pits belong to the phase *c.* 325–*c.* 345, with respect to both their digging and filling.

Well Pits

It was hoped that some significant differences might be established between the upper and lower layers of well pits, but on the whole all the fills cluster with the rest of the pits. Clearly the layer sequence within the wells is likely to represent a chronological sequence, although the possibility of deliberately dumping residual material to stabilize a disused and dangerous well shaft, interleaved with the gradual accumulation of day to day rubbish, must always be borne in mind. On the evidence of pottery and coins there is no reason why all the wells, except pit 135, were not out of use by 340–50, and that in most cases they had completely filled with rubbish by 350–60. It is also possible that the pits had ceased to function as wells

much earlier, say *c.* 330, e.g. pits 121 or 164, and had filled up with rubbish largely in the period *c.* 330–50. However, if the pits were an integral part of the *c.* 325–45 phase, then it is unlikely that the wells had all ceased to function before *c.* 345. If one considers the possibility of gradual settlement of the well fills after primary filling, then it is likely that the uppermost feet of fill may not have been deposited until very much later than the bulk of the fill. Pit 236, with a coin of 353–6 in the upper fill, corroborates this point, and that is the latest coin from any well. The pottery also from the upper layers tends to contain types which are rare in the other pits or in layers below the upper clay layer.

METHODS OF STUDY

The pottery from Portchester is presented not only typologically, with a quantitative assessment of how much is represented in terms of rim or distinctive body sherds, but also by the main fabric constituents and their relative weights. In addition all the stratified groups are presented in terms of the type series, but not with drawings. The quantity of vessels militated

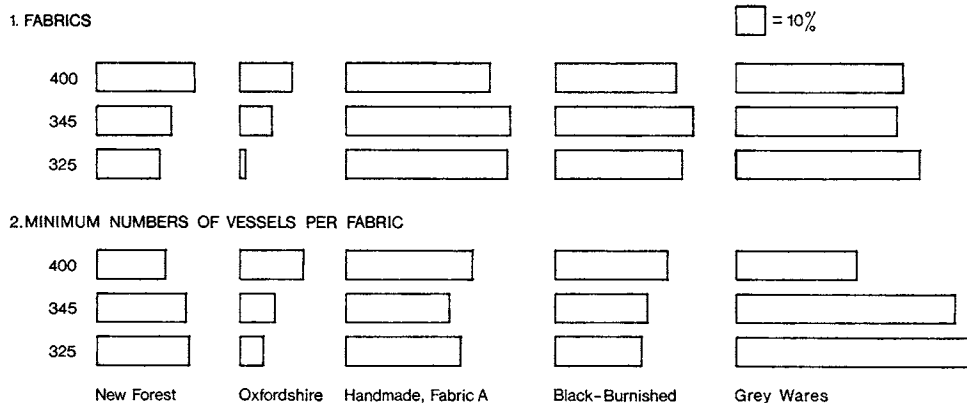


FIG. 141: The main fabric trends at Portchester

against visual presentation by group; moreover, such a work would have involved an enormous amount of wasteful repetition. Nevertheless, all the stratified groups can be reconstructed in terms of the type series; similarly the associations of each type and variant are recorded.

The division into fabrics is an attempt to see whether the ceramic trends can be more objectively defined, disregarding individual types (fig. 141). This approach also tends to highlight the progress of the kiln centres themselves. Each fabric type was weighed in each stratified group. This method of quantification will be of enormous importance in cross-comparing groups both within Portchester and outside. It appears that there is an interesting lack of correlation between fabrics and minimum numbers of types as a percentage of the total assemblage concerned (cf. fig. 141). Essentially the pottery falls into five main groups:

New Forest, Oxfordshire, hand-made, fabric A (grog-tempered), black-burnished (BB 1), and grey wares. These are described separately below.

Heavy mineral analysis (Peacock, 1967) was used to help define the grog-tempered fabric in terms of possible manufacturing centres. Visual identification of the black-burnished fabric was similarly backed up by analysis. Characterization of the grey fabrics, however, presented a much greater problem. Since a number of fabrics and sources seemed likely, a selection was analysed to try and define groups, and, if possible, sources. Unfortunately, too few results were obtained to allow generalization (but see p. 293 under grey wares).

Attempts at dating individual types have been made in the type series, but these are to a certain extent dependent on variations in percentage of the type in question from one group of stratified layers to the next. Two standards are employed, one slightly more refined than the other. First, as a fine measure, the rubbish layers against the wall have been used,¹ i.e.

LO/M. Clay	(c. 300–c. 325)
MO/Up. Clay	(c. 325–345)
UO	(c. 345 +)

Secondly, as a coarser guide three more general groups were assembled, i.e.

1. All layers pre-325, incorporating the same layers as above.
2. All layers pre-345, which incorporates layers BMU and BURRS as well as MO/Up. Clay.
3. All layers post-345, which incorporates AMU and AURRS, as well as UO.

Alongside these trends in individual types can be set the trend in basic fabric types, which is represented in figs. 141, 151–2, 158. No explanation can yet be offered for the lack of correlation between type and fabric as a percentage of the groups indicated above.

THE SAMIAN

by JOANNA MORRIS

Potters' Stamps (fig. 142)

T(?): on Dr. 31; Central Gaul, Hadrianic–Antonine; u/s.

Fig. 142a: on Dr. 33; Priscus of Lezoux, c. 130–160; u/s.

Fig. 142b: wheel stamp on Dr. 31; East Gaul, later C2–mid C3; u/s.

¹ The abbreviations used here and in the following pages are:

L. Clay Bank, lower clay bank
 LO, lower occupation
 MO, middle occupation
 UO, upper occupation
 M. Clay, middle clay
 Up. Clay, upper clay
 BMU, below upper make-up
 BURRS, below upper Roman road surface
 AMU, above upper make-up
 AURRS, above upper Roman road surface
 u/s, not from a closed group.

FIG. 142. The samian stamps. Scale $\frac{1}{1}$ *Decorated Ware*

Dr. 37 in the style of Cinnamus of Lezoux; his ovolo 1 with border of ovoid beads (cf. Stanfield and Simpson, 1958, pl. 162, 60), c. A.D. 150–180; u/s.

Plain Wares

Flavian: Dr. 18; South Gaul, very worn; u/s.

Hadrianic–early Antonine: Dr. 18/31; Central Gaul; u/s (4).

Dr. 31; Central Gaul; UO (1); u/s (1).

Dr. 33; Central Gaul; u/s (2), one of which is probably that stamped by Priscus.

Antonine: Dr. 31; Central Gaul; pits 52 and 144; u/s (4).

Dr. 33; Central Gaul; MO (1); u/s (1).

Dr. 45; Central Gaul; u/s (1).

Second century: Dr. 18/31 or 31; either Central or East Gaul; u/s (1).

Dr. 18/31; Central Gaul; u/s (1); East Gaul; u/s (1); either Central or East Gaul; u/s (1).

Dr. 36; Central Gaul; pit 121; u/s (1); either Central or East Gaul; u/s (1).

Later second to mid-third century:

	East Gaul	Either Central or East Gaul
Dr. 18/31 or 31	Pit 223	
Dr. 31	AMU (1); u/s (2)	u/s (1)
Dr. 31R		Pit 41; u/s (1)
Dr. 33	Pit 144	
Dr. 37	u/s (1)	
Dr. 38	u/s (3)	
Dr. 43 or 45	u/s (1)	u/s (1)
Dr. 45	AURRS (1)	
Curle 15	u/s (2)	
Curle 21	u/s (1)	

Altogether 1200 g. of samian, both stratified and unstratified, were recovered. This amounts to about 0.3% of all the pottery from the site. It is unlikely that this represents evidence of occupation in the late second or third centuries, although the Flavian sherd may be connected with the first- to second-century coarse pottery, which occurred in a small quantity (pp. 8–10).

More probable is the explanation that these sherds represent old pottery (cf. type 74) brought to the site by the first occupants, possibly as treasured heirlooms or antiques! In fact it would be strange if there were no remnants at all of such a large, fine-pottery industry in the later third or fourth centuries. Such an explanation will surely account for those late sites where a little samian occurs without supporting coarse wares.

THE ARGONNE WARE

(fig. 143)

Altogether 1025 g. of Argonne ware, representing between about 15 and 30 vessels, were recovered from Portchester. Only 385 g. were stratified. The types and different varieties are listed according to Chenet (1941):

Type 304: pit 236.

Type 313: pits 178 and 236 (possibly sherds of the same vessel); (cf. Chenet, fig. 18, no. 9).

Type 320: with stamp no. 8 or 191; u/s; fig. 143*a*.

Type 320: with stamp no. 65; u/s (cf. type 320*e*); fig. 143*b*.

Type 320: with stamp no. 303; AMU (not illustrated).

Type 320: with stamp no. 304; u/s (2); fig. 143*c*.

Type 320: rims only from; BURRS (1); AURRS (2); u/s (2).

Type 324: AMU (1).

Type 326: pits 185 and 206; UO (1); u/s (6).

Type 328: pit 138; AURRS (1); UO (1); u/s (3).

Type 329: AMU (1).

Summary: pits (6); BURRS (1); AURRS (3); AMU (3); UO (2); u/s (15).

The Argonne ware forms a very small proportion of the pottery at Portchester (0.27%) and it is difficult to interpret its presence as either through trade or the casual import of belongings by individuals. Argonne ware is rare in Britain, although one would not perhaps expect much importation of fine pottery in the face of competition from the Oxfordshire and similar potteries. On the basis of the distribution of Argonne ware in Britain, Portchester represents part of the extreme westward drift. Eastwards, at Richborough, there are decorated sherds which represent four or five times the amount at Portchester, while at Pevensey there is perhaps twice the amount. However, as in neither of these cases do we know the original size of the excavated sample, these sites can only be used as a very rough guide. On the grounds of the distribution which shows a bias towards south-east Britain, both in numbers of sites and the amount at each, it is reasonable to see the Argonne ware at Portchester as the result of trade. In view of the location of the major British fine-pottery producing factories, the south-east concentration would be an expected pattern.

While there are no sealed contexts with roller-stamped pieces, the plain forms appear to have a wide date range, being present both in the pits and later contexts, which give a wide bracket from *c.* A.D. 320 onwards. This does not conflict with Hübener's (1968) dating for Argonne ware. The roller stamped pieces belong to his categories 2, 3 and 5, which have, in

the first two cases, a range from *c.* 330 to *c.* 360, while group 5 ranges from *c.* 360 to 390. None of these dates are incompatible with the evidence from Portchester.

It is noteworthy that the bulk of the Portchester types are plain forms, in contrast to a general absence of plain forms among the published Argonne ware from many other sites. It will not be possible to understand the development of the Argonne industry until all the products of the kilns have been considered together.

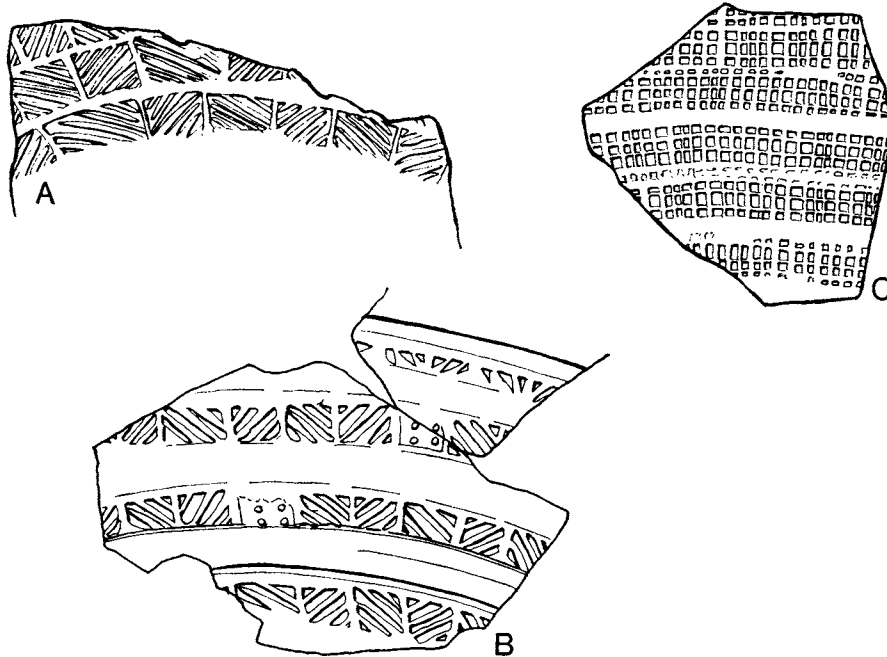


FIG. 143. The Argonne ware. Scale $\frac{1}{4}$

OTHER IMPORTS

In addition to the samian and Argonne ware, there are several other sherds which are recognizable as imports to Portchester from outside the British Isles:

- (a) Two sherds of beaker from either the Rhineland or Lezoux (Type 27).
- (b) Four sherds of Spanish globular amphorae (Type 74).
- (c) Two sherds of 'Mayen' ware (Type 151).¹
- (d) Two sherds in a sandy fabric with a Rhineland origin (Types 99.1 and 161.4).¹

COLOUR-COATED FABRICS

To save undue repetition, the common colour-coated fabrics have been numbered according to source and these will be used in the general descriptions in the type series.

¹ Fulford and Bird, forthcoming.

New Forest, Fabric 1

The fabric is a fine paste with a range of hardness up to a stone-ware. Inclusions are usually absent except in the form of haematite/limonite grains, up to 0.5 mm. diameter. When oxidized, which is rare, the fabric is medium hard and pale yellow or brown, sometimes with a grey core. Usually it is reduced and light grey, perhaps brown towards the surface. The stone-ware examples are dark grey all through.

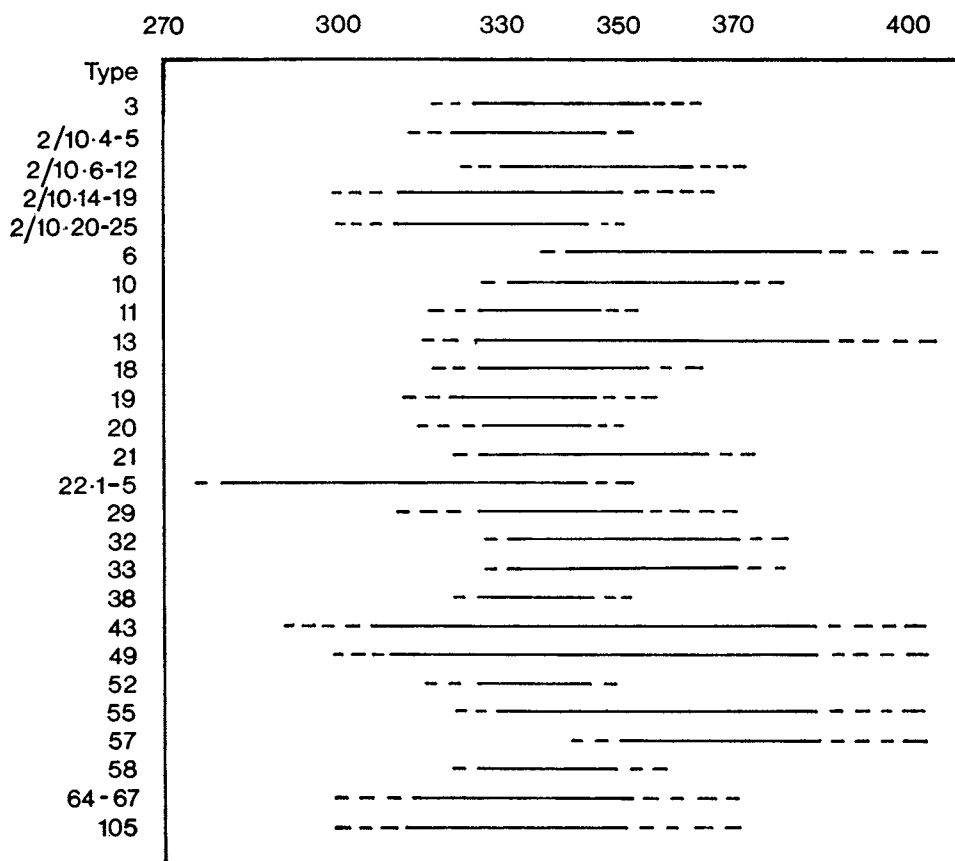


FIG. 144. Date ranges of New Forest types at Portchester

The slip corresponds with the different degree of firing temperature and the oxygen content of the kiln. It may vary (and sometimes a whole range of colour is present on the same vessel) from a light, reddish-yellow, through light and dark reddish-browns to a dusky red or purple, which often has a metallic sheen to it. It does not seem sensible to record the range of slip and fabric of each type, whenever it occurs, for the reasons above: thus a reference to fabric 1 includes both fabric and slip descriptions as above, since the two are so closely related.

Types in this fabric and slip are: 2, 3, 5, 6, 10, 13, 18, 19, 20, 21, 22, 23, 39, 52, 55, 56.

New Forest, Fabric 2

This fabric is very similar to fabric 1, but is always oxidized and never high-fired to a stoneware. If the fabric is not fine and cream in colour, with occasional haematite/limonite grains, then it is more granular and rough with a reddish-yellow colour. In the latter instance, it is difficult to distinguish between an Oxfordshire and New Forest product. Fortunately this problem does not arise very often. The colour-coat varies from a reddish-yellow to a reddish-brown, although the former is most common.

Types with this fabric and slip are: 29, 30, 32, 33, 34, 38, 40, 41, 43, 44, 47, 57, 58, 61, 88, 95, 175.

New Forest, Fabric 3

This fabric is the New Forest fabric known as 'parchment ware': it is white and heavily sanded. Although the majority of types are unslipped, certain types do possess a brown to purple slip, but these will be listed in the type series. Mortaria types invariably have crushed flint trituration grits.

Types in this fabric are: 10, 11, 12, 48, 49, 53, 54, 55, 56, 64, 65, 66, 67, 105.

New Forest, Fabric 3a

This fabric is like fabric 3, but it is fine and sand free. Kiln 3 in Amberwood Inclosure (Fulford, 1973(a)) produced type 49 in this fabric. Occasionally, when a slightly iron-rich clay was used, then an overall white slip was necessary to achieve the 'parchment' effect.

Types in this fabric are: 48, 49, 50, 64.

Oxfordshire, Fabric 1

This fabric has a granular or laminated appearance in fracture. The colour is a reddish-brown, often with a grey core, and the fabric is usually very micaceous. In general this ware is higher fired than its New Forest equivalent. The slip is usually a bright red, sometimes a little pale, and contrasts noticeably with that of the New Forest fabric 2.

Types in this fabric and slip are: 28, 30, 31, 33, 34, 35, 36, 40, 41, 42, 43, 53, 54, 57, 58, 59.

Oxfordshire, Fabric 2

This fabric comprises most of the beaker wares, and in many cases, because of the lack of certainty as to whether the type is Oxfordshire or not, individual variants are separately described in the type series. Generally the fabric is light brown, somewhat granular in appearance and very micaceous. Occasionally it occurs as a fine, hard brown ware with a grey core. Unlike New Forest beakers, high firing temperatures were seldom used with the Oxfordshire types. The colours of the slips range widely from a matt, dirty yellow or red-brown, to a muddy blue-black. Semi-glossy surfaces are rare.

Types with this fabric and slip range are: 1, 3, 7, 14, 15, 16, 17, 18, 24, 25.

Oxfordshire, Fabric 3

This is the Oxfordshire equivalent to the New Forest 'parchment' fabric, but is much finer, although still sandy. However, it is never finer than the New Forest, fabric 3a ware. The

colour is off-white or very pale yellow and sometimes there may be a covering of a thin yellow-brown wash or a white slip. Inclusions of rounded, translucent quartz do occur (up to 1-1.5 mm. diameter), particularly in mortaria types where they are the standard type of trituration grit.

Types in this fabric are: 48, 50, ? 55, 63.

Pevensey Ware

This fabric is extremely hard and laminated in fracture, with visible inclusions of haematite or limonite. There is a tendency for the fabric to flake apart. It is reddish-brown in colour, usually with a grey core, while the slip is a bright red or reddish-brown and is pimply and uneven on the surface. The fineness, hardness and finish make this fabric readily distinguishable from the New Forest, fabric 2, or Oxfordshire, fabric 1, equivalents. No exact source is known for this ware, but the name of 'Pevensey' ware has been suggested (Fulford, 1973(b)), as the highest percentage of this fabric in any assemblage occurs there.

Types in this fabric are: 35, 37, 42, 43.

New Forest Wares: Discussion

Prior to this report the evidence for the development of the New Forest pottery industry and the dating of individual types or kiln groups was limited (summarized in Fulford, 1973(c)). The pottery from Portchester can, however, provide the skeleton of a new framework. Briefly, it would appear that a distinctive range of colour-coated bottles, beakers, flagons and parchment ware types was in production by A.D. 320/30. This was then augmented by red slipped bowls and more beaker and jug types as the first group gradually went out of production (see fig. 144 and the detailed evidence in the type series). The latest phase of the industry is attested in Amberwood Inclosure (kiln 3) with a range of colour-coated types and 'parchment' bowls generally without further decoration (Fulford, 1973(a)).

In terms of the kiln groups within the Forest, it would seem that the earliest production of colour-coated wares was at Sloden (Wilson, 1968, and information from the excavator, Mrs V. G. Swan) and Crock Hill (Akerman, 1853; Bartlett, 1873; Sumner, 1927, 110-12), with subsequent shift of emphasis to Ashley Rails and Pitts Wood (Sumner, 1927, 17-41 and 114-15), Islands Thorns (Sumner, 1927, 101-8 and 112-13) and Amberwood (Fulford, 1973(a)). There is probably a considerable overlap from one main group to another. Coarse ware kilns are more difficult to date, but if the decline in grey wares at Portchester in the second half of the fourth century claims more support from other sites, then it is likely that the Linwood, Sloden (Sumner, 1927, 45-101; Cunliffe, 1965), Crock Hill (Cunliffe, 1965) and Amberwood (Fulford, 1973(a)) kilns, which produced *only* coarse wares, date to the first half of the fourth century. The coin evidence, flimsy as it is, does not contradict this hypothesis (Sumner, 1927, 81).

Oxfordshire Wares: Discussion

The evidence for the production of colour-coated and 'parchment' fabrics in the Oxfordshire is summarized in May (1922), Harden (1936), Atkinson (1941), Case and Kirk (1953), and Young (1973). Portchester is clearly very important to the dating of many of the

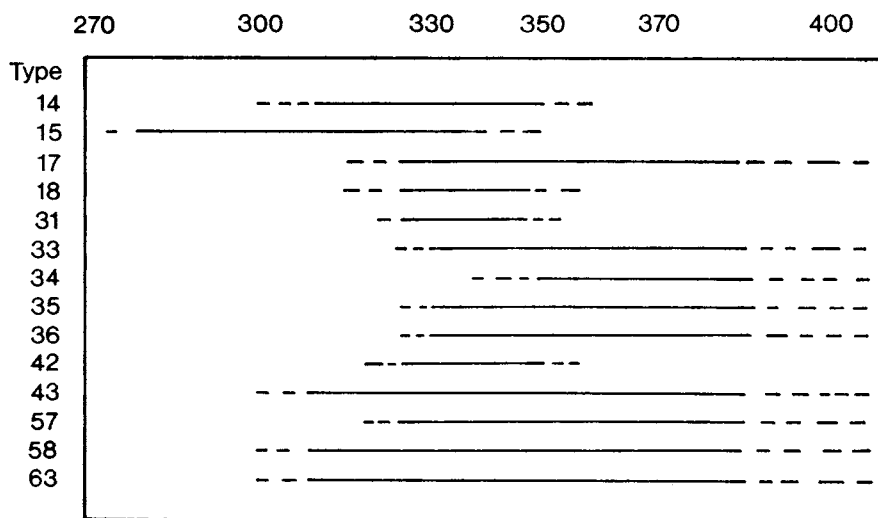


FIG. 145. Date ranges of Oxfordshire types at Portchester

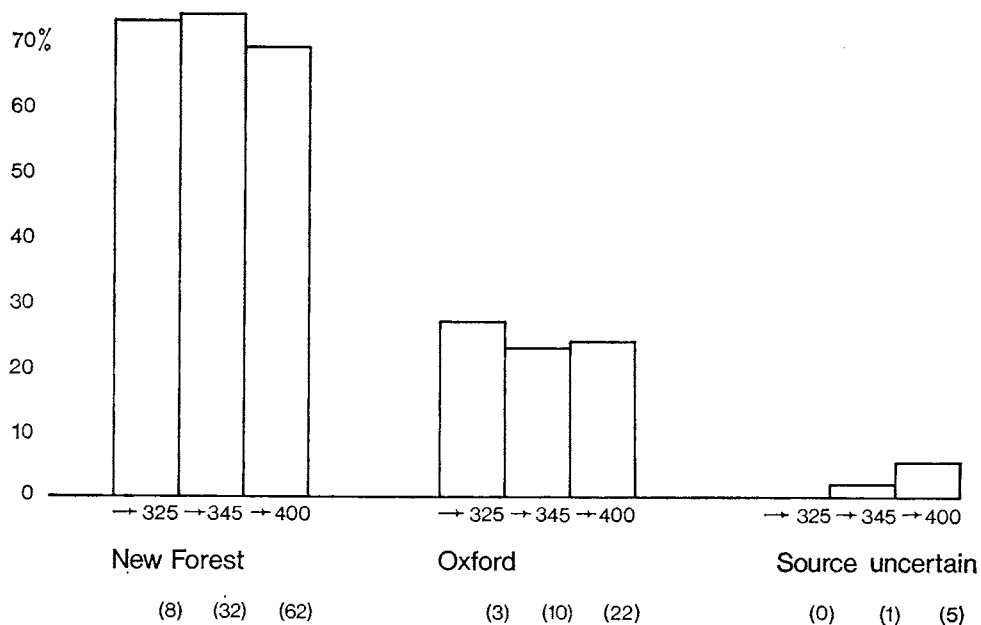


FIG. 146. Relative amounts of beakers, types 13-26, from the New Forest, Oxfordshire, etc. at Portchester

Oxfordshire types, whatever reservations may be made about the nature of the occupation and the distance of Portchester from the production centre. With the exception of those forms which closely imitate plain samian forms, like Dr. 31, 36, 38 and 45, it seems that the bulk of the red-slipped bowl forms are not being produced until *c.* A.D. 330 (cf. fig. 145). Decoration of finely executed rouletting, or combinations of both paint and rouletting, probably precede the use of stamps, which may not come in until *c.* 350. The sherd impressed with a coin of *c.* 300 seems to be a freak, and by itself is no evidence for the use of rosette stamping, etc., early in the century (Webster, 1968). Cordoned and handled bowls are likewise late. The beakers, on the other hand, like those from the New Forest, date from the late third century (if the diagnosis of an Oxfordshire source is right), but fade out in the second half of the fourth century. However, this situation may only be a reflection of a regional marketing trend, due to a preference for new Forest beakers. Portchester has no contribution to make to the dating of the 'parchment' fabrics. Like the New Forest equivalents, they probably have a long life and, in

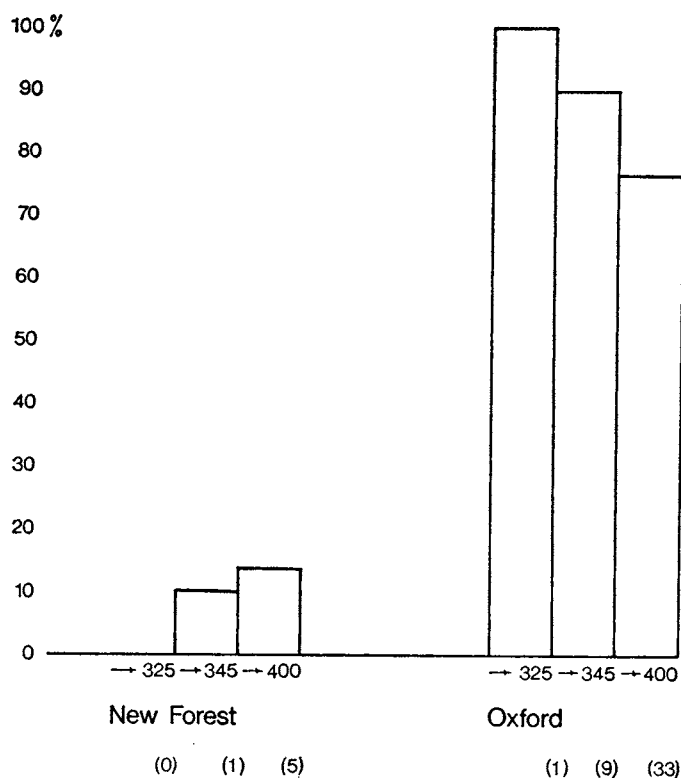


FIG. 147. Relative amounts of red colour-coated mortaria, types 57-61, from the New Forest and Oxfordshire at Portchester

the case of mortaria, production is attested in the second century (Frere, 1962, 145-6). On a wider level, it is interesting that the date of the increase in red-slipped Oxfordshire bowls is close to that of the start of roller-stamped Argonne ware (Hübener, 1968). If the industries reflect the availability of consumer capital, then it is interesting that this is more or less contemporary on both sides of the Channel in the fourth century. To complement Portchester large groups are needed for the first two decades and the second half of the fourth century. But it is reassuring that the Portchester evidence for the dating of Oxfordshire types and the development of the industry supports the slight evidence that we have from other sites, e.g. Leicester (Kenyon, 1948, 209-10) and Verulamium (Wilson, 1972, 348-63), for expansion after the first third of the fourth century.

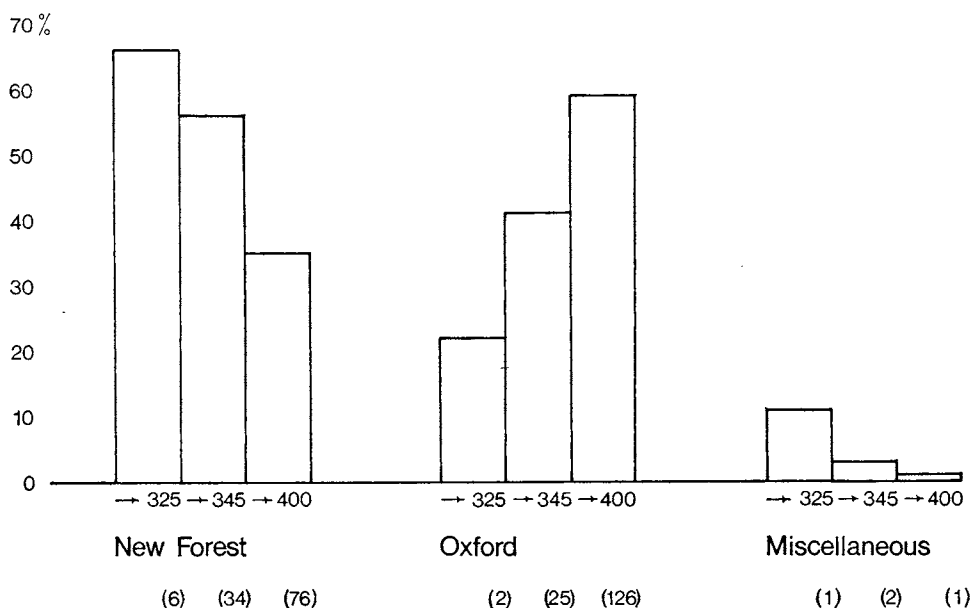


FIG. 148. Relative amounts of red colour-coated bowls and mortaria, types 28-61, from the New Forest, Oxfordshire, etc. at Portchester

New Forest and Oxfordshire Competition

The relationship between the New Forest and Oxfordshire colour-coated types is illustrated in figs. 146-152, where the predominance of each centre in different types over time can be clearly seen. It would seem that the New Forest industry was rather overwhelmed by the Oxfordshire kilns in the second half of the fourth century, except with respect to some beaker, jug, jar and 'parchment' types. While the Oxfordshire kilns were still in the ascendant, in the

latest Portchester groups, the New Forest types had begun to decline. The difference between the representation of the two centres in the later fourth century may be better explained if many of the New Forest types went out of production by *c.* 370–80, leaving only Oxfordshire types on the market. More groups dating towards the end of the century may resolve this problem. It seems unlikely, however, that the New Forest kilns would have survived much beyond the end of the fourth century.

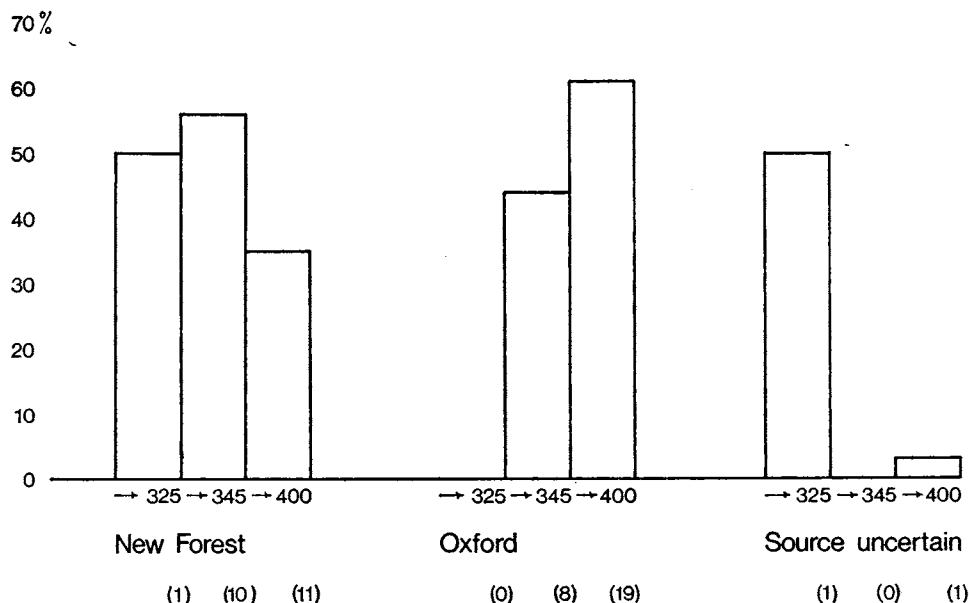


FIG. 149. Relative amounts of 'parchment' ware mortaria, types 63–67, from the New Forest, Oxfordshire, etc. at Portchester

GROG-TEMPERED FABRIC, HAND-MADE (FABRIC A)

This fabric, first described by Cunliffe (1970, 67–8), is a medium hard, black or dark brown, grog-tempered ware. Inclusions of grog are either red or black and spherical (*c.* 1 mm. diameter) in shape. Occasionally crushed flint or shell appear as temper, but this is not common. The fabric is used in three main types; the flanged bowl type 86, the dish type 107 and the everted rim jar type 123, although it is used for others as well, e.g. types 88, 93, 100, 106, 111, 114 and 158 (cf. figs. 163–8). Altogether the fabric accounts for about one-third of non-colour-coated wares in all phases. Like black-burnished vessels, grog-tempered types are made without the wheel, but the latter are much more roughly finished. Outside surfaces are

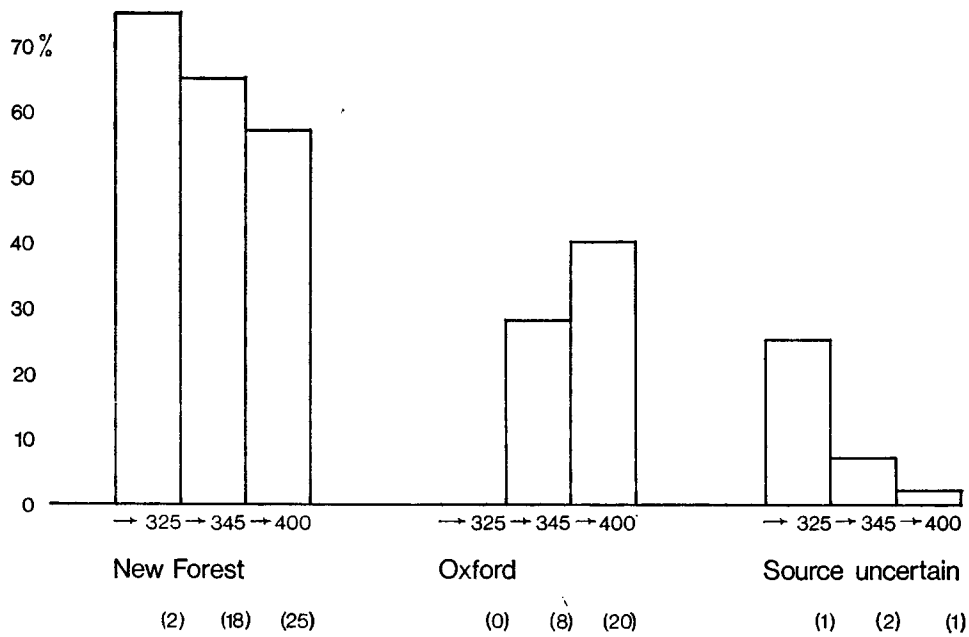


FIG. 150. Relative amounts of all 'parchment' ware vessels, types 48-67, from the New Forest, Oxfordshire, etc. at Portchester

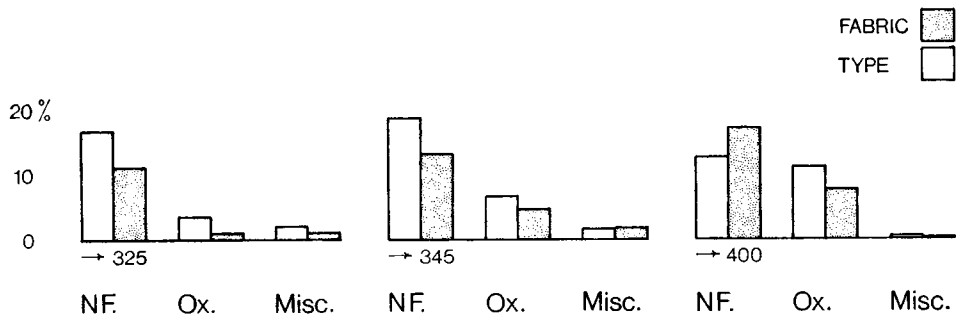


FIG. 151. Relative amounts of New Forest, Oxfordshire and other colour-coated types by rim count and fabrics by weight as percentages of the main groups at Portchester

EXCAVATIONS AT PORTCHESTER CASTLE

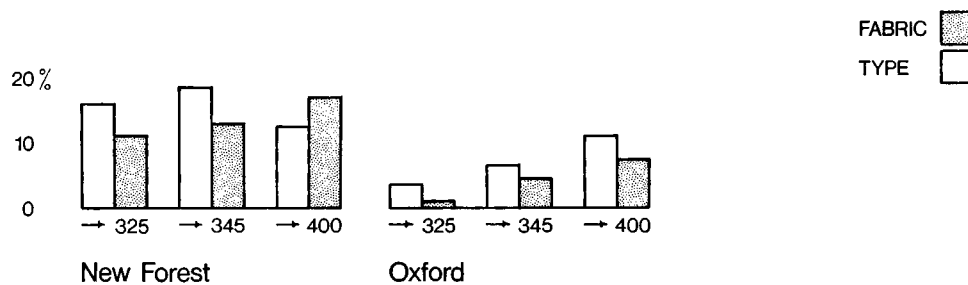


FIG. 152. Comparison of the relative amounts of New Forest and Oxfordshire types by rim count and fabrics by weight as percentages of the main groups at Portchester

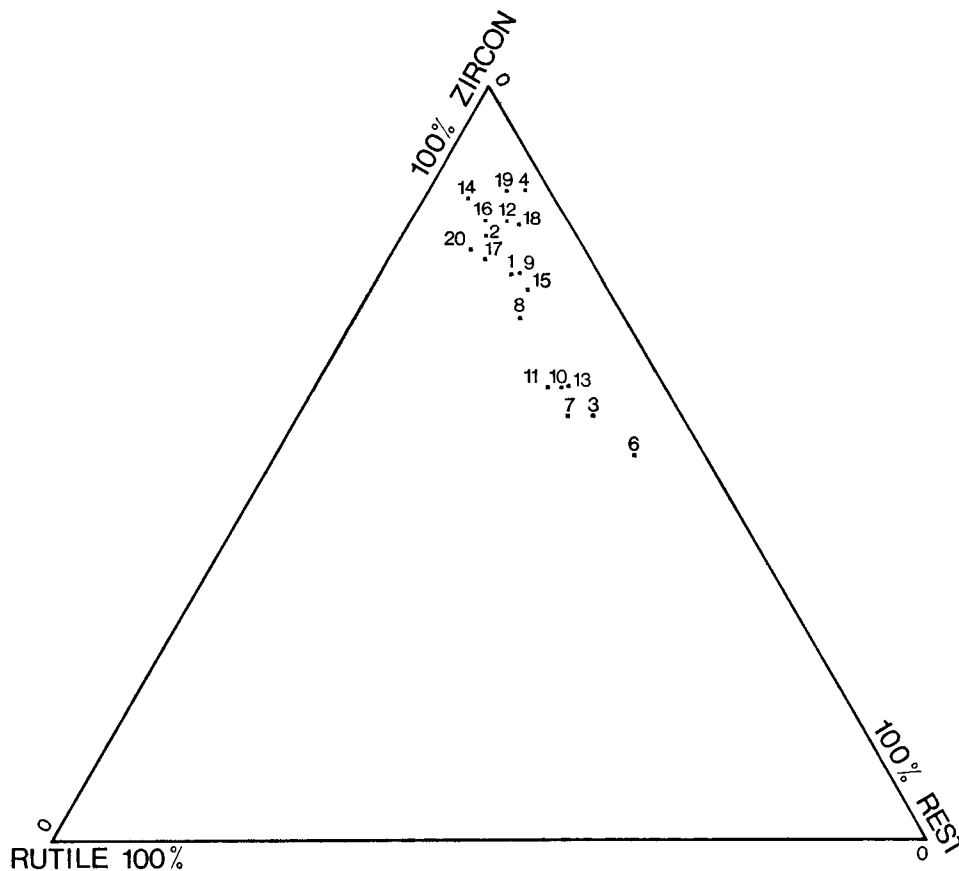


FIG. 153. Grog-tempered ware, fabric A; heavy mineral analysis: zircon, rutile and the rest

generally smooth burnished, usually with zones of diagonal or lattice pattern burnishing, according to the type of vessel. The similarity in form and decoration between the black-burnished types and the grog-tempered is striking. The currency of the fabric is from the late third century, where it is present in the construction layers of the fort, until some time in the fifth. As a basic constituent of the ceramic assemblage it alters proportionally very little, although it becomes slightly more important among the non-colour-coated wares after A.D. 345 (fig. 158).

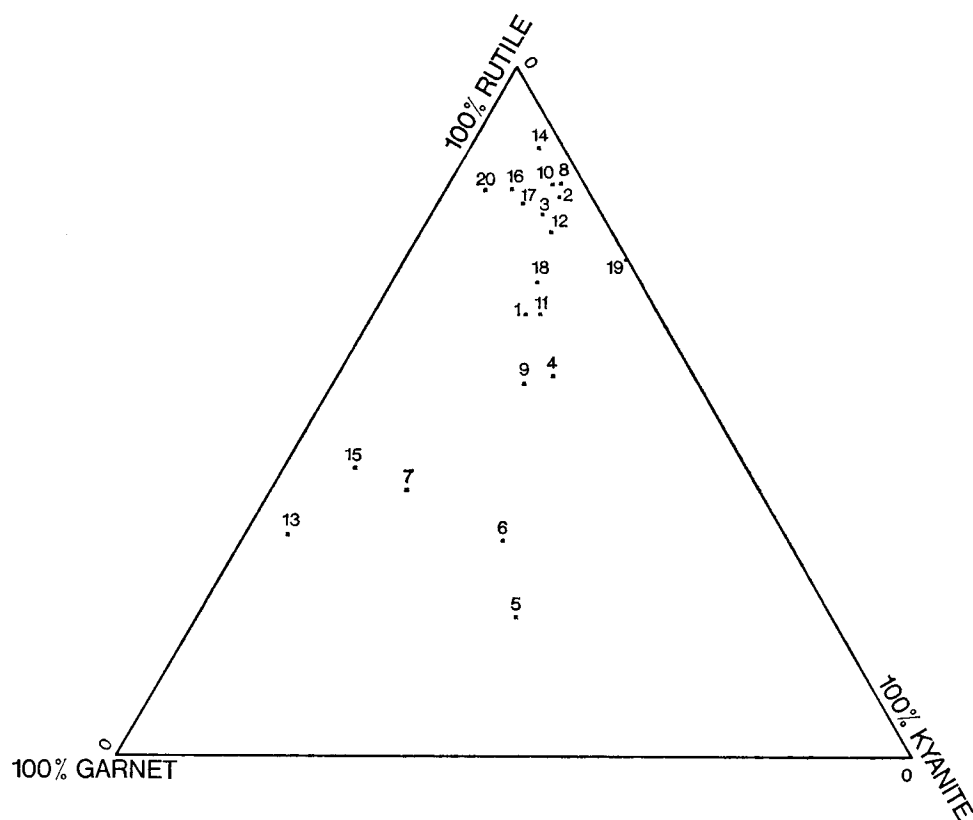


FIG. 154. Grog-tempered ware, fabric A; heavy mineral analysis: kyanite, rutile and garnet

As it is a crudely made product compared with the other grey wares, it seemed worthwhile to try to determine whether it was of diverse local manufacture or from one 'factory' source. To effect this a programme of heavy mineral analysis was carried out with samples not only from Portchester, but also from all over Hampshire, where grog tempering occurs widely in the fourth century. Visually the fabric of sherds from different sites appears homogeneous, with only subtle differences in colour and texture. The results of the analysis are listed below and on ternary charts (figs. 153-5), which show sets of individual minerals compared against one another.

In interpreting the results it should be stressed that minerals apart from zircon, tourmaline and rutile are only represented in very small quantities. Consequently the pattern of results, on figs. 154 and 155 in particular, tends to exaggerate small numerical differences in the actual number of the less important minerals.

Until wasters are found and analysed it is not possible to determine the level at which the results may be best grouped in order to reflect the real kiln centres. But if we take those results

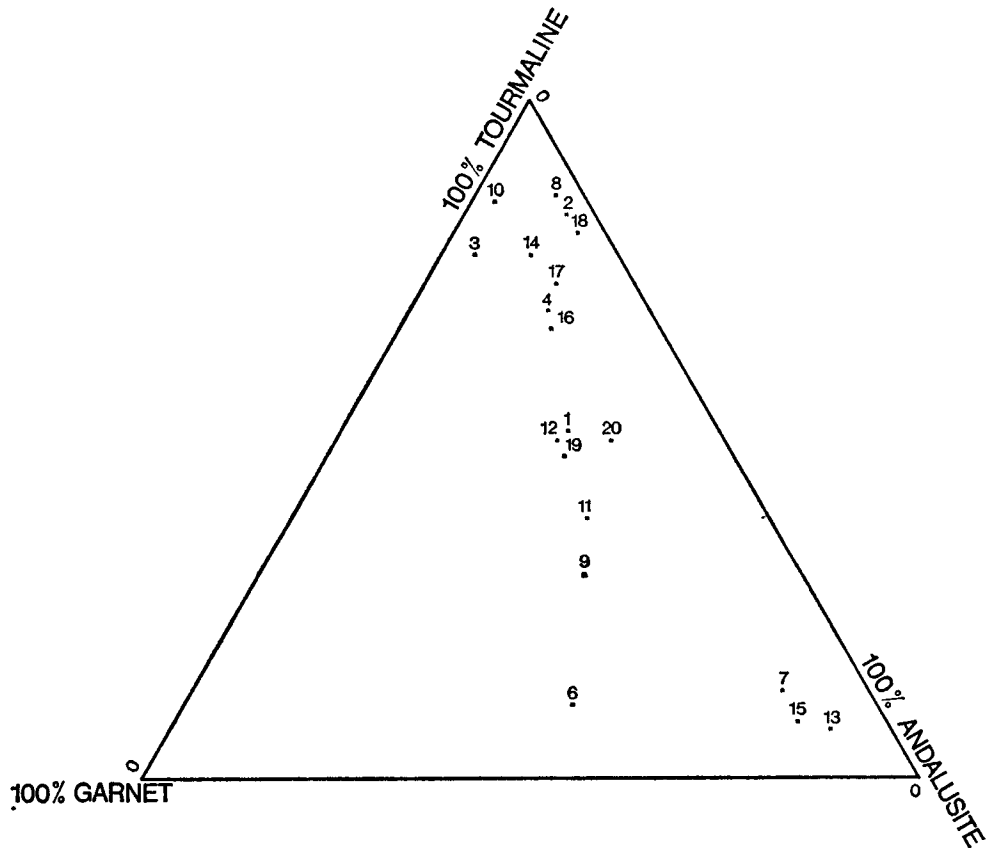


FIG. 155. Grog-tempered ware, fabric A; heavy mineral analysis: tourmaline, andalusite and garnet

which recur together in two of the three charts, or in isolation, the following groups emerge (number of analyses per site in brackets):

1. Botley, Downton, East Anton, New Forest, Portchester (4), and Winchester (3).
2. Holbury, Sparsholt (3).
3. Winchester (3).
4. Tournerbury.

Although the Winchester group 3 and the group 1 figures tend to merge, there does seem enough evidence (cf. fig. 153) to make a division. The results imply one large concern marketing to the whole Hampshire basin area with secondary centres producing for the immediately

local market. The lesser groups may indicate the possibility of itinerant potters, although the large coarse ware producing centres like Alice Holt and the New Forest appear, in a similar way, to have been competed against by a series of very local concerns (see under grey wares).

As fig. 156 shows, the main area using this fabric is narrowly defined by the triangle of Winchester, Portchester and Bitterne (Clausentum) and on locational grounds one might expect one large centre to serve all of these major sites. It may turn out, therefore, that all the anomalies present in the minor groups are feasible within the total range of mineral variations from one kiln centre (cf. the results of the New Forest kiln analysis). However, until wasters are found, it seems safer to over-estimate the possible number of sources rather than minimize them.

Elsewhere grog tempering of this kind is not found although hand-made pottery in these forms does occur widely; that from Richborough or Pevensey, for example, is very different. It is this restricted distribution which suggests a limited number of production centres.

The occurrence of 'crude' hand-made pottery at Portchester alongside fine wheel-made wares throughout the fourth century, apparently acting as a local competitor to the black-burnished fabrics, must stand as a warning to those who tend to generalize about hand-made pottery representing the degenerate continuation of Roman forms after the breakdown of the wheel-made pottery industry. The Hampshire fabric is very likely the product of specialist potters and stands in the tradition of hand-made pottery which is present throughout the Roman period in one area or another (cf. Alcock, 1971, 182-183).

The Heavy Mineral Analyses¹

	Zircon	Tourmaline	Rutile	Kyanite	Garnet	Staurolite	Andalusite	Epidote	Zoisite	Anatase	Apatite	Brookite	Total number of grains counted
1. Winchester	75.3	4.2	9.8	2.9	2.4	—	1.6	1.0			1.0	2.1	377
2. Portchester	80.1	3.7	10.5	1.9									674
3. Winchester	56.2	20.0	10.5	2.0	1.0	—	4.8	2.0		2.7	1.0		105
4. New Forest	86.5	4.6	2.7	1.4		—	1.2			1.2			740
5. Sparsholt	59.0	6.7	3.3	6.6	6.6	—	4.9	3.3		8.2			61
6. Tournbury	51.2	2.0	7.9	8.4	9.2	—	7.1	1.0		4.3	7.9		393
7. Sparsholt	55.6	2.6	13.0	5.9	14.6	—	1.9	1.0	1.0		3.5		575
8. Winchester	69.0	10.3	12.0	2.0	—	—	1.3		1.0	1.0			543
9. Winchester	75.2	7.6	9.1	1.5	—	—	1.0			1.6			552
10. Winchester	60.6	3.3	11.9	5.3	4.5	1.6	2.9	1.6	3.7		2.1		244
11. Winchester	60.3	3.1	13.6	4.5	3.1	—	1.8	1.6	2.5		3.5		551
12. East Anton	81.8	1.2	6.7	1.5	—	2.0	—			2.0	1.8		611
13. Sparsholt	59.8	1.9	11.0	1.9	21.1	—	1.9				1.6		318
14. Botley	85.3	2.4	10.2	1.0	—	—							586
15. Holbury	73.9	1.2	9.0	2.0	10.5		1.6						190
16. Portchester	82.1	3.5	9.5	1.0	1.0	1.0	—						402
17. Portchester	77.3	5.2	11.7	1.5	1.2								427
18. Downton	81.5	6.2	6.5	1.8	1.2		—						341
19. Portchester	86.1	3.3	5.4		2.1		1.5						331
20. New Forest	77.9	2.9	13.4	—	2.1								484

¹ The dash — indicates the presence of a mineral in quantities less than 1%.

EXCAVATIONS AT PORTCHESTER CASTLE

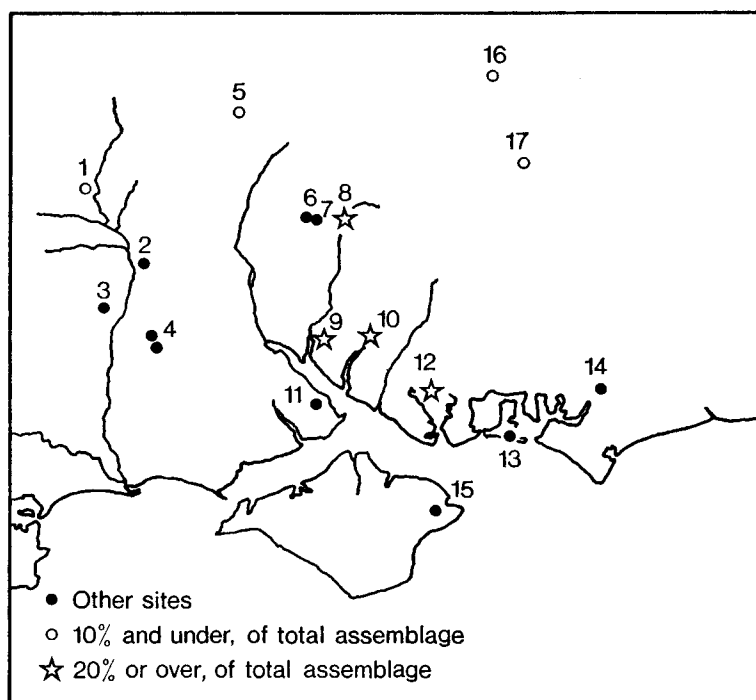


FIG. 156. Distribution map of grog-tempered ware, fabric A. 1, Durrington Walls, Wilts.; 2, Downton, Wilts.; 3, Rockbourne, Hants (Down site and Villa); 4, New Forest kiln sites, Hants; 5, East Anton, Hants; 6, Ashley Camp, Hants; 7, Sparsholt villa, Hants; 8, Winchester, Hants; 9, Bitterne, Hants; 10, Botley, Hants.; 11, Holbury Manor Farm, Hants.; 12, Fort Wallington, Hants; 13, Tournurbury, Hants; 14, Chichester, Sussex; 15, Brading villa, I.O.W.; 16, North Warnborough, 17, Neatham, Hants.

BLACK-BURNISHED WARE (FABRIC B)

This is a black, coarse sandy fabric which was used at Portchester for types 85, 107, 117 and 126, in particular, as well as types 88, 102, 115, 116, 119, 120, 154 and 175 (figs. 163-8). All types are made without the wheel. Macroscopic characterization of this fabric was first usefully undertaken by Gillam (1961), who named it BB 1, to distinguish it from a second, similar fabric (BB 2). Heavy mineral analysis of BB 1 from west Midland sites by Peacock (1967) suggested the possibility of a south-western origin for the fabric. Publication of wasters from the Poole Harbour area in Dorset indicated one centre of manufacture (Farrar, 1969), and heavy mineral analysis of the local sands agreed with the sherd analysis (Peacock, 1973). It is to this Dorset source that the Portchester black-burnished can be assigned. Sherds of types 85 and 126 were analysed for their heavy mineral content with the following results for the main constituents:

<i>Zircon</i>	<i>Tourmaline</i>	<i>Rutile</i>	<i>Garnet</i>	<i>Andalusite</i>	<i>Epidote</i>	<i>Apatite</i>	<i>Total number of grains counted</i>
38·4	32·7	4·4	10·1	2·5	1·7	3·1	159
36·1	33·3	5·9	8·8	3·9	1·6	2·3	143

No other analyses of pottery of other classes from Portchester gave remotely similar results and it seems likely that the visual sorting was satisfactory.

There is no close relationship between the percentage of black-burnished, in terms of the minimum number of types from group to group, and the percentage of the fabric alone in the same assemblages. Presumably the latter is a more accurate reflection of the amount per period, or perhaps an average of the two factors would be better. Taking either the fabric or the average as a measure (fig. 158), there is some evidence of decline in quantity in the post-345 groups. However, there can be no certainty as to when black-burnished ceased to come in to Portchester. If intensive occupation ended after *c.* 370–80, it is not likely that any change would be apparent. The Portchester curve may be reflecting the decline that presumably took place before the factories finally closed. On the other hand, the situation on Hadrian's Wall, where the fabric does not appear in post-367 levels (Gillam, 1957, Types 146–8, 228, 329) may not be relevant in the south with sites much nearer the production centre. In this case if there was considerable occupation at Portchester after 370–80, no decline need necessarily be apparent. More evidence is needed from late fourth-century levels in the south, particularly from Dorchester (Dorset), to complement our flimsy knowledge at present, before we can plot the decline of the industry in the south more accurately.

THE GREY WARES (FABRIC C)

This is the third and largest non-colour-coated fabric group from Portchester and, unlike the others, it probably represents more than one or two kiln sources. Both fine and coarse sandy fabrics are present; slipped and unslipped. Some are lighter, some darker than others, some more brown than grey; yet amongst these visually distinctive variations it is doubtful if any have significance with regard to the kiln centre that produced them, or which, if any, of all the apparent variables are significant in attribution to source. In order to try to define some groups which might be meaningful in terms of kilns and kiln groups, a programme of heavy mineral analysis (Peacock, 1967) was carried out and the results compared with others obtained from the analysis of waste material from known kiln sites. The possibility of defining groups is hampered by the difficulty of defining significant variations in the tertiary clays in the Hampshire basin area. Each group of results was clustered according to the programme described on pp. 273–4 and the dendrograms are presented as a 'family tree' in figs. 159 and 160.

Any conclusions that can be drawn from these analyses must be qualified by reservations about the size of sample (39), as large only as time would allow. 75% of the results belong to

the same 'family', although there are clusters within it. These can be divided into two main groups, which broadly agree with a visual characterization of the sherds sampled. Slides 24-32 and 9-10 form a group which has fine grey fabrics and, where visible, a grey or silvery grey slip. In terms of form and decoration, these can be closely matched with both Alice Holt and New Forest products since both industries produce very similar types. However, when the results are compared with sherds known to come from the New Forest and Alice Holt kilns, few differences are apparent, the results being surprisingly homogeneous. Since the kilns of each group cover several square miles, it need not be surprising if the variations in the mineral assemblages from one group coincide with those from another, although the bulk of each may be seen to be slightly different overall. In this case, the Portchester group could belong to either industry. If time had allowed, further Alice Holt analyses might have produced clearer differentiation. On the other hand, even with a small number of samples, the Rowlands Castle and Shedfield kilns seem to have separated from the New Forest and Alice Holt results. Subjectively a New Forest source might be preferred on the grounds that the latter is closer to Portchester and access by river or road is easier than the cross-country route from Alice Holt.

With the other clusters (slides 41-33 and 29-4) there again seems to be some correspondence between the heavy minerals and visual characterization of the sherds. The bulk of these slides belong to the non-slipped, coarser grey to black sandy fabrics (except 2, 13, 19, 27) which are not unlike those from the Rowlands Castle kiln site. Generally speaking, the coarser non-slipped fabrics only appear to be used for flanged bowls (type 85), simple dishes (type 107) and jars (types 139-141), whereas the finer, white slipped grey fabrics are used for these types as well as other jars, bowls, mugs, jugs, etc. If the analyses are of any value, then it is to support the hypothesis that the fine, slipped, grey fabrics are probably from the New Forest and Alice Holt kilns, while the rest are from local sources, perhaps in the Rowlands Castle or Botley area, if not closer to Portchester itself. Both Chichester, Botley and Portchester are likely to have had coarse ware kilns closer to hand than the New Forest and Alice Holt centres, and there is no reason for pottery production attested in the first/second centuries at Shedfield, near Botley (Cunliffe, 1961) or in the second/third centuries at Rowlands Castle (Cunliffe, 1971, 253-4) not to have continued in those areas into the fourth century. It may be suggested that about 75% of the grey wares comes within a five to ten mile radius, or even less, of Portchester, while only some 25% comes from further afield, say 20-30 miles, and most of that is from either the New Forest or Alice Holt centres.

As far as dating can be established with the grey wares, there is a decline in the percentage in groups later than *c.* 345, if the average amount between fabric (by weight) and minimum number of types (by rim) is considered. This does not mean that grey wares were no longer being produced in the later fourth century, rather that white or grey slipped types were gradually being replaced by more colour-coated varieties, while the range of day to day types (flanged bowl, dish and jar) were still being produced locally.

To refine the definition of grey wares further would require more analysis of both Portchester and original kiln data, taking into consideration not only all the visible features of form and decoration, but also more variables within the heavy mineral assemblages, such as shape and size of mineral types. A comparison using grain size analysis (Peacock, 1971) might also produce useful results.

Heavy Mineral Analysis Results

No.	Zircon	Tourmaline	Rutile	Garnet	Kyanite	Staurolite	Andalusite	Sillimanite	Epidote	Zoisite	Anatase	Apatite	Biotite	Collophane	Barite	Total number of grains counted
1	84.7		9.4		1.5				1.5							543
2	74.5		16.1	4.1	1.1		1.5		1.3							459
3	46.7	16.1	7.3		15.8	7.3	8.8				1.0		1.5			95
4	83.2		10.2	1.0	1.0						2.0					463
5	63.4	3.4	14.6	2.2	2.2		4.9	1.0	1.2		7.0					410
6	59.4	1.9	16.9		5.0		8.1	2.5			3.1					160
7	65.9	1.4	9.7	1.4	1.7		2.6		2.0	8.6	2.3	2.6				349
8	35.7		17.4	4.1	16.3	1.0	2.0	1.0	6.1	2.0	1.0	13.3				98
9	66.5	2.7	9.6		13.0		2.0		4.0							301
10	67.2	2.9	8.6		12.1		1.7	1.7	4.0							174
11	70.6	4.4	20.5		3.0											439
12	80.3		9.3				3.1		1.7			3.5				290
13	69.8		8.3	1.2			4.9					7.5				348
14	85.7		11.4													525
15	73.9	3.0	7.2	2.1			8.4		1.2			2.5				866
16	38.4	32.7	4.4	10.1			2.5		1.9	4.4	1.3	3.1				159
17	66.9	9.3	6.1		6.1	4.8	3.4		1.7							643
18	80.7	4.7	9.1	1.0	2.4		1.0									384
19	69.2		10.5	1.3	1.0		16.8									477
20																
21	79.5		8.0				8.0			1.5						400
22	65.9	9.1	11.4	1.1	4.6	3.4	2.3			1.1		1.1				88
23	84.4	3.3	7.8				2.5									397
24	81.0		7.1	4.3	1.0		3.8					2.8				211
25	87.4	4.7	4.7	1.0	1.0	1.0										452
26	79.0		6.1	4.4	2.2		1.8		1.0	1.8					1.8	228
27	73.9		14.3	2.5	3.9				2.5							203
28	88.5	1.8	6.2	1.8												339
29	76.1	6.9	5.4	3.0	2.7				2.7		1.5					335
30	84.7	2.8	8.4	1.1												537
31																
32	82.2	1.4	11.0				2.5					1.0				365
33	69.4		11.3	9.7			4.5			3.2						62
34	85.3		8.3	4.6	1.0		1.0									545
35	69.2	3.1	15.4	4.6	3.9		3.1		1.0							130
36	74.7	2.5	10.5		6.4	2.4	1.5			1.1						545
37	78.2	6.3	4.7		4.5	4.1	1.3									556
38																
39	71.7	12.3	10.4			3.8										106
40	74.1		18.1	1.0	4.4				1.6						1.0	320
41	70.9	1.0	7.0	14.1	2.9	1.0			1.0			1.0				388
42	29.3		2.3	16.9										50.7		444

Analysis of kiln waste

No.	Zircon	Tourmaline	Rutile	Garnet	Kyanite	Staurolite	Andalusite	Sillimanite	Epidote	Zoisite	Anatase	Apatite	Biotite	Collophane	Barite	Total number of grains counted
<i>Alice Holt</i>																
1	81.3		6.4	1.6	2.2		2.9		1.6			3.1				453
2	74.7		10.8	7.6	2.2											462
3	70.0	5.4	10.4		5.5		5.4						1.5			653
4	84.1		7.9		1.9		2.2					1.6				315
<i>New Forest</i>																
5	75.4	1.0	14.1		2.3		2.8		1.0			1.3				398
6	64.2		21.1	2.7	4.0		1.7		1.7		2.2					402
7	83.3		8.0	1.4	1.4		2.6				1.0					498
8	63.7		23.8	6.5	1.1							2.8				465
9	60.2	3.7	18.3		3.2		2.6		2.6							433
10	74.2		8.4	1.9	4.5		1.9		1.9		1.3	1.3				155
11	81.5	6.6	10.4													595
12	79.1	9.6	7.3		1.0											480
13	87.5		7.1		2.1	2.1										240
14	75.4	10.7	9.8				2.1									479
15	73.6	3.8	19.1	1.9												523
16	77.8	5.9	13.5													392
17	86.7		12.0													548
18	84.4		13.0		1.3				1.3							77
19	86.6		10.2	1.8												508
20	86.0	1.9	8.7		1.0											378
21	82.1		15.5													335
22	74.5	10.6	9.2		2.1											141
<i>Rowlands Castle</i>																
23	80.5		6.8	7.5	1.5		1.5		1.5							133
24	67.7	2.2	5.4	5.4	3.2		7.5	1.0		1.0	6.5					93
25	83.3	4.9	2.9	3.0	1.5	1.0			1.0		1.0	1.0				204
<i>Shedfield</i>																
26	76.3		12.3		6.1								3.5			570
27	90.9		2.3	2.3							2.3		2.3			44
28	75.5		10.8	1.4			3.6						4.3			139
29	64.6	2.0	11.5	2.0	5.2		1.0		3.1		1.0		8.3			96

Nos. 5-10: Amberwood Inclosure; 11, 12, 15, 17, 20: Sloden Inclosure; 14, 21: Linwood; 13: Ashley Rails; 18: Pitts Wood; 16: Islands Thorns; 19, 22: Crock Hill.

The Portchester Samples

- Slide No. 1. Type 132
 2. Type 133
 3. Type 98?
 4. Type 140
 5. Type 149
 6. Type 140
 7. Type 77
 8. Type 88.9
 9. Type 153.6
 10. Type 153.6
 11. Base ? type 127
 12. Type 141
 13. Type 159.5
 14. Type 129
 15. Type 172
 16. Type 85 (BB 1)
 17. Type 177/179
 18. Type 85
 19. Type 153.8
 20. Type 137.4-6 (fabric D, no results)
 21. Type 77 or 92 (pedestal base only)
 22. Type 141

- Slide No. 23. Type 77
 24. Type 129
 25. Type 107
 26. Type 141
 27. ? Type 29, red slipped, body sherd only
 28. Type 136
 29. Type 140
 30. Type 85
 31. Type 137.4-6 (fabric D), no results
 32. Body sherd ? types 127-133
 33. Type 85
 34. ? Type 127-133, body sherd only
 35. Type 85/87
 36. Base ? type 107
 37. Type 85
 38. Sherd of hard, micaceous, light brown fabric, no results
 39. Type 94
 40. Sherd of jar ? type 140/141
 41. Base of jar ? type 140/141
 42. Type 140

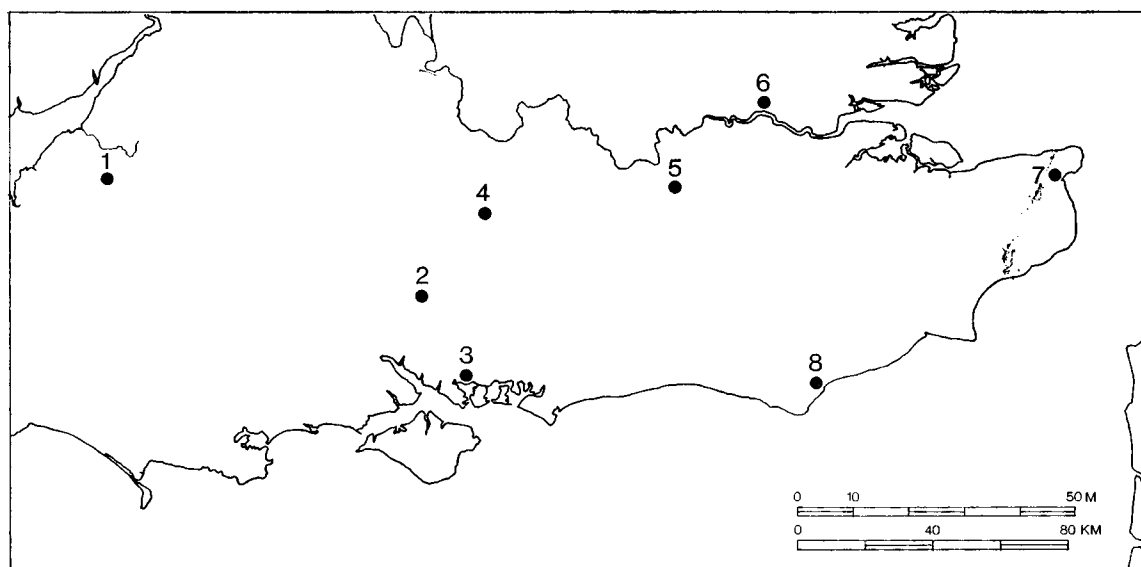


FIG. 157. Distribution map of fabric D wares. 1, Chew Valley, Somerset; 2, Winchester, Hants; 3, Portchester, Hants; 4, North Warnborough, Hants; 5, Cobham, Surrey; 6, London; 7, Richborough, Kent; 8, Pevensey, Sussex

EXCAVATIONS AT PORTCHESTER CASTLE

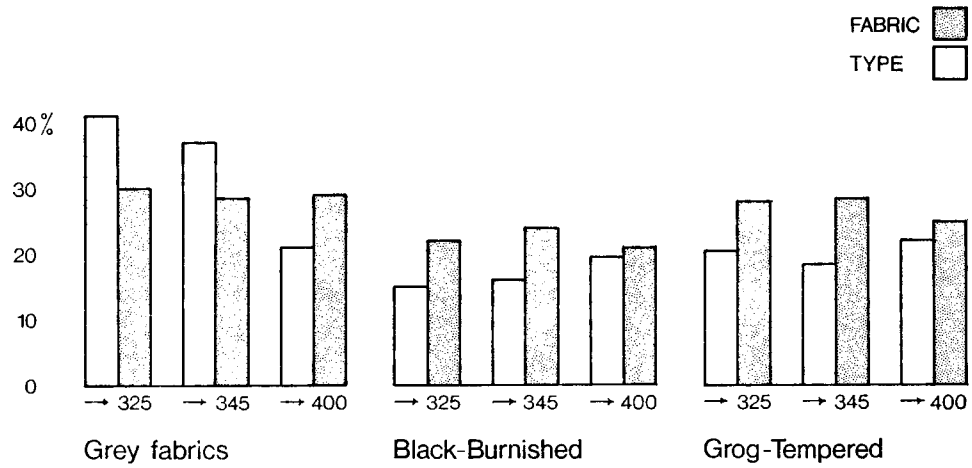


FIG. 158. Relative amounts of the main non-colour-coated ware types by rim count and fabrics by weight as percentages of the main groups at Portchester

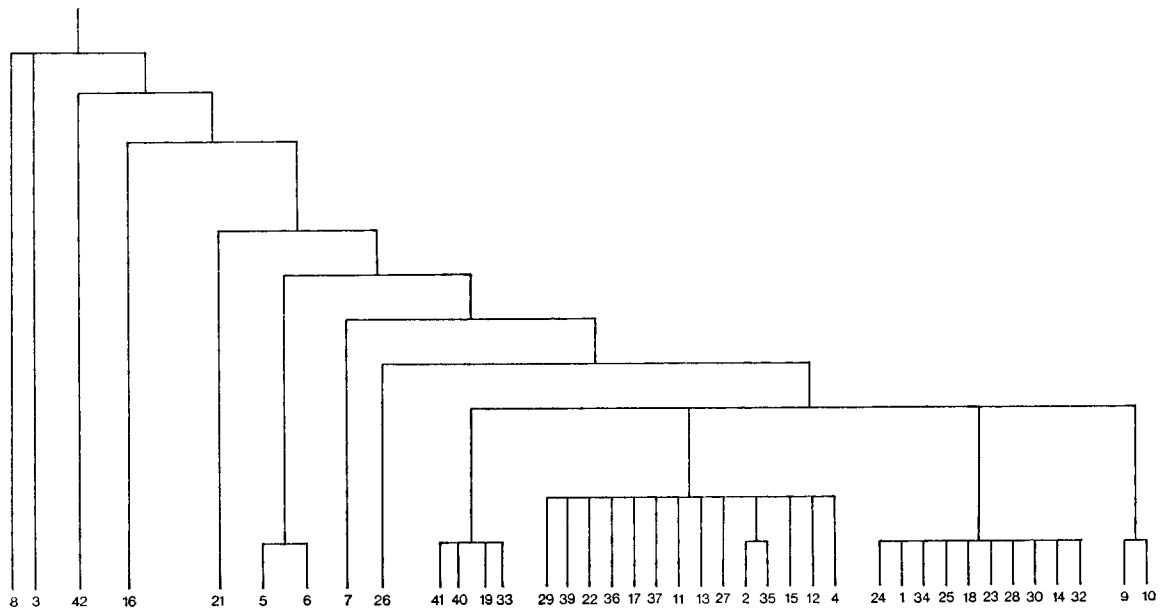


FIG. 159. Cluster analysis: heavy mineral analyses of Portchester grey wares

CREAMY SANDY WARES (FABRIC D)

This is a very distinctive fabric, the source of which is not yet recognized. It is very hard and granular, coloured dirty yellow, sometimes with a grey core. The surface ranges from a dirty yellow to a reddish-yellow and is fairly rough with translucent quartz grits (no more than 0.5 mm.) showing through at random all over. It is instantly distinguishable from the other non-colour-coated wares. Preliminary results of heavy mineral analysis have not been helpful in characterizing the fabric. The types represented in it are nos. 87, 89, 97, 109, 137, 155, 173.

The fabric has a wide distribution (from visual inspection) in south-east England, occurring at London (unpublished material in the Guildhall Museum), Richborough (Bushe-Fox, 1932, pl. 40, nos. 336-8; 1949, pl. 93, nos. 470 and 472), Cobham, Surrey (Frere, 1947, fig. 7, no. 2), Pevensey (unpublished material in Lewes Museum) and elsewhere (fig. 157).

At Portchester this fabric does not appear before *c.* A.D. 325 and very few types are present in the middle occupation and upper clay layers against the wall, although all varieties occur in later groups. There is a slight conflict between the minimum number of types and the fabric weights as representing the development of the ware, but neither suggests any decline after 350.

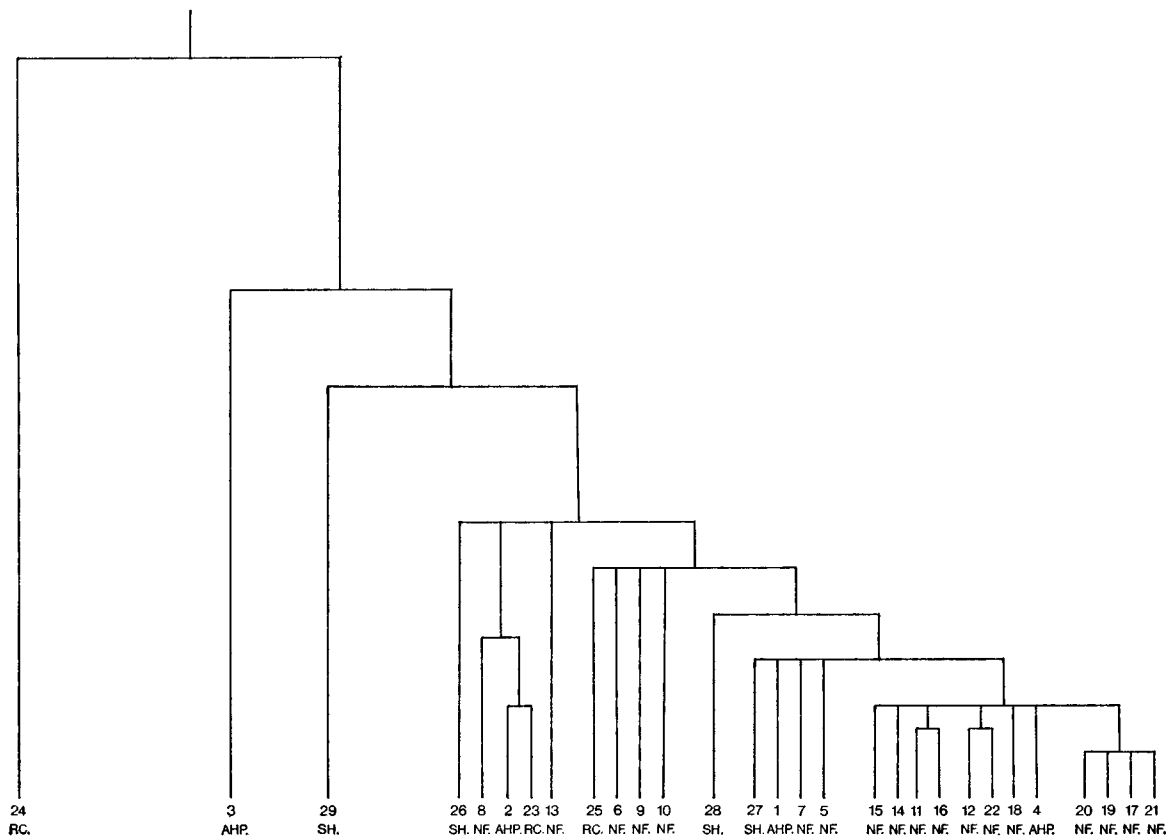


FIG. 160. Cluster analysis: heavy mineral analyses of kiln wasters

EXCAVATIONS AT PORTCHESTER CASTLE

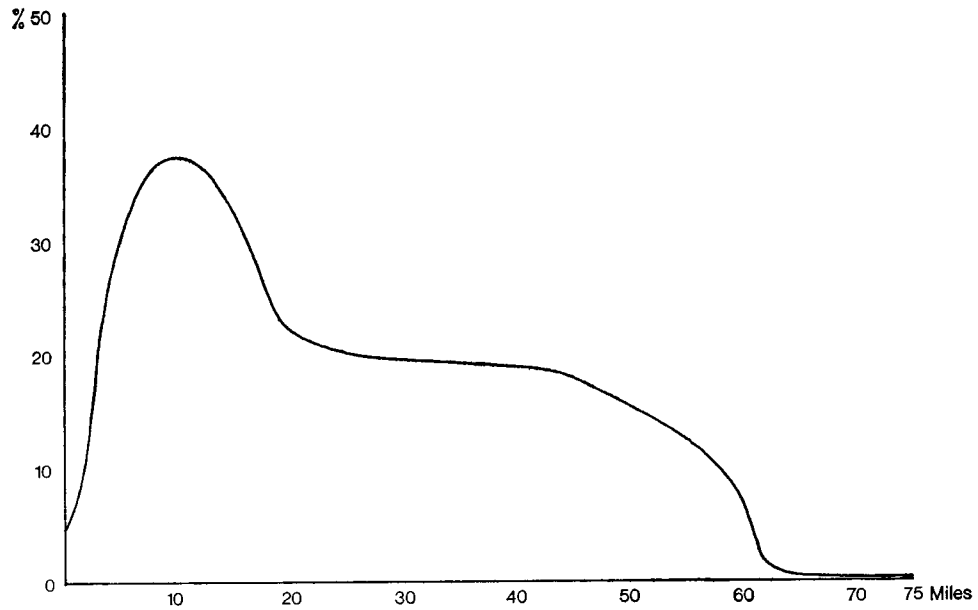


FIG. 161. Amounts of pottery compared with distance from the suggested source

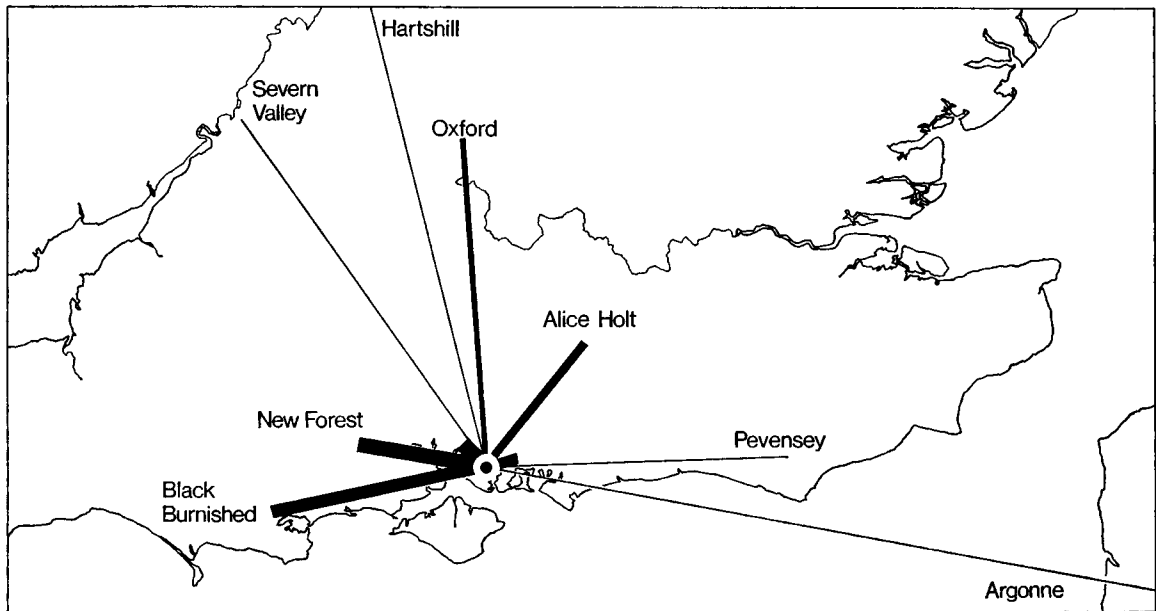


FIG. 162. Map showing the relative proportions of pottery originating from known sources

Minimum number of types as a percentage of group:

All groups pre-350, 0.16%.

All groups post-350, 1.88%.

Fabric weight as percentage of group:

All groups pre-350, 0.80%.

All groups post-350, 0.92%.

THE SOURCES OF THE POTTERY

An attempt has been made on figs. 161 and 162 to show what amounts of pottery came from what distances and sources during the period *c.* 325–*c.* 345. The thickness of the bars on fig. 162 is proportional to the amount supplied from that source. Clearly, as has been discussed already, not all the sources of the pottery are known, but for the grog-tempered and the bulk of the grey wares, a source or sources near Portchester (5–15 miles) have been suggested. The problem of the Alice Holt and New Forest contributions to the grey wares has been resolved by dividing the amount equally (25% of the grey wares) between the two. For the colour-coated and black-burnished fabrics, we can be certain, in most cases, of the source within a mile or so.

THE TYPE SERIES

The Closed Forms

Bottles

Type 1: with a closed nozzle mouth and no handle:

1.1, a fine, hard red fabric with a matt black slip; possibly Oxfordshire; MO (1).

1.2, a hard, red-brown fabric with a matt red-brown slip; possibly Oxfordshire; u/s (1).

Type 2: with an open mouth and no handle; New Forest, fabric 1.

2.1, u/s (1).

2.2, pit 121, u/s (1).

2.3, u/s (1).

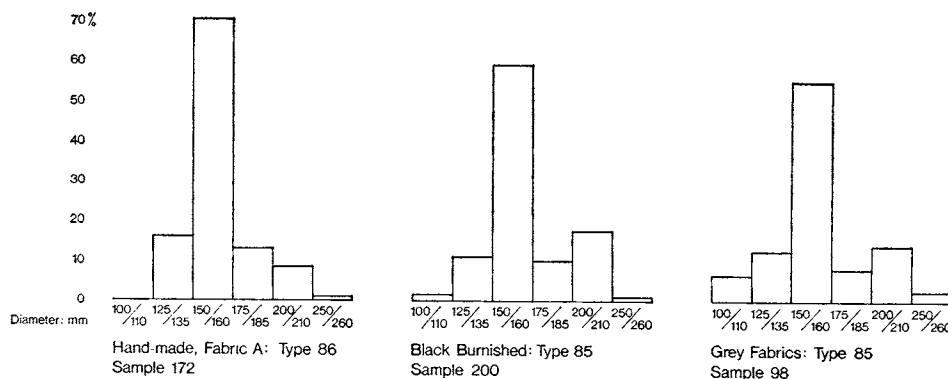


FIG. 163. Rim diameter variation of flanged bowls, types 85 and 86 (pp. 335–8)

EXCAVATIONS AT PORTCHESTER CASTLE

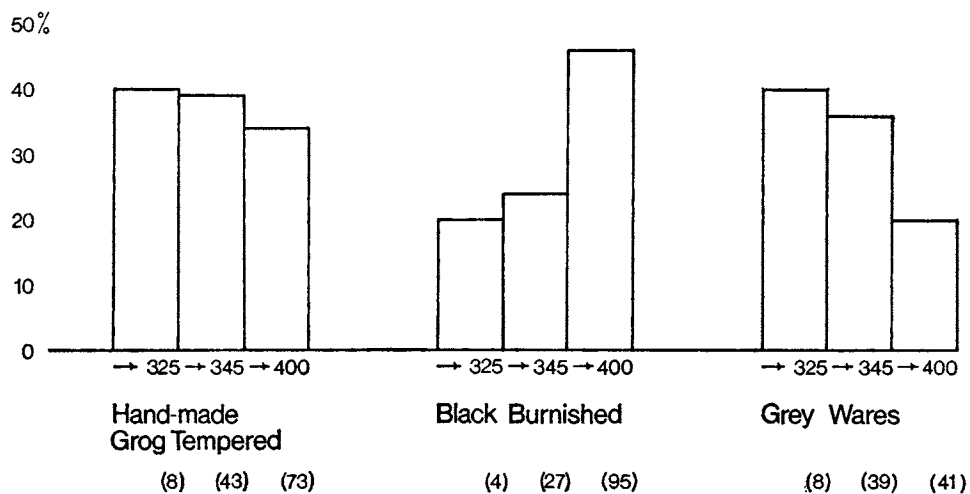


FIG. 164. Relative amounts of flanged bowls, types 85-87, in the three main non-colour-coated fabric groups (pp. 335-9)

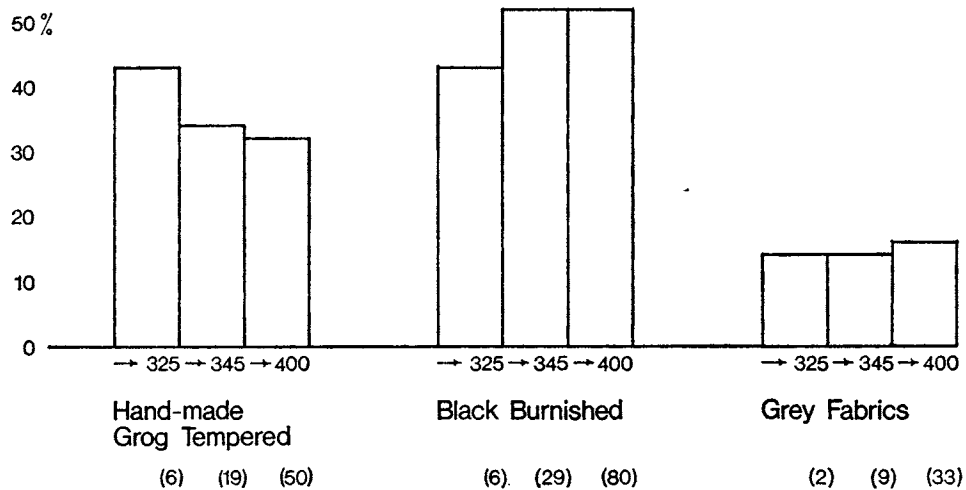


FIG. 165. Relative amounts of dishes, types 107-109, in the three main non-colour-coated fabric groups (pp. 342-5)

Flagons

- Type 3: globular body with a closed nozzle and handle attached to a flange on the neck; New Forest, fabric 1, except 3.3, which has a fabric like 1.2.
 Pits (6), (51, 103 (2), 121 (2), 144); BURRS (1); AURRS (2); BMU (1); MO (3); u/s (3); total 16. While those in pit 121 may have been deposited before 320, most of the rest belong to pre-345 contexts. Those AURRS are probably residual.
 Bases that could belong to this type, or types 2 and 10, occurred in pits (3), (48, 121 (2)); AURRS (1).
- Type 4: a collared neck with a handle attached to the neck.
 A pale red, sandy fabric, with a burnished slip, mottled, pale red in colour; cf. Gose (1950), forms 270-1; MO (1).

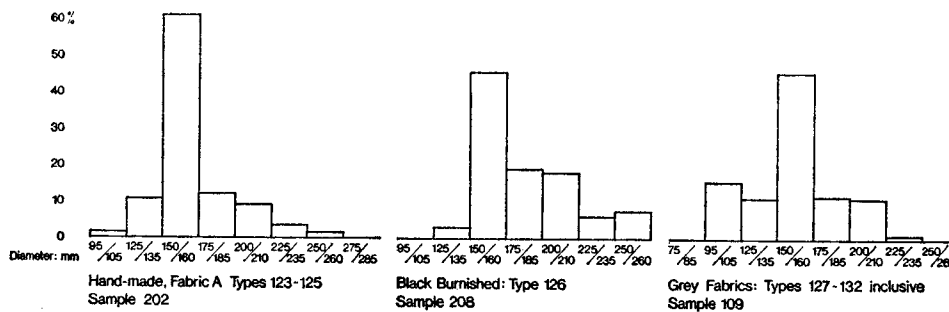


FIG. 166. Rim diameter variation of jars, types 123-132 (pp. 347-52)

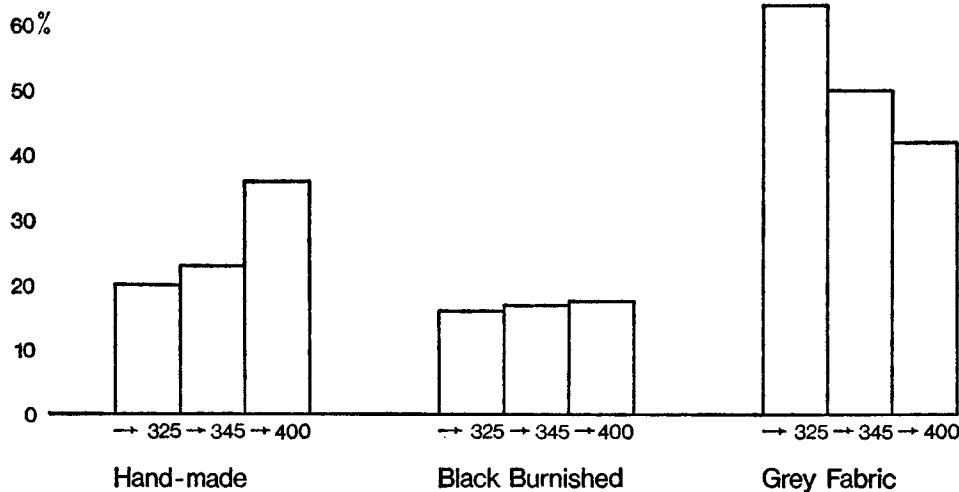


FIG. 167. Relative amounts of jar types 127-149 in the three main non-colour-coated fabrics (p. 357)

EXCAVATIONS AT PORTCHESTER CASTLE

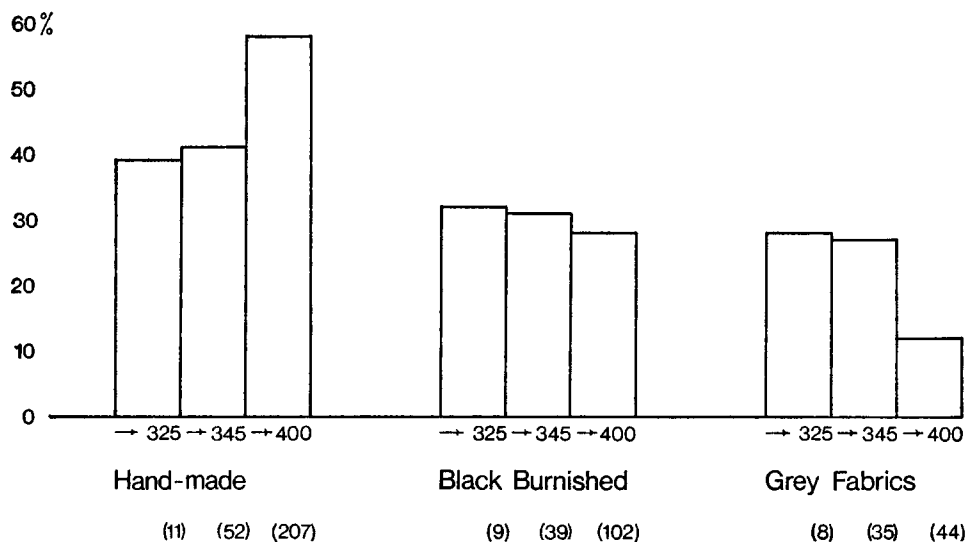


FIG. 168. Types 123-7: black-burnished, fabric B, jars and their close imitations in grog-tempered and grey fabrics (pp. 348-50)

Type 5: with an open and cupped rim, to which the handle is attached; New Forest, fabric 1; all variants u/s (4).

Type 2/10: body sherds with distinctive decoration, which could belong to all or any of types 2, 3, 5 and 10. Occasionally it is not always possible to distinguish body sherds of beakers from the closed forms, since both type ranges were made in the same kilns and share the same range of decorative motifs. All are New Forest, fabric 1, except 2/10.3.

2/10.1-2, Cylindrical body, with horizontal grooves.

2/10.1, possibly belonging to type 2; pit 144; AURRS (1); Up. Clay (1).

2/10.2, similar to above and also perhaps of type 2; UO (1).

A date after *c.* 330 seems likely for this pair; probably residual in AURRS or by ? *c.* 370.

2/10.3, body of either type 1 or 2; laminated, light-brown fabric with a dull brown slip; source uncertain; u/s (1).

With 'rouletted' decoration:

2/10.4, pit 69.

2/10.5, similar; pits (6), (47, 63, 77, 103, 144, 185). The date range could be either *c.* 300-*c.* 350, or possibly *c.* 315-*c.* 345.

With incised and stab decoration:

2/10.6, u/s (1).

2/10.7, pit 144.

2/10.8, pit 144.

2/10.9, UO (1); u/s (1).

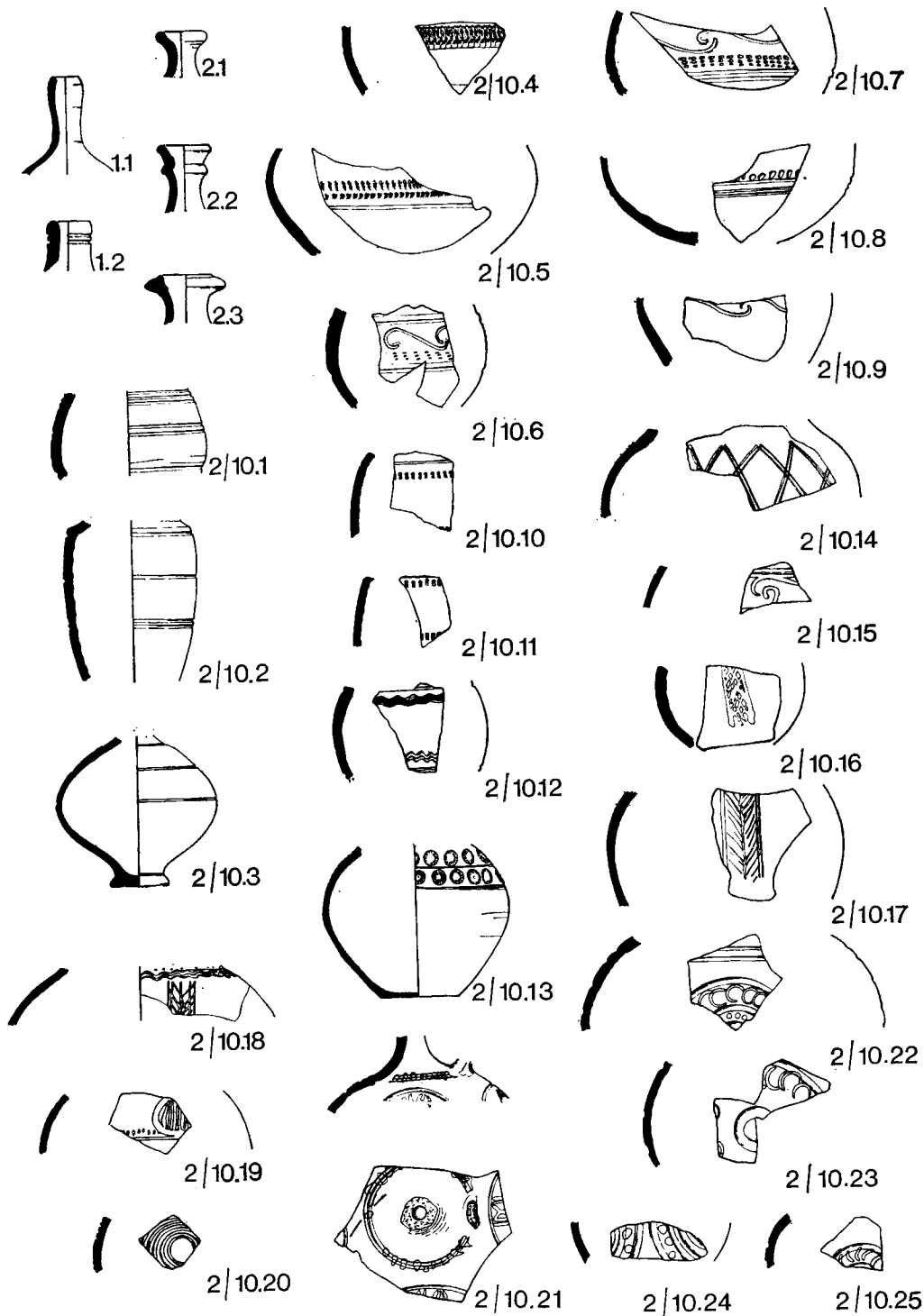


FIG. 169. Pottery types 1-2 (pp. 301-6). Scale $\frac{1}{4}$

2/10.10 and 11, possibly sherds of the same vessel; both from pit 41; others from AURRS (1); u/s (4).

2/10.12, u/s (1).

A date range *c.* 325–*c.* 360/70 seems likely for this type of decoration. None of the pits with this type would seem to have been filled pre-325, and comparison with the sherds of the beaker type 21 would support this.

With 'rosette' impressions:

2/10.13, pit 63; this is associated with coins dating 367–78.

With varieties of white painted decoration:

2/10.14, lattice pattern; u/s (1).

2/10.15, scroll pattern; pits 92, 147, 168 and 236; u/s (1).

2/10.16, lattice pattern; pit 103; MO (1).

2/10.17, herring-bone pattern; pits 92, 103 and 130; AMU (1); Up. Clay (1); UO (1); u/s (6); total 12.

2/10.18, painted lattice and incised wavy motif; LO (1).

2/10.19, UO (1).

With incised concentric circles and, usually, painted decoration:

2/10.20, no paint; pits (5), (103, 130, 164, 182, 223); MO (1); Up. Clay (1); UO (1); u/s (1); total 9.

2/10.21, circles enclosing painted lattices; pits 46, 103 and 125; AMU (1).

2/10.22–25, similar, but painted dots and crescents within the circles; pits 48 and 103; BURRS (3); AMU (1); LO (2); M. Clay (2); MO (2); UO (2); u/s (8); total 22. This type appears to be common in layers pre-325 and rare after 345. It is possible that there is a devolution in decoration from large circles and white painted patterns as in 2/10.21 to the plain style, like 2/10.20. The first is much closer to the cut glass parallels which were presumably copied at the outset. The date range is supported by the evidence for the beaker, type 20.

- Type 6:** with an open mouth and handle attached to a double beaded rim; New Forest, fabric 1; pits 144 and 168; AMU (2); u/s (3); a base probably belonging to this type from AMU. A date after *c.* 340/50 is compatible with the filling of the pits. This type seems to be current at the end of the century as it is the commonest pottery grave offering in the latest Lankhills graves, dated to the end of the fourth or early fifth century (Fulford, forthcoming).
- Type 7:** with a flared out and cupped mouth; the handle is attached to the rim:
 7.1, a light red fabric with haematite/limonite grains and a polished red-brown slip; pit 69 (cf. fabrics of 8.2 and 9.3).
 7.2, a fine, light red fabric with a grey core and a dark grey to brown slip; possibly Oxfordshire; MO (1).
- Type 8:** similar to the last, but a squared profile to the rim:
 8.1, a fine reddish-yellow fabric with a grey core and a dull red-brown slip; u/s (2).
 8.2, a light brown fabric with a grey core and haematite/limonite inclusions and covered by a dull brown slip; u/s (1); cf. 7.1 and 9.3.
 8.3, a fine, slightly sandy light red fabric with a reddish-brown burnished slip; u/s (1).
- Type 9:** with an everted profile and handle attached to a flange on the rim; sources unknown:
 9.1, fine, sandy yellow-red with a burnished brown slip; pit 164.
 9.2, fabric as above, but a light red slip; u/s (1).
 9.3, fabric as 7.1 and 8.2, but light brown slip; u/s (1).

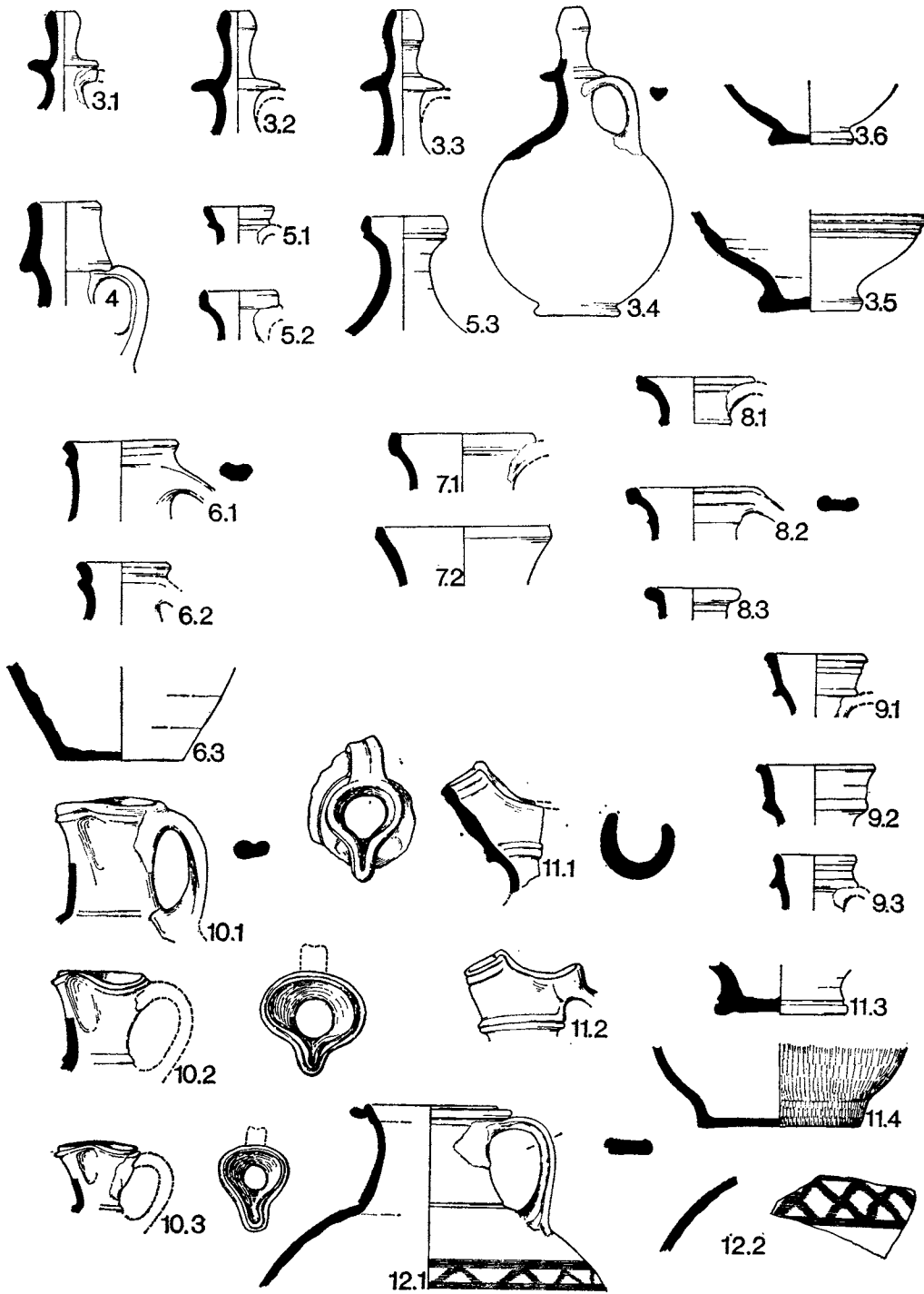


FIG. 170. Pottery types 3-12 (pp. 303-8). Scale $\frac{1}{4}$

- Type 10: with a pinched out spout and slightly flanged rim:
 10.1, New Forest, fabric 3, no slip; pit 63; BURRS (1).
 10.2 and 3, New Forest, fabric 1, purple slip; pits 144 and 223; BURRS (2); AURRS (1); AMU (1); UO (1); u/s (4); total 12.
 Possible date range of *c.* 325–*c.* 370/80.
- Type 11: jug with 'U' profile pourer; thumb stop on the handle; New Forest, fabric 3, purple slip; spouts from; MO (2); AURRS (1); u/s (1); sherd only from the neck in pit 48. Bases that probably belong to this type from AMU (1); MO (1).
 Possible date range of *c.* 325–*c.* 345.
 11.4, base in a white sandy fabric with haematite/limonite grains visible and 'roulette' decoration; pit 144.
- Type 12: large jug with a flanged rim.
 New Forest, fabric 3, brown paint on the body; u/s (1).

Beakers

- Type 13: bulbous-bodied beakers with tall necks and plain bodies.
 New Forest, fabric 1. It is likely that some of the body sherds of indented beakers belong to this type as well as to type 22. Included here are all occurrences of rim sherds giving no indication of the decoration of the body, although it is certain that many will belong to decorated types. As for other New Forest fabric 1 types it does not seem worthwhile to record the exact colour and hardness of each; it must be accepted that there is a range. Generally the slip covers all the outer surfaces, as well as 3 or 4 cm. below the inside of the rim. The only complete example occurred in pit 234, with sherds of the same vessel in pit 224. The rest occurred in pits (11), (46 (2), 65, 121, 144 (2), 182, 225, 230, 236 (2)); BURRS (1); AURRS (5); AMU (4); MO (4); UO (7); u/s (26); total 58. Of these it may be observed that 13.3 and 13.5 and 6 with shallow grooves on the neck occurred in pits 46 and 182; AURRS (4); AMU (1); UO (1); u/s (3).
 This is one of the few New Forest types that seems to increase as a percentage of the group concerned after 340/50. It rises from 0.79% of groups pre-340/50 to 1.07% of later assemblages.
- Type 14: this type accounts for all the non-New Forest beakers of the type described above. The fabric is generally a fine, somewhat granular, light brown, micaceous clay, with a brown to black slip. It is likely that many are from the Oxfordshire kilns. Stone-wares occasionally occur, e.g. type 14.2. The rim form also includes varieties like 13.1 and 2, although the most common range is as type 15.1–3. Again, as for type 13, all occurrence of plain rims, giving no indication of body decoration are included, but, unlike type 13, no complete, plain beaker in non-New Forest fabrics was recovered. Therefore the occurrences of the rim must also be compared with those of types 15, 17 and 18, from which presumably they are derived.
 Pits (9), (61, 121, 144, 187, 195, 223 (2), 236 (2)); BURRS (1); AURRS (5); AMU (3); LO (1); MO (3); u/s (17); total 39.
 The currency of this type would seem to be from *c.* 300–*c.* 325/45.
- Type 15: as type 13 and 14, but the body is decorated with two zones of 'roulette' or 'glass mark' impressions. There were very few occasions when rim and body survived as one, so the incidence of all the body sherds that would seem to belong to this type are listed.
 15.1, fine, brown, micaceous and granular fabric with a brown to black slip; Oxfordshire kilns; pit 144.
 Other body sherds in a similar fabric and also probably from the Oxfordshire kilns occurred in pits (17), (48, 60, 63, 85, 86, 92, 95, 121, 130, 144 (2), 187, 222, 236 (4)); BURRS (1);

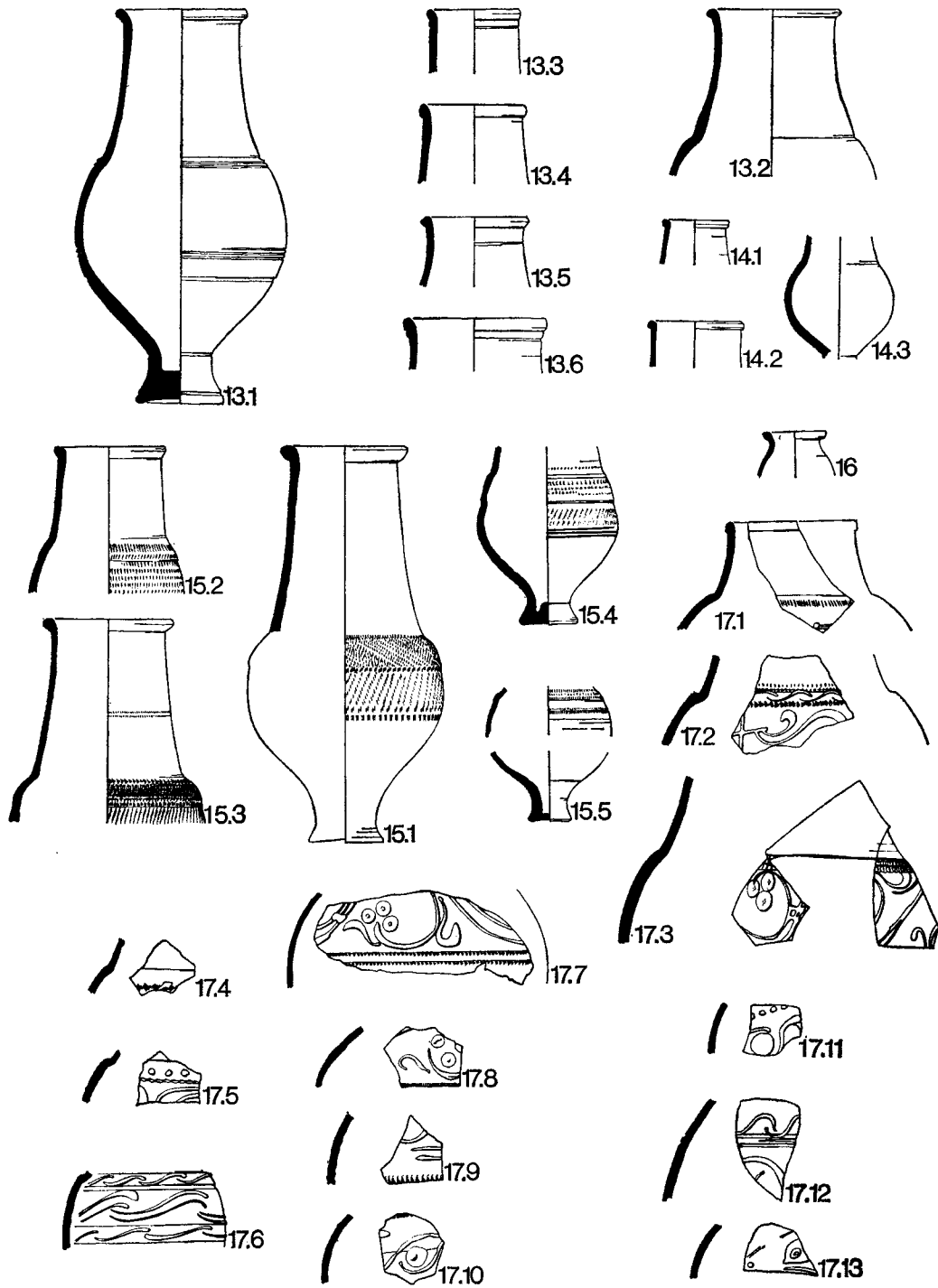


FIG. 171. Pottery types 13-17 (pp. 308-10). Scale $\frac{1}{4}$

AURRS (2); BMU (1); AMU (2); L. Clay Bank (1); M. Clay (1); Up. Clay (2); u/s (5); total 33.

15.2, soft, rough, reddish-brown fabric, with an uneven surface, roughened inside, and covered in a dark brown slip; source unknown; pit 130; others in AURRS (1); u/s (1).

15.3, a fine, somewhat granular, reddish-yellow fabric with a grey core and a dark brown slip; source unknown; pit 144; u/s (1).

15.4, a fine, dirty yellow fabric with a matt brown slip; the 'rouletting' is very faint; source unknown; pit 41; similar in pit 86; u/s (1).

15.5, a hard grey fabric with a thin black slip; source unknown; pit 235.

The date range suggested by the contexts of this type would appear to be from *c.* 280-*c.* 345.

Type 16: small, bulbous bodied beaker with a fine, very hard red fabric and a light brown, polished slip with a slightly roughened finish; source unknown; MO (1).

Type 17: as for types 13 and 14, except for the decoration which is of abstract motifs 'en barbotine'. Besides 17.1, all examples are body sherds, and it is possible that some belong to flagons and bottles, rather than beakers. The source of the majority is likely to be the Oxfordshire kilns. Each variant is described separately.

17.1, a fine, hard, grey fabric with a matt, deep reddish-brown slip; source uncertain; u/s (1).

17.2, a hard, brown, granular fabric with a grey core and a glossy, dusky red slip; pit 187; u/s (4); probably Oxfordshire.

17.3, a fine, hard, yellow to brown fabric with a grey core and a matt red-brown slip; pits 144 and ? 236; probably Oxfordshire.

17.4, a yellow to brown, fine fabric with a glossy reddish-brown slip; pit 41; source uncertain.

17.5, a laminated reddish-yellow, fine fabric with a grey core and a glossy dark red slip; pit 125; u/s (2); probably Oxfordshire.

17.6, a hard brown fabric with a grey core and a dirty, yellow slip; UO (1); probably Oxfordshire.

17.7 (this and the following sherds described for this type could belong to bottles and flagons, rather than beakers), a hard grey fabric with a glossy brown slip; this sherd u/s, but others similar in pit 103; AURRS (3); AMU (1); u/s (3); probably Oxfordshire.

17.8, similar to 17.7, but a glossy, reddish-brown slip; probably Oxfordshire; AURRS (1).

17.9, a hard, light brown, granular fabric with a grey core and a matt black slip; source uncertain; u/s (2).

17.10, reddish-yellow fabric with a grey core and a matt dark, red-brown slip; pit 92; MO (2); u/s (4); probably Oxfordshire.

17.11, similar to 17.7; pits 46, 63 and 121; AURRS (1); u/s (1); probably Oxfordshire.

17.12, a hard, reddish-yellow fabric with a grey core and a dull, dark reddish-brown slip; AMU (1); probably Oxfordshire.

17.13, reddish-yellow fabric with a brown slip; ? animal head figured; u/s (1); similar sherd but no animal in pit 69; source uncertain.

Other sherds with barbotine decoration too small to illustrate occurred in pits 92, 144 and 178; AURRS (1); AMU (1); u/s (3).

Summary of contexts:

Pits (14); AURRS (6); AMU (3); MO (2); UO (1); u/s (18). The pit evidence does not suggest a date pre-*c.* 325 for the start of the type, while the end may lie between *c.* 370 and *c.* 400.

Type 18: as types 13 and 14, but the decoration consists of white paint, sometimes in relief, and commonly as scroll patterns. Except for 18.1, all specimens are body sherds. Like type 17, some sherds may belong to non-beaker forms.

18.1, a hard reddish-brown granular fabric with white paint trailed on a matt black slip; slight indentations on the body; pit 121, with a similar in pit 157; probably Oxfordshire.

18.2, fabric 1, New Forest; indented body; very worn slip; UO (1).

18.3, a granular reddish-brown fabric with a bronze-black slip and white paint, slightly in relief; pit 125; probably Oxfordshire.

18.4, New Forest, fabric 1; pit 103; u/s (2).

18.5, a hard reddish-brown fabric with a bright red slip; u/s (1).

18.6, New Forest, fabric 1; joining sherds in pits 223, 227 and 229.

18.7, New Forest, fabric 1; UO (1); u/s (1).

18.8, a light red fabric with occasional chalk inclusions and a dark, red-brown slip; AURRS (1); probably Oxfordshire.

18.9, a hard red fabric with a dusky bronze slip and trailed white paint; pit 46; u/s (2); probably Oxfordshire.

18.10, reddish-yellow fabric with a dull brown slip and trailed white paint decoration; pit 195; probably Oxfordshire; similar in pit 231.

18.11, a hard reddish-yellow fabric with a dull light brown slip; u/s (1); probably Oxfordshire.

Other body sherds in a thin, very hard red fabric with a brown to black, glossy slip (cf. fabric of 1.1) and trailed white paint decoration from: pit 164; AMU (1); u/s (4). Fabric parallels in this form in Essex and Kent suggest an origin in that area.

Summary of contexts:

New Forest: pits (2); UO (2); u/s (3); total 7.

Oxfordshire: pits (6); AURRS (1); u/s (4); total 11.

Misc.: pits (1); AMU (1); u/s (4); total 6.

If the contexts for the painted 2/10 variants are compared with those for type 18, then it would seem likely that the date range for this style and type lay from *c.* 325-*c.* 345. It is possible that the New Forest varieties were current a little later than the other fabrics, although again the emphasis seems to lie within the given bracket.

Type 19: New Forest, fabric 1; tall necked with an ovoid body; white painted 'fir tree' patterns between the indentations. Most recorded examples are body sherds only. Besides 19.4 in pits 222 and 223; AMU (2); u/s (1); and 19.5 (u/s), the rest belong to type 19.1-3 and occur in pits (8), (46, 60, 178, 187, 195, 201 (2), 225); BURRS (1); BMU (3); AMU (2); M. Clay (1); MO (2); UO (2); u/s (11); total 30. Pit 222 confirms a pre-325 date for the type. It is probably residual by 350/60 as it falls from being 0.95% of the 325-45 assemblage to 0.40% of the later group.

Type 20: New Forest, fabric 1; form as type 13, but decoration consists of incised concentric circles with painted motifs, either between or within each circle; all examples are of body sherds only:

20.1, pits 144 and 225; MO (1).

20.2, pit 46.

20.3, BURRS (1); u/s (1).

All examples belong to contexts *c.* 325-*c.* 345, but a wider date bracket may be indicated by the contexts of the 2/10 variants, with this form of decoration, and an earlier starting date is possible.

EXCAVATIONS AT PORTCHESTER CASTLE

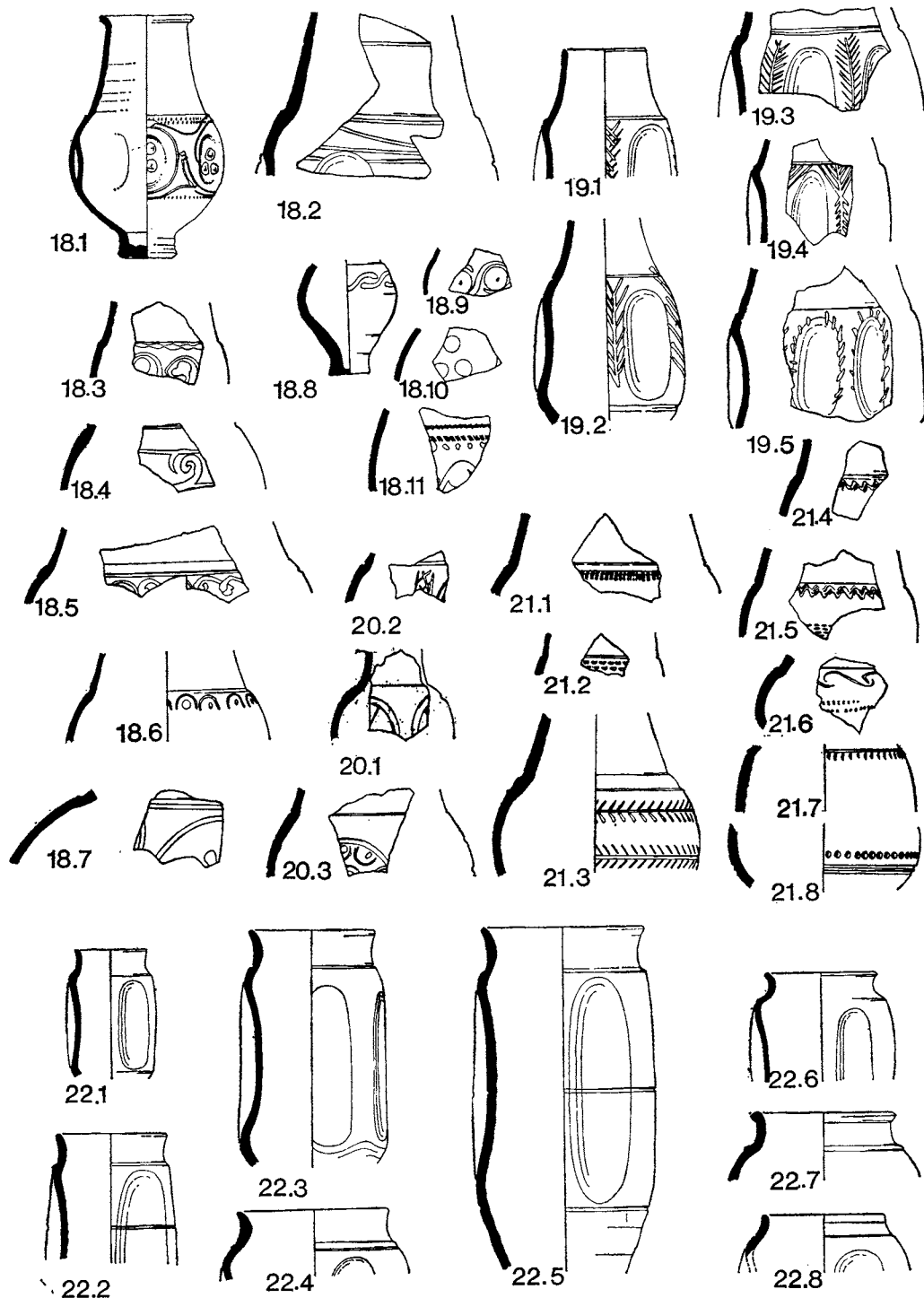


FIG. 172. Pottery types 18-22 (pp. 311-13). Scale $\frac{1}{4}$

- Type 21:** New Forest, fabric 1; form as type 13, but decoration consists of either 'stab', furrowed, or incised motifs, or combinations in pairs. Both single and multiple pointed instruments appear to have been used, and it is probable that the same point could be employed for both static and running motifs. Only body sherds of this type are recorded.
- 21.1, AURRS (2); MO (1); UO (2).
 21.2, u/s (1).
 21.3, MO (1).
 21.4 and 5, pit 69; AURRS (2); AMU (2); u/s (2).
 21.6, pit 236; u/s (2).
 21.7, Up. Clay (1); possibly belonging to a bottle or flagon.
 21.8, MO (1); possibly belonging to a bottle or a flagon.
- While 21.6 was probably deposited before 330, the rest belong to the period *c.* 325–360/70. As a percentage of each group, *c.* 325–345 and 345–*c.* 400, this type is 0.64% and 0.54% respectively. The date range is in agreement for the 2/10 variants.
- Type 22:** New Forest, fabric 1; unlike type 13, this beaker is characterized by a short neck and a mouth, which is as wide as its body. The rim is usually simple and pointed.
- 22.1–5, pits (33), (41 (2), 46 (2), 47 (2), 48, 49, 65, 77, 83, 95 (3), 103 (6), 121 (2), 130 (2), 144, 182, 184, 186, 187, 228, 234 (2), 235); BURRS (4); AURRS (7); AMU (7); L. Clay Bank (1); LO (6); MO (7); Up. Clay (3); UO (8); u/s (39); total 115.
 22.6 and 7, the rim is slightly thickened and bent out, and the shape more globular; pit 236; AURRS (3); AMU (2); u/s (6); total 12.
 22.8, inward sloping rim, still pointed; pit 92; AMU (1); UO (1); u/s (1); total 4.
 Total of all variants: 131.
- This type is definitely one of the earliest to be produced in the New Forest kilns. As a percentage of the assemblage, variants 1–5 range from 5.56% in contexts pre-325, to 2.23% in the group of 325–345 and to 1.48% in the latest groups. The difference between the pre- and post-325 groups suggest that these variants were not being produced much after 325, if not earlier. However, if the small typological differences are significant in the variants 22.6–8, then a continued development of the type may be accepted after 345, though clearly it is not as important as at the beginning of the century. On the other hand, since this type is the most common from the New Forest, then large amounts of residual are to be expected.
- Type 23:** New Forest, fabric 1; bag-bodied form.
- 23.1 and 2, pit 164 (2); AURRS (1); MO (1); u/s (1).
 23.3, with 'stab' and furrowed decoration; u/s (1).
- Although the sample is small, it would be expected that this type was one of the earliest New Forest types, but none of it appears to have been deposited before *c.* 325. 23.3 and its decoration equally does not suggest an early date.
- Type 24:** globular beakers with rustication; body sherds only.
- 24.1, a hard, light brown fabric with a grey core and a rich, brown slip; applied rustication; pit 103; MO (1); u/s (3); source uncertain.
 24.2, fabric as above; matt brown slip; rustication between indentations; u/s (1); source uncertain.
 24.3, reddish-yellow fabric, grey to the core, with a light reddish-brown slip; pit 186; similar in pit 92; AURRS (1); u/s (1).
 24.4, a hard grey and slightly sandy fabric with a black slip; BURRS (1); u/s (1).
 This is not a common enough variety at Portchester to make definite conclusions about date,

except that there is only one post-345 context, which is probably residual. The fabrics suggest a variety of unrecognized sources.

- Type 25: a hard, slightly sandy, creamy fabric with brown paint and 'rosette' impressions on the body; pit 92; possibly New Forest.
- Type 26: a fine, hard, brown fabric with a grey core and a dark brown slip. Decoration of 'cog' impressions in vertical zones; body sherds only; pits 103 and 182; AURRS (1); u/s (4); probably Oxfordshire.
- Type 27: a very hard, fine, pale red fabric, grey at the core and covered with a glossy black slip; u/s (1); similar sherd MO (1); either Rhenish or Lezoux.

Bowls

- Type 28: (not illustrated), Oxford, fabric 1; base only with very worn, illiterate stamp, as in samian; u/s (2).

- Type 29: New Forest, fabric 2; hemispherical bowl. Excepting the imitation Drag. 38, this is the commonest red slipped bowl from the New Forest at Portchester.

29. 1, 2 and 4-6, pits (16), (47, 52, 60, 61, 63 (3), 66 (2), 85, 144, 171, 206, 227, 236 (2)); AURRS (9); AMU (6); MO (9); Up. Clay (1); UO (6); u/s (33); total 80.

29. 3, with white painted decoration; Up. Clay (1); UO (1); u/s (2).

As percentage of group:

MO/Up. Clay	2.1%	All groups pre-345	1.59%
UO	1.64%	All groups post-345	1.41%

The evidence of the pits implies that some were deposited pre-325, and the absence of this type in LO may not be significant. The relatively slight difference between the earlier and later groups can either be regarded as the result of survivals (cf. the MO/UO contrast) or currency perhaps up to 360-70.

- Type 30: similar in form to type 29, but tending to a slightly everted, straight-sided profile.

(a) undecorated:

30. 1, New Forest, fabric 2; u/s (1).

(b) 'rouletted' decoration:

30. 2, a reddish-yellow, somewhat sandy fabric with a red-brown slip; similar to Oxford, fabric 1, but seems finer (cf. Atkinson, 1942, fig. 46, D1); pit 144; AMU (1); LO (1); UO (2); u/s (5).

30. 3, Oxford, fabric 1; u/s (1).

30. 4, Oxford, fabric 1, worn slip in pit 41; also u/s (2).

30. 5, Oxford, fabric 1; u/s (1).

(c) white paint decoration, with and without 'rouletting':

30. 6, Oxford, fabric 1; UO (1); u/s (4).

30. 7, very sandy, 'coarse', red-brown fabric with matt red, burnished, slip; source unknown; pit 225 (no paint/rouletting); Up. Clay (1).

30. 8, Oxford, fabric 1; UO (1).

(d) uncertain form:

30. 9, Oxford, fabric 1; grooves on the body; pit 144; AMU (1); u/s (1).

Besides 30. 2 which was deposited before 325, in one instance, none of the others of this type would appear to have been lost before 325, although there is, necessarily, doubt over the date of the fills of pits 41 and 225. It is also interesting that 30. 2 is the only decorated red slipped type, which appears in contexts definitely pre-325.

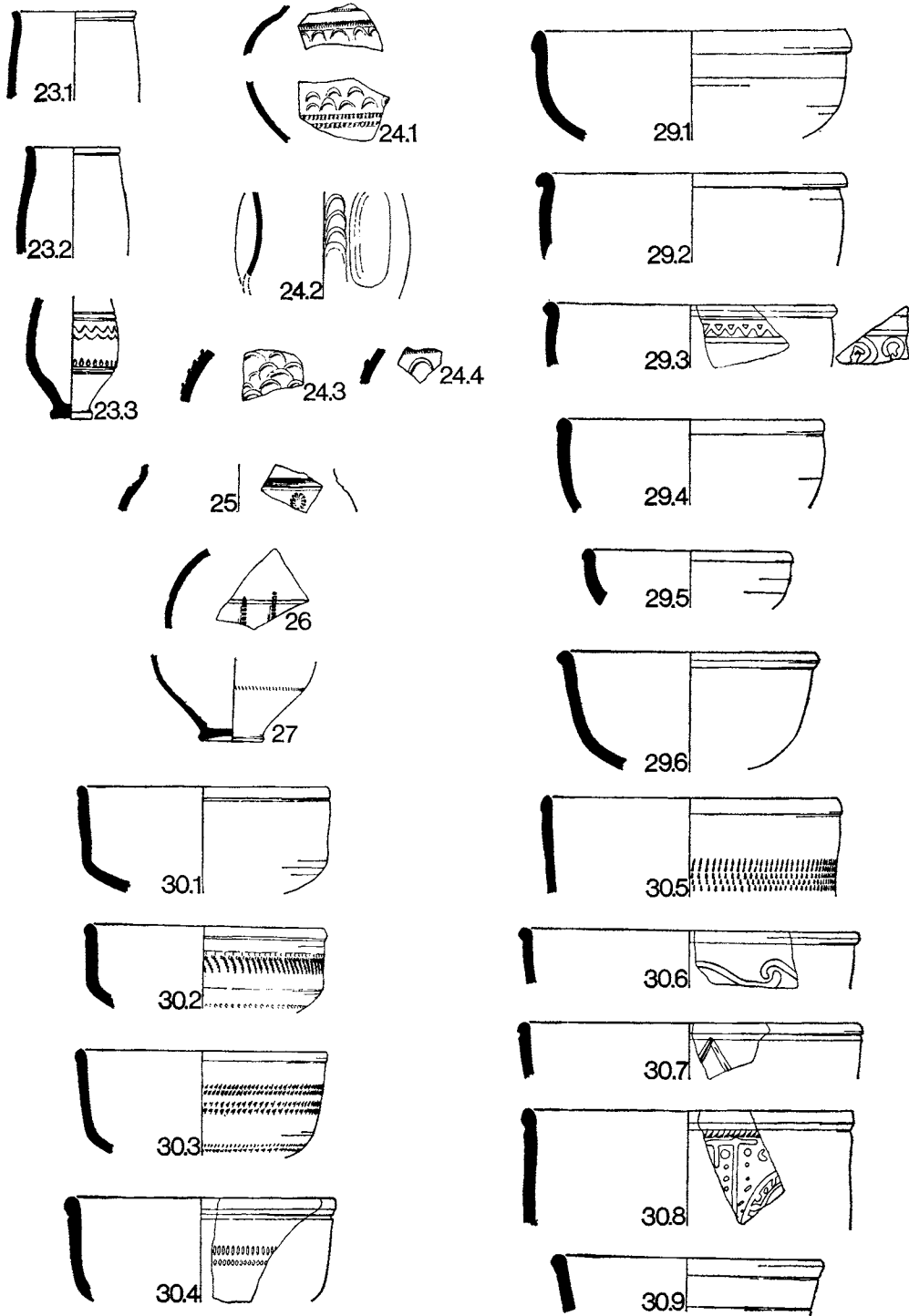


FIG. 173. Pottery types 23-30 (pp. 313-14). Scale $\frac{1}{4}$

- Type 31: carinated bowls with double beaded rims:
Oxford, fabric 1, except 31.6, which has a red-brown sandy fabric with a burnished red slip, AMU (1), and 31.7, which has a red-yellow sandy fabric with a burnished orange slip, of which joining sherds occurred in pit 223, MO and Up. Clay. The source of both of these is uncertain. The rest occurred in:
Pits (6), (41, ?47, 52 (sherd probably from same vessel in pit 54), 85, 122, 195, 206); BURRS (1); AURRS (1); u/s (2); total 10.
While it is clear that this type does not date later than *c.* 345/50, a starting date is more obscure and rests with the pits and the possibly significant absence in layers pre-325. If *c.* 330 is too late because it implies too short a life, then *c.* 320 may be reasonable.
- Type 32: New Forest, fabric 2; similar in form to type 31, but no double-beading on the rim:
Pits (11), (46, 63 (2), 121 (2), 144 (2), 195, 236 (3) — one of the latter had traces of a rosette stamp, cf. type 33.10); AURRS (1); UO (1); u/s (4); total 17.
None of the pits suggests a pre-325 date, as it is likely that the pits 144 and 236 examples were not deposited until after 340/50, while pit 63 is definitely filled post-370. On this slender evidence it seems possible that this type is slightly later than (*c.* 330/40–*c.* 370) and imitating type 31, which is basically an Oxford type.
- Type 33: form similar to type 30 and 32, but a slightly inverted profile.
- (a) undecorated:
33.1, Oxford, fabric 1; u/s (1).
33.2, New Forest, fabric 2; pit 144; u/s (1).
- (b) 'rouletted' decoration:
33.3, Oxford, fabric 1; pit 125.
33.4, Oxford, fabric 1; u/s (1).
- (c) painted decoration:
33.5, New Forest, fabric 2; pit 103.
33.6, with 'rouletted' decoration; Oxford, fabric 1; AMU (1).
- (d) with 'rouletted' and impressed decoration:
33.7, Oxford, fabric 1; u/s (2).
33.8, Oxford, fabric 1; u/s (1).
- (e) stamp impressions only:
33.9, New Forest, fabric 2; AURRS (1).
33.10, New Forest, fabric 2; u/s (1).
33.11, Oxford, fabric 1; AMU (1).
33.12, Oxford, fabric 1; with vertical rows of 'cog' impressions; pit 103 (1).
None of the variants date pre-330, but, within them, a possible division between the plain, painted and 'rouletted' examples and the stamped, or stamped and 'rouletted', may be significant. The former cluster *c.* 325–*c.* 345, while the latter are later than *c.* 350, if the curious 33.12 is excepted.
- Type 34: carinated bowls with a central cordon dividing two panels of stamped decoration:
34.1, New Forest, fabric 2; AURRS (1).
34.2, Oxford, fabric 1; UO (1); u/s (2).
34.3, Oxford, fabric 1; AURRS (1).
34.4, Oxford, fabric 1; pit 236 (similar); AURRS (1); u/s (1).
34.5, Oxford, fabric 1; AURRS (1); u/s (2).
34.6, Oxford, fabric 1; pit 63; others similar, but only half the profile, in pits 46 and 103.
34.7, Oxford, fabric 1; AURRS (2); AMU (1).

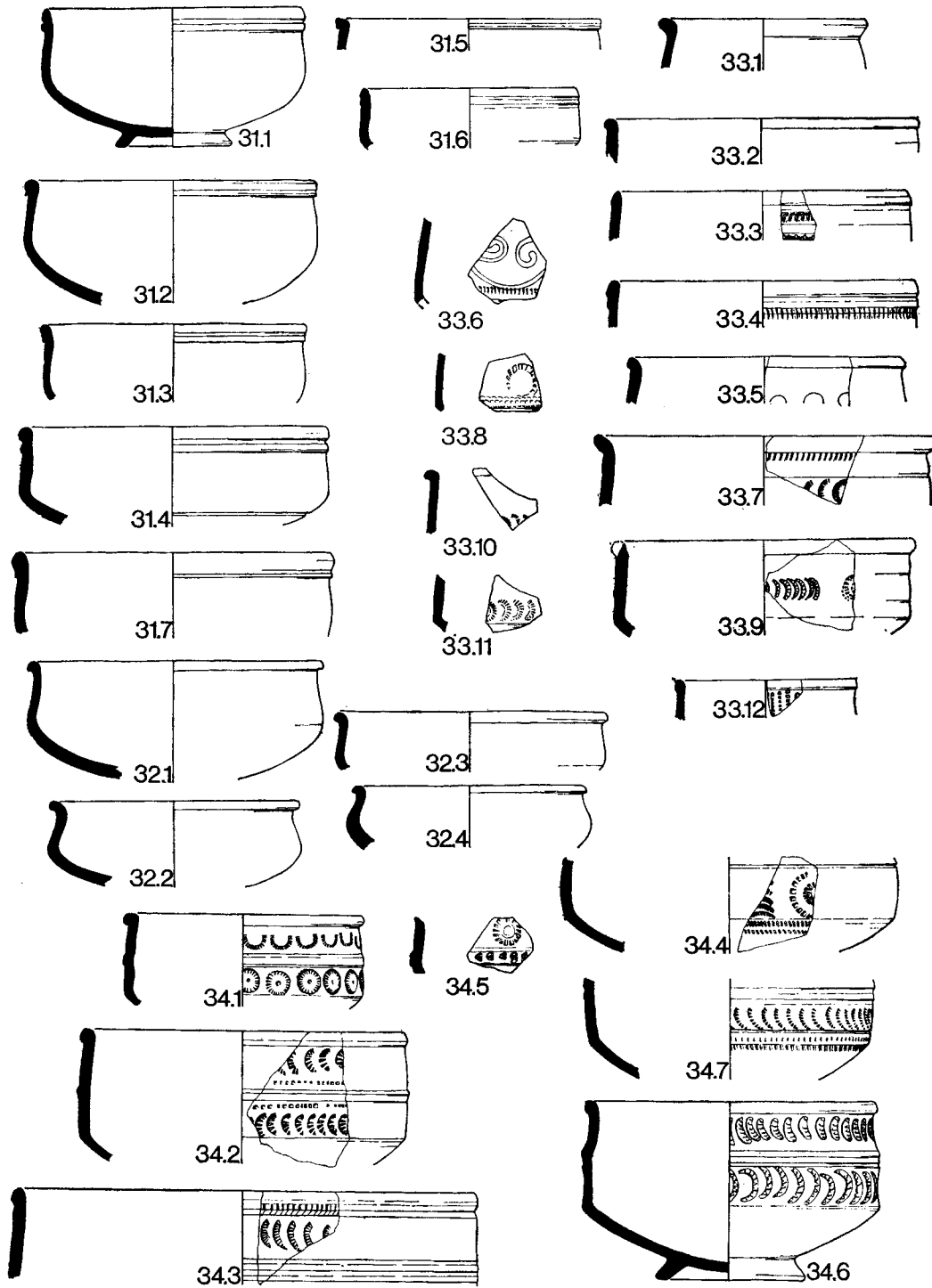


FIG. 174. Pottery types 31-34 (p. 316). Scale $\frac{1}{4}$

EXCAVATIONS AT PORTCHESTER CASTLE

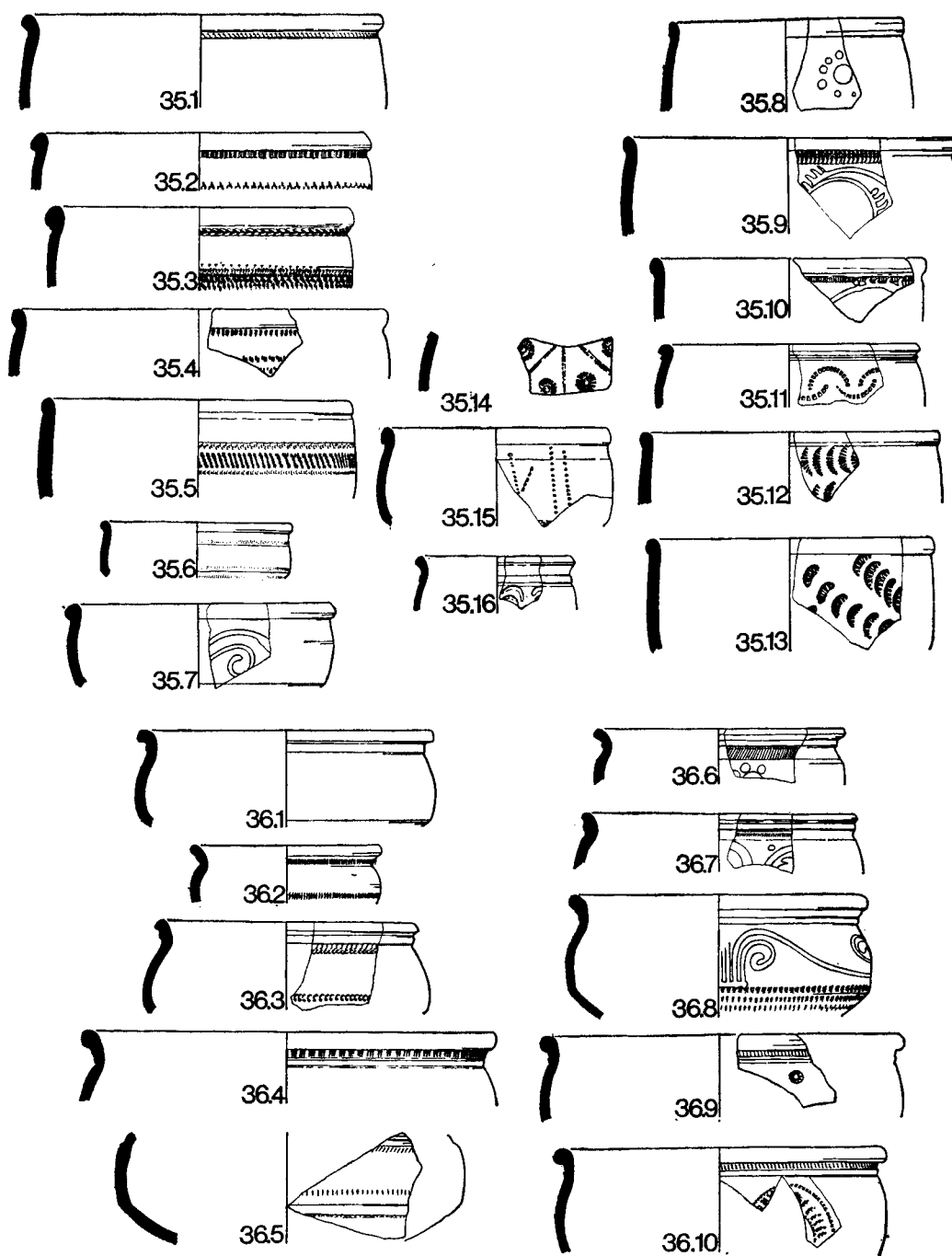


FIG. 175. Pottery types 35-36 (pp. 319-20). Scale $\frac{1}{4}$

Where the full profile of this type is present, there is no evidence for a pre-345 date. Though stamped, the pits 46 and 103 pieces are likely to be earlier, *c.* 325/45, but they may not belong to this type, because the sherds are too small for one to be certain.

Type 35: bowls with rounded and slightly swelling profiles:

(a) 'rouletted' decoration:

35.1, Oxford, fabric 1; pits 103, 125, 182, 236; AMU (1); u/s (2).

35.2, Pevensey ware; AMU (2).

35.3, Pevensey ware; u/s (1).

35.4, Oxford, fabric 1; pits 46 and 168; u/s (2).

35.5, Oxford, fabric 1 (*cf.* type 30.2-5); u/s (1).

35.6, Oxford, fabric 1; AMU (1); UO (1); u/s (3).

(b) painted decoration:

35.7, Pevensey ware; u/s (3).

35.8, Oxford, fabric 1; UO (1).

(c) 'rouletted' and painted decoration:

35.9, Oxford, fabric 1; MO (1); UO (1); u/s (1).

35.10, Oxford, fabric 1; AMU (2).

(d) stamped impressions:

35.11, brown, fairly sandy fabric with dull brown slip; source uncertain; u/s (1).

35.12, Oxford, fabric 1; pit 168; u/s (1).

35.13, Oxford, fabric 1; AMU (2); u/s (3).

35.14, Oxford, fabric 1; joining sherds from AURRS and AMU.

35.15, Pevensey ware; pit 147; AURRS (1); UO (1); similar, but with demi-rosettes in AURRS (1).

35.16, fine, hard, light brown fabric with a black slip; u/s (1); source uncertain, but possibly New Forest.

Although all the variants seem to occur before *c.* 345, it does seem that the plain, painted and 'rouletted' examples are more common before *c.* 345 than after, while the opposite seems true of the stamped variants. None of those from pits are likely to be pre-*c.* 325.

Type 36: this type is characterized by its reverse 'S' profile and a pronounced drawing-in below the rim; in the list of variants that follows there is a bias towards 36.1 because of the number of instances of rim sherds without enough determinant body detail. All are of Oxford, fabric 1.

(a) undecorated:

36.1, AURRS (2); AMU (1); UO (1); u/s (9); total 13.

(b) 'rouletted' decoration:

36.2, UO (1); u/s (4).

36.3, pit 63; AMU (1).

36.4, u/s (1).

36.5, pit 147; UO (1).

(c) 'rouletted' and painted decoration:

36.6, u/s (1).

36.7, pit 69; AURRS (1).

36.8, pit 46.

(d) 'rouletted' and stamped decoration:

36.9 and 10, possibly sherds of the same vessel, despite apparent unrelated decoration; AMU (1).

36.11, u/s (1)

36. 12, AMU (1); u/s (1).

36. 13, u/s (1).

36. 14 and 15, u/s (2).

36. 16, UO (1).

36. 17, UO (1).

Although none of the stamped examples can date pre-345, the sherds in the pits (apart from pit 63 with the late coins) suggest an earlier date for those with painted and 'rouletted' decoration, although they need not be much earlier. None of the pits in question will have been filled before 325.

Type 37: Pevensey ware; form similar to type 36, but the walls are thicker and there is often a slight shoulder below the rim; white paint decoration; pits 66, 130, 147 and 182; AURRS (1); AMU (1); u/s (1).

This type is unlikely to date before 325/45.

Type 38: New Forest, fabric 2; the form suggests a reverse 'S' profile with a pointed rim; pits 48 and 79.

Type 39: New Forest, fabric 2; simple, hemi-spherical bowls with plain rim; this type may be a development from a failed bottle or flagon type.

39. 1, white paint on black slip; u/s (1).

39. 2, white paint; UO (1).

39. 3, this is probably a base sherd of this type, with faint traces of 'rosette' impressions; pit 121 (scale: $\frac{1}{2}$).

Type 40: wide mouth bowl imitating Drag. 31 or Ludowici Type Sh:

40. 2, New Forest, fabric 2; BURRS (1); u/s (5).

The rest are Oxford, fabric 1, from pits (13), (46, 65, 69, 83, 103 (2), 138, 144 (2), 181, 182, 236 (2)); BURRS (1); AURRS (5); BMU (1); AMU (7); MO (3, of which sherds of one occurred in the Up. Clay and UO, 40.4); UO (4); u/s (23); total 57.

The absence of this type from definite pre-325 layers is probably not significant, and it is likely that some of the pit contexts, e.g. 65, 83, 181 are pre-325.

As percentage of group:

MO/Up. Clay	0.63%	All groups pre-345	0.80%
UO	1.09%	All groups post-345	0.81%

This suggests that the type had a long life, perhaps in to the fifth century, and that it had not reached the peak of its popularity until after A.D. 340/50.

Type 41: shallow bowl imitating Drag. 35/36:

41. 1 and 2, Oxford, fabric 1; white paint on the rim; AURRS (1); u/s (4).

41. 3, New Forest, fabric 2; pits 63 and 144; AMU (1); u/s (1).

On the coin evidence for the pit fills, this type does not date pre-340/50. If the type is a conscious samian imitation, then it is surprising that it is so late, although it would not be unreasonable for the New Forest examples to be a little later than the Oxford ones.

Type 42: shallow bowl imitating Drag. 36:

42. 1 and 2, with white paint and/or 'rouletting' on the rim; Oxford, fabric 1; pits 129, 182, 187 and 236; BURRS (1); AMU (1); Up. Clay (1); UO (1); u/s (8); total 16.

Pevensey ware (not illustrated); AMU (1); UO (1).

This type, at least in the Oxford fabric, dates before 340/50, although none of the pit contexts can necessarily push it pre-325. The closer resemblance with the samian counterpart would make an earlier date than type 41 more sensible.

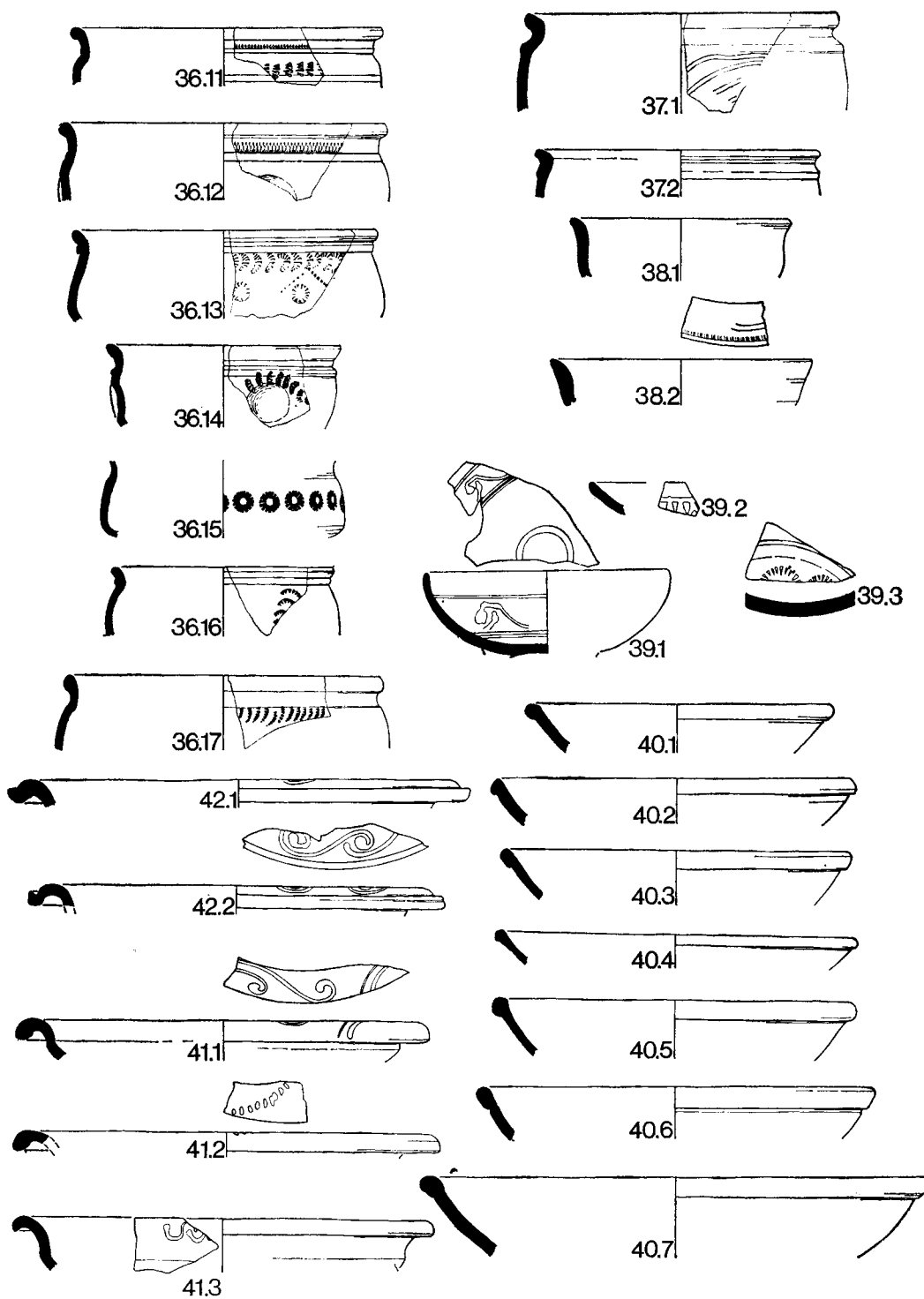


FIG. 176. Pottery types 36-42 (p. 320). Scale $\frac{1}{4}$ (except 39.3, $\frac{1}{2}$)

Type 43: bowl imitating Drag. 38; this is the commonest colour-coated type at Portchester. The decorated types are listed first:

43.8, with a pronounced flange and a mottled orange slip, very like 'marbled' ware but New Forest, fabric 2 (cf. type 47); pits 46 and 144.

43.9, New Forest, fabric 2; half the average size of the majority; pits 144 and 184; AURRS (1); UO (1).

43.10-12, Oxford, fabric 1; with white paint; pits 65 (43.12) and 103; AMU (3); UO (2); u/s (4); total 11.

43.13, New Forest, fabric 2; pit 223; u/s (1).

The rest are plain and occurred:

(a) New Forest, fabric 2; pits (57), (41 (2), 46, 48, 51, 52, 60 (2), 63 (2), 65, 66, 77, 103 (3), 121 (2), 125, 130 (3), 144 (7), 163, 164, 168, 178, 181, 187 (2), 195 (2), 206, 222, 223 (2), 225, 227, 228, 229, 235, 236 (10)).

(b) Oxford, fabric 1; pits (16), (46, 51, 52, 61, 63 (2), 69, 138, 144 (2), 147, 164 (2), 182, 195, 237).

The contexts of the other plain types can best be illustrated by a table:

	New Forest (43.1, 2, 4, 5, 6)	Oxford (43.3)	Pevensey (43.7)	Total
Pits	57	16	0	73
BURRS	5	3	0	8
AURRS	9	11	0	20
BMU	2	2	0	4
AMU	15	12	2	29
LO	4	1	0	5
M. Clay	1	0	0	1
MO	12	0	0	12
Up. Clay	3	1	0	4
UO	16	6	0	22
u/s	83	35	1	119
Total	207	87	3	297

Type 43 as a percentage of each group:

	New Forest	Oxford		New Forest	Oxford
LO/M. Clay	4.76%	0.79%	All groups pre-325	4.76%	0.79%
MO/Up. Clay	2.95%	0.21%	All groups pre-345	3.34%	0.95%
UO	4.37%	2.19%	All groups post-345	2.75%	2.28%

Although both types had a life span of the entire fourth century, the percentages above illustrate the dramatic difference in importance of the Oxford types after 350. The percentage of type 43 in any assemblage does not seem to alter much, though it is possible that the drop in the 325-345 group may be significant. Whether Oxford types were not readily available before 345, or whether the Portchester picture reflects different sorts of purchaser in the general groups is debatable.

Type 44: New Forest, fabric 2; moulded rim and body:

44.1, u/s (1).

44.2, UO (1).

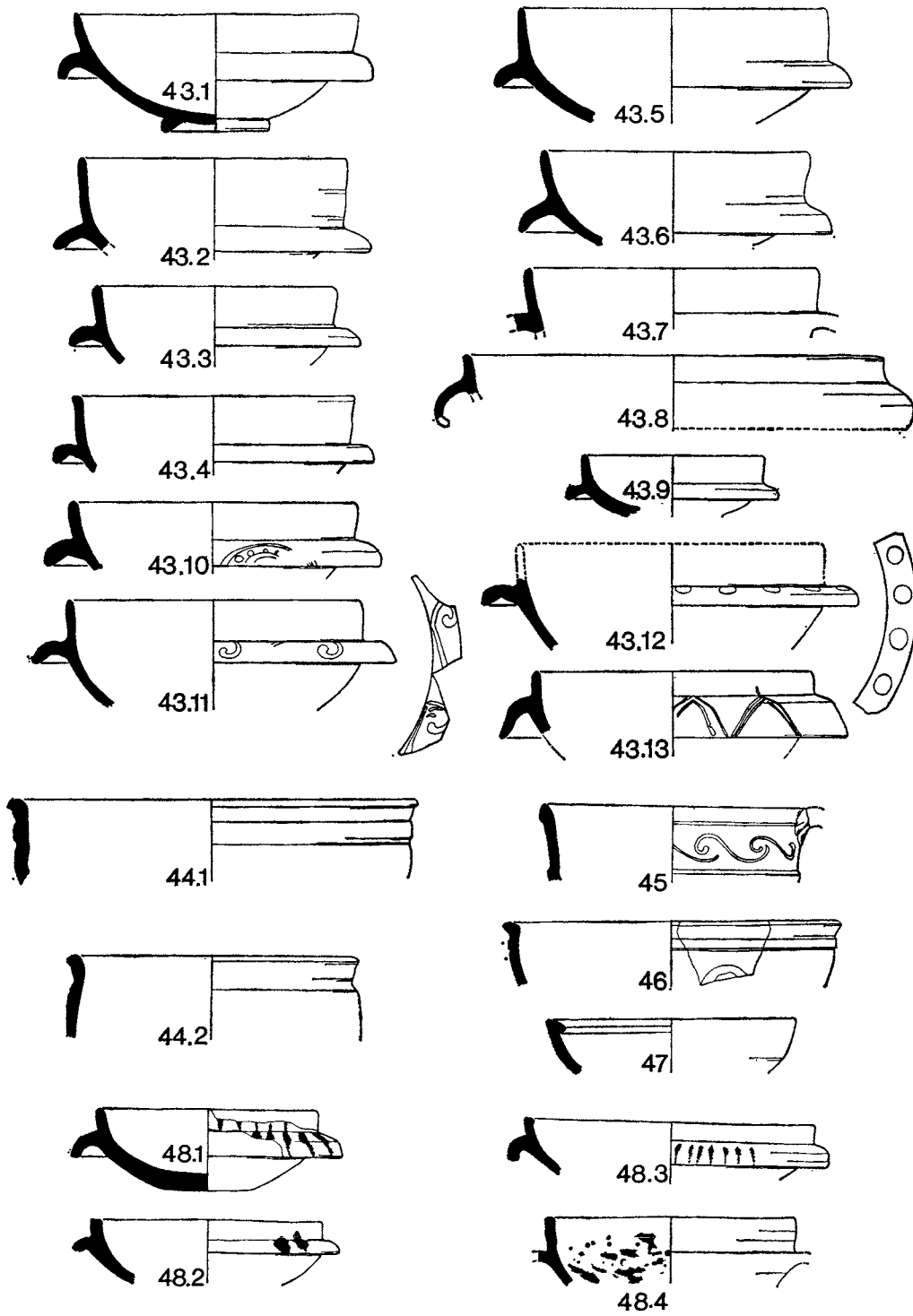


FIG. 177. Pottery types 43-48 (pp. 322-4). Scale $\frac{1}{4}$

- Type 45:** hard, fine, creamy fabric, grey towards the core, covered in a black slip; bowl with cordon and handle; AMU (2); UO (1); u/s (1); either New Forest or Oxford.
- Type 46:** hard, red-brown sandy fabric with a thick grey core and an orange-red, burnished slip; LO (1); source uncertain.
- Type 47:** New Forest, fabric 2; with a glossy orange slip (cf. type 43.8); UO (1).

Bowls (painted)

- Type 48:** flanged bowls, generally with brown paint splashed on the flange:
48.1 and 2, New Forest, fabric 3; pit 236; AMU (1); MO (1); u/s (1).
48.3, New Forest, fabric 3a (cf. type 49.8); u/s (1).
48.4, Oxford, fabric 3, but an unusual form; brown paint on the inside only, to give a mottled effect (cf. 56.2); u/s (1).
- Type 49:** New Forest, fabric 3, except 49.8, which is fabric 3a, like type 48.3; bowls with an internal flange and red-brown paint either on the flange, or in zones beneath it, or in combinations of both. There is no paint externally; pits (14), (48, 63, 77, 79, 95, 187, 223 (2), 225 (2), 230, 236 (3); AURRS (4); AMU (3); LO (1); MO (5); UO (1); u/s (19); total 47.

Type 49 as a percentage of each group:

LO/M. Clay	0.79%	All groups pre-325	0.79%
MO/Up. Clay	1.05%	All groups pre-345	0.79%
UO	0.27%	All groups post-345	0.54%

The date range of this type is long — from pre-325 to post 370-80. The less sandy fabrics, as in Amberwood kiln 3, may be typical of the late examples of this type.

- Type 50:** carinated bowl with moulding on the rim and at the carination; painted decoration can occur in horizontal zones on both the inside and outer surfaces:
50.1, a pale red, sandy fabric with red paint; Oxford; pits 85 and 86 (sherds of the same vessel); u/s (1).
50.2 and 3, fairly fine creamy fabric, grey towards the core, with red-brown paint on a white all-over slip; Oxford, fabric 3; base in pit 236; AURRS (1); u/s (1).
50.4, fine, pale yellow to dirty cream fabric, ? New Forest, fabric 3a; brown paint on an all-over white slip; UO (1). It seems likely that this variant is a New Forest imitation of the basic Oxford type, but the fine parchment fabric is unusual.
- Type 51:** hard, white sandy fabric; brown paint in wave pattern outside; either New Forest or Oxford, unusual form; u/s (1).

Cups

- Type 52:** New Forest, fabric 1:
(a) plain:
52.1 and 2, pits 157 and 223; u/s (1).
(b) furrowed or impressed decoration:
52.3 and 4, pits 85, 92 and 178; u/s (2).
52.5, UO (1).

Dishes

- Type 53:** with a slightly convex profile and a plain rim:
53.1, New Forest, fabric 3; with a thin, glossy black slip; sherds of the same vessel occurred in AMU, MO and UO.
53.2, Oxford, fabric 1, a dull red slip; AMU (1); u/s (1).

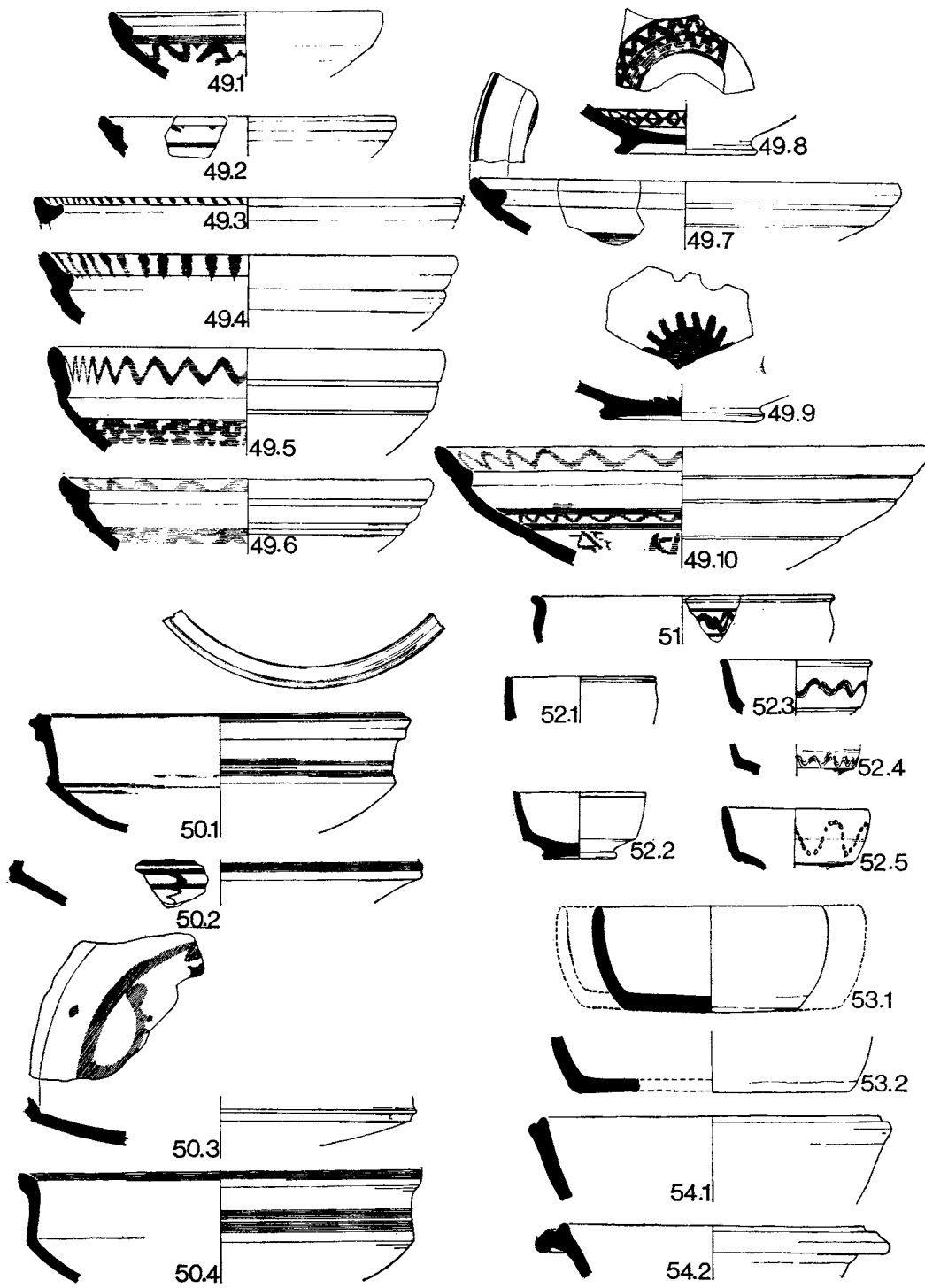


FIG. 178. Pottery types 49-54 (pp. 324-6). Scale $\frac{1}{4}$

- Type 54: dishes or bowls with an everted profile and a slight flange:
 54.1, New Forest, fabric 3; with a black slip; pit 64.
 54.2, hard, fine, brown-yellow fabric, grey at the core, covered with a purple slip; either New Forest or Oxford; u/s (1).

Jars

- Type 55: everted rim jars or bowls; in all cases the slip covers the outside surfaces as well as the upper surface of the rim:
 55.1, fine, light brown fabric with a brown slip; source uncertain; u/s (1).
 55.2, fabric similar to 55.1, but slightly vesicular and slightly glossy finish to the slip; AURRS (1); Up. Clay (1); UO (1); u/s (3).
 55.3, as 55.2.
 55.4, New Forest, fabric 3; with a purple slip; AURRS (1).
 55.5-7, New Forest, fabric 1; slip usually purple, but occasionally brown or red-brown; pit 236; AURRS (1); AMU (1); u/s (2).
 55.8-9, New Forest, fabric 3; with brown or purple slip; pits 103, 187 and 223; BURRS (2); AURRS (1); u/s (2).
 55.10 and 11, New Forest, fabric 1; pit 187; AURRS (1); MO (1); u/s (1).
 55.12, New Forest, fabric 1; red-yellow slip with a blob of white paint outside; UO (1).
 55.13, New Forest, fabric 1; hard-fired with white paint on a purple slip; AURRS (1).
 55.14, fine, cream, sandy fabric with zones of red-brown paint outside; source uncertain; u/s (1).
 55.15, New Forest; fabric 1; yellow-brown slip; u/s (1).
 55.16, New Forest, fabric 3; with a black slip; pit 230.
 55.17, light brown fabric with a grey core and a streaky slip of brown paint below the rim; the uneven surface of the fabric is very reminiscent of Pevensey ware; MO (1); u/s (1).
 55.18, creamy, slightly sandy fabric with a pink core; bands of brown paint; source uncertain; pit 223.
 55.19, hard, white sandy fabric; with circular patterns of brown paint; either New Forest or Oxford; u/s (1).
 55.20, New Forest, fabric 1; swelling on the neck; UO (1).
 55.21, New Forest, fabric 1; purple slip; possibly a jar, but exact type uncertain; AURRS (1).

Type 55 as a percentage of each group:

LO/M. Clay	0	All groups pre-325	0
MO/Up. Clay	0.63%	All groups pre-345	0.79%
UO	0.82%	All groups post-345	0.79%

The New Forest variants divide in to two fabrics, of which the fabric 3 group is clearly the earlier:

	Fabric 1	Fabric 3
MO/Up. Clay	0.16%	MO, etc. 0.32%
UO, etc.	0.47%	UO, etc. 0.13%

In general terms, while a pre-c. 325 starting date is not ruled out for the colour-coated jars, it is clear that the type, whatever the fabric, was current from c. 325-c. 400. The variety of fabrics is interesting.

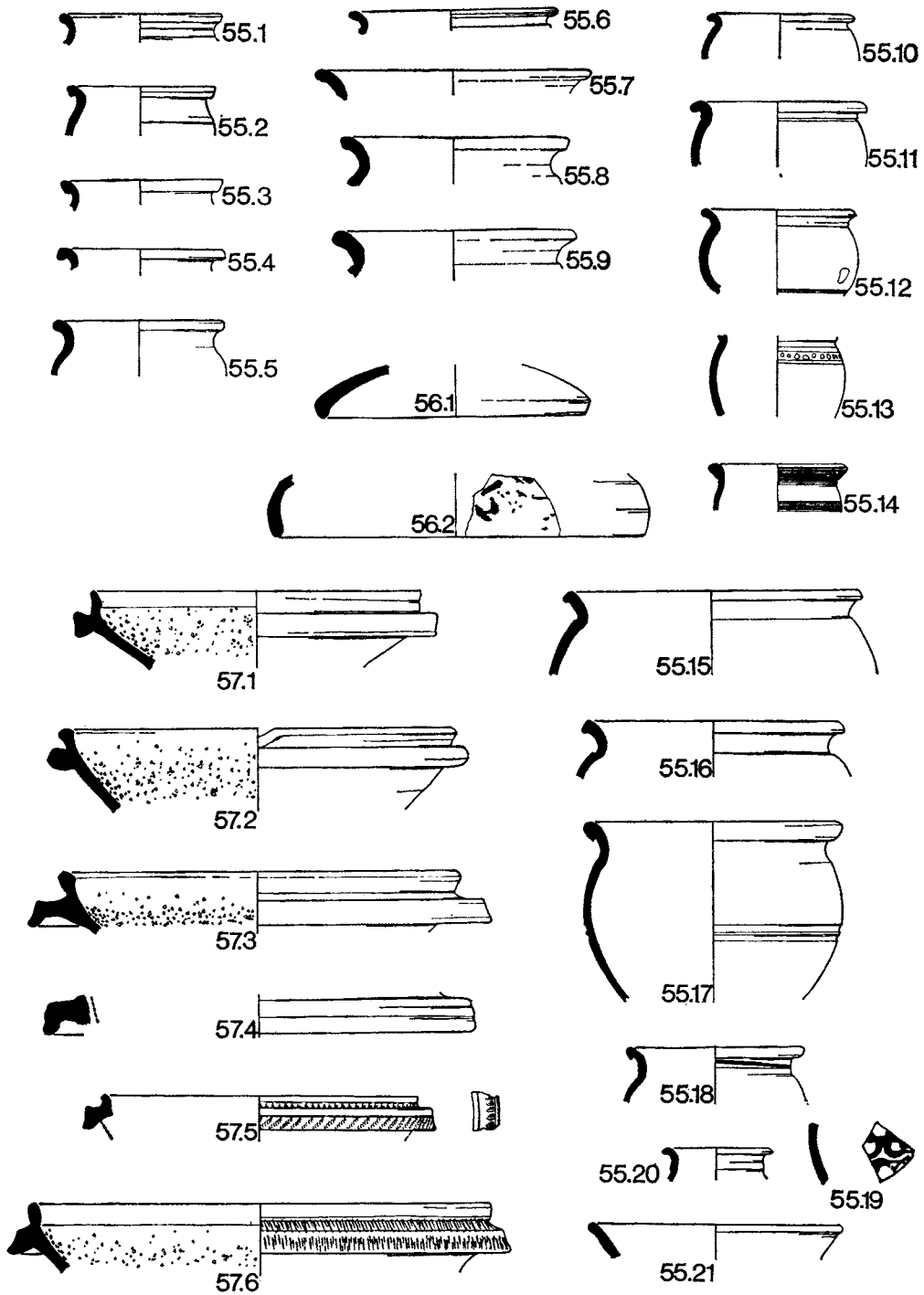


FIG. 179. Pottery types 55-57 (pp. 326-8). Scale $\frac{1}{4}$

Lids

- Type 56: 56.1, New Forest, fabric 3; possibly a lid for type 49; yellow surface, but no trace of paint; u/s (1).
56.2, similar to Oxford, fabric 3; mottled red-brown paint outside; BURRS (1); LO (1); MO (1); UO (1).

Mortaria

- Type 57: flanged, the flange usually being turned down:
57.1, Oxford, fabric 1; with translucent, rounded quartz grits; corresponding red slip; pits (6), (52, 129, 144, 157, 147, 230); BURRS (1); AURRS (2); AMU (6); MO (1); UO (2); u/s (13); total 31.
57.2-4, New Forest, fabric 2; with crushed flint gritting; corresponding reddish-yellow to brown slips; each variant AMU (1); the rest u/s (3).
57.5 and 6, Oxford, fabric 1; with fine 'rouletted' decoration; AMU (1); u/s (1).
Type 57 as a percentage of each group:

MO/Up. Clay	0.21% (Oxford only)	All groups pre-345	0.32%
UO	0.55% (Oxford only)	All groups post-345	0.94%

Although one or two of the Oxford variants from pits may date pre-*c.* 325, it seems clear that this type had not become fully popular until after *c.* 345. None of the New Forest examples date earlier than this.

- Type 58: wall-sided mortaria imitating Drag. 45:
58.1, New Forest, fabric 2, with flint gritting; pits 103, 144 (2) and 206; u/s (1).
58.2 and 3, Oxford, fabric 1, with translucent, rounded quartz grits; pits (21), (46, 63 (2), 65 (2), 86, 92, 103 (2), 119, 121, 125, 130 (2), 144 (4), 147, 182, 187); BURRS (1); AURRS (5); AMU (10); LO (1); MO (4); Up. Clay (2); UO (6); u/s (47); total 97.
58.4, New Forest, fabric 2; crushed flint gritting; UO (1).
58.5, Oxford, fabric 1; painted decoration; pits 61 and 164.
58.6, Oxford, fabric 1; 'rouletted' decoration; AMU (1); u/s (1).
Type 58 as a percentage of each group:

LO/M. Clay	0.79%	All groups pre-325	0.79%
MO/Up. Clay	1.27%	All groups pre-345	1.11%
UO	1.91% (New Forest and Oxford)	All groups post-345	1.55%
		(New Forest and Oxford)	

The length of popularity of this type is great and it spans all the fourth century. The possibility of comparative decline post-345 may merely reflect the growing numbers of type 57. At the moment there is no indication as to when this type became residual.

- Type 59: Oxford, fabric 1; imitating Drag. 45, as type 58, but unusually large:
59.1, sherds of same vessel in pits 87 and 94.
59.2, u/s (1).
- Type 60: New Forest, fabric 3a; traces of a yellow wash; no grits visible; AMU (1).
- Type 61: New Forest, fabric 2; imitating Drag. 44; MO (1).
- Type 62: New Forest, fabric 3a; with traces of a reddish-brown slip; furrowed, wavy line decoration with stab (pointed) impressions; u/s (1).

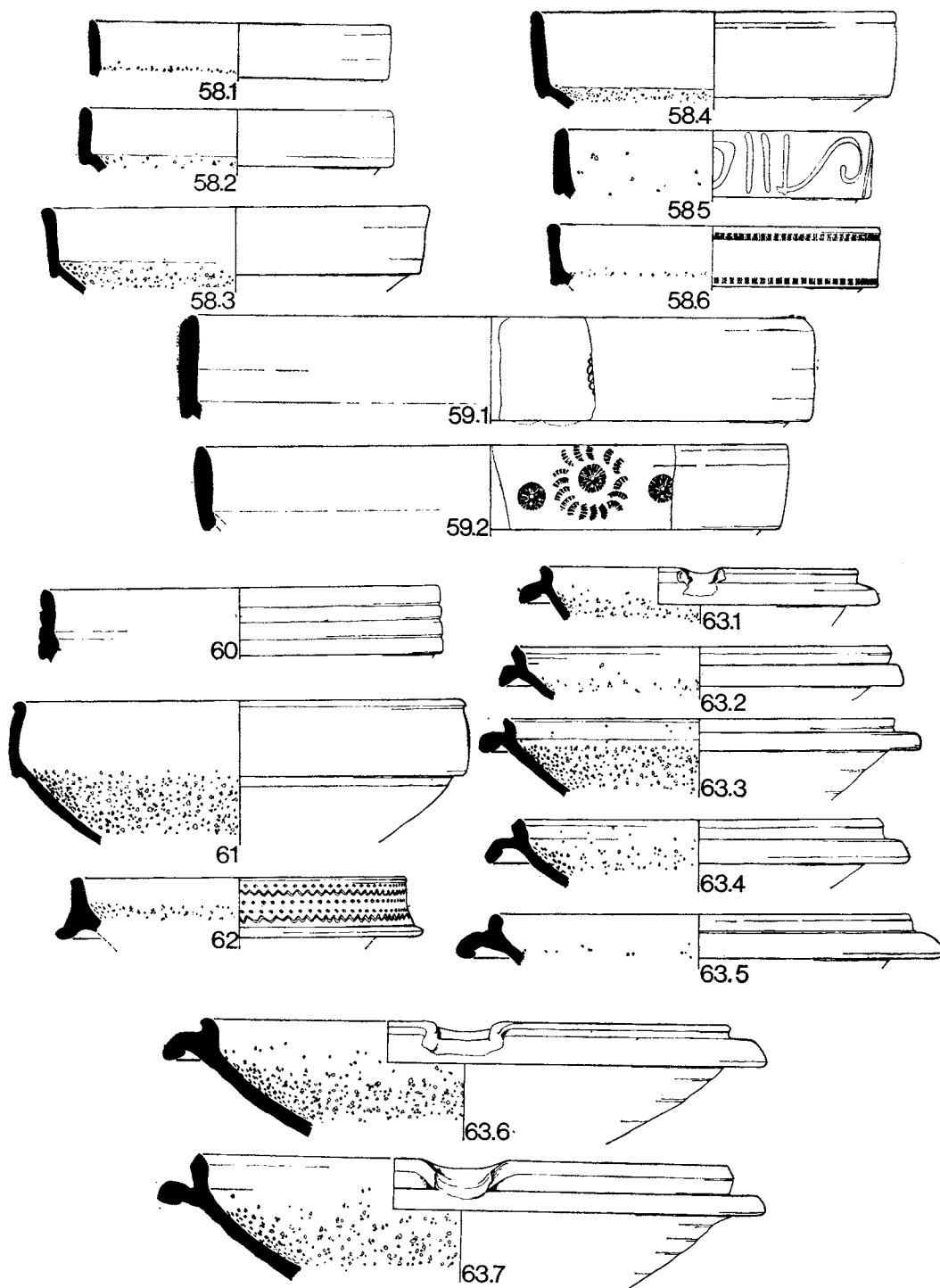


FIG. 180. Pottery types 58-63 (pp. 328-30). Scale $\frac{1}{4}$

Mortaria — plain

- Type 63: Oxford, fabric 3, except 63.4, which is like fabric 1 — a fine, hard red ware with a grey core, but a white rather than a red slip. Among the others a thin orange or red-brown wash is common. As with the other Oxford mortaria, they all have translucent, rounded, quartz grits. Pits (12), (40, 46 (2), 54, 61, 103, 121, 130, 147, 226, 227, 236); BURRS (2); AURRS (5); AMU (4); MO (5); UO (4); u/s (15); total 47.
63.4, pits 103, 129 and 187; AMU (3); MO (1); UO (3); u/s (4); total 14.
Type 63 as a percentage of each group:

MO/Up. Clay	1.27%	All groups pre-345	1.27%
UO	1.91%	All groups post-345	1.28%

The pit evidence as well as rimless sherds in layers against the wall suggests that this type was occurring from the beginning of occupation at Portchester, and at the moment there is not enough evidence to try to look for subtle variation with time, within the type.

- Type 64: New Forest, fabric 3, except 64.4, which is fabric 3a, with a yellow-brown surface. Decoration of horizontal rilling on the flange. The grits of this and all the following New Forest types are of crushed flint. Pits (6), (86, 95, 130, 222, 236 (2)); AURRS (2); AMU (1); MO (2); UO (2); u/s (6); total 19.
- Type 65: New Forest, fabric 3; these are classed together as they have horizontal or near horizontal flanges. BURRS (1); AMU (2); MO (2) (one of these with a join in UO); UO (1); u/s (3); total 9.
- Type 66: New Forest, fabric 3; these are classed together as they have angled flanges with two possible facets for decoration. The latter can consist of either furrowed, wavy lines made by a single or multiple pointed instrument, or of stab marks similarly caused, or of combinations of both varieties. Pits (8), (63, 121, 130, 144, 185, 195, 227, 236); AURRS (1); AMU (1); LO (1), (with a joining sherd in MO); MO (4); UO (1); u/s (12); total 28.
- Type 67: New Forest, fabric 3; distinguished by size from the others; pit 85; MO (1).
Types 64-67 as a percentage of each group:

LO/M. Clay	0.79%	All groups pre-325	0.79%
MO/Up. Clay	1.9%	All groups 325-345	1.6%
UO	1.09%	All groups post-345	0.74%

Types 64-67 have been taken together because in terms of fabric and basic form they can be considered as one, with minor variation in decoration between each type. While some at least were being deposited before 325, the peak of popularity seems to lie *c.* 325-*c.* 345. Pressure from the Oxford kilns seems to have an effect after 345, and it is possible that production ceased by *c.* 370. This type is not present in the late kilns at Amberwood (Fulford, 1973a).

- Type 68: very sandy brown fabric, grey on the surface of 68.2; rounded quartz grits; source unknown. 68.1, furrowed, wavy decoration; LO (1).
68.2, stab/slash marks; u/s (1).
- Type 69: fabric D; pale red, vesicular with a grey core and a yellow surface; rounded quartz grits; pit 47.
- Type 70: hard, fine, white fabric with brown paint outside; large, black, angular grits; Hartshill/Mancetter; u/s (1).

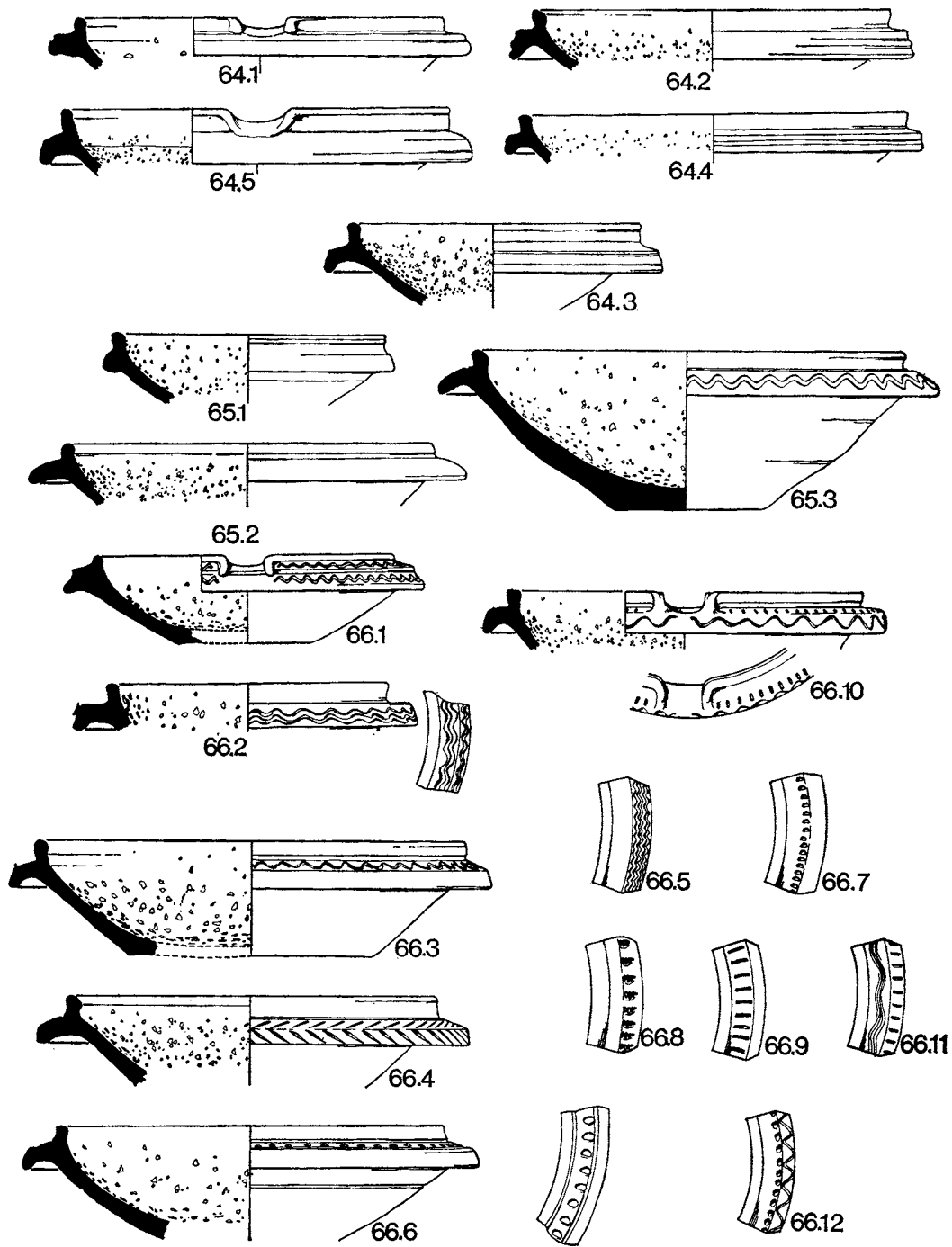


FIG. 181. Pottery types 64-66 (p. 330). Scale $\frac{1}{4}$

- Type 71: hard, dirty cream, slightly vesicular fabric with a grey core and a cream–yellow surface; flint grits; u/s (1). K. Hartley kindly supplied the following note: ‘the fabric and form can be matched fairly closely with Fishbourne Type 294 (Cunliffe, 1971); a source in southern England is likely. There is a fragmentary impression of an ansate stamp on the collar. Ansate stamps are rare. Probable date of manufacture *c.* 160–*c.* 200.’
- Type 72: hard, brown, sandy fabric with a grey core and a brown surface; small, rounded quartz grits; second/third century type; u/s (1).
- Type 73: bright red, sandy fabric with a burnished red-brown slip and large quartz grits; AURRS (1). Of all the mortaria, there are only 6 whose source is uncertain.

The Grey Wares and Miscellaneous

Amphorae

- Type 74: hard, pale red fabric with a cream to brown surface, micaceous; Spanish type; two rim sherds, possibly of the same vessel, AURRS (1); u/s (1). Two body sherds in similar fabric to the others from pit 70; u/s (1). Dr D. P. S. Peacock suggests a date no later than 250/60 for this type, and so the amphora (all the sherds could have come from the same vessel) was probably enjoying a use secondary to that for which it was intended when it came to Portchester. Total weight of these sherds: 850 g.

Beakers

- Type 75: narrow mouthed beaker with globular body:
- 75.1, hard grey, granulated fabric; hand-made; burnished outside and inside the rim; pit 90.
- 75.2, fine, grey sandy fabric; stroke-scored decoration on the body; silvery grey slip outside and traces inside, below the rim; pit 103.
- 75.3, fine, grey sandy fabric; a silvery grey slip, burnished on the rim outside; u/s (2).
- 75.4, fine, grey sandy fabric; all over white slip; burnished; u/s (1).
- Type 76: with tall neck and globular body:
- 76.1, fine, grey sandy fabric; a silvery grey slip outside and on the rim, with light vertical burnishing on the neck; pits (5), (40, 63, 144, 209, 236); AURRS (1); AMU (1); u/s (3); total 10.
- 76.2, fine, grey sandy fabric; traces of a grey slip outside and on the rim; pit 121; MO (1); Up. Clay (2); u/s (2).
- 76.3, a hard, light grey, somewhat granular fabric; no slip, but burnished outside and on the upper surface of the rim; AURRS (1).
- 76.4, a red–brown, sandy fabric with a grey core and haematite/limonite inclusions; a black, well-burnished slip outside; hand-made, with traces of luting inside; MO (1); UO (1).
- 76.5, hard grey sandy; traces of burnishing outside; UO (1).
- 76.6, fabric B; burnished surface with vertical strokes on the neck and horizontal zones on the body; the body and neck joint clearly visible inside; M. Clay (1).
- Summary (see type 77):
Pits (6); AURRS (2); AMU (1); M. Clay (1); MO (2); Up. Clay (2); UO (2); u/s (5).
- Type 77: as type 76, but the body is decorated with panels of incised patterns, scored with a blunt-nosed instrument; opposed diagonals between pairs of verticals is the commonest variety; apart from 77.1, only body sherds are known of this type. It is quite probable that the rims of type 76.1 and 2 belong to these sherds, (cf. types 80 and 92). Fine, grey sandy fabric with

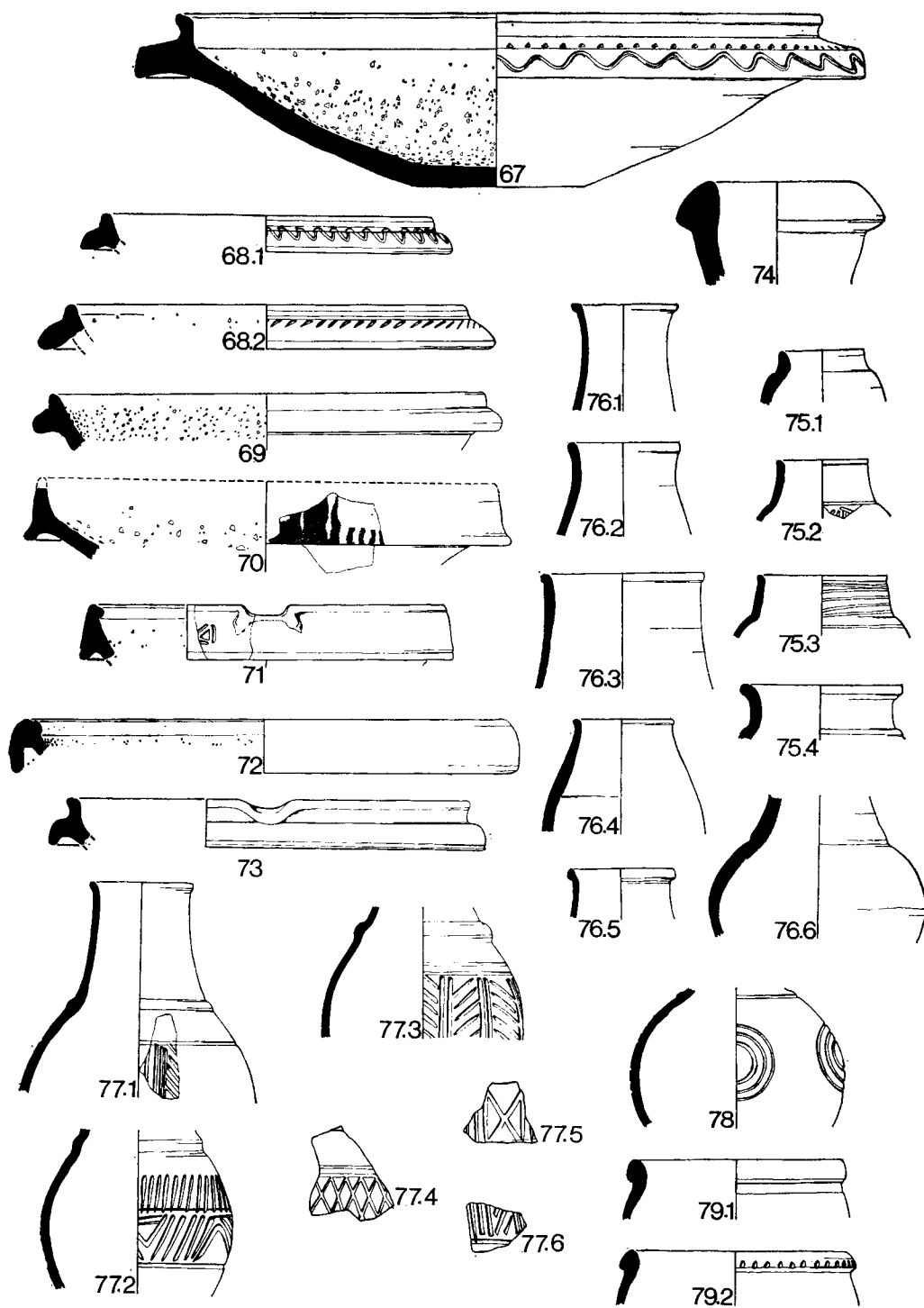


FIG. 182. Pottery types 67-79 (pp. 330-4). Scale $\frac{1}{4}$

EXCAVATIONS AT PORTCHESTER CASTLE

either a white or black slip. Probably New Forest, although not known yet from kilns there. The technique of the decoration compares with that used on New Forest bottles, beakers, mortaria (see this report) and the distribution of known examples circumscribes the New Forest area (e.g. at Rockbourne, Sparsholt (type 92), Winchester).

77.1, burnished body and neck, where decoration is absent. This seems to be typical of all the sherds, when enough survives.

Apart from 77.3; pit 164; and 77.4; MO (1); and 77.5; pit 121, all the illustrated examples were unstratified; similar pieces occurred in: pits (7), (60, 63, 206, 223, 227, 230, 236); AURRS (2); AMU (3); LO (1); MO (1); u/s (10); total 24.

Type 78: dark grey sandy fabric; probably from a beaker; incised circular decoration; horizontal wheel burnishing; cf. types 2/10.20-25 and 20. Probably a New Forest type. Joining sherds from pit 229 and MO.

Types 76-78: Comparison of the frequency of occurrence of each type and then of all the beakers together:

	Type 76	Type 77	Type 78	Types 76-8
LO/M. Clay	0.79%	0.79%	0	1.58%
MO/Up. Clay	0.84%	0.42%	0.21%	1.47%
UO	0.55%	0	0	0.55%

As a percentage of all groups:

(a) pre-325	0.79%	0.79%	0	1.58%
(b) c. 325-c. 345	0.64%	0.32%	0.16%	1.12%
(c) post-345	0.34%	0.34%	0	0.68%

From both the pit evidence and the layers against the wall, it seems that grey ware beakers were current before c. 325-45 and that they were probably out of production before c. 370. Even the decorated types seem to be at the peak of popularity before c. 345 (cf. type 92), and can, perhaps, be paralleled with the colour-coated New Forest equivalents using this decorative technique, both in terms of style and date.

Bowls

Type 79: bowl with bead rim:

79.1, a grey, granular fabric with a burnished outer surface; AMU (1).

79.2, fine, grey sandy fabric; silvery grey slip outside and inside the rim; 'notch' or fingernail decoration; u/s (1).

Type 80: bowl with bead rim:

80.1, fine, grey sandy fabric; black slip outside and inside the rim; burnished and scored decoration (cf. types 77 and 92); UO (1).

80.2, fine, grey sandy fabric; white slip with traces of lightly scored burnish strokes on the body; pit 144.

Type 81: bowl with simple rim:

hard, orange-brown, sandy fabric with a grey core; deeply scored cross on a burnished orange outer surface; AURRS (1).

Type 82: bowl with everted rim:

orange sandy fabric with a burnished orange surface (cf. type 81); pit 164

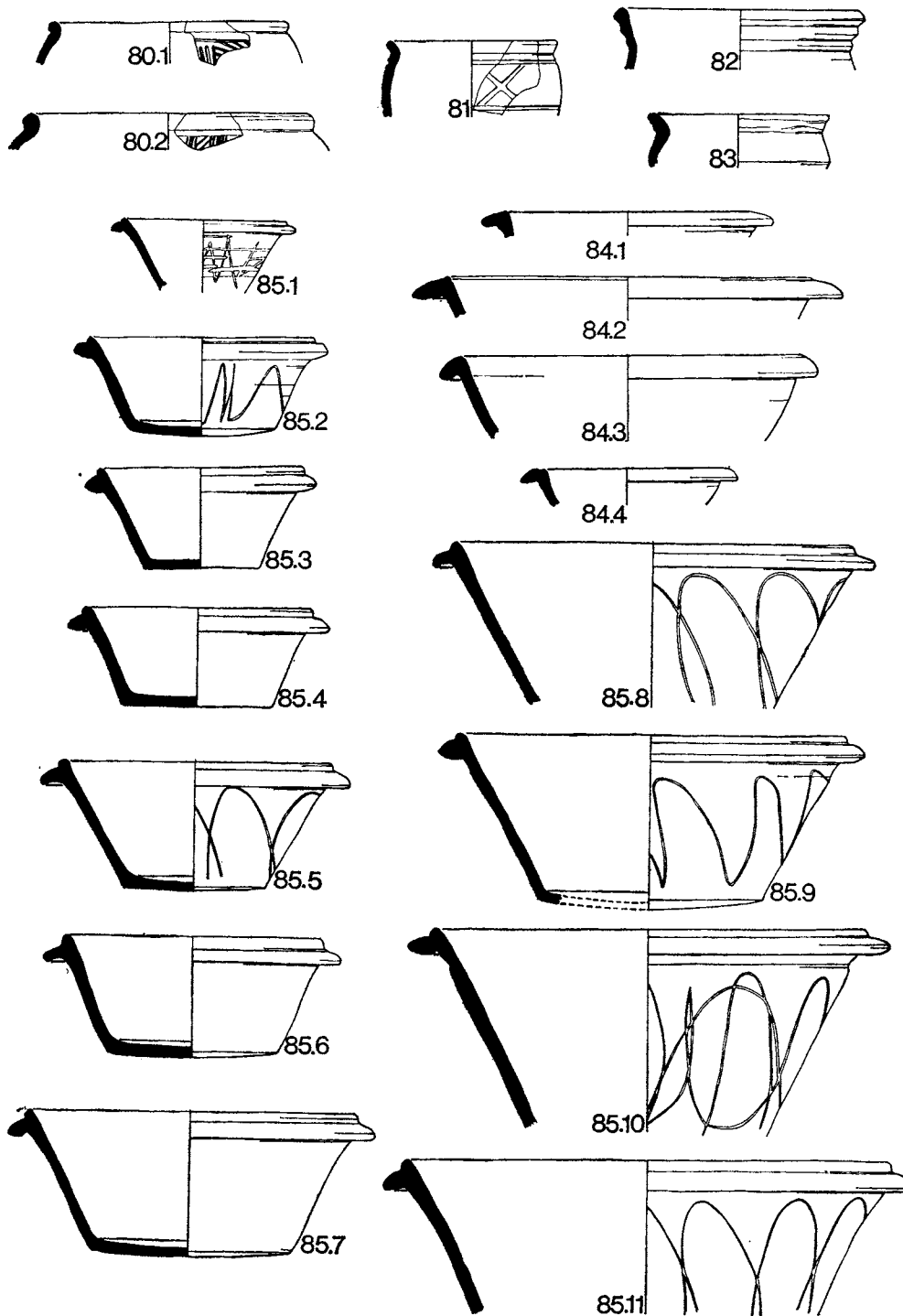


FIG. 183. Pottery types 80-85 (pp. 334-6). Scale $\frac{1}{4}$

- Type 83: carinated bowl:
grey to brown sandy fabric with a black surface and traces of a white slip; u/s (2). Possibly a first/second-century type.
- Type 84: bowl with flange at the rim:
84.1, fine, grey sandy fabric; grey slip, burnished outside; pit 61.
84.2, pale grey to white sandy fabric with upper surface of the flange burnished; u/s (1).
84.3, hand-made, fabric A; very micaceous; burnished on all surfaces; AMU (1).
84.4, fine, grey sandy fabric with an orange surface; no traces of a slip; cf. 88.6; pit 138.
- Type 85: bowl with flange and bead; pie-dish:

In form it is impossible to distinguish between those bowls hand-made in the black-burnished fabric (B) and those wheel-made in grey, sandy fabrics. Thus, though from at least two — and very probably many more — sources, they will all be considered as one type. Bowls in fabric B are type 85.4, 6–8 and 11. Generally the inside, and sometimes some of the outside, is covered in a black, or, very rarely, a white slip; the inside is burnished smooth as well as the top surface of the flange, while outside are burnished running loops and arcades, where they have not been rubbed away; these can occur on the base also. The grey-ware bowls have a fine, sandy fabric, sometimes with a grey core, and are invariably covered in a black or a silvery grey slip. As with the black-burnished vessels, the slip is generally on the flange and inside, but not commonly over the whole bowl, and it is similarly well burnished inside and on the flange, while only arcading decorates the outer wall surfaces. Sometimes on the inside of the base there are traces of slightly deeper scored burnishing in parallel lines. Type 85.1–3, 5 and 9–10 are in this fabric.

Fabric B bowls occurred as follows:

Pits (119), (40, 41, 46 (7), 47 (2), 48 (4), 49 (2), 52 (2), 54 (4), 60 (2), 62, 63 (5), 66, 79, 83, 85 (3), 86, 95 (5), 103 (5), 119, 121 (9), 125, 129, 130 (3), 142, 144 (8), 155, 157, 163, 164 (3), 178, 182, 185, 186 (2), 187 (3), 195, 201 (3), 206 (4), 209, 222 (2), 223 (2), 224, 225, 227 (2), 230, 236 (15)); BURRS (6); AURRS (34); BMU (2); AMU (41); LO (4); MO (13); Up. Clay (6); UO (20); u/s (116); total 361.

Grey fabrics occurred as follows:

Pits (61), (46, 47 (2), 48 (2), 52 (2), 54, 60, 63 (3), 64 (2), 79, 86 (3), 103 (5), 121 (2), 125, 138, 142, 144 (2), 157 (2), 163, 168, 182, 184, 185, 186, 187 (6), 195 (2), 206, 222, 223 (3), 224, 228, 229, 230 (2), 234, 235, 236 (3)); BURRS (4); AURRS (10); AMU (10); LO (6); M. Clay (2); MO (26); Up. Clay (8); UO (9); u/s (104); total 240.

The frequency of rims to diameter is shown in fig. 163. Although no account can be taken of possible different depths of a bowl for any one diameter, it is felt that the measurement of rim diameters does give some idea of standardization and what the potters were aiming at. Fig. 164 also shows how the three main fabric groups relate and compare with one another through time. Rim sherd count shows how close fabrics A (type 86) and B are in terms of possible numbers of this form of vessel, although the weight comparison, ignoring type variation, tends towards greater amounts of fabric A (cf. fig. 158). This is not surprising in view of the thick and clumsy shape of the grog-tempered vessels.

- Type 86: flange-bowl, as type 85:
The main distinguishing feature of this type is the crudeness with which it was made. Like fabric B bowls they are hand-made, but there is no attempt to produce an even thickness in the vessel wall or a standard profile. Some have straight sides, while others have rounded, sagging profiles; the flange varies enormously in length and thickness. In each group, whether early or late, there is a variety in finish and it is not possible, at the moment, to

distinguish between early and late examples. A small selection is offered to illustrate the range.

The fabric is a fairly soft, slightly granular, heavily 'grog'-tempered ware. Occasionally shell and flint occur, but the red and grey round (0.5-1 mm.) 'grog' inclusions are ubiquitous in a dark brown to black matrix.

Decoration consists of stroke-burnish lattice, vertical and zig-zag patterns on a totally burnished surface. Presumably this is trying to imitate the true 'black-burnished' finish, but, owing to the general uneven surface, patterns of arcading, for example, are not easily executed.

86.6 does not belong to this fabric group. Although it is hand-made, the fabric is a coarse sanded ware, black on the surface. Except the outer wall all parts are burnished regularly. On the outer wall there are diagonal strokes under a broad, burnished zone. Occurred LO (1). Hand-made, fabric A occurred in: pits (89), (40 (5), 41 (2), 46 (3), 47 (2), 48 (3) 54, 60 (2), 62 (2), 63 (3), 64, 65 (2), 66, 69, 77, 79, 92, 95 (2), 103 (7), 121 (3), 122, 125 (2), 129, 130 (4), 144 (7), 147, 164 (2), 166, 168, 184, 185, 187 (2), 201 (2), 206 (2), 222, 223 (2), 234, 235, 236 (12), 237); BURRS (8); AURRS (28); BMU (1); AMU (30); LO (7); M. Clay (1); MO (30); Up. Clay (4); UO (15); u/s (98); total 311.

It is interesting to notice that this figure, which is a purely hypothetical reflection of the original number of bowls, because it is based on a count of rim sherds, suggests that there were less than the 'black-burnished' type 85 (fig. 164). Weight analysis suggested that the opposite might be the case, but it probably reflects the greater weight per vessel in the 'grog'-tempered fabric (cf. fig. 158).

On fig. 163, there are histograms to show the frequency of the varying rim diameters. It is interesting to see how well they fall in to the pattern of other bowls of this type and how, in particular, the preferred size is 150/160 mm. This suggests that, far from being a rough and ready peasant type, the potters were making them to a demand which fits in to the pattern of the conventional material, i.e. black-burnished and the grey fabrics.

Type 87: flanged bowl; as type 85:

Besides the main fabrics in this type, already listed, there were a considerable number of flanged bowls in different fabrics and with slight differences in form.

87.1, fine, grey sandy fabric, covered all over in a silvery grey slip; inside, the surfaces have been stroke-burnished in a random fashion below a zone of total burnishing; outside, the flange is burnished and there is intermittent burnishing on the body. This is similar to the grey ware type 85, but the difference in slip and the squat flange have taken it out of type 85. Pit 129; others in AURRS (2); AMU (3); UO (2); u/s (8); total 16.

87.2, fabric D; pits 52, 54 and 170; BURRS (1); AURRS (1); AMU (1); UO (1); u/s (6); total 13. This type probably dates from *c.* 325-*c.* 400.

87.3, with a low under-cut flange; fabric fine, grey sandy with an all-over white slip; inside and the upper surface of the flange are burnished; pit 60; u/s (1).

87.4, a very coarse, grey sandy fabric; burnished inside and on the flange; u/s (1).

87.5, a pale grey, coarse sandy fabric, burnished inside and on the flange; no slip; UO (1); u/s (2).

87.6, fabric as for 87.5; no slip and wheel-burnishing marks inside and on the flange, and intermittently outside; pit 147; others u/s (3).

87.7, a micaceous, fine, grey sandy fabric with a grey slip inside; the distinctive characteristic of this type is the reeding on the top of the rim. This example from pit 94; others from AURRS (1); u/s (2). Fig. 164 shows the differing proportions of each of the main fabric

EXCAVATIONS AT PORTCHESTER CASTLE

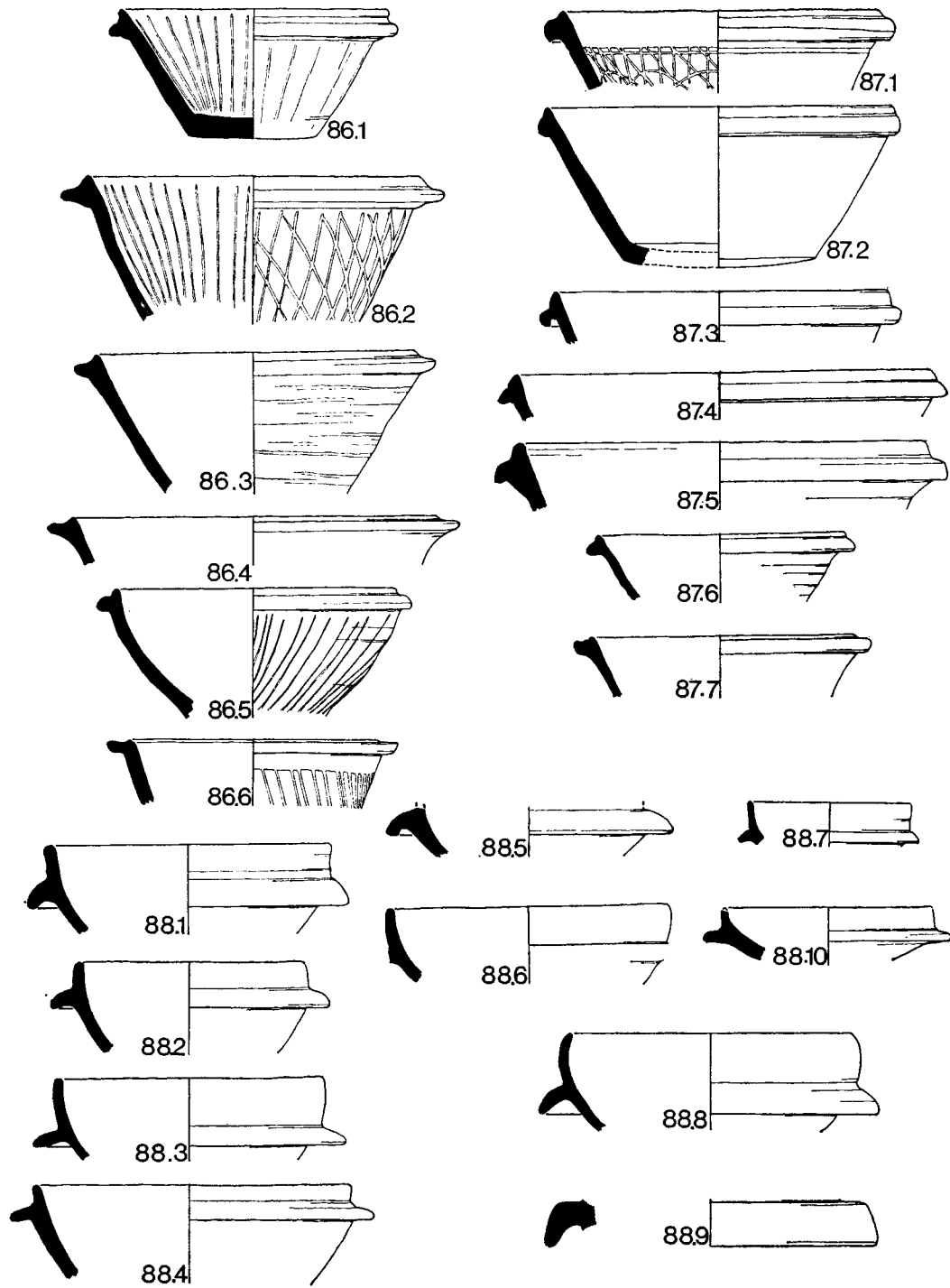


FIG. 184. Pottery types 86-88 (pp. 336-9). Scale $\frac{1}{4}$

groups in this type. The apparent displacement of the grey fabrics by the black-burnished is interesting especially as, in terms of fabric weight, the latter seems to decline in importance after *c.* 345 (cf. fig. 158).

Flange bowls as a proportion of the assemblage remain fairly constant throughout:

pre-325	15.9%	<i>c.</i> 325-345	17.3%	post-345	14.0%
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- Type 88: bowl with large flange projecting from the middle of the wall:
 88.1, coarse, grey, sandy, burnished inside and above the flange outside; u/s (2).
 88.2, black-burnished(fabric B); AMU (1).
 88.3, medium coarse, pale grey sandy fabric with an all-over black slip, burnished inside and above the flange outside; u/s (1).
 88.4, hand-made, fabric A; yellow-brown surface; probably an extreme variant of type 86; LO (1); UO (1).
 88.5, fine red-brown fabric on a grey core, with traces of a burnished surface all over (cf. type 84.4); u/s (1).
 88.6, very coarse grey sandy with a brick red, worn surface; traces of burnishing; u/s (1).
 88.7, soft, yellow-brown, slightly sandy fabric with traces of a burnished, brown slip on all surfaces; u/s (1).
 88.8, New Forest, fabric 2; no slip, but a burnished yellow-red surface; pit 182; AURRS (1); u/s (2).
 88.9, hard, granular, reddish-orange sandy fabric with a dark red burnished slip; possibly a mortarium, but no trace of grits; AURRS (ill.); AMU (1); similar in pit 187.
 88.10, New Forest, fabric 2; no slip, but burnished pale yellow surface; pit 69.
- Type 89: bowl with inturned rim:
 89.1, fine, grey sandy with traces of a white slip on the flange and possibly burnishing also; u/s (2); probably New Forest.
 89.2, brown to grey sandy fabric with a black slip all over; u/s (1).
 89.3, fabric D; u/s (1).
 89.4, fine, grey sandy fabric with a black slip, burnished outside; AURRS (1).
- Type 90: bowl with thickened and moulded rim:
 90.1, coarse, grey sandy fabric with a thick, black slip; u/s (1).
 90.2, dark grey, micaceous sandy fabric; u/s (3). Probably New Forest types, cf. Amberwood, kiln 1 (Fulford, 1973.)
- Type 91: ? small bowl with reeded outer surfaces:
 coarse, grey sandy fabric with a white slip inside, probably burnished; AMU (1).
- Type 92: two-handled bowl, probably with a pedestal foot:
 fine, grey sandy fabric with a silvery grey slip outside and inside the rim; decoration consists of scored lattices, or zones of diagonal patterns over the outside. A round-nosed instrument has been used, possibly the same as the general burnishing tool (cf. types 77 and 80); pits (5), (47, 48, 61, 234, 236); AURRS (1); AMU (1); UO (1); u/s (9); total 16; both rims and distinctive body sherds were recorded. Although there were no examples stratified against the wall before *c.* 345, all the pits, except 236 were filled by then, if not much earlier. So the date range is likely to be the same as for type 77 (see under type 78), *c.* 325/30-70.
- Type 93: bowls with turned out rim:
 93.1, hand-made, fabric A, grey surface; burnished inside and on the upper surface of the rim; AURRS (3).

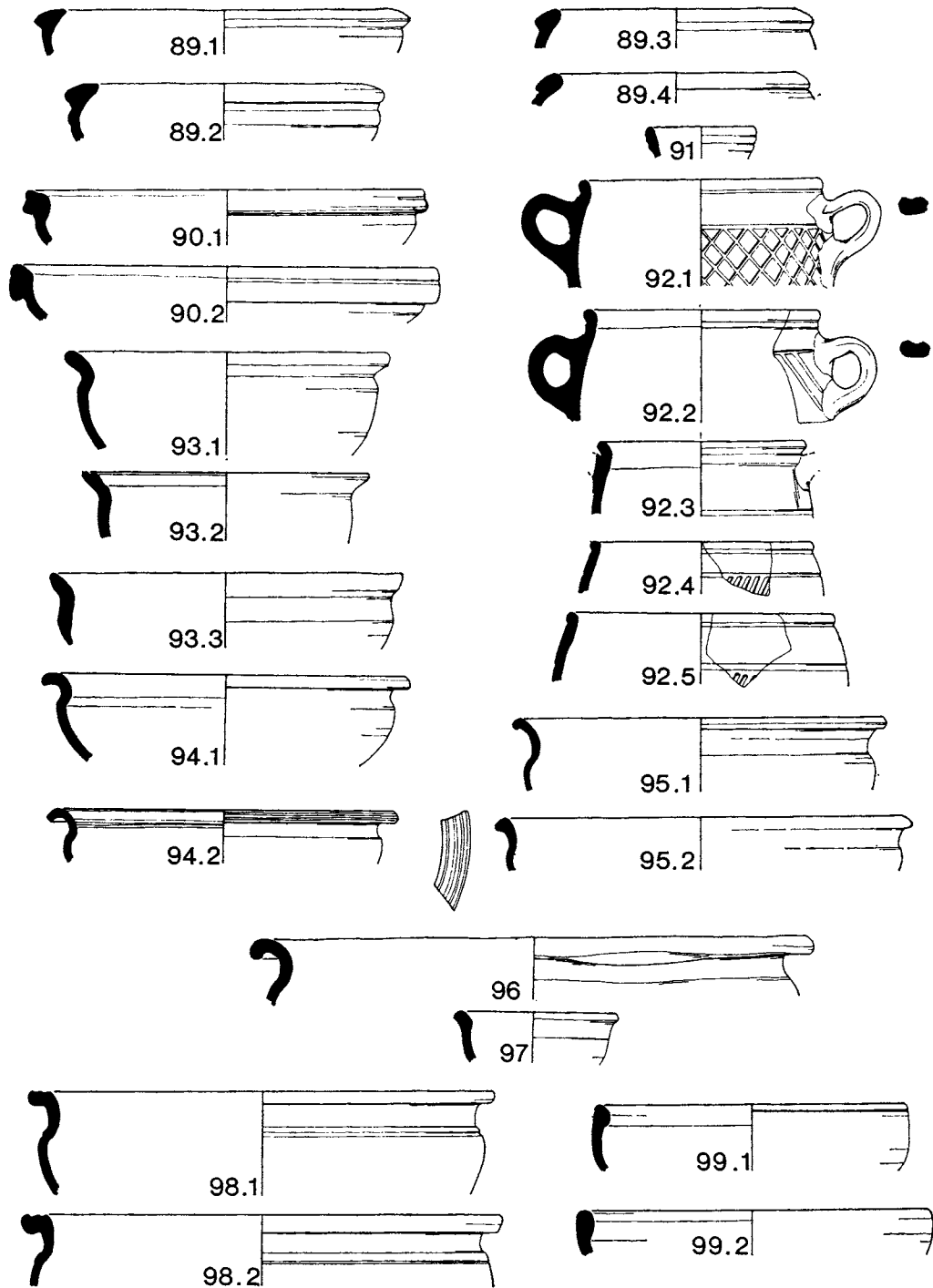


FIG. 185. Pottery types 89-99 (pp. 339-41). Scale $\frac{1}{4}$

93. 2, pale, red-brown sandy fabric with a pink to white slip all over; grooving on the rim; u/s (1).
93. 3, coarse, grey sandy; probably hand-made, or finished on a slow wheel; burnished upper surface of the rim; u/s (1).
- Type 94: bowls with rolled out rims; the complete form may be a colander, but there was no firm evidence:
dark grey, sandy fabric, slightly micaceous, occasionally with haematite/limonite grains visible:
94. 1, with a black slip, which is burnished in bands outside and all over the upper surface of the rim.
94. 2, apparently no slip, but has clearly been burnished on the upper surface of the body; these and similar occurred in: pits (5), (47, 121, 125, 223, 236); AURRS (1); AMU (1); MO (2); Up. Clay (1, with a join in UO), UO (1); u/s (4); total 15.
- Type 95: wide-mouthed bowl or jar, turned out rim:
95. 1, hard, pale yellow-brown, slightly micaceous fabric; similar coloured surface (cf. type 144); Severn Valley; u/s (1).
95. 2, New Forest, fabric 2; no trace of slip; pit 94.
- Type 96: hard, dark grey, coarse sandy fabric; no slip; pit 187.
- Type 97: small bowl with thickened, out-bent rim:
hard, granular, grey sandy fabric with a pale cream slip outside and on the upper surface of the rim; possibly fabric D; pits 51 and 69.
- Type 98: large bowl with out-bent and reeded rim;
fine, dark grey sandy fabric:
98. 1, with an all over white slip; pit 103.
98. 2, apparently no slip, but quite worn; traces of burnishing on the body and rim; pits 83, 130, 195, 225; AMU (1); MO (2); u/s (6); total 13.
- Type 99: bowl with a thickened rim internally:
99. 1, hard, yellow sandy fabric; Gose (1950), form 489; u/s (1) (Fulford and Bird, forthcoming).
99. 2, reddish-brown, sandy fabric with traces of burnishing outside; u/s (1).
- Type 100: bowl with thickened rim, slightly out-bent:
100. 1, hand-made, fabric A; burnished on all surfaces; AMU (1).
100. 2, fine, hard grey sandy fabric with a black slip outside (upper half only) and inside the rim; MO (1).
100. 3, coarse, grey sandy fabric with a brown surface; hand-made; white slip outside and on the inside of the rim; AMU (1).
- Type 101: bowl with folded out rim:
coarse, grey sandy fabric; hand-made; traces of stroke-burnishing inside; BURRS (1); AMU (2); possibly all one vessel.
- Type 102: bowl, base only; black-burnished fabric B; stab decoration on the carination with triple pointed instrument; u/s (1).
- Type 103: wide-mouthed bowl with thick, out-bent rim:
103. 1, fine, grey sandy, somewhat micaceous; burnished slip inside; pits 144 (2), 164, 206; BURRS (1); AMU (4); LO (1); u/s (3); total 13.
103. 2, pale grey sandy with a light grey surface; UO (1).

EXCAVATIONS AT PORTCHESTER CASTLE

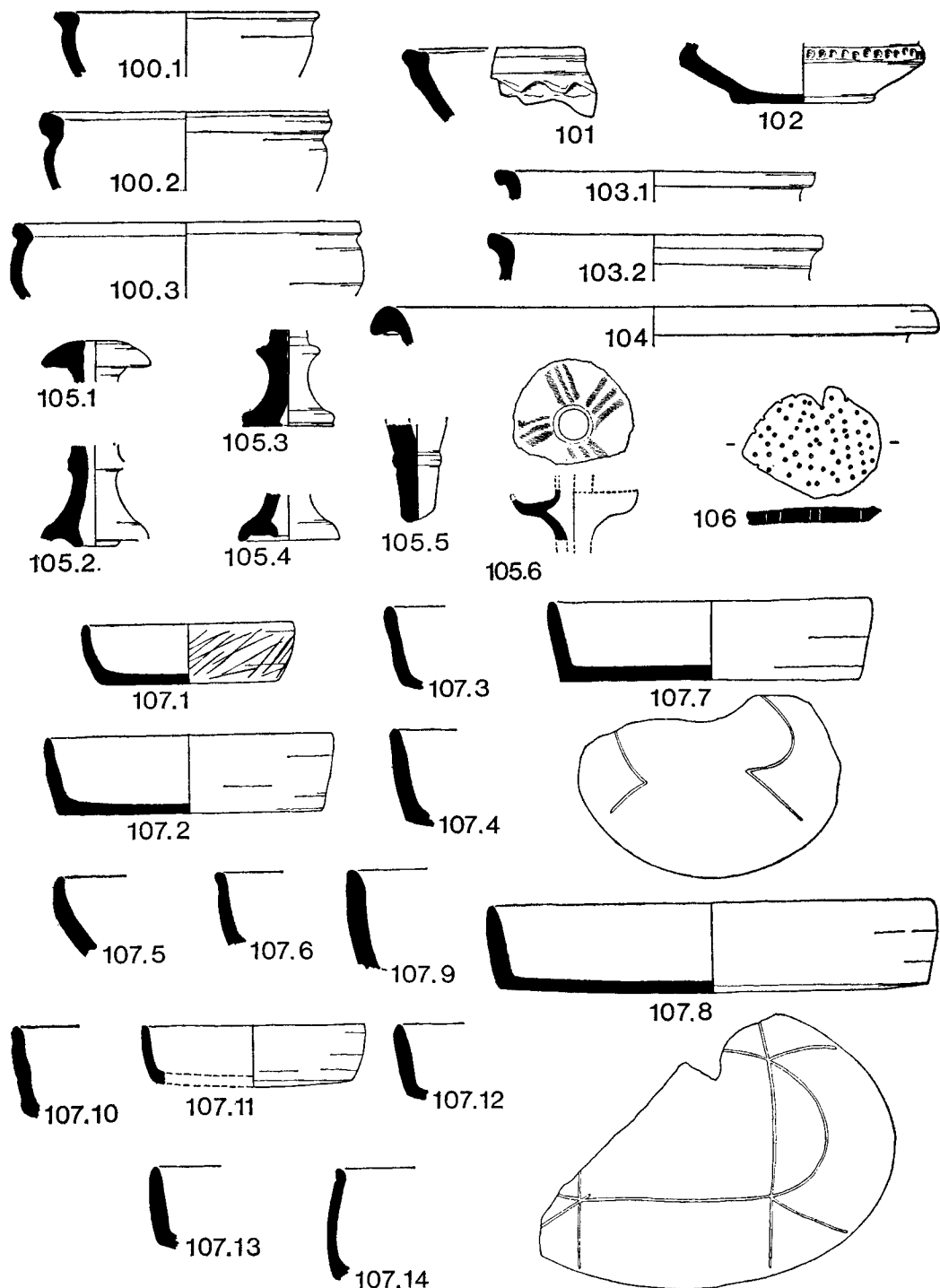


FIG. 186. Pottery types 100-107 (pp. 341-4). Scale $\frac{1}{4}$

Type 104: wide-mouthed bowl with thick, out-bent and rounded rim; coarse grey sandy with a white slip all over; u/s (1).

Candlesticks

Type 105: New Forest, fabric 3; off-white to cream surface; pits 235(.3) and 236(.6); AURRS(.5); AMU(.1); LO (1); UO (1) (.4); u/s (1) (.2); total 7.

Colanders

Type 106: form possibly as type 94:

- (a) grey sandy fabric with a black slip; pit 187; AMU (1); Up. Clay (1); u/s (3); total 6.
- (b) hand-made, fabric A; pit 121.

Dishes

Type 107: plain dish:

107.1-6, hand-made, fabric A; usually burnished all over, sometimes with zig-zag scribble outside. As so many were recovered of this type only a small selection of variants are drawn to show the basic range. There appears to be no discernible development from one group to another in this type.

107.1 and 2 and similar, pits (55), (46 (2), 47, 48, 52, 63 (2), 64 (2), 66 (2), 85, 86 (3), 103 (4), 119, 121, 125 (3), 130 (2), 140, 144 (3), 163 (3), 164 (2), 170, 184, 185, 195, 206, 223 (6), 226, 236 (8)); BURRS (6); AURRS (17); AMU (12); LO (4); M. Clay (2); MO (11); Up. Clay (2); UO (11); u/s (57).

107.3, AMU (2); u/s (2).

107.4, AURRS (1); AMU (2).

107.5, pits 46, 60, 63, 83 and 121; AURRS (3); AMU (2); total 9.

107.6, pit 85.

107.7-10, black-burnished, fabric B; either a white (rare) or a black slip is used. The inside surfaces are invariably smooth-burnished with superimposed designs on the inside base, as in 107.7 and 8. It is quite possible that many of the recorded rims will, in fact, belong to type 117, but, without evidence of handles, accurate typing of the sherds is not possible.

107.7, pit 103; 107.8, pit 54; 107.9, u/s (2); 107.10, pit 119; others similar in pits (88), (40, 41 (2), 46 (6), 47 (2), 48 (2), 51, 54, 60 (2), 61, 63 (2), 64, 66, 70, 79, 83, 85, 92 (2), 95, 103 (7), 121 (7), 125 (2), 130 (3), 144 (6), 163 (2), 164 (3), 166, 168, 178, 182 (2), 184, 185, 186, 187 (4), 205, 206, 222, 223 (2), 224, 227 (2), 228, 235, 236 (4)); BURRS (9); AURRS (32); BMU (3); AMU (33); LO (5); M. Clay (1); MO (15); Up. Clay (2); UO (15); u/s (90); total 298.

107.11-14, fine, grey sandy fabrics, except 107.12, which has a white, sandy fabric. The inside surfaces of the type are usually covered in a white or black slip, which spreads over the upper part of the rim outside. The slip is usually burnished. On form alone there is no means of distinguishing those in this fabric from the black-burnished equivalents in this type.

107.11, pit 103; 107.12, AURRS; 107.13, AURRS; 107.14, with a beaded rim and a slightly convex profile; AURRS (1); u/s (1); others similar from: pits (42), (65, 66, 70, 77, 85 (2), 86, 103 (4), 119, 121 (2), 125, 130, 144 (4), 157, 163, 166, 168, 186, 187 (2), 195 (2), 200, 201 (2), 206 (2), 209, 223, 224, 225 (3), 236 (2)); AURRS (6); AMU (5); LO (2); MO (7); Up. Clay (1); UO (10); u/s (39); total 117. Fig. 165 shows the relative quantities of this type through time in each of the main fabric groups. Like type 85, the black-burnished

fabric shows little sign of the expected decrease after 350. The proportion of dishes in the various groups shows little variation:

pre-c. 325	11.1%	c. 325-345	8.9%	post-345	10.34%
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- Type 108: probably a plain dish, but might be the rim for a wall-sided mortarium: hard, orange-brown, sandy fabric with a yellow to orange burnished, surface all over (fabric compares with that of type 82); pit 168.
- Type 109: dishes with beading or grooving on the rim:
 109.1-3, dark grey, fairly fine sandy fabric with a slip all-over inside and over the rim outside; usually white to dirty cream; stroke-burnished patterns inside on both base and wall; probably Alice Holt.
 109.1 and 2, pit 51; 109.3, pit 69; others similar in BURRS (1); UO (2); total 6.
 109.4, light grey, coarse sandy fabric; stroke-burnishing outside (cf. fabric of type 76.3); horizontal burnishing inside; pit 147.
 109.5, coarse, grey sandy, burnished all over inside; pit 206; others similar AURRS (2); u/s (1); total 4.
 109.6, dark grey sandy with an all-over black slip; lattice burnishing inside and horizontal burnishing outside; AMU (1); others similar in pit 41; AURRS (1); AMU (2).
 109.7, fine, grey sandy with a white slip inside and over the rim; AMU (1); u/s (1).
 109.8, fabric D; pit 51; others similar in pits 69, 144 and 182; AMU (1); u/s (7); total 12.
 109.9 and 10, hard grey sandy; no slip, but burnished inside and out; pit 201(.9); u/s (4); total 6.
 109.11, coarse, grey sandy with a black slip all over; burnished all over inside and stroke-burnished outside; AMU (1).
- Type 110: dish with notch decoration on the rim:
 fine, grey sandy fabric with a white to grey slip inside and on the rim; u/s (1).
- Type 111: dish with a slight, protruding rim:
 111.1, fine, grey sandy with a white slip inside and on the rim; all over burnishing; u/s (1).
 111.2, hand-made, fabric A, black surface; burnished inside and on the rim; u/s (1).
 111.3, brown, sandy fabric with an all over black slip, burnished outside; MO (1).
- Type 112: dish; coarse, grey sandy fabric; no slip; groove on the upper surface of the rim; u/s (2).
- Type 113: dish with a pair of knob handles at opposite ends:
 red-brown, sandy fabric with a pale red to white slip all over; pit 121; u/s (1).
- Type 114: dish with simple rim and knob on the middle of the vessel wall; hand-made, fabric A, dark surface; burnished all over; BURRS (1); AURRS (2); AMU (3); u/s (4); total 10.
- Type 115: dish with flanged rim:
 black-burnished, fabric B; inside surface is burnished and the flange; no means of distinguishing this type from type 85, unless large enough sherds survive; only one certain find; u/s (1).
- Type 116: two-handled dish with a protruding ledge rim; black-burnished, fabric B; burnishing on the upper surface of rim; MO (1). Probably a second-century survival.
- Type 117: two-handled dish with simple rim:
 117.1, black-burnished, fabric B; occasional use of a white slip; there is a basic problem of distinguishing between this type and type 107, when rim sherds survive with no trace of the handle. No example illustrated, but sizes like 117.2 were probably present. Pits (14), (41, 46, 60, 86, 121 (2), 144 (3), 187, 206, 224, 236 (2)); AURRS (2); AMU (4); MO (3); Up. Clay (1); UO (2); u/s (11); total 37.

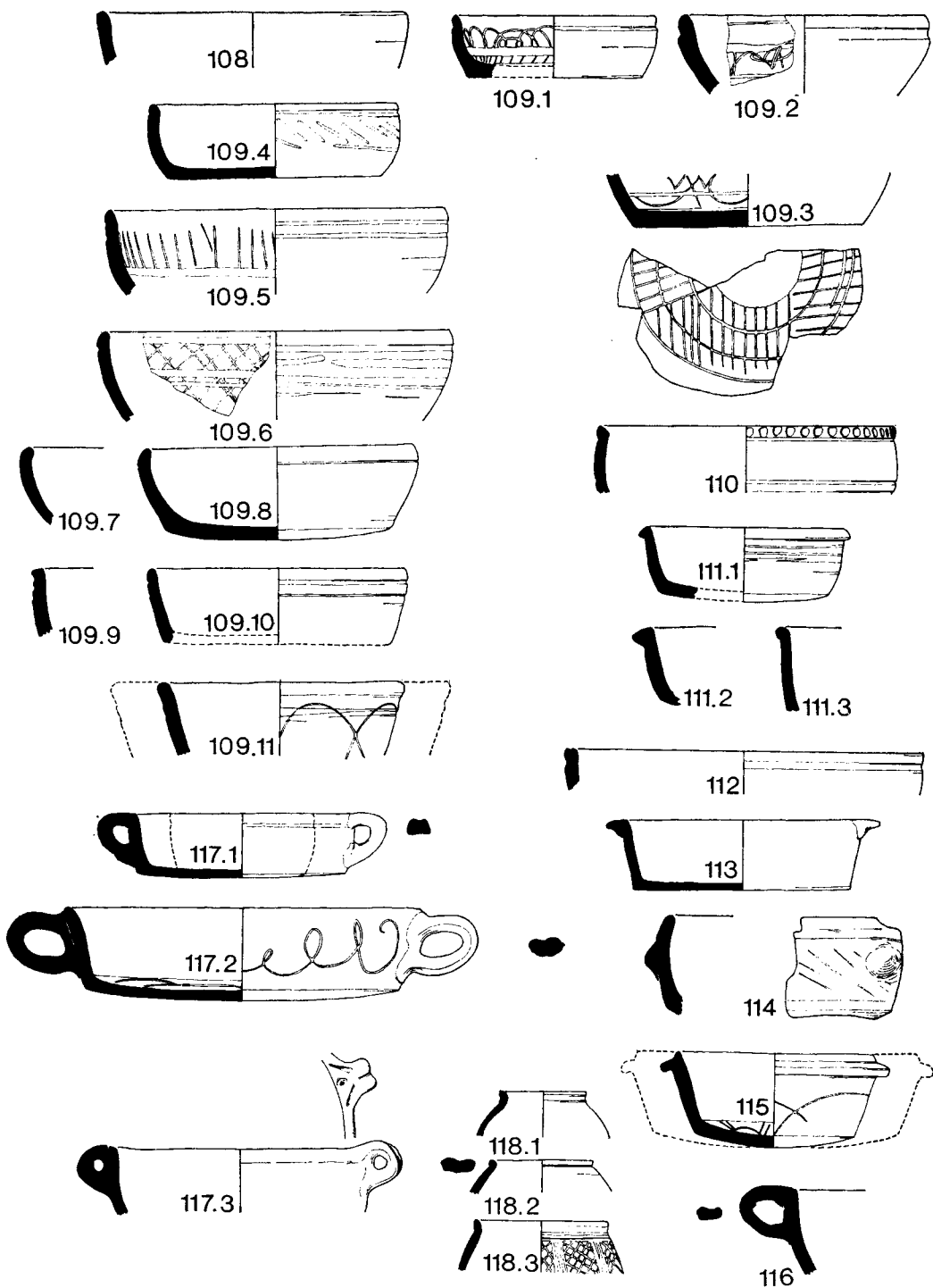


FIG. 187. Pottery types 108-118 (pp. 344-6). Scale $\frac{1}{4}$

117.2, fine, grey sandy fabric with a black slip all-over; burnishing all-over inside and stroke-burnishing outside; as with 117.1, there is the possibility of confusing this type with 107. Pits (5), (65, 86, 164, 225, 226); AURRS (2); AMU (10); LO (3); MO (4); UO (5); u/s (14); total 43.

117.3, grey sandy with a black slip; burnished on the handle; deeply scored grooves on the handle; u/s (1).

Type 117 as a percentage of each group:

	B-B	Grey		B-B	Grey
LO/M. Clay		1.1%	All groups pre-325		1.1%
MO/Up. Clay	0.8%	0.8%	All groups 325-345	0.6%	0.6%
UO	0.6%	1.4%	All groups post-345	0.5%	1.1%

The figures do not reveal any significant trends, but suggest that the type spans the fourth century, with the same importance at all times.

Jars

Type 118: jar with bead rim; possibly belonging to type 175:

dark grey, fine, sandy fabric, usually with a black slip outside and over the rim; 118.3 has fine, burnished lattices between vertical strokes; AURRS (1); the rest from pits 103(.1), 119 and 236; AURRS (1); AMU (2); MO (1); UO (1); u/s (3); total 12.

Type 119: jar with bead rim; unlikely that many will belong to type 175:

119.1-4, fine, grey sandy fabric with either a white or a black slip over the upper half of the vessel and over the rim; pits 40, 47(.1, with sherds of same vessel in pit 48), 60, 61, 164; AURRS (1); AMU (2); LO (1); MO (3); UO (1); u/s (3); total 16.

119.5, black-burnished, fabric B; lattice pattern burnished all over smoothed surface; u/s (1). This and type 118 seem to occur fairly evenly throughout the century.

Types 118 and 119 as a percentage of each group:

LO/M. Clay	0.79%	All groups pre-325	0.79%
MO/Up. Clay	0.84%	All groups pre-345	0.64%
UO	0.55%	All groups post-345	0.61%

Type 120: as type 119, but with more pronounced rim and a cordon below on the join of neck and body:

120.1, black-burnished, fabric B; burnished outside and the upper surface of the rim; u/s (1). 120.2 and 3, fine, grey sandy fabric with an all over white or black slip; pit 61; AURRS (1); MO (1).

Type 121: jar with bead rim:

a fine, hard white fabric with a silvery grey slip all over; (cf. type 169); AMU (1).

Type 122: jar with carinated body:

122.1, grey to brown sandy fabric; no slip; u/s (1).

122.2, fabric as last; AMU (4); u/s (1).

Possibly a first/second-century type.

Type 123: jar with everted rim:

hand-made, fabric A; diagonal, criss-cross or lattice burnishing on the body; horizontal burnishing between that and the base and smooth burnishing over the zone below the rim and above the main, decorated area; smooth burnishing on the upper surface of the rim. Probably imitating type 126. No significant changes can be detected in this type throughout the fourth century, but a large selection is drawn to show the range in minor variation. See

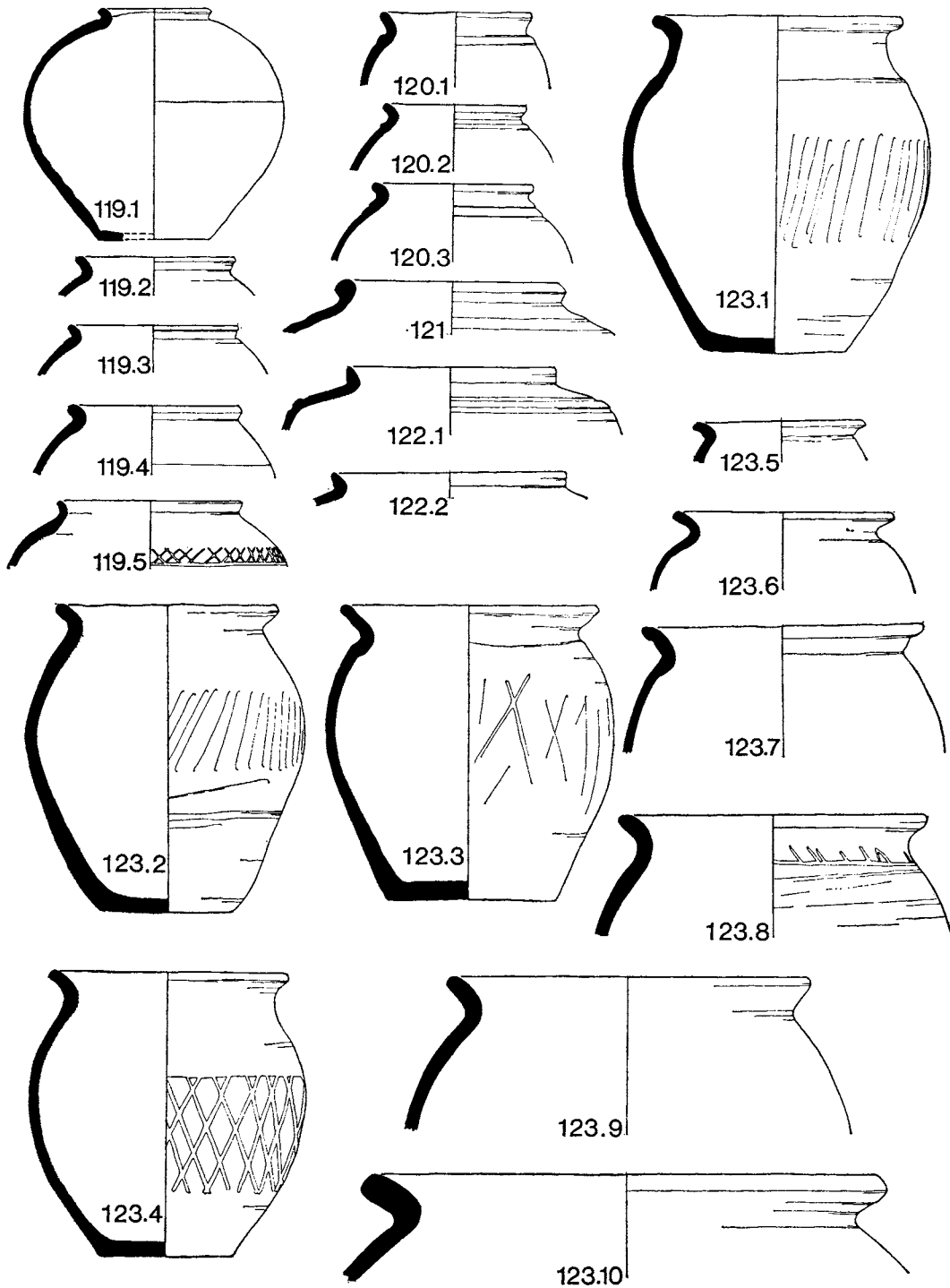


FIG. 188. Pottery types 119-123 (pp. 346-8). Scale $\frac{1}{4}$

fig. 166 for the frequency of different diameters and fig. 168 for the relationship with the grey and black-burnished equivalents.

123.1, 2 and 3, pit 121; 123.4, pit 52; 123.5, AURRS; 123.6, pit 103; 123.7, pit 144; 123.8, pit 46; 123.9, pit 121; 123.10, AURRS; similar in pit 222.

Others similar from: pits (258); (40 (5), 41, 46 (8), 47, 48 (11), 49 (2), 51, 52 (4), 54 (3), 60 (6), 61, 62, 63 (10), 64 (3), 65, 66 (5), 69, 77 (4), 79, 83 (2), 85 (5), 86 (3), 90, 92 (5), 95 (6), 103 (14), 119 (2), 121 (19), 122 (2), 125 (3), 129, 130 (4), 138 (2), 144 (16), 147 (3), 157 (2), 163 (4), 164 (6), 166, 168, 171, 178 (2), 179 (2), 182 (3), 185 (5), 186 (2), 187 (3), 195 (2), 200, 201 (3), 206 (8), 209, 222, 223 (5), 224 (3), 225 (3), 226, 227 (3), 230, 234 (3), 236 (25), 239); BURRS (13); AURRS (81); BMU (2); AMU (79); L. Clay Bank (2); LO (8); M. Clay (1); MO (24); Up. Clay (14); UO (44); u/s (223); total 717.

Type 124: as type 123, but grey to brown very sandy hand-made fabric; horizontal burnishing:
124.1; grey surface, very micaceous, rough finish; pit 63 (3); u/s (1).
124.2; dark brown to black coloured fabric; UO (1).

Type 125: as type 123, but distinctive 'cavetto' appearance at join of rim and body; fabric and appearance as type 123:
125.1; AMU (1).
125.2; light grey, slightly sandy; u/s (1).

Type 126: jar with everted rim:
black-burnished, fabric B; smooth burnishing on the upper surface of the rim and on the body above the zone of lattice decoration; wipe marks below the latter.

126.1: pit 85; 126.2, pit 65; 126.3, pit 46; 126.4, pit 85.

Others similar from: pits (145); (40 (3), 41 (2), 46 (10), 47, 48 (5), 49 (2), 52 (2), 54 (4), 60 (3), 61 (2), 63 (2), 64 (3), 65, 66 (3), 69, 77, 83 (2), 85 (5), 86 (4), 90, 92 (3), 95 (2), 103 (6), 119, 121 (14), 125, 130 (3), 144 (12), 153, 163, 164 (6), 168, 178, 182 (2), 185 (2), 186, 187 (2), 195, 201 (3), 206 (3), 222, 223 (4), 225 (2), 228, 230, 231, 234, 236 (11)); BURRS (10); AURRS (36); BMU (1); AMU (44); LO (8); M. Clay (1); MO (18); Up. Clay (9); UO (22); u/s (97); total 393.

See fig. 166 for the frequency of different diameters and fig. 168 for the relationship with the 'grog' tempered and grey ware equivalents.

Type 127: as type 126, but fine, grey sandy fabrics; the upper half of the body and the upper surface of the rim are covered in a light grey to black slip, sometimes smooth burnished. Like type 126, there is a panel of scored lattice decoration in the middle of the body.
127.1; the fabric is much sandier than the others, although not like the black-burnished fabric; pit 103.

127.2; pit 144; 127.3, pit 54; 127.4, pit 121.

Others similar to the last three came from: pits (78); (46 (2), 47, 48 (6), 52, 54 (2), 60, 61 (2), 63 (4), 65, 85, 103 (14), 119, 121 (4), 130, 144 (5), 147, 157 (2), 163 (4), 164, 166, 185, 186, 187 (5), 201, 206, 223 (3), 224, 225 (3), 229 (2), 235, 236, 238); BURRS (4); AURRS (9); BMU (3); AMU (18); LO (7); M. Clay (1); MO (22); Up. Clay (6); UO (17); u/s (106); total 275.

This type seems to have lost ground after *c.* 345, although popular from at least the beginning of the century.

Type 127 as a percentage of:

All groups pre-325	6.35%
All groups pre-345	5.56%
All groups post-345	2.95%

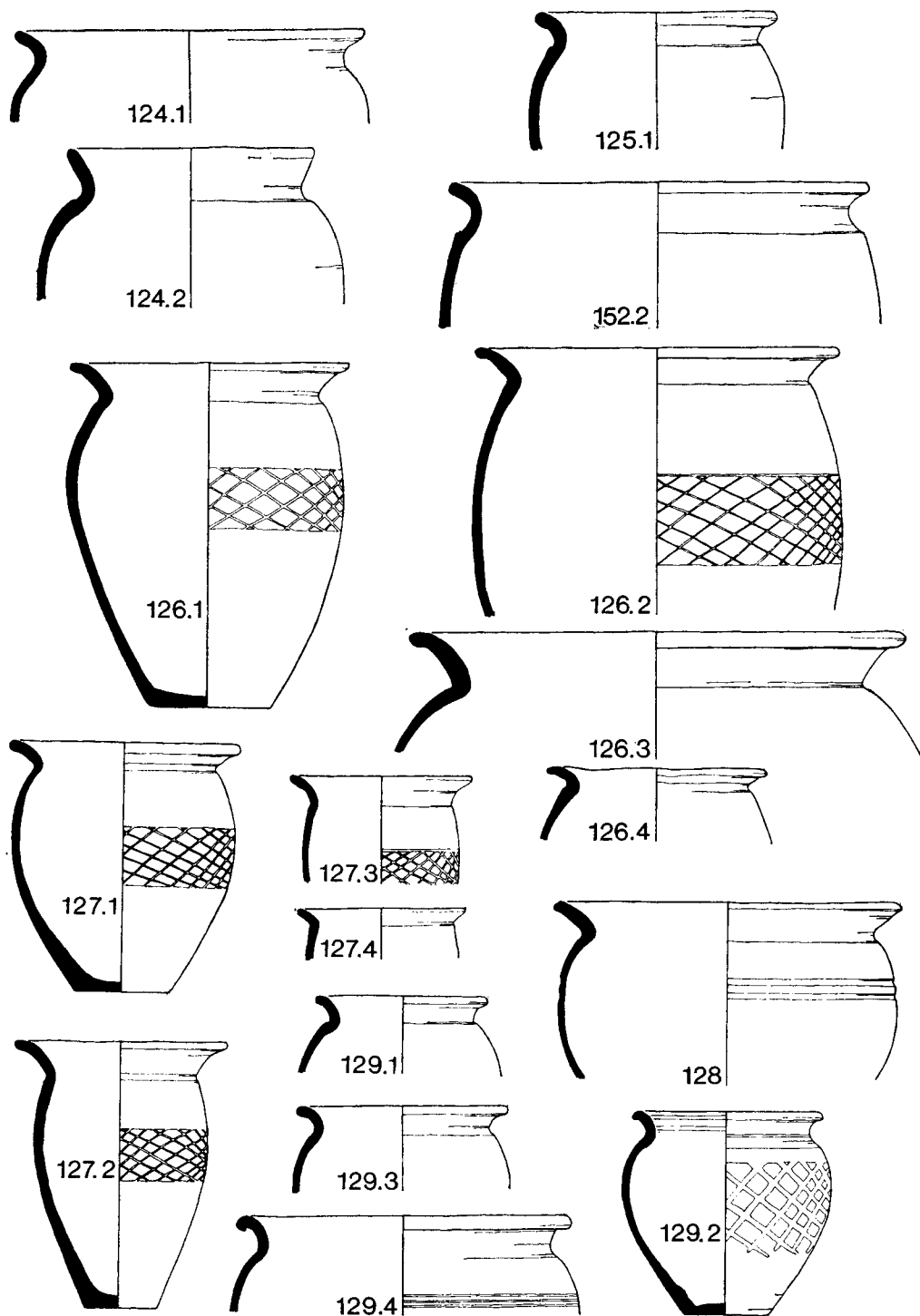


FIG. 189. Pottery types 124-129 (pp. 348-50). Scale $\frac{1}{4}$

Fig. 168 shows the relationship of this type with the black-burnished and hand-made equivalents.

Type 128: as type 127, but no lattice decoration on the body and diameter usually over 20 cm. Fabric and position of slip as type 127, except the illustrated example which has a coarse, sandy fabric and a plain, burnished surface only (pit 85). Others from: pit 121; AURRS (1); AMU (3); LO (2); MO (2); UO (2); u/s (15); total 27.

This type seems to have a similar life-span to type 127.

Type 129: jar with everted rim, less flared than type 127, and beaded at the end; like type 127, the upper surface is usually covered in a silvery grey slip with a zone of lightly scored lattice burnishing on the body; sometimes the slip on the rim and upper part of the body is smooth burnished; fabric, fine, grey sandy; pits (68); (41 (2), 46, 48, 49, 54 (2), 60, 63 (7), 65 (2), 66, 69 (3), 77 (2), 79 (2), 83 (2), 85 (2), 86 (2), 92 (2), 95 (2), 103 (3), 121 (4), 130 (3), 138, 144 (5), 164 (5), 168, 182 (2), 185, 187, 206, 222, 229, 235, 236 (3)); BURRS (5); AURRS (6); AMU (5); LO (7); MO (4); UP. Clay (1); UO (5); u/s (42); total 143.

There were also other examples in this form, but in slightly different fabrics:

(a) pale yellow, sandy fabric, very like fabric D; plain surface; UO (1); u/s (3).

(b) a very coarse grey sandy fabric, with a white slip on the rim and upper half of the body; pits 63, 144 and 223; BURRS (2); AURRS (1); AMU (3); Up. Clay (1); total 10.

129.4; as type 129, but no lattice decoration and diameter usually over 20 cm. Like type 128 a pair of grooves on the body limit both slip and burnishing (when it occurs) on the upper half of the vessel. Pits (13); (48 (3), 63 (2), 64, 65, 223, 224, 230, 234, 235, 236); AURRS (4); BMU (1); AMU (7); LO (1); MO (9); Up. Clay (2); UO (2); u/s (17); total 56.

Like types 127 and 128, this type seems to span most of the fourth century, although there are signs of a fall off after 350.

Type 129 as a percentage of:

All groups pre-325	6.35%
All groups pre-345	3.97%
All groups post-345	2.28%

It may be that production ceased before 345, but, with a common type, the amounts of residual material will be great and confusing.

Type 130: coarse grey sandy fabric; burnished on the rim and lattice burnished on the body; no slip; pit 184.

Type 131: jar with slightly everted rim and beading or under-cutting at the end; a variety of fabrics: 131.1; pale grey sandy fabric with a pale grey surface; no slip, no burnishing; pit 182; AMU (1); u/s (4).

131.2; coarse grey sandy fabric with an all over black slip, burnished outside and on the rim; pit 54.

131.3; light grey sandy fabric; light grey surface, no slip, no burnishing; pits 46 and 223; AURRS (1); AMU (2); LO (1); u/s (5); total 11.

131.4; coarse grey sandy fabric; dark grey surface; no slip, no burnishing; pits 95 and 236; AURRS (2); MO (1); UO (3); total 8.

131.5; coarse brown sandy fabric; hand-made; black slip outside (? upper half only) and over the rim; pit 60.

131.6; light grey sandy fabric with a white, streaky slip all over; AURRS (1); MO (1); u/s (2).

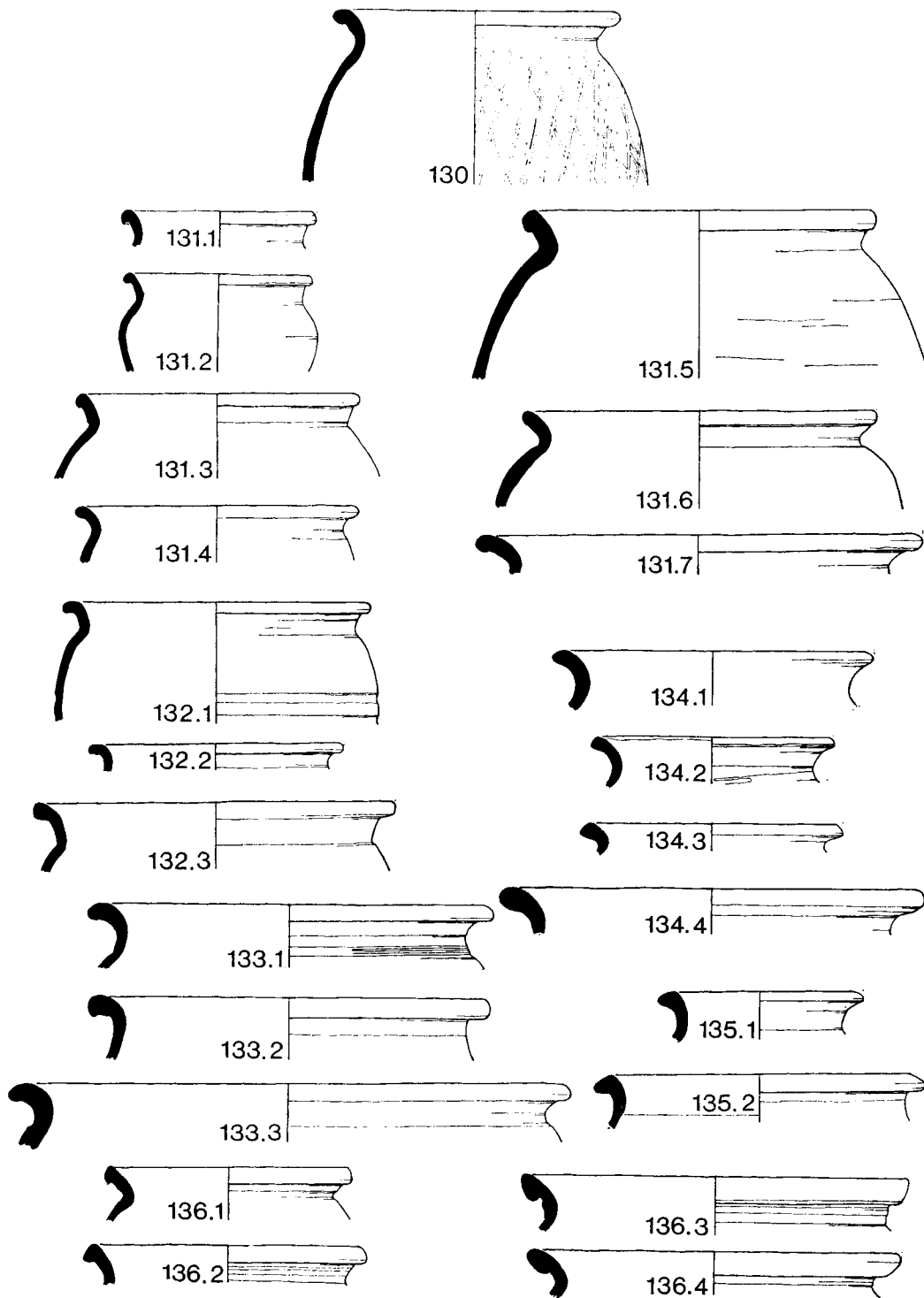


FIG. 190. Pottery types 130-136 (pp. 350-3). Scale $\frac{1}{4}$

131.7; brown sandy fabric with a grey core and a red-brown surface; burnished all over; u/s (1).

Summary: pits; (7) AURRS (4); AMU (3); LO (1); MO (2); UO (3); u/s (12); total 32. This type is probably best considered as an amalgamation of a few vessels differing from one another in fabric, but unified by the form.

Type 132: jar with out-bent and flat-topped rim:

132.1 and 2; fabric with grey to white slip over the upper half of the body and on the rim, like types 127-129. Like 128 and 129.4, grooves limit the spread of slip on the body; pits 47, 49, 63 (2), 92, 130 (2), 144 (2), 147, 223, 236; BURRS (4); AURRS (3); LO (1); UO (2); u/s (16); total 38.

132.3; red-brown, sandy fabric with a grey core and a burnished, red-brown surface outside and on the rim; AURRS (1).

Although there are fewer examples of this type than types 127-129, their contexts do not contradict the pattern of decline in importance after 345, seen with the other types.

Type 133: as type 132, but diameter invariably over 20 cm. and the rim is much heavier.

133.1 and 2, fine, grey sandy fabric with a white slip outside and on the rim, often smooth burnished; pits 40 (2) and 226; AURRS (5); BMU (1); AMU (5); LO (2); MO (5); UO (2); u/s (18); total 41.

133.3; coarse, grey sandy fabric, no slip but burnished surfaces; AURRS (1); AMU (1); u/s (1).

As a percentage of each group:

All groups pre-325	1.59%
All groups pre-345	0.95%
All groups post-345	0.94%

While on their own the figures are inconclusive, when considered with types 127-129 and 132, then a fall-off after 345, if not earlier, seems indicated.

Type 134: jar with slightly out-bent rim:

134.1-3; fine, grey sandy fabric with a white to grey slip outside and over the rim; upper surface of the rim often polished; pits 52, 144, 209, 222; BURRS (1); AURRS (8); AMU (12); MO (1); UO (1); u/s (8); total 35.

134.4; coarse, very sandy fabric; no slip, but rough, though burnished surface; UO (1); u/s (5).

Although this type appears before 330 (pit 222), the bulk of the contexts are post-345. Type 134 as a percentage of:

All groups pre-325	0
All groups pre-345	0.32%
All groups post-345	1.48%

Type 135: as type 134, but 'L' shaped rim:

fine, grey sandy fabric with a white slip outside and on the rim; the upper surface of the latter is usually burnished; pit 236; AMU (3); u/s (1).

This type does not date pre-340-50.

Type 136: jar with 'triangular', under-cut terminal to the rim; slight cupping internally on the inside of the rim:

dark grey sandy, or brown sandy fabric with a grey core; except 136.2, which has a white to grey slip outside and on the rim, the rest have no slip and are not burnished.

136.2; occurred in pit 223; u/s (1); while the rest occurred in pits (9); (62 (2), 63 (4), 66, 225, 226); BURRS (2); AURRS (6); AMU (6); MO (4); UO (2); u/s (18); total 47.
This type seems to spread out sporadically, but evenly, throughout the century.

- Type 137: as type 136, but smaller rim terminals, less sharply under-cut, and no cupping inside the rim:
137.1; grey to brown sandy fabric, with similar coloured surface; rilling on the body; no slip; pits 144 and 181; AMU (1); MO (1); Up. Clay (1); u/s (2); total 7.
137.2; as 137.1, but plain surface the same colour as the grey/grey-brown fabric; pits 103 (2), 121, 129, 130, 144 (2), 223; AURRS (2); AMU (7); LO (1); M. Clay (1); MO (1); UO (1); u/s (16); total 37.
137.3; fine grey sandy with a grey surface; light grey slip all over; faint rilling on the body; AMU (1).
137.4-6; fabric D; rilling on the body; pits (17); (48, 63, 69 (2), 77, 83 (2), 103 (2), 119, 125, 129, 138, 170, 182, 206, 237); AURRS (8); AMU (9); UO (4); u/s (29); total 67.
Absence of this distinctive type from MO, BMU and BURRS suggests a late starting date. However, as it is common in the pits, then the dating must go back to *c.* 325, but it would be strange if it went earlier, because of its absence from the large layers that are contemporary with the pits.
137.7; red-brown, sandy fabric with a red-brown surface, burnished outside and on the rim; AMU (2); MO (1); UO (1).
137.8; coarse, grey sandy fabric; no slip; pits 147, 223 (2), 225, 234; AMU (6); total 11.
Type 137, as a whole, as a percentage of each group:

All groups pre-325	1.59%
All groups pre-345	0.64%
All groups post-345	1.41% + 1.41% (fabric D) = 2.82%

Because there are a variety of different fabrics involved, it is very difficult to draw any conclusions about the type. The renewed popularity after 345 is due to fabric D and perhaps, too, to the tendency to unslipped vessels in the second half of the fourth century.

- Type 138: wide-mouthed jar with internally cupped rim:
fine, light grey sandy fabric, darker to the surface; polished surfaces, no slip; pit 226; MO (1); Up. Clay (1, sherds of same vessel in UO); UO (1); u/s (1); total 5.
- Type 139: jar with simple, pointed rim:
light to dark grey coarse sandy fabric; note batch marks on 139.2 and 3; cf. Fishbourne, type 313 (Cunliffe, 1971), which may be from the Rowlands Castle kiln site. The type does not appear significantly after 350, but there are many similarities with types 140-142, which may imply some continuity, either at Rowlands Castle, or at a workshop derived from there, throughout the fourth century.
Pits (7), (103, 130 (2), 144, 164 (2), 235); BMU (1); AMU (3); LO (1); M. Clay (1); MO (1); Up. Clay (2); u/s (6); total 22.
- Type 140: jar with simple, pointed rim, sometimes, slightly cupped:
coarse grey sandy fabric with black grains; no slip; no burnish; 140.2 has burnished lines on the body; cf. types 139 and 141; probably of very local manufacture; pits (36), (40, 47 (2), 54, 61, 63 (4), 64, 65 (2), 66 (2), 69, 85, 87, 103 (2), 157, 187 (2), 206, 223 (3), 224, 228, 230, 234, 235 (2), 236); BURRS (6); AURRS (12); AMU (7); LO (2); M. Clay (1); MO (11); Up. Clay (5); UO (8); u/s (50); total 138.

EXCAVATIONS AT PORTCHESTER CASTLE

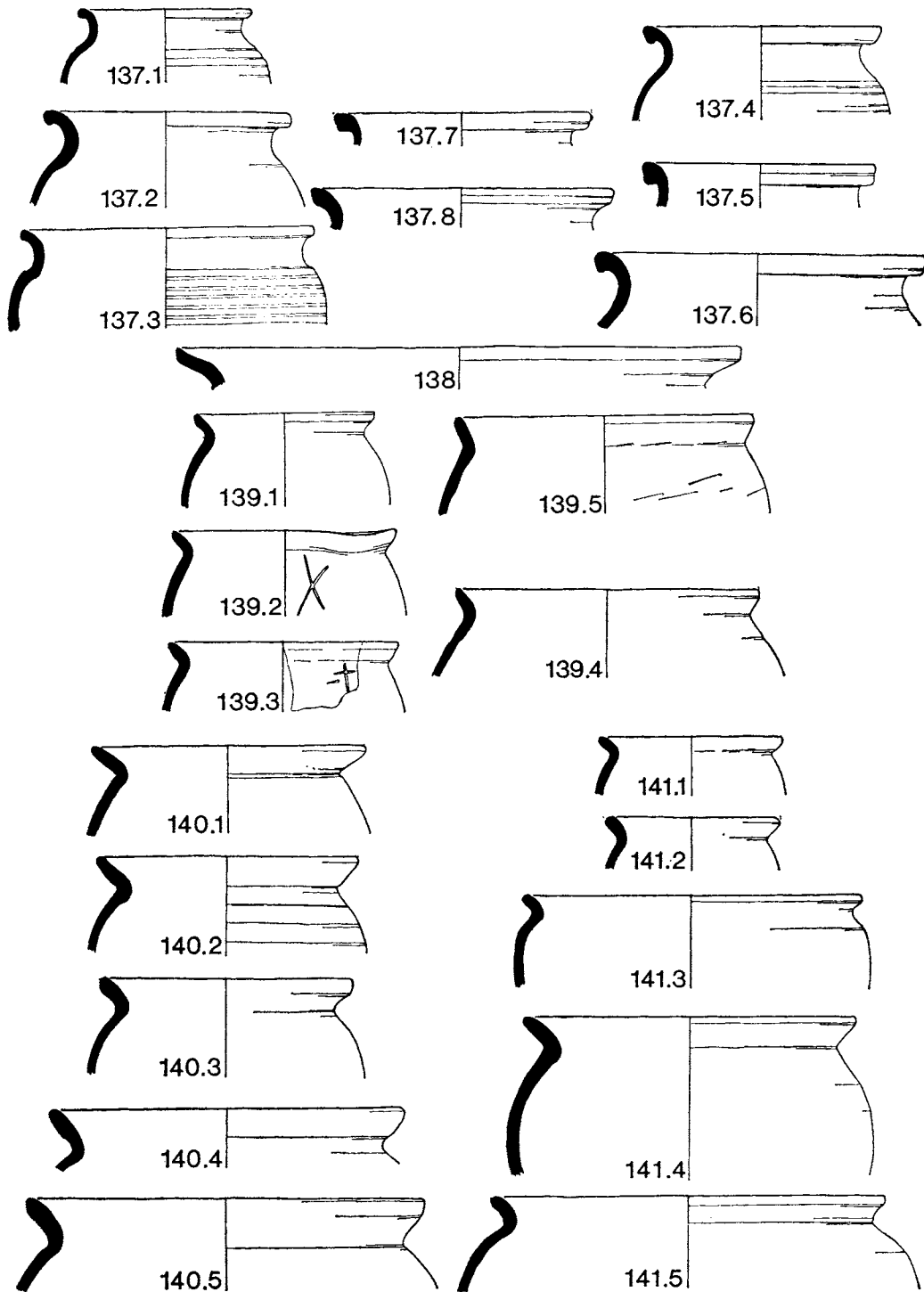


FIG. 191. Pottery types 137-141 (pp. 353-5). Scale $\frac{1}{4}$

Type 140 as a percentage of each group:

All groups pre-325	2·38%
All groups pre-345	3·5%
All groups post-345	1·81%

Although there is a decline after 345, this is not significant in the light of the general decline of grey fabrics in jar types after 345.

- Type 141: jar with simple, stubby rim:
light grey, coarse sandy fabric, sometimes with large black grains and/or occasional burnt flint or chert; no slip, no burnishing; cf. types 139, 140 and 142; pits (11), (48 (2), 60, 144 (2), 155, 178, 184, 187, 222, 236); BMU (1); AMU (2); UO (1); u/s (11); total 26.
- Type 142: jar with simple, stubby rim; cf. types 139-141:
light to dark grey coarse sandy with diagonal burnished strokes on the body; 142. 1-3, pits (8), (46, 52, 92, 95, 164, 187 (2), 222); BURRS (3); AURRS (6); BMU (1); AMU (4); MO (6); Up. Clay (2); UO (8); u/s (24); total 62.
142. 4 and 5 (plain), pits 144, 235, 237; AMU (3); Up. Clay (1); UO (1); total 8.
This type is fairly constant in all the groups, throughout the century.
- Type 143: hard, coarse grey sandy fabric, burnished on the rim and scored chevron pattern decoration on the body; no slip:
BURRS (1); AURRS (1); u/s (3); total 5.
- Type 144: miscellaneous non-grey ware everted rim jars:
144. 1, a hard orange fabric, brown to the core, with a yellow-brown surface; Severn Valley fabric; u/s (1).
144. 2, a very hard fabric with a yellow-brown surface (almost golden) on a dark grey core; sherds of same vessel from MO and Up. Clay; Severn Valley fabric; similar jar, but a reddish-brown fabric with similar coloured burnished slip; pit 79.
144. 3, hard, reddish-brown, fine fabric with a red, burnished slip all over outside and on the rim; sherds of same vessel in MO and UO; very similar sherds, possibly of the same vessel; pit 223 and 235.
144. 4, fabric as 144. 2, but the surface is a pale yellow to brown and very micaceous; Severn Valley; MO (1).
- Type 145: small jar:
fine, light to dark grey, sandy fabric with a white slip on the top half of the body and on the rim; easily confused with type 129.
Pits (7): (54, 87, 92, 121, 178, 236, 237); BURRS (3); AURRS (2); AMU (3); LO (1); M. Clay (1); MO (5); Up. Clay (1); UO (3); u/s (5); total 31.
This type, in fabric and style, belongs to the group, 127-129.
- Type 146: small jar:
brown to grey, fine sandy with red grains; there are traces of burnishing on the upper half of the body and the rim; pit 138; AMU (1); u/s (5).
- Type 147: small jar with pedestal foot:
red-brown sandy; similar coloured surface; burnished on the rim and on the body; u/s (1).
- Type 148: small jar:
148. 1, fine brown sandy fabric with an all over black slip burnished on the rim and all over outside; pits (8), (40, 63, 144, 164 (2), 178, 187, 236); M. Clay (1); u/s (2); total 11.

EXCAVATIONS AT PORTCHESTER CASTLE

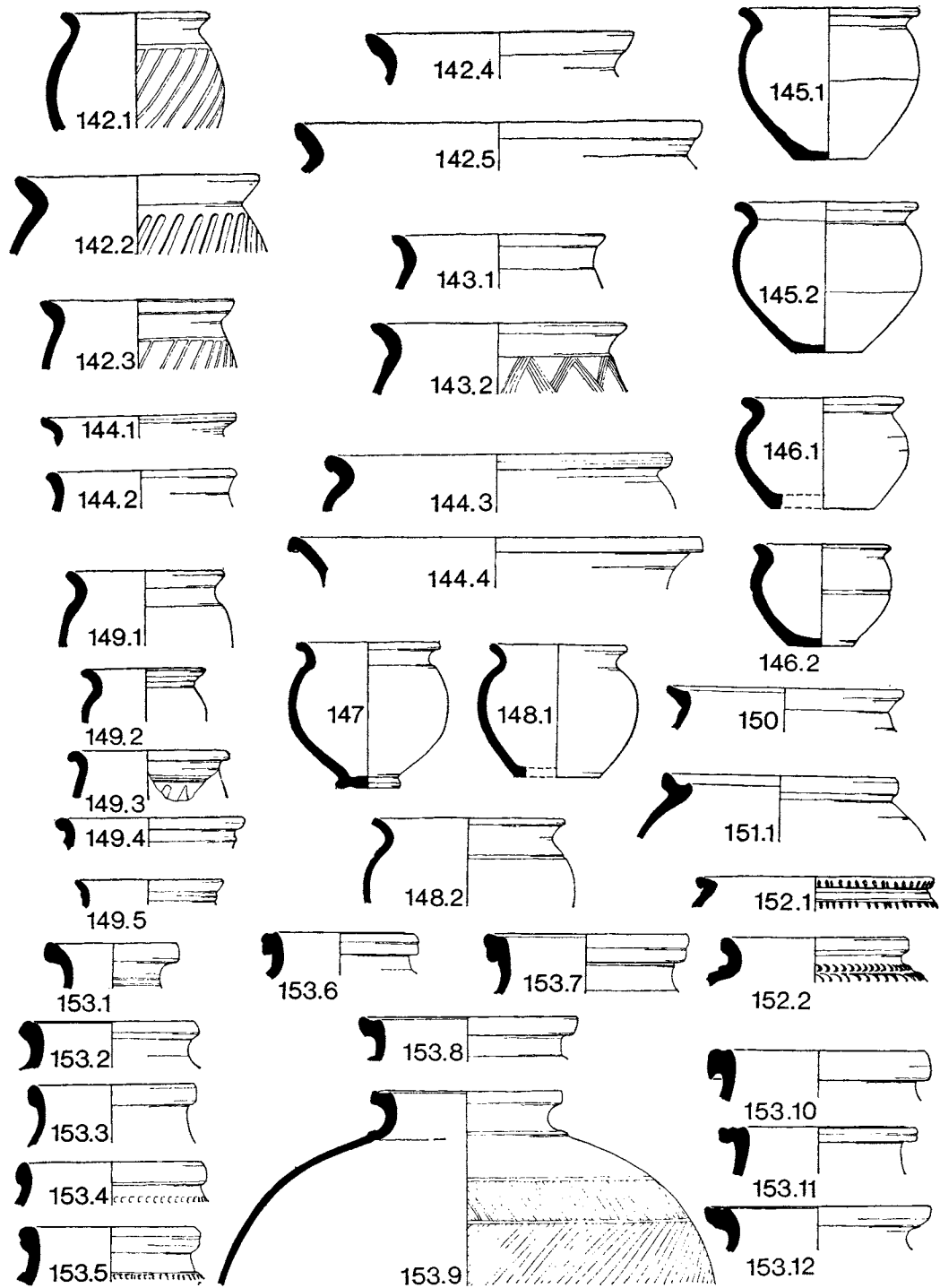


FIG. 192. Pottery types 142-153 (pp. 355-8). Scale $\frac{1}{4}$

148.2, a micaceous, brown sandy fabric, somewhat flaky; all over black slip; burnished on the body and upper surface of the rim; pits 61, 187, 225; AMU (1).

Type 149: small jars; miscellaneous:

149.1, micaceous, grey-brown, sandy fabric; similar coloured surface, burnished on the rim and on the body; pits 103 and 125; BURRS (1); u/s (1).

149.2, hard, vesicular, slightly sanded and micaceous; burnished outside and on the rim; AMU (2); u/s (1).

149.3, dark grey sandy fabric with a burnished pattern on the body; black surface; pit 182 (2); AURRS (1); AMU (1); u/s (1).

149.4, coarse, black sandy with a black surface; pit 163.

149.5, brown sandy micaceous fabric; white or black slip outside and on the rim; pit 170.

Types 127-149: A summary:

Leaving aside types with very few examples and types with many slight variants, the everted rim jars break in to three major grey fabric groups:

(a) fine grey fabrics with white slips; types 127, 128, 129, 122, 133, 145;

(b) rather coarser grey fabrics, seldom with a slip, rarely burnished; types 139, 140, 141 and 142;

(c) similar fabrics to (b) and no slip; includes fabric D and jars with a 'triangular' terminal; types 136, 137 and 138.

Each group of types as a percentage of each assemblage:

	Groups pre-325	Groups pre-345	Groups post-345
Type Group (a)	18.26%	12.87%	7.51%
Type Group (b)	5.56%	6.05%	3.69%
Type Group (c)	2.38%	1.75%	3.83%
All grey ware jars	27.78%	21.62%	16.44%
All jars, types 123-149	43.65%	36.09%	38.59%

While all the figures could be explained by the changing popularity of any one type, without implying the end of production, the drop in the percentage of grey jars after 345 seems significant. More hand-made jars are coming in at the expense of group (a) in particular, although, apart from group (c) and types like 134, all the other types suffer as well. It seems likely that group (a) jars went out of production after 345 or just before, at a time when colour-coated vessels are becoming more popular. Other grey ware groups probably continued to be made and these, except fabric D, are likely to have been from the nearest kilns to Portchester, whereas group (a) must be either from the New Forest or Alice Holt kilns.

Fig. 167 shows the relation between the three main fabric groups in the jar types.

Type 150: lid-seated jar:

fine, grey sandy fabric; no slip; u/s (1).

Type 151: lid-seated jar:

a very hard, almost stone-ware fabric, dirty yellow in colour; surface as the fabric, but also rough and 'warty' to feel; Gose (1950), form 547.

In thin section: augite, brown hornblende, sanidine, andesine, leucite and quartz in a light brown isotropic matrix (cf. Frechen, 1948); Mayen ware; pit 62; u/s (1) (Fulford and Bird, forthcoming).

Type 152: jar with neck and out-bent rim:

152.1, fine, grey sandy with a black slip outside and over the rim; finger-nail impressions; u/s (1).

152.2, hard, coarse, grey sandy with traces of burnishing; finger-nail decoration; joining sherds in MO and Up. Clay.

Type 153: jar with narrow mouth, neck and heavy, square rim:

153.1, fine, grey sandy; traces of a white slip; u/s (1).

153.2, fine, grey sandy fabric; white slip outside and on the rim; pit 48; AURRS (1); u/s (2); total 4.

153.3, hard, dark grey sandy; white slip outside and on the rim; pit 236; u/s (1).

153.4, fine, grey sandy fabric with a black slip, burnished outside; shallow, ? finger tip indentations on shoulder; MO (1).

153.5, fine, grey sandy fabric; white slip outside; AMU (1).

153.6, fine, grey sandy fabric; white slip outside; AMU (3); u/s (6).

153.7, fine, grey sandy fabric; worn, no trace of slip; pit 95.

153.8, fine, grey sandy fabric; white slip outside, and inside the rim; slight internal cupping; pits 64, 85 and 182; BURRS (2); AURRS (1); AMU (3); MO (1); u/s (3); total 13.

153.9, like 153.8, but lightly incised chevron decoration on the body, under a white slip; AMU (1).

153.10, fine, grey sandy fabric; black slip outside; u/s (1).

153.11, fine, grey sandy fabric; white slip outside and on the rim; u/s (1).

153.12, dark grey sandy fabric; burnished outside and on the rim; u/s (1).

Summary: pits (6); BURRS (2); AURRS (2); AMU (8); MO (2); u/s (16); total 36.

The dating of this type is difficult to establish, both because there is no difference in the percentage of the type in pre- and post-345 groups (0.64, pre-345; 0.60, post-345) and because each vessel is likely to have had a long life as a storage, rather than an everyday cooking vessel. This factor is likely to affect the residual element more than usual. Other evidence (flanged bowls and everted rim jars) suggests that slipped fine grey ware pots become scarce after 345. Type 153 will fit in to this pattern (the fine fabrics are very comparable) if the possibility of a long life for the individual jar is acceptable. With the pits the span of the type becomes *c.* 320/30–*c.* 350/60. The long life argument can be applied in reverse, and it might be expected that this type was current from much earlier than *c.* 320–30. The same sort of reasoning surely applies to types 176–178.

Type 154: jar with flange on the rim:

154.1–3, black-burnished, fabric B; burnished on the rim/neck, both inside and out; grey-white slip on 154.2 and 3; AMU (2); u/s (1).

154.4, fine, grey sandy fabric; all over white slip; u/s (2).

154.5, as above; pit 47; u/s (1).

154.6, as above; pits 103 and 236; AURRS (1); AMU (1); MO (1); Up. Clay (1); u/s (2); total 8.

For dating arguments, etc. see above, type 153.

Type 155: deep, straight-sided jar:

fabric D; pink to yellow surface; faintly scribed bands of wave decoration outside; AURRS (1).

Type 156: ? as type 155:

156.1, reddish-brown sandy fabric with a grey core and a burnished red slip; pits 51 and 69; probably sherds of the same vessel.

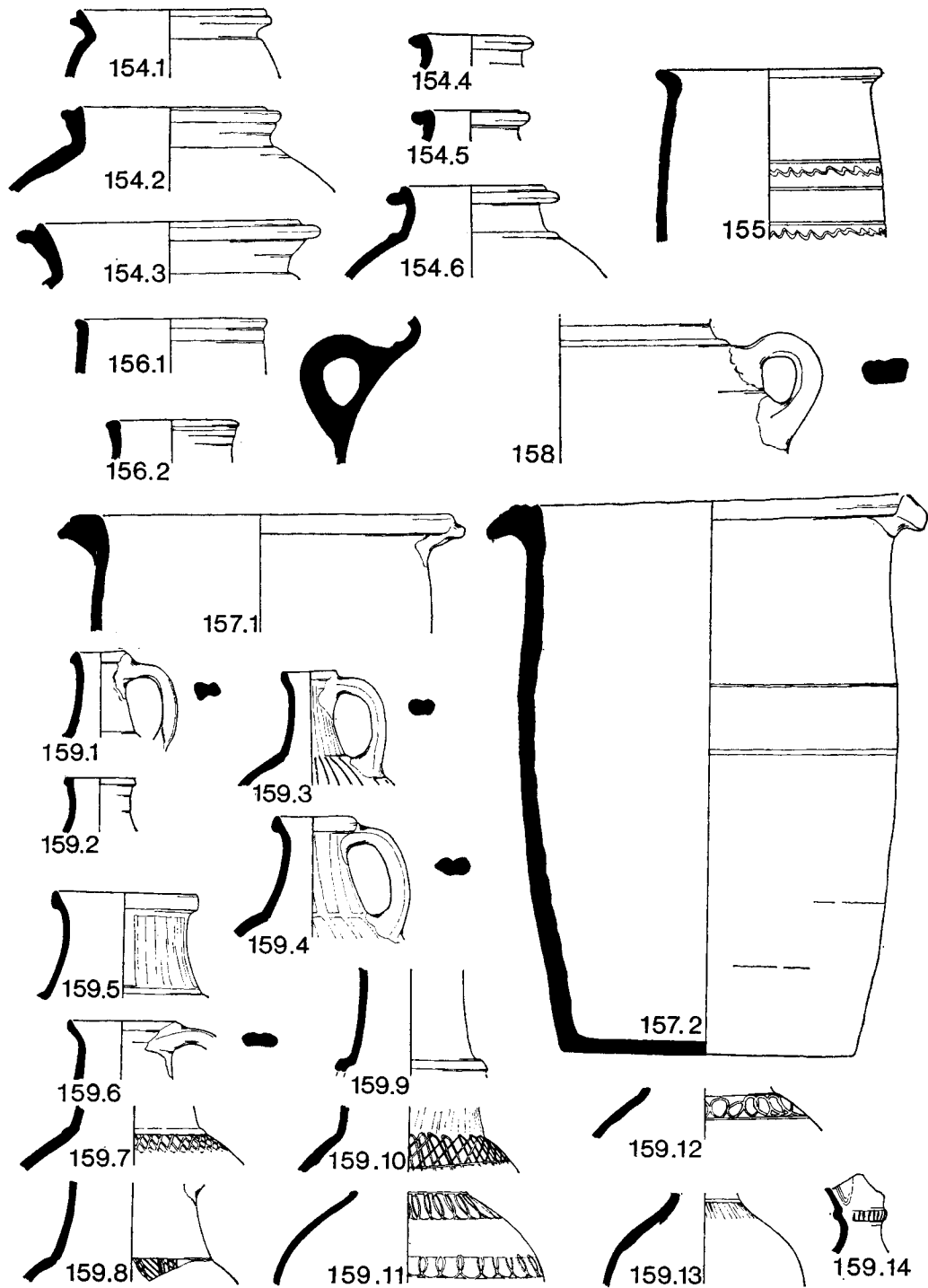


FIG. 193. Pottery types 154-159 (pp. 358-60). Scale $\frac{1}{4}$

156.2, hard grey sandy fabric; white, silvery grey slip outside and over the rim; u/s (1).

Type 157: deep jar or churn with a pair of opposing, knob handles; hard grey sandy fabric; no slip; pit 187; AMU (1); MO (1); UO (1); u/s (1); total 5. This type was being produced in Amberwood, kiln 1; but manufacture in another centre is also possible (Fulford, 1973).

Type 158: jar with two handles; rim missing:
hand-made, fabric A, light brown surface; MO (1).

Jugs

Type 159: jugs with simple collar rims:

fine to coarse, grey sandy fabric; white to grey slip outside, or, very rarely, no slip (159.2 and 5); vertical burnishing on the neck, diagonal on the shoulder; probably a New Forest type: 159.1 and 2, small jugs; pit 41; AURRS (1); MO (1); u/s (6).

159.3, pits 40 and 121; UO (1); u/s (2).

159.4 and 5 and others similar occurred in pits (6), (86, 95, 103, 144, 164, 223); BURRS (2); AURRS (5); AMU (1); MO (5); Up. Clay (1); UO (1); u/s (11); total 32.

159.6, slightly outbent rim; pit 144; u/s (5).

Summary: pits (10); BURRS (2); AURRS (6); AMU (1); MO (6); Up. Clay (1); UO (2); u/s (24); total 52.

body sherds only; fine, grey sandy fabrics covered in a white or black slip with vertical burnishing on the neck and diagonal or loop decoration on the shoulder; presumably these sherds belong to the preceding rims:

159.7-9, pit 46; 159.10, MO; 159.11, UO; 159.12, AURRS; 159.13, pit 121; others similar from pits 60, 63 and 83; AURRS (2); MO (1); UO (1); u/s (3); total 17.

159.14, hard, brown to grey fabric with white to brown slip; AURRS (1).

159.15 (not illustrated), neck sherd only; hard orange fabric with a grey core; no slip, but surface burnished with vertical strokes; pit 83.

Besides 159.14 and 15, summary: pits (7); AURRS (3); MO (2); UO (2); u/s (3).

Type 159 as a percentage of each group:

MO/Up. Clay	1.9%	All groups pre-345	1.8%
UO	1.1%	All groups post-345	0.9%

It is unfortunate that no examples occurred pre-325 in secure contexts. The pit evidence implies that the type was current before. The trend after 345 is not necessarily significant, although it is interesting that colour-coated jugs become more common after 345 (e.g. type 6). At Amberwood in the New Forest, jugs of type 159 were not being made in the later of the three kilns, although colour-coated types were present.

Type 160: as type 159, but squared rim:

fine, grey sandy fabric; the upper two-thirds covered in a silvery grey slip, burnished diagonally on the shoulder and in a broad zone below; pit 119; others similar in pit 164; UO (1); u/s (1); Alice Holt type.

Type 161: as above, but triple reeded handle and rounded rim profile:

161.1, fine, grey sandy fabric with a black slip; pit 225; AURRS (1).

161.2, brown to grey sandy fabric with a thick white to brown slip, except on the handle; u/s (1).

161.3, fine, grey sandy fabric with a black slip; probably of this type, though not enough rim for indication of handle; pit 103; u/s (1).

161.4 (not illustrated), hard, grey sandy fabric, handle only; u/s (1); Rhenish (Fulford and Bird, forthcoming).

- Type 162: jug with flanged rim:
fine, grey sandy fabric with a white or black slip all over; no trace of burnishing; pits 60 and 63; AURRS (2); u/s (2).
- Type 163: jug with flared-out rim:
fine, grey sandy fabric with a black slip; AURRS (1).
- Type 164: jug with narrow mouth:
fine, grey sandy with a white slip; u/s (1).
- Type 165: jug with everted mouth:
fine, grey sandy fabric with a white slip outside, and inside the rim; u/s (1).
- Type 166: ? jug or ? jar, with sharp, undercut rim:
166.1, grey sandy fabric; no slip; UO (1).
166.2, brown to grey sandy fabric; no slip, but burnished on upper surface of the rim; u/s (1).
- Type 167: jug with flange on the neck:
fine, grey sandy fabric with a grey slip; u/s (1).
- Type 168: ? jug or ? jar, reeding below the rim:
fine, grey sandy fabric with a grey slip; u/s (1).
- Type 169: jug with pinch mouth and thumb stop on handle:
very light grey, granular fabric with a grey slip (cf. type 121); MO (1).
- Type 170: ? jug with cupped mouth:
a hard yellow-brown fabric with smoothed, but not burnished self-coloured surface; pit 130.
- Type 171: jug:
hard white, granular fabric, yellow-brown to the core; white surface; u/s (1); possibly first/second century.

Lids

- Type 172: with a V-shaped rim, fabric varies from brown to grey sandy; no slip.
172.1-6, pits 60, 83, 121, 164, 236; AURRS (3); AMU (1); MO (2); UO (2); u/s (10).
172.7, New Forest, fabric 2; no trace of slip; AURRS (1).
- Type 173: with a turned down rim:
173.1, fabric D; AURRS (1); AMU (1), u/s (2).
173.2, grey sandy fabric, dark grey surface; u/s (1).
173.3, hand-made, fabric A, grey to yellow surface; AMU (1).
- Type 174: with simple rim;
174.1, grey sandy fabric; no slip; AMU (1).
174.2, light grey sandy fabric; no slip; pit 144.
174.3, hand-made, fabric A; burnished all over; AURRS (1); AMU (1).
Dating of types 172-174 indeterminate.

Mugs

- Type 175: mug with two handles:
175.1-3, fine grey sandy fabric with a white slip outside and over the rim; pits (12), (48(.2), 62, 92, 121(.1) (2), 144, 164, 209, 223, 227 (2), (.3), 237); AURRS (2); AMU (2); MO (2); u/s (5); total 23.
175.4 black-burnished, fabric B; all-over burnishing outside and stroke burnishing around the handles; pits (8), (65, 182, 223, 225 (2), 235, 236 (2)); AURRS (4); MO (1); UO (1); u/s (4).

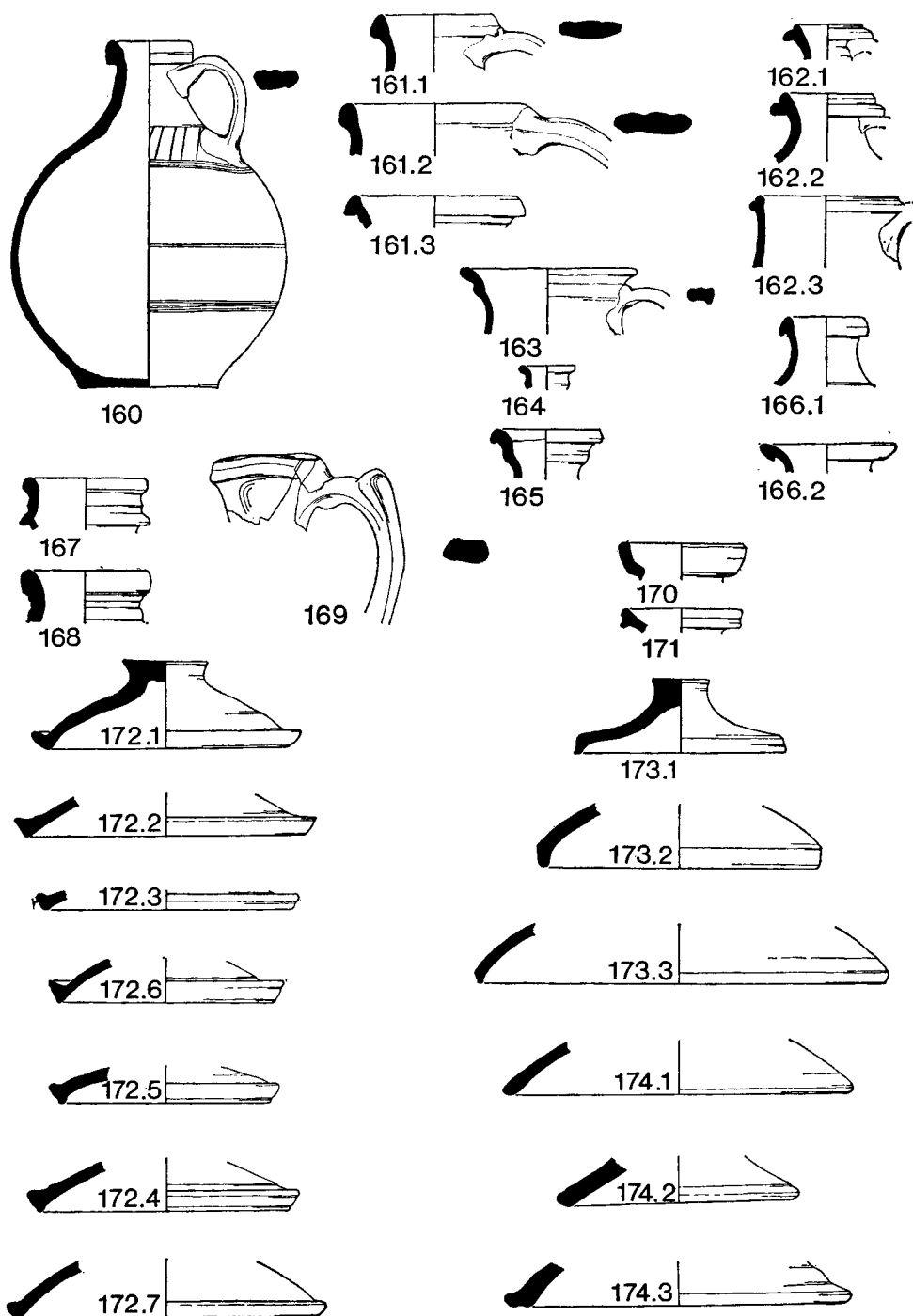


FIG. 194. Pottery types 160-174 (pp. 360-1). Scale $\frac{1}{4}$

The date range of this type in both fabrics must be from before 325 on the evidence of the pits to, perhaps, *c.* 370. There is no evidence of a fall-off trend after 345.

Storage Jars

Type 176: with simple folded-out bead rim:

176.1, fine grey sandy fabric with a silvery grey slip outside and over the rim; AMU (1); UO (1).

176.2, very coarse, grey sandy; hand-made; pit 54; AURRS (1).

176.3, as above, but finger impressions on the rim; UO (1).

Type 177: pronounced and everted rim:

177.1, fine, grey sandy fabric with a silvery grey slip; AURRS (1); AMU (1); UO (1); u/s (3).

177.2, hard grey sandy fabric, burnished on the rim and body, but not the neck; no slip; pit 206; u/s (1).

177.3, hard grey, sandy fabric; hand-made; u/s (2).

177.4, fine, grey sandy fabric with a white slip outside and over the rim; AURRS (1); AMU (1); u/s (1).

177.5, hard grey sandy with a white slip outside; pit 234.

177.6, grey sandy with a white to grey slip outside; hand-made; AMU with sherds of the same vessel from UO; u/s (2).

Type 178: hard grey sandy; no trace of slip; 'pie crust' finger impression on the rim; pit 46; MO (1); AURRS (2); AMU (2); u/s (2).

Types 176-178: body sherds that could belong to any of the preceding storage jar types:

176-8.1, hard grey sandy with two zones of white slip either side of a chevron pattern of slash marks; executed with a five pointed instrument; u/s.

176-8.2, grey sandy fabric with a silvery grey to black slip below a zone of comb decoration in a chevron pattern; u/s.

176-8.3, grey sandy with a zone of white slip with lattice burnished decoration below a zone of wavy comb decoration; u/s; similar in pit 164.

176-8.4, light grey sandy fabric with incised circles and wavy line stroke burnishing; AMU (1); u/s (1).

176-8.5, fine, grey sandy fabric; with a white slip and regular incised wave patterned zone between shallow, incised lines; u/s.

Summary of grey ware storage jar types 176-178: pits (5); AURRS (6); AMU (8); MO (1); UO (5).

Although there appears to be an increase in storage jars after 345 (0.16, pre-345 and 1.0, post-345), this may merely be a reflection of their individual long life. In this respect many jars were very worn. If the increase is significant, it must be seen against an overall decline in grey ware types, particularly slipped ones, post-345.

Type 179: storage jar:

brittle red, flaky clay with some grog and flint temper; sometimes a grey core; red-brown surface; nail and slash marks on the rim and finger impressions on the body:

179.1, pit 85; others from pits 182, 187 and 236 (? 2); AURRS (1); UO (1); u/s (1).

179.2, pit 147.

179.3, u/s (1).

179.4, pit 69.

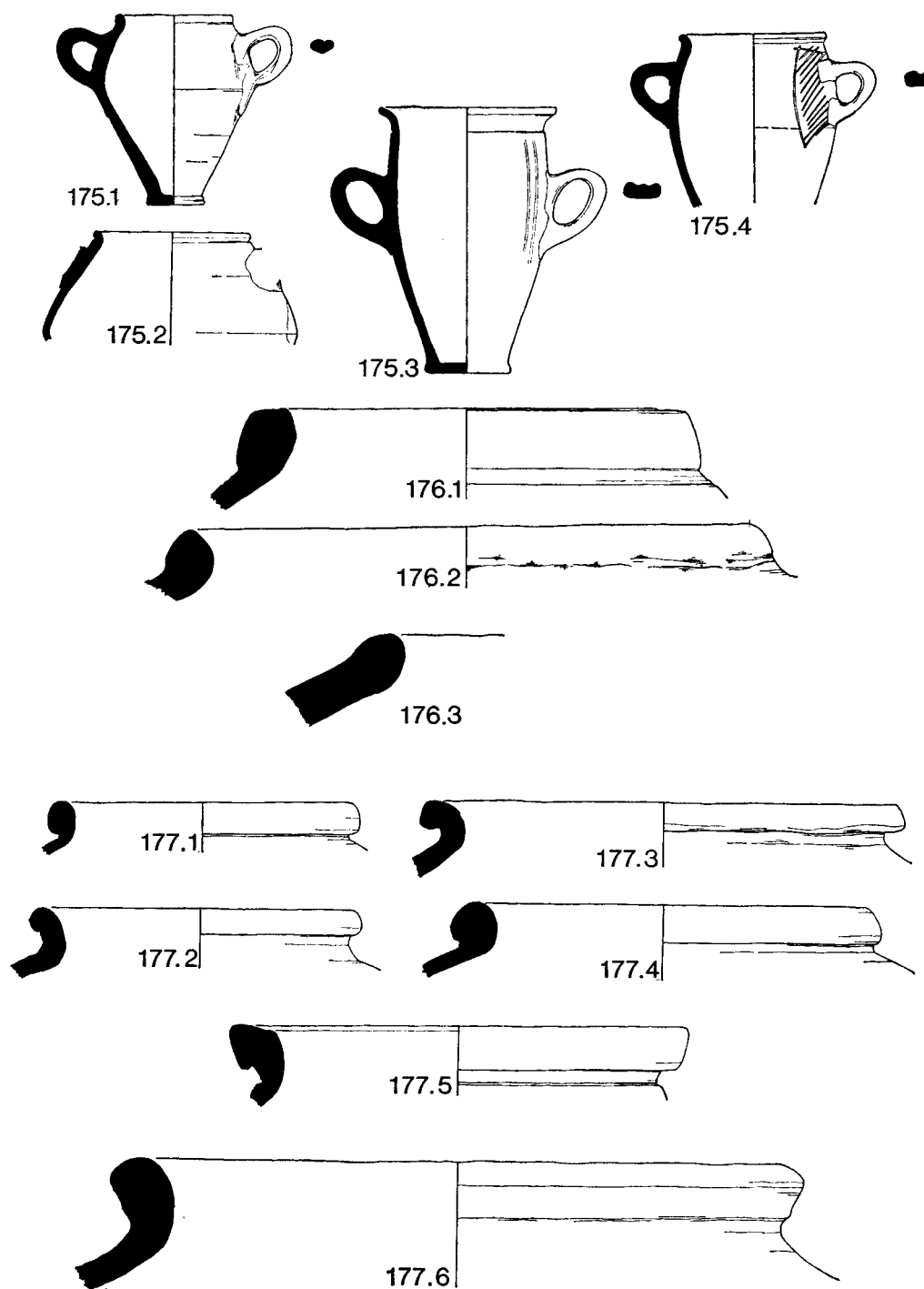


FIG. 195. Pottery types 175-177 (pp. 361-3). Scale $\frac{1}{4}$

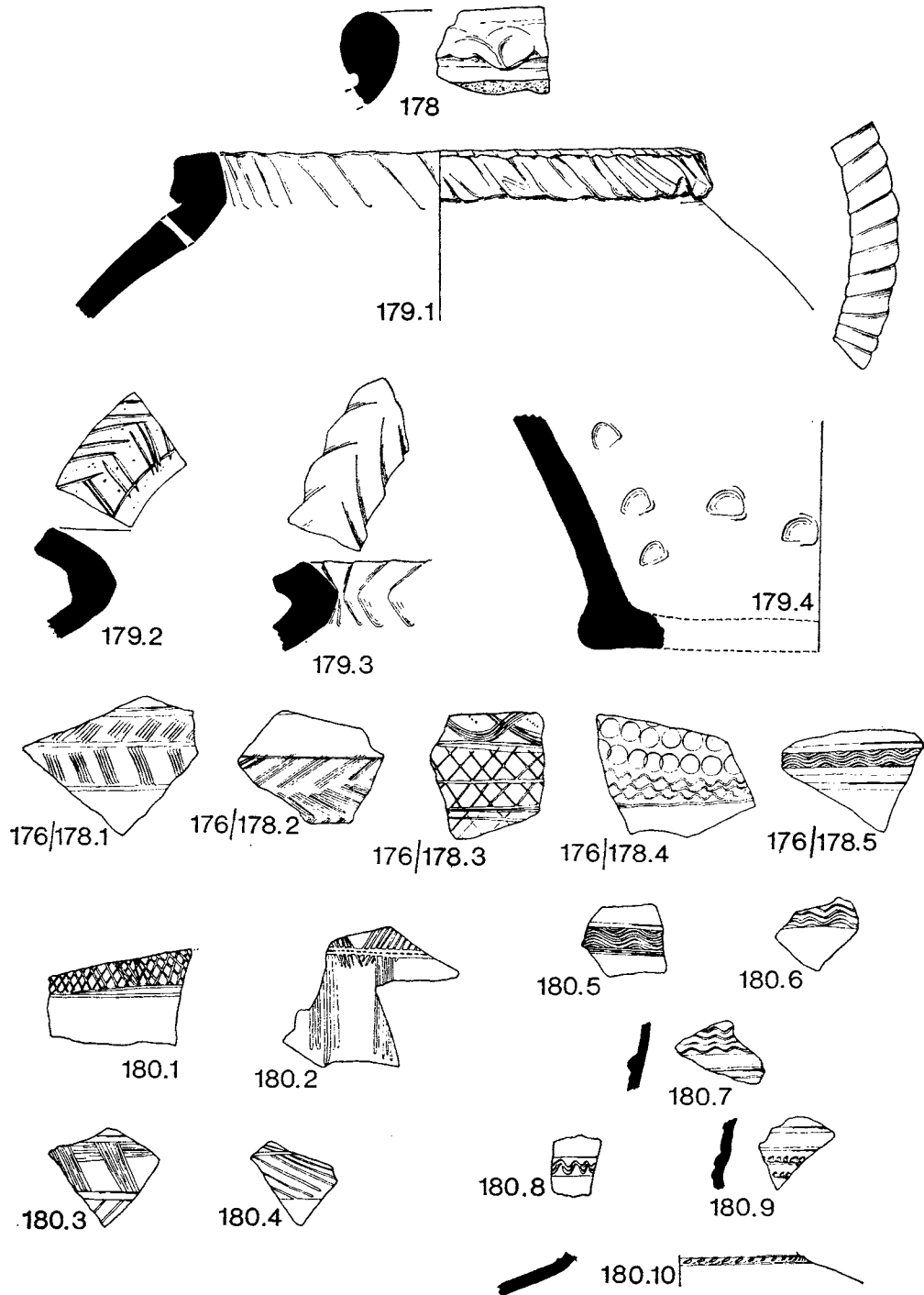


FIG. 196. Pottery types 178-180 (pp. 363-6). Scale $\frac{1}{4}$

This type seems to be particularly associated with the pits and perhaps has a limited date range *c.* 325–45. Perhaps it fills a gap in the supply of more durable large jars. Owing to the fragility of the fabric its manufacture must be very local, if not at Portchester itself.

- Type 180: body sherds only from grey ware jars and bowls:
- 180.1, stroke-burnishing on a thick, black, burnished slip; MO (1).
 - 180.2, coarse, grey sandy fabric; no slip, but stroke-burnishing; MO (1).
 - 180.3, as above; u/s.
 - 180.4, fine grey sandy; stroke-burnishing on a white slip; u/s.
 - 180.5, grey sandy; no slip; comb decoration; u/s.
 - 180.6, as above; u/s.
 - 180.7, fine, grey sandy with a silvery grey slip; comb decoration; u/s.
 - 180.8, wavy decoration on a grey sandy fabric.
 - 180.9, grey sandy with a white slip; stab decoration; u/s.
 - 180.10, grey sandy with a white slip; stab decoration at the join of neck and body; possibly from a jug.

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IX. THE GLASS

by D. B. HARDEN

INTRODUCTION

THE glass falls into two stratigraphical categories:

- (a) Roman glass from Roman contexts: nos. 1–25.
- (b) Roman glass from post-Roman levels: nos. 26–34.

Apart from the solitary fragment of a matt/glossy window-pane of the earlier Roman period, the Roman material, whether vessel or window, presents a very uniform fourth-century aspect. Most of the fragments can be readily recognized as belonging to one or other of the fourth-century forms discussed by Clasina Isings (her nos. 105–34).¹ A number of the types are also to be seen among the late third- and fourth-century fragments from site C at Shakenoak, Oxon.² Indeed the fragments are all very diagnostic and there can be no doubt that they belonged to the inhabitants of the fourth-century Saxon shore fort.

The majority are small and not particularly significant, apart from their value as dating material. A few, however, deserve some comment. Nos. 3 and 4 are fragments of bowls with geometric facet and linear cutting; cut ware was never prolific in Roman Britain and any fragments that occur are worth attention. No. 5 is peculiar. It belongs, I think, to a mould-blown head-vase, and represents part of the hair at the back of the head or neck. Roman head-vases are usually janiform, but this is a 'one-face' type; two examples of the type I have in mind are illustrated by R. W. Smith.³ The most prolific late Roman types at Portchester are cups and cone-beakers of colourless or yellowish-green glass with knocked-off, everted rims, some of the beakers being decorated with blue blobs (nos. 9–14). These types existed throughout the empire at this period, and it is satisfactory to find them in such comparative quantity at Portchester. It is also satisfactory to find that, with one exception (the matt/glossy fragment, no. 22, which is probably a stray from some earlier habitation on or near the site), all the Roman window-glass is of the double-glossy variety, now recognized as the normal window-glass of the fourth century (if not also of the third century) in Roman Britain.⁴ However much dispute there may be about whether the early matt/glossy window-glass was cast or blown, all agree that the later double-glossy type is cylinder-blown, i.e. 'muff' glass.

¹ Clasina Isings, *Roman Glass from Dated Finds*, Groningen/Djakarta, 1957, pp. 126–62.

² A. C. C. Brodrigg *et al.*, *Excavations at Shakenoak IV*, (1973), 102 ff., nos. 208 ff.

³ *Glass from the Ancient World*, Corning, 1957, pp. 141, 145, nos. 279 and 288.

⁴ Cf. Harden in *Glastechnische Berichte*, 32K (1959), Heft VIII, 8–16; *id.* in E. M. Jope ed., *Studies in Building History*, London, 1961, pp. 44–9; and G. C. Boon in *J. Glass Studies*, viii (1966), 41–7.

INVENTORY (figs. 197-9)

A. Glass from Roman Contexts

Unless otherwise stated the fragments come from Roman general layers.

Vessels

1. Fragment of rim of shallow bowl; greenish-colourless. Blown. Rim outbent, lip finely ground. Irregular band of wheel-incisions below lip. Whitish to black weathering film, mostly flaked off and leaving iridescent surface. D. *c.* 18 cm. Late third to fourth century.
Trench 101 layer 86: layer above make-up.
Similar fragment: Trench 88 layer 10. From a smaller and thinner bowl. D. *c.* 14 cm.
2. Fragment of rim of shallow bowl; greenish-colourless. Blown. Rim incurved, lip finely ground. Irregular band of wheel-incisions below lip. Weathering as no. 1. D. 24 cm. Late third to fourth century.
Trench 101 layer 86.
3. Fragment of rim and side of bowl; greenish-colourless. Blown. Rim outbent, lip finely ground. Irregular band of wheel-incisions near rim and, lower down, part of geometric design of thick and thin horizontal and sloping facets. Weathering as no. 1. D. *c.* 19 cm. Late third to fourth century.
Trench 101 layer 86.
4. Fragment of side of deep bowl; greyish-colourless. Blown. Convex side. Part of geometric design of horizontal wheel-cuts and vertical and sloping thick and thin facets. Surface pitted and iridescent in parts. D. *c.* 9 cm. Late third to fourth century.
Trench 70 layer 4.
5. Fragment of head-vase showing hair on back of head or neck; clear dark blue. Mould-blown. Milky film and iridescence. 3 by 3.5 cm. Third century.
Trench 71 layer 8.
6. Fragment of rim and side of cylindrical cup; colourless. Blown. Almost vertical side, curving in slightly at top, plain horizontal lip, knocked off and finished by grinding. Shallow wheel-cut below rim. Poor, streaky and bubbly glass; advanced flaking weathering with iridescence. D. 7.5 cm. Late third to fourth century.
Trench 74 layer 46: pit 86.
Similar fragments: trench 79 layer 60, pit 121. Colourless. No decoration. Dulled but not flaking.
Trench 87 layer 27: layer above upper road. Greenish-colourless. No decoration.
7. Fragment of rim of bowl or jar; bluish-green. Blown. Rim outplayed with solid thickened lip formed by outward folding. Rest of shape uncertain. Incipient iridescence; many small bubbles. D. *c.* 9 cm. Late third to fourth century.
Trench 72 layer 7.
8. Fragment of rim of bowl; yellow. Blown. Rim vertical, with a hollow tubular lip formed by folding outwards. Sides slope inwards from underneath lip; shape of rest of bowl uncertain. Milky weathering film, flaking away and leaving iridescent pits. D. *c.* 15 cm. Probably fourth century.
Trench 87 layer 5.

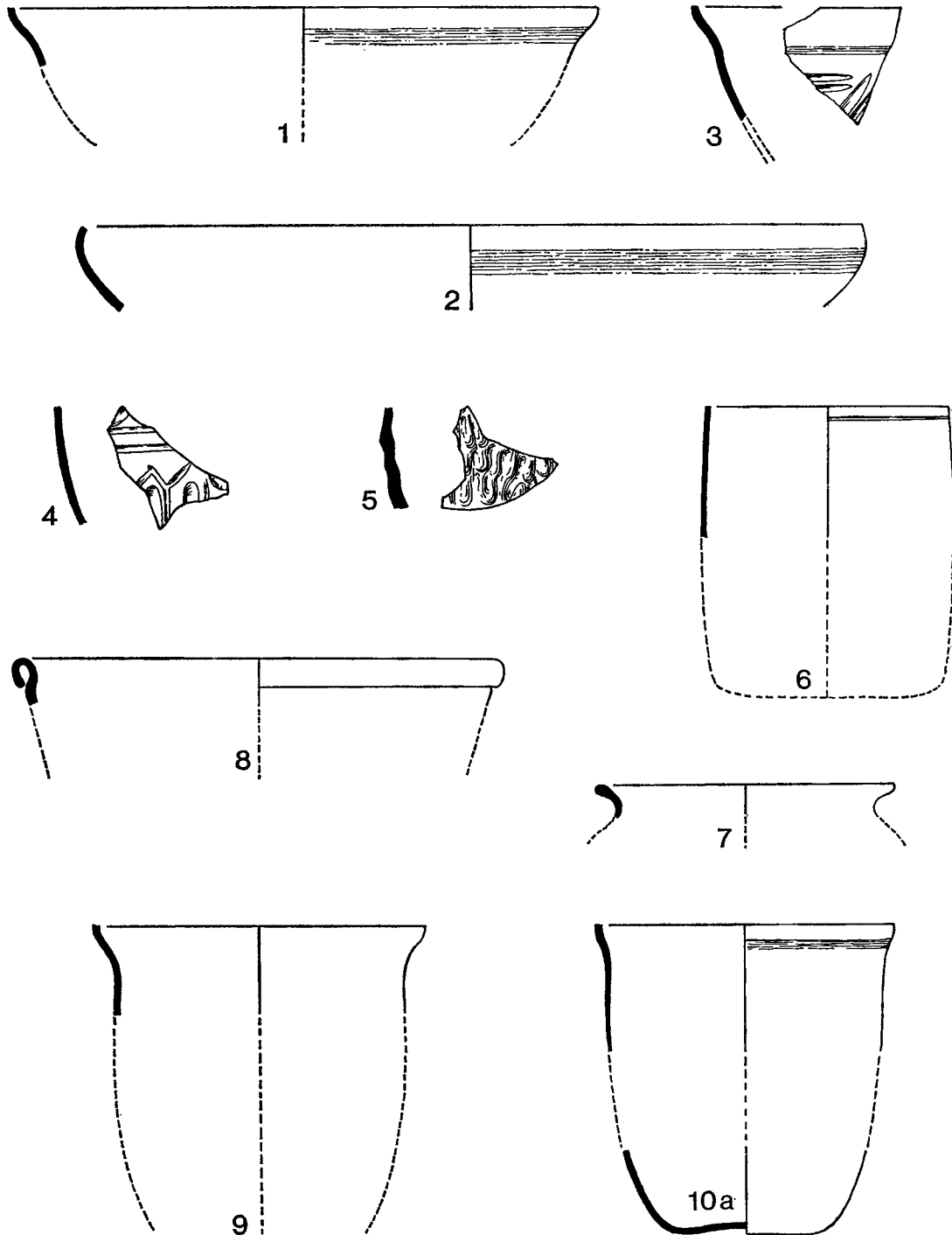


FIG. 197. Glass vessels (pp. 369, 371). Scale $\frac{1}{2}$

9. Fragment of rim of cup; yellowish-green. Blown. Rim outplayed with lip knocked off and slightly smoothed; walls convex with downward taper. Incipient weathering. D. *c.* 10 cm. Fourth century.
- Trench 88 layer 6: layer above make-up.
 Similar rim-fragments: Trench 91 layer 47: layer above upper road.
 Trench 62 layer 4. D. *c.* 9 cm.
 Trench 103 layer 23: upper occupation. Thinner walls, greener glass.
 D. *c.* 9 cm.
 Trench 69 layer 8. Walls and colour as previous example. D. *c.* 7.5 cm.
10. Group of fragments from a gully, all from cups of the same general type and date as no. 9:
- Ten fragments, not contiguous, but probably giving full profile of cup; dark yellowish-green. Blown. Rim slightly outplayed, lip knocked off and smoothed. Walls cylindrical at top, but taper lower down to curved junction with concave bottom. Broad group of wheel-incisions near rim. Poor, bubbly glass; incipient iridescence. D. 9 cm. H. *c.* 9 cm.
 There are also two rim fragments, similar in shape and colour, but *c.* 10 cm. diameter.
 - Nine fragments, not contiguous, and not providing complete profile of cup; greenish-yellow. Shape and dimensions similar to (a). Group of wheel-incisions at rim, and another 2 cm. lower down body.
 - Fragment of rim and side of cup; yellowish-green. Side tapers in towards bottom. At greatest diameter of body a band of blue blobs (only two extant). Bubbly and iridescent. D. *c.* 9.5 cm.
 - Three small fragments, two of which bear the greater part of one blob each, the third having parts of two, from one or more other cups, greenish-yellow, and a fragment of body, green with large bluish-green blob.
 Trench 63 layer 6: Saxon (?) gully.
11. Two contiguous fragments of rim and side of cone-beaker; colourless. Blown. Rim out-turned with lip knocked-off and smoothed; sides taper downwards. Bubbly; no weathering. D. 6.5 cm. Fourth century.
 Trench 79 layer 68: pit 121.
12. Fragment of body of cone-beaker; yellowish-green. Blown. Bubbly and streaky; thick film of black weathering, mostly flaked off and leaving an iridescent surface. D. *c.* 6 cm. Fourth century.
 Trench 63 layer 9: pit 47.
13. Fragment of body of cone-beaker, colourless. Blown. Raised trail of similar glass, vertically, with drop-on at the lower end. Thin horizontal band of wheel-incisions near bottom of fragment. Bubbly and streaky; weathering as no. 12. D. *c.* 6 cm. Third to fourth century.
 Trench 74 layer 44: pit 85.
14. Fragment of bottom of cone-beaker; green. Sides taper slightly to rounded basal angle; bottom concave with rounded kick. Very bubbly; no visible weathering. D. bottom 3 cm. Fourth century.
 Trench 65 layer 11: pit 51.
 Similar fragment: Trench 74 layer 19: pit 83. Much flaking and iridescence.
15. Rim of flask; light green. Rim widely splayed, lip thickened and rounded. Surface flaking off, leaving iridescence. D. 7.5 cm. Late third to fourth century.
 Trench 102 layer 38.
16. Rim of flask; dull green. Shape as no. 15, but with self-coloured trail below lip, outside. D. *c.* 5 cm. Late third to fourth century.
 Trench 54 layer 6.

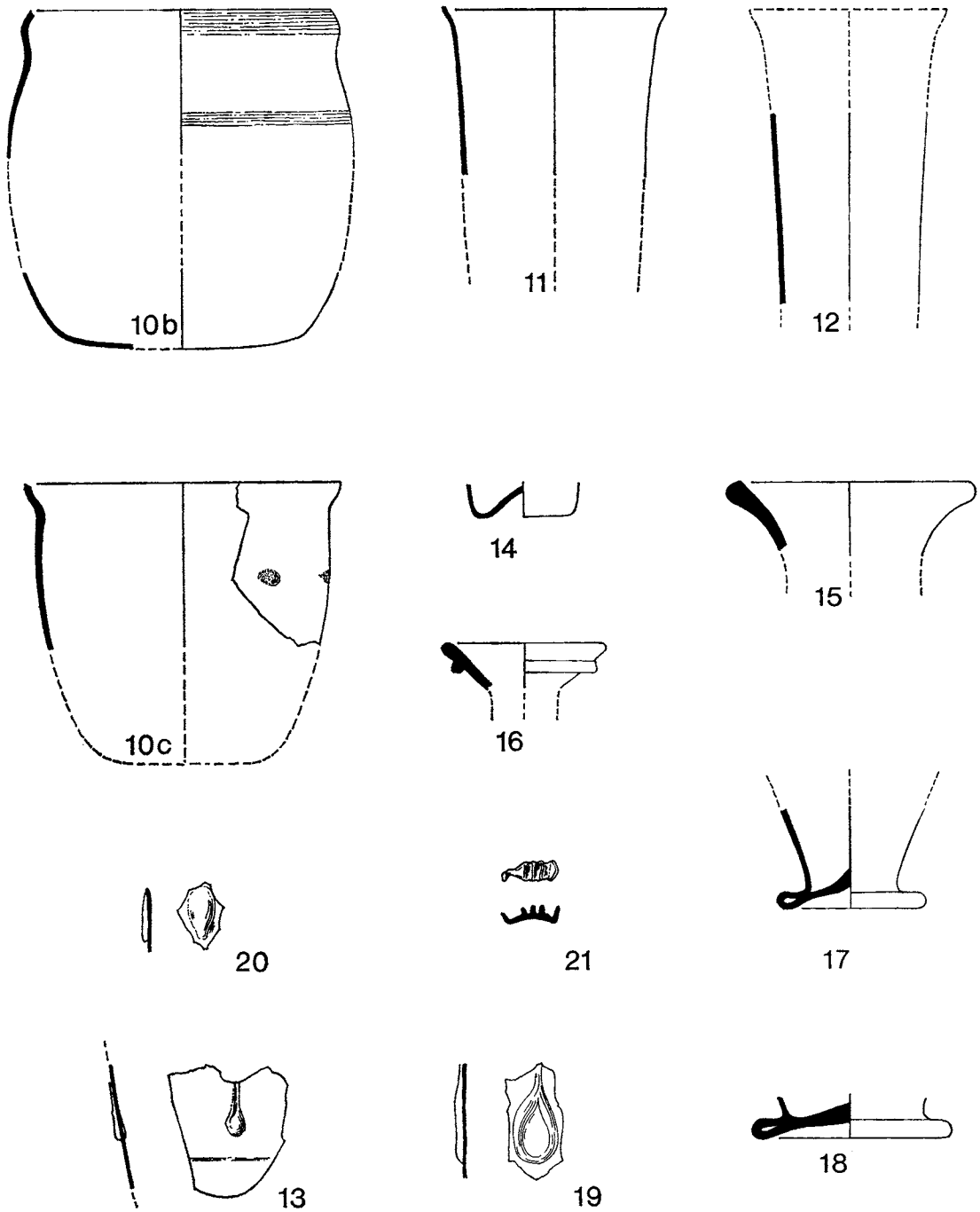


FIG. 198. Glass vessels (pp. 371, 373). Scale $\frac{1}{2}$

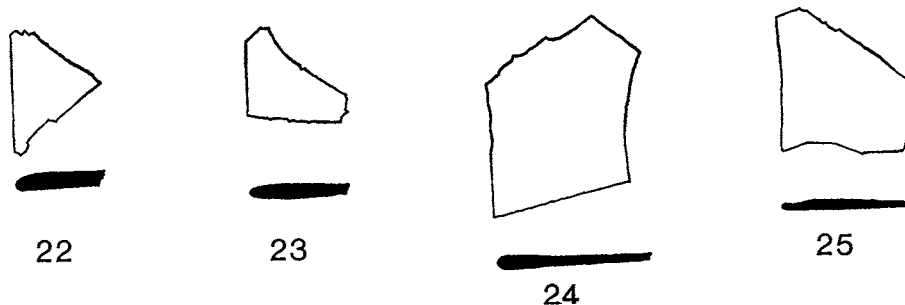
17. Base-ring and part of lower body of jug; greenish-colourless. Sides taper to base-ring, which is pushed-in and hollow, with concavity and low, pointed kick below. Streaky and bubbly; surface dull and rough through weathering. D. base-ring 4.5 cm. Fourth century.
 Trench 79 layer 68: pit 121.
 Similar fragments: Trench 103 layer 51 (2277). D. base-ring 4.4 cm.
 Trench 98 layer 75: pit 164. Half of base-ring only. D. 4.2 cm.
18. Quarter of base-ring of bowl or cup; dark bluish-green. Shape as no. 17. Recognizable trace of pontil-mark. Bubbly and streaky; incipient iridescence. D. base-ring c. 6 cm. Fourth century.
 Trench 62 layer 5.
 Similar fragments: Trench 89 layer 48.
 Trench 88 layer 10: layer above make-up.
19. Fragment of body bearing end-loop of vertical trail; colourless with greenish tinge. Shape uncertain. Bubbly; no weathering. Late third to fourth century.
 Trench 98 layer 73: pit 164.
20. Fragment of body bearing an oval prunt or flattened knob; green. Shape uncertain. Bubbly; flaking film and iridescence. Late third to fourth century.
 Trench 91 layer 52 (1301): layer above upper road.

Tag-end of trailing

21. Tag-end of open-work trailing from a vessel(?); dark green. Iridescent. Trail flattened and then pincer out four times at right angles. Length 1.5 cm., width 0.6 cm. Late third to fourth century.
 Trench 64 layer 7.

Window-glass

22. Fragment of matt/glossy window glass showing part of rounded edge; bluish-green. Thick pane, rounded but not thickened at edge. Bubbly; whitish film flaked away, leaving iridescent, pitted surface. First to second century.
 Trench 71 layer 8.
23. Fragment of double-glossy window-glass with part of rounded edge; bluish-green. Pane thick in parts, with thin edge. Bubbly and streaky, flaking and iridescent. Fourth century.
 Trench 103 layer 23: upper occupation.
 Similar fragments, but no thinning at edge of pane: Trench 77 layer 5.
 Trench 62 layer 20.
24. Two fragments of double-glossy window-glass, one showing part of the rounded edge; bluish-green. Thin pane with thickened edge. Bubbly and streaky; dulled, no iridescence. Fourth century.
 Trench 79 layer 68: pit 121.
 Similar: Trench 70 layer 23: pit 66.
 Trench 87 layer 50 (1362): layer below upper road.
 Trench 88 layer 55: layer above make-up.
25. Two fragments of double-glossy window-glass, each showing part of the rounded edge; bluish-green. Thin pane with thin edge. Bubbly and streaky; flaking and iridescent. Fourth century.
 Trench 88 layer 10: layer above make-up.
 Similar: Trench 78 layer 14: pit 103.
 Trench 62 layer 20.

FIG. 199. Window-glass (p. 373). Scale $\frac{1}{2}$ *B. Roman Glass from Post-Roman Levels*

26. (Not illustrated.) Fragment of pane of double-glossy window-glass; no part of edge extant; bluish-green.
Trench 87 layer 33: *Grubenhau*.
27. (Not illustrated.) Fragment of three-ribbed handle of small jug; greenish-colourless.
Trench 88 layer 9: pit 135.
28. (Not illustrated.) Fragment of bottom of body of drop-shaped unguent-bottle; green.
Trench 88 layer 9: pit 135.
29. (Not illustrated.) Fragment of slightly incurved rim of bowl; dark green.
Trench 88 layer 11: pit 135.
30. (Not illustrated.) Two fragments of double-glossy window-glass; bluish-green.
Trench 88 layer 33: pit 135.
31. (Not illustrated.) Fragment of double-glossy window-glass with part of one grozed edge; bluish-green.
Trench 88 layer 80: pit 135.
32. (Not illustrated.) As no. 31, with parts of a diamond-cut (?) edge and a grozed (?) edge; yellowish-colourless.
Trench 88 layer 81: pit 135.
33. (Not illustrated.) Fragment of rim of bowl; greenish. Splayed rim, knocked off and smoothed at lip. For shape cf. no. 1 above.
Trench 85 layer 21: Saxon slot.
34. (Not illustrated.) Fragment of cylindrical neck of bottle; green. From a tall-necked cylindrical bottle with two 'dolphin' handles at base of neck. For shape cf. example from Shakenoak, *op. cit.* in p. 368, note 2, p. 104, no. 232, fig. 52, and refs. *ad loc.* Late third or fourth century.
Trench 76 layer 4: medieval layer.

X. THE HUMAN BONES

by BARI HOOPER

DISCUSSION

WITH one exception all of the human remains recovered from the Roman levels at Portchester are of infants. The exception is an adult over the age of 23 years, represented by only a few fragments of pelvis. Not enough remained to establish the sex of this individual. It is quite possible that these pieces are not Roman but are intrusive from the Saxon level.

A number of problems arose in studying the infant remains, not the least being the small number of bones surviving in most burials. Only in four instances were anything like complete skeletons recovered. Unlike mature bones which will frequently yield much valuable information about disease and congenital anomaly, immature specimens by their very nature are less than informative. Suffice it to say in this instance that no evidence of disease or congenital change could be found. Beyond cataloguing them and attempting to assess their chronological age little else can be said. To assess the age at death the bones were compared with those of modern infants of known age. It must however be understood that direct comparison of size between bones of different periods for the purpose of establishing the chronological age of one group is a crude method of study. The different environmental, genetic and ethnic backgrounds of the two groups will have influenced the size to age ratio. But until a more scientific method of ageing immature bones is developed the direct comparison method remains as a guide. Another difficulty encountered was in trying to decide whether the bones of a full-term infant were immediate ante- or post-natal. Neither case can be proved with the present material, although some bones are several weeks old. It was therefore decided, with the above reservations, to divide the burials into two groups according to age: Group A being ante neo-natal; Group B being from neo-natal up to about 18 weeks. The obvious problem of the overlap between the upper range of Group A and the lower range of Group B cannot be overcome, but the classification should be seen as a tentative attempt to find out at which end of the scale most deaths occurred. And from it, it appears that most of the infants survived the actual birth but succumbed within the first few weeks of life. The rate of infant mortality in Roman Britain has not yet been established, but it is reasonable to assume that it was high. The low life expectancy of infants in the Graeco-Roman period is referred to by Aristotle in Book vii of the *Historia Animalium*, where, speaking of babies he says 'Most are carried off before the seventh day; that is why they give the child its name then, as they have more confidence by that time in its survival' (author's italics). Aristotle was writing in the fourth century B.C., but there is no documentary evidence in the Empire period of Rome to suggest any improvement in life expectancy for the new-born. Indeed even in Britain as late as the eighteenth century the chances of a child reaching adulthood were poor. The London Bills of Mortality for 1762-71 show that two-thirds of the children died before the age of five years, and 75% of these deaths occurred below the age of two years (Still, 1931).

This brings us to the question of the location and method of burial. The ancient Roman law of the Twelve Tables expressly forbade the burying or burning of a corpse within a city (*hominem mortuum in urbe ne sepelito neve urito*). It appears however that newly born babies were not affected by this law and it is not surprising to find the Portchester inhumations within the confines of the fort. There are many other examples from Britain, the most notable being at the villa of Hambleton, Bucks., which yielded no fewer than 97 infant burials (Cocks, 1921). Similarly the scarcity of infant burials in the large Romano-British cemetery at Trentholme Drive, York, favours the hypothesis that the inhumation of infants in the communal burial ground was not a general custom (Warwick, 1968). At Portchester, 13 of the 27 infants were interred in pits along with a selection of animal, bird and fish bones. The classes represented were ox, pig, sheep, dog, cat, horse, red deer, roe deer, fallow deer, hare, birds and fish. The deposition of animal remains with the dead is occasionally noted in Romano-British contexts. At Trentholme Drive 105 specimens of animal remains were found in the cemetery and 12 of these were associated with particular skeletons. The classes represented were horse, ox, sheep, pig, cat, red deer, roe deer and birds. Eight of the Portchester pit assemblages and one from a well had among the mammalian remains a neo-natal or very young pig. A full analysis of these pit groups is contained in the section on animal bones in this report. It will be seen that some types of animal consistently occur with the infant burials which might suggest that their deposition was part of funeral ritual. Pits full of the normal detritus of the Roman household do sometimes contain the skeletons of infants, as at Radwinter, Essex, where six infants were found in a rubbish pit (Hooper, forthcoming).

As at Hambleton a few double burials were noted; these occurred in one pit and in the upper and middle occupation and middle clay layers. It is impossible to determine whether the second infant in each pit or grave was buried contemporaneously with the first or later.

INVENTORY OF HUMAN REMAINS FROM PORTCHESTER

<i>Location</i>	<i>Inventory</i>	<i>Age group</i>
Pit 46	Humeri, right scapula, left radius, vertebrae and ribs	B
Pit 47	Right tibia	B
Pit 60b	Left humerus	A
Pit 63 upper	Skull and jaw fragments, vertebrae and ribs, scapulae, right radius, left femur and left tibia	B
Pit 63 lower	Fragment of left ulna	B
Pit 64	Skull and jaw fragments, vertebrae and ribs, right scapula, left clavicle, right humerus and ulnae	A
Pit 86	Right radius	B
Pit 92	Skull and jaw fragments, vertebrae, scapulae, clavicles, pelvis, left humerus, femora and tibiae	B
Pit 119	Right clavicle	A
Pit 129	Jaw fragment, left scapula and right ulna	A

<i>Location</i>	<i>Inventory</i>	<i>Age group</i>
Pit 235	Skull fragments, vertebrae and ribs, scapulae, pelvis fragments, humeri, radii, left ulna, left femur and tibiae	B
Pit 164 (well)	Humeri and tibiae	B
107 layer 52 mid occupation	Left ulna	B
108 layer 163 mid occupation	Left femur	A
107 layer 50 upper clay	Skull fragments, right scapula, pelvis fragment, ribs, tibiae	A
108 layer 111 upper clay	Skull and jaw fragments, humeri, right radius, right ulna, right femur, tibiae	A
108 layer 111a upper clay	Right humerus, right femur and right tibia	A
107 layer 53 mid clay	Right femur	B
107 layer 53a mid clay	Fragment of left humerus and right femur	B
107 layer 61 lower occupation	Fragment of left humerus	B
108 layer 202 lower occupation	Right ulna	B
107 layer 44 upper occupation	Left ulna, left radius, right femur and right tibia	B
107 layer 44a upper occupation	Right femur and right tibia	B
108 layer 62 upper occupation	Right femur	A
108 layer 99 upper occupation	Right femur	B
87 layer 9 above road	Right humerus	B
91 layer 43 above road	Fragment of pelvis	Adult

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XI. THE ANIMAL BONES

by ANNIE GRANT

INTRODUCTION

SOME 36,000 bone fragments were examined by the writer, of which 28,908 were identified. The remaining 7000 were generally too small to allow positive identification. The bones were those recovered from the Roman pits, wells and well-stratified layers against the Roman wall. Because of the obvious dangers of analysis of bone material from multi-period sites, the bones from those layers where there was risk of contamination from later levels were not examined. It is hoped that this minimized the chance that Saxon and medieval bones were included amongst the Roman material, although this possibility cannot entirely be excluded.

It has been demonstrated by Payne (1972) that, in excavations where sieving is not common practice, the recovery of animal bones is very heavily biased against small animals in favour of larger species. Payne's findings have been backed up by the writer's own experience of controlled sieving experiments. Excavation at Portchester was often in the hands of volunteers who were required to work quickly and no sieving was carried out. Inevitably, the recovery of animal bones will have been biased and this fact must be borne in mind when reading this report.

For the purposes of some analyses the bones were divided into five main and one subsidiary group. These are shown in Table I, with their contexts and approximate dates. They will be referred to as group 1, group 2, etc., during the report. When no groups are individually referred to, the discussion can be assumed to apply to the Roman bones as a whole.

TABLE I

<i>Group</i>	<i>Archaeological context</i>	<i>Approximate date A.D.</i>
1	Pits (excluding wells and the upper layers of pits 63 and 66)	290-325
2	Lower occupation and middle clay	290-325
3	Middle occupation and upper clay	325-345
4	Upper occupation, above road surface and make-up and the upper layers of pits 63 and 66	345 onwards
5	Wells	290-360
a	Below road and upper make-up	290-345

THE ANIMALS REPRESENTED

(fig. 200)

Bones were recovered of cattle, sheep, pigs, birds, dogs, cats, red deer, horses, roe deer, hare, foxes, badgers, fallow deer, fish, voles and mice. Five bones were recovered of a small mammal that was not positively identified. It was rarely possible to distinguish sheep from goat and so 'sheep' is used throughout to mean 'sheep and/or goat'.

Several methods of determining relative proportions of different animals are in common use and much has been written about their various merits (e.g. Chaplin, 1971; Clason, 1972). The writer has already discussed the possible advantages of counting only those bones which have at least part of an epiphysis present (Grant, 1970), over the method of counting all bone fragments identified. For some analyses, the 'minimum number of animals' method is to be preferred. It does give some idea, however vague, of how many animals we are actually dealing with, but it does not distinguish between animals represented by one or two bone fragments and those represented by complete or nearly complete skeletons. This might be important on sites where some animals are represented by joints rather than carcasses, or where some parts of an animal were specially collected for an industrial use, such as bone tool manufacture or glue making. It is the author's opinion that, ideally, as many different methods should be used for calculating the proportions of animals as possible. The results can then be compared, with allowances made for the possible biases of each. Three main methods have been used for this report.

'Epiphyses only' includes only those bones with part of an epiphysis or fusion surface present and mandibles with at least one tooth present. Mandibles without teeth, skull fragments including upper jaws and horn cores, and vertebrae are excluded. Adjustments are made where an animal has two bones in the place of a single bone in the more commonly represented animals. For example, the numbers of pig metapodia have been divided by two. Carpals, tarsals (except calcanea and astragali) and other small bones are not counted because they are so rarely recovered for small animals. Whole bones are counted twice, once for each epiphysis, except in the case of phalanges, which are rarely broken, and far more frequently recovered from cattle than from any smaller animals.

'Total fragments' includes all bone and tooth fragments identified and assigned to a species, except for skull fragments without teeth or horn cores. These are excluded because the very brittle nature of much of the bone of the skull means that the number of skull fragments can double during the transportation of the bones from the excavation to the place of analysis. Ribs are also excluded because of the difficulty of precise species identification.

'Minimum numbers of individuals' have only been calculated for the better represented animals. No attempt has been made to try to match pairs of bones to determine whether or not they could have come from the same animal. This would have presented enormous practical problems in a sample of this size, and is anyway of dubious validity. Minimum numbers have been calculated by the rough and ready method of dividing by two the number of the most commonly represented bone for each animal in each group.

The results are shown in Table II and fig. 200, where the percentages of the more common animals in each group have been presented in histogram form. Tables II(a) and II(b) give

EXCAVATIONS AT PORTCHESTER CASTLE

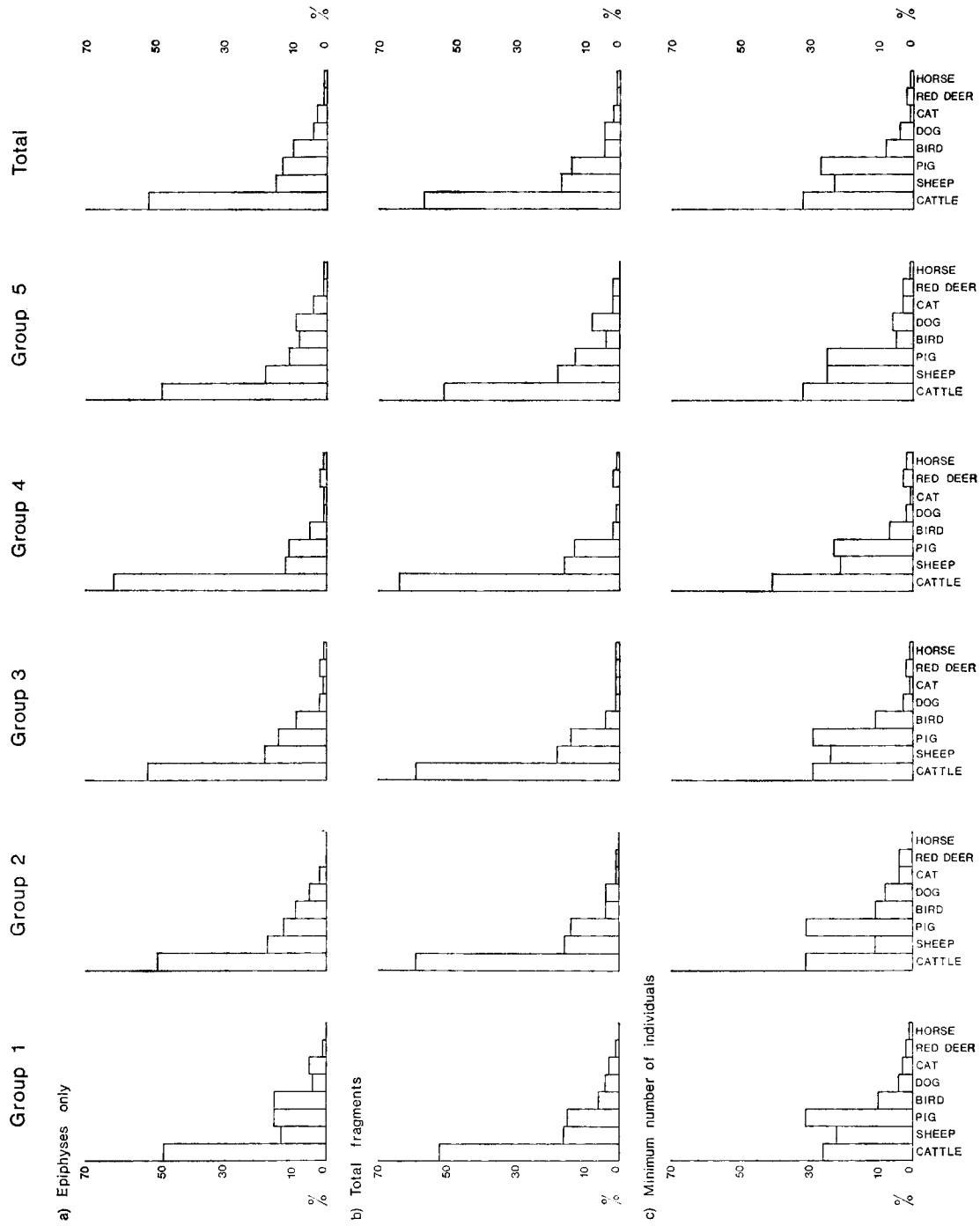


FIG. 200. Percentage of species represented

broadly similar results, except that the 'total fragments' method gives slightly higher percentages for cattle and slightly lower percentages for small animals, especially birds, than does the 'epiphyses only' method. This is precisely what was expected, as the 'epiphyses only' method was designed to help combat the bias against the smaller animals. The main disadvantage of this method is that where animals are represented only by bone fragments without epiphyses, they will not appear at all. The 'total fragments' method might be expected to give better results for very poorly represented animals. However, since these are generally very small animals with poor chance of recovery on unsieved sites, the results, however calculated, will not be very significant.

Using for the moment the results of table II(a), it would seem as if approximately half the animals found at Portchester were cattle. The numbers of sheep and pig seem fairly equal and together they represent just over a quarter of the bones recovered. Next in importance are birds, then dogs and cats. Red deer, horses, roe deer, hares, foxes, badgers, voles, fallow deer, fish and mice together only form approximately 3% of the total. Between the groups small changes are seen. The percentage of cattle bones increases slightly over the time span represented, from 47% in groups 1 and 2 to 62% in group 4. The proportions of pig and sheep bones vary slightly from group to group, but only become significantly different in group 5, where sheep bones form 18% of the total compared to 11% pig bones. Bird is most common in group 1, where it forms 15% of the total. In group 4, bird forms only 5%. Dogs are found most commonly in group 5, and least frequently in group 4. Cats, too, are most common in group 5 and group 1, and least common in groups 3 and 4. Changes in the percentages of the other animals represented are not significant because of the small number of animals involved, although it should be mentioned that some deer bones, especially when they are fragmented, can be confused with cattle and sheep bones. It is therefore possible that the percentages given might slightly under-represent the deer.

Although, because of the size of the sample, most of the percentage differences between the species are statistically significant when tested to 95% confidence limits using Rosenbaum's (1959) method, because of the recovery biases and because only a part of the interior of the fort was excavated, the percentages calculated should only be used as a general guide. This is very much reinforced when we examine the results of the 'minimum numbers of individuals' calculations, given in Table II(c). Here a very different picture is obtained, with pig more important or as important as cattle in groups 1, 2 and 3. In fact only in group 4 are cattle significantly more important than pigs. Sheep seem to be slightly less important than pigs in the first three groups, although they equal pigs in the last two groups.

Other differences between the groups are similar to those noted above, although bird is most common in groups 1, 2 and 3. Small differences are not statistically significant using this method, because the sample is fairly small. The figures given for group 2 should be treated with special caution.

Some of the reasons for the wide discrepancy between the results calculated by the 'epiphyses only' method and the 'minimum numbers of individuals' method are discussed in detail in the next section. It certainly serves as a warning to those trying to interpret the results of animal bone analysis. It is also worth noting that although the sample, nearly 30,000 bones, is by many standards quite large, we may in fact be dealing with the remains of only relatively few animals — a minimum of 216 cattle, 151 sheep, 180 pigs, 25 dogs, 7 horses,

TABLE II

	Group 1		Group 2		Groups 1 and 2		Group 3		Groups 1, 2, 3 and 4		Group 4		Group 5		Total	
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
<i>(a) Epiphyses only</i>																
Cattle	1602	47	126	49	1728	47	790	52	2564	49	1662	62	1106	48	5332	52
Sheep	455	13	45	17	500	14	268	18	779	15	367	14	405	18	1551	15
Pig	500	15	39	15	539	15	216	14	761	14	354	13	246	11	1361	13
Bird	505	15	23	9	528	14	142	9	670	13	145	5	177	8	992	10
Dog	138	4	14	5	152	4	31	2	183	3	31	1	204	9	418	4
Cat	155	5	5	2	160	4	15	1	176	3	14	1	91	4	281	3
Red deer	32	1	1		33	1	24	2	61	1	54	2	33	1	148	1
Horse	12				12		8	1	22		23	1	15	1	60	1
Roe deer	1				1		3		4		11		5		20	
Hare	7		2	1	9		2		11		5		1		17	
Fox	2				2		15	1	17		5				22	
Badger	4		2	1	6		7		13						13	
Vole	3				3				3		3				6	
Fallow deer	3		1		4		4		8						8	
Fish	—				—		—		—		—		—		—	
Mouse	—				—		—		—		—		2		2	
Small mammal	—				—		2		2		—		6		8	
Total	3419		258		3677		1527		5274		2674		2291		10,239	
<i>(b) Total fragments</i>																
Cattle	3143	53	331	59	3474	53	1813	59	5383	55	3457	64	1934	51	10,774	57
Sheep	978	16	89	16	1067	16	551	18	1638	17	878	16	696	18	3212	17
Pig	919	15	79	14	998	15	426	14	1444	16	700	13	510	13	2654	14
Bird	386	6	21	4	407	6	120	4	528	5	107		163	4	798	4
Dog	259	4	23	4	282	4	39	1	321	3	48	1	311	8	680	4
Cat	168	3	7	1	175	3	18	1	194	2	15		87	2	296	2
Red deer	52	1	7	1	59	1	28	1	90	1	106	2	66	2	262	1
Horse	27				27		17	1	46		59	1	14		119	1
Roe deer	4		2		6		6		12		20		6		38	
Hare	5		2		7		9		16		5		1		22	
Fox	4				4		15		19		3				22	
Badger	4		1		5		5		10		1		2		13	
Vole	2				2				2		1				3	
Fallow deer	3		1		4		6		10		1				11	
Fish	3				3		3		6		4		1		11	
Mouse	—				—		—		—		—		3		3	
Small mammal	—				—		1		1		—		4		5	
Total	5957		563		6520		3057		9720		5405		3798		18,923	
<i>(c) Minimum nos. individuals</i>																
Cattle	51	26	8	31	59	27	30	29	91	27	78	41	47	32	216	32
Sheep	43	22	3	11	46	21	25	24	73	22	40	21	38	25	151	23
Pig	60	31	8	31	68	31	30	29	99	30	43	23	38	25	180	27
Bird	20	10	3	11	23	11	11	11	35	11	13	7	8	5	56	8
Dog	8	4	2	8	10	5	3	3	13	4	3	2	9	6	25	4
Cat	6	3	1	4	7	3	1	1	9	3	2	1	4	3	15	2
Red deer	4	2	1	4	5	1	2	2	8	2	6	3	4	3	18	3
Horse	1	1			1		1	1	3	1	3	2	1	1	7	1
Total	193		26		219		103		331		188		149		668	

18 deer, 15 cats and 56 birds. Even taking into account the fact that only an eighth of the fort has been excavated to date, this is a very small number of animals for a fairly long occupation, and unless the population was very small, probably represents only a fraction of the animals kept, eaten, or hunted by the inhabitants. Domestic refuse might well have been thrown in places other than the pits and wells and occupation layers inside the fort.

It is impossible to make any estimation of the amount of cereal and vegetable crops grown and eaten, so we do not know what proportion of the diet was made up of meat. Davies (1971) has discussed the importance of meat in the Roman military diet, although it is not clear how much of the occupation here was in fact military. Because of the location of the site, sea foods are likely to have been of some considerable importance. Large numbers of oyster shells were recovered during the excavation. The very small quantity of fish bones recovered is far more likely to reflect poor survival and recovery than a distaste for fish.

Again the small numbers of horse bones may not truly reflect their position in the economy. Any military occupation is likely to have involved some use of horses, but they would not generally have formed a part of the diet. Horses in Roman times were sometimes buried separately, outside the area of occupation, and so their rarity amongst what on the whole appears to be domestic refuse is not necessarily surprising.

The large number of birds found at the site is interesting and unusual and they are discussed in detail by Anne Eastham below (pp. 409-15).

The vast majority of the meat must have been provided by the cattle, sheep and pigs, for 56 birds would have provided very little in the way of food. Wild animals seem to have been of very little importance at the site, and deer might have been hunted as much as a source of raw materials as a source of food. This is discussed again later. Table III gives the figures for the main food animals, calculated by the 'minimum number of individuals' method, adjusted to show the relationships of each in terms of meat yield. The weights used are those given by Carter *et al.* (1965).

Cattle 900 lb.

Sheep 125 lb.

Pigs 200 lb.

TABLE III

	Group 1			Group 2			Group 3			Group 4			Group 5			Total		
	No.	%	Meat yield (%)	No.	%	Meat yield (%)	No.	%	Meat yield (%)	No.	%	Meat yield (%)	No.	%	Meat yield (%)	No.	%	Meat yield (%)
Ox	51	33	73	8	42	78	30	35	75	78	48	84	47	38	77	216	39	78
Sheep	43	28	8	3	16	4	25	29	9	40	25	6	38	31	9	151	28	8
Pig	60	39	19	8	42	17	30	35	17	43	27	10	38	31	14	180	33	14

The weight of an animal does, of course, depend on many factors including breed, sex, age at death and plane of nutrition. The figures given in the table above can only be used as a very rough guide.

Cattle would certainly appear to be the most important source of meat, on whatever basis the percentages of animals are calculated. The 'minimum numbers of individuals' method used for this analysis gives cattle the lowest importance of all the methods used and yet the table shows that the amount of beef consumed far exceeds the amount of pork and lamb. This is interesting in the light of much of the evidence of Roman writers. In Italy, cattle were kept mainly for traction and sometimes milk, and pork seems to have been the most common meat eaten, especially judging by the recipe books. Sheep were kept mainly for wool, and only secondarily for milk and meat. The uses of the domestic animals in Roman Italy are discussed in detail by White (1970). The environmental as well as cultural differences between Roman Italy and Roman Britain will have had an enormous effect on the type of animal husbandry practised. One of the problems of keeping cattle for milk in Italy lay in the shortage of good grass. This is unlikely to have been such a problem in Hampshire. The results of the bone analysis of Fishbourne Roman villa (Grant, 1971) show a far higher percentage of pig at this site. There is obviously a time and a cultural difference involved, but the environmental differences are not so great. When analysis of the Saxon and medieval bones from Portchester has been completed, it might be possible to attempt some distinction between environmental and cultural factors.

The last group of animals is the domestic, probably non-food animals, the dog and the cat. The numbers of these animals recovered at Portchester are very high in comparison to many sites of all periods, especially the numbers of cats. They may have been kept as household pets or working animals or, the cats especially, could have been strays living and breeding around the fort.

BUTCHERY AND ANALYSIS OF BONES REPRESENTED

We now turn to a more detailed analysis of the bones recovered from the three main food animals. Table IV and fig. 201 give a breakdown of the bones recovered for each animal. Fig. 201 does not include an analysis of group 2 because of the small numbers of bones involved. Table V shows the number of rib and skull fragments found for all species in each group. Where percentages are given in Table IV they are percentages of the greatest number. The figures have been adjusted to allow for accurate comparison between each bone. Thus, the number of phalanges have been divided by two, and assigned to front and back legs in the same ratio as that of the distal end of the metacarpal to the distal end of the metatarsal. The numbers of atlases and axes have been multiplied by two. Where no percentage is given, it has not been thought possible to give a realistic comparison with the other bones. Two figures have been given for the skull. The first of these includes all large and fairly diagnostic fragments (excluding horn cores and jaws); the second includes small fragments, mainly broken frontal bone, and other thin areas of the skull.

The work of Brain (1969) and Isaac (1967) has clearly shown that some parts of the skeleton have a far lower chance of survival than some others. Brain, who did his work on goat bones, related this in part to the specific gravity of the bone and in part to the age of fusion of the bone. Bones with a low specific gravity are those with a spongy internal structure and thin walls. These have less chance of survival than parts of bones with a dense compact structure. Bones with low specific gravity are proximal ends of humeri, proximal ends of tibiae,

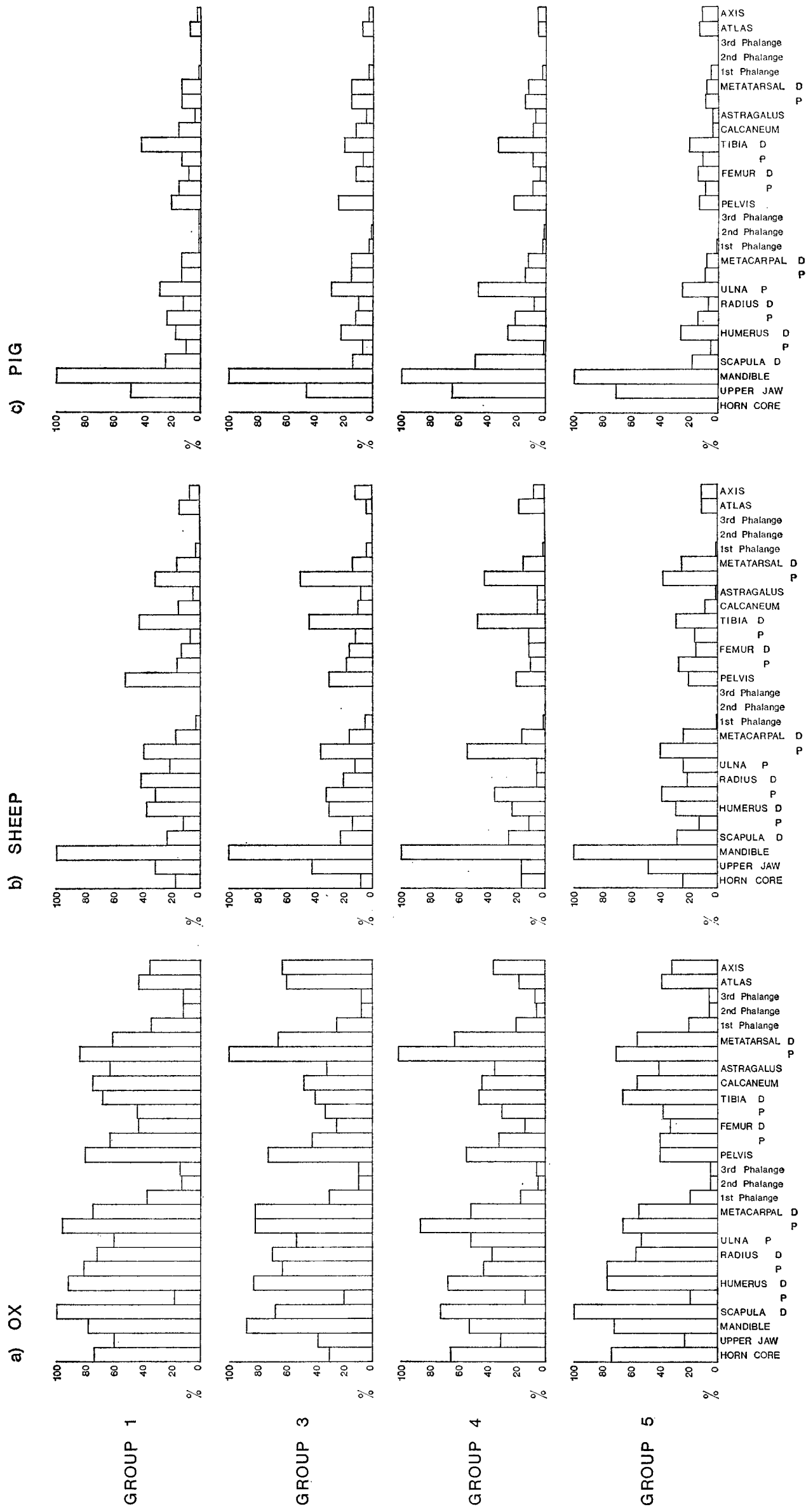


Fig. 201 : Percentages of bones represented

vertebrae and skull fragments. Because immature bone is less resistant to decay and fragmentation than mature fused bone, those bones that fuse late also have a poorer chance of survival than those which fuse early. In fact, the two sources of bias operate together in some cases, and bones which fuse early are generally far more dense than those which fuse later in the animal's life. The bones that will be affected in this way are again the proximal end of the humerus, the proximal end of the tibia and the distal end of the femur.

Recovery is also another possible source of bias in these figures. Large bones will be recovered far more frequently than small bones such as phalanges, carpals and tarsals.

The other factor which will affect the survival of bones is the activity of dogs and other gnawing animals. Teeth marks, apparently those of dogs, are found frequently on the Portchester bones. The cattle bones most commonly affected are calcanea, distal ends of humeri, metapodia, femora, and less frequently distal ends of scapulae, pelves, phalanges, and proximal ends of tibiae and vertebrae. Pig bones that were commonly gnawed include distal humeri, scapulae, ulnae, calcanea and vertebrae, and sheep bones gnawed include distal humeri, proximal radii, metapodia, and proximal ends of tibiae and calcanea.

In some cases of dog gnawing, the whole epiphysis and part of the shaft appear to have been completely destroyed, although in most of the cases noted only part of the bone has been destroyed. The smaller the animal, the greater chance of complete destruction of bones by dogs. Some bones may well have been completely removed from the site by dogs or other flesh-eating animals. Pl. XXXIXc shows the distal end of a cattle humerus which has been gnawed and partly destroyed by a dog or similar animal.

There might in fact be further scope for a more careful analysis of tooth marks on bones than has been carried out at the time of writing this report. The incidence of gnawing could be correlated with the numbers of dogs found in any group. Incidence of gnawing might also reflect methods of rubbish disposal. Animal bones left lying on the ground surface might be expected to be gnawed more frequently than those thrown into pits or wells shortly after they were discarded. Similarly, it might be possible to make a distinction between groups or sites where a deliberate policy of feeding dogs was practised and those where dogs were left to scavenge as they might.

To return to table IV, with all the possible sources of bias just discussed operating, it becomes extremely difficult to draw too many firm conclusions from the percentages of the various skeletal parts. In the case of the cattle bones shown in table IV(a), many of the discrepancies between the various bones can be explained in terms of the possible sources of bias discussed above. Brain and Isaac have shown that, even when whole skeletons are initially represented, after fairly short amounts of time have elapsed, there will be several parts missing. We should not expect every bone to be evenly represented even where whole animals are involved. We should certainly not be too rash in our interpretation of butchery practices from this sort of analysis. Even changes such as are seen from group to group may be the result of natural occurrences rather than deliberate policies. Use of bone as a raw material might explain some anomalies, and if the tools manufactured were traded away from the site, there might be no evidence of this left in the archaeological record. The relatively low occurrence of horn core in groups 2 and 3 may be the result of some form of industrial activity connected with horn cores. The patterns of survival from group to group are in fact fairly similar, although there are some differences, such as the high percentage of calcanea found in

group 1. Table IV(b) gives the analysis for sheep bones. There is far less bone from the skulls of these animals in relation to the number of jaws than was found among the cattle bones. The skulls of sheep will tend to fragment into fewer pieces than the much larger cattle skulls, and this might be the explanation. The percentage of horn cores is also fairly low (excluding group 2 where the small sample makes the figure unreliable). The low numbers of both skull fragments and horn cores may together be related to some sort of industrial use, especially if the horns were cut from the heads with a large amount of skull attached. The discrepancy between the numbers of upper and lower jaws in all animals is probably due to the greater fragility of the maxillary bone. There are few significant differences between the groups, apart from the small number of distal radii in group 4. Some differences between groups are to be expected since the bones from groups 1 and 5 were probably better protected than those from groups 2, 3 and 4, which might have been exposed for some time on the ground surface.

Analysis of the pig bones given in table IV(c) shows a quite considerable discrepancy between the numbers of jaws, especially mandibles, and the numbers of all other bones. This is true to a lesser degree also in the case of sheep. It is this fact that has caused such a wide difference between the results of the various methods of calculating percentages. At Fishbourne, pig mandibles were the most common pig bones too. It is very difficult to explain the large numbers of pig jaws except in terms of survival and recovery. It is well known that pig bones do not survive as well as those of cattle and sheep. Mandibles are made from fairly dense bone and the teeth themselves must add to their strength and durability. Mandibles, too, tend to have a good recovery rate because they are conspicuous and easily identified by the untrained volunteer. Other interpretations are of course possible. In his analysis of fourth-century animal bones from Lefevre Road, Rixson (1969) also found a high proportion of jaws for sheep and pigs, which he interpreted as the unsaleable debris left near a butcher's shop. One well, no. 121, had a particularly large number of jaws in it, especially pig jaws.

If the reason for large numbers of pig jaws is one of poorer survival of the other bones, this argues in favour of using the 'minimum numbers of individuals' method of species analysis. However, if they have either been deliberately collected or left behind as unsaleable butchers' debris the 'epiphyses only' method would provide a more valid analysis of the eating habits of the inhabitants of the area. It would certainly seem to argue for the use of both methods together.

On the whole the writer believes that the indications are that whole animals were brought into the fort, either dead or alive. There is no clear evidence of any preliminary butchery of the animals away from the area of occupation or outside the fort on any major scale.

Many of the bones have cuts or chops on them that seem to result from butchering the animals. These butchery marks were examined in some detail, but there is only space in the present report to discuss them briefly. The majority of cuts were found on the bones of cattle. This of course reflects both the larger numbers of cattle bones recovered and the smaller size of sheep and pig carcasses.

For cattle we even have evidence of the method of killing the animal. Where skulls were complete enough, the majority showed evidence of pole-axing, that is, hitting the animal with a heavy instrument or pole-axe in the centre of the frontal bone, just above the eyes. This method of killing is still used today, although in a modern slaughterhouse a gun with a fixed bolt is used instead of a pole-axe (Hammett and Nevell, 1929). Two variations of pole-axing

TABLE IV

	Group 1		Group 2		Group 3		Group 4		Group 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
(a) Cattle										
Horn core	75	74	6	38	18	30	103	66	69	74
Skull	69 (264)		18 (10)		99 (120)		171 (230)		124 (204)	
Upper jaw	61	60	6	38	23	38	48	31	21	23
Mandible	80	78	16	100	53	88	82	53	67	72
Scapula	D 102	100	6	38	41	68	113	73	93	100
Humerus	P 18	18	1	6	12	20	21	14	18	19
	D 94	92	6	38	50	83	106	68	72	77
Radius	P 83	81	5	31	38	63	67	43	72	77
	D 73	72	6	38	41	70	58	37	53	57
Ulna	P 61	60	5	31	32	53	80	52	49	53
Metacarpal	P 98	96	6	38	49	82	135	87	61	66
	D 76	75	6	38	49	82	81	52	51	55
1st phalange		75	8	25	35	30	51	17	36	19
2nd phalange		25	13	2	6	11	10	14	5	5
3rd phalange		27	14	1	6	11	10	18	6	5
Pelvis with acetabulum		82	80	9	56	44	73	86	55	37
Femur	P 64	63	1	6	25	42	49	32	37	40
	D 44	43	4	25	14	25	21	14	31	33
Tibia	P 45	44	3	19	20	33	46	30	35	38
	D 69	68	4	25	24	40	72	46	61	66
Calcaneum		76	75	8	50	29	48	68	44	52
Astragalus		64	63	2	13	19	32	54	35	38
Metatarsal	P 86	84	4	25	60	100	155	100	66	71
	D 63	61	7	44	40	66	98	63	52	56
1st phalange		69	34	9	28	29	25	62	20	37
2nd phalange		23	12	3	13	9	8	18	6	11
3rd phalange		24	12	2	6	9	8	21	7	11
Atlas		22	43	3	38	18	60	22	28	18
Axis		18	35	1	13	19	63	28	36	15
Cervical vertebrae		44		13		45		46		33
Thoracic vertebrae		58		13		64		67		37
Lumbar vertebrae		25		8		21		20		19
Sacrum		12		6		17		19		5
Caudal vertebrae		8		—		6		4		1
Vertebra fragments		434		35		236		287		202
Loose teeth		183		22		98		403		51
(b) Sheep										
Horn core	15	17	4	80	4	8	13	16	18	24
Skull	26 (31)		1		20 (19)		9 (7)		24 (25)	
Upper jaw		31	1	20	21	42	13	16	38	48
Mandible		86	100	2	40	50	100	79	100	75
Scapula	D 20	23	2	40	11	22	20	25	21	28
Humerus	P 10	12	2	40	7	14	9	11	10	13
	D 32	37	1	20	15	30	18	23	22	29

EXCAVATIONS AT PORTCHESTER CASTLE

Table IV—*continued*

		<i>Group 1</i>		<i>Group 2</i>		<i>Group 3</i>		<i>Group 4</i>		<i>Group 5</i>	
		<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
Radius	P	27	31	2	40	16	32	28	35	29	39
	D	11	41	1	20	10	20	6	6	16	21
Ulna	P	18	21	—	—	6	12	5	6	18	24
Metacarpal	P	34	39	4	80	18	36	43	54	30	40
	D	15	17	2	40	8	16	13	16	18	24
1st phalange		8	5	1	10	4	4	2	1	2	1
2nd phalange		—	—	—	—	—	—	—	—	—	—
3rd phalange		1	1	—	—	—	—	—	—	—	—
Pelvis		45	52	—	—	15	30	16	20	15	20
Femur	P	14	16	5	100	9	18	8	10	20	27
	D	11	13	4	80	8	16	9	11	11	15
Tibia	P	6	7	2	40	6	12	9	11	12	16
	D	36	42	5	100	22	44	37	47	22	29
Calcaneum		13	15	—	—	5	10	4	5	7	9
Astragalus		4	5	1	20	4	8	4	5	1	1
Metatarsal	P	27	31	5	100	25	50	33	42	29	38
	D	14	16	2	40	7	14	12	15	19	25
1st phalange		6	3	—	—	5	5	2	1	2	1
2nd phalange		—	—	—	—	—	—	—	—	—	—
3rd phalange		—	—	—	—	—	—	—	—	—	—
Atlas		6	14	—	—	1	4	7	18	4	11
Axis		3	7	—	—	3	12	3	8	4	11
Cervical vertebrae		6	—	—	—	7	—	1	—	6	—
Thoracic vertebrae		22	—	—	—	2	—	4	—	8	—
Lumbar vertebrae		8	—	2	—	5	—	7	—	5	—
Sacrum		—	—	1	—	1	—	1	—	—	—
Caudal vertebrae		3	—	—	—	2	—	—	—	—	—
Vertebra fragments		65	—	7	—	22	—	15	—	20	—
Loose teeth		78	—	8	—	38	—	94	—	36	—
<i>(c) Pig</i>											
Skull		44 (70)	—	3 (3)	—	17 (19)	—	25 (22)	—	14 (41)	—
Upper jaw		58	48	5	33	27	46	55	65	54	71
Mandible		120	100	15	100	59	100	85	100	76	100
Scapula	D	29	24	3	20	8	14	42	49	14	18
Humerus	P	12	10	1	6	4	7	1	1	4	5
	D	20	17	2	13	13	22	22	26	20	26
Radius	P	28	23	—	—	7	12	18	21	11	14
	D	14	12	—	—	6	10	7	8	5	7
Ulna		33	28	4	27	17	29	40	47	19	25
Metacarpal	P	16	13	2	13	9	15	11	13	7	9
	D	15	13	2	13	8	14	10	12	5	7
1st phalange		2	2	—	—	2	3	2	2	1	1
2nd phalange		1	1	—	—	1	2	1	1	—	—
3rd phalange		1	1	—	—	—	—	1	—	—	—
Pelvis		24	20	2	13	14	24	19	22	10	13
Femur	P	18	15	—	—	—	—	8	9	7	9
	D	10	8	1	6	7	12	3	4	11	14

Table IV—*continued*

		Group 1		Group 2		Group 3		Group 4		Group 5	
		No.	%	No.	%	No.	%	No.	%	No.	%
Tibia	P	15	13	—		4	7	8	9	8	11
	D	49	41	—		12	20	28	33	15	20
Calcaneum		18	15	1	6	7	12	8	9	3	4
Astragalus		5	4	—		3	5	6	7	3	4
Metatarsal	P	16	13	2	13	9	15	12	14	7	9
	D	15	13	1	6	9	15	10	12	6	8
1st phalange		1	1	—		2	3	1	1	—	
2nd phalange		—		—		1	2	—		—	
3rd phalange		—		—		—		—		—	
Atlas		4	7	—		2	7	2	5	5	13
Axis		1	2	—		1	3	2	5	4	11
Cervical vertebrae		3		—		1		3		1	
Thoracic vertebrae		13		—		8		10		7	
Lumbar vertebrae		7		1		2		11		6	
Sacrum		2		—		1		—		—	
Vertebra fragments		40		4		30		22		33	
Loose teeth		65		3		43		93		31	

P = Proximal; D = Distal.

are used in modern times, and both seem to have been practised at Portchester. In one method, the skull is pierced and a rod is introduced into the opening to destroy the medulla oblongata and brain. In the second method the animal is merely stunned by the blow, and is then hoisted and bled. There is no evidence for the bleeding, but pl. XXXVIII e shows a skull which has been struck with a blow that merely fractured but did not penetrate the skull, whereas pl. XXXVIII a shows a skull where a large area of the frontal bone has been destroyed by the blow. The numbers of pole-axed skulls found indicated that both the killing and the subsequent butchery of the animal were performed on the site.

The actual butchery of the animals seems to have been carried out with the aid of at least three different kinds of tool, a sharp heavy tool, such as an axe or chopper, a knife and a saw. The results of the use of each of these tools can be seen in pls. XXXVIII d , XXXIX f , and XXXVIII f respectively.

Horn cores were frequently cut from the skull; generally the cuts were made to include part of the skull, but in some cases the horn itself must have been damaged in the process of removing it. Pl. XXXVIII g shows a skull with a cut that for some reason has not quite severed the horn core from the skull. Pl. XXXVIII d gives an example of a case where the horn itself must have been damaged when it was removed. It is not clear whether the horns were cut off for use as raw material, for glue, or whether they were just discarded as waste.

Cuts on the head and jaws seem to be the result of boning out the head and cheek meat, and removing the lower jaw and perhaps the tongue from the head. Where whole skulls were found the frontals were not normally split or smashed sufficiently to allow the removal of the brain. This does not mean that this did not happen in every case. Most skulls were so

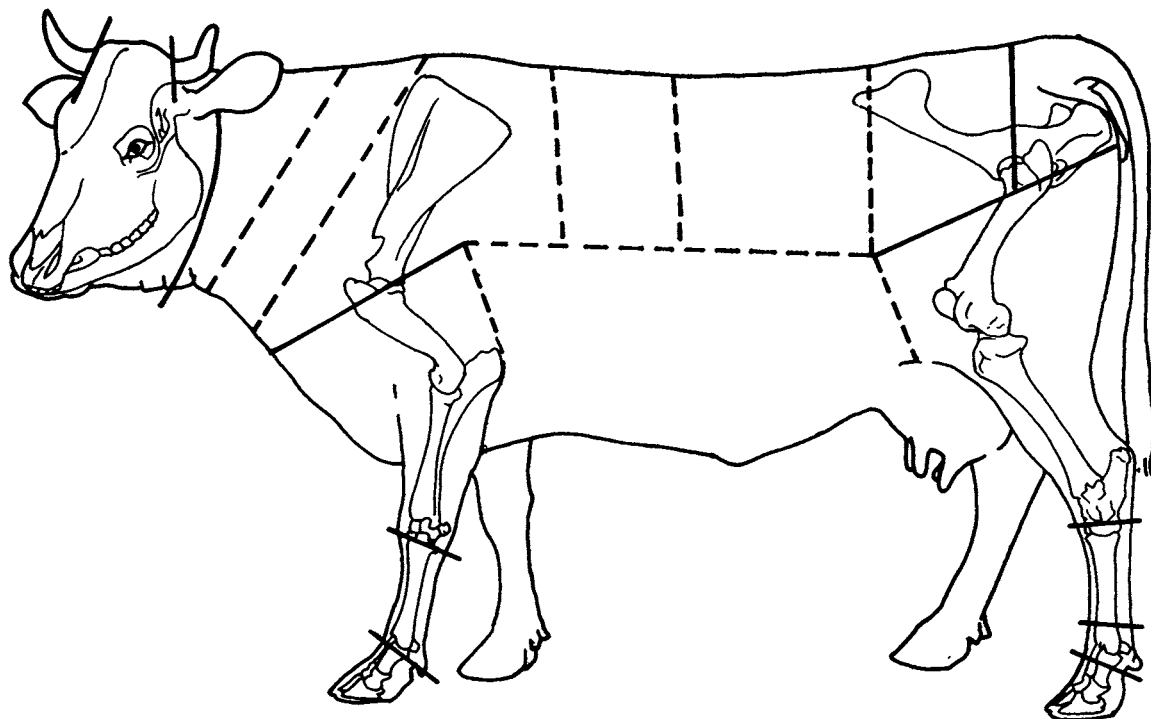


FIG. 202. Diagram of a cow with the main butchery points indicated

fragmented that it was impossible to deduce anything about butchery from them, and some of the fragmentation could have occurred when the brain was removed.

The skull seems generally to have been severed from the rest of the body between the occipital condyles and the atlas. This is seen clearly in pl. XXXVIII*b*. The vertebrae themselves are found chopped, either longitudinally or at right angles to the backbone, or occasionally in both directions. Even today, butchery techniques are remarkably conservative, and regional differences in the technique are fairly rigidly adhered to. However, since vertebrae with each kind of cut are found in every group, the differences between splitting vertebrae and not splitting vertebrae may not in this instance be cultural ones. There may

TABLE V

	Group 1		Group 2		Group 3		Group 4		Group 5		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Ribs	2854	30	379	39	1465	30	1902	24	1448	25	8090	28
Skull fragments	615	7	35	3	295	6	502	6	436	8	1895	7
Other bone fragments	5957	63	563	58	3057	63	5405	69	3798	67	18,923	65
Total	9426		977		4817		7809		5682		28,908	

TABLE VI

	Group 1			Group 2			Group 3			Group 4			Group 5		
	B	C	%C	B	C	%C	B	C	%C	B	C	%C	B	C	%C
(a) <i>Cattle</i>															
Humerus	92	2	2	6	—	0	50	—	0	105	1	1	68	4	6
Radius	61	12	16	6	—	0	39	3	7	59	8	12	57	15	21
Metacarpal	54	44	45	4	2	33	29	20	41	96	39	29	30	31	51
Femur	61	3	5	4	—	0	24	1	4	49	—	0	31	6	16
Tibia	65	4	6	4	—	0	22	2	8	67	5	7	35	6	15
Metatarsal	51	35	41	7	—	0	43	17	28	113	42	27	32	34	52
Total	384	100	21	31	2	6	207	43	17	489	95	16	253	96	28
(b) <i>Sheep</i>															
Humerus	26	6	19	1	1	50	12	3	20	15	3	17	13	9	41
Radius	20	7	26	1	1	50	14	2	13	28	—	0	16	13	45
Metacarpal	24	10	29	3	1	25	12	6	33	33	10	23	14	16	53
Femur	10	4	29	4	1	20	9	—	0	6	3	33	10	10	50
Tibia	32	4	11	4	1	20	21	1	5	33	4	11	12	10	33
Metatarsal	16	11	41	3	2	40	18	7	28	23	10	43	12	17	59
Total	128	42	25	16	7	30	86	19	18	138	30	18	77	75	49
(c) <i>Pig</i>															
Humerus	12	8	44	2	—	0	13	—	0	21	1	5	16	4	20
Radius	25	3	11	—	—	—	5	2	29	14	4	22	7	4	36
Femur	12	6	33	1	—	0	7	—	7	0	1	13	7	4	36
Tibia	44	5	10	—	—	—	12	—	0	24	4	14	9	6	40
Metapodia	16	47	75	2	6	75	3	32	91	8	38	83	8	19	70
Total	109	69	43	5	6	54	40	34	46	74	48	39	47	37	44
(d) <i>Dog</i>															
Humerus	7	8	53	1	—	0	3	3	50	2	2	50	—	15	100
Radius	4	10	71	1	—	0	5	—	0	2	2	50	3	13	81
Femur	1	9	90	—	—	—	1	1	50	—	1	100	3	15	83
Tibia	5	6	55	2	1	33	—	1	100	3	1	25	2	12	86
Metapodia	1	6	86	—	1	100	—	4	100	2	3	60	—	36	100
Total	18	39	68	4	1	20	9	9	50	9	9	50	8	91	92
(e) <i>Cat</i>															
Humerus	3	9	75	—	—	—	1	1	50	1	1	50	1	6	86
Radius	2	6	75	—	—	—	2	—	0	—	—	—	2	3	60
Femur	2	6	75	—	1	100	—	1	100	3	—	0	1	4	80
Tibia	2	10	83	—	—	—	—	—	—	2	—	0	—	8	100
Metapodia	2	38	95	—	—	—	—	2	100	—	1	100	—	3	100
Total	11	169	86	—	1	100	3	4	57	6	2	25	4	24	86

B = Broken. The figure represents the number of either proximal or distal ends of the bone, whichever is greater.

C = Complete.

%C = Percentage of complete bones.

have been different butchery techniques used on animals required for immediate consumption and those intended for salting or smoking and preserving. None of the vertebrae from the Lefevre road site had been split, but many had been chopped across. Some of the Portchester vertebrae had been chopped twice as if chops were being cut.

Ribs had cuts generally made from the inside, but sometimes made from the outside of the animal. They were located both near the articulation with the vertebrae and nearer the belly.

The forelimb seems to have been cut from the carcass at the shoulder joint. Cuts into the distal end of the scapula, and the head of the humerus, where these survive, are very commonly found. The nature of this butchery will of course have had an effect on the survival of any particular part of the body.

The elbow joint is another very common site for cuts, although it is not certain that the cuts in this region resulted in the severance of the bones. They do in fact appear to have been made while the meat was being cut from the bone in this area. The limb might have been severed again between the distal end of the radius and the proximal end of the metacarpus. The majority of the meat on the forelimb lies above this joint, and most of the cuts are found on the bones of the upper part of the limb. Many bones also show the marks of the removal of the flesh from the bone shafts. The spine of the scapula has frequently been cut off, probably when the shoulder meat was removed from the blade of the scapula.

The hind limb seems to have been severed from the body at the hip joint, by cutting off the head of the femur. Detached femur heads are fairly frequently found, and corresponding marks are found in the border of the acetabulum. The pelvis itself is frequently cut in half through the acetabulum.

The cuts on the distal end of the femur and the proximal end of the tibia are similar to those found at the elbow joint, in that they seem to result from cutting off the meat from the bones rather than from severing the leg at this point.

The leg is cut again between the metatarsus and tibia, sometimes between the scapho-cuboid and the astragalus. Because it is difficult to distinguish between front and back phalanges we can only assume that the treatment of each was the same, though occasionally the whole foot has been cut off just above the distal end of the metatarsus. Cuts are rare on first phalanges and very rare on second and third phalanges. When cuts are found they seem either to result from severing the toes from the metapodia, or to be knife marks such as might have resulted from cutting through the ligaments. Such knife marks are also found at the distal ends of the metapodia, and around other joints; knives seem to have been used mainly for severing ligaments and larger tools for cutting up bones.

The toes themselves may have been boiled for glue or stew, or the hoofs cut off and used. Flesh-removing cuts were also found on the bones of the hind limb (pl. XXXIX*b*).

Not enough information was available to build up a picture of the butchery of sheep and pigs, although some evidence of the butchery techniques was found. Evidence of the splitting of the skull through the line of the frontal suture was found for both animals (pl. XXXIX*i, j*), and in the case of the pig, the mandibles were frequently split apart, between the two central incisors. The forelimb of the pig had, on some animals at least, been cut through at the elbow joint.

Pl. XXXIX illustrates a selection of bones with cut marks, mainly from cattle, and fig. 202 is a drawing of a cow with the main butchery points indicated.

Most of this analysis of butchery is based on the cuts seen on the articular facets of the bones. Butchery is likely also to have involved cutting through the shafts of bones, but it is frequently very difficult to be certain whether breaks in the shafts of bones are deliberate or accidental. Table VI shows the percentage of bones found whole for each period and each animal, including dog and cat. It can be seen that the percentage of whole bones is far higher amongst the animals presumed to have been kept as pets and not for food, the cats and dogs. There is also a far higher percentage of whole bones of sheep and pig than of cattle. As has already been mentioned, this must reflect carcass size. A modern shoulder of lamb will include a complete scapula, humerus and most of the radius. The marrow content of the bones might also be reflected in this table — humeri, tibiae and femora are rich in marrow and might have been smashed to remove it. There is no evidence of the Saxon and medieval method of splitting bones longitudinally for marrow in the Roman period. The higher numbers of whole bones from pits and especially wells will reflect the better preservation of bones from these protected contexts.

AGE STRUCTURE

The aging of the animal bones was attempted by two main methods — epiphyseal fusion and tooth eruption and wear. The dangers of applying modern data on fusion and eruption are understood, but it is less likely that the sequences of eruption and wear will have changed, than the actual ages of these events.

TABLE VII

Approximate age at fusion	Bone	Group 1			Group 2			Group 3			Group 4			Group 5		
		UF	F	%F	UF	F	%F	UF	F	%F	UF	F	%F	UF	F	%F
(a) Cattle 10 months	Pelvis	2	50	96	—	7	100	4	39	95	9	66	88	2	33	94
18 months	Humerus D Radius P 1st phalange 2nd phalange	18	353	95	1	33	97	1	166	99	10	310	97	4	224	98
2–2½ years	Metacarpal D Tibia D Metatarsal D	27	185	87	3	16	84	10	104	91	37	219	85	14	160	92
3½ years	Calcaneum P Femur P	32	84	72	0	4	100	14	27	66	23	64	74	23	49	68
3½–4 years	Humerus P Radius D Ulna P Femur D Tibia P	75	130	63	8	8	50	38	62	62	56	100	64	59	95	62

EXCAVATIONS AT PORTCHESTER CASTLE

Table VII—*continued*

Approximate age at fusion	Bone		Group 1			Group 2			Group 3			Group 4			Group 5		
			UF	F	%F	UF	F	%F	UF	F	%F	UF	F	UF	%F	F	%F
(b) <i>Sheep</i> 10 months	Scapula	D	25	101	80	5	1	17	6	53	90	9	69	88	55	33	38
	Humerus	D															
	Radius	P															
	Pelvis																
1½–2 years	Metacarpal	D	22	41	65	4	6	60	8	29	78	25	43	63	38	27	41
	Tibia	D															
	Metatarsal	D															
2½ years	Ulna		8	6	43	—	—	—	2	1	33	1	1	50	6	1	14
2½–3 years	Femur	P	28	10	26	7	—	0	16	10	38	12	8	40	32	11	26
	Calcaneum																
	Radius	D															
3–3½ years	Humerus	P	26	4	13	5	3	38	18	7	28	24	14	37	30	3	9
	Femur	D															
	Tibia	P															
(c) <i>Pig</i> 1 year	Humerus	D	18	60	77	—	7	100	5	29	85	13	48	79	13	31	70
	Radius	P															
	2nd phalange																
	Pelvis																
2–2½ years	Metapodia	D	81	45	36	5	2	28	42	15	26	58	20	26	22	18	45
	1st phalange																
	Tibia	D															
	Calcaneum																
3½ years	Humerus	P	74	11	13	4	—	0	24	3	11	31	2	6	36	4	10
	Radius	D															
	Ulna																
	Femur	P															
	Femur	D															
	Tibia	P															

F = Fused; UF = Unfused; P = Proximal; D = Distal.

Table VII analyses the bones from the main meat animals where evidence of the state of fusion of the bone is present. Each bone has been analysed separately, and then groups have been made of bones that, on modern evidence at least, fuse at more or less the same time. This, it is hoped, will have the effect of ironing out some of the inconsistencies due to poor survival and recovery. The ages used are those given by Silver (1969), but they are intended to be used as a general guide only. It is likely that unfused bones, especially those from animals in their

first year, will be under-represented. Higher percentages of young animals than are given in this table might be expected.

The figures reveal a strikingly different age structure in the three animals, with approximately 60% of the cattle bones coming from animals at least four years old, and only 6-12% of pig bones and 9-37% of sheep bones coming from animals of 3½ years or more.

The age structure of the bones found does not necessarily reveal the age structure of the herds and flocks from which the animals were taken. If we are dealing with a society which is self-supporting in terms of its meat supply, then the age structure of the animal bones from the

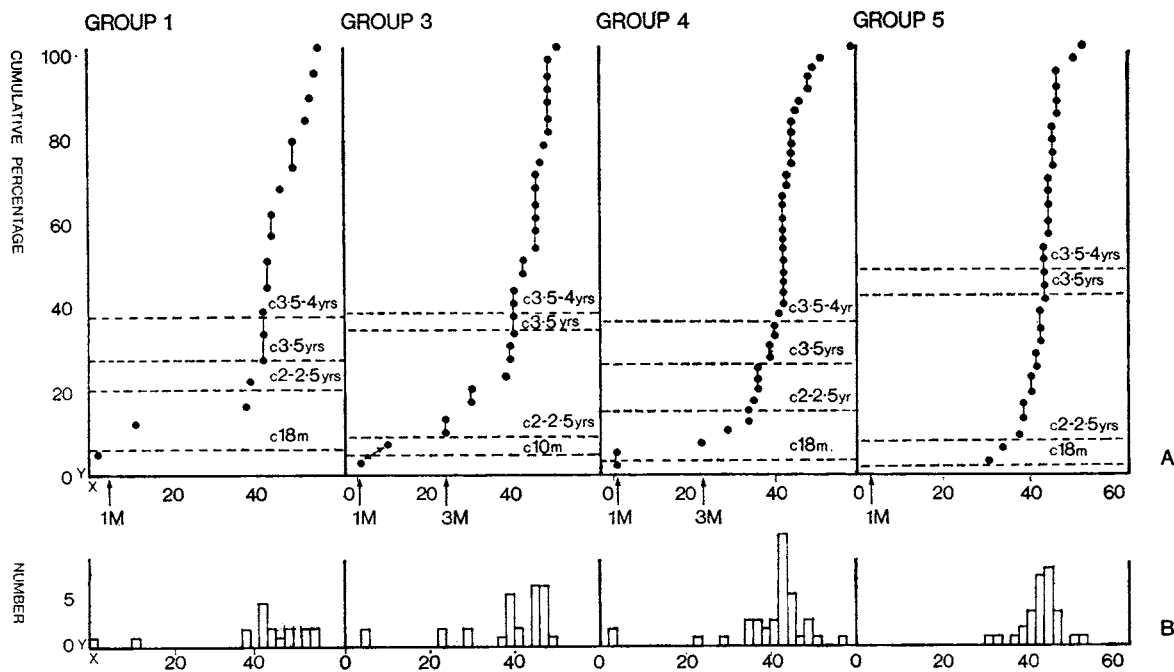


FIG. 203. Age structure of cattle mandibles (x axis : tooth wear stage)

domestic refuse should closely resemble that of the herd. However, many other situations could exist where the age structure of the food refuse bears little relationship to that of the herd. The meat might be bought entirely from markets or local farms, or the inhabitants of the fort could have kept animals that they used partly for their own meat supply and partly for sale to markets. The animals eaten could be those that were killed because they were not required for traction, milk or wool production. In which case, especially if the non-meat animals were killed or sold elsewhere when they had outlived their usefulness, the age of the food animals might provide a negative picture of the structure of the live herd. The incidence of illness and accidents is also reflected in the age at death of the animals.

The main disadvantage of the epiphyseal fusion method of determining the age of the animals is that it only allows the bone material to be divided into very broad groups, and gives no further information about the ages of animals beyond the date of fusion of the last bone. The writer has been working on tooth wear as a more precise guide to the age of the animals than epiphyseal fusion. Details of this method are laid out in Appendix B, where full details of the wear stages of the Portchester animals are given. The numerical equivalents of these wear stages are plotted against cumulative percentages and as histograms in figs. 203–6 for each animal in each group (excepting group 2 where the sample was again too small for useful analysis). In order to combine the results of both methods of assessing age, the age structure revealed by epiphyseal fusion is also plotted on the graph. Group 1 excludes all pits up to pit 103 and group 5 excludes pit 121. The identification of the bones from these pits was made before the method of analysing tooth wear was fully evolved. The corresponding epiphyseal fusion tables have been adjusted accordingly. It is of course assumed that the bones and teeth come from the same population of animals. This has already been discussed in the previous section. There is a difference in sample size, especially in the case of the pig, where there are far more mandibles than any single long bone. This might be expected to lead to some anomalies in the correlations of the two methods, so they are to be used with an expected margin of error that is greater for pig than for cattle. Of course, if the long bones and mandibles are not from the same animals the correlation will be invalid.

The analysis of cattle jaws is shown in fig. 203. There seems to be a fair degree of consistency in the age at death from period to period as shown by the slope of the curve, although there are small differences revealed on closer examination. The most common age at death of the animals is about $3\frac{1}{2}$ –4 years in group 1, slightly later in group 4 and perhaps nearer $4\frac{1}{2}$ or 5 years in groups 3 and 5, where the peak occurs at stages 45 to 48. The interval of time between stages will be far greater between the higher numbers than between the lower numbers representing wear stages. This is discussed in the appendix. Very few animals were eaten which were older than those at the peak killing age in each group. Group 4 has the largest number of old animals, while group 3 has the smallest. The oldest animal found at the site is represented by the mandible in group 4 which has a wear stage of 57+. This animal must have been very old. It is unfortunate that it is not possible at the moment to correlate sex with age as this would aid greatly an interpretation of the animal husbandry. It is unusual to keep bulls to a very great age because they present a major management problem, so this animal is perhaps a very old cow.

Very few young animals are found amongst the Portchester cattle bones. Group 5 has the lowest percentage and groups 1 and 3 the highest. We might have expected generally higher percentages of young animals which had either been killed for the purposes of herd management or had died from natural causes. The animals could have been kept primarily for traction or milk, with the young animals that were surplus to these requirements sold off elsewhere. Roman writers quoted by White (1970) discuss the practice of not allowing a cow to conceive until she was at least two or even four years old. Milk animals would thus be relatively old animals. Oxen used for traction would also be fairly old before they were killed off to ensure sufficient return for the trouble of training them.

Fig. 204 shows the analysis of sheep mandibles. It is a great disadvantage not to be able to distinguish between sheep and goat for the purpose of this analysis, since the management of

these animals may well have been entirely different. On the whole, the climate of England is more favourable to sheep than to goats, since these latter animals are very sensitive to changes of temperature. We might expect that more sheep than goats were kept, but the presence of horn cores from both species indicates that some goats were kept as well. It would be dangerous to calculate their relative proportions merely on the basis of the horn cores since these bones might reflect a difference in industrial use; however, the majority of goat horn cores were found in group 4.

There is a similar pattern in the age structure of the first three groups, but group 5 shows a far higher proportion of young animals. In groups 1 and 3, the peak killing age is between 1½

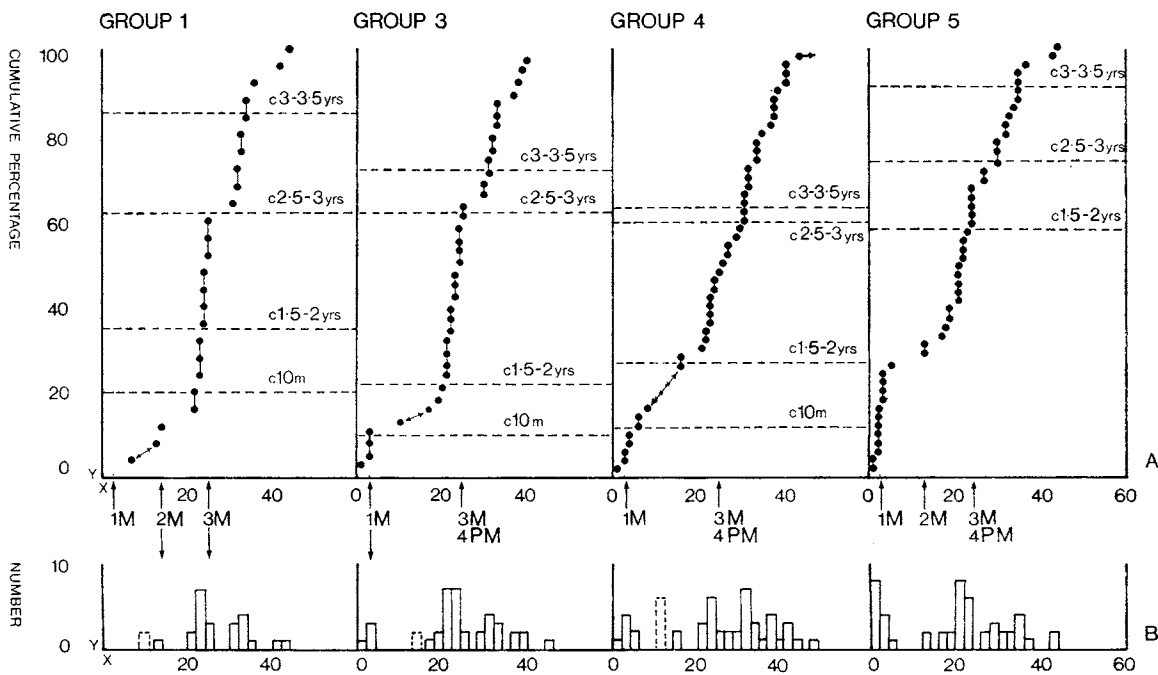


FIG. 204. Age structure of sheep/goat mandibles (x axis : tooth wear stage)

and 2½ years, probably in the early part of the period at wear stages 21 to 24. In group 4 there is also a peak at this stage, but another at wear stages 31 and 32, possibly representing animals of about 3-3½ years. The first two groups have a slightly smaller peak at this stage. Groups 3 and 4 have younger animals represented than group 1, but this might only reflect the small size of the sample in group 1. The distribution of tooth wear stages is not continuous and there appear to have been ages when animals were not killed. This is represented in groups 1 and 3 by the gaps between stages 25 and 30. It raises the vexed question of autumn killing. We might be seeing, especially in groups 3 and 4, peaks at six months, 1½ years and then 3½ years, which could possibly reflect an autumn killing policy. There is evidence

discussed in the section on disease that the plane of nutrition was relatively low. If this is so, winter feeding might have presented difficulties.

The mandibles of group 5 reflect a slightly different picture, in the very high percentage of young animals found. However, the date of this group overlaps that of groups 1, 2, 3 and part of 4, so we are probably not seeing the results of any changes in animal husbandry or of sudden illness affecting new-born animals, but a deliberate disposal of the carcasses of young animals in the wells. If we examine the pit summaries given in the main text, it is clear that some pits and especially wells contain animal bones which do not seem to be the result of

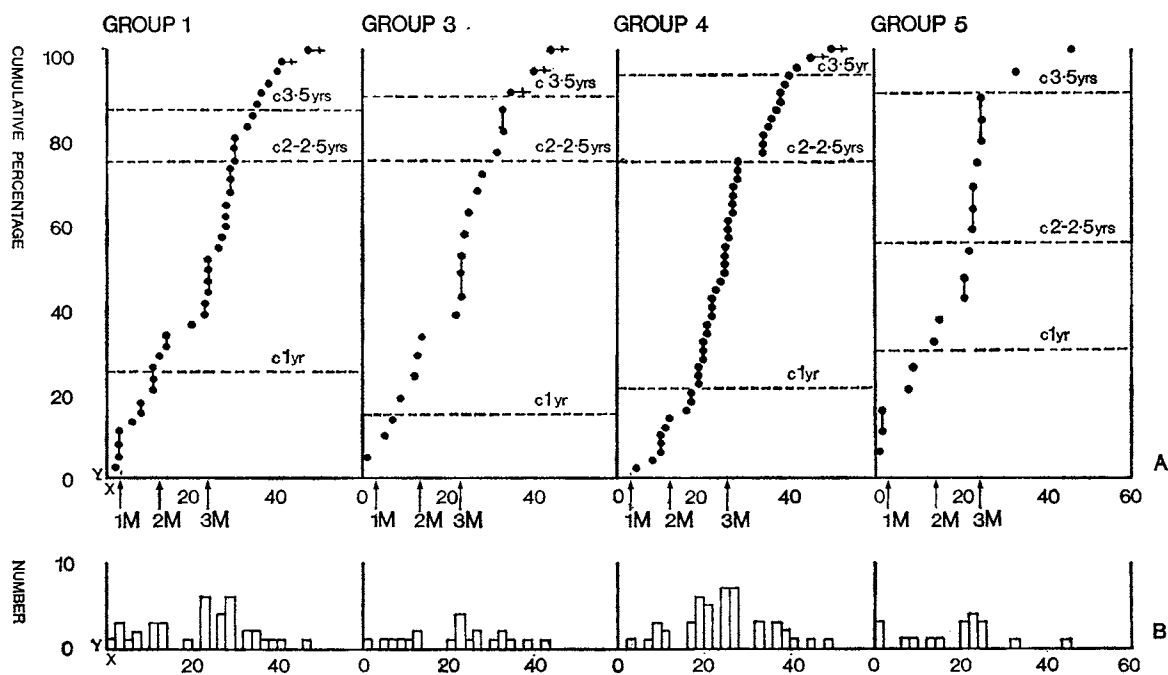


FIG. 205. Age structure of pig mandibles (x axis : tooth wear stage)

haphazard rubbish disposal. These are the pits with young animal carcasses, whole ox skulls, complete dog and cat skeletons and human infant bones. It would appear that some significance was attached to the deposits thrown into wells and the high percentage of young sheep found there might reflect this.

Some animals were evidently kept for some time after the second peak at stages 30 to 34, although after this time most groups show a more gradual kill-off of animals. The oldest animals are those represented by stages 45 and 47+. These might be from animals of seven or eight years.

Fig. 205 gives the analysis of pig mandibles. The pattern is similar from group to group, with the peak stage for killing falling between 21 and 26. This might occur at the end of the

second year. The eruption of the third molar occurs at this time, and this would agree with Silver's date of 17 to 23 months for the eruption of this tooth. Even if the actual ages are not accurate for ancient animals, it would imply that the sequence was correct.

In group 4 it would appear that animals were killed fairly evenly throughout the period represented, including during the first year. Young animals also seem to have been killed off throughout the first year in the other periods, with the highest number of young animals found in groups 1 and 5. This reflects the higher percentages of young sheep in these groups, but contrasts with the small numbers of young cattle, especially in group 5. In groups 1 and 3 we find only a few animals between two and three years, although more were killed at this time in groups 4 and 5.

It would appear to have been uncommon practice to keep very old pigs at the site. The oldest animals are represented by those with wear stages of 45 to 50 +. The age structure of the pig mandibles reveals the sort of pattern one might expect where pigs are kept as part of the household or social group and killed off as they are needed. White (1970) quotes Tremulus Scrofa as saying that 'in our fathers' day the man who went to the butcher to buy the fitch that hangs in his larder was called a lazy spendthrift'. Pigs are some of the easiest of animals to keep as they will more or less feed themselves by foraging and eating scraps. This is discussed in the appendix: the pig's omnivorous feeding habits have an effect on the amount of tooth wear.

Throughout this section, the writer has used the ages of epiphyseal fusion given by Silver to facilitate discussion of the age structure. The age at which bones fuse and teeth erupt depends on many factors such as breed, sex, age of castration, and planes of nutrition. Modern breeds have been 'improved' to obtain more rapid maturity. It is likely that, before selective breeding, maturity was reached slightly later. This means that the fusion ages and eruption dates used are probably slightly too young. This should not however affect the relative age structure of the group.

METRICAL ANALYSIS

Measurements were taken of bones when their condition made it possible. It is always hoped that measurements taken on bones will reveal the sex structure of the bones as well as indicate size and possibly breed of animals. However, determining the sex structure of a group of animal bones is by no means easy, especially when there are males, females and also castrates present in the sample. We would certainly expect to find castrates here, as in most samples of animal bones that were closely related to human populations. Analysis of the cattle metapodia using the method proposed by Howard (1963) was undertaken. The indices

$$\frac{\text{Distal breadth}}{\text{Length}} \times 100 \text{ and } \frac{\text{Minimum transverse diaphyseal breadth}}{\text{Length}} \times 100$$

were calculated for each complete metapodial. The second index calculated is slightly different to that used by Howard. She used the transverse breadth at the mid-point of the overall length of the bone. However, since the minimum diaphyseal breadth almost always occurs at or near the mid-point of the bone, there is not likely to be very much difference in the results. The results of the calculations on the metatarsals did not give satisfactory results. It is known

EXCAVATIONS AT PORTCHESTER CASTLE

that there is generally less sexual dimorphism in this bone than in the corresponding bone of the front leg. The indices calculated for the metacarpals are given in table VIII, and plotted as a histogram in fig. 206. The upper and lower extremes of the range can be taken fairly confidently as respectively males and females. Where the females/castrates and castrates/males

TABLE VIII

<i>Distal index</i>	<i>Possible sex</i>	<i>Shaft index</i>	<i>Possible sex</i>	<i>Distal index</i>	<i>Possible sex</i>	<i>Shaft index</i>	<i>Possible sex</i>	<i>Distal index</i>	<i>Possible sex</i>	<i>Shaft index</i>	<i>Possible sex</i>
<i>Group 1</i>				<i>Group 3</i>				<i>Group 4</i>			
33·5	C	16·3	F	32	C	17·3	C	28·0	F	15·3	F
31·3	C	17·6	C	31·9	C	19·3	M	29·1	F	15·2	F
30	C	15·7	F	26·8	F	15·8	F	27·8	F	15·4	F
35·4	M	18·7	C/M	31·9	C	18·5	C	34	M	18·6	C/M
29·4	F	15·8	F	28·7	F	16	F	27·8	F	15·9	F
28·5	F	15·0	F	28·3	F	14·9	F	23·6	F	12	F
31·4	C	18·6	C	26·3	F	13·2	F	29·4	F	15·7	F
34·2	M	18·1	C	27	F	14·8	F	27·7	F	13·4	F
33·4	C	20	M	29	F	15·5	F	32·4	C	18	C
30·5	F/C	15·9	F	31·7	C	18·1	C	28·3	F	15·4	F
27·5	F	15·5	F	29·4	F	15·7	F	34·8	M	20	M
29·9	F	16·0	F	27·2	F	14·7	F				
33·3	C	19·2	C/M	—	—	15·6	F				
26·4	F	13·7	F	28·7	F	16·5	F	<i>Group 5</i>			
30·3	C	15·9	F	30·3	C	17	F/C	28·5	F	16	F
29·2	F	15·7	F	33	C	18·7	C	31	C	15·8	F
33·2	C	17·6	C					32·9	C	18·6	F
32·6	C	17·0	C	<i>Group 4</i>				28·7	F	15·4	F
28·2	F	14·3	F	29	F	13·2	F	29·4	F	15·3	F
35·6	M	19·8	M	27·6	F	14·9	F	31·9	C	18	F
27·6	F	14·0	F	29·1	F	15·8	F	29·3	F	15·8	F
35	M	19·1	M	29·1	F	15·8	F	32·9	C	17·4	C
31·6	C	17·1	C	27·3	F	14	F	33·2	C	18	C
28·9	F	15·1	F	28·5	F	—	—	26·9	F	14	F
31·5	C	17·2	C	31·1	C	18·0	C	35·2	M	19·7	M
33·3	C	17·5	C	29·1	F	16·4	F	28·2	F	14·5	F
31·4	C	18·2	C	34·5	M	18·3	C	27	F	16·8	F
26·8	F	14·8	F	32·1	C	18·1	C	29	F	15·7	F
35·1	M	19·3	M	31·9	C	17·7	C	34·9	M	19·8	M
28·9	F	15·5	F	29·1	F	17	F/C	29·8	F	—	—
27·5	F	15·7	F	30·5	F/C	16·9	F	30·9	F/C	15·9	F
27·8	F	14·9	F	28·2	F	15	F	31·5	C	18·2	C
28·6	F	15·4	F	28·5	F	16	F	27·2	F	15·9	F
28·7	F	15·3	F	22·9	F	15·4	F	34·2	M	18·5	C/M
29·5	F	16	F	29·5	F	17	C/F	27	F	14·4	F
31·1	C	16·3	F	28·7	F	15·7	F	26·7	F	14·6	F
29	F	16	F	27·6	F	15·1	F	26·4	F	13·4	F
27·5	F	13·3	F					27·3	F	15·9	F
								33·5	C/M	19·5	M
<i>Group 2</i>								27·6	F	15·9	F
28·1	F	15·4	F					26·6	F	14·7	F
31·9	C	17·5	C					28·2	F	—	—

F = Female; C = Castrate;
M = Male.

TABLE IX

Group	♀		♀ or ♂		♂		♂ or ♂		♂	
	No.	%	No.	%	No.	%	No.	%	No.	%
1 and 2	22	51	6	13	9	21	2	5	4	9
3	10	63	1	6	4	25	1	6	—	—
4	33	83	—	—	4	10	2	5	1	2
5	19	63	2	7	5	17	1	3	3	10
Total	84	65	9	7	22	17	6	5	8	6

borders lie is not so clear. There is likely to have been some degree of overlap between the groups that makes interpretation difficult. The dotted lines on the figure indicate the possible sexual groupings, but these are extremely tentative. The problem was further complicated when the two indices calculated for the same bone gave differing results. Plotting the indices against the length of the bone did nothing to clarify the position. However, if we accept the sexual divisions given in table VIII and fig. 206 the results shown in table IX are obtained. This of course will only reflect the sex structure of the animals of 2–2½ years and more. This is the age at which the metacarpals fuse. No measurements were taken of immature bones.

The indications are that the majority of the cattle bones are from females, with very small numbers of bulls and a few castrates. Varro (White, 1970) gives a ratio of one bull to every 60 cows, while Columella gives a ratio of 1 to 15 cows. The writer has already discussed the possibility that the cattle were being kept primarily for milk.

One of the problems of trying to define sexual dimorphism is that the proportions of the bones are affected not only by the sex of the animal but also by the breed, the age that castration is carried out, the plane of nutrition and the age of the animal at death (*vide* Hammond *et al.*, 1971). If the animal bones are from a mixed population, fed at different levels, there will be considerable difficulty in reliably determining the sex of the bones.

Measurements of the distal ends of the tibia and length and distal breadth of the metatarsal used by Jewell (1962) in his analysis of size changes in cattle indicate that as at Corstopitum, the Roman site in his analysis, both small cattle and much larger animals are present at Portchester. Table X gives the range and number of these measurements and those from Corstopitum.

TABLE X

(a) <i>Distal width of tibia</i>			
Portchester	50–69 mm.	No. = 143	
Corstopitum	45–68 mm.	No. = 78	
(b) <i>Length and distal width of metatarsal</i>			
	<i>Distal width</i>		<i>Length</i>
Portchester	43–70 mm. No. = 172		183–240 mm. No. = 108
Corstopitum	42–65 mm. No. = 127		181–244 mm. No. = 67

This shows animals as small as the Iron Age cattle and as large as modern shorthorns. The Romans are supposed to have introduced larger breeds of cattle into Britain. These measurements support this view.

No further analysis of the measurements of the animals has been attempted at this moment. However, full details of the measurements of all the Portchester animals can be obtained from the writer.

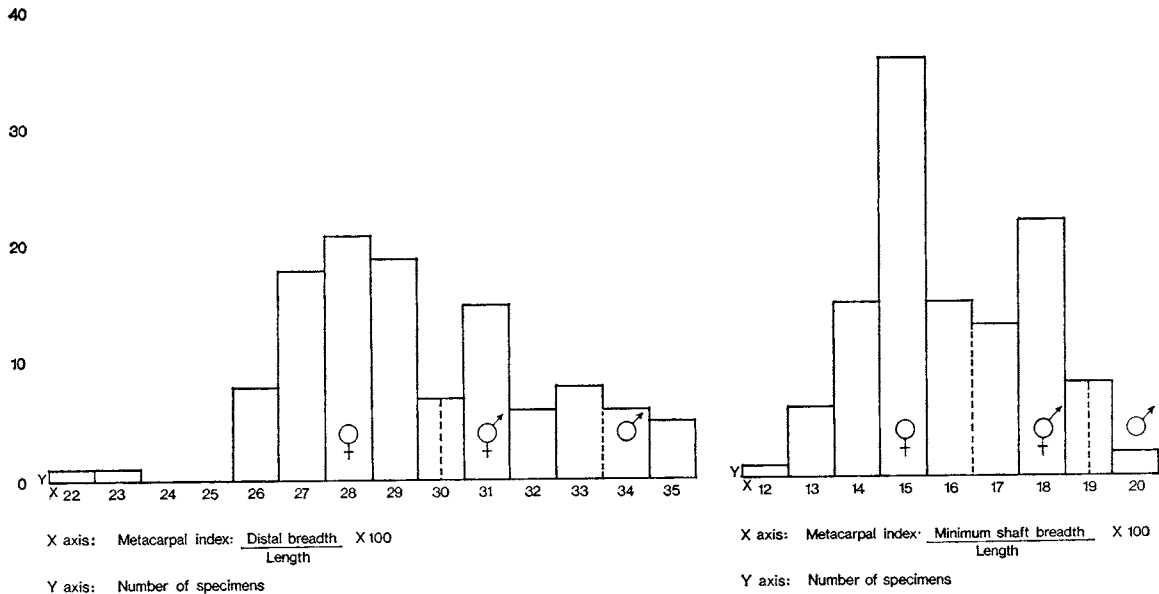


FIG. 206. Ox metacarpals

DISEASE AND INJURY

The bones of the animals were examined for evidence of disease. The majority of the bones came from apparently healthy animals, but of course many of the animals probably in fact suffered from diseases and parasites that did not affect the bone. Only a few diseases commonly affect the bone, although the advanced stages of other diseases which in their early stages affect the tissue may also affect the bony substances. The diseases and injuries of the bones that were seen fall into three main groups: these are, arthritis and allied conditions, dental diseases and anomalies, fractures and trauma.

Arthritis and Allied Conditions

Evidence of disease was found at some of the joints of cattle bones that may have been caused by arthritis or other similar conditions. The joints most commonly affected were the hip joints and the ankle joints. These conditions are rarely found in sheep or pig bones, but this might be because old animals occur so rarely amongst the sheep and pigs. Where deposition of bone has occurred within the joint, eburnation or polishing of the joint surface occurs.

Pl. XXXVII*i* shows two tarsals fused together and proliferation of bone at the margin and pl. XXXVII*h* shows a metatarsal fairly severely affected by a disease resulting in erosion and deposition of the bone. In some cases, the degree of severity of the condition would have made the animal quite lame.

Dental Diseases and Anomalies

The jaws of sheep are most commonly affected by disease. Sheep are very prone to periodontal disease — this remains a problem even today where premature incisor loss in sheep is a problem without a clear-cut solution. The problem is discussed in detail by Duckworth *et al.* (1962) who believe that one of the causes might be dietary deficiency. Certainly the main result is inability to feed properly and consequent starvation. The periodontal disease in the Portchester animals is generally recognized by a reduction of the bone just below the teeth causing the teeth to become very loose in their sockets. Although the incisors are rarely found and the front part of the jaw is almost invariably damaged, it is likely that the incisors would have been affected as well. In some severe cases abscesses are found as well. Pl. XXXVII*a* and *b* show a mandible and a maxilla with fairly severe periodontal disease. It is surprising that the farmer did not kill these animals sooner, as their ability to feed is likely to have been badly affected. Periodontal disease is not by any means a rare occurrence amongst the Portchester mandibles, which might indicate that they were feeding at a low nutritional level. The older the animal is, the more likely it is to become diseased, and so the age structure of the herds might reflect the difficulty of keeping healthy animals beyond three or four years. The animal husbandry will reflect a compromise between what is desired in terms of marketable commodities and meat supply, and what the food availability and the health of the animals will allow.

Sheep mandibles are also very prone to overcrowding, especially when the deciduous molars are replaced by the permanent premolars. It is a rare occurrence to find a sheep mandible that does not exhibit some degree of overcrowding of the teeth. Overcrowding is also seen in pig jaws where it may cause rotation of the teeth, especially the premolars. It is far rarer in cattle jaws. The congenital absence of the second premolar was found in cattle jaws as was the absence of the third pillar on some third molars. These anomalies have been noted on other prehistoric material (Jackson, 1948). It is not known whether they are linked to inheritance or are random mutations.

Fractures and Trauma

Several bones of various species were found with signs of rehealed fractures. These fractures were found in the limbs of smaller animals and only in the ribs of cattle. It is not usually possible to do anything with a cow or horse that has broken its leg; the only economic course of action is slaughter. Smaller animals are well able to get around on three legs and so a broken limb would not be too great an inconvenience, especially to a dog or a cat. Pl. XXXVII*c-f* and *k* shows a selection of bones with rehealed fractures. The dog radius and ulna have a large amount of irregular bony growth around the site of the fracture which indicates that it was hanging loose and unsupported for some time, before the bones began to fuse together. In fact the radius was not completely fused at death. This would argue against the

use of splints to aid rehealing, although the pig tibia and sheep metatarsal, *c* and *d*, have healed fairly neatly and so might have been splinted. The bird femur, *f*, shows how little a fracture would affect a small animal — the distal part of the bone is severely displaced and yet the bird evidently survived some time after the fracture. A piece of cattle humerus showed a fairly unusual feature. A fragment of the shaft of the bone seemed to have been detached from the main part of the bone and had moved from its original position before fusing with the bone again. The limb itself presumably would not have been completely broken, hence the survival of the animal for some time after the fracture.

Other examples of trauma were seen that would have had very little effect on the animal at all, like the blow to the horn cores of a sheep, shown in pl. XXXVII*m*, which merely caused a restriction of the bone at the point of the blow, and was then followed by normal growth.

In a few cases the extent of the injury or disease was so great that the animal affected would have been seriously incapacitated. Pl. XXXVII*b* shows an ox tibia with very severe destruction of the proximal end, possibly due to an infected abscess. The amount of ossification would indicate that some time had elapsed since the abscess burst. Pl. XXXVII*g* shows the second and third phalanges of a cow fused together. This must have been the result of a very severe infection of the foot.

Both of these animals would have been made lame by their conditions and would probably not have been able to feed themselves effectively in open pasture. This raises the possibility that there were stalling facilities in or near the fort for injured animals that it was not thought expedient to kill, and perhaps for pregnant and nursing animals.

The value of an examination of diseased bones lies not just in the evidence it provides for the incidence of disease in ancient animal populations, but on the information it might give on the nature of the animal husbandry, the feeding levels, veterinary practices and possible use of stalls even where there is no direct archaeological evidence for them.

CONCLUSIONS

Cattle

Although much was written by Romans about the animals of Italy and the neighbouring areas, we have little documentary evidence about areas as far afield as Britain and so must rely almost exclusively on archaeological evidence. The Roman writers paid little attention to breed, even in their own country, and so we can only give the most general discussion of this question, especially when colour and type of hair are important in the diagnosis of particular breeds. Where they were whole, most of the skulls recovered were of the same general type, although there was some variation in the form of the horn core. This is seen in pl. XXXVIII*a* and *g*. Pl. XXXVII*c* shows the only example recognized of a different type of skull — one with a prominent frontal eminence.

The evidence of the measurements of the bones indicates a wide range of sizes of animals, although it is not certain that these necessarily reflect breed differences. We have discussed the possibility that the cattle may be predominantly female, and kept for milk rather than meat, although there is no doubt that they were eaten in the end, from the frequency with which butchery cuts are found.

Cattle probably provided all sorts of by-products that would leave no trace in the archaeological record, from hides to paint brushes to glue and blood. Most peoples will exploit all the possibilities of an animal carcass, and cattle certainly provide many, as well as a large amount of meat.

Sheep and Goats

The evidence of the horn cores certainly implies that both species were present although in what proportions it is impossible to say. There is also evidence of a hornless breed of sheep, illustrated in pl. XXXIXj. The bones of many of the animals are small and slender, although larger and more robust bones are also found. It is not clear whether the animals were intended mainly for meat, milk or wool, although in any case all three products would undoubtedly have been utilized. Lamb — or occasionally mutton — provided a fairly small though not insignificant proportion of the meat diet. The animals seem to have been troubled by diseases of the mouth and in fact the location of Portchester was probably more suitable for cattle than for sheep rearing. It is possible that they were killed off in peaks before the winter. This, and the incidence of dental and periodontal disease may imply a lack of suitable food for the winter, making the keeping of too many store animals through this season uneconomical.

Pigs

Again there is possible evidence of two breeds of pigs — one with a shallow sloping forehead and one with a more raised and prominent nuchal crest, although the evidence is rather fragmentary.

Pigs can only be kept for meat, as they give neither milk nor wool, and are certainly not suitable for traction. They may have been left to forage in or around the fort, and killed when there was a need for meat.

Birds

These are the subject of a separate report (pp. 409-15).

Dogs

A selection of dog bones was sent to Mr R. Harcourt whose report is appended (pp. 406-8). The writer is in agreement with the conclusions reached by Mr Harcourt.

Cats

The most significant feature of the cats is their presence in such large numbers. They can only be presumed to have been pets and strays living in and around the fort. The fact that several whole carcasses were put in wells and pits might imply that some at least were kept as pets.

Horses

These animals are represented in very small numbers at the site. This may be a result of special treatment of the dead animals, or it may mean a lack of importance of the horse to the economy.

Deer

Red, roe and fallow deer were all found, although red deer were by far the most common at the site. The majority of the bone fragments identified as red deer were from antlers. This indicates their importance as a source of raw material rather than food. The report on the bone small finds shows that both antlers and metapodia were commonly used for tool manufacture. Antlers could be picked up in the forested areas at some times of the year, although they are not as common as might be expected since the deer themselves eat them as sources of minerals.

Fallow deer are supposed to have been introduced into Britain by the Romans, so it is interesting to find them at the site, even if only in very small numbers.

Hare, Fox, Badger, Vole, Fish and Mouse

The small numbers of the remains of wild animals apart from deer indicate that they did not form a significant part of the economy, although the Romans are known to have had a very catholic taste in food. Fish, despite its poor representation, should be expected to have provided a reasonable proportion of the food. The representation of all these small animals is probably very much underestimated because they have a very small chance of recovery.

We have at Portchester a picture of an economy based on beef as the main source of meat. It seems more likely that the inhabitants were self-supporting than that they brought in meat from the markets, especially in the light of the lack of major industrial activity so far discovered at the site. The level of the economy is impossible to assess, although analysis of the bones from the later periods might help to isolate the factors determined by environment from those determined by choice and deliberate policy on the part of the inhabitants.

The division of the bone material into different groups has not revealed any startling differences. In fact many of the differences may be due to the different type of location from which the bones were recovered. Other differences may be more significant, but it does not seem as if there were any major economic changes made during the Roman occupation of the fort.

ACKNOWLEDGEMENTS

I would like to thank Mr E. S. Higgs, Mrs H. Jarman and Mr D. Allen for their help on some points of identification. Messrs. Peter Robins and Bari Hooper gave valuable advice on the diseased bones. I would also like to thank Mr Harcourt for looking at the dog bones, and Professor Cunliffe for his encouragement and discussions.

THE DOG BONES

by R. HARCOURT

A minimum of 14 animals was represented and they showed the wide variation in size characteristics of dogs in the Romano-British period. The shoulder heights ranged from an estimated 25 cm. (10 in.), similar to that of a modern toy poodle, to 63 cm. (25 in.), which is

as tall as an Alsatian. Height apart, no other resemblance to such modern breeds is implied by these comparisons.

As is nearly always the case the shortest bones were relatively the stoutest, but in no instance did any of the long bones show any appreciable bowing, a feature quite common among Roman dogs, but not yet seen by the writer in those of any other period.

TABLE XI
Measurements of Long Bones

	No.	Range (mm.)	msd Index ¹ (%)	Ht. ² (cm.)
Humerus	12	85-191	6·7-10·6	28-60
Radius	9	76-202	6·4-11·8	25-65
Ulna	7	88-235	—	24-63
Femur	9	86-208	6·5-10·5	26-63
Tibia	6	99-213	6·6-10	29-62

¹ msd Index = midshaft diameter expressed as a percentage of the total length.

² Ht. = shoulder height. The total length in millimetres of the humerus is multiplied by 3·37, radius by 3·22, ulna by 2·67, femur by 3·01 and tibia by 2·92 to give the height in centimetres. The result is an estimate only.

There were three complete skulls of which the measurements are shown in table XII. The dimensions of these varied but their overall shape and relative proportions were very similar, a fact best shown by the small variation in the values of the cranial, snout and snout width indices. These give, respectively, a measure of the breadth of the skull, the length of the snout and the breadth of the muzzle, allowing a comparison to be made between skulls of widely differing sizes.

One bone showed a pathological abnormality. This was a right tibia from trench 95 layer 150. The upper 3 cm. of the shaft were tilted sideways which had had the effect of tilting the

TABLE XII
Measurements of Skulls from Well (Pit) 144

Feature no.	Layer 150		Layer 151	
I. Occipital protuberance to anterior margin of incisors	161	193	216	
II. Occipital protuberance to posterior junction of nasal bones	92	107	121	
III. Posterior junction of nasal bones to anterior margin of incisors	78	95	105	
IV. Bizygomatic breadth	91	105	111	
IX. Palatal length	74	93	97	
X. Palatal breadth PM ⁴ /M ¹	53	60	64	
XI. Length of maxillary tooth row	53	66	69	
XII. Width of snout across canine alveoli	31	39	40	
XV. Length of mandibular cheek tooth row	—	73	76	
Length of lower first molar (M ¹)	—	21·5	22·1	
Cranial index IV/1.1000	56·5	54·5	51·5	
Snout index III/1.100	48·5	49	48·5	
Snout width index XII/111.100	39·7	41	38	

articular surface sideways and slightly backwards. In addition, the upper half of the outer margin of the shaft was less rounded than normal. Such a distortion could have occurred only when the animal was young and the bone still plastic and may have been brought about by an interference with the blood supply to the uppermost part of the bone.

It should not be assumed that early and prehistoric dogs were necessarily used for any particular purpose and it is quite possible that those of medium size, at any rate, were nothing more than scavengers living by their wits, performing a very useful function none the less. Furthermore, size alone is an unreliable guide to the ability of a dog to perform a given task; at the present day the spectrum of dogs used for 'hunting' of one sort or another extends from small terriers to large hounds. It seems, however, highly probable that the smallest dogs found at this site, and others even smaller found at other Roman sites, must have been house dogs kept as pets. It is hard to imagine how else they could have survived. The largest of those present here could have been guard dogs.

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XII. THE BIRD BONES

by ANNE EASTHAM

AT Portchester Castle bird bones were found in many of the very numerous rubbish pits scattered around the site. We can assume that all the skeletal remains were deliberately disposed of in these pits, that probably none of the species arrived there by accident and that most of them were eaten. The list given below shows that, while the number of species is small, certain of them are surprising and unusual and apart from raven and jackdaw no passerines were found on the site.

List of species

<i>Gallus gallus</i>	Domestic fowl.
<i>Pavo cristatus</i>	Peacock.
<i>Gavia immer</i>	Great Northern Diver.
<i>Anser anser</i>	Grey lag goose.
<i>Tadorna tadorna</i>	Shelduck.
<i>Anas platyrhynchos</i>	Mallard.
<i>Anas crecca</i>	Teal.
<i>Anas querquedula</i>	Garganey.
<i>Anas penelope</i>	Wigeon.
<i>Falco tinnunculus</i>	Kestrel.
<i>Perdix perdix</i>	Common partridge.
? <i>Scolopax rusticola</i>	Woodcock.
<i>Sterna hirundo</i>	Common tern.
<i>Columba livia</i>	Rock dove.
<i>Corvus corax</i>	Raven.
<i>Corvus monedula</i>	Jackdaw.

As the accompanying table shows (table XIII), out of a total of 378 bones 234 belonged to domesticated fowl and peacock, 95 were waterfowl, and 9 were bones of gamebird and pigeon, all of which could have been consumed, though the flesh of the diver is extremely unpalatable. The remainder, 29 raven bones, 7 jackdaw, 3 tern and 1 kestrel died or were killed for perhaps a variety of reasons other than for the table.

The most common species is, as might be expected, the farmyard fowl, with a total of 230 bones. Out of the thirty-two pits in which bird remains were found, chickens appeared in all but one of them. Seven pits and gullies 3 and 9 contained only chicken. In pits 12, 62, 107, 121 and 223 fowl bones were accompanied by those of Mallard or domesticated duck. However, the total number of individuals does not appear on the basis of comparative size and the number of bones to have been large. The chart below suggests a total of between 48 and 60 individuals from the whole site. The greatest concentration of bones was 90 in pit 92

EXCAVATIONS AT PORTCHESTER CASTLE

TABLE XIII

Numbers of Bird Bones Discovered

	Gallus gallus		Pavo cristatus		Gavia immer		Anser anser		Tadorna tadorna		Anas platyrhynchos		Anas crecca		Anas penelope		Anas querquedula		Falco tinnunculus		Perdix perdix		?Scolopax rusticola		Sterna ? hirundo		Columba livia		Corvus corax		Corvus monedula	
	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R
Skull					1																										1	
Mandible - upper					1	1											1															
- lower					1	1																								1		1
Coracoid	7	7			1	1					4	2					1									2	1					
Sternum	1	1									4																					
Furcula	9				1						3				1																	
Scapula	5	3			1						2																					
Vertebrae	3				3						3																					
Ribs																																
Pelvis	1	3																														
Humerus	P	12	16	2	1	1			1		3	1												1		1	1	4	3			
	D																															
Radius	P	13	8			1				1	2	5	1											1								
	D																															
Ulna	P	13	11			1	1			1	10	4											1			2		6	4			
	D																															
Carpo-Metacarpus	P	7	5			1					7	2	1											1						1	1	
	D																															
Digits																																
Femur	P	14	13			1					2											1						2	3	3	2	
	D					1																										
Tibio-Tarsus	P	12	15					1			1																		1	2		
	D																															
Fibula						1																										
Tarsus-Metatarsus	P	15	12	2	1	1	1				1											1								1		
	D																															
Phalanges		6						1																								
Total		230	4		23	3		3		3	58	2		1		5		1		2		1		3		6		29		7		

and these included bones from all parts of the body, with ribs and many sections of axial skeleton, representing probably a minimum of 6-8 individuals, whereas in other pits mainly limb bones were found.

There was very little variation in the size of the domestic fowl at Portchester. Any variation there is, is easily explained as a factor of sex and age and there is no sign of differential breeding. Even the three tarsi-metatarsi with spurs and the detached spur found in pit 92 are not

TABLE XIV

Minimum Numbers of Individuals from Chicken Bones in Each Pit

<i>Pit</i>	<i>Quantities of bone</i>	<i>Minimum numbers of individuals</i>
12	4	2
18, 19, 49	9	2
40	3	1
47	5	1
62	1	1
63	15	4
64	2	1
71	8	3
73	2	1
74	17	2-3
79	14	2-3
89-90	2	1
91	2	1-2
92	90	6-8
107	5	1-2
108	6	1-2
109	2	1
121	15	4-5
187	1	1
223	6	1-2
236	5	2
Gully 3	1	1
Gully 7	1	1
Gully 9	7	2-3
Miscellaneous	10	2-3
Totals	230	48-60

overlarge for the domestic cock bird and would be on the small side for a game or fighting cock. In any case the total number of chickens is not sufficient to suggest that they were kept or farmed to any real extent on the site. There can be no comparison here, therefore, with the domestic fowls at Fishbourne (Eastham, 1971, pp. 391-3), where there was a strong suggestion based on comparative measurements that the occupants might have had a certain interest in keeping a variety of different breeds of chicken.

The other domesticated member of the *Gallus* family to be found on the site is the Peacock. There were only four bones found, two tarsi-metatarsi in pit 47 and two humeri in a miscellaneous sample of bones, so that probably only two or three individual birds are represented. This would seem to be a rather surprising species to find in southern Britain at this period, although they are commonly quoted as dishes for feast days during the middle ages and large numbers of them occurred in the medieval rubbish pits at Winchester. There does not appear to have been sufficient systematic study of bird fauna of Roman sites to assess just how infrequent a species in Britain the Peacock was.

The Peacock is a native of the Indian peninsula and of Ceylon. The fact that it was the favourite bird of Hera, who in mythology had bestowed on its plumage the hundred eyes of Argus after he had been killed by Zeus for spying on him for Hera, suggests that the Greeks knew of it from a fairly early period, but were probably not very familiar with the species until after the conquests of Alexander. In Roman mythology the Peacock was sacred to Juno in her capacity of Regina. In so far as Juno, as protectress of the city of Rome, had geese as her sacred animals and they were supposed to have warned the city of the approach of the invading Gauls, possibly the Peacock, with its excessively strident voice, may have had a similar function of alarm. In art, the Peacock is most often represented with Hera or Juno. In a military context, the officer's badge of Aurelius Cervianus of the third century A.D., in the Bibliothèqne Nationale in Paris, has a low relief of a Peacock occupying the lower third of the medal. Its appearance as a symbol in such a military object raises a number of speculations as to its significance. In the Byzantine church (Matthew, 1963, p. 35), because its flesh was held to be incorruptible, the bird came to be a symbol of everlasting life and later of the Eucharist. One of the earliest representations of it in this context is in the mosaics of St. Costanza in Rome built between A.D. 320-30; another is in Hagios Georgios, Thessaloniki of A.D. 400 and from the fifth century onwards there are many examples, including the pair which confront one another in the carvings on the throne of the Emperor Maximian of A.D. 545.

Waterfowl of various species are fairly common on the site. If one looks at a table estimating the minimum numbers of individuals, these amount to a possible 31 Mallard, 5 Garganey, 2 Teal, a Grey lag goose, a Wigeon and a Shelduck. Of these, some of the Mallard and the Goose might have been domesticated but the bones are consistent in size with the wild breed and very few of them are from immature specimens, a factor which could suggest that they had been reared for the table. In any event the sample is rather small for the determination of any marked domestication features.

The most unusual and unexpected water bird to be found on the site was the almost complete skeleton of *Gavia immer*, the Great Northern Diver, all bones together in pit 236. The skull and mandibles were in numerous pieces which it was possible to reassemble. Of the axial skeleton, there was found both coracoids, a scapula, part of the furcula and some vertebrae. The limb bones were very nearly complete, except that both femora were missing and no phalanges or wing digits were recovered.

The Great Northern Diver is a very shy bird which, at the present day, breeds in Iceland and occasionally in the Hebrides and Northern islands (Vaurie, 1965, p. 7). In the winter it migrates southwards along sea coasts and is sometimes seen off Cornwall and even as far south as the coasts of southern Spain. On Roman sites in Britain it seems to be practically unknown. One was found in the Broch of Ayre in Orkney which belongs to the first century A.D., and in a second century culture sequence in a Fife cave bones of a Red-throated Diver were discovered.

The bird at Portchester Castle is a fully mature if not aged specimen and the measurements of each complete bone (given in the table below) fall within the size limits for an adult male of the species. Why or how it came to be thrown away in pit 236 seems unanswerable. It is at best distinctly unpalatable as food. The fact that all the bones were found together might suggest, however, that it might have been accidentally bagged on a wildfowling trip and thrown out into the rubbish pit without more ado.

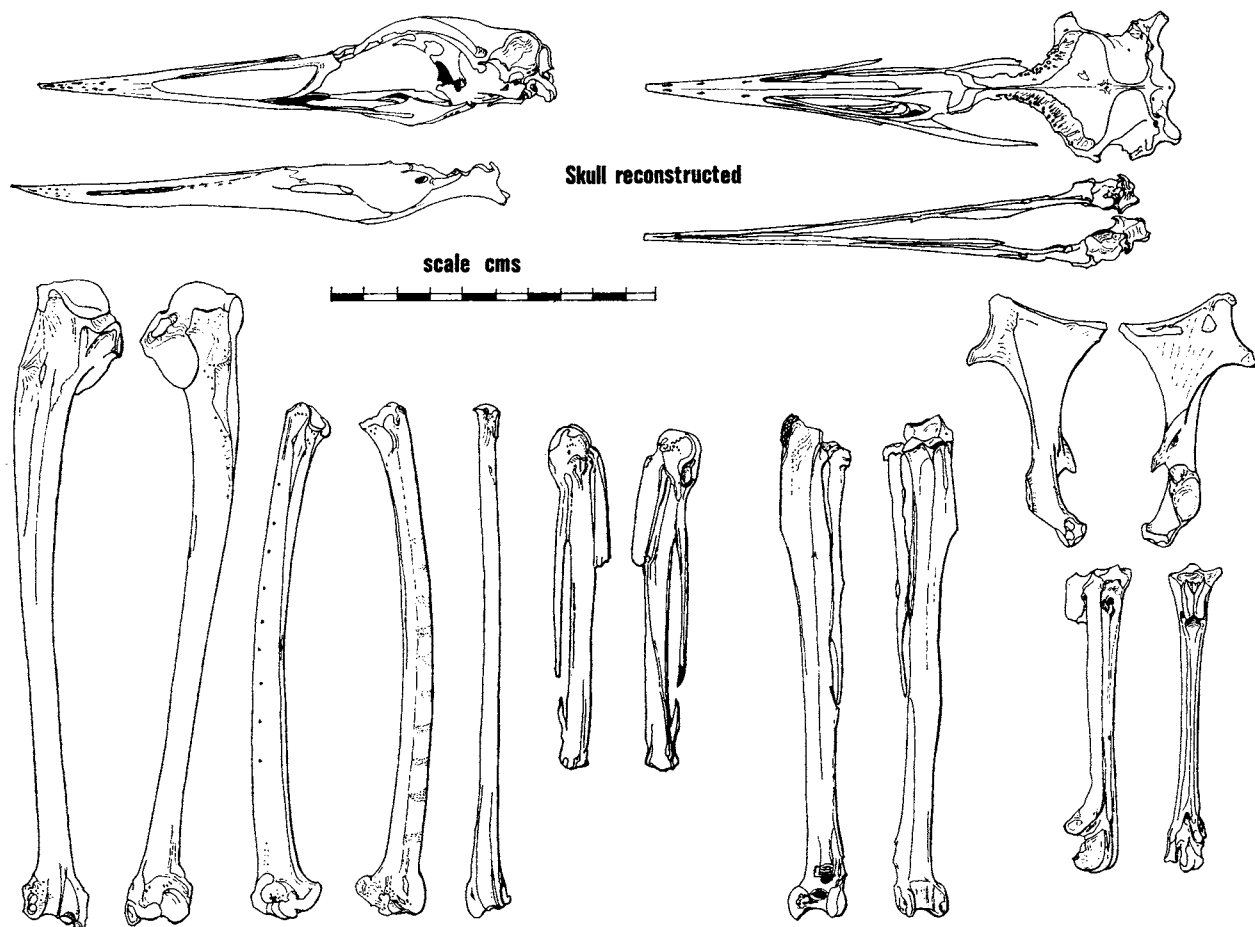
Measurements of the complete bones of Gavia immer

<i>Bone</i>	<i>Side</i>	<i>Length</i> (mm.)	<i>Proximal width</i> (mm.)	<i>Distal width</i> (mm.)
Skull (reconstructed)		150.25	orbit width 46.6	
Bill		93.5		
Mandible (reconstructed)		151.5		
Coracoid	Right	70.5		
Humerus	Left	190.7	29.35	15.9
	Right	190.65	28.8	15.85
Radius	Left	150.80	12.5	7.8
Ulna	Left	159.2	15.0	21.8
	Right	—	15.25	—
Carpo-metacarpus	Left	10.2	11.45	9.85
Tibio-tarsus	Left	over 155.0	19.5	16.1
	Right	—	—	16.1
Tarsus-metatarsus	Left	95.25	17.5	13.25
	Right	95.65	17.6	13.25

TABLE XV

Minimum Numbers of Wildfowl in Each Pit, Estimated from the Bones

<i>Pit</i>	<i>Anser anser</i>		<i>Tadorna tadorna</i>		<i>Anas platyrhynchos</i>		<i>Anas crecca</i>		<i>Anas querquedula</i>		<i>Anas penelope</i>	
	<i>Bones</i>	<i>Individuals</i>	<i>Bones</i>	<i>Individuals</i>	<i>Bones</i>	<i>Individuals</i>	<i>Bones</i>	<i>Individuals</i>	<i>Bones</i>	<i>Individuals</i>	<i>Bones</i>	<i>Individuals</i>
8					4	3						
12					4	1						
47					1	1			1	1		
48					5	2			1	1		
62					2	2						
63					5	2						
64					1	1						
79					6	2			4	1		
85											1	1
92					12	2						
107					3	1						
108					4	2						
109					4	1	1	1				
121			3	1	2	1						
223					1	1						
236	3	1			8	2	1	1	2	2		
Totals	3	1	3	1	62	24	2	2	8	5	1	1

FIG. 207. *Gavia immer* from pit 236

The remaining birds, apart from the crow family, would seem to rank as accidentals. The Tern could be expected on a site as close as this to the sea. The single Partridge and Woodcock and the pair of Doves are only noteworthy because there are so few of them. And the Kestrel, although it could have been one tamed for hunting purposes, is just as likely to have been a chance death.

The Jackdaws will have been residents and there are always deaths in any nesting colony of them. The Ravens are a different matter. The Romans are well known to have tamed them and taught them to talk. Six pits yielded bones of Raven and the total of 30 bones represent a probable minimum of eight individual birds.

The two birds of pit 236 are of very different size but both fully mature. It is not possible to be certain of the sex of crows from the skeleton but the size difference of this pair suggests the possibility of their being kept for breeding at the castle either as pets or mascots.

TABLE XVI

The Distribution and Numbers of Raven at Portchester Castle

	<i>Bone number</i>	<i>Individual number</i>
Gully 9	5	1
Pit 63	1	1
64	1	1
73	2	1
108	1	1
236	20	2
Total	30	7

Any conclusions to be reached about the birds found in the Roman levels at Portchester Castle are very brief. The finds do not show that birds were either kept in captivity or hunted for food to any appreciable degree. Accidental corpses are a minimum and none of the more frequent passerine species like thrushes, blackbirds and sparrows etc., which very often occur in Roman debris, appeared here. Unusual species were, however, brought on to the site, two Peacocks and a Great Northern Diver and explanations for either of these are a matter for speculation.

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XIII. THE CARBONIZED CEREALS

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SIX samples of carbonized cereals collected in 1966 from Roman layers and pits were received for examination. The samples consist of carbonized caryopses of wheat, barley and a species of oat. In general they are in poor condition, with a rather eroded appearance, and there are unidentifiable fragments of cereal grains mixed with them. A careful inspection detected no weed seeds, and in only one case were any spikelet parts preserved.

TABLE XVII

Carbonized Seeds Identified in the Samples¹

Sample no.	Hordeum vulgare	T. spelta or T. dicoccum	Wheat	Avena sp.
63 (5)	—	—	1 fragment	1
63 (6)	11	7 2 glume fragments	1	—
65 (5)	1	4	—	2
65 (12)	3	5	2	—
65 (15)	2	6 2 fragments	—	—
65 (18)	—	2	—	—

¹ The sample from trench 65 (12) came from pit 52, that from trench 65 (18) from pit 54. The rest are from Roman occupation levels.

Wheats (*Triticum* sp.)

In the table 'wheat' denotes a grain too poorly preserved to be more closely identified.

The better preserved grains have the appearance of being spelt (*Triticum spelta*) or emmer (*Triticum dicoccum*) and no grains of a bread/club wheat type are present. The detection of spelt and emmer requires either a large sample to enable the inspection of metrical distributions (Morrison, 1959) or the presence of spikelet parts to confirm identifications based on grain morphology (Helbaek, 1952). In sample 63 (6) there are two fragments of glumes,

which though badly preserved have the strongly nerved appearance of glumes from spelt. One may suspect that in this sample at least the wheat represented is spelt, though definite identification is not possible with this material.

TABLE XVIII

Dimensions of Measurable Wheat Grains (mm)

	<i>Length</i>	<i>Breadth</i>	<i>Thickness</i>
63 (6)	5·6	3·0	2·8
	5·3	2·7	2·7
	4·8	2·6	2·2
	4·7	2·7	—
65 (12)	6·3	3·5	2·9
	5·5	3·0	2·7
65 (15)	5·8	2·9	2·9
	5·0	2·6	2·2

Barley (*Hordeum vulgare*)

One species is represented in the samples: *Hordeum vulgare*, a hulled 6-row barley. In the absence of intermodes the spike type, whether dense or lax, remains unknown. In one specimen from 65 (12) the lemma base is well preserved and it is of the plain (spurium) type. Unfortunately lemma bases are not a reliable indication of spike type (Renfrew, 1973, 78).

None of these samples constitutes a statistically useful population, and comparison with the known ranges of dimensions for carbonized barley grains (see, for example, Van Zeist, 1970, p. 160) would be invalid.

Straight grains from median spikelets are in the majority in these samples. In sample 63 (6) there are six such grains as opposed to three twisted grains from lateral spikelets.

TABLE XIX

Dimensions of Measurable Barley Grains (mm)

	<i>Length</i>	<i>Breadth</i>	<i>Thickness</i>	
63 (6)	5·7	3·1	2·6	
	5·4	2·8	2·5	
	5·1	3·0	2·6	
	5·0	2·9	2·7	
	5·2	2·7	2·3	
	5·0	2·7	2·7	
	4·7	2·1	2·0	
	5·2	2·9	2·6	
	65 (5)	5·4	2·8	2·5
	65 (15)	5·2	2·8	2·3

Oats (*Avena* sp.)

Three caryopses of oats are present. The two from 65 (5) are badly distorted and unmeasurable whilst the single caryopsis from 63 (5) has: length 4·8 mm.; breadth 1·2 mm.; thickness 1·4 mm. Species determination is not possible in the absence of flower bases, so the grains may represent wild oats (*Avena fatua*) or the cultivated oats (*Avena sativa* and *Avena strigosa*).

One can conclude from the samples that hulled wheat, 6-row barley and possibly oats were being grown near, or at least consumed at, the Saxon shore fort in the middle of the fourth century.

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XIV. DISCUSSION

HAVING now amassed the basic data upon which the interpretation of the Roman phase of Portchester Castle must at present rest, we may now consider them in relation to the contemporary scene both in Britain and on the continent. One method would be to discuss the Portchester evidence against the background of late third- and fourth-century military history. Such an approach would, however, prejudice the interpretation by the very fact of supposing that a relationship was maintained between Portchester and the army. Instead, it has been thought advisable to discuss separately the elements which constitute the evidence and only by way of conclusion to offer a summary of the more plausible historical interpretations.

THE DEFENCES: THEIR FORM AND DATE

The walls, bastions, gates and ditch system of Portchester fall within a general category of defensive structures which can be paralleled in Britain and on the continent in late Roman contexts, dating to after the middle of the third century A.D.¹ The thickness of the wall (10 ft. (3 m.) above foundation offset) is comparable to other British sites of this type (e.g. Richborough, Lympne, Dover, Pevensey and Clausentum) and presumably represents the standard width regarded as optimum for free standing masonry walls, as compared with 8 ft. (2.4 m.) for walls of earlier forts backed by ramparts (e.g. Dover (*Classis Britannica* fort), Reculver, Brancaster and Burgh Castle), and the walls of towns, which vary between 4 and 10 ft. (1.2–3.0 m.). A similar standardization can be seen among the European forts of comparable date.

Less is known of contemporary ditch systems, but the pair of V-shaped ditches at Portchester are clearly within the third-century tradition represented at Reculver and Richborough. A single V-shaped ditch also occurs in the fourth-century fort at Pevensey but by the third quarter of the fourth century wide flat bottomed ditches seem to have become the norm.

The development of forward-projecting bastions in Britain can be traced by reference to the architecture of the shore forts and to the late stages of certain town defences. At the beginning of the sequence lies Burgh Castle, where it is evident that the fort began to be constructed in the style of the early third century, with internal corner towers, ramparts and rounded corners² comparable to Brancaster and Reculver, but was modified during construction by the addition of external bastions of sub-circular plan and solid form. The date of this change is uncertain, but is likely to lie towards the middle of the third century. There-

¹ For a general description of the shore forts, Collingwood and Richmond (1969), 47–57. For a discussion of the sequence, with detailed references, Cunliffe (1968). A summary of the continental evidence is contained in Petrikovits (1971) (with references). Specific British sites: Dover (Philp, 1971); Reculver (Philp, 1969); Carisbrooke (Rigold, 1966); Pevensey (Peers, 1953); Richborough

(Cunliffe, 1968; Johnson, 1970); Brancaster (St Joseph, 1936); Lympne (Roach Smith, 1850, 1852); Clausentum (Cotton and Gathercole, 1958); Bradwell (*V.C.H. Essex*, iii, 52–5); Burgh Castle (Morris, 1949); Cardiff (Nash-Williams, 1954); Caer Gybi (Wheeler, 1924).

² Information from the late Mr Charles Green.

after, bastions of various forms were commonly adopted in fort architecture: Richborough, Portchester and possibly Lympne dating to the late third century, Pevensey to the early fourth, with less certainty attaching to the dates of Bradwell, Walton Castle, Cardiff and Caer Gybi. In the second half of the fourth century, bastions were added to the existing walls of a number of towns, and several small settlements, defended for the first time in this period, were provided with bastioned walls (e.g. Clausentum, Gatcombe (Cunliffe, 1967), Mildenhall,¹ etc.).

On the continent the development of forward-projecting towers can be seen to begin somewhat earlier than in Britain, starting in the last quarter of the second century. By the time that many of the Gaulish towns were being provided with new defensive circuits under Probus (after A.D. 276), bastioned walls had become a regular feature of defensive architecture.

Little standardization is apparent in the form of the bastions; the elongated D-shaped, hollow type at Portchester is one of many variants. In Britain the D-shaped variety was more commonly adopted than the circular type set astride the wall (cf. Carisbrooke)² or the rectangular type (cf. Richborough). The Portchester bastions, however, differ from those of Lympne and Pevensey in that they are hollow, a characteristic not uncommon in northern Europe.

The two principal gates in the centres of the east and west sides of Portchester are of a somewhat unusual type. In each case, the gatehouse has been set back at the end of a courtyard formed by inturning the walls of the fort. A similar arrangement is apparent at the so far undated fort at Carisbrooke, where, at the east gate, the fort wall was inturned for a distance of 46 ft. (14 m.), leaving a gap of 18 ft. (5.5 m.) to accommodate both road and any guard-chamber which might have been built. The early fourth-century fort of Pevensey provides a variation of the same basic idea. Here, at the west gate, the courtyard effect was created not by inturning the fort wall but by placing a bastion on either side of the approach and setting the guard-chambers back wholly behind the wall. Elsewhere in Britain and in northern Europe parallels are difficult to find, the more normal arrangement involving gate towers on the line of, and often projecting in advance of, the fort wall. Only at the Bùrgle, near Gundremingen (Bersu, 1964) has anything approaching a forecourt been recognized, but the site is little more than a pair of defended barrack buildings, and therefore not strictly comparable. Comparison might be made with the gate of Split (Marasović, 1968), where an enclosed forecourt preceded by projecting towers was constructed: the similarity is, however, tenuous. It is best, therefore, to regard the gates of Portchester, Pevensey, and possibly Carisbrooke, as a specialized southern British type.

The two postern gates at Portchester were simple arched openings through the wall, similar to the east gate of Pevensey. They contrast, in their simplicity, with the angled posterns found in the north wall of Pevensey and in the north and south walls of Richborough, where flanking protection was provided by inserting the gates into bastions in the manner also recorded at Caelius Mons (Kellmünz) and Icorigium (Jünkerath).³

The British shore forts, in so far as the evidence is available, fall into two size groups; those between 6 and 7½ acres in extent, including Brancaster, Burgh Castle, Reculver and Rich-

¹ No definitive report but notes in *Wilts. Arch. Mag.* lvii (1958-60), 233, 397; lviii (1961-3), 35; lx (1965), 137.

² Carisbrooke is anomalous. In spite of internal excava-

tions there is no dating evidence: Rigold (1966) suggests that it was unfinished.

³ Conveniently summarized in Petrikovits (1971), fig. 30

borough, and those between 8 and 10 acres, to which class Lympne, Pevensey and Portchester belong. Superficially the groupings would seem to represent two different periods, the smaller forts all belonging to the period before Carausius, the larger forts dating to the Carausian period and later. Whereas the smaller forts correspond to the larger British auxiliary establishments, the later forts are significantly larger and may well reflect a difference in function — a problem returned to in more detail below.

From the discussion so far, it would appear that in constructional detail and plan the shore forts of south-eastern Britain display a variety which at first sight is confusing. It is, however, possible to isolate certain characteristics which allow broad groupings to be defined.¹ The earliest forts in the series are undoubtedly Brancaster and Reculver. With their classic 'playing card' shape, internal turrets and ramparts, the absence of bastions and tile courses, they must be placed at the beginning of the series, probably in the first half of the third century, a dating entirely consistent with the associated finds. Next, typologically, comes Burgh Castle, representing a transitional form, begun in the earlier style, but modified during construction by the addition of solid, sub-circular bastions. Burgh displays two further features, which recur in certain of the other forts, the lack of strict rectangularity and the presence of regular tile courses. One or more of these elements can be seen at Dover, Bradwell, Lympne, and Richborough (earliest stone phase). Precise dating evidence is sadly lacking for all but Richborough, where it has been argued that construction was begun, modified and later completed probably within the 270s and certainly before the appearance of Carausius in A.D. 285 (Johnson, 1970). If the shared characteristics of these forts imply a broad contemporaneity (and the coin evidence does not dispute this) the date range for the group must lie within the third quarter of the third century. There is no need to suppose that all were built at the same time or as a response to the same stimulus — a perfectly acceptable hypothesis being that forts were put up individually, as the threat of pirate raids made itself increasingly felt, culminating in a burst of activity at the instigation of Probus in A.D. 276–7. Where in this sequence the construction of Lympne should be placed is unclear, but its elongated D-shaped bastions, some of which had hollow chambers in their bases, are not unlike those of Portchester, hinting at the possibility of a late pre-Carausian date.

Portchester is the only fort for which a Carausian construction date may now reasonably be argued. Briefly summarized, the evidence consists of one coin of Saloninus and two of Gallienus, in contexts immediately pre-dating construction levels, together with a coin of Tetricus I and one of Carausius in primary layers against the fort wall. These significantly stratified coins, taken in conjunction with Dr Reece's carefully argued assessment of the full coin list, strongly suggest that the defences of Portchester were erected early in the reign of Carausius, probably between A.D. 286 and 290.

The contrast between Portchester and the forts previously discussed is striking. Although elements are shared in common, the overall impression given is that Portchester represents the imposition of a rigorous order not previously apparent. Such an order would agree with the view that the wall was built by military engineers employed in the early years of the Carausian campaigns, regularizing the techniques and concepts which had gradually been developed in the preceding decades. The only comparable structure in Britain is the largely undated fort at

¹ The dating evidence is summarized in Cunliffe (1968, 260–8), but see Johnson (1970) for new thoughts on the dating of Richborough.

Cardiff, but here the presence of an apparently contemporary rampart seems to distinguish it from Portchester. On the continent, regular square planning is a feature shared by several of the fourth-century forts, including Március, Budapest (late third-century), Oudenberg (pre-Crispus), Köln-Deutz and Haus Bürgel (Constantinian) and Alzey (Valentinian I).¹

In Britain the preference for square planning was shorter-lived, since the builders of the fort at Pevensey, which probably dates to the 340s, or later, blatantly rejected any semblance of rectangularity, choosing instead to follow the contour of the hillock upon which the enclosure was sited. The same underlying concept is apparent in the defence of Clausentum, constructed after 367, although there is no reason to consider Clausentum to be military rather than civilian.

Sufficient will have been said to show that the fort at Portchester, probably built by Carausius, lay within the broad tradition of military engineering which spanned the north-west provinces of the late Roman empire. Its construction followed a period of intensive fortification around the shores of the North Sea, which began in the first half of the third century and culminated in the strengthening of the Channel crossing by the reconstruction of the earlier military works of Richborough, Dover and Lympne, some time probably in the 270s, perhaps by Probus following his restoration of Gaul in A.D. 277. Why, in the next decade, Carausius should have chosen to build an isolated fort in the centre of the south coast is a problem which will be further explored in the final paragraphs (pp. 428-31).

THE HISTORY OF THE SITE

The reconstruction of an historical framework against which to assess the military, social and economic functions of the settlement depends upon a general consideration of the coin sequence (pp. 188-97) together with an assessment of the phases represented in the detailed stratigraphy preserved against the south wall of the fort (pp. 38-61). The coin series itself is of dubious value. Although the numbers are large enough to be representative of the coins lost on the site, there is no sure way of interpreting the meaning of a period of intensive loss or, conversely, a period represented by only a few coins. One view would be that intensive loss represents intensive occupation, but an equally plausible alternative is that coins were only lost in quantity when site conditions became squalid and rubbish was allowed to pile up in the fort; at other times, when rubbish was removed, the coin loss would be thin. Until it is possible to excavate large areas outside the fort, in the regions in which the rubbish was at certain times tipped, in order to recover a sufficiently large sample of coins to compare with those found inside the walls, there seems to be no easy way out of the dilemma.

At best the coin evidence suggests a short initial period of coin loss in the decade A.D. 280-90, followed by a period of ten years represented by remarkably few coins. From 300-45 sufficiently large numbers were lost to suggest continuous interior occupation. Few coins of the period 345-60 were found but from 360 to the end of the century a moderate number points to continued occupation at least until about 400.

Turning now to the dating evidence from the stratified layers against the south wall (summarized pp. 59-61) it is possible to recognize certain periods of constructional activity which it might be possible to correlate with changes in the main coin sequences. Following the

¹ Dating briefly summarized in Petrikovits (1971). For Oudenburg see Mertens (1962).

construction in *c.* 285–90, occupation rubbish accumulated in piles against the wall until about 325, at which time the filth was sealed by a deposit of freshly quarried brickearth. The principal question to be raised of this occupation phase (period 2) by the coin series is, was occupation continuous throughout the 40 years or was it interrupted? That coins occur in reasonable numbers after 300, but are very rare from 290–300, could well be seen to imply a period of abandonment very soon after construction, followed by re-occupation of a rather untidy nature after 300. The alternative, of course, is that the site was under military control until 300 and was kept clean but was turned over to civilian use after this. Certain aspects of the structural evidence have a bearing on the problem. The lack of any buildings of a permanent nature belonging to the initial period might imply that the interior arrangements were never completed. Streets were only lightly metalled and do not appear to have been properly edged or drained while the only evidence of buildings consists of the rectangularly arranged gullies on site A (fig. 22), which could well represent drainage gullies around tents, or other light structures. The discontinuous patches of gravel trampled into the natural clay would suggest the haphazard filling of puddles between temporary structures of this kind. Similarly, the scattered ovens, some of which might belong to this early period, would be in place in a phase of short-lived occupation.

Taken together, the evidence points to the initial occupation of *c.* 285–90 being of a slight character. It is possible that the fort was intended to be occupied in this manner, but the alternative, that the work was never completed, only temporary accommodation for the builders being erected, is equally acceptable as a hypothesis, which must be considered in an historical context later.

If the phase of temporary initial occupation was short-lived, it might account for the surprising lack of coins in the decade 290–300 to which Dr Reece has drawn attention. The appearance of coins in plenty after 300 could then be seen to represent a new phase of occupation to which the rubbish tips against the wall belong. Thus, in terms of the sequence summarized on p. 61, period 2 may tentatively be divided into 2a, a phase of abandonment lasting *c.* 290 to 300, and 2b, a phase of occupation spanning the years 300 to 325.

The deposition of the middle clay in period 3, dated to about 325, represents a time of tidying up when the rubbish deposits against the wall were sealed. The origin of the clay itself presents an interesting problem. It could, of course, have been brought in from outside but the distinct possibility remains that it was derived from the two large quarry pits (pits 103 and 187) close to the centre of the fort, augmented perhaps by clay produced during the digging of the cesspits.

Next follows a period of intensive occupation, period 4, spanning the two decades from approximately 325 to 345 (p. 60). Only one structure can be shown to have been in use during this time, the 'guard house', built of upright timbers on the west side of the south postern gate. Elsewhere in the fort, while no conclusive evidence of buildings survives, it seems likely that light timber structures were laid out along the north–south road, the spaces between them being reserved for the digging of cesspits (p. 77), of which several clearly defined groups can be recognized. The dating evidence for the use of the cesspits assigns the bulk of them to period 4 (pp. 77–8).

If, as suggested above, pits 103 and 187 were quarry pits dating to *c.* 325, it is interesting to remember that pit 103 was largely filled with the rubbish from the careful dismantling of at

PORTCHESTER CASTLE SUMMARY OF THE ROMAN DEVELOPMENT, AREAS A-C

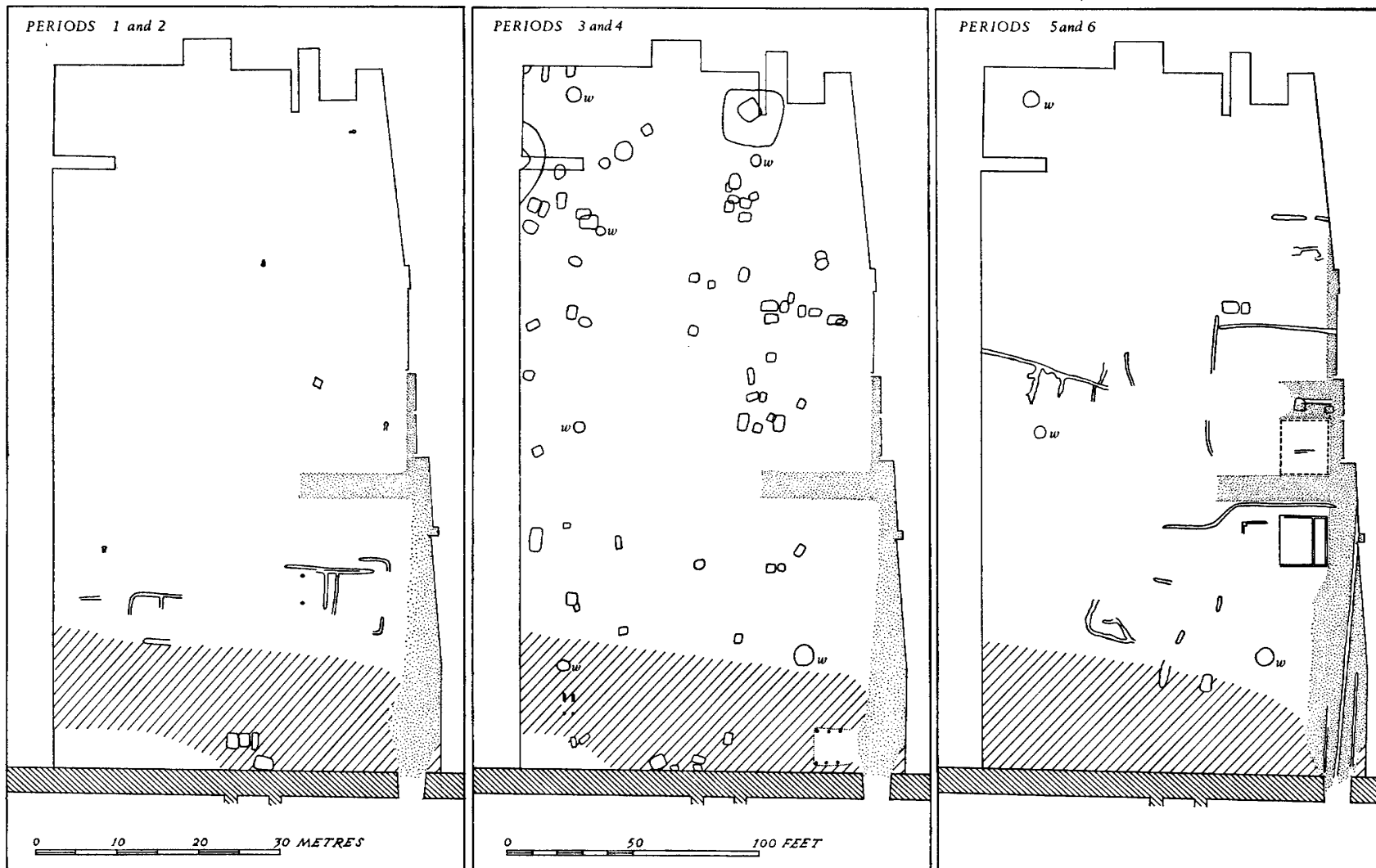


FIG. 208

least one timber building, the re-usable materials such as roof tiles having been removed. such an act of deliberate demolition would fit well with the tidying up and replanning of *c.* 325.

The number of coins lost during the period 325–45 in general reflects the fluctuations in coin supply in the province as a whole in such a way as to suggest that occupation at Portchester was continuous. The presence of no less than five contemporary wells is indicative of settled occupation.

Early in the 340s, perhaps as late as 345, a new phase of building activity is discernible, represented by the further sealing of the rubbish tip against the fort wall and the remetalling of the major roads, together with the construction of timber gutters. To this period belong timber buildings R₄ and R₅, which were apparently constructed on sill beams at the time when the roads were re-surfaced. Most of the cesspits and some of the wells were by this stage filled; wells 164 and 206 were deliberately packed with clay, the others became choked with refuse, with the exception of 135 which was kept in use. It was also at this time that large expanses of cobbles were spread out over the western part of the excavated area.

The activity speaks of an attempt to impose an order. How long into period 6 this phase lasted it is impossible to say. Dr Reece has drawn attention to the relative scarcity of coins at Portchester from 345–64, but again the explanation could as well be cleanliness as lack of activity. On the evidence of the coins, however, period 6 may be divided into three phases: phase (a) represents the dearth of coinage, 345–64; phase (b) covers the intensification of coin loss from 364–78, while phase (c) reflects a sharp decrease in the number of coins belonging to the period 378 to 400 + in contrast to other sites in Britain where issues of this period are relatively common. How these phases are to be interpreted in terms of site history is less certain. Archaeologically, one can define a period of activity represented by irregular drainage gullies cutting through the cobbled metalling and associated with further tips of rubbish which spread out over the roads. Clearly, occupation continued but no longer of the ordered kind represented by the reconstruction of period 5, and presumably the first phase of occupation following it (period 6a). It is not unreasonable, therefore, to assign the new squalor to the phase of intensive coin loss from *c.* 364–78 (period 6b) after which occupation continued, but possibly not on the same scale as before, until coins ceased to be issued.

The tentative historical framework outlined above may now be summarized:

Period 1	(285–90)	Construction phase and temporary internal structures.
Period 2a	(290–300)	Abandoned.
Period 2b	(300–25)	Occupation.
Period 3	(325)	Middle clay seal, quarry pits, guard house.
Period 4	(325–45)	Occupation, cesspits, wells.
Period 5	(345)	Upper clay seal, remetalling of roads, rebuilding, cobbling, filling of wells.
Period 6a	(345–64)	Ordered occupation.
Period 6b	(364–78)	Intensive disordered occupation, drainage gullies.
Period 6c	(378–400 +)	Continued disordered occupation.

SOCIAL AND ECONOMIC IMPLICATIONS

The life style and activities practised by those living at Portchester can to some extent be reconstructed from the material remains recovered from the excavation.

A military presence is indicated by a small group of 13 bronze fittings (nos. 11-23), certainly or probably of military character, some of them comparable to those used by detachments of the late Roman army (Hawkes and Dunning, 1961). One buckle (no. 15) occurred in a layer below the make-up and therefore belongs to period 4 or earlier (pre-345); the remainder cannot be assigned to any particular phase of the Roman occupation. Further evidence suggestive of an army presence is provided by two fragments of swords, a ballista bolt, and seven or eight spearheads, together with two spurs and two complete horseshoes, all of which came from either general layers or occupation layers of period 6. Although the presence of each object could be explained individually in terms of retired veterans or the iron work being of non-military purpose, taken together the collection is strongly suggestive of a military presence both before and after A.D. 345. There is, however, no necessity to suppose continuous army occupation, or even an army majority among the inhabitants, during their period of residence. It is as well to emphasize these points, if only to counter the widely held assumption that all shore forts were purely military institutions.

A wide range of activities were carried on by the occupants of the fort. Metal working is represented by iron slag, a crucible, copper ore and lead trimmings (p. 265). Antler working is implied by the quantity of sawn and cut antler, while the unusually large number of bone pins, particularly from well 121, might suggest local production. Similarly, the way in which some of the horn cores were cut would indicate the careful removal of horn (p. 389) although this need not have taken place in the fort. Other activities of a manufacturing nature include spinning and weaving, as evidenced by spindlewhorls of shale, bone, clay and stone, and a triangular bone tablet for braid making. While the majority of these pursuits would not be out of place in a military establishment, weaving would surely indicate the presence of women.

The community was amply provided with meat, beef clearly being the most favoured. Mrs Grant's discussion of the animal bones strongly suggests that cattle were slaughtered on the site. The alternative explanation, that entire carcasses were transported from the slaughter-house, would seem less likely when transport on the hoof was so much more economic. The question is thus raised, were animals quartered for any period in the fort? To this there can be no answer except that the large open area, consolidated on more than one occasion with metalling, would have been admirably suited to coralling should it have been necessary. The fact that several wells were close to hand was an additional advantage. Sheep, too, seem to have been important. In gross numbers, they represented some 23% of the total animal sample. The existence of at least one pair of shears large enough to have been used for sheep shearing raises the possibility of shearing on the spot.

Evidence for baking was far from plentiful. Ovens are few and seem to be restricted to the early period, while milling (and probably baking) must have surely been centralized either within the fort or somewhere outside, since even quernstones are surprisingly rare.

Hunting and gathering do not seem to have played a major part in the economy, with the exception of oysters, which may, anyway, have been provided by specialists and sold to the inhabitants. A few marsh birds such as mallard, may have been caught locally, as

presumably were fish. A lead net weight, a netting needle, and a fish hook may be taken as reasonable evidence for this.

That the range of activities outlined above are entirely appropriate to an essentially civilian population deserves further consideration. The discussion as to the relative significance of the civilian and military element must hinge on the presence or absence of women living in the fort in a permanent capacity. Here the evidence of the infant burials is decisive (pp. 375-7): altogether the bones of some 27 infants were discovered, of whom 13 were found in pits. The distribution in time is interesting: two belong to period 2b (lower occupation), two to period 3 (middle clay), 15 to period 4 (middle occupation and pits), three to period 5 (upper clay) and five to period 6 (upper occupation, etc.). In short, infants were being interred at Portchester from about A.D. 300 onwards at all periods (although not necessarily throughout each period), with a particular preponderance between 325 and 345. Unless it is supposed that some abnormal ritual was practised requiring infant burial, the simplest explanation is that the community living in Portchester included resident women from about A.D. 300, who adopted the accepted expedient of disposing of dead infants with little ceremony in convenient places around the living site. That many of the pits containing infants also produced unusual animal bone assemblages might however imply that the body of the child was accompanied with an offering (p. 376).

Other evidence may be quoted to support the suggestion of the presence of women. We have already mentioned the extensive collection of spinning and weaving equipment; to this should be added personal jewellery, including finger rings, bracelets of bronze and shale, toilet equipment, and beads, all more appropriate to the dress of womenfolk than to soldiers. Finally we should draw attention to women's shoes, preserved in the collection of leather work from the wells (p. 260). Altogether the evidence for resident females is persuasive.

As to the general quality of life, the small finds offer some indications. The silver ring and the gemstone were evidently of some value; locks and keys imply personal privacy, while the number of styli represent a high level of literacy. Beyond this it is difficult to go, except to say that buildings were insubstantial, living conditions were sometimes squalid, and the site was infested with cats.

There are three ways of viewing the evidence summarized in the preceding paragraphs. It could be supposed that (a) civilians occupied the site in the intervals between military residence; or (b) that the fort was occupied throughout by the military who gradually allowed wives and children to move into the defended area; or (c) that it housed a basically civilian community, among whom was billeted a small militia. That the three explanations are historically possible is a reflection partly of the complexity of relations between soldier and civilian in the later Roman empire¹ and partly of the general lack of knowledge about late fort sites. The most reasonable compromise, based on all the available internal evidence including both sequence and material finds, is that the fort was established by Carausius in or soon after A.D. 285 but was abandoned not long after. Following the re-establishment of central government rule in Britain by Constantius, a largely civilian community took over the abandoned installations either as the result of a gradual process of drift or, more likely, as part of a deliberate policy for the settlement of peasant militias in key positions, not unlike the establishment of *laeti* in northern Gaul. While it is evident that the civilian character of the

¹ The complex and changing situation is well summarized in MacMullen (1967).

occupation remained strong, the periodic attempts to create some semblance of internal order in and following 325 and 345 could be seen as the assertion of some form of control, occasioned perhaps by the billeting of new contingents in times of potential trouble. In this way the style of occupation of the fourth century would have passed imperceptibly into that of the fifth.

HISTORICAL CONTEXT

If the above interpretation of the internal evidence can be accepted, it remains only to see how, if at all, such a development relates to the broader historical and social picture.¹ It is now clear that the so-called 'shore fort' system did not originate as a unified defensive measure, but rather grew piecemeal as the threat of pirate attack gradually increased. Until the 280s it is highly unlikely that the south coast of Britain was defended further west than the cluster of strong points guarding the Channel crossing.

The concentration of forts at this point, including Boulogne, Richborough, Dover and possibly Lympne, would have been sufficient to prevent the pirates who infested the North Sea from penetrating into the English Channel. That the situation soon deteriorated is shown by the appointment of a new naval commander in 285, M. Aurelius Carausius, whose specific task was to 'rid the seas of Belgica and Armorica of pirates',² implying that the raiders had finally penetrated the Dover-Boulogne defences and were now roaming the Channel coasts. Within a year Carausius had usurped his power and taken control of the province, whilst still retaining his hold on the north Gaulish coast. It was in these troubled times that Portchester was built.

Two explanations are possible: either the fort was erected to serve as the centre of the Channel-based arm of the fleet engaged in mopping up the pirates, or it was constructed after the break with Rome as a defence against threat of Roman re-conquest. The latter suggestion seems highly unlikely in spite of arguments put forward in its favour (White, 1961). An isolated coastal garrison was no adequate defence against an organized invasion, as the events of 296 were soon to show, nor could it be thought to constitute part of a chain of strong points serving as refuges from which the defenders of the island could sally forth, since the fort was more than 100 miles from its nearest contemporary neighbour at Lympne.³ Moreover, at just the time when the argument would have required the fort to have been most heavily inhabited, i.e. c. 290-96, the evidence strongly suggests not only a dearth of activity but possibly even abandonment.

If, however, Portchester is seen as an early Carausian construction designed specially as the home base of a naval detachment patrolling the Channel, the logistics of the situation make more sense. Assuming, as the panegyric implies, that pirates had broken through the Dover-Boulogne block, then a new defensive axis would have been required to hinder their further passage west. In such a scheme Portchester could well have served as the British base with a counterpart on the north French coast, for which *Grannona*, probably sited near Bayeux

¹ The most convenient survey of these events is to be found in Frere (1967). For the life of Carausius, see White (1961).

² Eutropius ix, 21.

³ This is always supposing that no fort has been lost by coastal erosion along the intervening coast.

(Grenier, 1931, 393–3) is the most likely contender.¹ A 50-mile range from each would have allowed a fleet so based to have effectively sealed the Channel, thus bottling up would-be attackers and driving them back on the already strongly defended straits of Dover. In short, Portchester makes some strategic sense as part of a cross-Channel ‘frontier’ against a naval enemy instead of as an element in a British coastal *limes* designed to combat the potential invasions of a land-based army.

Once the immediate threat of piracy had been overcome, a base at Portchester would have decreased in significance, and when, soon afterwards, Carausius lost his hold on Gaul altogether, the value of the now-isolated garrison would have been still further reduced. Such an interpretation provides a reasonable context for the brief period of occupation which, on purely archaeological grounds, has been suggested for period 1. The apparent abandonment in period 2a (290–300) would, then, represent a time when efforts were concentrated more on watching the Dover Straits and the Rhine mouth, where Maximian was concentrating his fleet, than on guarding the southern shores. The ease with which Asclepiodotus managed his landing on the southern coast in the autumn of 296 may be a reflection of the lack of preparedness in this region. The landing succeeded by surprise.

In the period which followed the re-establishment of central government control, the area within the fortifications at Portchester came back into regular use, occupied, it would seem, by a community in which women and children were present. Throughout the first half of the fourth century (periods 2b to 4) little change can be detected, rubbish piled up within the walls, buildings of wattle and daub with tiled roofs and glazed windows continued to be rebuilt, while cesspits and wells were dug when required. The only recognizable ‘event’ during this time was the sealing of the rubbish against the south wall and the construction of the ‘guard-house’ adjacent to the south postern gate. The overall impression gained from the surviving structures and the material evidence is that the community was substantially, if not wholly, civilian. In the relative peace of the early fourth century there may have been little need to maintain a garrison on this part of the south coast. The pirates, if at all active, were presumably once more restricted to the North Sea.

Early in the 340s a change can be detected at Portchester: the interior was tidied up, the rubbish tips and the pits were sealed, and the roads were roughly remetalled. At the same time there is evidence of levelling and rebuilding. While it could be argued that these changes were merely of local significance, contemporary events elsewhere imply more widespread change. It was probably at this time that the fort of Pevensey was built, while the coin evidence from Richborough suggests major activity after several decades of virtual abandonment (or more precisely a phase of extensive coin loss following one of sparse loss). It is tempting to relate these changes to the visit made by the newly appointed emperor Constans in the winter of 342, presumably for the purpose of initiating improvements in the defences of the province.

Constans may well have established the command of the *Comes Litoris Saxonici*, later recorded in the *Notitia Dignitatum*. Restricted territorial commissions held by Counts were unknown under Constantine the Great, but the rank of *Comes Maritimi Tractus* was in existence in Britain by 367. If Constans was the creator of the new command, what prompted the choice of the phrase *Saxon Shore*? Either it refers to a shore attacked by Saxons or a shore defended by them.

¹ The significance and date of the fortlet on Alderney still need defining. If contemporary with the Carausian scheme it could have served as a valuable rearward base in the new arrangement.

The debate is a long-established one,¹ and this is not the place to rehearse the relevant arguments; suffice it to say that the generally accepted view is that the Count's command was named after its attackers. There is, however, much that could now be said in favour of the alternative. In particular, Myres' recent study of Anglo-Saxon pottery (Myres, 1969, 65–83) points conclusively to the settlement of German *laeti* in eastern England, possibly even as early as the late third century. In fulfilling such a policy, the governors of Britain were simply following the well-established traditions common at the time in the continental provinces. Although the ceramic record for the south coast is less demonstrative (and the 'Romano-Saxon' pottery unknown) there is no need to suppose that this region was excluded from the general policy. If then we can accept that Germanic *laeti* were extensively employed as paramilitary mercenaries in coastal regions by the middle of the fourth century, there would seem to be no good reason for opposing the view that *Litus Saxonicum* meant 'coasts settled by Saxons'. Such an hypothesis would open the way for the further suggestion that it was Constans who formalized the coastal command by appointing a *Comes* to organize it, possibly even introducing additional drafts of *laeti* from the continent to add strength.

If major reorganization was undertaken by Constans, some signs might be expected in the excavation at Portchester. We have already referred to the structural changes in period 5 (c. A.D. 345). To these may be added the appearance of a woman's or child's shoe made in a distinctively Germanic manner found in the rubbish tipped into well 236 (p. 261). Neither observation proves anything, but they are wholly consistent with an increased Germanic presence after the mid-340s. Comparable evidence from elsewhere would go some way towards supporting the 'coast settled by . . .' hypothesis.

It is now evident (*contra* Cunliffe, 1968, 268–71) that the occupation of Portchester continued into the fifth century without a major break in 369 at the time of the restoration of the province by Theodosius. There may indeed have been shifts of emphasis in the deployment of troops but the fortification of Clausentum after 367 is best seen as the creation of an additional safe refuge rather than as a replacement to Portchester. The community occupying the fort continued much as before, the families living in close proximity to their refuse tips. That the Germanic element was maintained is demonstrated by the group of characteristic military fittings belonging to the *Laetenhorizont* dated, in the German frontier region, to the last third of the fourth century and the early fifth. The discovery of a silver coin of Maximus is a hint that official pay was still being handed out as late as the 380s.

The last indication we have of the organization of the Saxon Shore is provided by chapter XXVIII of the *Notitia Dignitatum*, which provides a list of nine coastal sites and their garrisons under the command of the *Comes Litoris Saxonici*.² The date of the final compilation of the chapter is still very much a matter of debate. It is generally assumed to represent the situation in the third quarter of the fourth century, although the most recently stated view supports an early fifth-century date (Ward, 1973). Whatever the outcome of the discussion, the document clearly indicates a measure of established order.

Whether or not Portchester featured on the list is debatable. The first eight names listed can all be assigned to known forts between Pevensey and Brancaster, but the ninth, *Portus Adurni*, where the *Numerus Exploratorum* was based, is without certain location. Some writers

¹ Usefully summarized in White (1961).

² *Not. Dig. Occ.* xxviii: discussed in detail by Stevens (1941) and summarized by Frere (1967), 228–38.

have suggested that it was Portchester by virtue of its position on the list following Pevensey, but since the other forts are not listed in strict geographical order, the argument lacks conviction: it could equally well be the other unnamed fort of Walton Castle. Short of new epigraphic evidence the Roman name of Portchester will remain unknown.

In any event, Portchester continued in use into the fifth century. In the last years of the Roman occupation its massive defences, enclosing $8\frac{1}{4}$ acres, would, together with the neighbouring defended sites of Chichester and Clausentum, have formed a welcome refuge for the rural population in moments of crisis. It is at this point that the first volume of these reports ends and the second volume will begin.

APPENDIX A : THE SECTIONS

THIRTY-ONE sections have been selected for illustration here (figs. 209–18) in addition to the sections of the individual pits and wells published above (figs. 26–105). They cover all major areas of complex stratigraphy, and include examples of areas where Roman layers are sparse. Sections 1–3 illustrate the landgate, 4–6 the watergate, 7–25 the main interior area, and 26–30 the area against the west wall.

A brief commentary on the Roman layers shown on each section follows. Comment on the post-Roman layers will be reserved for later volumes.¹

Section 1 (Trenches 1, 8, 110)

The Roman wall and Roman gate-tower platforms were primary. To the south of the wall, the offset of the Roman wall was sealed by a heap of stony clay (trench 1, layer 6) above which occupation rubbish accumulated (trench 1, layer 4). Within the gate-tower successive make-up layers are represented by trench 8, layers 5 and 9. Above this was an accumulation of soil containing some occupation material (trench 8, layer 4). Between the gate-towers builders' debris (trench 110, layers 33, 12 and 11) underlay the flint metalling of the road (trench 110, layer 10). Part of the walls of the Roman gatehouse collapsed (trench 8, layer 3) and were subsequently robbed (trench 8, layers 6 and 7, and trench 110, layer 26).

Section 2 (Trenches 10 and 11)

The foundations for the Roman gate-tower were primary. Building spreads of construction period butted up to the surviving greensand foundation (trench 10, layers 12 and 13). Above this a layer of soil and mortar (trench 10, layer 11) accumulated. The Roman superstructure was extremely robbed.

Section 3 (Trench 110)

The builders' mortar spread and subsequent make-up levels are represented by layers 30, 31, 32 and 34. Occupation material accumulating on this surface and in the drainage gully includes layers 8 and 33. Above this, soil mixed with mortary rubble represents the weathering and collapse of the superstructure of the guard-chamber.

Section 4 (Trenches 32 and 34)

The Roman wall and the foundation platform for the gate-towers are primary. Make-up layers within the north gate-tower include trench 32, layers 20 and 19. Layer 18 represents the relaying of a hearth which is sealed by occupation debris (layer 17), mortary gravel make-up (layer 16) and more occupation rubbish (layer 15). The road surface of flints (trench 34, layer 21) is bedded on clayey gravel (trench 34, layer 22) and is cut by a drainage gully filled by soil and flints (trench 34, layer 24). The whole road is sealed by occupation material (trench 34, layer 14).

Layers representing different phases in the robbing of the Roman gatehouse superstructure include trench 32, layer 9, and trench 34, layer 13.

¹ In the main area excavation most of the latest Roman layers have been disturbed by Saxon and medieval ploughings. This matter will be discussed in detail in volume 2.

Section 5 (Trenches 33, 34 and 38)

Builders' debris of construction date includes trench 34, layers 40 and 41 and trench 35, layers 10 and 11. Trench 33, layer 10, represents clay piled up around the inturned Roman gate wall. Eroded mortar rubble from the weathering of the gate-tower includes trench 33, layer 14 and trench 34, layer 39. A later soil accumulation containing only Roman material is represented by trench 33, layers 7, 8, 9; trench 34, layer 38, and trench 38, layer 8.

Section 6 (Trench 34)

The foundation platform for the north gate-tower was cut into the natural brickearth.

Builders' debris of construction date (layer 20) is overlaid by clay hearths interleaved with soil (layers 18 and 17) which is sealed by gravelly mortar (layer 16), sealed in turn by soil (layer 15).

Outside the gate tower, builders' debris is represented by layer 40. This is sealed by mortary rubble (layer 39) derived from the weathering of the gate-tower superstructure. The robber trench for the gate-tower wall is filled by layers 38 and 37.

Section 7 (Trenches 87 and 91)

The primary clay bank was piled against the back face of the Roman wall (trench 91, layer 69).

Late metalling of the road surface was represented by trench 91, layer 70, and can be seen in the bottom of trench 87. Occupation accumulation was represented by trench 91, layer 46 and trench 87, layer 48.

Section 8 (Trenches 87, 91 and 107)

Foundation trench fill against back face of the Roman wall (trench 107, layers 81 and 82).

Primary clay bank (trench 107, layer 74).

Lower occupation (trench 107, layer 61).

Middle clay (trench 107, layers 44, 53).

Middle occupation (trench 107, layer 52).

Upper clay (trench 107, layer 50).

Make-up (trench 91, layer 77; trench 87, layers 20 and 41).

Layers below make-up (trench 91, layer 78).

Occupation above make-up (trench 87, layer 10; trench 91, layer 46 and trench 107, layers 41 and 31).

Section 9 (Trenches 100, 101, 103)

Primary clay bank, unexcavated and unnumbered.

Lower and middle occupation (trench 103, layers 47 and 77).

Upper clay (trench 103, layers 46 and 74).

Upper occupation and general occupation layers (trench 100, layer 66; trench 101, layers 103 and 117; trench 103, layers 23, 69 and 72).

Cobbles equivalent to make-up layers and make-up (trench 100, layer 99; trench 101, layer 94).

Occupation beneath (trench 100, layers 107, 118, 124).

Builders' mortar spread (trench 101, layers 123 and 135).

Gullies (trench 101, layer 122).

Section 10 (Trench 102)

Primary clay bank; unexcavated and unnumbered.

Lower occupation (layer 66).

Middle clay (layer 65).

Middle occupation (layers 60 and 63).

Upper clay (layer 62).

Upper occupation and general occupation (layers 44, 46, 47, 48).

Section 11 (Trench 91)

Section shows the foundation trench for the Norman blocking wall of the south postern gate cutting through the Saxon and Roman layers. Layers 16, 17 and 18 are Roman occupation layers, 17 representing a layer of eroded mortar. Layer 10 consists of more eroded mortar and rubble of late Roman or early Saxon period.

Section 12 (Trench 108)

Primary clay bank (unnumbered) separated by a thin lens of occupation material, layer 231, from a further levelling of clay, layer 225, belonging to the construction period.

Lower occupation (layer 205).

Middle clay (layer 204).

Middle occupation (layer 163).

Upper clay (layers 75 and 111).

Section 13 (Trenches 100, 101, 102)

Foundation trench filling behind the Roman wall (trench 102, layer 30).

Primary clay bank (trench 102, layer 34 and trench 101, layer 63).

Lower occupation (trench 102, layer 32).

Middle clay (trench 102, layer 28).

Middle occupation (trench 102, layers 24, 25, 26, 27).

Upper clay (trench 102, layer 22).

Upper occupation and general occupation levels (trench 102, layers 21 and 33a; trench 101, layer 49; and trench 100, layers 24, 29, 32).

Section 14 (Trench 88)

Early quarry pit (layer 34).

Early drainage gully (layer 46).

Late scoop (layer 40).

Make-up (layer 45).

General occupation (layer 42).

Section 15 (Trenches 72, 71, 73, 80, 82)

Throughout the area crossed by this section, the Roman occupation material had been reduced to a single layer by post-Roman ploughing. This appears immediately above natural as trench 72, layers 7 and 6; trench 71, layer 6; trench 73, layer 10; trench 80, layer 7; trench 82, layer 9.

In trench 71, layer 23 represents an area of cobbling sealing occupation material (layer 38). In trench 72, a layer of chalky mortar (layer 9) is sealed beneath the Roman general layer.

Section 16 (Trenches 94, 95, 96, 97, 98, 99, 109)

Section 16 parallel, to Section 15, reflects much the same simple stratigraphy. The Roman general layers include trenches 94, layer 37b; trench 95, layers 61 and ?113; trench 96, layer 25; trench 97,

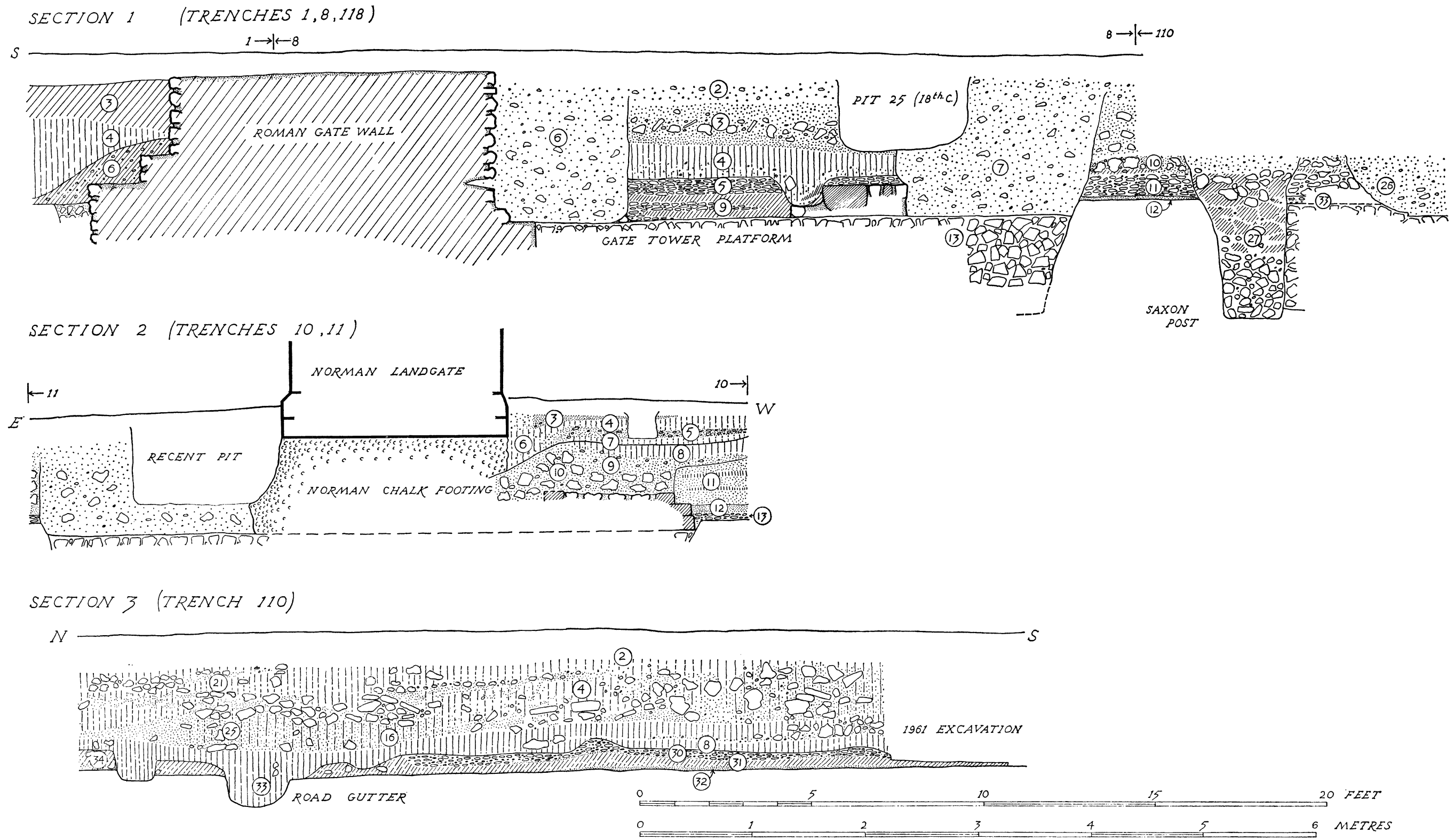
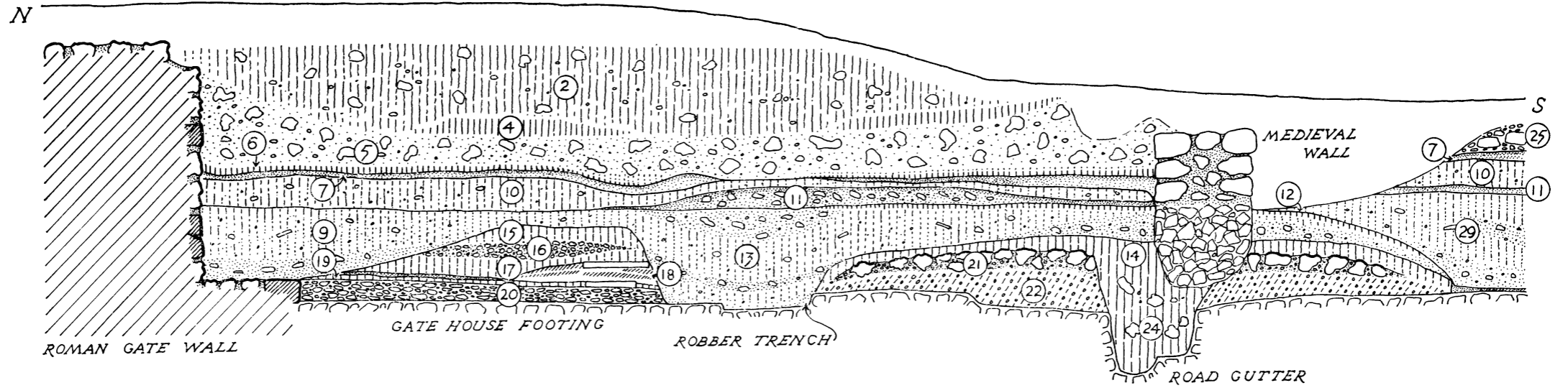
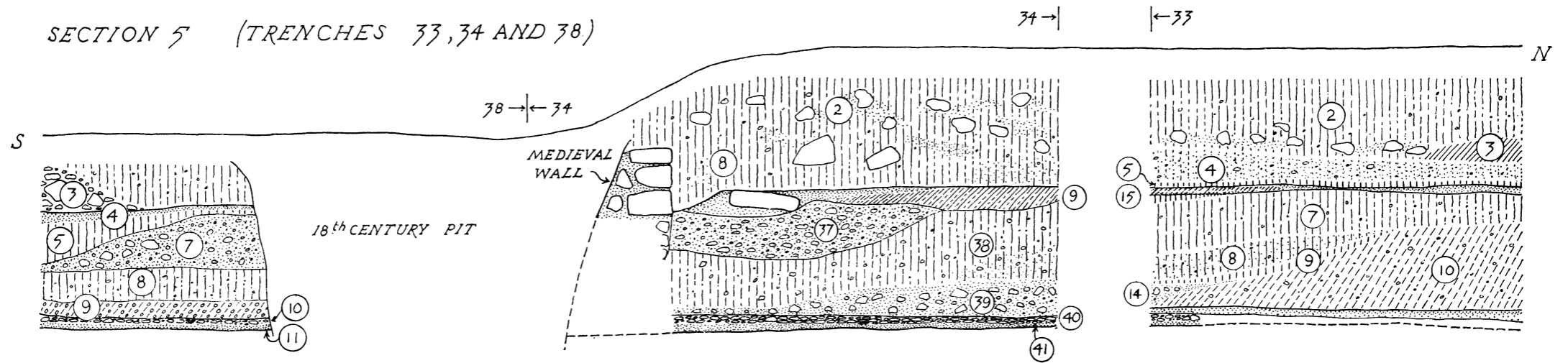


FIG. 209. Sections of the landgate

SECTION 4 (TRENCHES 32 AND 34)



SECTION 5 (TRENCHES 33, 34 AND 38)



SECTION 6 (TRENCH 34)

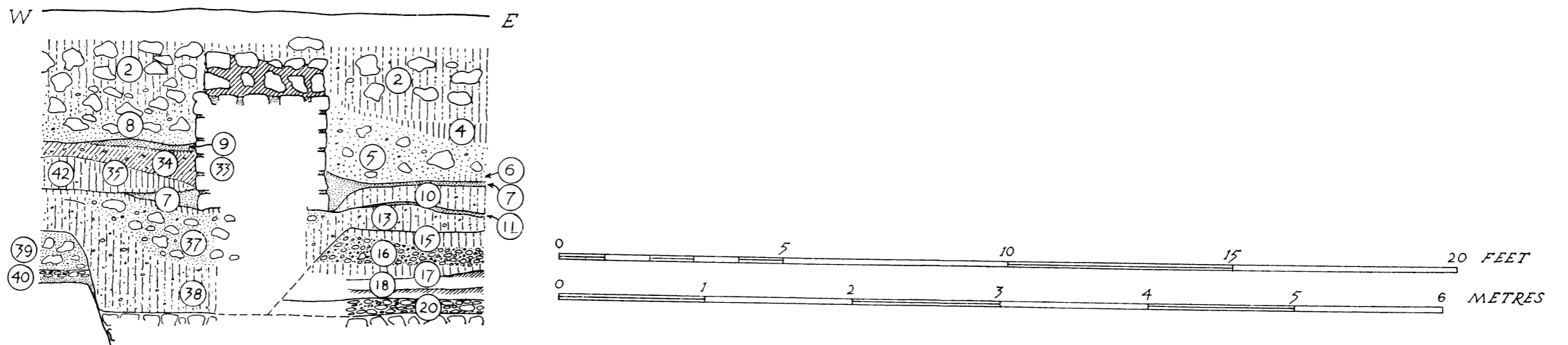
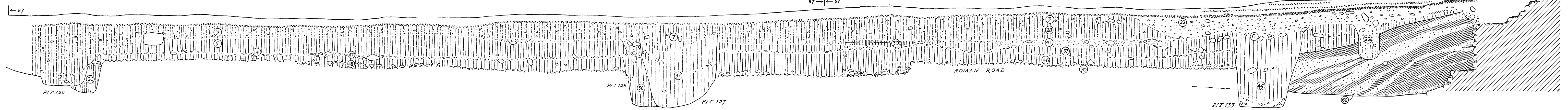
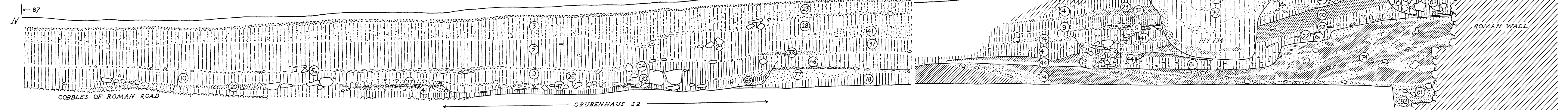


FIG. 210. Sections of the watergate

SECTION 7 (TRENCHES 87, 91)



SECTION 8 (TRENCHES 87, 91, 107)



SECTION 9 (TRENCHES 100, 101, 103)

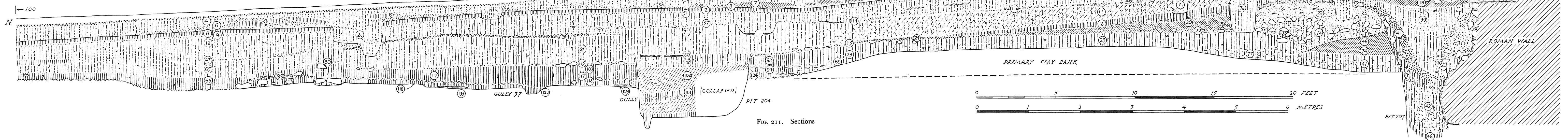
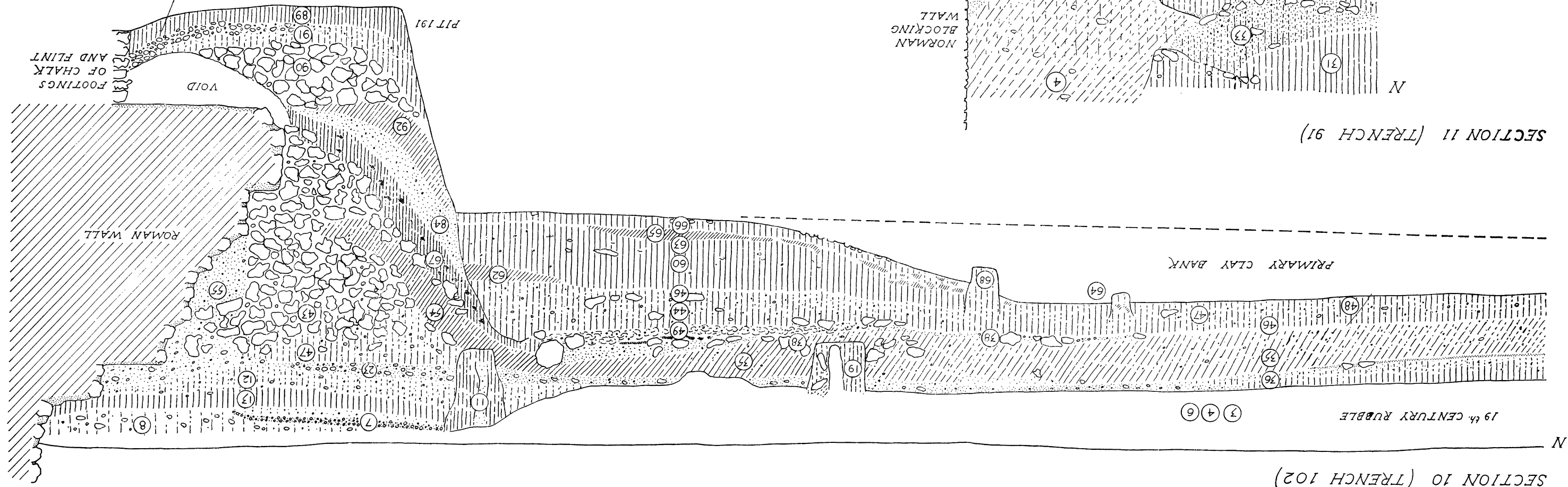
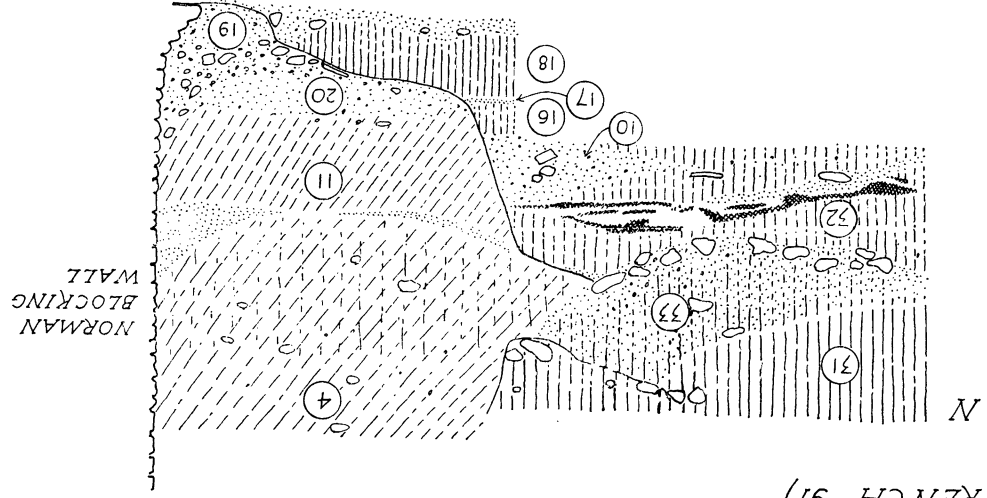


FIG. 211. Sections

SECTION 10 (TRENCH 102)



SECTION 11 (TRENCH 91)



SECTION 12 (TRENCH 108)

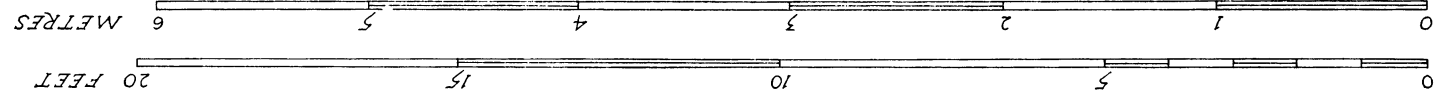
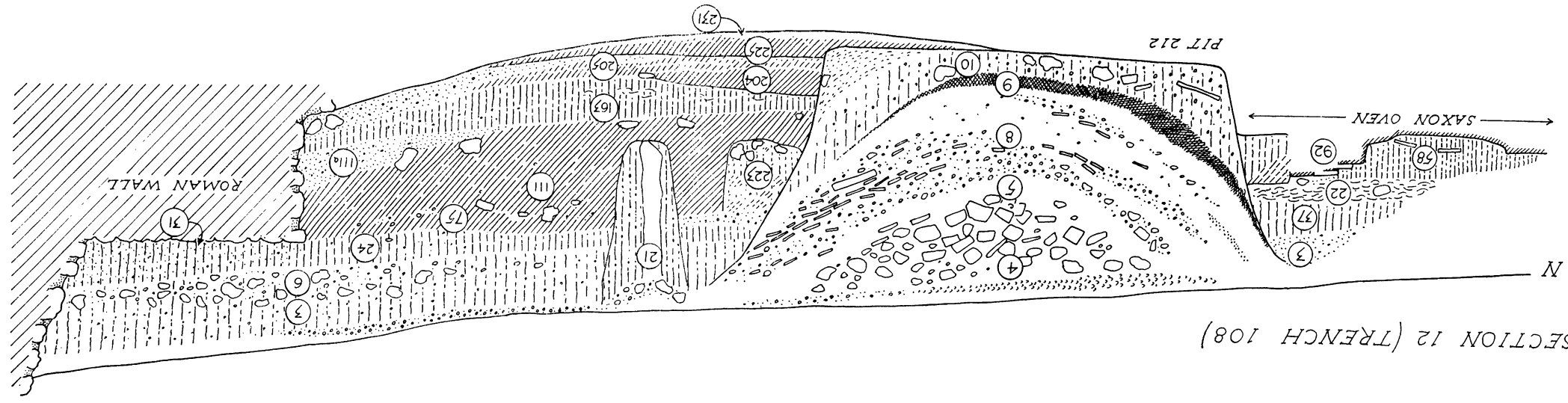
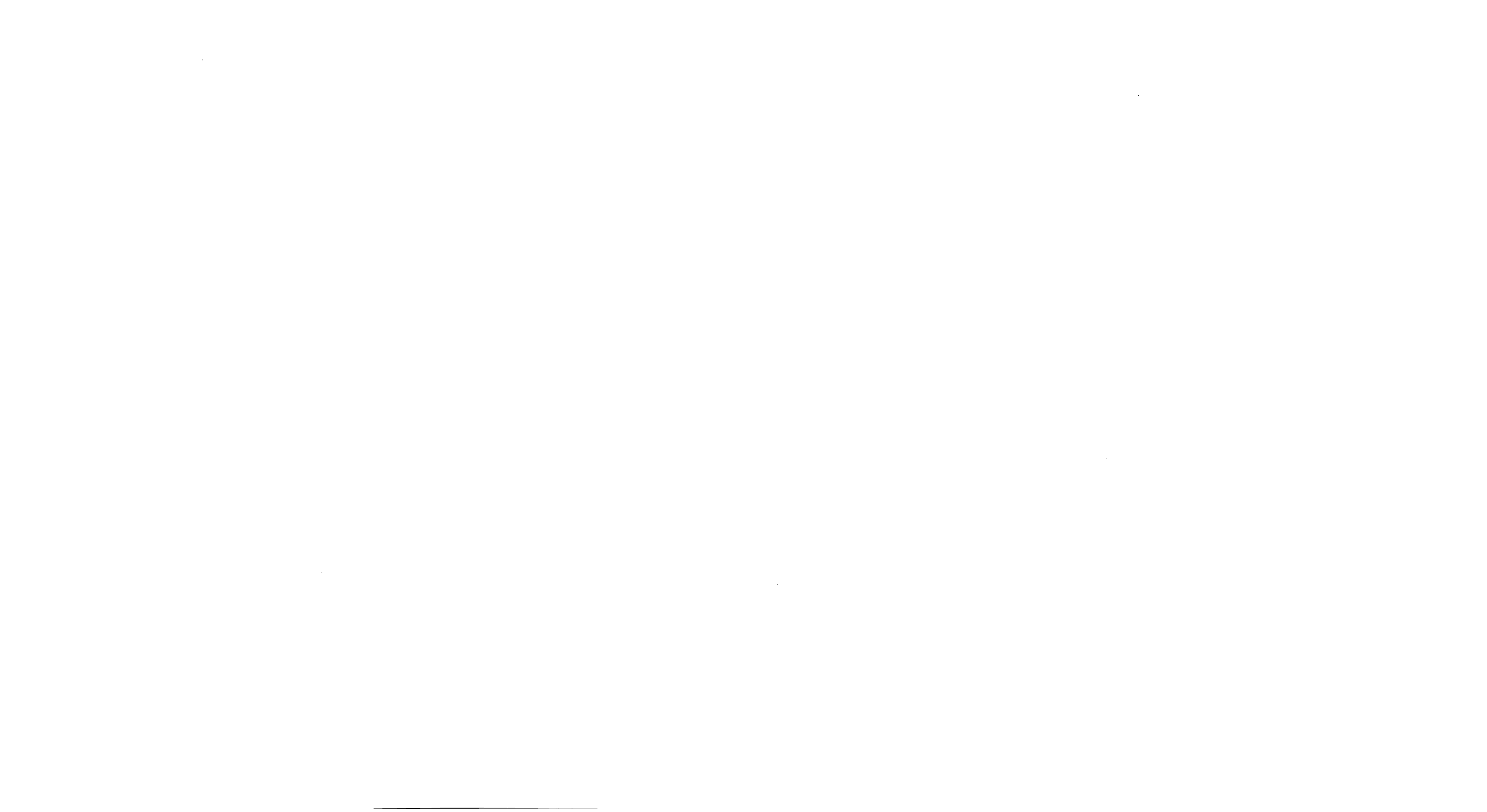
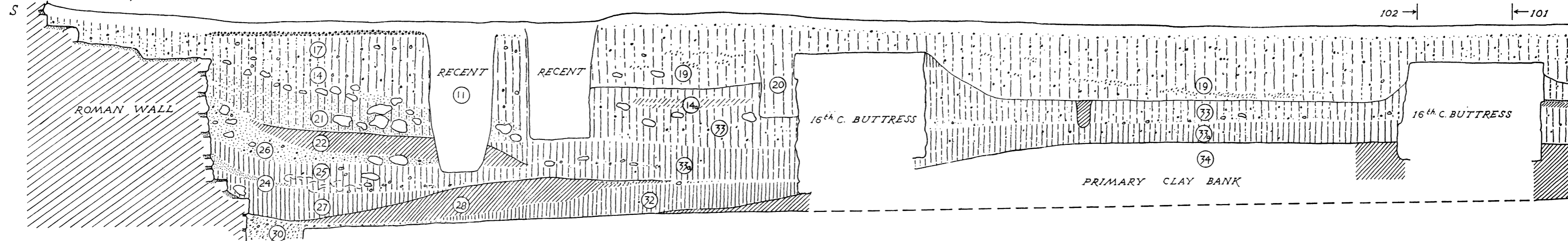


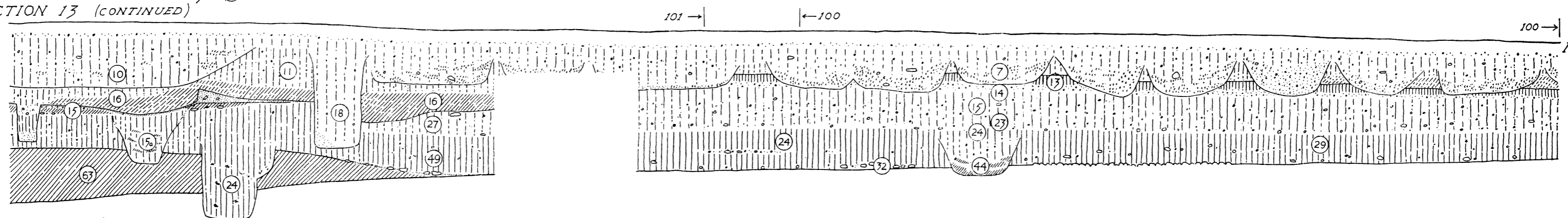
Fig. 212. Sections



SECTION 13 (TRENCHES 100, 101, 102)



SECTION 13 (CONTINUED)



SECTION 14 (TRENCH 88)

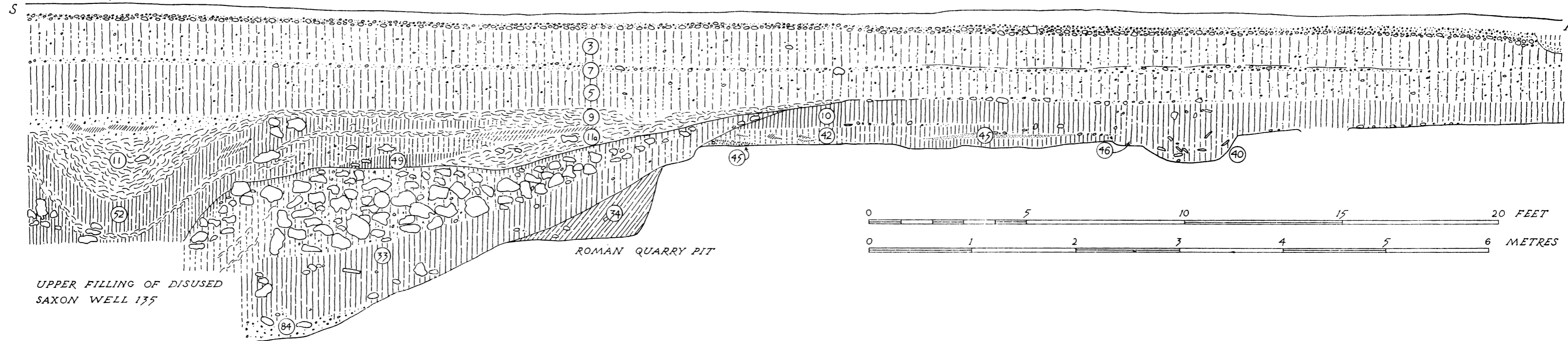
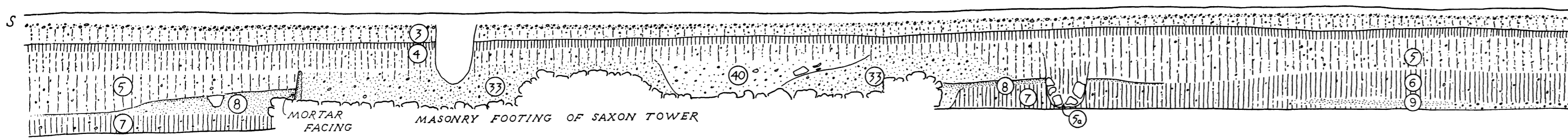
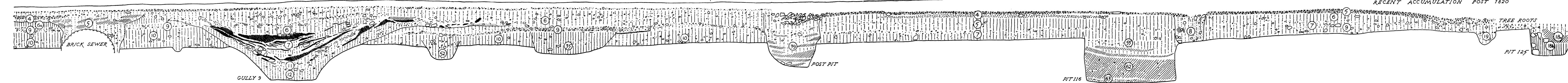


FIG. 213. Sections

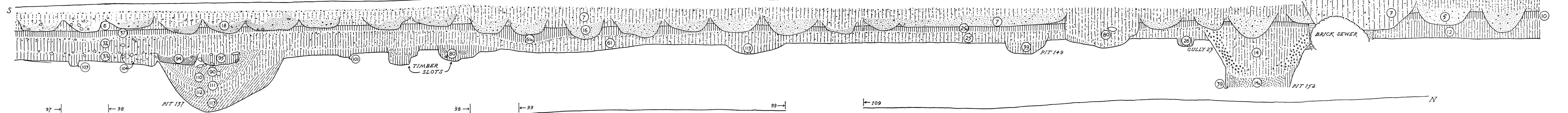
SECTION 15 (TRENCHES 71, 72, 73, 80, 83)



SECTION 15 (CONTINUED)



SECTION 16 (TRENCHES 94-99, 109)



SECTION 16 (CONTINUED)

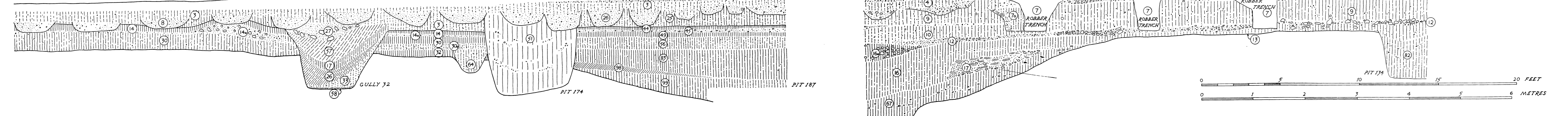
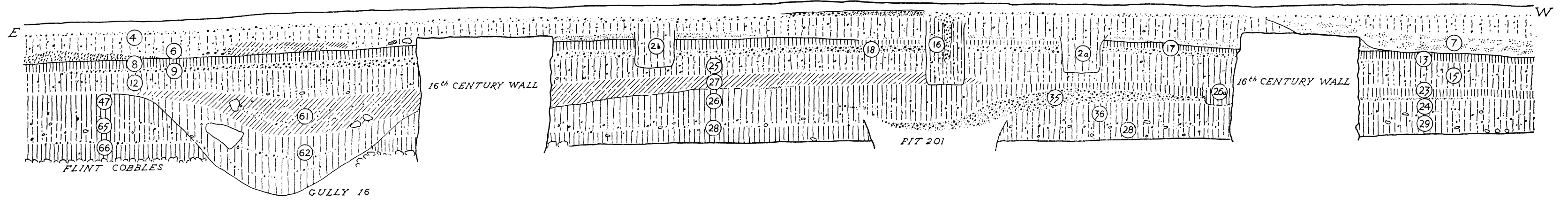
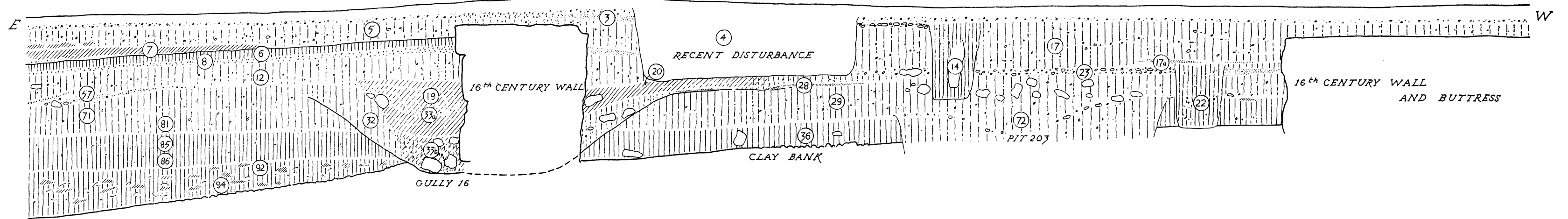


FIG. 214. Sections

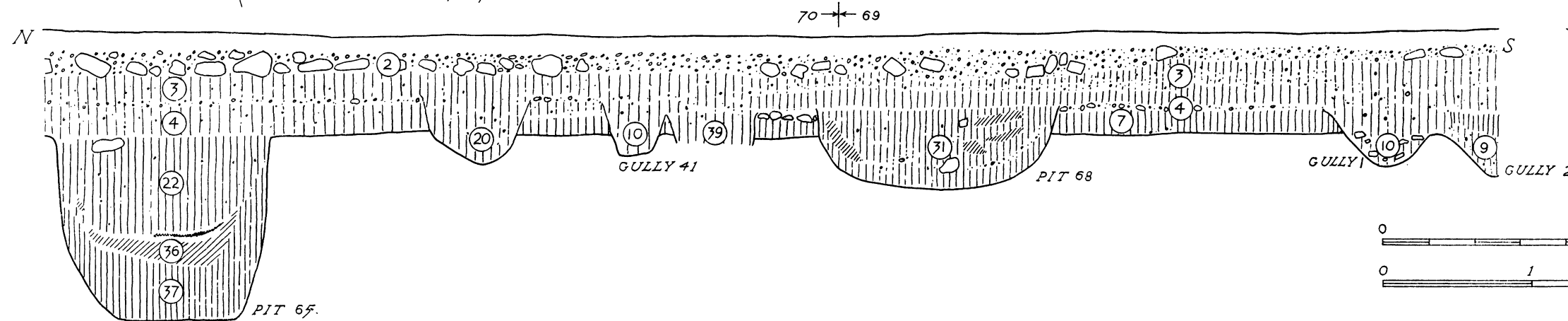
SECTION 17 (TRENCH 100)



SECTION 18 (TRENCH 101)



SECTION 19 (TRENCHES 69, 70)



SECTION 20 (TRENCH 69)

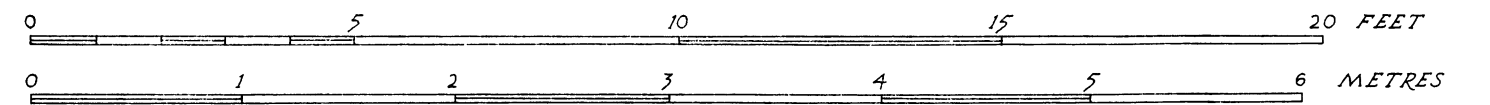
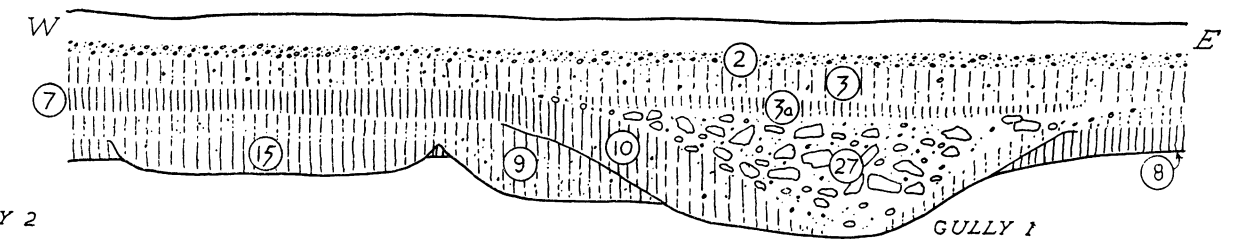
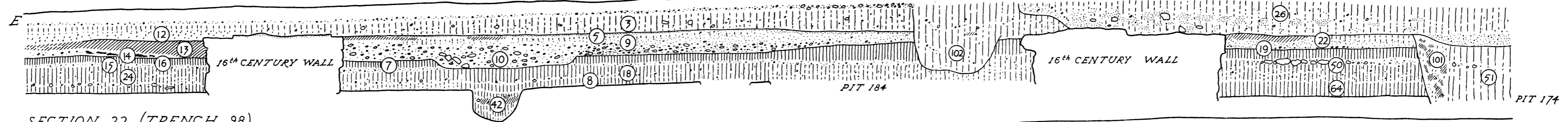
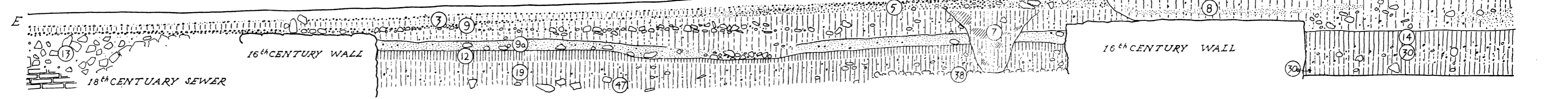


FIG. 215. Sections

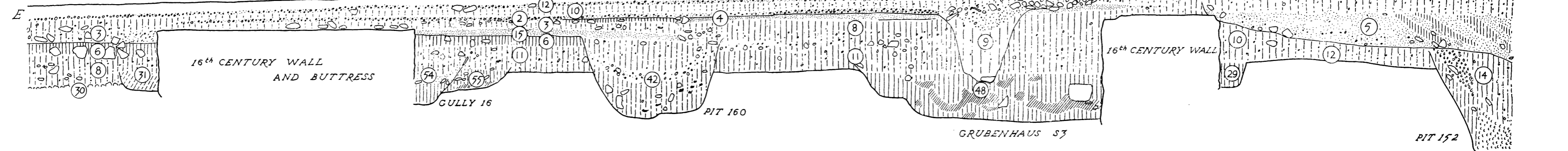
SECTION 21 (TRENCH 99)



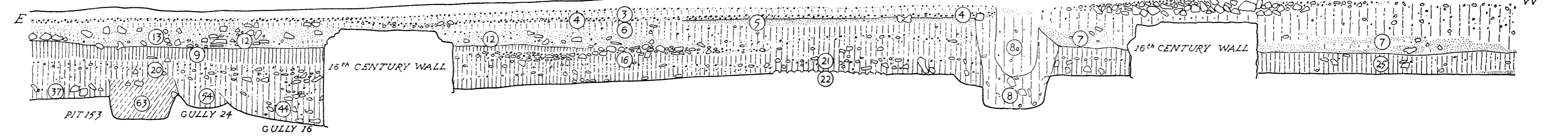
SECTION 22 (TRENCH 98)



SECTION 23 (TRENCH 97)



SECTION 24 (TRENCH 96)



SECTION 25 (TRENCH 95)

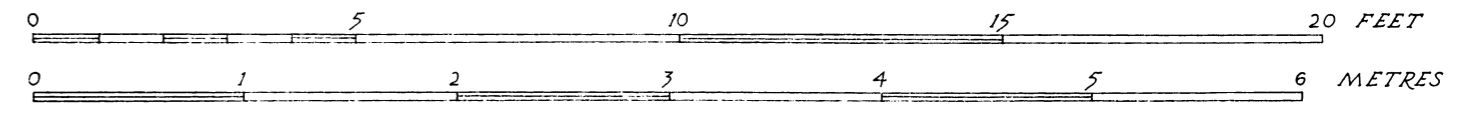
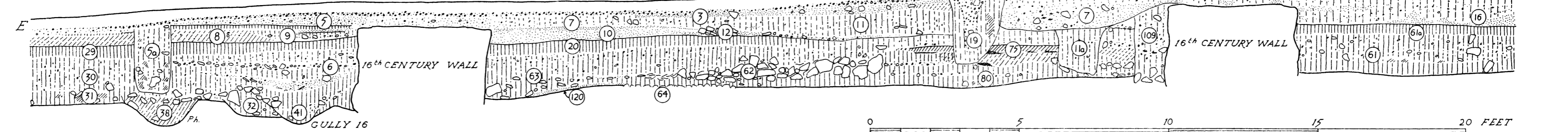
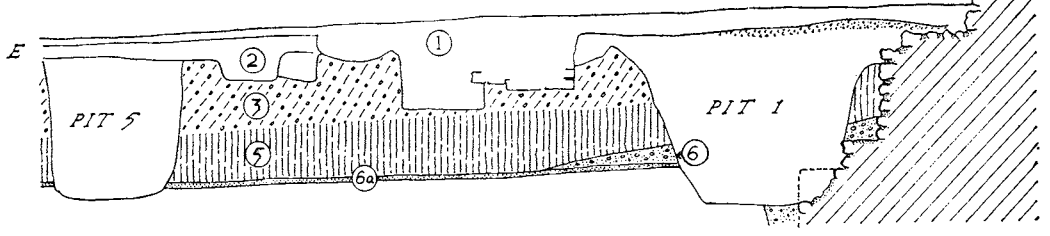
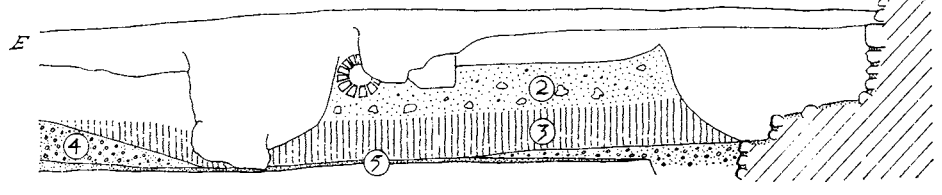


FIG. 216. Sections

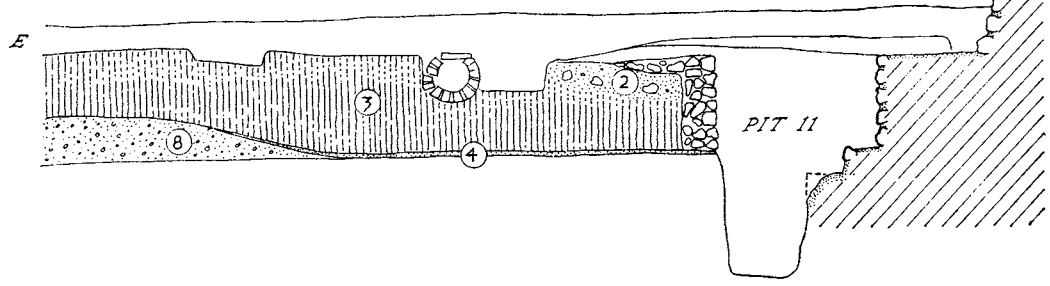
SECTION 26 (TRENCH 1)



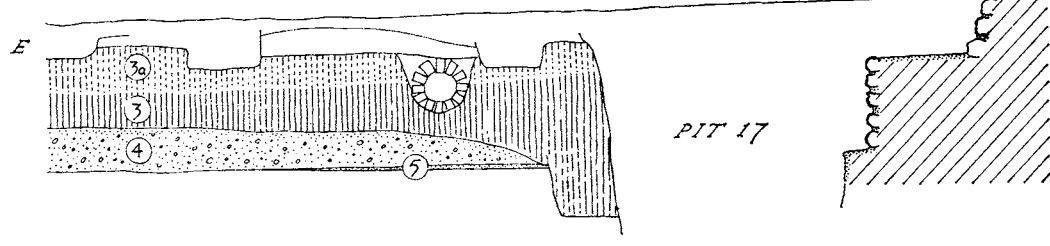
SECTION 27 (TRENCH 2)



SECTION 28 (TRENCH 3)



SECTION 29 (TRENCH 4)



SECTION 30 (TRENCH 5)

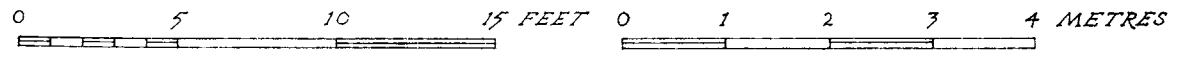
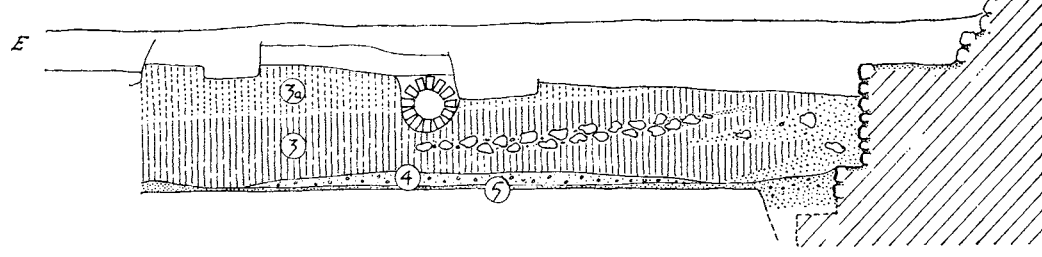


FIG. 217. Sections of 1961 area

SECTION 31 (TRENCHES 42 AND 43)

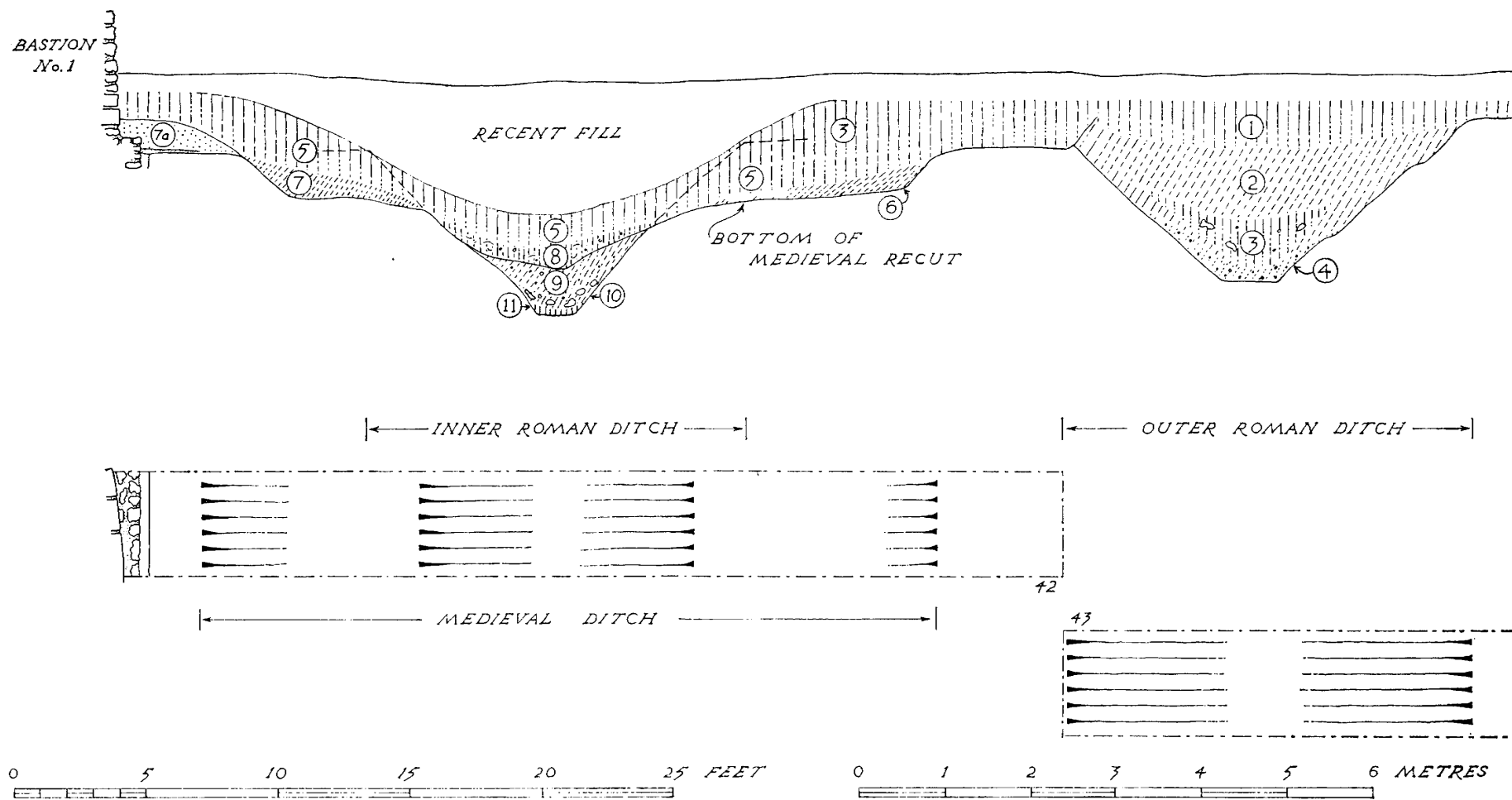


FIG. 218. Section across the Roman ditches

KEY TO POSITIONS OF TRENCHES AND SECTIONS

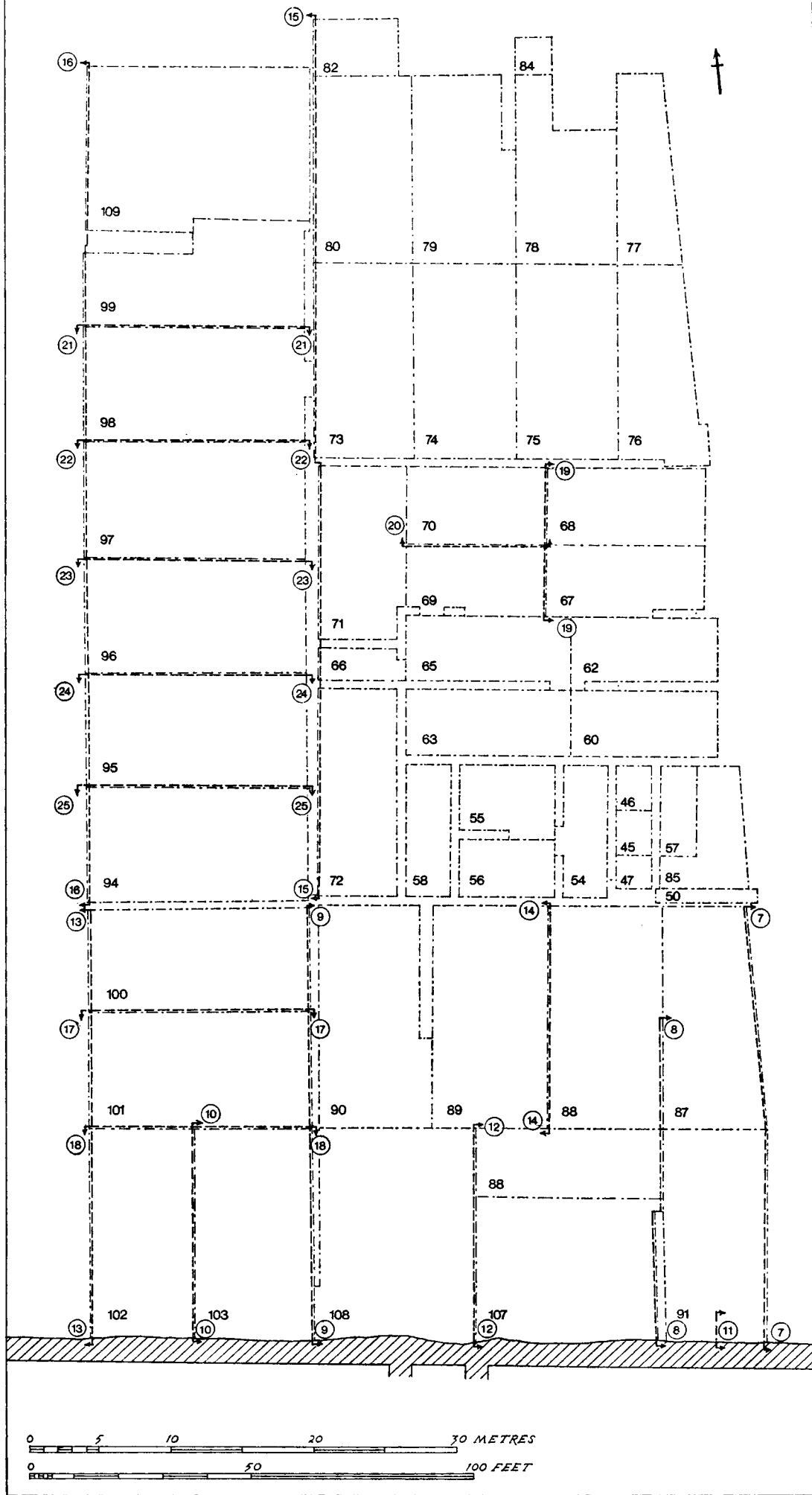
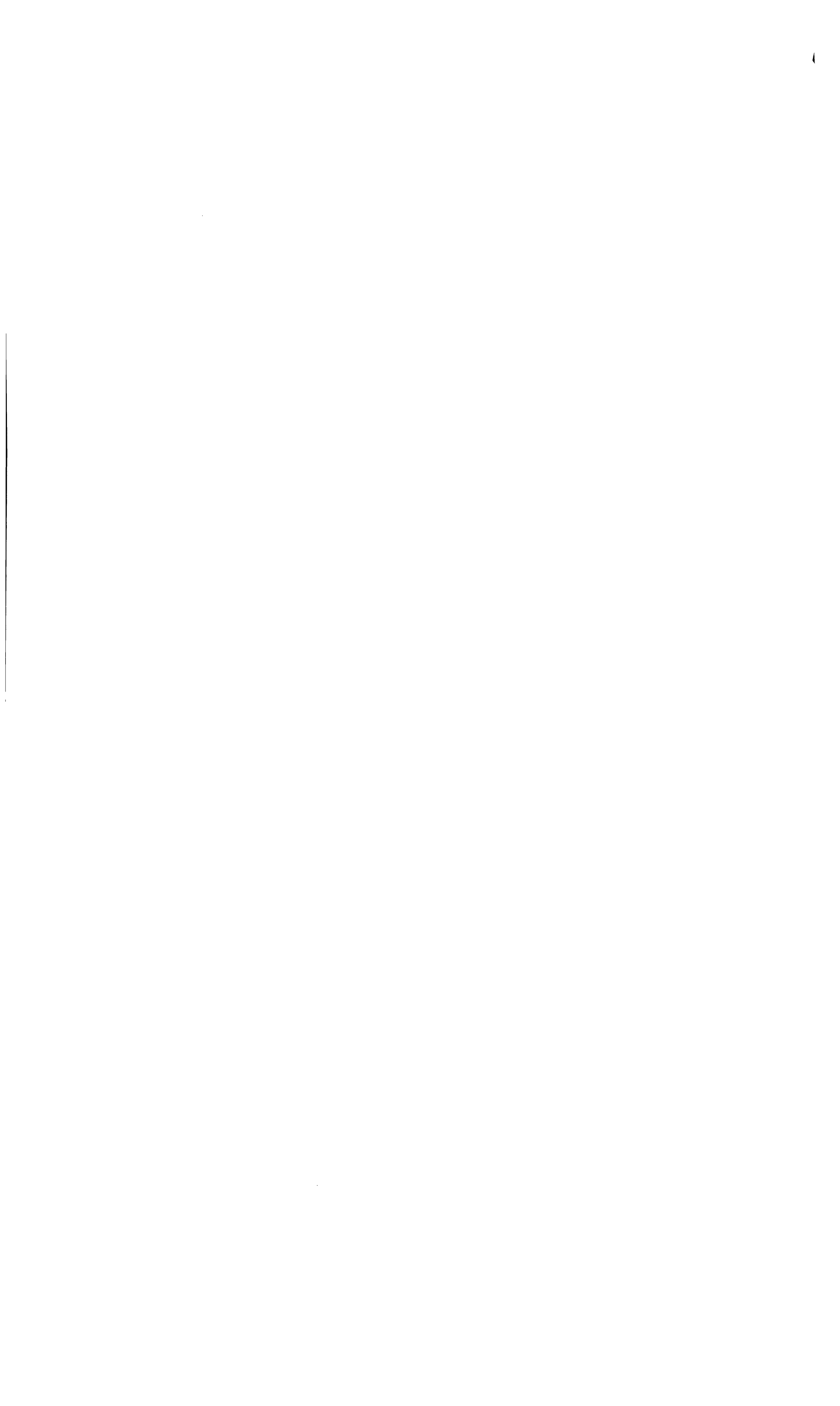


FIG. 219



layer 12; trench 98, layers 30 and 32; and trench 109, layer 13.
 Gully 23 (trench 96, layer 26).
 Pit 187 (trench 99, layers 83, 98, 99; trench 109, layers 16, 17, 67).
 Pit 237 (trench 109, layer 82).

Section 17 (Trench 100)

General Roman occupation layers 66, 28 and 29. Layers 24, 36, 26 and 65, contain considerable quantities of Roman material mixed with occasional Saxon material.

Section 18 (Trench 101)

Primary clay bank, unexcavated and unnumbered.
 General Roman occupation levels (layers 36, 85, 86).
 Later make-up (layers 92 and 94).

Section 19 (Trenches 70 and 69)

General Roman occupation level (trench 70, layer 4; trench 69, layer 7).
 Pit 65 (trench 70, layers 22, 36, 37).

Section 20 (Trench 69)

General Roman occupation level (layer 8).

Section 21 (Trench 99)

General Roman occupation level (layers 8, 64).
 Pit 184 not shown in detail on this section.

Section 22 (Trench 98)

Roman cobbles (layer 38).
 General Roman occupation level; layer 30a and that part of layer 19 which overlay the cobbles. (It was not distinguished from the filling of the thirteenth-century depression (layer 47)).

Section 23 (Trench 97)

Roman cobbles (layer 30).
 General Roman occupation level (layers 8 and 12): layer 11 contained much Roman material but had been disturbed.

Section 24 (Trench 96)

Roman cobbles (layer 22).
 General Roman occupation level (layers 37, 21 and 25).

Section 25 (Trench 95)

Roman cobbles (layer 64).
 General Roman occupation level (layers 80, together with 61 and 31, both of which have been disturbed).

Sections 26-30 (Trenches 1-5)

These five sections against the west wall of the fort show a similar stratigraphy: Builders' spread (trench 1, layer 6a; trench 2, layer 5; trench 3, layer 4; trench 4, layer 5; and trench 5, layer 5). In trench 3 the spread was laid over a primary pile of clay and gravel, presumably dug out of the foundation trench for the wall (layer 8). Spread of debris from the foundation trench (trench 1, layer 6; trench 2, layer 4; trench 4, layer 4; and trench 5, layer 4). General Roman occupation debris (trench 1, layer 5; trench 2, layer 3; trench 3, layer 3; trench 4, layer 3; and trench 5, layer 3).

Section 31 (Trenches 42 and 43)

Trenches cut across the ditches in front of bastion 1 showed two Roman ditches. The inner ditch was re-cut in the medieval period, leaving only the bottom silting of the original Roman ditch, layers 9-11, in position. The outer ditch survived intact, its section showing continuous silting with no appearance of re-cutting. Layer 2 produced two coins: (42) Licinius (A.D. 309-24); (43) Constantius I (A.D. 293-306).

APPENDIX B: THE USE OF TOOTH WEAR AS A GUIDE TO THE AGE OF DOMESTIC ANIMALS— A BRIEF EXPLANATION

By ANNIE GRANT

THIS is a brief outline of the method used to record and interpret the wear on the teeth of the Portchester mandibles.

The amount of tooth wear is commonly used by farmers and veterinary surgeons as a guide to the age of farm animals. This assessment of age is generally made from the incisor teeth which are the only teeth readily visible in the live animal. Unfortunately for the archaeologist, mandibles are rarely found with the incisors in place, and on unsieved sites the incisors themselves are rarely recovered. Assessment of age from the wear on molar teeth has been used to some effect for game animals where annual culls and natural deaths of animals of known age have made possible a proper study of the value of the method (*vide* Lowe, 1967). Since mandibles with molar teeth in place are frequently recovered on archaeological sites, a method based on molar wear should be of great practical value to animal bone workers.

When a tooth erupts, its upper surface is completely covered in enamel. As the tooth comes into wear, the enamel of the occlusal or biting surface is gradually worn away revealing the darker coloured dentine below. At first 'islands' of internal enamel are left within the dentine, but as wear proceeds these 'islands' gradually disappear, so that the biting surface of the tooth is formed entirely of dentine with a border of enamel around the edge. In later stages still the tooth wears right down to its roots, and will finally fall out. In sheep and pig mandibles especially, the enamel on the sides of the teeth that touch the next teeth in the row may also wear away. This is due to overcrowding of the teeth in the jaw and has no direct bearing on the following study.

Figures 220-2 give the 'stages' of wear observed on the four last teeth of the mandibular row of cattle, sheep and pigs. In practice it has been found that almost every worn tooth seen can be fairly readily assigned to one of these stages although, since the wear on a tooth is a continual process, occasionally wear patterns will be seen that lie between two stages illustrated. In these cases, the teeth can be assigned to one or other of the stages closest to the wear stage of the tooth in question. The wear on a tooth is normally heaviest on the first cusp of a tooth as this cusp erupts first and consequently comes into wear sooner than the second or third cusp of the tooth. Sometimes teeth are seen that have more severe wear on the second cusp than on the first cusp. This might be caused by unequal pressures from the upper jaw due to the loss of a tooth or some other anomaly. It makes assigning a 'stage' to the wear of the tooth rather difficult. In practice the writer has usually found it best to assign the tooth to the stage that shows approximately the same *amount* of wear as the anomalous tooth, but the anomaly should always be noted. Uneven wear is found fairly frequently on very heavily worn teeth but this does not always affect the pattern of wear. In any case it is recognized that these later stages are somewhat variable.

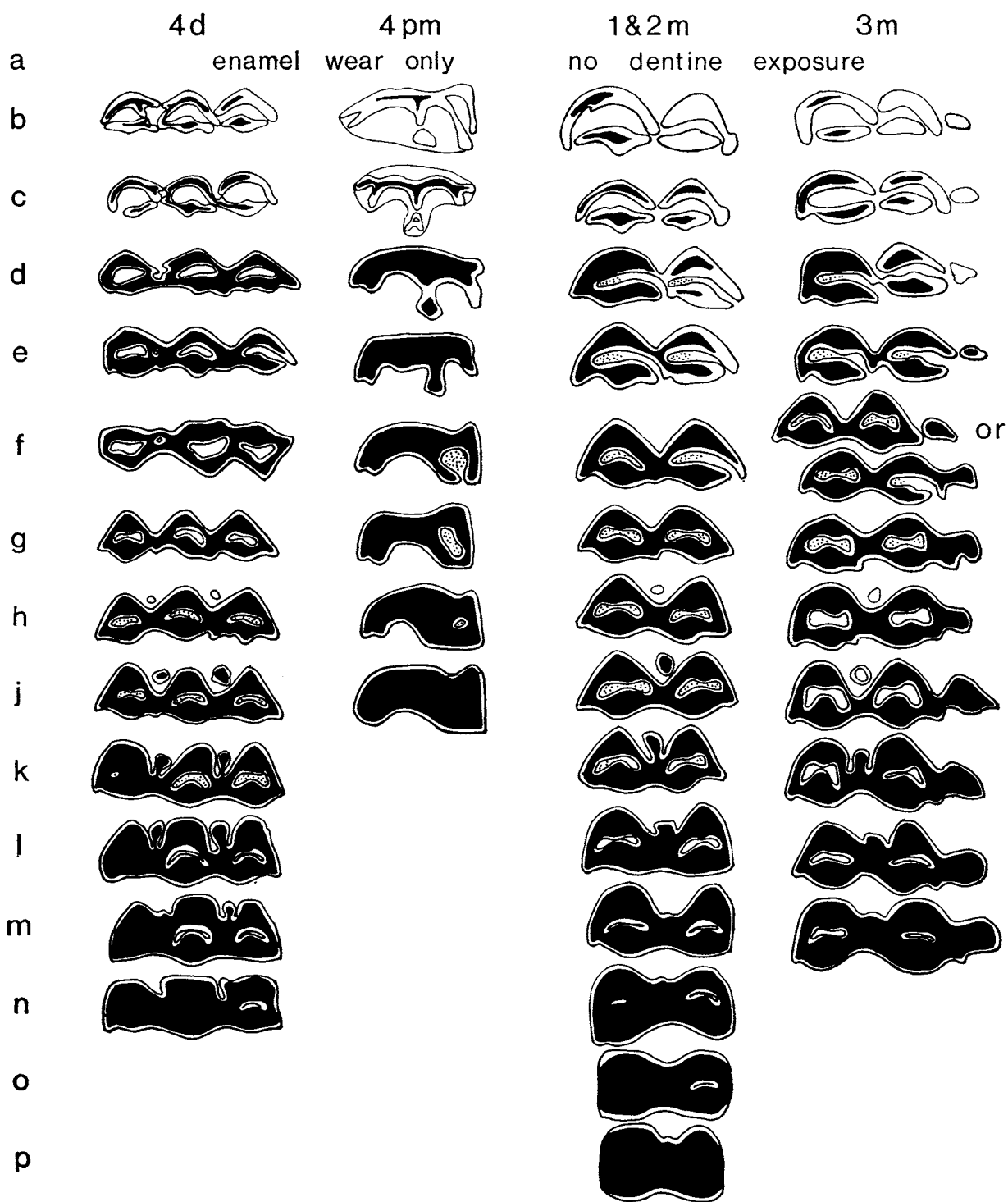


FIG. 220. The tooth wear stages of cattle

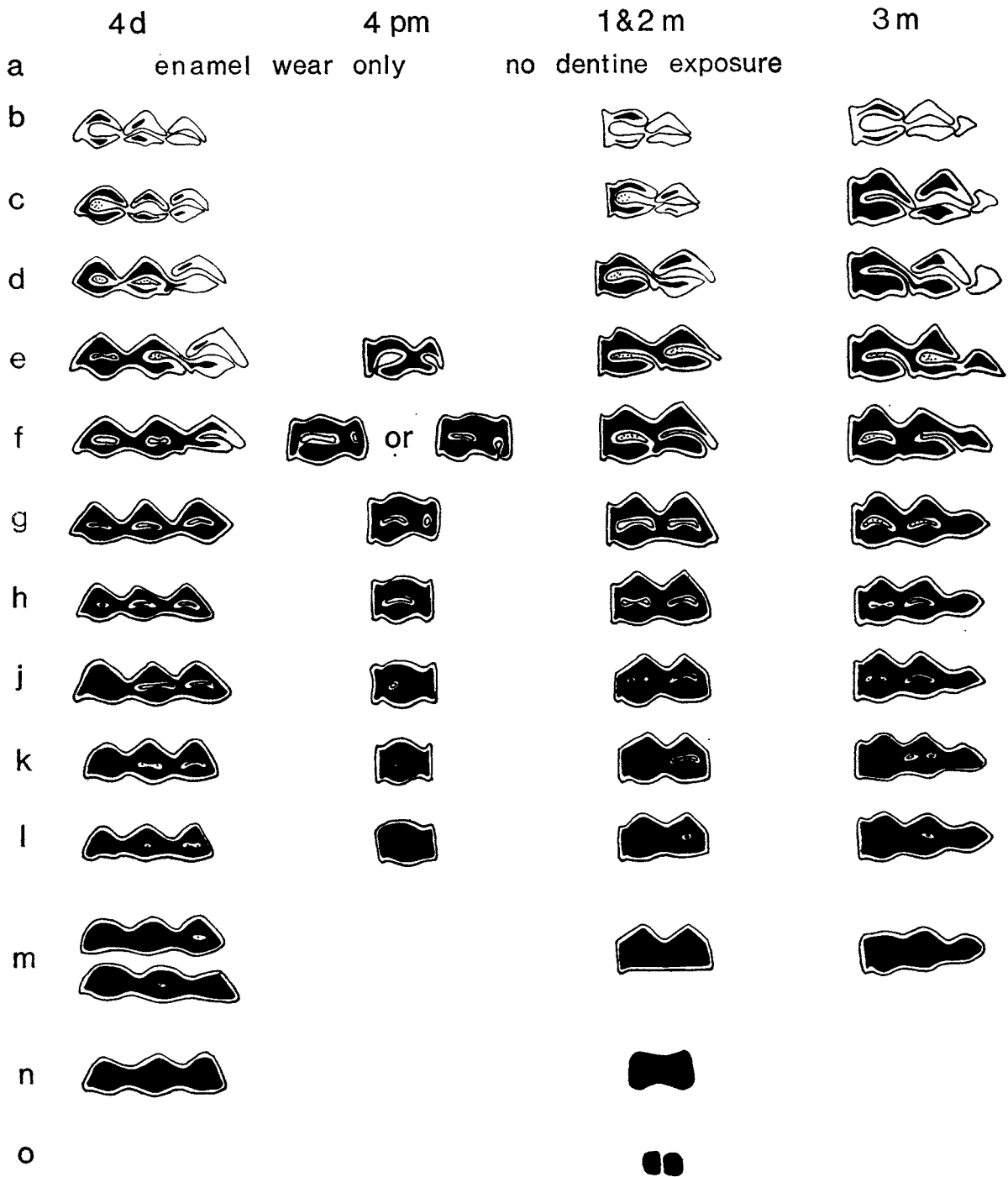


FIG. 221. The tooth wear stages of sheep

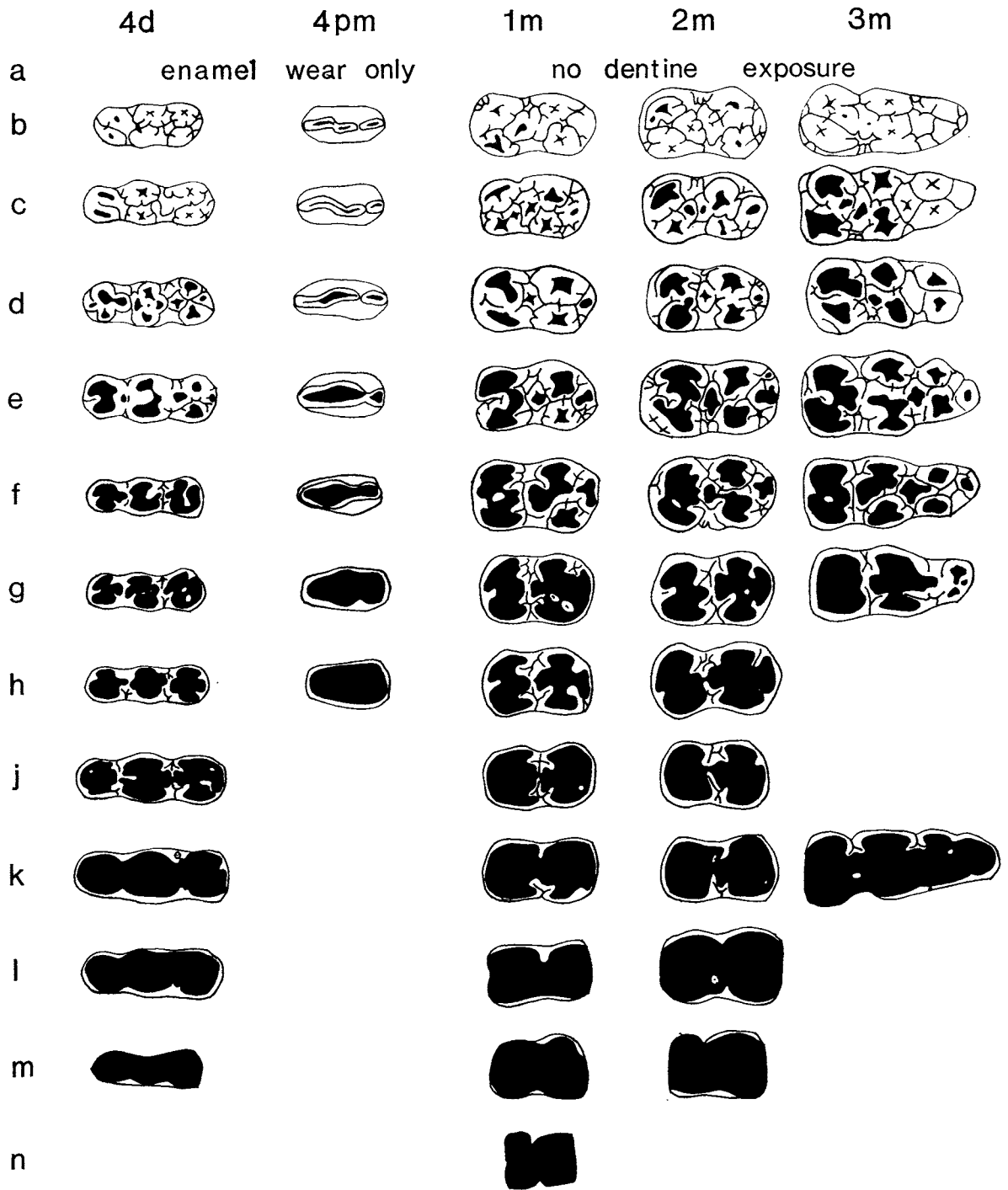


FIG. 222. The tooth wear stages of pig

The wear on the fourth premolar is also variable, especially in sheep jaws. This is mainly because overcrowding of the jaw often causes this tooth to become impacted against the first molar. The rate of eruption and the angle of wear of the tooth will be severely affected by this. It is for this reason also that the early stages of wear of this tooth in sheep are not given.

For the stages of eruption of the teeth, the writer has used the notation proposed by Ewebank *et al.* (1964) although it is generally only necessary to record the eruption of the first cusp of the tooth, unless one has a sample with very large numbers of young jaws. In this case the method proposed by Ewebank could be employed for the very young mandibles. The symbols used are:

- C — perforation in crypt visible
- V — tooth visible in crypt but below head of bone
- E — tooth erupting through bone
- $\frac{1}{2}$ — tooth half erupted
- U — tooth almost at full height but unworn

The next stage will be stage 'a' on the tooth wear charts.

Using Ewebank's scheme and the tooth wear charts, it is possible to record the state of eruption or wear for each of the last four teeth in the mandibular row of cattle, sheep and pig. This can be done very quickly with a small amount of practice, especially by recording the jaws on paper ruled with vertical columns for each tooth. Although the state of wear of the first three (two in the case of cattle and sheep) deciduous molar or premolar teeth is not

TABLE XX

<i>Eruption/ Wear stage</i>	<i>Numerical equivalent</i>
C	1
V	2
E	3
$\frac{1}{2}$	4
U	5
a	6
b	7
c	8
d	9
e	10
f	11
g	12
h	13
j	14
k	15
l	16
m	17
n	18
o	19
p	20

recorded, their presence and the state of eruption can be noted. Any anomalies, caries, diseases, impacted teeth and post- or ante-mortem tooth loss should also be recorded at the same time. Deciduous teeth can be distinguished from permanent teeth by the use of brackets round a wear stage that refers to a deciduous tooth.

Once all the mandibles from a site or group have been recorded in this way, the results can be analysed. This is begun by using the eruption or wear stages on the first molar to place the mandibles in ascending order of degree of wear. Subdivisions will be made by referring to the stage of wear on the other teeth present.

The wear of the fourth premolar will be the least reliable for this as discussed above. If a jaw does not have the first molar present, or for that matter any other tooth, it can usually be satisfactorily placed into the sequence constructed from the wear on the first molar by reference to those teeth that are present. Where a jaw has only one of the relevant teeth present, it is not generally possible to place it in the sequence very precisely, unless it is a tooth in a stage of eruption or in a very early stage of wear. Some jaws that do not precisely agree with the sequence of wear and tooth replacement of the majority of the mandibles will always be found, but they should be placed in the sequence where they best fit. Tables XXI–XXIII show the mandibles from Portchester placed in ‘wear order’. Those that did not have enough teeth present to be thought reliable for this analyses are not included.

The next stage is to assign a numerical value to the tooth wear of the mandibles as a whole. Each eruption and wear stage is given a numerical equivalent as shown in Table XX. The numerical value of the jaw as a whole is found by adding up the value of the three molar teeth only. The deciduous and premolar teeth are not used for this purpose. However, where a jaw has one or more of the molar teeth absent, a decision has to be made as to whether one can reliably predict what the state of wear on the missing teeth would have been. This is done by reference to the state of wear of those teeth that are present including the deciduous molar or fourth premolar. If it is found that for jaws which have teeth in the same stages of eruption and wear as those present in the jaw in question, there is little or no variation in the state of wear of the missing tooth, the stage of wear of that tooth can be fairly confidently predicted. Sometimes, however, a range within which the jaw should fall has to be given. Tables XXI–XXIII include the numerical values of the Portchester mandibles. Where the values have been estimated they are followed by an ‘e’.

It should be noted at this stage that the intervals between the tooth wear stages are by no means equal in time. Some stages last for very short amounts of time while others are very long-lasting. Stage ‘g’ for first, second and third molars of sheep is very long-lasting, while the early stages of wear for all teeth tend to be relatively short. On the whole the early wear stages last a short time and the later stages last slightly longer, but this is a very general rule. In sheep, the stage ‘g’ is the longest lasting of all.

Some idea of the length of any stage can be gained by looking at the number of stages the other teeth in the row go through while one tooth is in any one stage. For example, while the first molar of sheep is in stage ‘g’ the second molar stages range from ‘b’ to ‘g’. The wear on the other teeth obviously subdivides the time represented by a very long-lasting stage in one tooth. Given a sheep mandible with only a molar in stage ‘g’ present, it would be very unwise to try to predict the wear stages of the other teeth.

Once numerical values of the jaws have been calculated for each jaw it then becomes

possible to construct histograms and cumulative percentage charts as in figures 203-5. What these graphs and histograms show is a relative time scale. They also demonstrate 'peak' killing stages and allow groups of mandibles from the same environment to be compared. By correlating the analysis of epiphyseal fusion of the long bones, and by using eruption ages of the teeth given by Silver (1969) tentative absolute ages can be fixed. For reasons already mentioned, the time intervals between the numerical wear stages are likely to be short in the early stages and relatively long in the later stages. The teeth possibly wear more slowly in old animals too. It has been shown with human teeth that the length of time it takes any tooth to reach a given stage depends on its position in the tooth row. The first molar will reach the stage the most rapidly with the second and third molars each taking longer than the tooth before (*vide* Miles, 1963; Murphy, 1969).

TABLE XXI
Wear Stages in Cattle Mandibles

Group One					Group Three				
4PM	1M	2M	3M	Numerical value	4PM	1M	2M	3M	Numerical value
(½)	V			2	(½)	—			4-6e
(d)	e	V		12	(b)	—			6e
—	h	g	g	37	(k)	g	—	E	24e
E	k	j	d	38	—	—	d	V/E	24e
e	k	j	g	41	—	—	f	b	30e
e	k	j	g	41	—	—	g	b	30e
f	k	k	—	41e	—	k	g	f	38
f	k	k	g	42	e	k	h	f	39
—	l	h	g	42	½	k	j	e	39
—	l	k	—	43e	c	k	j	f	40
—	l	k	g	43	c	k	j	f	40
—	—	k	j	45e	—	k	j	f	40
k	m	l	k	48	—	k	j	f	40
—	—	l	k	48e	f	k	k	g	42
—	m	m	m	51	—	—	k	g	42e
h	n	m	m	52	f	l	k	j	45
h	o	m	—	53	g	l	k	j	45
h	o	n	m	54	g	l	k	—	45e
					—	l	k	j	45
					—	l	k	—	45e
					g	m	l	g	45
					f	l	k	k	46
					—	m	k	k	47
					g	m	l	k	48
					g	m	l	k	48
					—	m	l	k	48
					—	m	l	—	48e
					—	—	l	k	48e
					h	n	m	h	48
					g	m	m	l	50

EXCAVATIONS AT PORTCHESTER CASTLE

Table XXI—*continued*

<i>Group Four</i>					<i>Group Five</i>				
<i>4PM</i>	<i>1M</i>	<i>2M</i>	<i>3M</i>	<i>Numerical value</i>	<i>4PM</i>	<i>1M</i>	<i>2M</i>	<i>3M</i>	<i>Numerical value</i>
(e)	½			4	(l)	h	f	—	31 ^e
(f)	½			4	d	j	g	c	34
(m)	g	d	EV	24	c	k	g	f	38
—	g	f	b	30	—	—	h	f	39 ^e
(o+)	k	g	c	35	—	k	g	g	39 ^e
½	—	g	c	35 ^e	—	—	j	g	41
—	—	g	d	36 ^e	f	k	k	g	41 ^e
—	h	g	g	37	—	—	k	g	42
k	k	g	f	37	d	k	k	g	42
U	k	g	f	37	e	l	k	g	43
—	k	g	g	39	—	l	k	g	43
—	k	g	g	39	—	k	k	j	44
—	k	j	g	41	f	l	k	—	44 ^e
—	k	j	—	41 ^e	f	l	k	—	44 ^e
f	k	k	g	42	f	l	k	—	44 ^e
—	l	k	g	43	—	l	l	g	44
e	l	k	—	43 ^e	g	l	k	j	45
—	l	k	—	43 ^e	g	l	k	j	45
—	l	k	g	43	g	l	k	j	45
—	l	k	g	43	—	—	k	j	45 ^e
—	—	k	g	43	—	l	k	j	45
—	—	k	g	43 ^e	g	l	k	k	46
—	—	k	g	43 ^e	—	l	k	k	46
—	l	k	—	43 ^e	—	l	k	k	46
f	l	k	—	43 ^e	g	m	k	j	46
f	l	k	—	43 ^e	g	m	l	j	47
—	l	l	g	44	—	m	l	—	47 ^e
—	—	j	j	44 ^e	—	m	k	—	47 ^e
—	l	k	j	45	h	m	k	k	47
—	l	k	j	45	g	n	m	—	51 ^e
g	l	k	j	45	h	o	m	m	53
—	l	k	j	45					
—	—	k	j	45 ^e					
—	l	k	k	46					
—	l	l	—	47 ^e					
—	m	l	—	49 ^e					
—	m	l	k	49					
—	m	m	—	50 ^e					
—	o	m	l	52					
—	—	p	m	57+ ^e					

e = estimated
 — = tooth lost post-mortem
 () = deciduous tooth
 a-m = lost ante-mortem

TABLE XXII
Wear Stages in Pig Mandibles

Group One					Group Three				
4PM	1M	2M	3M	Numerical value	4PM	1M	2M	3M	Numerical value
(b)	V			2	(U)				→1
(b)	E			3	(b)	U			5
(b)	E			3	(f)	b			7 ^c
(c)	E			3	(j)	c	C		9
(k)	a	V		6	—	c	E	C	12
(k)	b	—		8 ^e	(g)	d	E	—	13
—	b	—		8 ^e	—	e	E	—	14
—	c	V	C	11	—	g	b	E	22
(k)	c	—	—	11	—	g	b	½	23
(j)	c	V	—	11 ^e	b	g	b	—	23
(j)	c	a	—	12 ^e	—	g	b	—	23
—	—	½	C	14 ^e	—	g	c	½	24
(k)	d	—	—	15 ^e	c	h	c	—	25 ^e
b	g	a	V	20	—	j	c	U	27
b	g	b	—	23 ^e	b	k	c	U	28
—	—	c	E	23	d	l	f	U	32
b	g	c	½	24	—	k	f	U	33
a	g	c	—	24	e	k	f	—	33 ^e
b	g	c	½	24	—	—	f	c	35 ^e
—	—	c	—	25 ^e	—	—	k	c	40 ^e
—	j	c	½	26	—	—	—	f	44+ ^e
b	g	d	a	27					
d	g	d	b	28					
b	h	e	a	28					
c	h	d	—	28 ^e					
—	g	f	b	29					
c	l	d	½	29					
—	j	c	U	29					
b	j	e	a	30					
b	j	e	a	30					
—	—	e	a	30 ^e					
d	l	e	b	33					
d	l	f	—	34 ^e					
e	l	g	b	35					
e	m	f	c	36					
—	m	g	d	38					
—	m	j	d	40					
f	n	—	—	41+ ^e					
—	—	m	f	47+ ^e					

EXCAVATIONS AT PORTCHESTER CASTLE

Table XXII—*continued*

<i>Group Four</i>					<i>Group Five</i>				
<i>4PM</i>	<i>1M</i>	<i>2M</i>	<i>3M</i>	<i>Numerical value</i>	<i>4PM</i>	<i>1M</i>	<i>2M</i>	<i>3M</i>	<i>Numerical value</i>
(c)	½ a			4	(½)				1
(b)	a			8	(b)	V			2
(j)	b	E		10	(b)	V			2
(k)	c	V		10	—	b	C		8
—	c	V	—	10	—	b	V		9
—	c	V	C	11	(m)	f	E		14
(m)	d	E	—	12	—	e	½ b	—	15e
(k)	d	a	—	16e	—	e	—	—	22e
½	d	b	—	17e	b	e	—	—	22e
(l)	e	U	—	17e	b	e	c	U	23
—	e	b	V	19	b	f	b	—	23e
—	—	b	V	19	b	g	b	V	21
—	e	b	—	19e	—	h	b	E	23
b	e	c	—	20e	—	—	c	½	24e
—	e	c	—	20	c	g	c	—	25e
—	—	c	V	20e	c	h	c	½	25
—	g	b	—	21e	c	h	c	—	26e
—	g	b	—	21e	c	l	e	b	33
c	g	c	V	22	f	a-m	—	d	46e
—	g	c	V	22					
—	—	c	V	22e					
c	g	d	—	23e					
—	h	d	V	24					
—	j	c	E	25					
c	l	d	E	25					
c	l	c	½	25					
b	h	c	U	26					
—	—	c	½	26e					
—	—	—	½	26e					
c	h	g	V	27					
c	k	g	E	27					
—	k	d	E	27					
c	k	d	—	27					
—	—	c	a	28e					
—	k	c	U	28					
e	k	g	b	34					
e	m	e	b	34					
—	—	e	b	34e					
f	l	f	c	35					
e	m	f	b	35					
—	—	g	b	36e					
f	m	g	c	37					
f	n	g	c	38					
f	n	g	c	38					
—	—	g	d	39					
—	—	h	d	40e					
g	n	l	d	42					
—	—	l	e	45+e					
—	—	—	l	50+e					

e = estimated; — = tooth lost post-mortem; () = deciduous tooth; a-m = lost ante-mortem

TABLE XXIII
Wear Stages in Sheep Mandibles

Group One					Group Three				
4PM	1M	2M	3M	Numerical value	4PM	1M	2M	3M	Numerical value
(e/f)	—	—		→13e	(a)	C			1
(g)	e	—		→14e	(c)	E			3
(h)	f	E		14	(e)	E			3
—	g	c	V	22	(d)	—			3e
V	g	c	—	22e	(g)	d	—		10-17e
(k)	g	d	—	23e	(h)	d	—		10-17e
—	g	d	CV	23	(h)	f	b	C	19
V	g	d	—	23	—	f	c	C	20
(l)	g	e	V	24	—	f	c	—	21e
(m)	g	e	—	24e	—	f	c	—	21e
—	g	d	E	24	(g)	f	d	—	21e
V	g	e	—	24e	(h)	g	c	C	21
(k)	g	e	E	25	—	f	c	E	22
(l)	g	f	—	26e	(h)	g	c	V	22
—	—	—	½	26e	(j)	g	C	—	22e
e	g	g	b	31	(h)	g	d	c/V	23
½	h	f	c	32	(j)	g	d	c/V	23
—	h	g	b	32	V	g	d	—	23e
—	g	g	d	33	E	g	e	—	24e
—	g	g	c	33	E	g	e	V	24
—	g	g	e	34	—	g	e	V	24
f	g	g	e	34	—	g	e	V	24
—	h	g	f	36	½	g	e	E	25
—	h	g	f	36	(l)	g	f	E	26
l	m	h	g	42	—	g	e	c	30
l	m	k	g	44	—	g	e	—	30e
					—	g	f	c	31
					—	g	g	b	31
					—	g	g	c	32
					—	g	g	—	32e
					g	g	g	d	33
					g	g	g	d	33
					—	—	g	d	33e
					—	—	g	f	37e
					h	j	g	—	38e
					—	k	g	g	39
					—	l	l	h	40
					—	—	l	—	45

EXCAVATIONS AT PORTCHESTER CASTLE

Table XXIII—*continued*

Group Four					Group Five				
4PM	1M	2M	3M	Numerical value	4PM	1M	2M	3M	Numerical value
(a)				→1	(½)				→1
(d)	E			3	(½)				→1
(d)	E			3	(½)	V			2
(c)	E	C		4	(c)	V			2
(e)	—	—		4 ^e	(c)	V			2
(f)	½	—		6 ^e	(d)	V			2
(f)	½	V		6	—	V			2
(f)	b	—		8-15	(d)	—			2 ^e
(f)	—	—		8-15	(d)	E			3
(f)	—	—		8-15	(e)	E			3
(g)	b/c	—		8-15	(e)	—			3 ^e
(g)	—	—		8-15	(e)	—			3 ^e
(f)	c	—		8-15	(f)	½	C		5
(g)	f	V		15	(g)	e	E		13
(k)	g	c	C	21	(g)	e	—		13
(g)	f	c	E	22	(h)	f	U	C	17
—	f	d	—	22 ^e	—	e	b	—	18 ^e
—	g	d	—	23 ^e	(h)	f	U	C	19
(h)	g	—	—	23 ^e	(g)	g	b	—	19
(k)	g	d	—	23 ^e	(h)	g	c	—	21
E	g	d	V	23	—	—	c	C	21
—	g	c	—	24	(h)	g	c	C	21
—	g	c	½	24	(k)	g	c	C	21
—	g	e	E	25	(l)	g	c	—	21 ^e
E	g	e	½	26	(h)	g	d	—	22 ^e
—	g	f	½	27	—	g	d	—	22 ^e
—	g	—	½	27	(h)	g	e	—	23
—	g	e	b	29	(h)	g	e	V	23
—	g	e	c	30	½	g	d	E	24
f	g	g	—	31 ^e	—	g	e	E	25
—	—	g	b	31 ^e	(l)	g	e	—	25 ^e
—	—	g	b	31 ^e	—	g	f	C	24
—	g	f	c	31	V	g	e	E	25
—	g	g	c	32	½	g	e	U	27
f	h	g	—	32	(m)	g	e	—	27 ^e
—	h	g	b	32	f	g	e	c	30
—	g	g	e	34	—	g	f	b	30
—	g	g	e	34	—	g	f	b	30
j	h	g	d	34	—	g	f	d	32
—	g	g	f	35	—	g	g	c	32
—	h	g	g	37	—	—	g	d	33
j	k	g	f	38	—	h	f	e	34
k	k	g	f	38	g	—	g	e	35
—	—	g	f	38	—	g	g	f	35
h	l	g	—	39 ^e	g	g	g	e	35
—	m	g	g	41	—	h	g	—	35 ^e
k	m	g	g	41	—	j	g	—	37 ^e
k	m	—	—	41 ^e	l	m	j	g	43
l	m	k	g	44	l	m	k	g	44
l	n	n	—	47 ^{+e}					

e = estimated; — = tooth lost post-mortem; () = deciduous tooth; a-m = lost ante-mortem.

It is hoped that with further research, it may be possible to put more precise age values to the wear stages. Possible lines of research are studies of modern aged animals in different environments and feeding conditions and analysis of incremental structures in teeth.

By examining the sequence of mandibles made for each group however, further information can be elicited. It is known and has been stated by Chaplin (1971) that the *rate* of wear will be affected by many variables, especially the amount of mineral or abrasive material in the foodstuff. The age of the eruption of the teeth will also vary according to such factors as breed and state of nutrition. The advantage of using a method that records the wear of each tooth individually, rather than of the mandible as a whole, is that one can more readily assess the possible effects of these variables. This can be done by examining the wear stage of, for example, the first molar in jaws where the second molar is actually erupting. If there is a great deal of wear on the first molar, it could either mean that the rate of wear was very rapid, or that the age of eruption of the second molar was very late. Analysis of the soil type in the area where the animals are expected to have grazed can be carried out. Correlation with the epiphyseal fusion data, which might be expected to be affected by the same factors that cause late eruption of teeth but not by abrasive conditions, might help the bone worker decide which of the possible causes is the most likely to be affecting any group of jaws. By careful appraisal of these factors it might be possible to compare the results of such tooth wear analyses for sites in very different environments.

On the whole the writer has found fairly little variation in the relationships of the wear stages of the teeth in the jaws of sheep and cattle in any single group of bones. The variation tends to be greater for pig mandibles. This must certainly be in part related to the omnivorous feeding habits of the pig. A pig fed on soft foods would be expected to show far less tooth wear than a pig that was left to forage. The individual feeding preferences of different pigs within the same population would also be expected to cause anomalies in the tooth wear. This is seen in the larger number of pig jaws that do not fit precisely into the sequence. A small range of variation is to be expected in any species.

There are obvious dangers in using this method of recording and analysing tooth wear. Some have been mentioned above; others are not so obvious. Cattle and sheep cannot chew on both sides of their mouths at once. Observations in zoos of other animals with similarly constructed jaws have shown that some have a marked preference for one side of the jaw over the other. This will obviously affect enormously the wear on the teeth. It is generally expected that the chewing forces will be equally divided between the two jaws, whereas an animal chewing on one side of the mouth rather than the other will have very unequal wear on the two sides of its jaw. It is to be hoped that very unequal chewing habits are rare. On the few occasions that the writer has examined pairs of jaws that definitely belong to the same animal, the state of wear has been the same on each jaw.

As it stands, this method can only be used to indicate the relative ages of animals within a population. Actual ages can only be guessed at. The method seems to work best for sheep, although in fact there is always the possibility of the presence of goat in the sample. It may be that the teeth of goats wear at the same rate as those of sheep in the same environments but this should be tested by further research. The method is probably least reliable for pig, for the reasons discussed.

The value of this method in comparison to some other methods of ageing animals is that it is

quick and easy to use, involves no destruction of the bone, and since jaws are usually very well recovered even on unsieved sites, the sample available for analysis is usually relatively large and represents the complete age range of the animals present. If it were adopted by other animal bone workers it would allow more direct comparisons to be made between bone assemblages analysed by different people. It is only by standardizing and clarifying the methodology, that animal bone workers can produce reports that are of real value. Only then can we lift the level of animal bone reporting from the isolated appendix at the back of a site report to proper and valid research into the relationship of man to his animals and environment.

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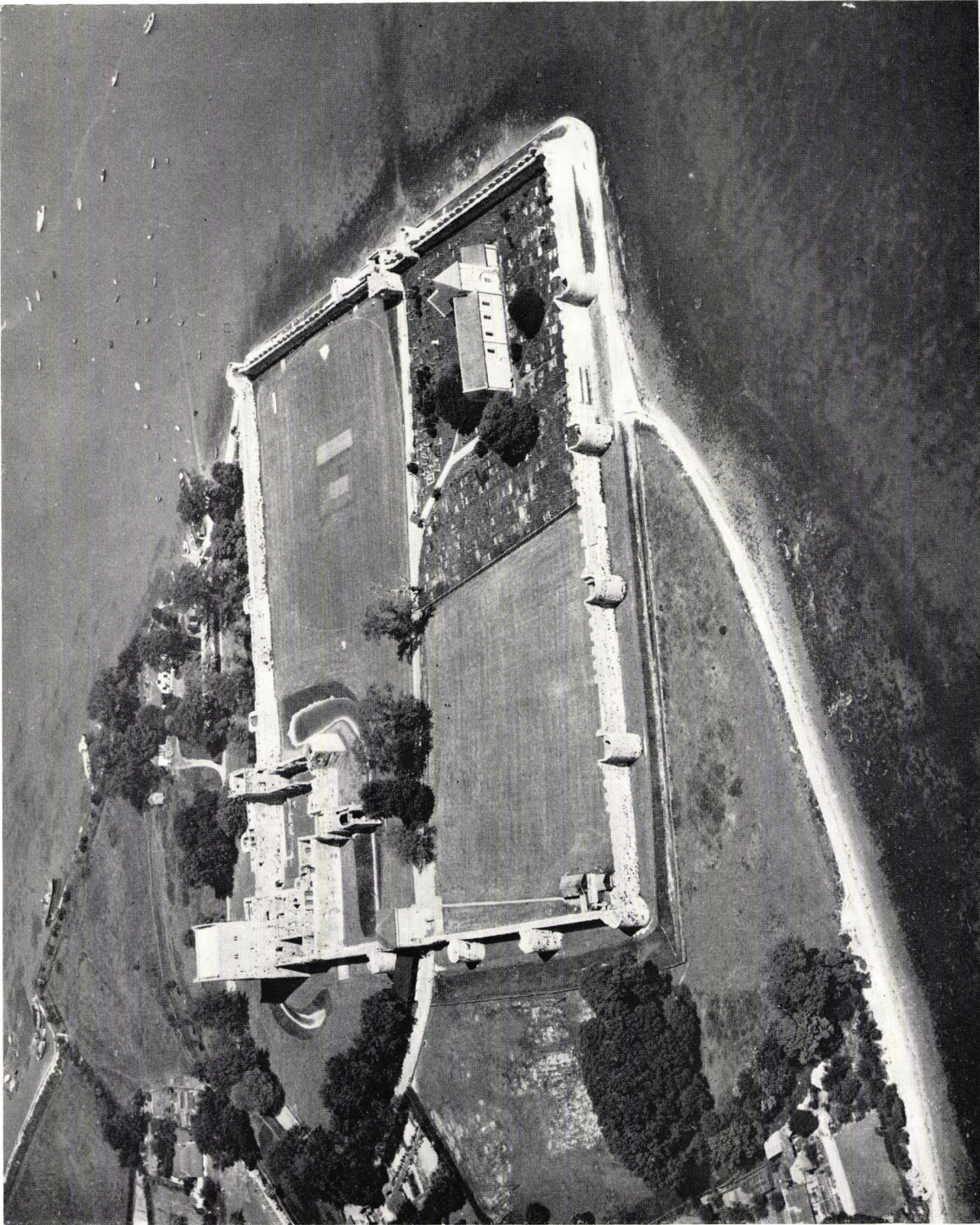
INDEX

- Alderney (Channel Isles), fortlet at, 429*n*
 Alice Holt (Hants), coarse ware kilns at, 291, 294, 296, 301
 Allectus, coins of, 42, 43, 59, 195
 Alzey (W. Germany), square plan of, 422
 Amberwood Inclosure (New Forest) (Hants), pottery kilns at, 282, 296
 Ambrose, Timothy, on the leather finds, 247–62
 Antler objects, 43, 44, 45, 51, 52, 115, 131, 157, 224–5, 426
 Anton, East (Hants), grog-tempered ware from, 290
 Aquileia (Italy), coins from, 192, 193
 Aristotle, on infant mortality, cited, 375
 Asclepiodotus, surprise landing of, 429
 Ashley Rails (New Forest) (Hants), pottery kilns at, 282, 296
 Aurelius Cervianus, peacock on badge of, 412
- Baker, D., excavation of priory by, 185
 Bastions, 13, 21–6, 419–20
 Binstead (I. of Wight), limestone from, 12
 Bitterne (Hants), *see Clausentum*
 Bone objects, 37, 43–54 *passim*, 83–127 *passim*, 153–66, 215–24, 426
 Bones:
 animal: 79–143 *passim*, 152–79 *passim*, 376, 378–408, 426; tooth wear, 437–50; bird, 409–15; human, infant, 83, 84, 91, 96, 97, 108, 112, 118, 124, 140, 172, 375–6
 Botley (Hants): kilns at, 6; coarse ware from, 290, 294
 Boulogne (France), fort at, 428
 Bradwell (Essex), 420
 Brain, C., cited, 384
 Brancaster (Norfolk), construction and plan of, 419, 420, 421
 Bricks, 71, 72
 Broch of Ayre (Orkney), Great Northern Diver's bones at, 412
 Bronze Age finds, 6, 7
 Bronze objects, 34, 43–54 *passim*, 83, 87, 91, 94–5, 114, 119, 131, 143, 146, 150, 160, 162, 173, 174, 184, 188, 189, 200–17
 Buildings, 10, 63–68
 Burgh Castle (Suffolk), construction and plan of, 419, 420, 421
 Bürgle, nr Gundremmingen (W. Germany), forecourt at, 420; square plan of, 422
 Butler, Dr R. M., cited, 2
- Caelius Mons (Kellmünz) (W. Germany), gates in bastions at, 420
- Caer Gybi (Holyhead) (Anglesey), fort, 420
 Canterbury (Kent), coins from, 192, 195
 Carausius: Portchester probably constructed by, 421, 422, 427, 428; coins of, 41, 42, 43, 44, 51, 53, 59, 60, 76, 78, 93, 150, 173, 195, 421
 Carbonized cereals, 416–18
 Cardiff (Glam.), fort, 420, 422
 Carisbrooke (I. of Wight), east gate at, 420
 Cesspits, 41, 76, 77, 81, 83, 84, 85, 88, 91, 92, 93–4, 96, 97, 99, 103, 104, 106, 108, 110, 122, 129, 144, 147, 159, 163, 164, 169, 425
 Chaplin, R. E., cited, 449
 Charles I, King, Portchester Castle sold by, 1
 Claudius, coin of, 8, 194
 Clausentum (Bitterne) (Hants): 6, 13, 420, 422, 430, 431; pottery trends at, 271, 291; walls of, 419
 Cleary, A. S. Esmonde, coins identified by, 188
 Cobham (Surrey), fabric D wares from, 299
 Coins: 188–97, 422, 425; summary list from pits, 59–60; comprehensive list, 188–90; 1st-century, 8, 194; 3rd-century, 195; 3rd–4th century, 195; 4th-century, 195–6; *see also under individual names*
 Cold Kitchen Hill, Brixton Deverill (Wilts.), glass beads from, 231
 Constans: visit to Britain of, 429, 430; coins of, 44, 52, 59, 60, 76, 131, 186, 187
 Constantine I, coins of, 41, 42, 43, 44, 51, 52, 53, 59, 60, 61, 76, 77, 78, 90, 106, 111, 119, 143, 150, 162, 169, 187
 Constantine II, coins of, 44, 52, 53, 59, 60, 76, 78, 173, 183, 187
 Constantine, House of, coins of, 34, 53, 60, 74, 76, 77, 111, 173, 195
 Constantinopolis coins, 51, 60, 76, 173, 187
 Constantius I, coin of, 34
 Constantius II, coins of, 52, 127, 183, 187
 Constantius Chlorus, coin of, 37
 Constantius, House of, coins of, 62, 187,
 Corstopitum (Corbridge) (Northumb.), bone analysis of, 401
 Counts of the Saxon Shore, 429–30
 Crispus, coins of, 41, 52, 60, 61, 76, 77, 81, 119, 162, 183
 Crock Hill (New Forest) (Hants), pottery kilns at, 282, 296
- Daub, 44, 67, 73, 83, 91, 92, 97, 117, 150, (painted) 106, 115
 Dijon (France), coins from, 192
 Diocletian, coins of, 51, 60
 Ditches, 2, 10, 13, 37, 419
 Dorchester (Dorset), pottery trends at, 271, 293
 Dover Castle (Kent): 420, 422, 428; walls of, 419

- Downton (Wilts.), grog-tempered ware from, 290
 Duckworth, J., cited, 403
- Eastham, Ann, on the bird bones, 409-15
 Ewebank, J. M. *et al.*, cited, 441
- Fishbourne (Sussex): analysis of bones from, 384, 386;
 domestic fowls at, 411; whetstones from, 265
 Fulford, Michael, on the pottery, 45-8, 55-8, 270-367
- Galerius, coins of, 44, 59, 76, 119
 Gallienus, coins of, 27, 41, 59, 60, 421
 Gammer, N. G., computer analysis of pottery by, 273-4
 Gatcombe (Somerset), bastioned walls at, 420
 Gates: east, 2, 34-6, 185, 420; west, 2, 11, 29-34, 180,
 420; postern, 26-8, 420
 Gemstone, 231-2
 Germanic presence, 430
 Gillam, J. P., cited, 292
 Glass: beads, 52, 95, 131, 230; vessels, 45, 53, 55, 84, 87,
 103, 105, 107, 120, 138, 368-73, 374; window, 45,
 51, 55, 72, 99, 115, 120, 368, 373-4
 Grannona (France), 428-9
 Grant, Annie: on the animal bones, 378-406; on tooth
 wear and the age of domestic animals, 437-50
 Gratian, coins of, 34, 42, 45, 52, 59, 60, 61, 77, 94, 196
 Great Northern Diver, bones of, 412-13
 Guido, Mrs M., on glass objects (excluding vessels),
 230-1
 Gullies, 63, 64, 66, 67, 68, 73-5, 186
- Hadrian's Wall, black-burnished ware from, 293
 Hambleden (Bucks.), infant burials at, 376
 Harcourt, R., on the dog bones, 406-8
 Harden, Dr D. B., on the glass, 368-74
 Haus Bürgel (W. Germany), square plan of, 425
 Hearths, 62, 68, 69-70, 80
 Helena, coin of, 76, 131, 187
 Henig, Dr M., on the gemstone, 231-2
 Holbury (Hants.), grog-tempered ware from, 290
 Hooper, B., on the human bones, 375-6
 Howard, M., cited, 399
 Hübener, W., on Argonne ware, cited, 278
- Icorigium* (Jünkerath) (W. Germany), gates in bastions at,
 420
 Iron Age sherd, 8
 Iron objects:
 Roman: 43, 44, 45, 51-5 *passim*, 74, 88, 90, 91, 95, 96,
 101, 102, 105, 106, 113, 119-20, 138, 162, 167, 173,
 174, 182, 184, 233-47; 5th-century purse mount,
 127; *see also* Metal-working and Nails
 Irvine, James, recording of bastion footing by, 24
 Isaac, G. L., cited, 384
 Isings, Clasina, cited, 368
 Islands Thorns (New Forest) (Hants), pottery kilns at,
 282, 296
 Isle of Wight, probable source of limestone, 12, 20, 21
- Jewell, P. A., cited, 401
- Köln-Deutz (W. Germany), square plan of, 422
- Lead objects, 232-3, 427
 Leather shoes and fragments, 131, 133, 247-62, 427, 430
 Leicester (Leics.), pottery trends at, 271, 285
 Licinius, coins of, 37, 41, 53, 60, 61, 77, 160
 Linwood (New Forest) (Hants.), pottery kilns at, 282, 296
 London: coarse ware trends at, 271, 299; Lefevre Road,
 animal bones from, 386, 392
 Lydney (Glos.), bronze bracelets from, 205
 Lympne (Kent): 428; bath suite at, 73; construction and
 plan of, 419, 420, 421, 422
- Magentius, coin of, 187
 Mainz (W. Germany), coins from, 192
 Március (Budapest) (Hungary), square plan of, 422
 Maximian, Emperor: 429; peacocks on throne of, 412
 Maximus, silver coin of, 196, 430
 Mesolithic finds, 6, 8
 Metal-working, 265, 426
 Mildenhall (Wilts.), bastioned walls at, 420
 Ministry of Works, work at Portchester by, 1, 2, 11-12,
 17, 21, 37, 188
 Morris, Joanna, on the Samian ware, 276-8
 Murphy, P., and J. M. Renfrew, on the carbonized
 cereals, 416-18
 Myres, Dr J. N. L., cited, 430
- Nails, 44, 51, 52, 55, 72, 79, 80, 82, 84, 85, 87, 88, 95, 99,
 102, 104, 106, 109, 111, 114, 116, 117, 120, 133
 Neolithic finds, 6, 7, 8, 53
 New Forest (Hants): pottery kilns, 282, 290, 291, 294,
 296, 301; *see also under* Pottery
 Norman castle, 1, 3, 11, 12
- Office of Works, *see* Ministry of Works
 O'Neil, B. H. St J., Portchester coins listed by, 188
 Oudenburg (Belgium), square plan of, 422
 Ovens, 67, 68-9, 423, 426
 Oyster shells, 75, 79-172 *passim*, 181, 426
- Pachten (W. Germany), coins from, 192, 193
 Payne, S., cited, 378
 Peacock, D. P. S.: on the whetstones, 265-7; cited, 292
 Peacocks, mythology of, 412
 Pevensey Castle (Kent): construction and plan of, 13, 15,
 19, 419, 420, 421, 422; dating of, 429; pottery from:
 Argonne ware, 278; coarse ware, 291 ('Pevensey'),
 282
 Phillipson, D. W., coins identified by, 188
 Pits, 67, 68, 76, 179; pottery from, 272-4; *see also* Cesspits
 and Wells
 Pitts Wood (New Forest) (Hants), pottery kilns at, 282,
 296
 Plaster, painted, 44, 55, 73, 115

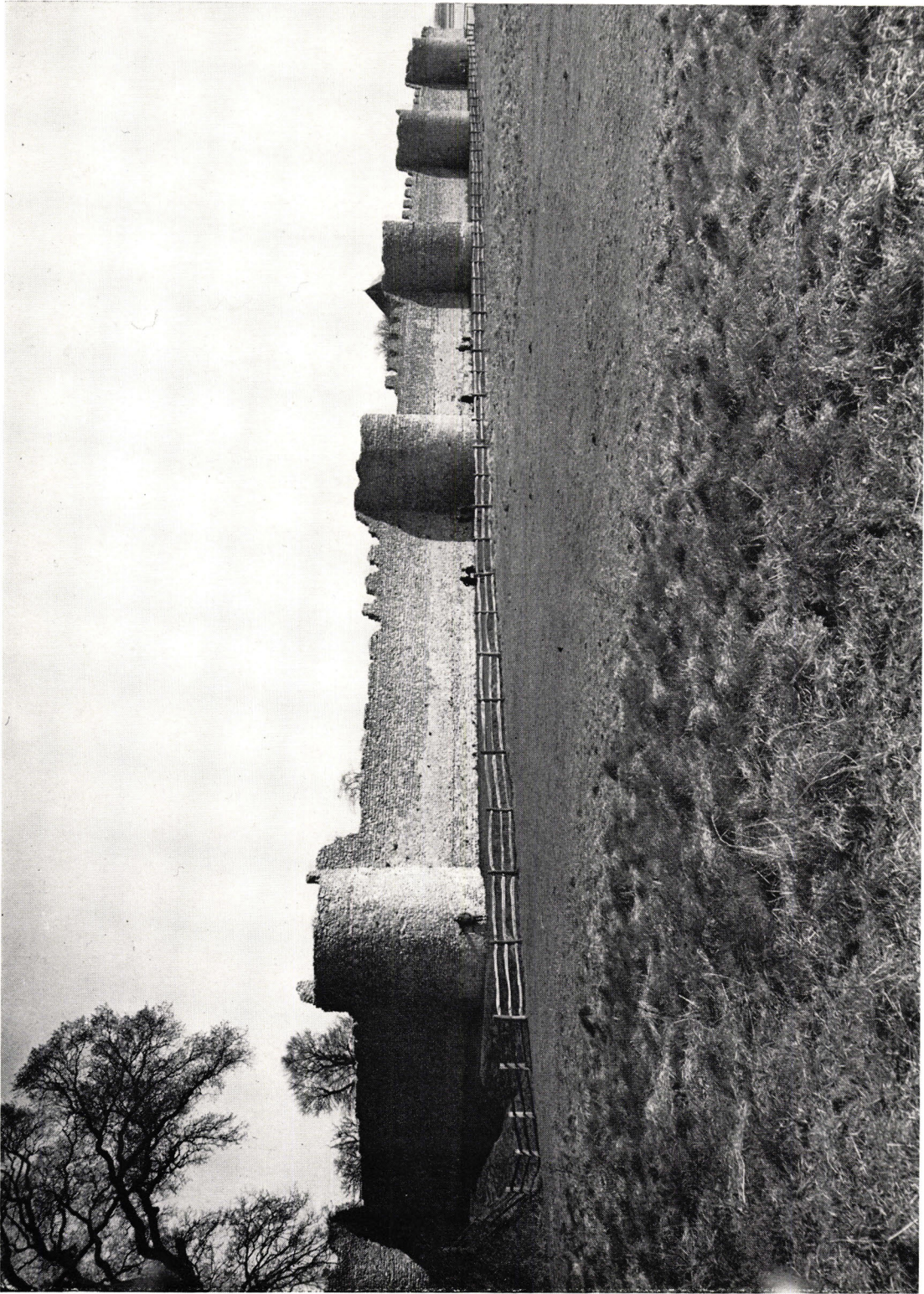
- Portchester (Hants): documentation, 1-2; geology, 3-4, 6; topography, 1, 3, 4
- Portsmouth (Hants), 6, 20
- Portsmouth (Hants): City Museum, Portchester coins in, 188; Harbour, 1
- Portus Adurni*, 430-1
- Pottery:
- Iron Age, 8; 1st-century, 8-10, 270, 277; Mayen ware, 93, 279; Samian, 270, 276-8; 3rd-4th-century: Argonne ware, 56, 57, 58, 127, 144, 146, 149, 157, 175, 273, 278-9; black-burnished ware, 56, 57, 58, 79-179 *passim*, 292-3, 302, 303, 304; creamy sandy wares, 82-104 *passim*, 112-77 *passim*, 299; grey wares, 56, 57, 58, 79-177 *passim*, 293-4, 298, 302, 303, 304; grog-tempered ware, 79-179 *passim*, 286-92, 302; New Forest ware, 56, 57, 58, 80-177 *passim*, 270, 271, 272, 273, 280-1, 282, 285-6, 288; Oxfordshire wares, 56, 57, 79-177 *passim*, 270, 271, 272, 273, 281-2, 282-6, 288; 'parchment' ware, 281, 282, 284, 285, 286, 287; 'Pevensy' ware, 57, 99, 125, 135, 282; grass-tempered ware, 34; miscellaneous objects, 262
 - Priory, Augustinian, 1, 2, 12, 185
 - Prison camp, 1, 11
 - Probus, defence measures of, 420, 421, 422
- Querns, 267, 426
- Radwinter (Essex), infant skeletons at, 376
- Reculver (Kent), construction and plan of, 419, 420, 421
- Reece, Dr R., on the coins, 188-97
- Renfrew, J. M., *see* Murphy, P.
- Richard II, King, rebuilding at Portchester by, 1
- Richborough Castle (Kent): 428; construction and plan of, 15, 19, 419, 420, 421, 422; dating of, 421; bath suite at, 72; bronze bracelets from, 209; coins from, 190, 191, 192, 195, 196, 429; pottery trends at, 271, 291, 299; Argonne ware from, 278
- Rixson, D., cited, 386
- Roads: exterior system, 4-5; interior roads and gravel spreads, 63-5
- Rome, St Costanza, peacocks in mosaics of, 412
- Rowlands Castle (Hants), pottery kilns at, 6, 294, 296
- Saalburg (W. Germany), Roman shoes from, 260
- Saloninus, coin of, 180, 184, 421
- Saxon Shore forts, 430-1
- Shakenoak, nr. Wilcote (Oxon.): bronze bracelets from, 209; glass from, 368
- Shale objects, 34, 44, 45, 51, 52, 54, 81, 91, 95, 96, 103, 111, 112, 125, 143, 149, 157, 171, 184, 226-30
- Shedfield (Hants), pottery kilns at, 294, 296
- Sill beams, 63, 65-6, 67, 68, 425
- Silver, I. A., cited, 394, 399, 443
- Silver objects, 51, 203, 210
- Sloden (New Forest) (Hants), pottery kilns at, 282, 296
- Smith, R. W., cited, 368
- Southwick (Hants), Portchester Priory removed to, 1
- Sparsholt (Hants), grog-tempered ware from, 290
- Speyer (W. Germany), coins from, 192, 193
- Split (Yugoslavia), gate at, 420
- Tetricus I, coins of, 41, 43, 59, 60, 61, 77, 81, 421
- Tetricus II, coins of, 44, 51, 59
- Theodosius: restoration of province by, 430; coin of, 53, 60
- Theodosius, House of, coins of, 34, 42, 45, 59, 61, 182, 184, 196
- Thessaloniki (Greece), Hagios Georgios, peacock represented at, 412
- Tile courses, 24, 25, 26, 421
- Tiles: box, 72; circular, 72, 173; hypocaust, 72-3; imbrex, 71, 115; tegulae, 71, 115
- Timber structures, 41, 42, 68; 'guard-house', 68, 423, 429; *see also* Buildings
- Tournerbury (Hants), grog-tempered ware from, 290
- Trentholme Drive, *see* York
- Urbs Roma coins, 44, 53, 59, 60, 187
- Valens, coins of, 52, 53, 60
- Valentinian I, coins of, 53, 60, 61, 64, 77, 94, 99, 183
- Valentinian II, coin of, 34
- Verulamium* (St Albans) (Herts.), pottery trends at, 271, 285
- Victorinus, coin of, 44, 59
- Vindonissa (Switzerland), coins from, 192, 193, 195, 196
- Walls, 10, 11, 13-21, 180, 186, 419
- Walton Castle (Suffolk), 420, 431
- Weaving evidence, 426
- Webster, Mrs J., on finds: bone and antler, 215-25; bronze and silver, 198-215; iron, 233-47; lead, 232-3; shale, 226-30; miscellaneous, 262, 265
- Wells: 75-6, 118, 126, 130-1, 138, 156, 172, 425, 426; pottery from, 274-5
- Wheeler, Sir Mortimer, cited, 2
- Whetstones, 43, 44, 45, 51, 53, 54, 74, 95, 119, 169, 265-7
- White, K. D., cited, 384, 396, 399, 401
- Wickham (Hants), Roman road junction at, 6
- Winchester (Hants): coins from, 192, 195; pottery trends at, 271, 290, 291; City Museum, Saxon shoe in, 262
- Women, presence of, 427
- Wooden objects, 131, 133, 174, 262
- York (Yorks.), Trentholme Drive cemetery, scarcity of infant burials at, 376

PLATE I



General view of Portchester Castle from the air
(photo: Arthur Rule)

PLATE II

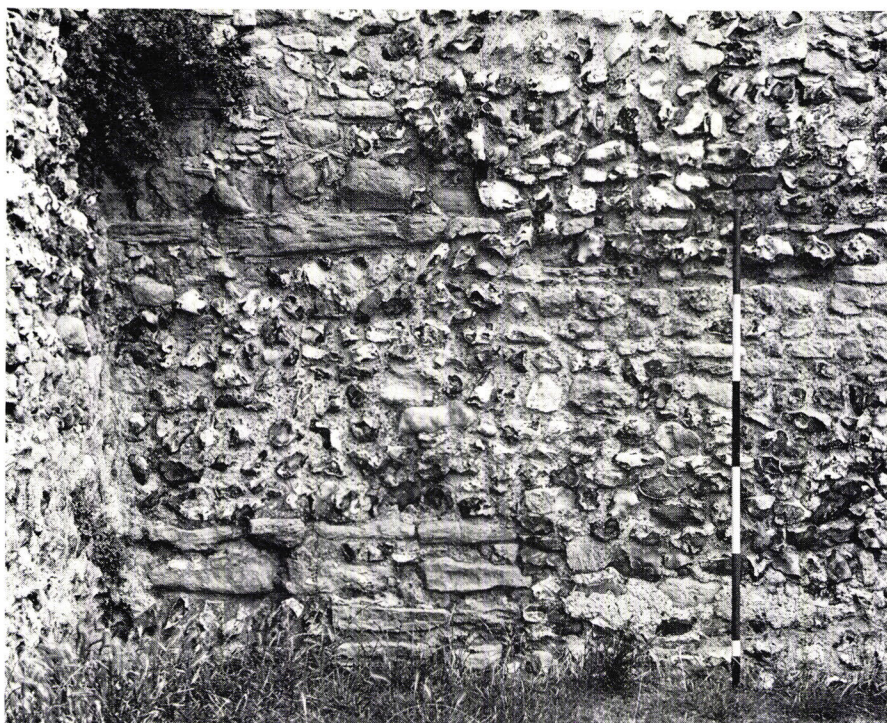


The south wall of the fort from the outside
(photo: David Baker)

PLATE III



a. The west wall, as exposed in the 1961 excavation, showing the join of two working parties
(photo: David Baker)



b. The west wall showing the same joining of the working parties from the outside
(photo: David Baker)

PLATE IV

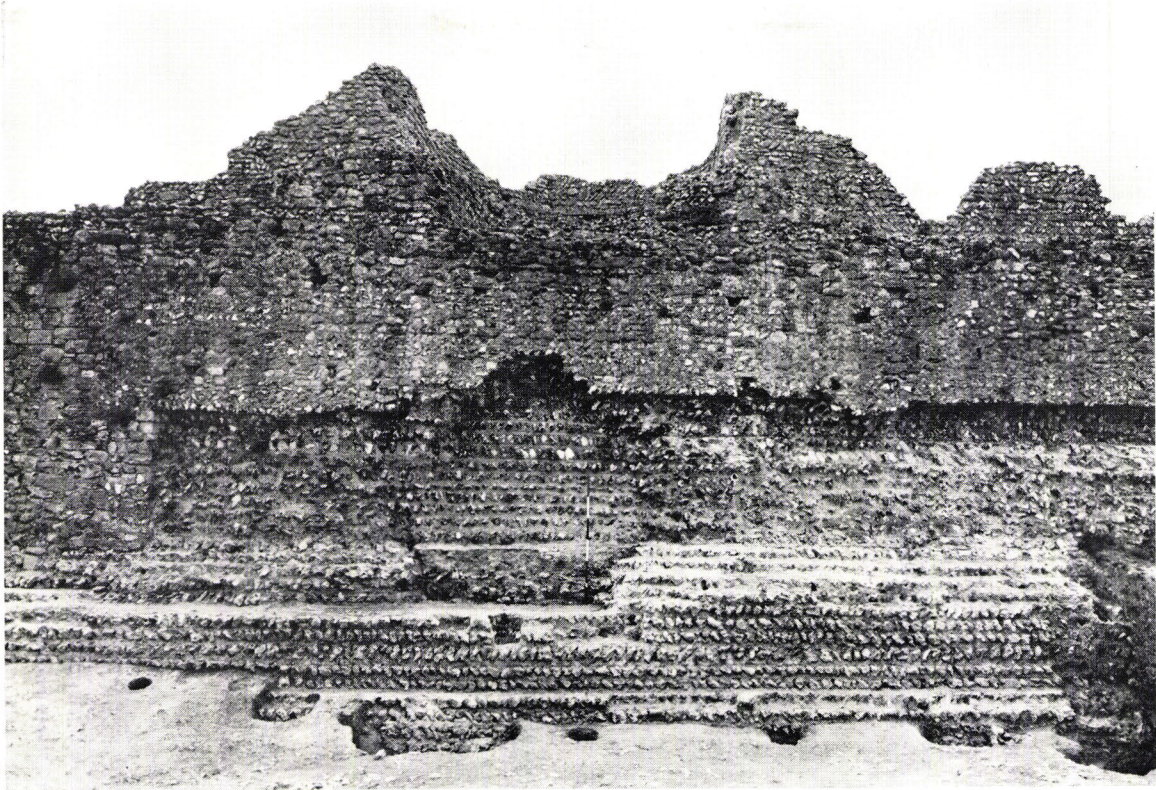


a. The 1961 excavation facing south, looking along the Roman wall
(photo: David Baker)



b. The 1961 excavation facing towards the landgate
(photo: David Baker)

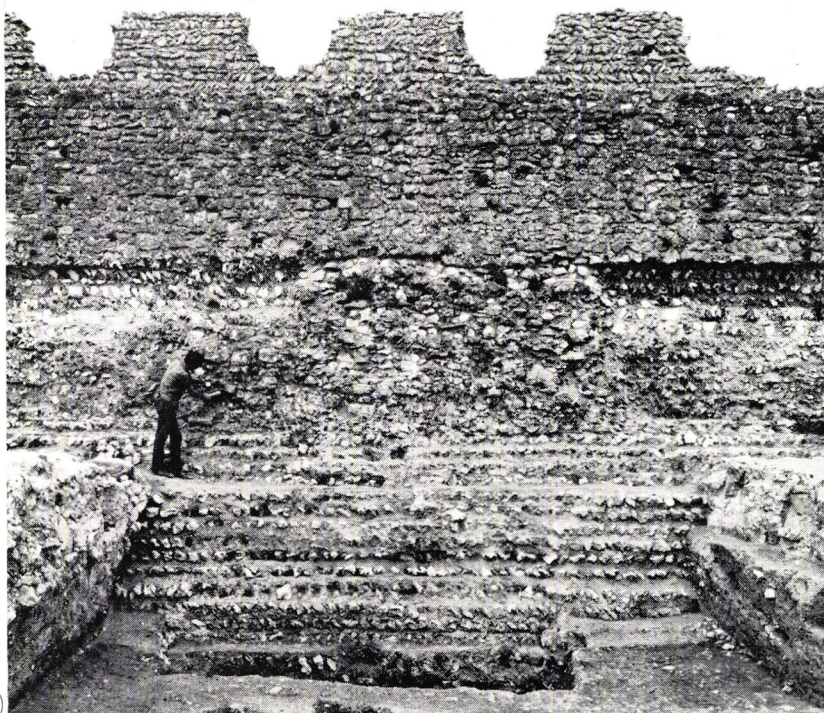
PLATE V



(a)

a. The inner face of the south wall, with clay bank in position, exposed in trench 108

(photo: Mike Rouillard)



(b)

b. The inner face of the south wall exposed to the level of the footings seen between the footings of the sixteenth century storehouse in trenches 102 and 103

(photo: David Leigh)

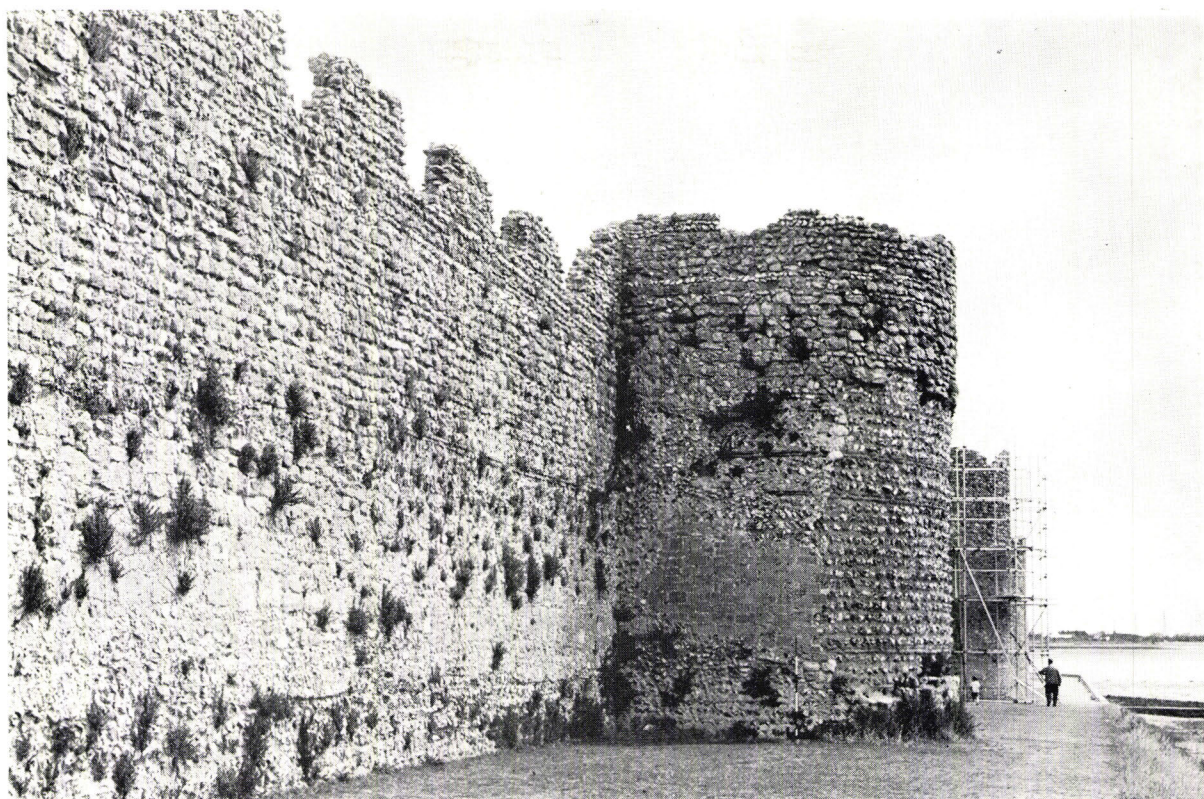


a. The clay bank against the back face of the south wall exposed in trenches 107 and 108
(photo: Mike Rouillard)



b. The internal face of the south wall exposed in trench 107 after the partial removal of the clay bank to the original ground surface
(photo: Mike Rouillard)

PLATE VII



a. Bastion no. 16
(photo: David Baker)



b. Bastion no. 20
(photo: David Baker)



a. Bastion no. 5
(photo: David Baker)



b. Excavation in the top of Bastion 5 showing Roman masonry with an offset probably for a timber platform
(photo: David Baker)

PLATE IX



a. The site of bastion no. 9. The figure stands where the north side of the bastion once was
(photo: David Baker)



b. The foundation of bastion no. 9 at its junction with the fort wall. The offset of the wall is below the rod
(photo: David Baker)

PLATE X

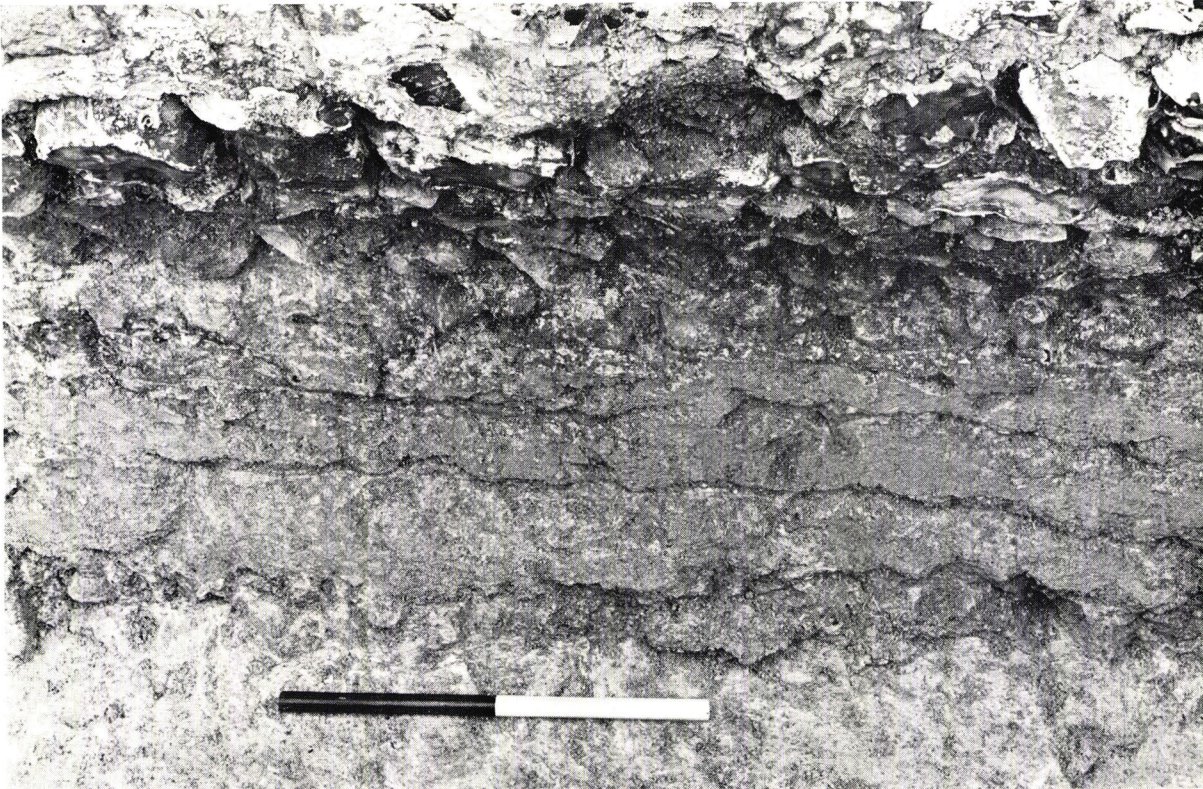


a. The site of bastion no. 7. The figure stands at the extremity of the bastion footing exposed in the excavations
(photo: David Baker)

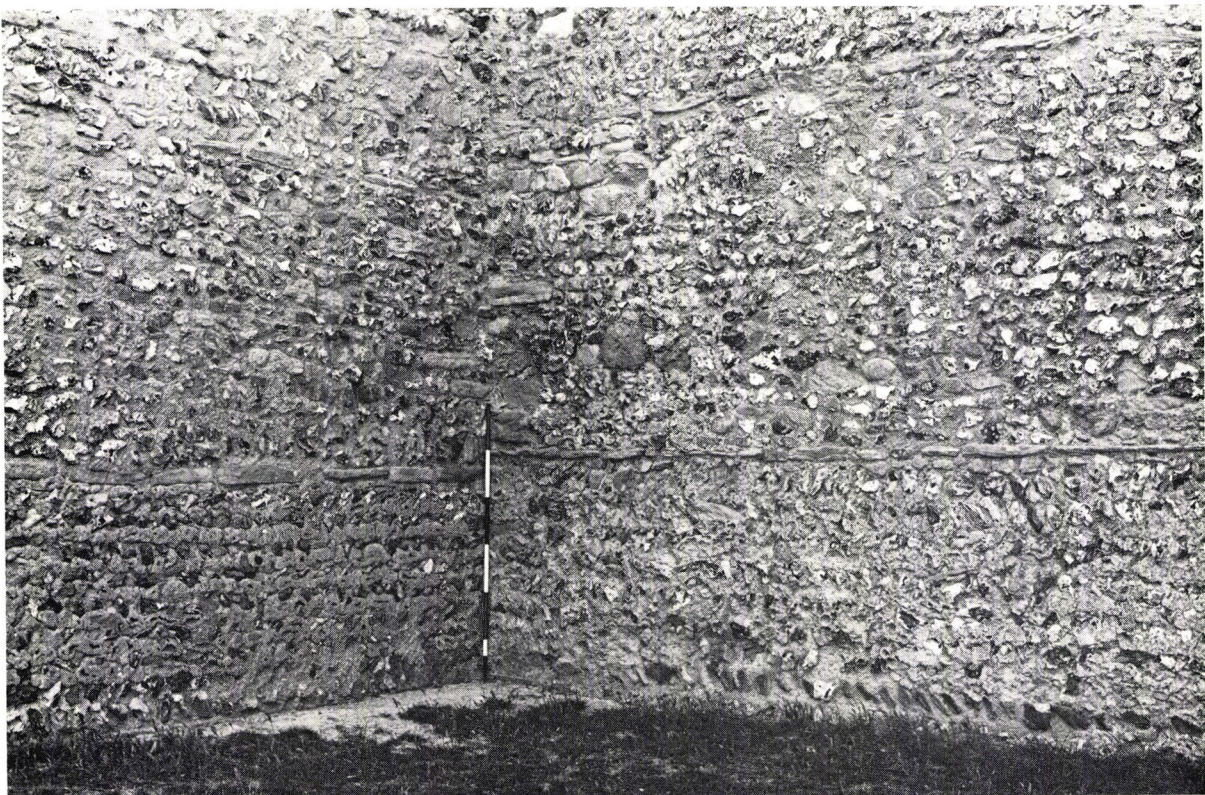


b. The foundation of bastion no. 7 at its junction with the fort wall
(photo: David Baker)

PLATE XI



a. Roman pointing surviving on the face of the fort wall with bastion no. 7
(photo: David Baker)



b. Bastion no. 15 at its junction with the fort wall (wall to the right of the rod) showing stone courses and ironstone used in the base
(photo: David Baker)

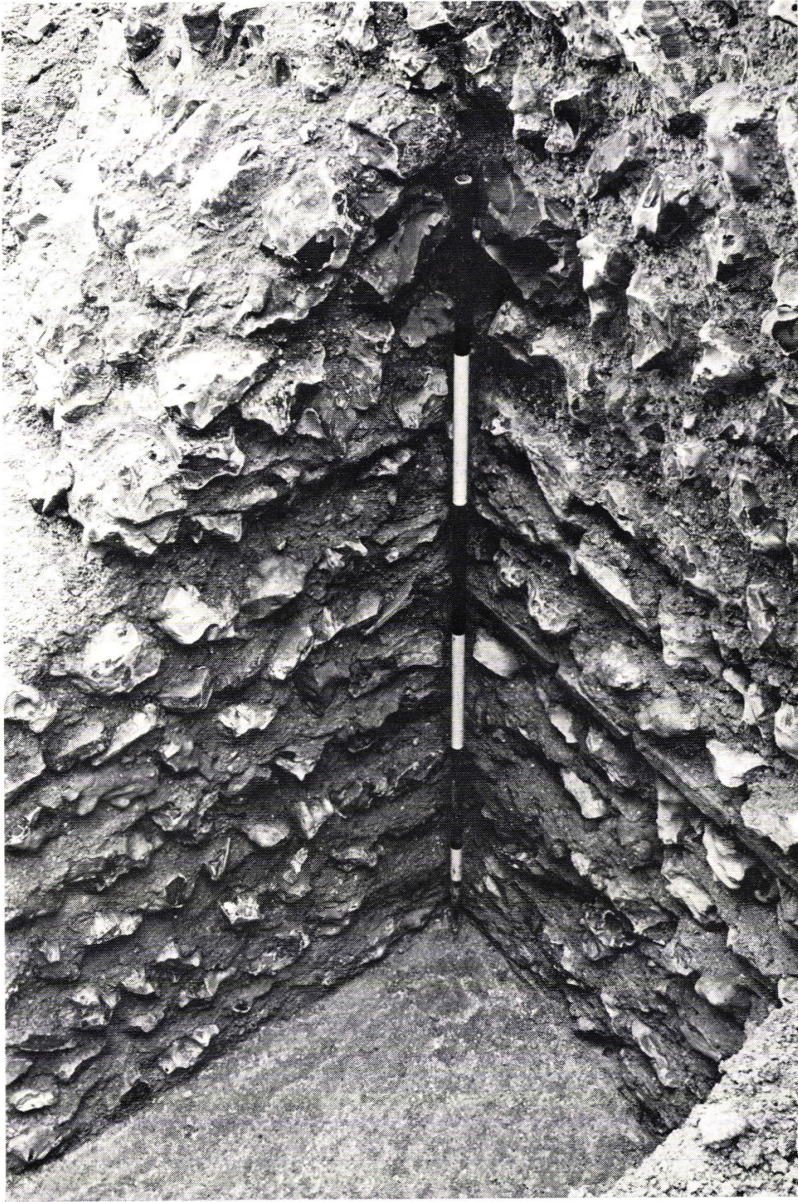
PLATE XII



a. Bastion no. 18 showing the excavation from within the bastion
(photo: David Baker)



b. Bastion no. 18 showing the inner face of the fort wall behind the bastion
(photo: David Baker)



a. Bastion no. 18: the inner angle
(photo: David Baker)



b. The north postern gate: general view showing Roman footings
and the medieval gate partly underpinned
(photo: David Baker)

PLATE XIV

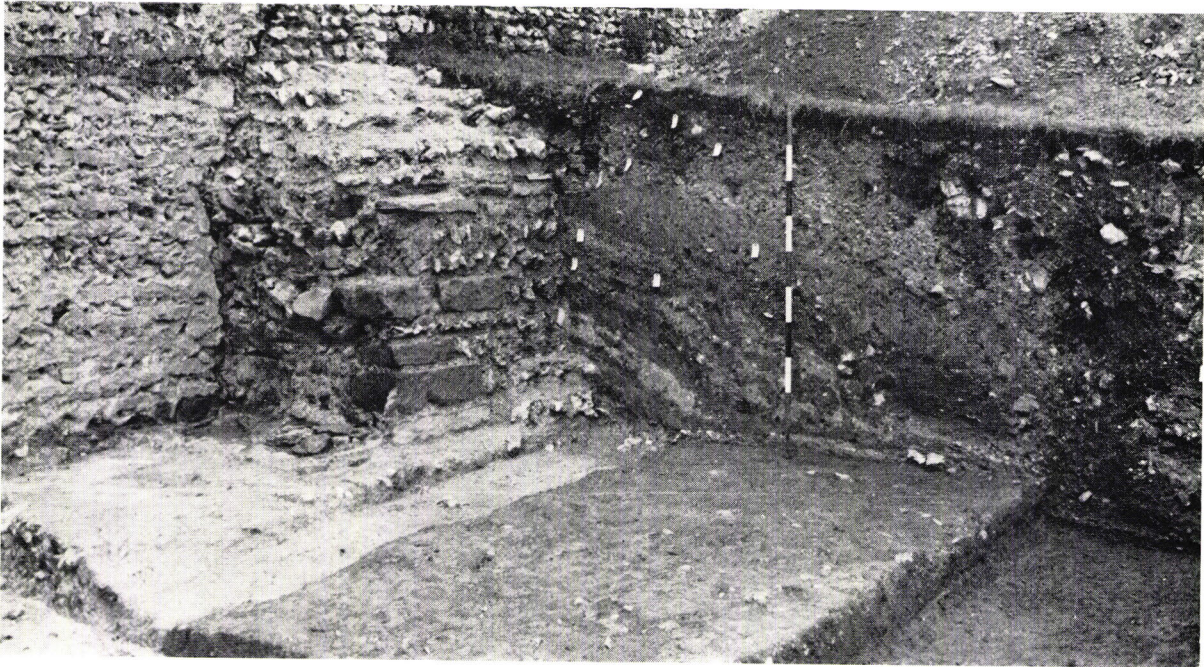


a. The north postern gate, west side
(photo: David Baker)

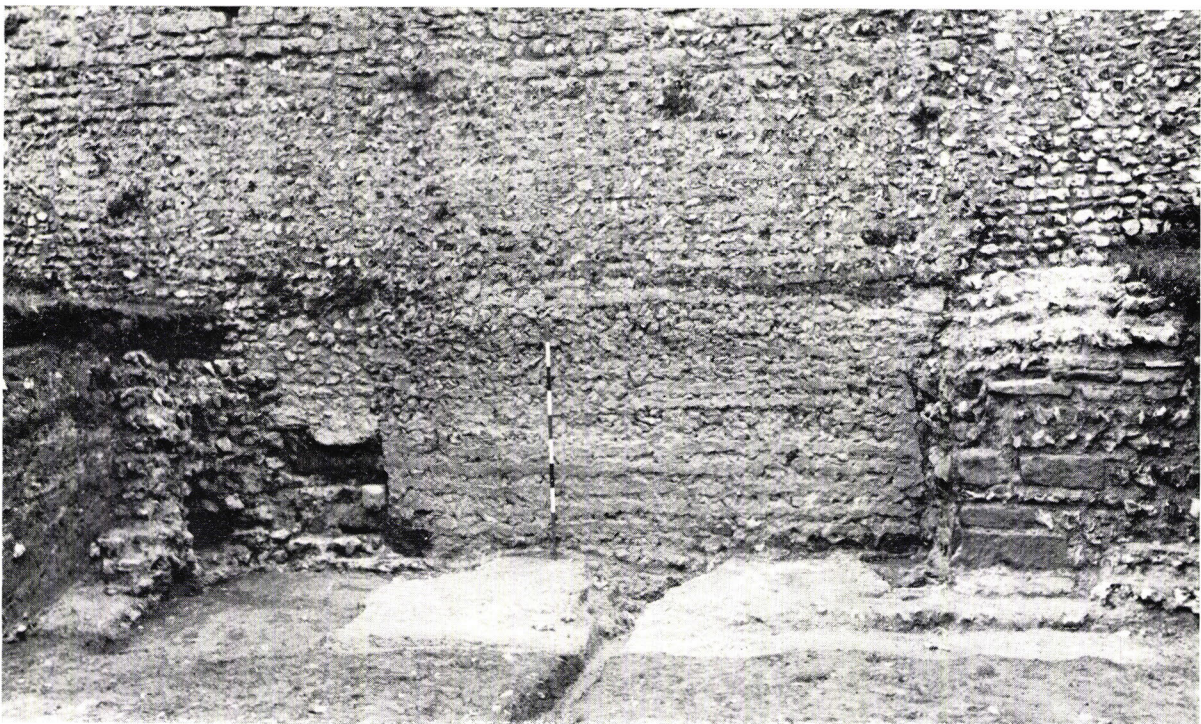


b. The north postern gate, east side
(photo: David Baker)

PLATE XV



a. The south postern gate showing the west side with the clay bank in section
(*photo: David Baker*)



b. The south postern gate with the clay banks and road surface removed. The Norman blocking wall is behind the rod
(*photo: David Baker*)

PLATE XVI



The landgate, showing the Norman blocking wall, built with chalk blocks in its core, and the adjacent Roman wall to the right of the road
(photo: David Baker)



a. The landgate: inside the fort showing the junction between the Norman blocking wall (right) and the Roman gate wall. The flints are the foundation of the Norman wall
(photo: David Baker)



b. The landgate: outside the fort, showing the junction between the Norman blocking wall (extreme left) and the Roman wall. The rod lies at the base of the Roman offset parallel to the edge of the foundation trench
(photo: David Baker)

PLATE XVIII

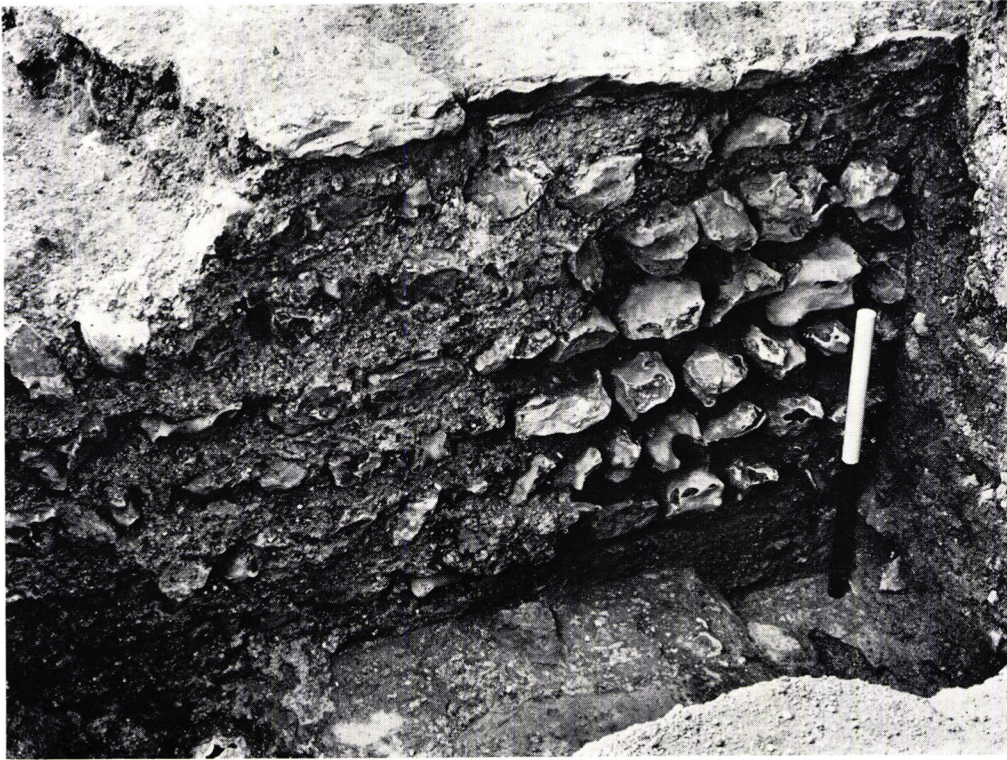


a. The landgate: the south inturned wall at its junction with the fort wall
(*photo: David Baker*)

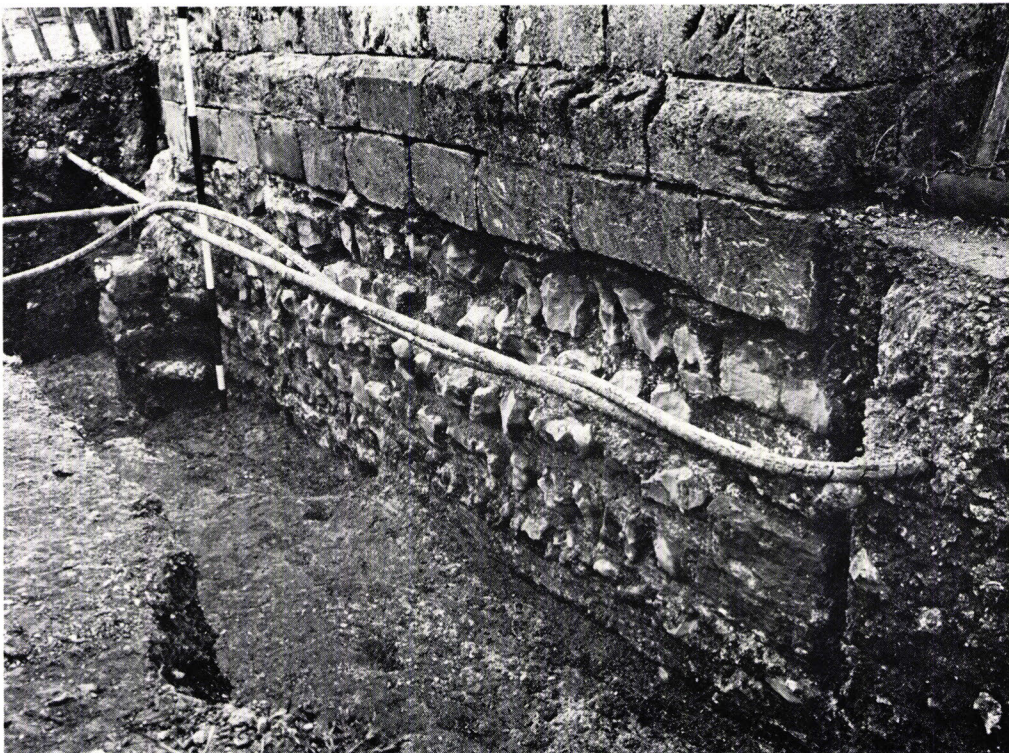


b. The landgate: the south inturned wall
(*photo: David Baker*)

PLATE XIX



a. The landgate: the south inturned wall at its point of junction with the gate tower
(photo: David Baker)



b. The landgate: the north inturned wall beneath the Norman gate
(photo: David Baker)

PLATE XX



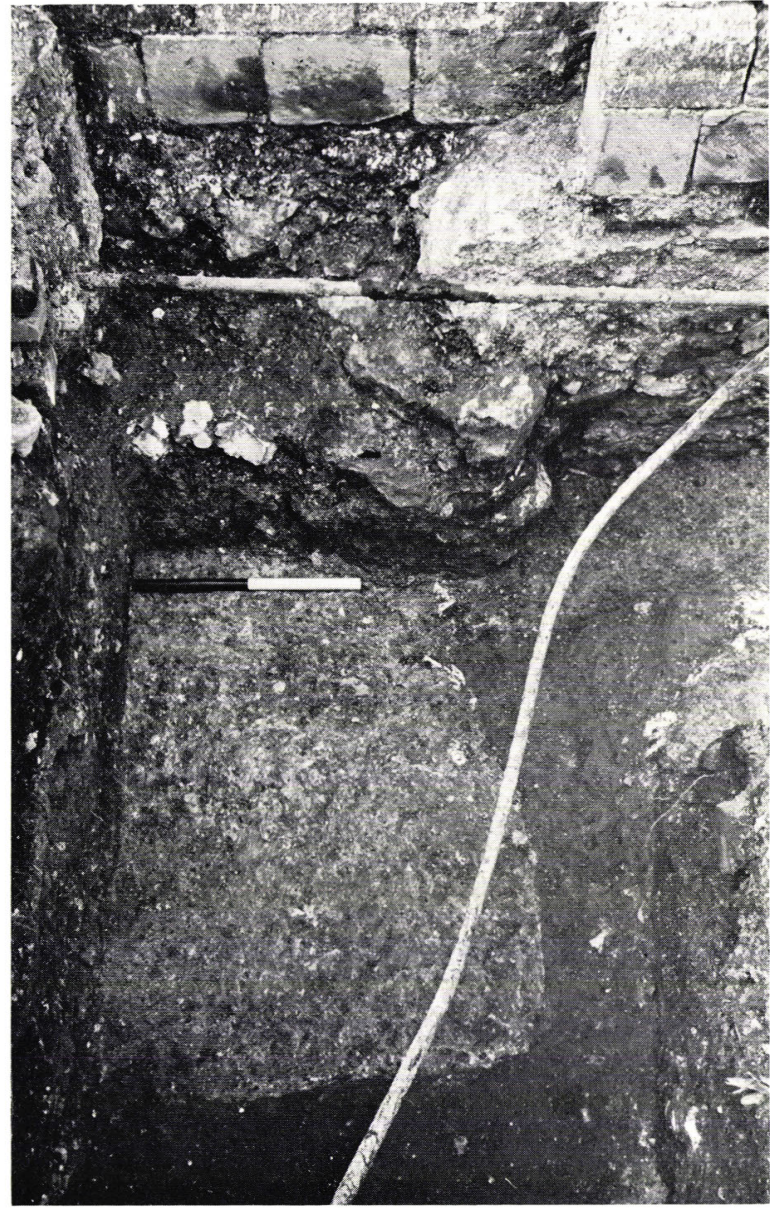
a. The landgate: the south gate tower looking east
(photo: Mike Rouillard)



b. The landgate: the south gate tower looking west
(photo: Mike Rouillard)

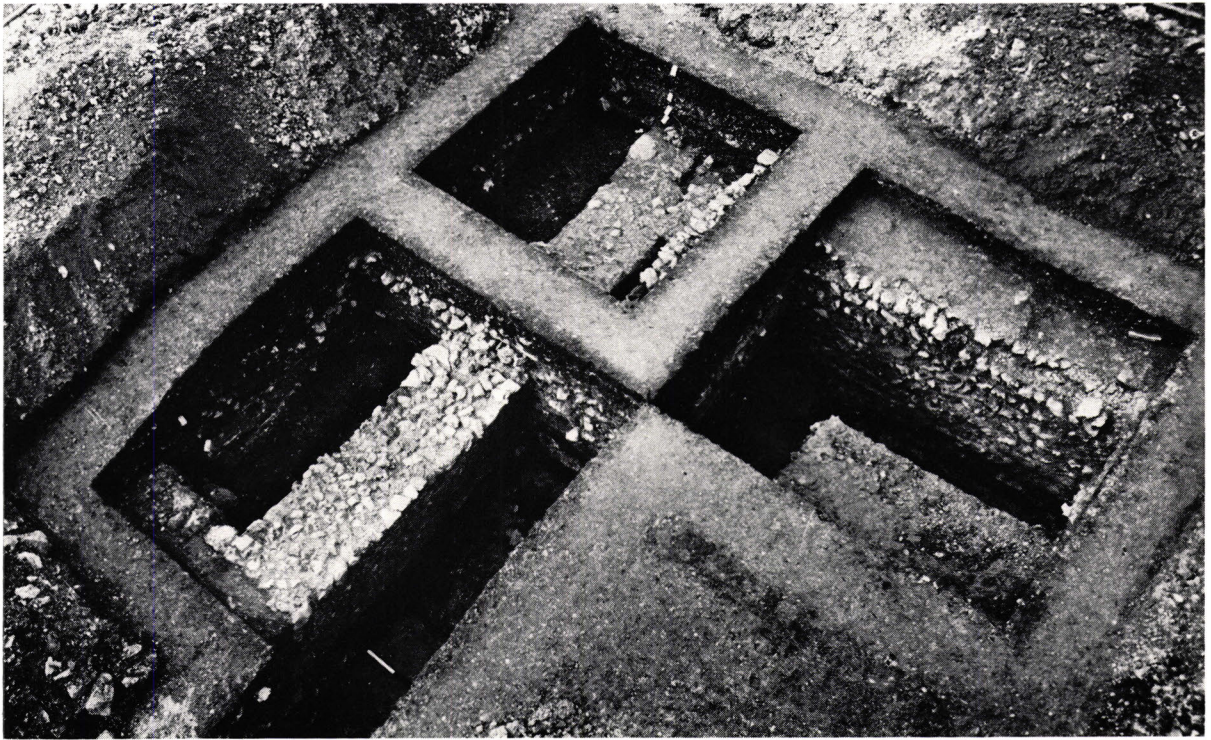


a. The landgate: the footing of the north gate tower inside the Norman landgate
(photo: David Baker)



b. The landgate: the foundation of the north gate tower projecting from beneath the Norman landgate
(photo: David Baker)

PLATE XXII



a. The watergate: general view of the excavation in progress
(photo: David Baker)



b. The watergate: the south face of the north inturned wall
(photo: David Baker)



a. The watergate: the south inturned wall projecting from beneath the late Saxon gate house
(photo: David Baker)



b. The watergate: the face of the north inturned wall. The late Saxon blocking wall is to the right
(photo: David Baker)

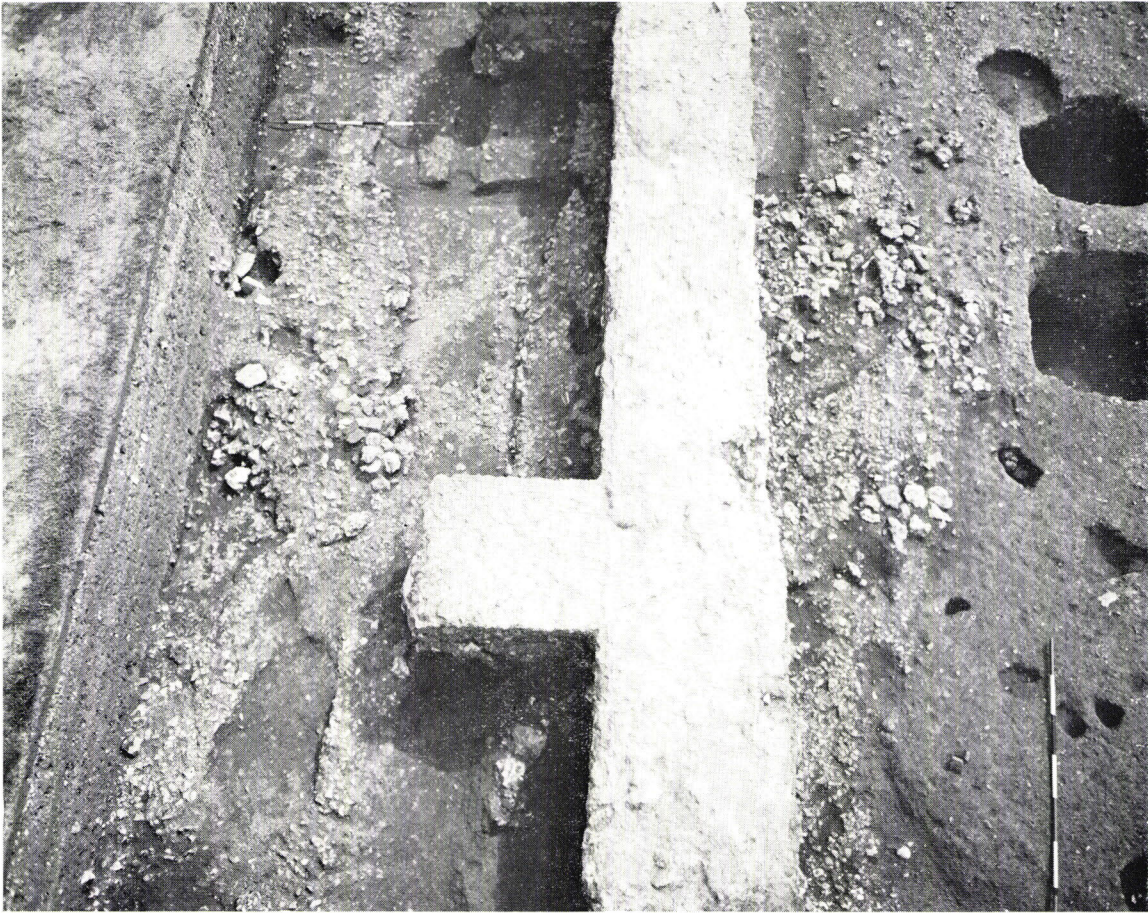


a. The main north-south road facing the blocked south postern gate
(photo: David Baker)

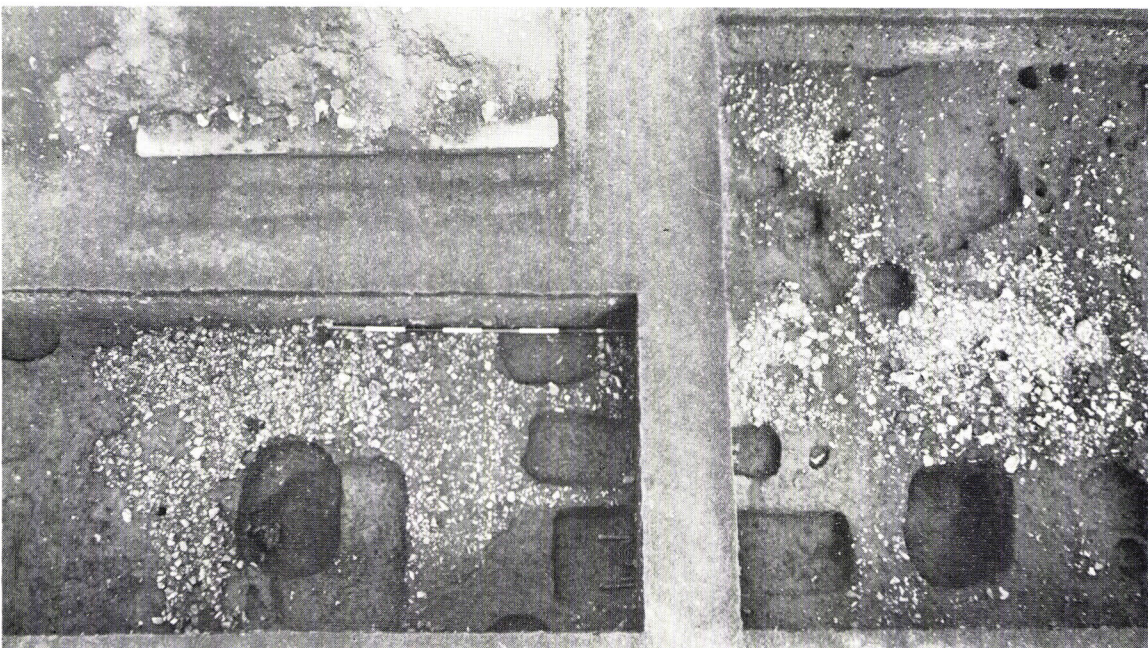


b. East-west Road 1
(photo: David Baker)

PLATE XXV

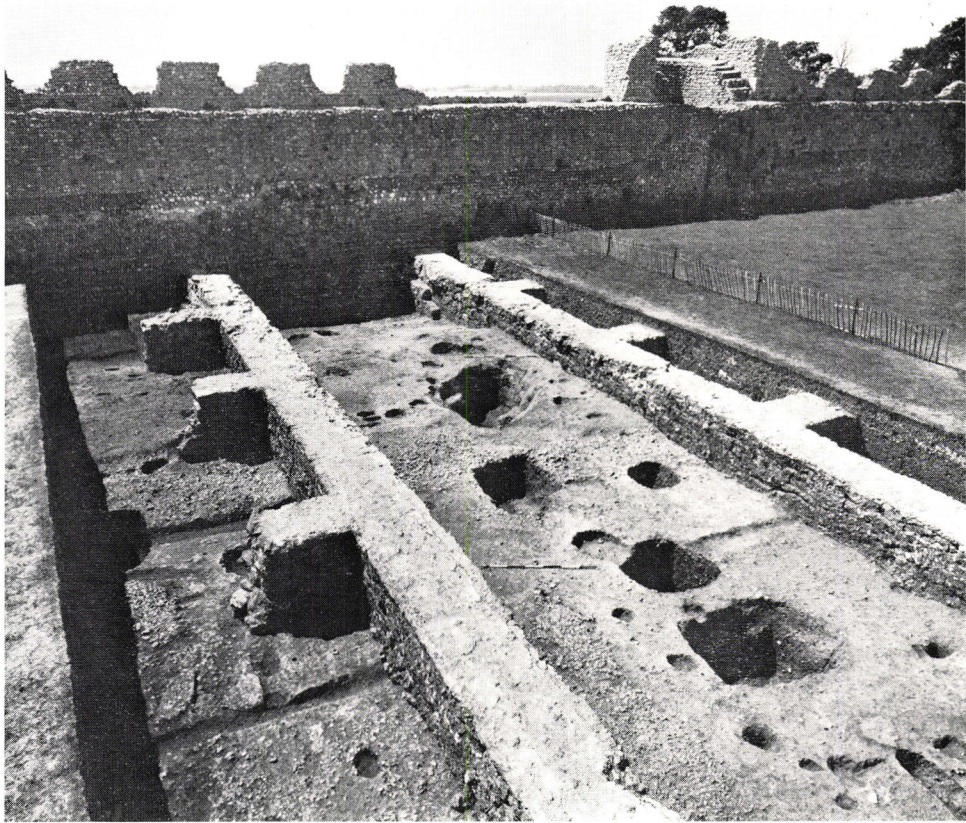


a. Gravelled area in trench 100
(photo: David Leigh)



b. Gravelled area in trenches 65 and 66
(photo: David Baker)

PLATE XXVI



a. General view of metalling and gullies in trenches 100-103. The wall footings are sixteenth-century
(photo: David Leigh)



b. General view of the clay bank behind the south wall of the fort in trenches 107-8
(photo: Mike Rouillard)

PLATE XXVII

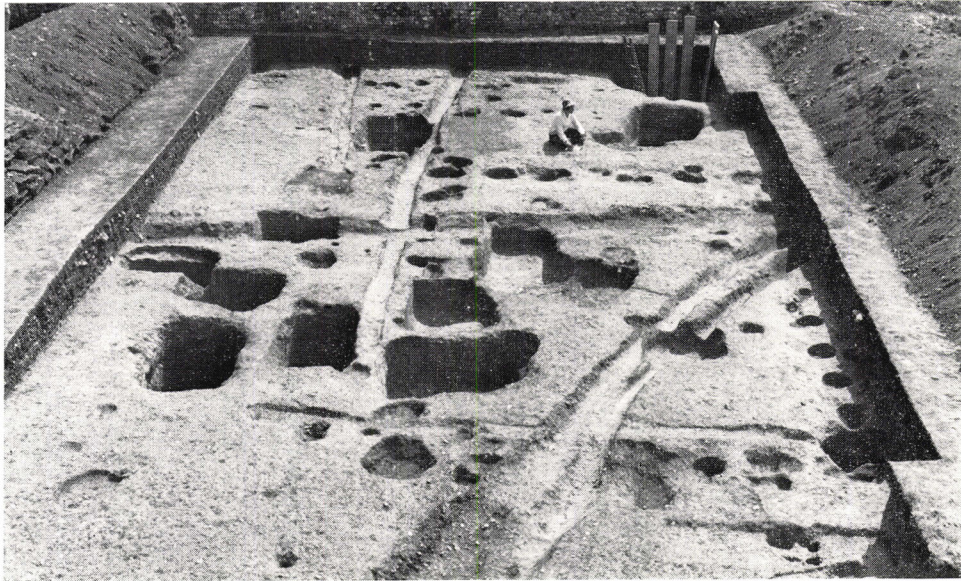


a. General view of the Roman ground surface in trenches 89 and 90. The stone structure is a fourteenth-century limekiln
(photo: David Baker)

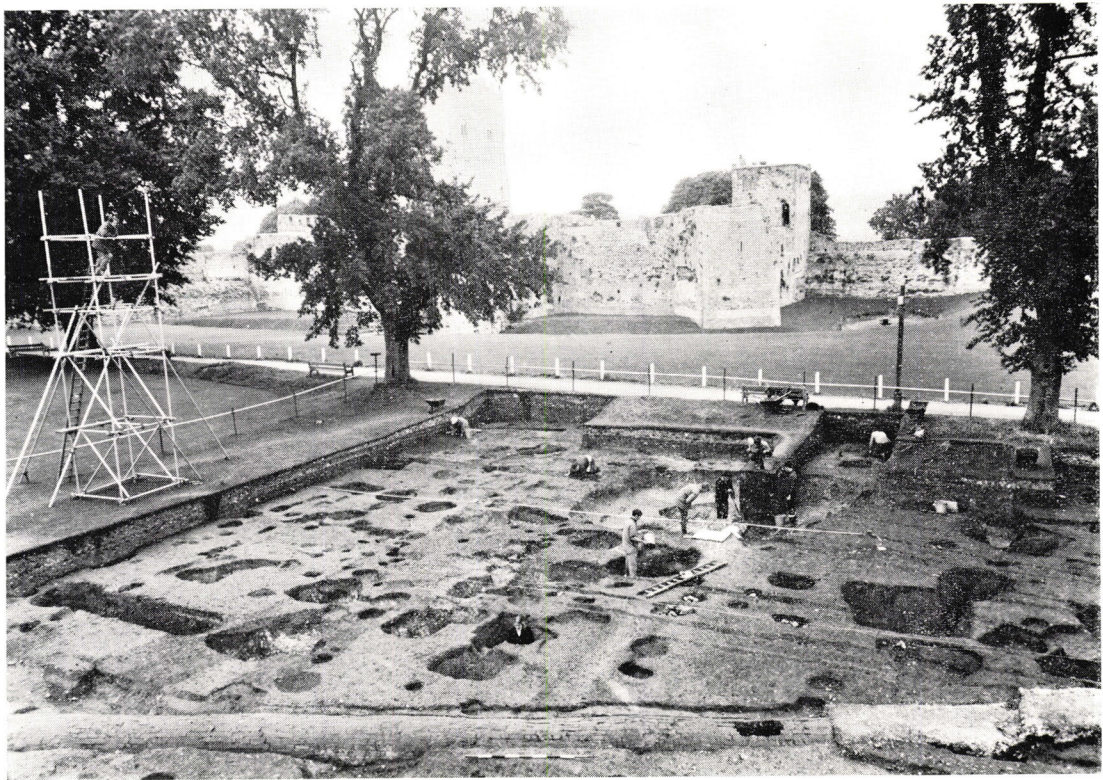


b. General view of the Roman ground surface in trenches 88 and 89. The quarry hollow is below the rod. To the right is pit 135 in an early stage of excavation
(photo: David Baker)

PLATE XXVIII



a. Trenches 60, 62, 63 and 65 showing features of all periods, including a group of Roman cesspits
(photo: David Baker)



b. General view of trenches 77-82 showing features of all phases
(photo: David Baker)

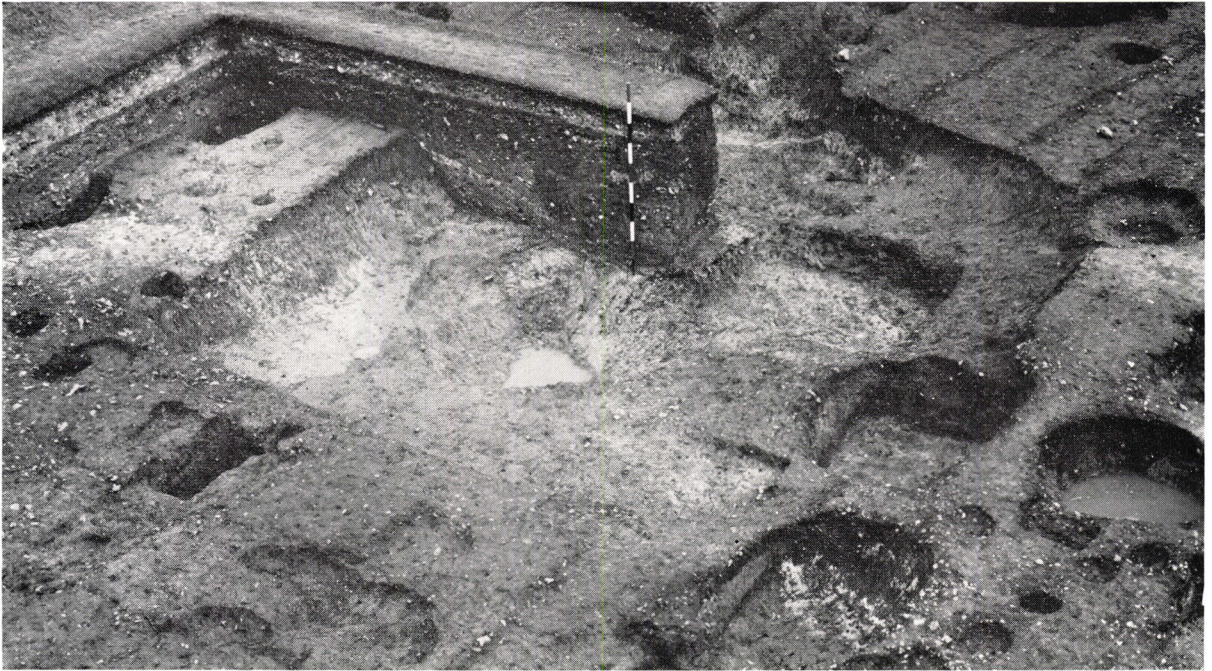


a. Impression of a sill beam belonging to building R5
(photo: David Baker)

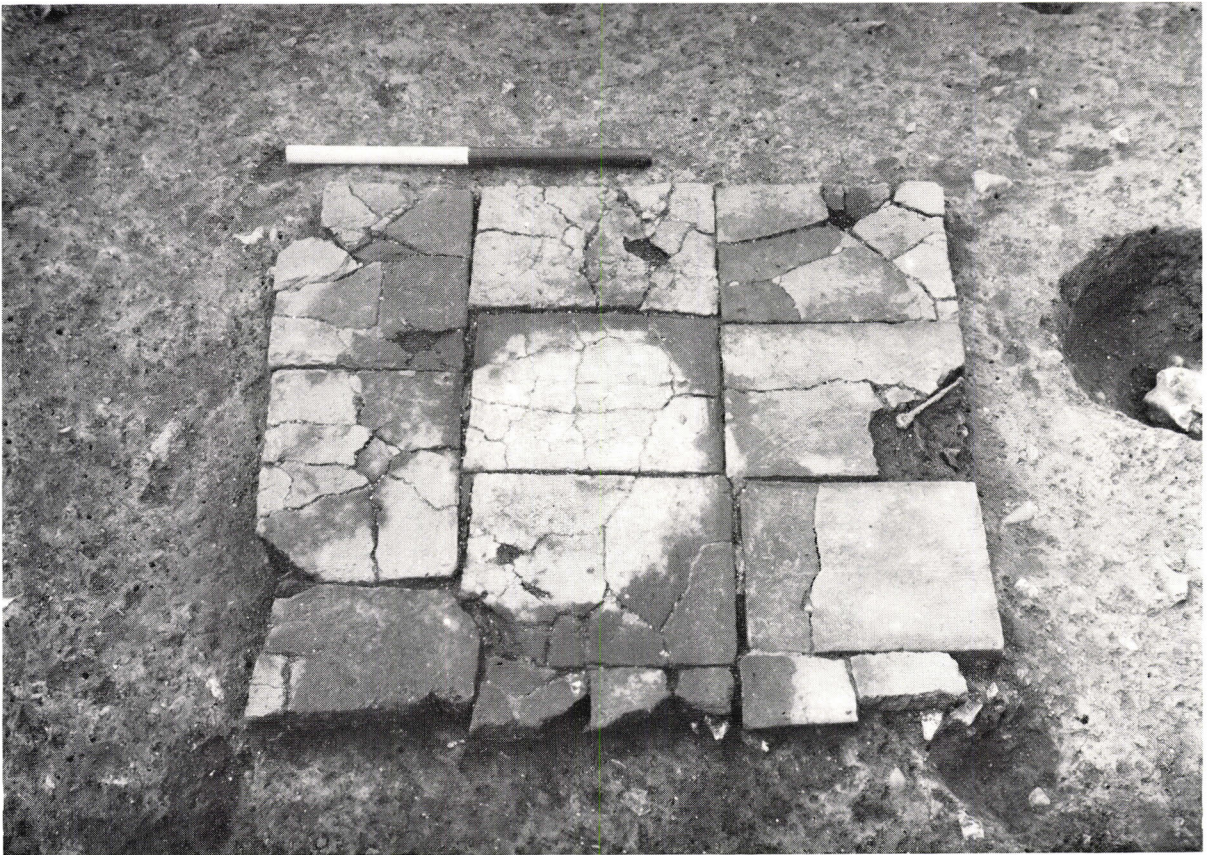


b. Oven 4 and adjacent pit (the rod is in 25 cm. divisions)
(photo: David Leigh)

PLATE XXX



a. Pit 103
(photo: David Baker)



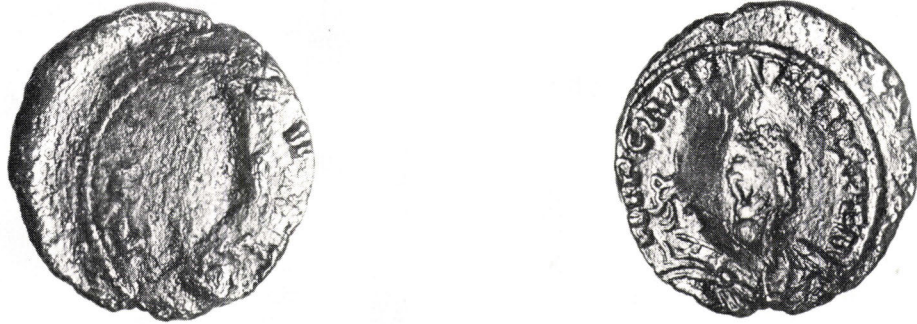
b. Hearth 4
(photo: David Baker)

PLATE XXXI



Selection of decorated box tiles (p. 72). Scale $\frac{1}{3}$
(photo: R. Wilkins)

PLATE XXXII



a. Double struck coin of Tetricus I. Scale $\frac{2}{7}$
(photo: R. Wilkins)

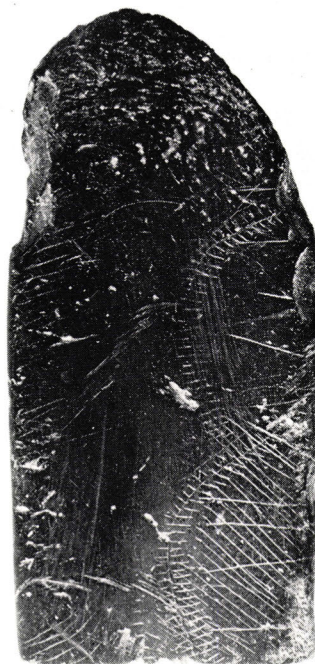
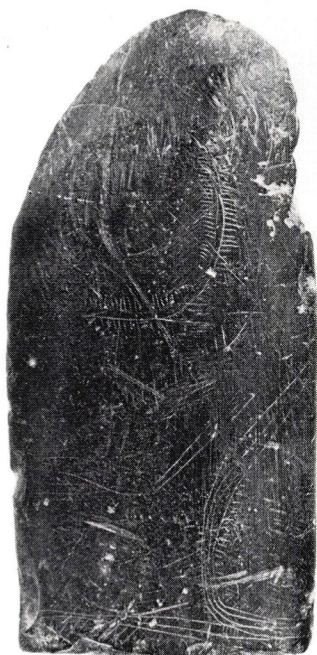


b. Gemstone (p. 231). Scale $\frac{4}{1}$
(photo: R. Wilkins)

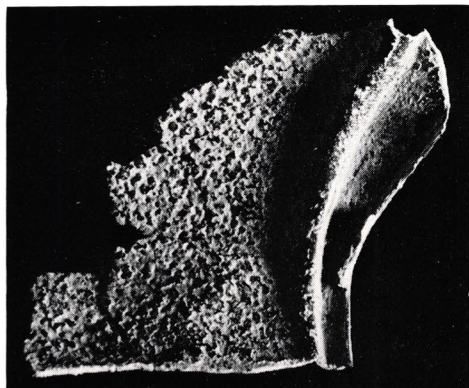


Worked antler (p. 224). Scale $\frac{3}{16}$
(photo: R. Wilkins)

PLATE XXXIV



a. Whetstone, no. 355, decorated with incised lines. Scale $\frac{1}{4}$
(photo: R. Wilkins)



b. Skin vessel, no. 321. Scale $\frac{1}{4}$
(photo: R. Wilkins)

PLATE XXXV



Shoe no. 267 (fig. 133). Scale $\frac{1}{1}$
(photo: R. Wilkins)

PLATE XXXVI



Shoe no. 266 (fig. 133). Scale $\frac{1}{4}$
(photo: R. Wilkins)



Examples of diseased and injured bones (scale $\frac{1}{4}$). (a) A sheep mandible with periodontal disease; (b) a sheep maxilla showing the site of a large abscess; (c, d, e) a pig tibia, sheep metatarsal and dog rib with neatly healed fractures; (f) a fractured bird femur: the distal end of the bone was displaced before the two parts of the bone fused together; (g) the fused second and third phalanges of an ox; (h, i) the proximal end of an ox metatarsal and two fused tarsals showing bony proliferation probably due to arthritis; (j, k) the ulna and part of the radius of a dog with a large amount of bony growth around the site of a fracture; (l) the proximal end of an ox tibia showing severe destruction of the bone, probably due to an infected abscess; (m) a pair of sheep horn cores showing reconstruction of the bone: probably due to an injury early in animal's life

(photo: R. Wilkins)



Cattle skulls (scale $\frac{1}{4}$). (a) An ox skull with part of the frontal bone destroyed through pole-axing; (b) the back of an ox skull showing the marks resulting from the severance of the skull from the atlas; (c) an ox skull with a prominent frontal eminence; (d) chop marks on a horn core; (e) detail of the frontal bone of a skull fractured by a pole-axing blow; (f) saw marks on a horn core tip; (g) a horn core partly severed from the skull

(photo: R. Wilkins)

PLATE XXXIX



Examples of butchery marks (scale $\frac{1}{2}$). (a) Ox tibia; (b) ox femur; (c) ox humerus; this bone has been partly destroyed by gnawing; (d) ox calcaneum; (e) pig humerus; (f) sheep metatarsal; (g) ox ulna; (h) ox scapula; (i) pig skull; (j) sheep skull; this is an example of a hornless type

(photo: R. Wilkins)

PLATE XL



a

b

a, b. Skull of *Gavia immer* (scale $\frac{1}{4}$)

