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PORTS IN ROMAN BRITAIN

by

JOHN FRYER

(a thesis submitted for the degree of Doctor of Philosophy)

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ABSTRACT

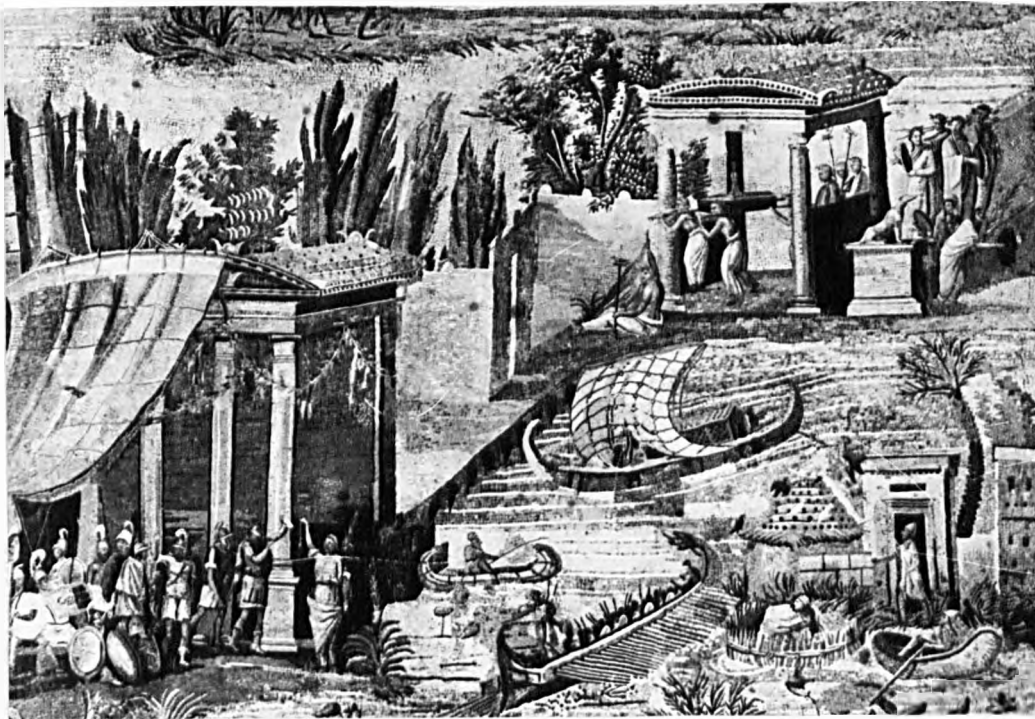
In contrast to what is known of the road system of Roman Britain our knowledge of ports is somewhat limited. Remains of harbour installations, which have been variously identified as wharves, quays, jetties, lighthouses, warehousing, and a mole have been encountered, as well as the timbers of several boats, largely in the course of modern construction work, and many more doubtless await discovery.

Many military and civilian settlements were situated on navigable rivers, at or near the head of tidal limits, or on navigable arms of the sea, in such a position that there can be little doubt that they were part of the system of land, river and coastal communications.

Erosion has in some cases, notably along the East coast, removed all trace of harbour installations and features encountered during gravel extraction have rarely been adequately recorded. However, many stretches of waterfront lie buried beneath silt, sand, shingle and post-Roman structures. Excavations at Dover and London, often executed in advance of construction work, have yielded detailed information about the plans of these ports and the techniques used in the construction of the harbour installations found there.

While literary and epigraphic evidence rarely gives a detailed insight into the commercial and naval development of harbour settlements, the distribution patterns of imported or locally-produced commodities, such as building-materials, lead or pottery, do give some indication of the extent to which water transport was exploited, at specific times.

It would appear that the search for information about the ports and harbours of Roman Britain will in the future be in the hands of the "land archaeologist" as there is no major site at which the techniques of underwater exploration utilized in the studies of Mediterranean ports may be employed.



i. Serapium, with river-boats approaching a quayside, the face of which is apparently reinforced with timber piles.
Mosaic of the Nile - National Museum, Praeneste.



ii. Discharging cargo, in the absence of harbour installations, 3rd century A.D.
Mosaic found at Sousse - Bardo Museum, Tunis.



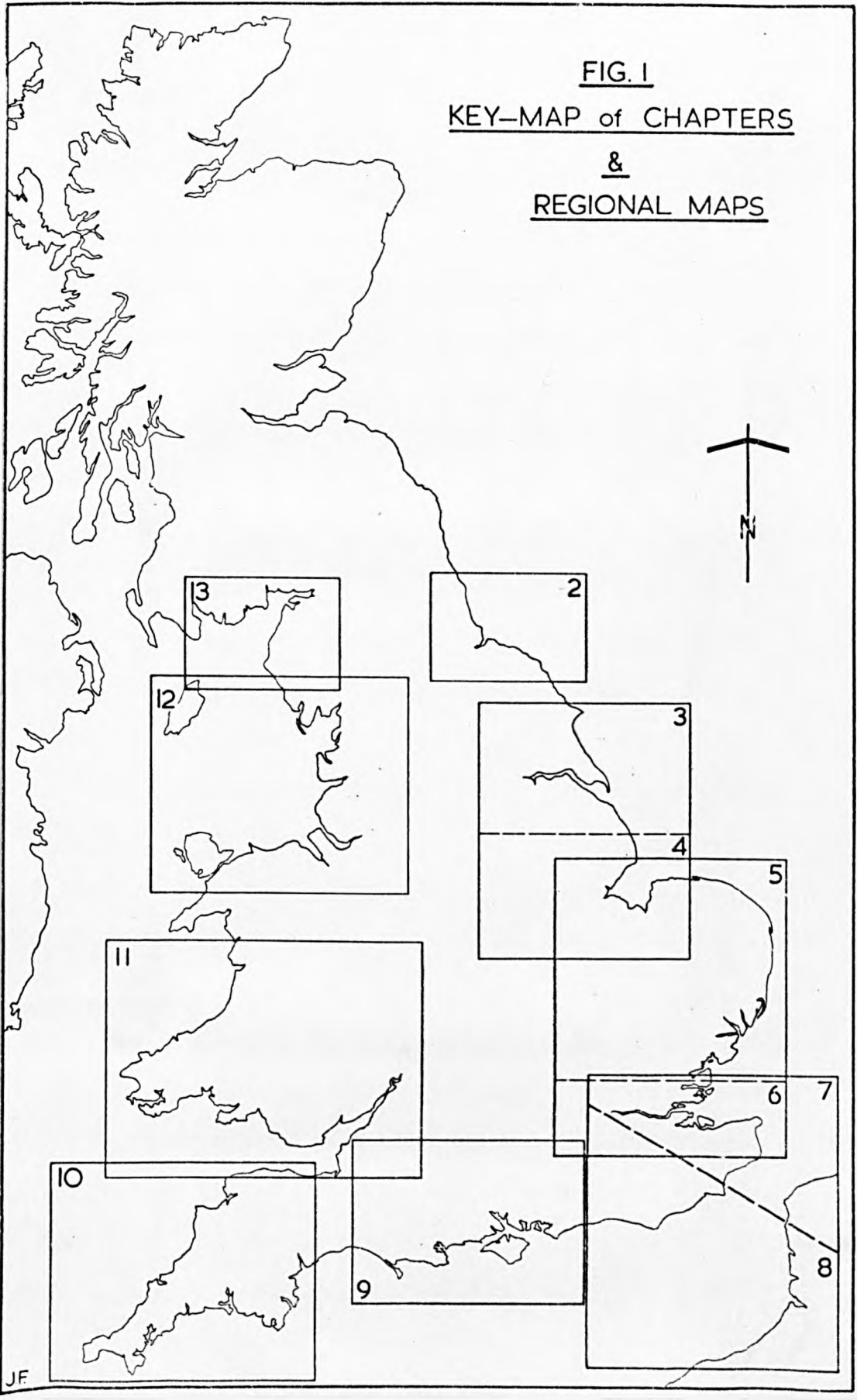
iii. Transshipping cargo. Museo della Civiltà Romana, E.U.R., Rome.

CONTENTS

ABSTRACT	ii
<u>CHAPTER ONE - Introduction</u>	1
i Aims	
ii The Origins and Development of Ports in Roman Britain	
iii Harbour Installations and Related Features	
iv Shipping in Roman Britain	
<u>CHAPTER TWO - North-East England from the Tyne to the Esk</u>	26
South Shields and the River Tyne (Wallsend, Newcastle, Benwell, Jarrow); Chester-le-Street; Middleton St. George; Whitby.	
<u>CHAPTER THREE - York and the Borders of the Humber</u>	40
York; Brough-on-Humber; Old Winteringham; Bridlington; Grainthorpe; Saltfleetby St. Clement.	
<u>CHAPTER FOUR - The Borders of the Wash and Fenland Navigation</u>	63
Lincoln; Longthorpe; Peterborough; Water Newton/Chesterton; Skegness; Holme-next-the-Sea; Hunstanton; Brancaster; Holkham.	
<u>CHAPTER FIVE - East Anglia and Essex, from the Bure to the Blackwater</u>	90
Caister-by-Yarmouth; Burgh Castle; Reedham; Caistor-by-Norwich; Brampton; Dunwich; Felixstowe/Walton Castle; Fingringhoe; Colchester; Bradwell-on-Sea; Heybridge; Chelmsford.	
<u>CHAPTER SIX - London and the Thames Estuary</u>	133
Staines; London; Wapping; Hadleigh; Southwark; Rochester; Maidstone; Puddingpan Rock.	
<u>CHAPTER SEVEN - The Wantsum Channel and the Strait of Dover</u>	166
Reculver; Fordwich; Richborough; Dover; Folkestone.	
<u>CHAPTER EIGHT - Romney Marsh and the Pevensey Levels</u>	227
Lympne; Tenterden; Sedlescombe; Bodiam; Hastings/Fairlight; Pevensey.	
<u>CHAPTER NINE - The Isle of Wight, and the Mainland Coasts from Selsey Bill to the Isle of Portland</u>	242
Fishbourne/Selsey; Portchester; Bitterne; Lepe; Isle of Wight/Brading/Carisbrooke; Hengistbury Head; Hamworthy/Isle of Purbeck; Radipole/Weymouth/Isle of Portland.	

<u>CHAPTER TEN - Exeter and South-West England</u>	279
Exeter; Topsham; Mount Batten; Polruan; Falmouth; Constantine/ Condurra; Hayle; Rock; Bideford/Barnstaple.	
<u>CHAPTER ELEVEN - The Estuary of the River Severn and the Coasts of South and West Wales</u>	294
Sea Mills/Martinhoe/Old Burrow; Aust; Gloucester/Wroxeter; Newnham/Arlingham; Beachley; Sudbrook; Redwick; Caerleon/Usk; Cardiff/Bridgend; Neath; Loughor; Carmarthen; Pennal.	
<u>CHAPTER TWELVE - Chester and the Coasts of North Wales and Lancashire, from the Seiont to the Kent</u>	325
Caernarvon; Aberffraw; Caer Gybi; Caerhûn; Rhuddlan/St. Asaph; Prestatyn; Garreg; Pentre Ffwrndan; Heronbridge/Holt; Chester; Meols; Runcorn; Wilderspool; Walton-le-Dale/Ribchester; Kirkham/ Fleetwood; Lancaster; Hincaster.	
<u>CHAPTER THIRTEEN - The Coast of Cumbria and the Solway Firth</u>	369
Ravenglass; Egremont; Moresby; Burrow Walls; Maryport; Beckfoot; Kirkbride; Bowness-on-Solway; Drumburgh; Burgh by Sands; Carlisle/Stanwix; Netherby; South-West Scotland.	
ABBREVIATIONS	406
BIBLIOGRAPHY	408
LIST OF ILLUSTRATIONS	447

FIG. 1
KEY-MAP of CHAPTERS
&
REGIONAL MAPS



Chapter OneIntroduction(i) Aims :-

In contrast to what is known about the system of land communications in Roman Britain, our knowledge of ports is comparatively limited. While much work has been done in surveying, excavating and recording the remains of ancient Mediterranean harbours, the marine archaeology of Roman Britain has never been adequately studied. Archaeological excavation, often executed in advance of construction work has, over the last two decades, resulted in the recovery of a substantial portion of the plans of the ports at Dover and London and has yielded detailed information about the techniques of construction used in harbour installations. The aim of this research has, therefore, been to present an account, based on published reports and supported by fieldwork wherever practicable, of such harbour installations as have been located and to collate information on sites which, by the nature of their position in relation to land and sea routes, may in the future yield further information about the origins and development of ports in Roman Britain. Sites in all states of preservation have been included, including a small number for which claims have been exaggerated or unsubstantiated. The sections which follow contain first an outline survey of the origins and development of ports in Roman Britain, followed by a summary, with an attempt at a tentative classification, of harbour installations and related features, and conclude with a short note on shipping in Roman Britain. In the succeeding chapters, which form the bulk of the thesis, sites have been grouped in regions, based wherever practicable on estuaries or stretches of coastline which seem to form natural units in the system

of coastal communications; these divisions may at first sight seem a little artificial, but they serve as a framework to a regional approach to the subject. The style of treatment varies, with the nature of the sites and the amount of information available. All the notes for each site have been collected at the end of the chapter to which they refer, while a full bibliography has been appended at the end of Volume One. Illustrations, where not specifically numbered in the text, are indicated in bold print in the margin at the beginning of the section or paragraph to which they relate.

(ii) The Origins and Development of Ports in Roman Britain

The development of the nucleus of a port is the product of regular interaction between land and water transport or the result of a need to fulfil a specific military or commercial requirement. In the pre-Roman Iron Age and in the initial phases of the Conquest, this was probably just a haven where ships could be brought close in to land at a place readily accessible from the sea, yet sheltered from storms or flood-spate, and from which access might be gained, by trackways or waterways, into the hinterland.

From the end of the 2nd century B.C. until the campaigns of Caesar, the Veneti, and probably other Armorican tribes, were in trading contact with South-West Britain; the distribution-patterns of imported pottery and coins around Hengistbury Head, Mount Batten, Poole Harbour and the Isle of Wight indicate that these were ports of entry to traders not only from the Armorican Peninsula but also from the Mediterranean (1). After Caesar's campaigns in Gaul, the focus of trading activity shifted to South-East England. The large quantities of imported Gallo-Belgic and Arretine wares found at Sheepen, Colchester, indicate considerable trading contact with the

Continent, and Gaul in particular. Many amphorae, used for the importation of Italian wine, olive oil or fish sauce, have also been found, the by-product of a considerable volume of trade which appears to have intensified throughout the first half of the 1st century A.D.

The first impact of the invasion of A.D.43 was military, with the establishment of the bridgehead camp and then a vast supply-base at Richborough. Other, secondary, supply-bases seem to have been established at Fingringhoe, on the first well-drained piece of land in the estuary of the River Colne, and Fishbourne, at the head of Chichester Harbour, which almost certainly formed the base for the capture of the Isle of Wight. As the Second Legion advanced westwards, other supply-bases must have been set up along the South Coast so as not to over-extend the chain of communications. Claudian occupation at Hamworthy, which is only 5 miles (8 Km) South of the 42-acre (16.8 Ha) vexillation-fortress at Lake, near Wimborne, may be associated with a supply-base on Poole Harbour. A small quantity of imported samian and coarse ware of Claudian date, found at Radipole, South of Dorchester, may similarly have been derived from an early exploitation of the sheltered haven now known as Radipole Lake. A Claudian origin has been claimed for Topsham, near Exeter, and Sea Mills, on the River Avon below Bristol, the latter possibly acting as a base for a detachment of the fleet on patrol in the British Channel, prior to the subjugation of the tribes of South Wales. All these sites lay adjacent to naturally sheltered harbours from which there appears to have been ready access into the hinterland. Although no trace has yet been found of harbour installations attributable to the initial phases of conquest, the introduction of facilities designed to ease the loading and un-loading of cargoes must have followed close in the wake of primary development, when

elements in the soldiers' rations not produced locally, such as pottery, wine, oil and equipment, must have been imported from the Continent, probably by way of Boulogne. It is not known if these supplies, and reinforcements, were shipped to supply-bases direct or were channelled through Richborough, where the supplies-base remained in use, with modifications, until ca. A.D.85.

The legionary fortresses at Colchester, Gloucester, Lincoln, Wroxeter, Chester, York & Caerleon and, the towns or coloniae which developed from them, were all situated on navigable rivers, while those at Usk and Inchtuthil may have been sited more with a regard to communications with the interior via river-valleys, than to ease of access from the sea. Harbour installations have been found at Chester, York and Caerleon but none, with the exception of the quay at Caerleon, have been securely dated, and it is just possible that a riverside wall found at Lincoln may not have been a quay but part of a water-powered mill. Auxiliary forts at Neath, Loughor, Carmarthen (?), Pennal, Caernarvon and Caernŷn were all situated on navigable estuaries, at or near the head of tidal waters, and constitute a good example of a communications system based partly on water transport.

It is not known to what extent the fleet participated in the subjugation of the Welsh tribes : there was no detachment to hand when Agricola planned the assault on Anglesey, although the enemy had been thinking in terms of a fleet, ships and naval warfare (2). However, the navy acted in conjunction with Agricola's land forces during his campaigns in the North and reconnoitred the West coast of Scotland; beach-head camps may have been established at Irvine (Vindogara ?) and Stranraer (Rerigonium ?), and on the Tay at Perth and Carpow, in addition to supply bases at either end of the temporary Forth-Clyde frontier (3). The advancing forces must have been provisioned

largely by sea when supplies were not available locally, as was the defensive system based on the Solway-Tyne isthmus.

Whilst Black-Burnished Ware - Category I (=B.B.1), which was evidently manufactured on a large scale in the Wareham/Poole Harbour area, appears in considerable quantity on the line of Hadrian's Wall and its hinterland after ca. A.D.120, having probably been shipped out of Poole Harbour, via St. George's Channel, to a port, possibly Carlisle, on the Solway Firth, Severn Valley Ware is virtually restricted to the western sector and possibly the Cumbrian coast (4). Building inscriptions at Benwell and ^{in the vicinity of} Birdoswald, on the line of the Wall, ~~at the Hadrianic outpost fort at Netherby,~~ testify to the presence of detachments of the Classis Britannica on the Tyne-Solway frontier at this time, but there is no evidence that they were engaged in anything other than construction work; despite this lack of evidence, patrolling flotillas based on the Tyne, the Solway and the coast of Cumbria would have been strategically logical, and a squadron of the fleet may have transported the Legio VI from Lower Germany to the Tyne in A.D.122 (5).

With the reoccupation of Scotland, ca. A.D.140, and for the next two decades, Severn Valley Ware was distributed along the entire length of the Antonine Wall and has been found at Carpow. B.B.1, on the other hand, was eclipsed along the Clyde-Forth frontier by B.B.2, which was almost certainly the product of potteries at Colchester. In Roman times the Clyde was apparently navigable only as far as Dumbarton, just downstream from the western terminal fort of the Antonine Wall, at Old Kilpatrick. It seems likely that a small port developed at Dumbarton, possibly acting also as the base for a detachment of the fleet, but no harbour installations have been found there. On the eastern flank of the frontier, all the forts on the southern shore of the Firth of Forth, from Camelon to Inveresk, and a "lost" fort on the estuary of the River Tweed in the vicinity of Berwick, for which the Devil's

Causeway appears to have headed, lay on or near to navigable water (6). The 5.95 acre (2.38 Ha) North fort at Camelon which, with the 8 acre (3.2 Ha) South annexe and the eroded North annexe, the ramparts of which Christison estimated would have enclosed an area of 5.5 acres (2.2 Ha), dominated that South bank of the River Carron and may have formed the main supply base for at least the eastern sector of the Antonine frontier. An anchor and sea-tackle are reported to have been found, at a place called Duratre (Dorrator) according to Maitland, some time between 1595 and 1695, though whether the harbour was in this area, or a quarter of a mile (0.4 km) downstream and adjacent to the fort, has yet to be established (7). No certain trace of harbour installations has been found at any site on the southern shore of the Firth of Forth, although Sibbald when discussing the Roman occupation at Cramond, stated that :-

"..... upon the East side of the mouth of the River Almond which there runneth in to the Firth of Forth, the Foundation of a Mole built upon a Rock, doth appear yet very strongly cemented; so it seems there has been a Dock, for small ships there, which Dock has advanced some length into the Firth" (8).

No remains of Sibbald's "mole" are now visible and any surviving elements of the Roman waterfront must lie behind a series of 18th-20th century constructions (9).

Although B.B.1 continued in use on the Tyne-Solway isthmus, B.B.2 was not introduced there until ca. A.D.163, when Hadrian's Wall was re-occupied. Thereafter, B.B.2 was supplied to South Shields, Corbridge and the eastern half of the Wall, but did not penetrate into the western sector, where B.B.1 remained abundant until the late 3rd-early 4th century (10).

The use of large numbers of Classis Britannica-stamped tiles

in buildings found within the walls of the early fort at Dover indicates that it was almost certainly part of a major naval base in the 2nd century. Such a base would have been provided with harbour installations necessary to the maintenance of at least a detachment of the fleet, installations which almost certainly included the Dover "mole" and the Stembrook quay and jetty. The fort was apparently abandoned towards the end of the 2nd century by which time parts of the harbour area had become choked by alluvial material (11).

Four re-used Classis Britannica-stamped tiles and an altar dedicated to Neptune by Lucius Aufidius Pantera, praefectus classis Britannicae, found embedded within the fabric of the late short fort at Lympne, may have been salvaged from a derelict and partly-submerged naval base in the vicinity. The use of Classis Britannica-stamped tiles on coastal or estuarine sites need not necessarily imply the presence of a fleet-base in the vicinity: such tiles have been found at several iron-working sites on the Weald, apparently indicating some connection between the Classis Britannica and the iron industry, in the second half of the 2nd century (12). It is possible, therefore, that the fleet was also involved with the exploitation of other natural resources - such as building-stone, at Folkestone. Similarly, the small number of tiles found at Pevensey may indicate naval involvement with a possible land settlement scheme. The single stamp from Richborough, on the other hand, may have arrived on site in a load of building material if it was not derived from a hitherto undiscovered fleet base in the vicinity (13).

Preparations for Severus' campaigns in the North, in A.D.208-211, which may have involved a re-organisation of the fleet, led to the remodelling of the Hadrianic-Antonine fort at South Shields, into a great stores-base, including at least sixteen, and probably twenty-two,

granaries. This base, and probably Maryport on the Cumbrian coast, must have been a vital link in the chain of communications to the North, a port where supplies could be collected and organized for shipment to forward bases at Carpow on the Firth of Tay, or Cramond on the Firth of Forth (14).

All the forts of the Litus Saxonicum, and the late Roman enceintes at Cardiff, Caer Gybi and Lancaster were originally situated on, or near to, estuaries or tidal inlets. None of these establishments, except for Walton Castle, near Felixstowe, occupied a naturally strong defensive position in the event of a land-based assault, but all would have provided protection for an adjacent harbour when under threat from sea-borne raiders, a threat which Carausius successfully quelled in A.D.285 (15). These forts may also have been designed to provide secure bases for patrolling flotillas, one of which, the classis Anderetianorum must once have been stationed at Pevensey, and may have made use of camouflaged scouting vessels which Vegetius states were used in late Roman Britain (16). When Allectus was under threat from the forces of Constantius Chlorus, in A.D.296, no apparent attempt was made to hold the fort at Portchester : Allectus' fleet was on patrol in the Solent when it was outflanked, in conditions of poor visibility, by vessels commanded by Asclepiodotus (17). Hence, it would seem that the fort at Portchester was designed primarily to defend a flotilla base rather than to provide a secure enceinte for forces operating on land.

The dedication on a late mosaic at Lydney, by T. Flavius Senilis, PR.REL. (praefectus reliquationis (?) classis), implies continuing naval activity in the Bristol Channel as late as A.D.367, but for what length of time such a presence was maintained is not known (18).

While, in some instances, trading activity developed in the wake of the flag, to co-exist with military establishments, in others, harbour sites were given over to civilian development once specific military requirements had been fulfilled. At South Shields, the large size of the extramural settlement and the wealth of tombstones are indicative of a prosperous and important vicus, possibly incorporating civilian merchants, which appears to have co-existed with the Hadrianic-Antonine fort and the great Severan supply-base. At Fishbourne, on the other hand, civilian development followed in the wake of the military advance along the South coast, presumably making use of abandoned installations. Stone, found lying loose or in the footings of Period I B timber structures, includes blocks of igneous rock from Cornwall, the Channel Islands and Brittany, which may have arrived on site as ballast in ships engaged in trading activity. Large quantities of decorative building materials were imported from Mediterranean, Continental, and British quarries, such as those on the Isle of Purbeck and the Isle of Wight, from ca. A.D.65 onwards, for use in the Flavian palace and the "proto-palace" which preceded it (19). The development of the harbour settlement at Fishbourne was apparently curtailed when work began on the construction of the palace complex. Thereafter, the harbour may have been used as a "private" port serving the palace. The port at London, however, quickly assumed pre-eminence as a centre for business and trade (20), a role which it has fulfilled and expanded until the present day. Kentish ragstone, probably derived from quarries in the Maidstone area, was used extensively in building-construction at London, from the mid-1st century onwards. Similar stone was used in the walls at Rochester, Reculver, Richborough, Lympne and Pevensey, in walling at Colchester and in the Castle Pharos at Dover, to which it may have been transported from Maidstone or quarries on the South coast in

river-barges similar to that found at Blackfriars, London. Vast quantities of commodities imported from the Continent through Boulogne, and probably directly from the estuaries of the Rhine, Seine, Loire and Garonne, and the Iberian Peninsula, were shipped to London, Colchester, York and other ports at various times from the period of the conquest onwards, commodities such as samian and coarse wares, glassware, and amphorae containing wine, oil, or, possibly, fish sauce. Studies of the distribution patterns of such imports throughout the province, and those of exported commodities such as pottery, iron and lead, have shed some light upon the fragmentary and all too often obscure history of the development of ports and trade routes, and individual examples of trading activity have been cited wherever it has proved practicable so to do. Exports to the Continent, chief of which appear to have been woollen goods, metals, corn, luxury items, increased in the 3rd and 4th centuries; a bulk shipment of grain to the Rhineland, ca. A.D.359, may have been part of regularized shipments of corn from Britain and pottery was apparently exported through Bitterne, Richborough and London (21).

The construction of harbour installations designed to ease the handling of cargoes must have followed close in the wake of primary development. Few installations, however, have been adequately dated or their relationship to Ordnance Datum recorded. Excavations in London, on the Old Custom House, and New Fresh Wharf sites have revealed the remains of substantial lengths of the late 2nd century waterfront which was found to have been built out southwards in advance of a timber quay of the early-2nd century. The harbour installations at York and Chester, on the other hand have never been securely dated.

Transit from the Continent was apparently still easy in the 5th century, when Germanus, bishop of Auxerre, visited Britain in A.D.429,

and later in 446-7, in order to restore spiritual health to the people of God, after the spread of the Pelagian heresy (22). Sherds of late imported 5th-6th century pottery, found at London and Exeter, and the account of the 6th century voyage of an Alexandrian cornship to the tin-producing areas of South-West England, related in the "Vita Sancti Ioannis Eleemosynarii", strongly suggest that, despite the collapse of the Empire in the West, trading links were then still open between the southern part of Britain and the Mediterranean (23).

(iii) Harbour Installations & Related Features

While harbour installations seem to fall into the broad categories listed below (sections A - L), such "classification" must be tentative as few of the structures have been adequately excavated; many more have not been securely dated, and the relationship of others to ancient water-levels has not been established. In the list which follows, the categories have been subdivided to take account of the materials ("t" = timber; "b" = boulders; "s" = stone; "m" = masonry; "c" = composite), and the techniques used in the construction of the installations. Each installation has been described in detail under site-headings, as indicated.

A. Moles

t.i) a free-standing framework of massive timbers, made up of two parallel walls, of superimposed tiers of baulks tied together vertically and braced by transverse beams set at regular intervals on each tier. Interior of framework, packed with shingle and "hard ballast".

- Dover (p.182), "mole"; date - uncertain, probably late 1st-2nd century.

b.ii) a "bulwark" foundation, composed of boulders with mortar containing burned clay.

- Wardie, Edinburgh (Chapter 1, ————— note 9); insufficient dating evidence, possibly Roman.

s.iii) a "strongly cemented" foundation set on rock, running out into deep water.

- Cramond (Chapter 1, section 2, p.7); date - uncertain, possibly Roman.

B. Harbour Basin

- Dover (p.194), inner basin ?; date - probably 1st-2nd century, but apparently choked with silt by 3rd century.

C. Quays

t.i) a massive timber staging, consisting of a series of box-units - a riverside "wall" consisting of superimposed tiers of massive horizontal baulks secured vertically and braced by series of regularly-spaced transverse members, themselves jointed to other "walls" of baulks which run behind and parallel to the river-frontage; some elements apparently prefabricated and floated into place.

- London, Old Custom House Site (p.139); date - second half of 2nd century, possibly ca. A.D.180-190. A series of piles and planks, found in front of the quay, were apparently secondary to the main work and may have been intended to support quayside structures or to hold the quay in position. The box-sections were apparently empty when the structure

was completed and the feature was presumably surfaced with planking.

t.ii) a riverside "wall", based on ground-piles and transverse anchor beams, consisting of superimposed tiers of massive horizontal baulks secured vertically by false tenons, but which was braced by tie-back beams and reinforced by piling and diagonal members.

- London, New Fresh Wharf Site (p.142); date - third quarter of 2nd century: timbers felled ca. A.D.155 \pm 5 years.

- London, Seal House Site (p.146); date - third quarter of 2nd century: timbers also felled ca. A.D.155 \pm 5 years. (Timberwork was similar to that noted on the New Fresh Wharf Site, and comprised oak baulks, piles, occasional tie-back beams and also horizontal logs which may represent beam flooring).

t.iii) Vertical piles and planking/camp-sheathing, secured by transverse horizontal members running towards river-bank; rear packed with filling material.

- London, Old Custom House Site (p.139); date - early Hadrianic.

- London, New Fresh Wharf Site (p.142); date - prior to second half of 2nd century. Only the frontage was excavated and no transverse members were seen. This possibly represents the revetment of a quay of chalk and rubble, laced with timbers. (v.i., section C.V.)

- t.iv) a "timber platform" or "framework" probably a quay - details not published.
- Norwich (near to), (p.101); date - associated pottery included mid 1st-mid 2nd century wares.
 - Bitterne, (p.253); date - possibly Roman.
- c.v.) natural slope of river-bank made up to a level surface by a platform of squared blocks in courses, with associated piles and/or camp-sheathing.
- Dover, Stembrook Site (p.188); date - area in front of quay choked with silt containing late 1st-2nd century pottery.
 - York, Telephone Exchange Site (p.43); date - uncertain, but probably Roman.
- m.vi) natural slope of river-bank made up to a level surface behind a revetment wall.
- Dover, Market Square - West Side (p.191); date - probably 2nd century.
 - Gloucester "Quay Wall" (p.300); date - uncertain, possibly Roman
 - Gloucester "Harbour Wall" (p.302); date - uncertain, possibly Roman.
 - Lincoln, Telephone Exchange Site (p.66); date - 2nd century.
 - Chester, Roodee (p.344); date - probably Roman (based on style of construction).
 - Burgh Castle (p.98); date - probably 3rd century.

c.vii) natural slope of river-bank made up to a level surface behind a masonry revetment wall, and fronted by a timber stage supported by timber posts.

- Caerleon (p.307); date - two phases : early-middle, and late 3rd century.

D. Jetty

c.i) a free-standing, unrevetted chalk block platform, on which lay a framework of timbers surrounding an area of horizontal planking.

- Dover, Stembrook Site, (p.193); date - late 1st-2nd century.

E. Function uncertain, but probably part of a water-front revetment, quay or jetty.

t.i) piles.

- London, Botolph's Wharf Gateway (p.144); date - uncertain.
- London, Public Cleansing Department Site (p.147); date - some piles had been driven into river bed in ^{AD} 1st-2nd centuries; other timbers were undated.
- Gloucester, Co-operative Wholesale Society Site (p.300); date - uncertain, possibly 1st century.
- Chester, Gasholder Site (p.341); date - uncertain; the piles were associated with coins and a lead ingot of the 1st century, but were in an apparently disturbed context.
- Chester (p.343); date - Roman or Mediaeval.
- Fordwich (p.171); date - timbers cut about the middle of the 3rd century.

- Brampton (p.101); date - Roman, possibly 2nd-3rd century. The flat bases of vertical timbers 2.4 feet (0.7 m) in diameter, rested on the gravel bed of the river.
 - Ware Lock (v.i., note 24); date - uncertain; chalk rafts found nearby, substructures for buildings in a marshy area, were tentatively dated to the period A.D.290-375. Timber framing was associated with the piles.
- m.ii) a wall (presumably a revetment) "supporting a jetty formed of beams and posts" - inadequately recorded but possibly similar to C.c.vii, above.
- York (p.45); date - uncertain, possibly Roman.
- s.iii) rows of rough stone columns, square in cross-section, possibly the substructure of a riverside feature - a wharf or a quay.
- York (p.45); date - probably Roman; samian pottery from an old riverbank was mostly Antonine in date.
- s.iv) natural slope made up to a level surface by dumping quantities of large greensand and limestone blocks - no trace of timber revetment.
- Fishbourne (p.248); date - pre-A.D.75.
- c.v) slope in ground made up to a level surface with dumped blocks of greensand & limestone and revetted with timber piles.

- Fishbourne (p.247); date, post A.D.75.

c.vi) corduroy timber platform, with overlying layer of rammed sand, gravel and chalk, the edge of which was retained by large horizontal timbers.

- Brampton (p.101); date uncertain, possibly 2nd-3rd centuries. This feature may have been the approach to a bridge rather than a wharf.

F. Dock(s).

- a natural or artificial hollow leading from a waterway, flanked by masonry revetments.
- Caerhûn, (p.332); date - uncertain, probably Roman.
- Heronbridge (p.338); date - ca. A.D.130; it is possible that this feature is not a dock, but an attempt to control flood-water.
- Camelon (Chapter One, n.7); date - uncertain.

G. Deep-Water Channel

- Fishbourne (p.247); date - probably late 1st century.

H. Canals.

- Foss Dyke, Lincoln (p.67); Roman date likely, but not certain; possibly an overflow drain for the R. Trent: use as a canal, unproven.
- Lincolnshire & Cambridgeshire Car Dyke, & Cnut's Dyke (p.67); almost certainly gravitational drainage system, not designed as navigable waterways.

I. Lock(s) Sluice-gates, Barrage(s).

- Fishbourne (p.247); date - probably late 1st century.
- Dover (pp.182ff. 194); date - probably late 1st-2nd century.

J. Machinery

- t.i) five pairs of piles, forming East-West bays, approximately 6.6 feet (2 m) wide, driven into foreshore immediately behind quayfront beams, probably representing the substructure of a crane or a waterfront building.
- London, New Fresh Wharf Site - Area III (p.143); date - third quarter of 2nd century.

- m.ii) massively built stone platform, possibly the base for a crane.
- York, Telephone Exchange Site, (p.44); date - uncertain, but probably Roman.

K. Lighthouses

- Dover, Eastern (Castle) Pharos, (p.197); date - possibly late 1st-2nd century.
 - Dover, Western Pharos (p.200); date - uncertain, possibly 3rd century.
- Falsa - Garreg, Holywell (p.335) - incorrectly attributed to the Roman period; probably a mill.
- Puddingpan Rock - (p.139) - incorrectly identified as site of a pharos, actually site of a wreck.

I. Unidentified, undated or unpublished features.

- Peterborough (pp.69-71).
- South Shields (p.31).
- Heybridge (p.116).

iv. Shipping in Roman Britain

While it was much cheaper to transport commodities by water than by land, and markedly so in the case of fragile or bulky cargoes such as pottery or grain, sea-going vessels ran the risk of shipwreck in inclement weather (25). An undated inscription from Chester refers to one such shipwreck, although details about the type of vessel involved, whether naval or mercantile, are not given (26). Three warships, hijacked by a cohort of Usipi and sailed round the coast of Scotland, were eventually lost, through poor seamanship, in A.D.83 (27). A merchantman, bringing a cargo which included pottery manufactured at Lezoux to Britain, possibly to London, sank in the Thames Estuary in the vicinity of Puddingpan Rock, 2.5 miles (4 km) North-East of Herne Bay, ca. A.D.160, while a river barge, carrying Kentish ragstone, probably derived from the Maidstone area, foundered in some 14 feet (4.27 m) of water, about 130 yards (118.4 m) out from the mouth of the River Fleet, at London, sometime during the 2nd century (28).

Ships were not equipped to beat against an adverse wind and were often subject to considerable delays and if, in times of storms, a convenient port or haven was not to hand, cargo might be spoiled by sea-water or have to be jettisoned in order to lighten the vessel (29).

The dangers of the ocean were held to be so great that navigation was normally suspended during the winter months, from November 11th to March 10th according to Vegetius, who added that the seas were still very dangerous between September 22nd and May 27th. The waters in parts of the North Sea and the Atlantic approaches were regarded as being so dangerous that in Agricola's day it was sufficient merely to have essayed those parts of the ocean (30).

Three vessels of the Roman period have been found in Britain, all from the borders of the River Thames at London. Two, the Blackfriars Barge and the New Guy's House barge, were built in the Celtic shipbuilding tradition, the latter almost certainly in a boatyard on the Thames or one of its tributaries, while the third, the County Hall Ship, was of Mediterranean type. A short description of each vessel appears, with full references, in Chapter Six - London and the Thames Estuary. It has apparently not been possible to calculate the exact draught of these craft, laden or unladen. The gunwale and deck beams of the Blackfriars barge, which sank sometime in the 2nd century, were never found and its depth could only be tentatively estimated at 7 feet (2.13 m). The depth of the New Guy's House barge, which had been abandoned ca. A.D.200 if not before, had been apparently no more than three to four feet (0.91 - 1.22 m), as indicated by the fact that the maximum depth of the tributary in which it lay was less than three feet (0.91 m). Although it is not known if these barges had keels, they both had reasonably flat bottoms enabling them to sit upright on the strand at low water. The sea-going County Hall Ship, which sank after A.D.293, had a more rounded hull similar to merchant vessels of the Mediterranean and had been approximately 6 feet (1.83 m) deep. Excavations on the Old Custom House Site, London, indicated that there could only have been some 3-4 feet (0.91 - 1.22 m) of water alongside the late-2nd century quay, assuming a vertical quayfront wall of at least 5 feet (1.52 m),

whilst there may have been a sufficient depth of water alongside the quay at Caerleon to accommodate ships of up to 5.5 feet (1.67 m) draught (31). Clearly nothing more than a tentative conclusion may be reached on the basis of the evidence now available, but it seems reasonable to suggest that the range of draught of shipping, laden or unladen, fell within the limits indicated above, that is 2 - 5.5 feet (0.61 - 1.67 m).

Notes

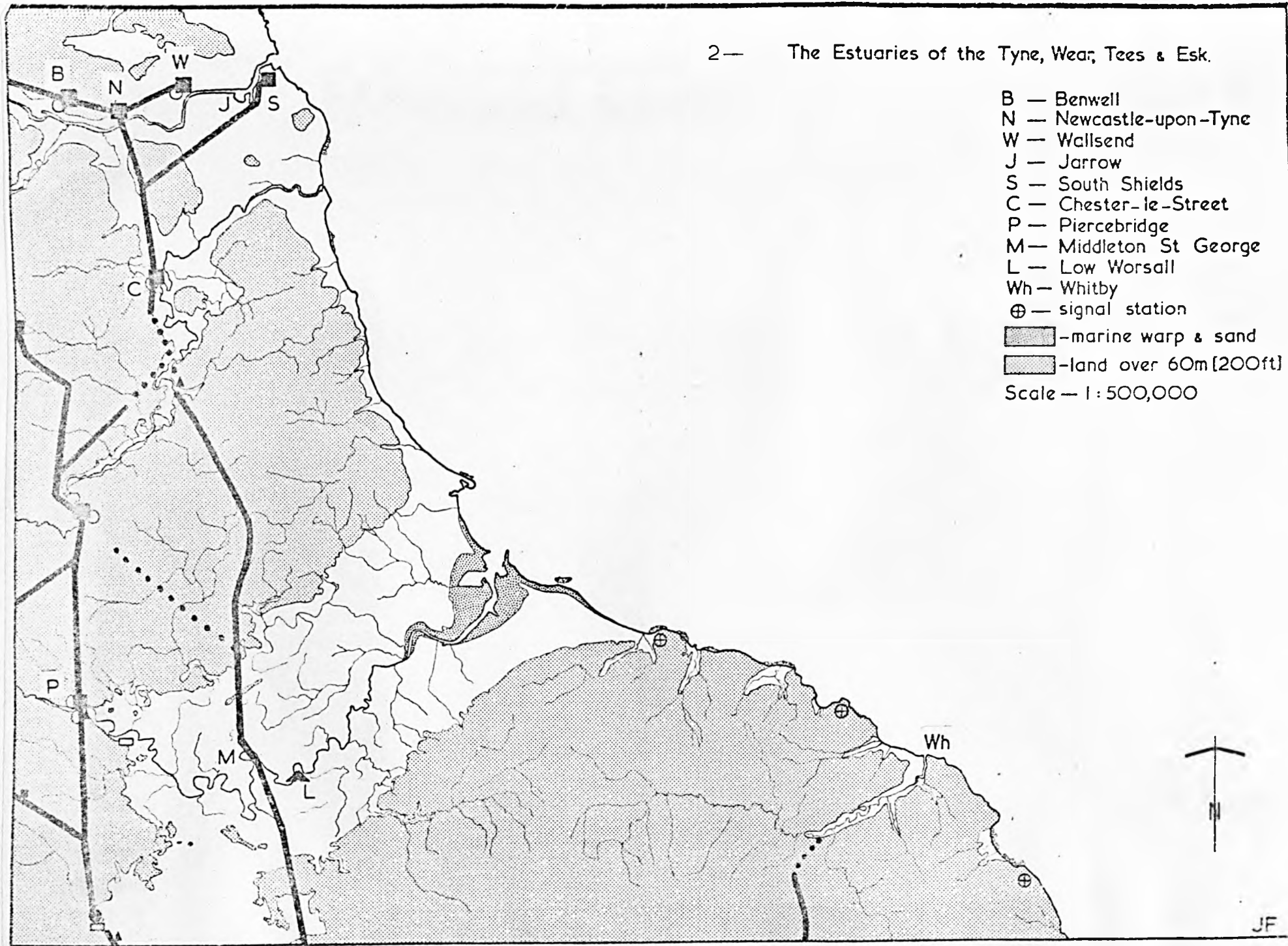
1. Cunliffe, B., "Iron Age Communities in Britain", 1975, pp.129-151.
2. Tacitus, Agricola, 18; _____, Annals, XIV, 29.
3. Tacitus, Agricola, 20, 22-5, 38; Reed, N., "The Fifth Year of Agricola's Campaigns", *Britannia* II, 1971, pp.143-8 (Portus Trucculensis); Graham, A., "Archaeological Notes on some Harbours in Eastern Scotland", *Proc. Society of Antiquaries of Scotland*, vol. 101, 1968-9, pp.200-285; Starr, C.G., "The Roman Imperial Navy, 31 B.C. - A.D.324", Ed. II, 1960, pp.152-156. See also, note 6 (Camelon).
4. See also, Hamworthy, p.262f; Webster, P.V., "Severn Valley Ware on the Antonine Frontier", in Dore, J. & Greene, K., "Roman Pottery Studies", B.A.R.
RIB 1340, 1944-5;
5. Starr, op.cit., p.155; see also, South Shields, p.30ff.
6. Sibbald, R., "Historical Inquiries concerning the Roman Monuments and Antiquities in Scotland", 1707, pp.32-4; Christison, D., "Account of the Excavation of the Roman Station of Camelon, near Falkirk, Stirlingshire", *P.S.A.S.*, Ser.3, vol.XI, 1901, pp. 329-417; Miller, S.N., "The Roman Fort at Old Kilpatrick", 1928, passim; Robertson, A.S., "The Antonine Wall", 1963, pp.32, 42-55; Rae, A. & V., "The Roman Fort at Cramond, Edinburgh : Excavations 1954-66", *Britannia*, vol.V, 1974, pp.163-224; *Britannia*, vol.IV, 1973, pp.273-4; V, 1974, p.405; VII, 1976, pp.300, 305 ff; VIII, 1977, pp.362-368; *Discovery & Excavation in Scotland*, 1972 (1973), pp.40, 45; 1973 (1974), pp.52, 58 ff.; 1974 (1975), pp.57 ff, 63-5, 67-9; 1975 (1976), pp.24, 51-3; Margary, I.D., "Roman Roads in Britain", Ed.III, 1973, Route 87, pp.478-480.
Sissons, J.B., "The Evolution of Scotland's Scenery", 1967, pp.185-9 & fig. 82; Francis, E.H. et al. "The Geology of the Stirling District", *Memoirs of the Geological Survey of Great Britain (Explanation of One-Inch Geological Sheet 39)*, 1970, pp.268-291; Graham, op.cit., *ibid.*
7. Camden, W., "Britannia", ed. Gibson, E., 1695, pp.921, 958; Sibbald, op.cit., pp.33-4; Maitland, W., "The History and Antiquities of Scotland", 1757, vol.I, p.206; Christison, op.cit., pp.329-350 and PL.II; Graham, op.cit., p.221.
The small, circular domed building, commonly known as "Arthur's O'on", variously regarded as a shrine, temple or possibly a tropaeum, lay on the northern slopes of the Carron Valley, 1.5 miles (2.4 Km) North-East of Camelon, and would have commanded extensive views over the Firth of Forth and the estuary of the Carron; Steer, K.A., "Arthur's O'on : A Last Shrine of Roman Britain", *Archaeological Jnl.*, vol.CXV, 1958 (1960), pp.99-109, with bibliography.
8. Sibbald, op.cit., p.33.
9. Rae, A. & V., op.cit., p.164, at NT 1876. Traces of what may, just possibly, have been a Roman breakwater were observed in 1832,

at Wardie, Edinburgh, some 2.5 miles (4 Km) East of Cramond, at NT 242772. The remains comprised a "bulwark" foundation, some 500 feet (152 m) long, made up of boulders, and mortar containing "burned clay"; Graham, *op.cit.*, pp.202²⁰¹. The use of boulders and mortar in harbour installations is without parallel in Roman Britain and no dateable material appears to have been associated with the feature.

10. See also, Hamworthy, p.262 ff.
11. See also, Dover, pp.178-181.
12. See also, Bodiam, Sedlescombe and Tenterden, pp.231-3.
13. For a different interpretation, see Cunliffe, B., "Fifth Report on the Excavations of the Roman Fort at Richborough, Kent", Reports of the Research Committee of the Society of Antiquaries of London, No. XXIII, 1968, pp.257-260 ("The British Fleet"); Starr, *op.cit.*, pp.155-6.
14. Hartley, B., "The Roman Occupations of Scotland : the evidence of samian ware", *Britannia*, III, 1972, pp.36-42; *R.I.B.*, 2313; Carpow, at No. 208179: - *J.R.S.*, LV, 1965, p.200 ff; LVI, 1966, p.199; LVII, 1967, p.175; LVIII, 1968, p.177 ff; LIX, 1969, pp.110 ff., 202; *Britannia* I, 1970, p.273 ff; II, 1971, p.248; Wright, R.P., "Carpow and Caracalla", *Britannia* V, 1974, pp.289-293.
15. Eutropius, *Breviarium*, IX, 21.
16. Vegetius, *Epitoma rei militaris*, iv, 37 (ed. C. Laing, 1885).
17. *Panegyrici Latini*, viii, (V), 16-18.
18. *C.I.L.*, vii, 62.
19. Imported Italian marble was also used to embellish substantial buildings at Lincoln, p.65 ; cf. Jones, A.H.M., "The Later Roman Empire, 284-602", 1964, Vol.II, pp.846-7.
20. Tacitus, *Annals*, XIV, 33.
21. Ammianus Marcellinus, XVIII, 2, 3; Frere, S., "Britannia", 1967, pp.279-302; Jones, A.H.M., *op.cit.*, 1964, pp.843-846, 848-851, 864-872; Fulford, M., "Pottery and Britain's Foreign Trade in the Later Roman Period", in Peacock, D.P.S. "Pottery and Early Commerce", 1977, pp.35-84.
22. Bede, *Historia Ecclesiastica*, I, xvii and xx-xxi.
23. See also, Exeter, p.282 and London, p.149
24. Site centred on TL 351143, adjacent to the point at which Ermine Street crossed the flood-plain of the River Lea; *Britannia*, vol.VIII, 1977, p.401 ff.; VI, 1975, p.260.
25. Diocletian, *Edict on Prices*, xvii, 3-5; Jones, *op.cit.*, 1964, vol.ii, pp.841-842 and fn.43.

26. See also, Chester, p.341. A lead anchor-stock, of Class C (2) - a common Mediterranean type certainly obsolete by A.D. 74-78 and probably attributable to the late 2nd or perhaps the 1st century B.C., has been recovered from 50 feet (15.2 m) of water within the East corner of Porth Felen, a rocky cove at the tip of the Llyn Peninsula in North-West Wales. There were no recognizable signs of a wreck, but the size and weight of the stock indicates that it came from a comparatively small vessel ; Boon, G.C., "A Greco-Roman Anchor-Stock from North Wales", *Antiquaries Jnl.*, vol. LVII, pt. i, 1977, pp.10-30; cf. Chapter Nine, note 137 (an iron anchor, probably of the Conquest Period, from Bulbury Hill-fort).
27. Tacitus, *Agricola*, 28.
28. See also, London, p.138ff..
29. Acts of the Apostles, Ch.27; Jones, op.cit., 1964, vol.ii, pp.842-3 (sailing schedules and accounts of voyages illustrating the vagaries experienced during voyages on the Mediterranean).
30. Vegetius, IV, 39; cf. *Codex Theodosianus*, XIII, ix. 3, 380; Jones, op.cit., 1964, vol.ii, p.843. Tacitus, *Germania*, 34; _____, *Agricola*, 30; cf. Plutarch, *De Defectu Oraculorum*, Ch. 18 = *Moralia*, 410, 38; Richmond, I.A., "A forgotten exploration of the Western Isles", *Antiquity*, 14, 1940, pp.193-5; Pauly-Wissowa, *Realencyclopädie*, "Delphoi", 2601.
31. Marsden, P., "A boat of the Roman period found at Bruges, Belgium, in 1899, and related types", *International Journal of Nautical Archaeology & Underwater Exploration*, vol.5, no.1, 1976, pp.23-55. See also, Chapter Six, pp.138-9.

2— The Estuaries of the Tyne, Wear, Tees & Esk.



NORTH-EAST ENGLAND FROM THE TYNE TO THE ESK.

On the generally inhospitable stretch of coast between the mouth of the River Humber and the eastern terminus of Hadrian's Wall, there are few naturally sheltered havens, except for the estuaries of the Rivers Tyne, Wear, Tees and Esk.

Until the last century the mouth of the River Tyne was obstructed by a bar which was dangerous to shipping and in Elizabethan times the river itself was encumbered with rocks and shoals above South Shields, there being only 4 feet (1.22 m) of water, at low tide, in the middle and at the ends of Long Reach, between Jarrow Slake and the terminus of Hadrian's Wall at Wallsend (1). The Elizabethan chart stops short at the bridge at Newcastle which may, therefore, have been the head of navigable water at that time. There has been a slow submergence of land levels in relation to that of the sea since Roman times and the river may have then been considerably shallower than it was when the Elizabethan chart was surveyed. It is, therefore, unlikely that there was sufficient depth of water at low tide for sea-going vessels to sail far above Jarrow Slake. However, if the tide-range in the estuary in Elizabethan times, 8 feet (2.44 m) at neaps and 12 feet (3.66 m) at springs, was similar to the tide-range in Roman times it may have been possible for sea-going vessels to sail upstream with the tide, as far as Newcastle (2). The Milldam creek at South Shields was, therefore, with the possible exception of Jarrow Slake, the only sheltered haven on the South bank of the Tyne which was accessible at all states of the tide and, if the river was not viable to sea-going craft above Jarrow Slake, may have served as a port at which supplies could be transferred to shallow-bottomed river-craft . On the other hand, if the river was navigable as far as Newcastle, South Shields may only have become important in the context of campaigns in the North (3).

In the late 17th century small wooden boats were built at Sunderland

to convey coal from the higher reaches of the River Wear to its mouth (4). A mid-19th century map shows railway tracks running to staithes on the East bank of the Wear in the area of Chester-le-Street (5). The river is tidal at least as far as Fatfield, 2.5 miles (4 km) below the fort at Chester-le-Street, and it is just possible that the Wear was navigable at least as far as this point, if not the fort itself, in Roman times.

The lower reaches of the River Tees have been much altered by the processes of reclamation and industrial development, which have obscured the outline of Ptolemy's "Dunum Sinus" (6). In Roman times, the Tees estuary would have been wide, open and complex. The deposition of enormous amounts of alluvium must have already resulted in the formation of extensive sandbanks and marshlands on both the North and South shores of the estuary and this may well have made navigation of the river a hazardous business (7). In the early 13th century the Tees was navigable at least as far as Yarm, which was taxed as a port in 1204 A.D. (8). In the Middle Ages, sailing ships of 60 tons (60.96 tonnes) could reach this port and there was a considerable trade with Scotland, France and Flanders in wine, wool, hides, salt, corn and agricultural products; Yarm was also an outlet for the lead-manufacturing industry of Swaledale, to the South (9). In the 18th century there was a small port further upstream at Low Worsall, which was 26 miles (41.8 km) from the sea and 1 mile (1.6 km) above tidal limits (10). Low Worsall is only 3 miles (4.8 km) downstream from Middleton St. George where the Roman road from Brough-on-Humber crossed the Tees and it is, therefore, possible that the river was navigable up to that point in Roman times (11). There is, however, no evidence to suggest that craft could negotiate the meandering course of the Tees as far as the fort and vici at Piercebridge (12).

From Tees Bay southwards the coast of Cleveland is lined with cliffs, punctuated by the outfalls of small becks, as far as Whitby where there is a fine natural harbour. A deep gorge-like inlet, the estuary of the River Esk, runs just under 2 miles (3.2 km) inland and its inner reaches are well protected from prevailing winds by high ground to the East and West.

(Wallsend, Newcastle, Benwell, Jarrow).

The land on the southern shore of the River Tyne is lower and less precipitous than that on the northern bank. The site of the Roman settlement is a low headland which overlooks the mouth of the Tyne and affords uninterrupted views of the sea and the river (13).

The fort was protected on the North by the Tyne, on the East by the sea, and on the South and West by a stream, now culverted, which is known as the Milldam (14). The outlet of this stream, formerly known as the Gut, was a salt-water creek in mediaeval times and until recently tides often rose high enough to sweep into the old channel and, according to Collingwood-Bruce, "insulate" the fort (15). While an Elizabethan chart of the River Tyne shows the outlet of the Gut to the West of the fort, it gives no indication that the promontory on which it was built was ever "insulated" at high tide, and while the mouth of this stream may have been deep enough to accomodate vessels, the fall of the land from East to West seems to preclude the possibility that the higher reaches of the Milldam were ever navigable, although industrial activities in the last two centuries may have considerably raised the level of the stream-bed (16).

There is no structural evidence for a pre-Hadrianic occupation at South Shields, although finds of pottery indicate such, perhaps in the form of a Flavian fort somewhere on the Lawe (17).

The Hadrianic fort covered an area of some 5 acres (2 Ha), its defences being 620 feet (189.1 m) by 360 feet (109.3 m) externally. Hadrianic and Antonine barrack blocks have been found underlying Severan granaries, their fabric having been partly incorporated into the 3rd century structures while adjacent to the South-West gate, a pair of Hadrianic-Antonine granaries survived to be used in the Severan scheme (18).

The supply-base and, presumably, the Hadrianic fort were connected to the road system by a branch from the road which ran from Chester-le-Street

to Newcastle. From Wrekenton, $3\frac{1}{2}$ miles South of Newcastle, it was laid on a single alignment until, close to Arbeia, it turned North to reach the fort. Its course on its approach to The Lawe has been lost because of the ravages of the construction of mineral railways. However, excavations have revealed what may have been a paved way making toward the West gate and proceeding beyond it, "probably with a view to reaching the shore" (19).

There is no evidence that the Hadrianic fort acted as a supply-depot or as a base for a detachment of the British Fleet and while the western end of Hadrian's Wall, along the coast of Cumbria, was vulnerable from the opposite coast, the estuary of the Tyne was apparently not fordable and permitted no such threat; similarly, there would have been little threat to shipping (20). A detachment of the Classis Britannica was stationed in the area but there is no evidence that it was based at South Shields or that it was engaged in anything other than construction work, as at Benwell (21). The fact that the altars dedicated to Neptune and Oceanus, whose protection was apparently needed to cross the North Sea, were found at Newcastle may indicate that the Legio VI landed there although altars and a building stone dedicated by that same legion have also been found at Wallsend and South Shields (22).

Preparations for Severus' Scottish campaigns, prior to A.D.209, saw the remodelling of the Hadrianic-Antonine fort at South Shields into a great stores base (23). The principia was reversed, the retentura of the old fort was walled off and granaries were erected within it. Sixteen granaries, built from local freestone, and two barracks have been located; a total of twenty-two granaries and four barrack-blocks may be inferred from the plan. The granaries are unusually large and differ from the two Hadrianic stores in that air-flow is effected by means of air-shafts cut through long sleeper walls (24). It has been calculated that these granaries could have held sufficient grain to provision 40,000 men for three months; however, part of this storage space may have been used to accommodate other items of military diet (25).

A large number of leaden baggage seals of the period A.D.209-211, indicate that stores were being stockpiled in some considerable quantity at that time (26). If Arbeia was a supply base then there must have been a navigable creek or haven in the immediate vicinity to accommodate the volume of shipping needed to convey and to re-distribute the stores.

It is probable that the creek now represented by the Milldam (Ocean Road Creek) was the site for the wharves or jetties which would have been needed to off-load supplies from lighters, if the sea-going vessels lay out from the shore, or from the cargo-boats themselves. No harbour installations have been located with any degree of certainty and it is unlikely that any will be found in the near future because modern repair yards occupy the mouth of the creek. If the creek was widened or deepened when these yards were constructed, as seems likely, then little or nothing will survive of the Roman frontage. The only hope for the survival of Roman installations lies in the possibility that the 19th and 20th century works were built out from the side of the creek, into deeper water. Two early sources may, however, be referring to Roman harbour works:-

Horsley mentions "another altar" found at the same time as that which was dedicated to Jupiter Conservator, "which was built up in a quay wall" (27). No evidence was given as to the date and the location of this wall except that it was "at the West end of South Shields". Hunter, in a letter of A.D.1735, records two quays, or rather

"elevated pavements in the river Tine
proper for their safe landing at different times of
the tyde", at South Shields and Wallsend.

Again these cannot be definitely assigned to the Roman period and may well be more recent (28).

With the change, under Severus, in the appearance and role of the fort, the garrison too was altered, the quingenary Cohors V Gallorum replacing the Ala I Asturum (29). While the campaigns into Scotland were in full swing in A.D. 209-211 (and possibly in A.D. 212 also), Arbeia served as a vital point in the supply chain to the North. There supplies would be collected, organised and shipped up to Cramond on the Forth. However, it was not long before life at Arbeia changed again.

Early in the 3rd century, at least before the reign of Severus Alexander, structural modification and re-planning indicates that the great stores-base was no longer needed. Some of the granaries were converted into living accommodation and into one were inserted tile-kilns (30). There is, however, no reason to suppose that the harbour was necessarily in decline.

The Notitia describes the garrison of Arbeia as being a numerus barcariorum Tigrisiensium, who were presumably engaged in ferrying stores or troops up the Tyne or in transshipping stores from sea-going vessels on the barcae; these barcae may, however, have been used in offensive military activities in the Tyne estuary, in upstream operations, or to meet the threat of sea-borne raiders (31).

The wealth of tombstones and the large size of extramural settlement are indicative of a prosperous and important vicus, possibly accommodating civilian merchants, as may have been Barates, the Palmyrene (32). Very many coins have been found in excavations; few have been recorded or preserved but the sheer abundance complements the evidence of the tombstones. The coin series continues into the 5th century and pottery of the second half of the 4th century or very early 5th century is abundant (33). Of the end of Arbeia little is known. As the road system declined, the port may have become more important but there is no reason to believe that the settlement did not suffer a decline similar to that of other sites in this area (34).

Chester-le-Street.

NZ 276514

The fort, and vicus, of Concangium stood 8 miles (12.8 km) South of Pons Aelius and just East of the Roman road which runs southwards from the Wall at Newcastle-upon-Tyne up the valley of the River Wear towards Durham and on to the crossing point of the River Tees at Middleton St. George (35). The fort occupied the top of a low plateau which overlooks and commands the River Wear which may have been navigable up to this point in Roman times. To the North lies a shallow valley through which the

Cong Burn runs on its way to join the Wear some 400 yards (366 m) E.N.E. of the defences (36).

The 6.2 acre (2.5 Ha) fort was occupied from the first half of the 2nd century onwards, there being some evidence of structural alterations in the early 3rd century (37). A vicus lay to the West and South of the defences and excavations have shown that there was building activity there from the late 2nd to 4th centuries (38).

The lower reaches of the valley through which the Cong Burn runs have been choked with alluvium. It is possible that there was once a small inlet here, which would have afforded some protection from the spate of the Wear. No finds of Roman material have been reported from the immediate area of the confluence, but the course of the Wear tends to cut into the river-terrace above which the fort stands and thus any installations on the Wear itself have probably been washed away.

Middleton St. George.

NZ 346121

15

The Roman road which ran from Brough-on-Humber to Durham crossed the River Tees immediately to the South of Middleton St. George. It ran over undulating land, about 100-140 feet (30-42 m.) above O.D. towards the South bank of the Tees until it reached the tip of a long promontory formed by a loop of the meandering river. The route by which this road descended to the South bank of the river is marked by a modern cart-track which partly obliterates a slight agger, 15 feet (4.57 m) wide (39).

The road probably crossed the river by way of a bridge. The lower courses of the abutments of such a structure were observed in 1823. Vast quantities of squared stones then lay in the river (40). Although a mediaeval bridge was once built near this spot, the fact that the stones had been secured to each other with iron clamps indicates that they were once part of a Roman structure (41). Beyond the river, the road must have climbed the steep bank above the Tees between Dinsdale Park and Middleton St. George, from where it heads due North (42).

Whether there was ever a port or indeed a settlement at or near Middleton St. George can only be determined by excavation. The Tees was almost certainly navigable to this point and vessels would have had the help of tidal flow for most of the voyage upstream. Middleton St. George was also the lowest bridging point of the river and the site has, therefore, obvious strategic importance to the communications system of the area.

Whitby.

NZ 900110

No remains of Roman occupation have been found at Whitby itself. 16
 However, the Roman road has been traced as far as the ridge above Grosmont, which lies 4.5 miles (7.2 km) upstream and S.W. of Whitby, on the South bank of the R. Esk (43).

Until quite recently, considerable quantities of jet, eroded from underwater outcrops and washed ashore, could be found on the shore at Whitby. At York, a workshop was engaged in the manufacture of objects in jet, the site of which was used in the 3rd and 4th centuries as a cemetery in the graves of which have been found objects made from jet. It is not certain whether the raw material was worked and finished at York; it may have been distributed, unworked, to other centres and even to the Continent (44).

While it is possible that the road continued northwards to serve the signal station at Goldsborough, the availability of jet on the foreshore at Whitby may have encouraged the establishment of some sort of settlement near to the haven, to supply the artisans of York with the raw materials they required. Such a settlement need have had little use for wharves or jetties; fishing boats or lighters would have been drawn up onto the shore while such sea-going craft as may have put in at Whitby could have safely cast anchor, in the inner reaches of the inlet, a mile and a half (2.4 km) or more from the open sea.

Notes.

1. a - An Elizabethan chart of the River Tyne, from Newcastle to the sea, dating from ca. A.D.1570, British Museum, Cotton MS., Aug. I.ii.5.
- b - Parts of the wall, gates and an angle-tower of the 4 acre (1.6 Ha.) Hadrianic fort, Segedunum, at Wallsend (NZ 300660) have been excavated as well as the remains of internal structures; Birley, E., "Research on Hadrian's Wall", 1961, pp.159-161; Richmond, I.A. (ed.), "Handbook to the Roman Wall", edn.xii, 1966, pp.41-3. A branch-wall ran from the South-East angle of the fort down to the low water mark of the Tyne, to the West of which rose an extensive civilian settlement. Breeze, D.J., & Dobson, B., "Hadrian's Wall : Some Problems", Britannia, III, 1972, p.193; _____, "Hadrian's Wall", 1976, passim; Britannia, VII, 1976, pp.306-8; VIII, 1977, pp.371-2.
2. See note 1 (a).
Of Newcastle, Pons Aelius, little is known; Roman buildings, part of a Roman road, and sherds of the mid-2nd to late-4th century have been noted; Birley, op.cit., 1961, pp.161-3; Richmond, op.cit., 1966, pp.45-47; Dymond, D.P., "Roman Bridges on Dere Street, County Durham," Archaeological Jnl., vol.CXVIII, 1963, pp.158, 164; Harbottle, B., "Excavation & Survey in Newcastle-upon-Tyne : 1972-3", Archaeologia Aeliana, Ser. 5, vol. II, 1974, pp.57-89.
3. Steers, J.A., "The Coastline of England and Wales", Ed.II, 1964, Ch. XI, p.441 ff.
4. V.C.H. Durham, vol.II, 1907, p.303;
Owen, D.J., "The Origin and Development of the Ports of the United Kingdom", Ed.II, 1948, p.153:- In A.D. 1669, King Charles granted letters patent to Edward Andrew - to build pier(s) lighthouse(s) at Sunderland, and to cleanse the harbour, .. "being very commodiously situated for the shipping of vast sea-coles is of late so much gorged, stopped up and choked by the many shoals, sand-beds and much rubbish daily increasing in the same, that it is about rendered unnavigable". In A.D.1717, a Commission was set up to make, inter alia, the Wear navigable to Newbridge, in the parish of Chester-le-Street. Little seems to have been done with these powers for, by A.D.1755 the channel at the mouth of Sunderland harbour was so narrow and choked with shoal that ships drawing only 6-7 feet (1.83 - 2.13 m) of water were prevented from emerging. However, by A.D.1856 the channel of the river had been straightened and deepened. Charters of A.D.1154 and 1634, also refer to the port at "Weremouth" (Sunderland).

Notes - continued

5. Hall, T.Y., "Map of ^{the} Great Northern Coalfield", 1854.
6. Ptolemy, Geography, Bk. II.
7. Steers, J.A., op.cit., 1964, pp.463-5; he follows: Harrison, J.W.H., "A Survey of the Lower Tees Marshes...." Transactions of the Natural History Society of Northumberland, Durham and Newcastle-on-Tyne, vol. 5, 1918-21, p.89 ff..
8. Pipe Roll 6, John, m.16 d..
9. ibid; "The River Tees", Tees Conservancy Commission, 1952, pp.7 & 15.
10. Barton, P., "Low Worsall: The Shipping and Trade of an Eighteenth-century Port on the River Tees", Mariner's Mirror, vol.55, No. 1, January 1969, p.57 ff..
11. Margary, op.cit., 1973, Route 80a, p.432.
12. Piercebridge (NZ 211157)
 - 4th century fort:- J.R.S., 55, 1965, p.203; Britannia, VI, 1975, p.234; VII, 1976, p.313; VIII, 1977, p.381; C.A. 55, vol.V, No.8, 1977, p.245.
 - Vicus North of the fort (at NZ 211159):- Britannia V, 1974, p.413; VI, 1975, p.234; VII, 1976, p.313. Occupation was late 1st to late 4th century in date.
 - Vicus South of the Tees (NZ 2214154):- Britannia, III, 1972, p.309, No.2. Occupation was mid 2nd to the end of the 4th century in date.
 - 2nd century villa, South of the Tees (NZ 221152) :- Britannia, I, 1970, p.279, no. 3; II, 1971, pp.251-2, no. 3.
 - For descriptions of the remains of bridges found in the Tees at Piercebridge see :- Britannia IV, 1973, p.280, no.3 (NZ 214154) - mid 2nd century; A. Ex., 1972, p.70 ff; C.A. 40, vol.IV, no.5, 1973, p.136 ff.

When the site at Piercebridge was visited the water in the river was very low, the result of a prolonged spell of dry weather. It may have been possible for shallow-bottomed craft to reach the site but, at present, there is no evidence to indicate that this was the case.

In 1933, 32 oak piles were found in the river, "near" to the George Hotel and upstream of the abutment found in 1972. These are described in: Yorkshire Archaeological Journal, XXXI, 1934, p.385.

Notes continued

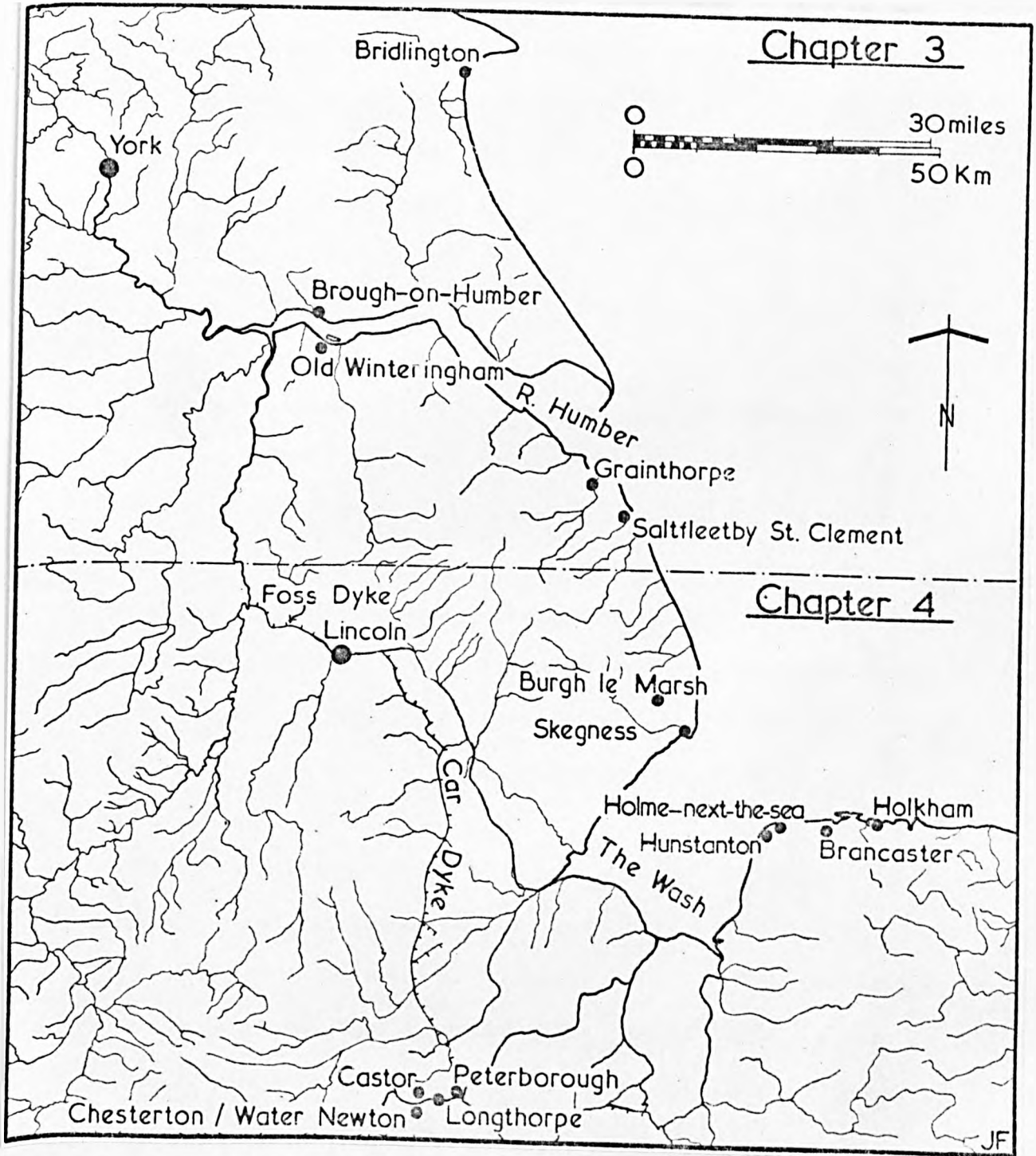
12. The piles lay in two concentrations - 22 feet (6.71 m.) and 52 feet (15.81 m.) from the South bank of the river. Dymond suggests that these were the remains of the piers of a bridge; Dymond, D.P. op.cit., 1963, p.156.
- For Piercebridge see also : Wooler, E., "The Roman Fort at Piercebridge, County Durham," 1917, with plan.
13. Collingwood-Bruce, J., "Recent Discoveries on the Lawe", Arch. Aeliana, N.S.(2), vol.10, 1885, p.225; _____, "Excavations at South Shields", Archaeologia, vol.46, 1880, pp.163-170.
14. Richmond, I.A., "The Roman Fort at South Shields", Arch.Aeliana, Ser. 4, vol.XI, 1934, p.84; Birley, E., op.cit., 1961, p.154.
15. Collingwood-Bruce, op.cit., 1880, pp.163-170 & 1885, pp. 225-6.
16. See note 1 (a).
17. Birley, op.cit., 1961, p.155; J.R.S., 57, 1967, p.177.
18. Birley, op.cit., 1961, p.154; _____, in Archaeological Jnl., vol. CXI, 1954 (1955), p.209 ff; Richmond, op.cit., 1934, p.92; J.R.S., 57, 1967, p.177; 58, 1968, p.179. Cf. Britannia, VII, 1976, p.306.
19. Collingwood-Bruce, op.cit., 1880, pp.163-170; Margary, I.D., "Roman Roads in Britain", Ed. III, 1973, Routes 80b & 809, pp.441-2. Birley, op.cit., 1961, p.157, supposes a westward road from South Shields towards Jarrow, but it has not been located.
20. Frere, S.S., "Britannia", 1967, p.135.
21. R.I.B.,1340; Birley, op.cit., 1961, p.164. The large expanse of slack water of Jarrow Slake would have provided a more secure anchorage for a detachment of the fleet, providing that there was sufficient depth of water in the basin or in the channel of the River Don for vessels to put in or out at low water. Birley, op.cit., 1961, pp.157-9.
22. Newcastle. R.I.B., 1319 & 1320; Wallsend, R.I.B., 1305 & 1306; South Shields, R.I.B., 1057, 1061. Caplan, C., "To Neptune and to Oceanus", Archaeologia Aeliana, Ser. V, vol. IV, 1976, pp. 171-6.
23. Cassius Dio, LXXVII, 11-15; Herodian, III, 14, 15. Frere, op.cit., 1967, pp.172-5.

Notes continued

24. Richmond, op.cit., 1934, p.84 ff & p.92, fig.2; Birley, op.cit., 1961, p.155 and 1955, p.209 ff; J.R.S., 57, 1967, p.177, fig.5.
25. Bulmer, W., "The provisioning of Roman forts - a re-appraisal of ration storage", Arch. Aeliana, Ser. 4, vol.XLVII, 1969, pp.7-14; Birley, op.cit., 1955, p.209 ff; Frere, op. cit., p.172.
26. Richmond, op.cit., 1934, p.92 ff. Of the thirty leaden seals which have been found, 50% bore the heads of Severus, Caracalla & Geta (A.D. 198-209); all the others, except for two, bear the stamp of the Severan garrison of Arbeia, the Cohors V Gallorum. Birley, op.cit., 1955, p.209 ff; Blair, R., "Roman leaden seals", Arch. Aeliana, N.S.(2), vol.8, 1880, pp.57-9.
27. Horsley, J., "Britannia Romana", 1733, pp.286-7.
28. Birley, op.cit., 1961, pp. 152-3.
29. Birley, op.cit., 1955, p.209 ff; R.I.B., 1064, 1059 & 1060; Britannia, II, 1971, p.295, no.35.
30. Richmond, op.cit., 1934, p.92, Granaries, IV, V, VIII; Birley, op.cit., 1955, p.209 ff., suggests that Arbeia then became a transit-centre, a settlement of quasi military character; J.R.S., LVII, 1967, p.177. cf. Dore, J.N., "Excavations at South Shields, 1975", Archaeologia Aeliana, ser.V, vol IV, 1976, pp.185-6.
31. Notitia Dignitatum; Occ. XI, 22; Shotter, D.C.A., "Numeri Barcariorum : a note on R.I.B., 601", Britannia, IV, 1973, pp.206-9.
32. In the North, only Carlisle has such a wealth of civilian tombstones. The style of Regina's tombstone indicates Palmyrene influence, which may reflect the presence of other Orientals; Smith, D., "A Palmyrene Sculptor at South Shields ?", Arch. Aeliana, Ser.4, vol.37, 1959, pp.203-210; R.I.B., 1065. For extramural settlement see Birley, op.cit., 1961, pp.155-6; Britannia, V, 1974, p.407.
33. Richmond, op.cit., 1934, p.92 ff; Birley, op.cit., 1955, p.209 ff. & 1961, pp.156-7; J.R.S., LVII, 1967, p.177.
34. Richmond, op.cit., 1934, p.92 ff; Breeze & Dobson, op.cit., 1972, pp.200-6.
35. Margary, I.D., op.cit., 1973, Route 80b, p.441.
36. But see note 4.
An altar has been found about 300 yards (274 m) North of the fort in alluvial soil beside the Cong Burn and about 400 yards (366 m.) from its outlet into the River Wear; R.I.B., 1045.

Notes continued

37. J.R.S., 59, 1969, p.205; Britannia, II, 1971, p.251.
An inscription records the provision of a water-supply and the erection of baths in A.D.216. (R.I.B., 1049).
38. J.R.S., 59, 1969, p.205; 55, 1965, p.203; 54, 1964, p.156.
A hypocaust was inserted into one of three rooms in Church Chare, in the late 4th century; J.R.S., 50, 1960, p.215 and 51, 1961, p.164. This may be linked with Theodosius' programme of restoration.
39. Margary, I.D., op.cit., 1973, Route 80a, p.432.
40. Surtees, "History and Antiquities of County Durham", vol.III, 1823, p.228 ff; V.C.H. Durham, vol.III, 1928, p.294 a.
41. Dymond, op.cit, 1963, p.156.
42. Margary, op.cit., 1973, p.432.
43. Margary, I.D., op.cit, 1973, p.425, Route 81b.
It is possible that this road continued northwards to the signal station at Goldsborough, which was occupied from the third quarter of the 4th century to the early 5th century; Arch. Jnl., vol.89, 1932, p. 203.
44. Solinus refers to the superior quality of British jet in:-
Collectanea rerum memorabilium, 22, 11 (3rd century);
R.C.H.M., City of York, Vol.1, "Eboracum - Roman York, 1962, pp. 141-144, "The Jet Industry of Roman York".
Objects of jet have been found at Malton (Yorkshire), Strood and Sittingbourne (Kent); Corder, P., "Miscellaneous small objects from the Roman fort at Malton", Antiq.Jnl., 48, 1948, pp. 173-177; Payne, G., "Roman leaden coffin and other interments discovered near Sittingbourne, Kent", Arch.Cant., 16, 1886, pp.9-11; Kirk, J.R., "A Roman jet pendant from Strood, near Rochester", Arch. Cant., 69, 1955, pp.217-9; Smith, C.R., "Roman sepulchral remains found at Strood (Kent)", Collectanea Antiqua, I, 1848, pp. 17-32.



Chapter ThreeYork and the Borders of the Humber

When a military presence was first established at what is now York, during the extension of the province in A.D.71-74, a site of the greatest strategic importance was chosen for the fortress. It was situated in a basin of the Ouse at a point where the river cuts through a glacial moraine which formed a low causeway across what must once have been a wide and marshy valley (1). This crossing facilitated access to the South-West and beyond the Pennines to the fortress Chester on the one hand, and to the Yorkshire Dales and the North, on the other. Bisecting the lower basin of the River Ouse and the Boulder Clay, to the South, and the forested area towards the North Sea, an area strewn with meres, a southward extension of the Yorkshire Wolds provided a good line of communication to the Humber crossing at Brough, and beyond, by way of a northward projection of the Lincolnshire Wolds, to Lincoln and the South (2). Furthermore, although the River Humber is difficult to navigate, it provided access from the North Sea not only by the Ouse to York and the hinterland of the Yorkshire coast, but also by the Trent into the Midlands (3).

The River Humber is probably one of the muddiest rivers in Britain; mud and silt from Holderness have been swept into the estuary and have settled in areas not affected by scour, an accretion great enough in some places to allow marsh plants to grow. Much of this land was reclaimed in the last century : West of Brough, the former Broomsfleet Island which, like Read's Island, is post-Roman in formation, has now been incorporated into the mainland. It has been calculated that some two hundred and ninety square miles (75,110 Ha) of land have been reclaimed as a result of accretion, warping and embanking in the estuary since the Roman period (4) . Little is known of the littoral topography

of the river in Roman times except that it was somewhat wider than now and that considerable areas along both banks would have been low-lying marshland.

The bed of the Humber has been subject to constant change and it is not now possible to ascertain the position of channels for any part of the Roman period. Natural harbours at North and South Ferriby and Faxfleet are floored with mud or clay and, while the first two seem to have been in use as terminals for a pre-Roman ferry across the river, they were apparently ignored in favour of the havens at Brough and Old Winteringham, which had floors of sand and/or gravel. The River Trent, near its outlet into the Humber, is too swift of flow to have afforded good, sheltered facilities (5).

Rough water, constantly shifting banks, shoals and channels and very swift surface currents have always made navigation of the Humber a hazardous business, particularly in summer. To cover the thirty-five miles (56.3 km) from the open sea to Brough, vessels would have had to sail upstream on the flood tide, making the most of the current (6). Although the Ouse was tidal to York, no heavily-laden vessel could have drifted all the way there on one tide without artificial power. In the late 17th century organised towing was in operation and close supervision was necessary (7). In Roman times navigation can hardly have been less hazardous and there is evidence that gubernatores, river-pilots, were used to guide shipping up and down the river system (8). Despite these difficulties, the efficiency of even metalled arterial roads is not to be compared with that of a waterway such as the Humber/Ouse when it came to the transportation of bulk cargoes, for export or import, and the advantages of river transport would have been particularly important during the period when the fortress was being constructed, when transport of bulk supplies over the tracks would have presented serious communications problems.

The first fortress covered an area of 50 acres (20 Ha) and took the form of a rectangle measuring 1,370 feet (417.3 m) by 1,590 feet (484.4 m). The original rampart was of timber, clay and turf, the first of which could have been hewn in the Vale of York and taken to the site by way of ^{the} river. Timber for the rampart foundations, towers and internal structures of the Agricolan reconstruction may have arrived on site in the same way (9). In the first half of Trajan's reign the defences were rebuilt in stone as were some, at least, of the internal buildings. This stone, a magnesian limestone probably deriving from the Tadcaster area, and roofing shingles from the West Riding, were probably also transported by river rather than overland (10). The defences, and probably also some or all of the internal structures, were again reconstructed in the reign of Severus, ca. A.D.197, and further reconstruction took place in the late 3rd to early 4th century, when the North-West side and in particular the South-West front were remodelled in their final imposing form (11).

Few structural remains have been located of the canabae, the buildings of which lay to the North-West, North-East and South-East of the fortress, except by the southern angle of the defences, where the structures were found to be tightly packed together. The tomb monuments of the settlement, however, attest a prosperous community (12).

The area to the South of the defences has also yielded evidence indicating that wharves lined the River Foss, which flows into the River Ouse just below the fortress. The Foss appears to have been wider in Roman times than it is at present and to have been tidal and navigable (13). On the site of the Telephone Exchange, SE 60595180,

excavations in 1949 revealed a series of features which may have had some functional connection with the river in Roman times. Above what was once the steep West bank of the Foss and at a height of 21-25 feet (6.4-7.6 m) above O.D., the remains of a substantial stone building were encountered but partially destroyed; the structure had originally been some 23 feet (7.01 m) by 15 feet (4.57 m) square, with walls of red millstone grit blocks which survived to a height of 5 feet (1.52 m) (14). Although there was insufficient stratigraphical evidence for the building to be securely dated, it was tentatively assigned to the Roman period; the vertical stakes of some wattle hurdling, part of a brushwood structure thought to be of late-Saxon date, were embedded in the uppermost courses of the building and much of the pottery from a nearby trench was of the late 3rd to 4th century. The excavator tentatively interpreted the building as a watch tower and guard house for those supervising the loading and unloading of cargoes, but it could well have been the base for a crane (15).

Adjacent to, and South-East of the masonry building, was a large platform, composed of millstone grit blocks, which measured 18 feet (5.49 m) long from North-East to South-West and lay on a line behind and parallel to the former bed of the River Foss. The platform lay at a height of 17.25 feet (5.26 m) above O.D., and some 6.25-2.25 feet (1.9-0.69 m) above the depression in the "natural" which was thought to represent the ancient bed of the river. A 15 feet (4.57 m) wide strip of "small cobbling" stretched some 53 feet (16.1 m) from the rear of the platform. Twenty feet (6.1 m) South-East of and parallel with both platform and "hard", a double row of piles was encountered at a height of 17.50 feet (5.33 m) above O.D. These were traced over a length of 40 feet (12.2 m) and may have been part of the substructure or revetment of a wharf or a quay. There were indications that the

area South-East of the "cobbled quay" was under water in Roman times and the whole feature was covered with alluvial silt to a height about 23 feet (7.01 m) above O.D. in mediaeval times when this area was part of the Marsh of York (16). Although the 'quay' could not be securely dated, it was probably part of a Roman harbour installation, if only on structural grounds.

In 1829, during the excavations for a well, south of the present bank of the River Foss (but probably on its West bank in Roman times), a "wall of Roman bricks" was found "resting on gravel and supporting a jetty formed of beams and posts"; it lay approximately 30 feet (9.1 m) below ground level (17). On the same side of the river, some 164 yards (150 m) to the South of this "jetty", two rows of rough stone columns some 3 feet (0.9 m) high and 1-1.5 feet (30-45 cm) square, were taken to be, at the time of their discovery in 1938, "obviously meant to support a platform, probably of a wharf". The samian pottery from the mud of the river bank was mostly Antonine in date (18). While it is reasonable to identify the "jetty" found in 1829 as part of some riverside installation because of the depth at which it lay, there is insufficient data to apply this description to the 1938 find (19).

The banks of the Foss and the Ouse were doubtless lined with wharves, stores and other port installations. In 1975, rescue excavation of a limited area on the East bank of the Ouse, a little over one hundred yards (91 m) downstream from the point at which the road from the porta praetoria crossed the river, exposed the superimposed remains of two riverside buildings, beneath ca mid-2nd century road metalling. An immense number of insects, almost entirely grain pests, had infested the earlier structure, a timber-framed warehouse with a raised floor, dated to A.D. 90-110; before a series of sleeper trenches were cut to take the foundations of the later building, another grain store, a seal of clay was laid to prevent further contamination (20).

It has been thought that Eburacum was linked by way of the River Trent, the Fosssdyke, the River Witham and the Lincolnshire Car Dyke, with the Fenland. It is just possible that the Fosssdyke was navigable in Roman times, but recent field-work by Simmons on the Lincolnshire Car Dyke has shown that it was never intended as a canal but rather was part of a gravitational drainage system. While the River Trent would have expedited the transport of bulk cargoes from the iron-producing areas of Lincolnshire and the sources of lead in Derbyshire, the River Humber, which links York and the River Ouse with the North Sea and the Continent, must have been busy with shipments of wine, oil, and other products from the Continent, as well as exports such as wool, hides, linen, sealskin, walrus ivory, furs, jewellery of jet, and hunting dogs (21). A reflection of successful commerce is seen in the inscription on an altar dedicated by one Marcus Aurelius Lunaris, a sevir Augustalis of Lincoln and York, who, having been "ship-borne" from York, "ab Eboraci avect(us)", raised his altar in Bordeaux, a centre for both the oil and wine trades (22). Another such merchant was Lucius Viducius Placidus, a pottery merchant, who hailed from Rouen and who dedicated an arch and shrine at York in the early 3rd century (23).

19

Other men and women of widely flung origins lived at York; tombstones record that a sevir Diogenes hailed from Aquitaine and that his wife was a native of Sardinia; one Theodorianus came from Nomentum in Italy (24). The cemeteries have in fact yielded abundant evidence of a well-to-do community (25).

Eburacum was for most of its life an important and dominant military establishment and the Ouse would have been used to transport supplies and troops to and from the fortress. But Eburacum was, especially in the 3rd century, also an administrative centre with a prosperous and important colonia. It appears that the colonia

originated as ribbon development along the line of the road to Tadcaster, on the West bank of the River Ouse; very little is known of it but the remains of a few structures of the 3rd century indicate that by then it had grown to include stone buildings with good mosaic pavements, and also monumental structures (26). Although the title "colonia" may have been the sign of an honorary status of rank, by A.D.213 Eburacum was the capital of Britannia Inferior and was selected as the seat of the Imperial Court of Severus and Caracalla during the campaigns against the Caledonii and the Maeatae (27). No remains have been located of a Severan palace at York but it is known that Julia Domna lived there and reference is made to such a building in the "Life of Severus" (28). Such a "palatium" would probably have been used by Constantius I who died in York (29). The picture of Eburacum in the 3rd century is, therefore, one of a fortress of great military importance, canabae busy with trade, and a considerable colonia, all of which would have needed the facilities of a large port, equipped with installations for the loading and unloading of cargoes and passengers. No decline is apparent until the end of the 4th century by which time a rise in the level of the Ouse may have caused some flooding and made the riverside installations unusable (30).

Brough-on-Humber

SE 936268

Petuaria lay at the head of a small promontory on the North bank of the River Humber, at Brough (31). In Roman times a gravel-floored inlet lay immediately West of the settlement, and almost opposite a silted harbour on the South bank at Old Winteringham (32). At Brough, the sand and gravel of a buried foreshore of the harbour have been observed in the course of sewer excavations (33). In a sewer trench between Manhole Nos. 7 and 8 (=M.H. 7&8), slightly water-worn Antonine samian and 2nd-3rd century coarse pottery were found in coarse sand and

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gravel at a depth of about 9 feet (2.74 m) above O.D.; the level of the sand and gravel rose slightly towards the North as if the trench was cutting the former shore on an oblique alignment. The absence of a peat layer above this foreshore was taken to indicate that its surface was subject to scouring action, implying little or no deposition of silt/warp in the 2nd century. Some time after the middle of the 2nd century, the foreshore was buried beneath a layer of marine warp, containing mediaeval and post-mediaeval pottery in its upper strata, the result, Wachter suggested, of inundation in the 4th century (34).

Further North, at Site G1, some 50 feet (15.2 m) North of M.H.9, a layer of silt almost 3 feet (0.91 m) deep, containing many fragments of charcoal, wood and leather, may mark the northern limit of the area affected by silting; the top of this layer lay at 12 feet (3.66 m) above O.D., two feet (0.61 m) lower than the surface of the warp in the sewer trench (=M.H. 7-8) (35).

Just outside the S.E. corner of the curtain wall, there was no evidence of silting at a depth of 15 feet (4.57 m) above O.D., and between M.H. 15 and 15A sand and gravel were met at a depth of 13 feet (3.96 m) above O.D., indicating that the maximum height of spring tides was about 12 feet (3.66 m) above O.D. Nowadays the tidal range in the Humber is 21 feet (6.4 m) at springs in the area of Brough; while the considerable decrease in the width of the river may have served to push the head of tidal limits further upstream than it was in Roman times, there seems little reason to doubt that the range of neap and spring tides was substantially different to what is now. A maximum height of about 12 feet (3.66 m) for springs at the time when the warp was being deposited, possibly in the 4th century, may, therefore, imply a mean sea level of about 1.5 feet (0.46 m) above the present (36).

At M.H.9, approximately on the line of the defences, no silt was encountered. The base of the curtain wall, which must have been built to stand clear of spring tides lay 12 feet (3.66 m) above O.D., if not lower, and so the gravel "beach", which was found to lie some 3 feet (0.91 m) lower down, at 9 feet (2.74 m) above O.D., must have been at or a little above the limit of spring tides in the late 3rd century. It would appear then that mean sea level (= m.s.l.) at that time could have been little higher than 1.5 feet (0.46 m) below O.D. Wachter has suggested that m.s.l. may have been considerably lower, possibly as much as 5 feet (1.52 m) below O.D. There is no evidence, however, anywhere in the world, for a sudden rise in absolute sea-level in the 3rd-4th centuries and this apparent "marine transgression" may, therefore, have been due to local or regional subsidence (37).

It seems then, that the harbour at Brough, and by implication, that at Old Winteringham, offered the best facilities in the area and the alignment of the roads North and South of the river shows that here lay the Humber ferry (38). 24

Some evidence for a pre-Roman occupation at Brough has been found at Brough House and in Bozzes Field (39). Wachter has suggested that the area of native occupation on the North Shore of the river must have stretched for some miles East of Brough, and an extensive pre-Roman settlement has been identified at North Ferriby which probably acted as a focal point for early trade with the romanized South as well as a ferry terminal (40).

No structural evidence for any pre-Flavian military presence has been found, although pottery of this period has been reported (41). Initial Roman occupation possibly took the form of a temporary camp of unknown size followed by the auxiliary fort. There is little evidence from excavations for such a camp, or the stores base which would be expected during the initial phases of the campaigns of A.D.71-72;

possibly there was a fort on the southern shore at Old Winteringham (42).

Shortly after A.D.71-72 a permanent auxiliary fort, some 4.5 acres (1.8 Ha) in area, was established to command the river and the ferry. It was evacuated in the late 70's. There is no evidence to indicate whether or not any supply base in the vicinity remained in use after this date (43).

Structures in the garden of the Manor House may have been in use from ca A.D.70-80 into Hadrianic times. A scatter of late-Flavian and Trajanic samian, and much coarse ware, has been observed South of the fort, but no structures can be definitely assigned to this period; there is also a decline in the frequency of coin finds at this time, contrasting with a steady rise in the Vespasianic period (44). This has been taken to betoken a decline in the fortunes of the site consequent upon the abandonment of the auxiliary fort, a decline which should not be found if the presumed supply base remained in use. It is strange that a point of such importance in land, river and sea communications should not have been supervised and used: perhaps the answer lies in the changeable nature of the stream, channels and shoals of the Humber. The fort was briefly re-occupied ca A.D.125, possibly associated with transport arrangements during the erection of Hadrian's Wall (45).

There seems to have been a slow development of the settlement during the late 1st century until the Hadrianic/Antonine period, for which there is evidence of fairly widespread building activity which presumably included the construction of a theatre (46). An area of 13 acres (5.2 Ha) was enclosed by a rampart and ditch system constructed ca A.D.125 - late 2nd century A.D. which defended an area larger than that of the later fortifications. Wachter suggested that Petuaria might still have been in use as an army supply-depot or as a base for a naval detachment at this time but the evidence as yet is inconclusive; it may be significant that no Classis Britannica-stamped tiles have yet

been reported from the site (47). The period A.D.200-270 saw a second phase of earthwork fortification, accompanied by much internal building activity, when Brough may have been re-furbished as one of a network of bases for the fleet (48). From ca A.D. 270-290, the curtain wall was re-built in stone, a work which was never completed, and which may have been necessitated by the ineffectiveness of the fleet against incursors (49). Work was resumed in the late-3rd century, when bastions and gate-towers were added (50). It is not unlikely that the defences at Brough were unfinished when Carausius assumed control and he may have been responsible for the addition of the towers and bastions. The Humber estuary must have been important to the defence of the north-eastern seaboard and its hinterland and so would have been important to Carausius' strategy against piracy (51).

If Brough was important as a general port, naval base or staging point on the route to York in the 2nd-3rd centuries, then it is likely that, with the increase in raiding on the East coast in the 4th century, its importance, especially as a base, should have remained or increased (52). Yet soon after the middle of the 4th century, when control of the sea was vital, the defences at Brough were falling into decay; and occupation of the site apparently thereafter dwindled until it seems to have become a backwater (53). The answer to this problem may lie in the character of the river on which the settlement depended. The course of the River Humber is liable to constant change; it is very muddy and silting must have been considerable at times. The initial effect of even a slight rise in sea-level in the 4th century would have been a scouring action, when a silted harbour might briefly have become more readily accessible to vessels, but when "relative" sea-level had reached stability again, silting would soon render the harbour useless.

Excavation at Old Winteringham, has indicated that a small town had by now developed near the southern ferry terminal which apparently remained active when Brough was in decline. If Brough was primarily a terminal for the Humber ferry then one would expect the fortunes of both harbours to be inter-dependent. If, on the other hand, the main purpose of a port on the Humber in this area was to deal with river traffic on its way to and from York, then either site may have prospered at different times, depending on the state of their harbours. As the one silted, or became difficult of access because of unfavourable currents or inconveniently-located channels or shoals, so the other port may have gained in importance; only extensive excavation at Old Winteringham can hold a solution to the problem, and the conjecture.

No harbour installations have, as yet, been located at Brough. Metalling, encountered in the gardens of the houses to the West of High Street may, Wachter has suggested, have been part of a quay system. The metalling may, however, represent the remains of a road which ran outside and parallel to the defences, serving harbour installations which may now lie buried beneath the eastern fringes ^{of a} line of water-meadows which run as far North as Cave Road (54). To avoid marshy or waterlogged ground the road may have bore north-eastwards as it approached what is now the South end of Cave Road, probably to join the road which ran from the North gate of the defences at a point where it cut through the western edges of the apparently extensive extramural settlement which lay in that area (55).

Old Winteringham

SE 945213

The site lies on the southern shore of the Humber estuary, almost opposite the ferry terminal at Brough on the opposing shore, at a point where one of two prongs of the Lincoln Edge runs to within 400 yards (366 m) of the Humber. Ermine Street follows the Edge on a virtually

straight alignment for 30 miles (48 Km) from Lincoln as far as a
 point 1.25 miles (2 Km) South of Old Winteringham. Here a turn was
 made to the North-East, onto a low promontory, some 15 feet (4.57 m) ²⁶
 above O.D., near to what must have been the shore of a now-silted
 haven at the mouth of the Ancholme Valley, the site of the southern
 terminal of the Roman ferry (56) . Flashmire, a water-logged depression ²⁵
 off the head of this promontory, has traditionally been regarded as
 the site of the Roman harbour. Recent geomorphological field-work ²⁷
 has shown, however, that the gleyed grey silty and sandy clay with
 which it is filled is not typical of Humber warp which, significantly,
 is found in the adjacent inlets to the North-West and North-East and
 from which Flashmire is separated only by low cols. These cols rise
 to a height of about 14 feet (4.27 m) above O.D. (57). There is no
 evidence either here or at Brough to indicate that the high water mark
 of spring tides ever reached 20 feet (6.1 m) above O.D., the level
 which would have been required to give a navigable depth of water over
 the cols of 4-5 feet (1.22-1.52 m). The absence of Humber alluvium in
 Flashmire rather confirms the data from Brough, that sea-level at
 springs, even in the late-4th century, could never have risen higher
 than 14 feet above O.D., giving a maximum possible mean sea level
 relative to land of about 2 feet (0.61 m) above O.D. (58). If a mean
 sea level of about 1.5 feet (0.45 m) below O.D. prevailed in the
 River Humber in and before the 3rd century A.D., then there would not
 have been a sufficient depth of water in the inlets which lie to the
 North-West and North-East of Flashmire for them to be viable as harbours
 (59). Straw speculated that ferry boats may have made use of a smoothly
 shelving sandy beach and spit which apparently lay adjacent to the
 mouths of the inlets. This strand would have been exposed to the open
 estuary and use may, therefore, have been made of a more sheltered site
 further South, perhaps in the lee of the eastern prong of the promontory,
 in the vicinity of Eastfield Farm (60).

Occupation, probably in the form of an early fort or camp, began ca. A.D.50, of which ditches, traces of timber buildings and two carefully constructed roads may have been part. This military phase continued at least until ca. A.D.80, when the fort at Brough was also abandoned. While Old Winteringham would have been a cardinal point, almost certainly as a supply base, during the preparation for the crossing of the Humber in A.D.71, its strategic importance may have decreased after the subjugation of Yorkshire, when an alternative route to York, via Doncaster, would have been open (61).

After the close of the military phase, occupation, mainly civilian in character and probably in the form of a village or small town, continued until the end of the 4th century (62). An undated leaden seal, found in 1972 in an unstratified context, bears an imperial head on the obverse and may indicate that, in addition to its role as ferry terminal for the Humber crossing, the settlement was also once used as a staging-point for supplies bound for the North, perhaps during the campaigns of Severus or Constantius I (63).

MINOR COASTAL SITES

Bridlington

TA 185672

From Stamford Bridge a Roman road has been traced running in an easterly direction towards the village of Fridaythorpe, just West of which the road divides; one branch leads, by way of Kilham, to Bridlington while the other follows a more northerly course, passing close to the 4th century villa at Rudston and thence, along the valley of the Gypsy Race, through Boynton, to Bridlington (64). As these roads enter the western outskirts of the town, they are separated by the Gypsy Race, which has its outfall just South of Bridlington Station.

Coastal erosion has been severe in Bridlington Bay, and particularly so in the area of Bridlington itself before the pier was built, and it has been calculated that, from Barmston to Kilnsea, an average of 1,809 yards (1,654 m) has been lost to the sea, from A.D.1086 until A.D.1800. If erosion has taken place at a constant rate, this would mean that the equivalent of a strip of land 2.5 miles (4 km) deep has been washed away since Roman times (65).

A chart by Lord Burleigh shows that there was once an island just South-East of Bridlington (66). This may represent the remains of the southern arm of an inlet or bay, perhaps the Gabrantovicum Sinus of Ptolemy (67).

Except for the two roads, no Roman finds have been reported from the Bridlington area and, as at Hastings and Walton Castle, the remains of the coastal settlement may long since have been washed away. It is just possible, however, that the roads never led to a port. The nearest settlement was the fort and vicus of Derventio, at Malton, about 30 miles (48 km) away, and Derventio in turn was only 18 miles (29 km) from the major port that is known to have existed on the River Ouse at York (68).

Grainthorpe

TF 3798

Saltfleetby St. Clement

TF 4692

A series of roads, lanes, fields and parish boundaries may mark the route of a minor road from Bullington, where it divides from the Lincoln to Burgh-le-Marsh road, to the Lincolnshire coast, just North of Grainthorpe (69).

Grainthorpe lies nearly 4 miles (6.4 km) inland of Donna Nook, and on the western edge of an extensive tract of accreted sand and gravel, much of which has been reclaimed, and behind which also lies Saltfleetby St. Clement, some 7 miles (11.2 km) to the South-East (70).

Another series of aligned features may represent the line of a minor route from Furze Hill, Stixwold, on the East bank of the River Witham, to Saltfleetby on the coast (71). There is no evidence, other than scanty traces of Romano-British occupation at Grainthorpe, to indicate that there was ever anything at either of these two places other than a minor coastal settlement, concerned probably with fishing or salt-manufacturing activities (72).

NOTES

1. Benson, G., "York" I (1911), 1-2, figs. 7-8.
2. R.C.H.M., "An inventory of the historical monuments in the City of York, Vol.1 : Eburacum : Roman York", 1962, p.xxxix; Margary, I.D., "Roman Roads in Britain", Ed.III, 1973, Routes 2d, 2e, and 270, pp.236, 240 and 418.
3. Duckham, B.F., "The Yorkshire Ouse", 1967, pp.14-17. Until A.D. 1757, the Ouse was tidal as far as "popleton fferry", some 4 miles (6.4 Km) above York; Steers, J.A., "The Coastline of England and Wales", Ed.II, 1964, pp.415-419.
4. Steers, op.cit., 1964, p.418.
5. Wachter, J.S., "Excavations at Brough-on-Humber, 1958-1961". Reports of the Research Committee of the Society of Antiquaries of London, xxv, 1969, pp.5, 14 ff and 76 ff.; _____, "The Towns of Roman Britain", 1975, p.394; Wright, E.V. & Wright, C.W., "Prehistoric Boats from North Ferriby, East Yorkshire", Proc. Prehistoric Society, vol.xiii, 1947, p.114 ff; _____, Antiquity, vol.xiii, 1939, p.349 ff; Margary, op.cit., 1973, pp.236 & 418; Stead, I.M., "Excavations at Winterton Roman Villa and other Roman sites in North Lincolnshire, 1958-1967", D.O.E. Archaeological Reports No.9, 1976, pp.3-4 and Appendix I (by Allan Straw), "Geomorphology of the Roman Site at Old Winteringham", pp.311-314.
6. Wachter, op.cit., 1969, pp.78-81.
7. Duckham, op.cit., pp.21-4.
8. R.I.B., No. 653; R.C.H.M., 1962, Insc. 36, p.116 & pl.44, fig.81.
9. R.C.H.M., 1962, p.xxx; Britannia, vol.VI, 1975, p.236; VII, 1976, pp.314-5; VIII, 1977, p.383; Webster, G., "Military Situations in Britain, A.D., 43-71" Britannia I, 1970, p.193. Demetrius, presumably Demetrius of Tarsus, visited York just before A.D.84. Inscriptions on two bronze plates record that he made a dedication to the deities of the governor's headquarters and to Ocean and Tethys (RIB. 662,663). When he took part in Plutarch's dialogue just before the Pythian festival in A.D.83-4, he had recently returned from a visit to Britain where he had accompanied a voyage apparently around the western isles of Scotland. (Plutarch, 410, A and 419, E.).
10. R.C.H.M., 1962, pp. xxx,xxxii; R.I.B., p.215a; J.R.S., vol. xviii, 1928, p.211; xxxix, 1949, p.114 (cf. R.C.H.M., 1962, p.111, Insc. 1); Britannia, vol. III, 1972, pp.309-310; IV, 1973, p.280; VI, 1975, p.236; VII, 1976, pp.314-315; VIII, 1977, p.383; Current Archaeology No. 37, vol.IV, No.2, June 1973, pp.49-50, 52; No.50, vol.V, No.3, Dec. 1975, pp. 85-6; Kitson-Clark, H. "Gazeteer of Roman East Yorkshire", p.25. A Trajanic building inscription is the latest dated record of the presence at York of Legio IX, and under Hadrian it was replaced by Legio VI; R.I.B., 665. For the presence of the Legio VI at York in the 4th century see Notitia Dignitatum - Occ. xl, 18.

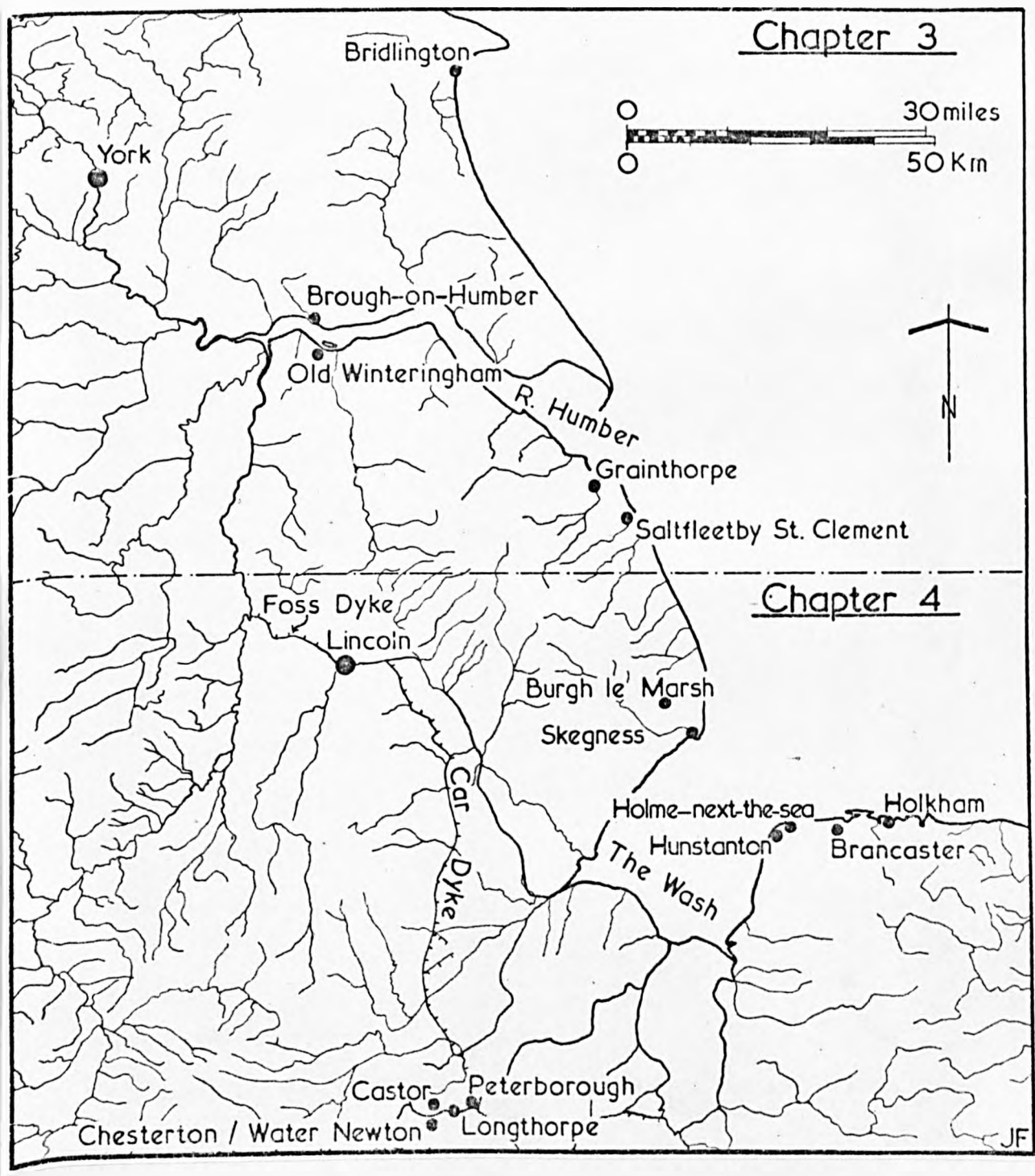
11. R.C.H.M., 1962, pp. xxxii-xxxiii; *Britannia*, vol. III, 1972, p.310; IV, 1973, p.280; VIII, 1977, p.383.
12. R.C.H.M., 1962, p.xxxiv, fig.37, and *Inscriptions*, Nos. 104, 107, 113, 122, 126-8, 130.
13. R.C.H.M., 1962, pp.xxxi, 64-5.
14. Figure 18 : Feature A; R.C.H.M., 1962, Monument 52, p.64a & Figs. 52-3; Richardson, K.M., "Excavations in Hungate, York", *Archaeological Jnl.*, vol.CXVI, 1961, pp.51-6, Fig.2.
15. Richardson, *op.cit.*, pp.54-56; R.C.H.M., 1962, p.64a.
16. Richardson, *op.cit.*, pp.53, 55.
17. Fig.18 : Feature B; R.C.H.M., 1962, Monument 53, p.64b.
18. Fig.18 : Feature C; R.C.H.M., 1962, Monument 54, p.65a and *J.R.S.*, xxix, 1939, 204.
19. Samian pottery, said to be Antonine in date, was recovered from the "mud of the river bank".
20. Hall, R.A., and Kenward, H.K., "Biological evidence for the usage of Roman riverside warehouses at York", *Britannia*, vol. VII, 1976, pp.274-6.
21. See p.67ff;
Dudley, H., "Early Days in North-West Lincolnshire", 1949, 142-3, 194-6; *J.B.A.A.*, Ser 3, vii, 1942, p.28; of
Tylecote, R.F., "Metallurgy in Archaeology" 1962, Nos.1-7;
R.C.H.M., 1962, pp.108, 141-4 and xxxviii; *Strabo, Geography*, iv.5.2.
22. *J.R.S.*, xi, 1921, 102.
23. *Britannia*, vol. VIII, p.430, no.18.
24. *R.I.B.*, Nos. 678, 687, 677.
25. R.C.H.M., 1962, pp.67-135.
26. R.C.H.M., 1962, xxxvii and Monuments 34, 30, 31; of *Inscriptions* 13 & 14; *Britannia* VI, 1975, p.236; V, 1974, p.414. Excavations in Skeldergate (SE 60195144), revealed a riverside road which had been resurfaced six times. It lay a little under 60 yards (55 m) from the West bank of the Ouse, and was apparently separated from the earliest colonia buildings by a wide space; *Britannia*, vol. VII, 1976, p.315; Addyman, P.V., "The Archaeology of York, 2nd Interim Report", 1976.
27. *C.I.L.*, XIII, 3162; The title "Colonia" may have been granted by Severus when he stayed at York; *Eutropius, Breviarium*, VIII, 19.
28. *Cassius Dio*, LXXVI, 16, 5; *Scriptores Historiae Augustae*, Severus, 22, 7.

29. Eutropius, *Breviarium*, x, 1.; Wacher, J.S. "The Towns of Roman Britain", 1975, pp.157-9.
30. Butler, R.M., (ed.) "Soldier & Civilian in Roman Yorkshire", 1971, pp.179-199.
31. Ptolemy, *Geography*, ii, 3, 17; Antonine Itinerary, 464.1; 466.4; *Notitia Dignitatum*, Occ., xl,31; R.I.B., 707.
32. Wacher, *op.cit.*, 1969, p.76 ff, figs. 31-3. See remarks on Old Winteringham, p.52 ff.
33. Plan 1, section A; Wacher, *op.cit.*, 1969, p.76 ff.
34. Wacher, *op.cit.*, 1969, p.76 ff, Layer j.I.4.
35. Wacher, *op.cit.*, 1969, pp.76 ff, 81.
36. Wacher suggested a m.s.l. of 2 feet (0.61 m) above O.D. for the late 4th century. The area between M.H.6 and M.H.15 was not observed. Humber alluvium never penetrated over the "cols" which separated the Flashmire hollow at Old Winteringham from "inlets" to the N.W. and N.E., the tops of which lay at, or about 14 feet (4.27 m) above O.D. See p.53 & n.57
37. Wacher, 1969, *ibid*, and see remarks on Dover, p.182 ff.
38. Margary, *op.cit.*, 1973, pp.236 and 418.
39. Wacher, *op.cit.*, 1969, pp.3, 5.
Corder, P., "Excavations at the Roman Fort at Brough-on-Humber, i", 1934.
Corder, P., "Excavations at the Roman Fort at Brough, East Yorkshire, ii", 1935.
Corder, P., & Romans, T., "Excavations at the Roman town at Brough, East Yorkshire, iii", 1936, iv, 1937 and v, 1938.
These are summarized in Corder, P. & Richmond, I.A., "Petuaria", *J.B.A.A.*, S3, vii, 1942, p.5 ff.
40. *Antiquaries Journal*, xviii, p.262; Hull Museum Publications, 212, 237; Wacher, *op.cit.*, 1969, p.5.
41. Wacher, *op.cit.*, 1969, p.6-8, 93; Webster, G., "Military Situations in Britain between A.D.43 & 71", *Britannia I*, 1970, pp.179-197.
42. Wacher, *op.cit.*, 1969, pp.3, 7-8; *J.R.S.*, vol. xi, 1921, p.10; lv, 1965, p.205; Wacher, *op.cit.*, 1975, p.395. South of the fort, in the Manor House Garden, early timber buildings and pits were found on the same alignment as structures within the fort. The buildings were based on sleeper beams and individual posts. Wacher, *op.cit.*, 1969, p.7, fig.2, pl.ivb. See also, remarks on Old Winteringham, p.54.
43. Wacher, *op.cit.*, 1969, pp.8-20; 1975, p.395.
44. Wacher, *op.cit.*, 1969, p.20 ff.

45. But cf. Wacher, *op.cit.*, 1969, pp.3, 20-23, 29 ff.
46. R.I.B. 707; the location of *civitas Petuariensis* is summarised in Wacher, J.S., *op.cit.*, 1975, pp.393-7; 1969, pp. 23-26.
47. Wacher, 1969, 26 ff. Frere has argued that the site could still have been an army depot; see *Britannia* I, 1970, p.40 ff., and Frere, S.S., "Britannia", 1967, p.249, n2; cf. Cleere, H., "The Classis Britannica", in Johnston, D.E. (ed.), "The Saxon Shore", C.B.A. Research Report No.18, 1977, p.16.
48. Wacher, *op.cit.*, 1969, pp. 3, 26-29, 32-3, 43-9, Fig.12; 1975, p.395; R.I.B., No.707; Johnson, S., "Late Roman defences and the Limes", in Johnston D.E. (ed.) *op.cit.*, p.68.
49. Johnson, S., *ibid.*
50. No t.p.q. later than the late-3rd century to early 4th century was suggested by Wacher, *op.cit.*, 1969, pp.34-8. Corder dated some of the bastions to the 4th century; Corder, *op.cit.*, 1935, pp.6-8; Corder and Richmond *op.cit.*, 1942, p.5. The North gate guard-room can hardly have been in use much after the mid-4th century. It has been suggested that there was a workshop producing mosaics in the vicinity of Brough in the mid-4th century. Smith, D.J., "The Mosaic Pavements" in Rivet, A.L.F., (Ed.) "The Roman Villa in Britain", 1969, pp.102-7.
51. Wacher, *op.cit.*, 1969, pp.50-53; Corder P., "The defences of the Roman fort at Malton", 1930, p.67 ff.; here there was a high proportion of Carausian coins.
52. Wacher, *op.cit.*, 1969, pp. 4, 53-4, 198; 1975, p.397.
53. Wacher, *op.cit.*, 1969, p.54.
54. Wooden piles and horizontal timbers, associated with mediaeval pottery, observed 148 feet (45 m) North of M.H.7 when the sewer trench was cut, are unlikely to represent the underpinning of the Roman curtain wall, and may have been part of a harbour installation. It was not stated whether or not the timbers were in situ. Wacher, *op.cit.*, 1969, p.35.
55. Wacher, *op.cit.*, 1969, p.73.
2nd-3rd century pigs of Derbyshire lead found at Brough may indicate that the port was a trading outlet for the lead industry. They may, however, have been sent to Petuaria for use in maintaining boats or in construction work on the settlement. The pigs could have been shipped to Brough along the Rivers Trent and Humber. Tylecote, *op.cit.*, 1962, Nos. 3-7 & p.87. If Brough is to be identified as the Pretorium of the Antonine Itinerary (464.1) then it is likely that accommodation was provided there for officials or travellers, as it lies at a terminal point of "Iter I". Wacher, *op.cit.*, 1969, p.26.

56. Margary, *op.cit.*, 1973, Route 2d, p.236-8; Riley, D.N., "The End of Ermine Street at the South Shore of the Humber", *Britannia*, V, 1974, pp.375-7, fig.1, pl.xxxi B; Wachter, *op.cit.*, 1969, p.76 ff. The road was found to fork at SE 94532134, one arm leading onto the low promontory at Flashmire; the other arm was traced for a short distance northwards and may have led to the settlement.
57. Stead, I.M., "Excavations at Winterton Roman Villa and other Roman sites in North Lincolnshire, 1958-1967", D.O.E. Archaeological Reports No. 9, 1976, pp.1-4 and fig.3, and Appendix I, "Geomorphology of the Roman Site at Old Winteringham", (by Allan Straw), pp.311-4 and fig. 147-148.
58. Straw, *op.cit.*, p.313 ff. See also, remarks on Brough, p.49.
59. *ibid.*
60. Straw, *op.cit.*, p.314 and fig. 146.
61. Stead, *op.cit.*, 1976, pp.4, 11-16, 18-19; J.R.S., LV, 1965, p.205, at SE 945213; Goodburn, R., "Lead Sealing from Old Winteringham, Lincolnshire", *Britannia*, V, 1974, pp.377-9; Webster, G. "The Roman Military Advance under Ostorius Scapula", *Archaeological Jnl.* vol.CXV, 1958 (1959) pp.53-4; _____, "Military Situations in Britain between A.D.43 & 71", *Britannia*, I, 1970, pp.179-197.
62. Stead, *op.cit.*, 1976, pp.6-19; Goodburn, *ibid*; J.R.S., LV 1965, p.205; LIX, 1969, pp.242, No.35 & 244, No.56.
63. Goodburn, *ibid.*
64. Margary, *op.cit.*, 1973, Route 810, p.421 ff.
Fridaythorpe - SE 8859.
Rudston - TA 088667 : *Britannia* II, 1971, p.253; III, 1972, p.310; IV, 1973, p.281; A.Ex., 1972 (1973), p.12; J.R.S., LII, 1962, p.130; LIV, 1964, p.157-9; LV, 1965, p.204; LVI, 1966, p.199; LVII, 1967, p.179. Rivet, A.L.F., (Ed.), "The Roman Villa in Britain", 1969, S.V.
65. Sheppard, "The Lost Towns of the Yorkshire Coast", 1912, pp.42-3. Steers, *op.cit.*, 1964, p.409 ff. If denudation since Roman times has been at the same rate, then about 83 sq. miles (21,497 Ha) have been lost.
66. temp. Henry VIII; cf. Chart of the "River Humber & Coast to Scarborough", ca. 1579, Royal MS. 18 D III (62). Hornsea is shown at some distance from the sea with which it is connected by a long straight river or creek.
67. A suggestion by H.G. Ramm, via. Prof. A.L.F. Rivet; Ptolemy, *Geography*, Bk.II, CAP. 3. 4.
68. Margary, *op.cit.*, Route 800, p.426 and Route 81a, p.421.

69. Margary, op.cit., 1973, Route 272, pp.241-2; Whitwell, J.B., "Roman Lincolnshire", 1970, p.53; Whitwell tentatively suggests that this road may have led to a fort of the Saxon Shore type, part of a defensive system for the Lincolnshire Coast.
70. Steers, op.cit., 1964, pp.419-420.
71. Margary, op.cit., 1973, Route 273, pp.241-2.
72. Phillips, C.W., "The Present State of Archaeology in Lincolnshire", Archaeological Jnl., vol.91, 1934 (1935), pp.97-187.



Chapter 3

Chapter 4

JF

Chapter Four.

The Borders of the Wash and Fenland Navigation.

Nowadays, strong tides and currents, and extensive, constantly-shifting shoals make the 14-mile (22.5 km.) crossing of the Wash, from Skegness to Hunstanton, one of the most difficult on the East coast (1). This, however, need not necessarily have been the case in Roman times. The presence of Scrobicularia in clays deposited before and immediately after the Roman period, along the northern shore of the Wash, indicates that this was then an area of sheltered water, probably a tidal lagoon (2). For such sheltered conditions to exist, there must have been some form of offshore barrier to shield the coast from rough waters, a barrier which was no longer effective in the 13th and 15th centuries, judging by the severe marine incursions of that period (3).

The inner shoreline of the Wash has been subject to considerable change since Roman times; an estimated 66,844 acres (26,738 Ha.) of accreted land lie outside an early sea wall, commonly known as the "Roman Bank". During the 1st-4th centuries A.D., if not earlier, a rise in sea level caused the development of extensive marshes, which were broken, West of Boston, by the large estuary of the River Witham and its tributaries, one of which, the River Bain, was apparently tidal as far as the Roman walled town at Horncastle (TF 2569) (4).

Lincoln.

SK 9771

28

At Lincoln a limestone ridge rises sharply to a height of some 200 feet (61 m.) above the point where the River Witham flows through a narrow glacial channel before entering what was once a wide and marshy flood-plain (5). At the South end of the ridge, a 41 acre (16.4 Ha) legionary fortress was established ca. A.D. 61. The first garrison, the Legio IX Hispana, was replaced by the Legio II Adiutrix ca. A.D. 71, at which time the defences were strengthened (6). Foundation trenches of timber structures have been encountered at various points within the

enceinte but their relationship to the plan of the fortress has not been established. (7). Occupation debris, dating from ca. A.D. 50, has been found in the area South of the fortress, debris which may be derived from cannabae which presumably sprang up on the slopes between the fortress and the river, and which must have formed the nucleus from which the extramural settlement developed (8).

When the fortress was evacuated in the late 70's, probably ca. A.D.77, the defences were not slighted but survived to be re-used when a colonia, Lindum, was founded in the reign of Domitian, perhaps in the early 90's (9). In the first part of the next century, perhaps ca. A.D.100, they were reconstructed in masonry and a wall, some 4.5 feet (1.37 m) thick, was added to the front of the rampart (10). By ca. 200 A.D., the defences of the colonia were extended downhill, towards the northern bank of the Witham, increasing the area within the ramparts from 41 to 97 acres (16.4 to 38.8 Ha.) (11). Early in the 3rd century, probably ca. A.D. 210-230, the defences were again refurbished but on a more monumental scale, one of a complex series of modifications(12). Although very little is known about the internal layout of the colonia, a series of scattered finds of architectural material indicate that Lindum was a prosperous city with a high level of romanisation, including at least one building complex of classical proportions and monumental size, and equipped with an unusually well-appointed sewerage disposal system.(13). Parts of substantial town-houses, decorated with painted wallplaster and mosaics, and variously constructed between the first half of the 2nd century and the 4th century, have also been encountered during excavations, as have gilded mosaics and veneers of polished sandstone, granite, Purbeck "marble", and imported marble much of which was Italian in origin (14). The general prosperity of the city is also indicated by a series of elaborate tombs and burials contained in cemeteries to the North, East and South of the defences (15).

A series of pottery kilns were in production from the 1st to the 4th centuries and produced mortaria which were shipped in bulk to the East

coast of Scotland in the Antonine II period, almost certainly from wharves or quays on the R. Witham (16). A stretch of ashlar walling some 20 feet (6.1 m.) long, was encountered in 1954 on the site of the new Telephone Exchange, at the junction of Broadgate and St. Rumbold Street, some 80 yards (73.2 m.) outside the South-East corner of the "lower colonia" and approximately 100 yards (91 m.) North of and parallel to the now-canalised River Witham (17).

Although site contractors had removed some 2 feet (0.61 m.) of dressed stone, two courses of large blocks of dressed stone still stood to a height of 4.25 feet (1.29 m.). The lower course rested on 3 feet (0.91 m) of rubble foundation below which lay clean sand and gravel. Much Flavian pottery was recovered from the surface of this sand and gravel in the area South of the wall, while to the North of the masonry, a shallow pit containing early 2nd century wares was sealed beneath rubble ^{which} had been thrown in against the foundation course, indicating a Hadrianic date for the construction. No structures were found to the South of the wall and the bed of sand and gravel may, therefore, be taken to represent the 1st century A.D. channel of the Witham. The stones and mortar in the lower part of the wall were encrusted with a black iron deposit and had evidently once been submerged in water. The wall, was, therefore, tentatively identified as forming part of the 2nd century waterfront of the river. The feature continued northwards as a solid or 'hard'; to the East it was lost under adjoining property while to the West it made a right-angled turn to the North (18). Fragments of two stone hubs, parts of wooden water-wheels, have been found in the Witham just South of the "lower colonia", and indicating that the waters of the river were harnessed to provide power for at least one water-mill, of which the masonry wall may conceivably have been part (19).

The position of Lindum at a nodal point of major land routes must have been vital to the successful development of the city, but its role as a major inland port is open to question, as there is now considerable doubt as to whether the Lincolnshire Car Dyke was ever intended as a

navigable water-way (20). The River Witham was evidently navigable as far as Lincoln, above which the waterway known as the Foss Dyke may have provided a link with the Trent-Humber-Ouse river-system and the North. There are indications, but no certain proof, that the Foss Dyke is Roman; it had become seriously choked by the reign of Henry I but, although two sepulchral stones and a considerable amount of Roman pottery have been found at various points on or near its banks, the only Roman object to have come directly from the bed of the dyke is a 2nd-3rd century silver statuette of Mars and this need not necessarily have been lost in Roman times (21). It is, indeed, possible that the dyke was never intended as anything more than an overflow drain for the flood-waters of the River Trent.

29

The course of the Lincolnshire Car Dyke has been traced over most of the 56 miles (90 Km) from the Witham Fens, in the Washingborough area some 3 miles (48 Km) downstream from Lincoln to Peterborough on the River Nene (22). Parts of it were apparently out of use by the Middle Ages, as a short section of the channel, just East of Sempringham House Farm, Pointon, was back-filled to make way for a large mediaeval ^{moated} site; in 1811, clay moulds for coins of Constantine and Helena were found in the bed of the Dyke at the North end of Nocton Wood on the edge of the Witham Fens some 7 miles (11.2 Km) South-East of Lincoln, in the same area as two undated ancient boats (23). Although the course it follows is often sinuous when skirting rising ground and there are a number of sharp bends and an unexplained sudden change of level of some 10 feet (3.05 m), it was navigable at least in parts of the southern section in the Middle Ages, as a load of dressed Barnack Stone, "obviously intended for a church", has been found in the channel near to Morton (24). Recent field-work by Simmons has resulted in the discovery of seventeen presumed Roman roads which crossed the "siltlands" of the Dyke; none have been found traversing the Witham Fens. Simmons has shown the Car Dyke was probably non-existent in the central sector between the River Slea and Billingham, and that it was never intended as a canal linking the Fenland with the North, but

rather as a gravitational drainage system; navigation requires a good depth of water which is anathema to the drainer whose main aim must be to keep the channel as empty as possible. While the dyke may have been navigable over short lengths, it is almost certain that it was never intended as an inland waterway to link Lincoln and the Witham with Peterborough and the Nene (25).

The Nene Valley.

In the area of Peterborough and its new town, the River Nene meanders through a wide valley along which there are extensive gravel terraces. To the North, the land rises to an undulating plateau, at about 70-120 feet (21-36 m.) above O.D., while, to the South, the topography is similar except that it levels out at about 70' (21 m.) above O.D. East of Peterborough, the Nene valley descends towards the Fens, which lie less than 20 feet (6.1 m.) above O.D. Before the end of the 13th century, the River Nene had its outlet at Wisbech, which is now some 11 miles (17.7 Km.) inland from the shore of the Wash. Wisbech was of note as a port before A.D. 1292, when a diversion of the River Ouse and an inrush of tidal silt and sand all but choked its approaches; drainage and canalization schemes led to its revivification in the 17th and 18th centuries (26). At present, the Nene is navigable to light traffic at least as far as the extensive Roman settlements around and to the West of Peterborough (27).

Longthorpe.

TL 158977

The fortress at Longthorpe lies above the North bank of the River Nene, some 2.3 miles (3.7 Km.) upstream from Peterborough and 2.8 miles (4.5 Km.) from Ermine Street, with which it may have been connected (28). The two defensive ditches enclose an area of 27.3 acres (10.9 Ha), being 1,182 feet (350.50 m) long from East to West, and 999 feet (301.95 m.) wide from North to South. This was probably a "vexillation fortress", housing detachments of legionary and auxiliary troops. Although it may have served as a supply base or as winter quarters, it is most likely

to have been a "campaign fortress", established as part of a specific strategy soon after A.D. 43 or, possibly, in A.D. 48. (29). A smaller 11-acre (4.4 Ha) fort, built within the fortress, represents a reduction in the size of the garrison, probably as part of the strategy following the events of A.D. 60-1 (30). Occupation ends ca. A.D. 61-62. Both fort and fortress face and command the crossing of the Nene, but whether either relied on river transport is a matter of some debate. Store-buildings "A" and "B", the former probably an horrea, lie inside the North gate of the fortress, through which supplies must have come by road from the South or, as requisitions, from Coritani to the North and North-West (31).

Some 400 m. (437 feet) to the South-East, downstream of the fortress and immediately above North bank a native farmstead gave way, during the period of military occupation, to a large industrial establishment or works depot. Pottery Kilns were in operation here between A.D. 50-65 and there is some evidence for bronze working, with "clear military connections". (32).

Peterborough.

TL 194986.

30

The site of the extensive pre-Roman settlement at Fengate, Peterborough, was occupied during the 2nd-4th centuries, but the nature of that occupation is not clear (33). Another area of "intensive" Roman occupation has been located beneath the centre of the old town of Peterborough (34). A short distance further South, on the present North bank of the Nene at TL 19199816, a dug-out canoe, possibly of the late Iron Age, has been found; its presence here helps to delimit the course taken by the Nene at the turn of the millenium (35).

At Stanground on the South bank of the river, approximately 100 yards (91.4 m.) South East of Cnut's Dyke, a Roman pottery kiln was revealed in A.D. 1908. Nearby lay a length of "road covered with Roman potsherds" and "the remains of an ancient 'wharf'" (36). Although pottery and coins from the site indicate 1st-4th^{century} occupation,

there is insufficient evidence to assign the 'wharf', if it was such, to the Roman period. In fact, none of the accounts of the 1908 diggings gives anything more than a passing reference to it.

The site is, however, close to the point at which the Cambridgeshire Car Dyke meets the Nene, and is $1\frac{1}{2}$ miles (2.4 Km.) from the point at which the Fen Road crossed that river (37). This section of the Car Dyke probably followed the course now taken by the artificial cuts known as Cnut's and King's Dyke. A mechanical section across Cnut's Dyke showed that alluvium had settled around Romano-British Kiln wasters which had been dumped in the Channel, which in turn was sealed by a stratum of peat containing a Saxon cauldron (38).

Cat's Water, 700 yards (640.5 Km.) South-East of Peterborough Cathedral, (at TL 19959821) is an old channel of the River Nene and it is from here that the Lincolnshire Car Dyke struck northwards towards the River Witham (39). In the area immediately East and North of Peterborough, it now varies from 25-50 feet (7.62-15.2 m.) wide and 4-10 feet (1.22-3.05 m.) deep and in parts is still flooded with 4 feet (1.22 m.) of water. While the Car Dyke may have been navigable at this point, it is almost certain that it was never intended as an inland waterway linking the Nene and the Witham (40).

Water Newton/Chesterton.

TL 120967.

Although the area around Peterborough was occupied in the 1st-4th centuries, the main focus of Roman activity lay some 5 miles (8 Km.) upstream, at Durobrivae (41).

Aerial photography has revealed the presence of a small fort, probably of the Claudio-Neronian period, to the East of Ermine Street, between the River Nene and the later walled-town, at Water Newton (42).

The walls of the town itself enclosed an area of 44 acres (17 Ha.) and carefully skirted along the edge of the flood-plain of the river. Ermine Street, following an undeviating alignment, cuts through the town, dividing it into two unequal halves. It leaves the town by way of the

North gate and heads directly for the crossing of the Nene, 1400 ft. (427 m) to the North-West which it gained by means of a bridge (44). It is towards this point that another road, which runs down the Nene Valley from Irchester, is aligned (45).

The town lies at the centre of an area of intense industrial activity; kilns used for the manufacture of Castor ware have been found over an 8-mile (12.8 Km.) stretch of the Nene Valley on both banks, from Stibbington in the West down to Stanground in the East, and including Castor itself on the North bank of the river, opposite the town at Water Newton. Pottery was manufactured in large quantities from the mid-2nd to 4th centuries and it is probable that much of it must have been distributed by way of the River Nene, and related waterways (46).

On the North bank of the Nene, at Castor, a series of roads branch off Ermine Street and King Street (47). Here lies a large part of the extra-mural area of Durobrivae and its potteries - amid a large number of complex sites (48). From its junction with Route 250, at TL 12629801, a side road runs in a southerly direction for 600 yards (548.6 m.). Then, South of the railway, it turns and heads South-East for 1 mile (1.6 Km.) to the edge of the Nene (49). It runs over a gravel terrace on the East side of a large S-shaped projecting meander of the river, on which there are traces of ring-ditches, settlement areas, tracks, enclosures and linear ditches (50). The road terminates abruptly at a "large" depression near the river (Fig. 31); this has led to the suggestion that there may have been a wharf here for river transport (51). While it is most likely that the products of the potters' kilns were largely conveyed by water transport, for which wharves would have been necessary, there is no evidence thus far to warrant the identification of this site as a river port. The 'depression' need not necessarily be Roman in origin and it could well be the result of small-scale gravel extraction. If such activity has not removed all trace of Roman wharves in the immediate vicinity of the terminus of the road, then the Nene itself may well have washed them out; only excavation can provide an answer.

Pottery may not have been the only product to be shipped along the Nene. A road which branches from Ermine Street, at Ailsworth, heads in a westerly direction, along the high ground above the North bank of the Nene, towards King's Cliffe, where its course is lost (52). This passes South of Bedford Purlicus where ore-roasting furnaces have been found (53), and evidence for iron-working has been found on other sites in the area (54). The country to the South of the Nene was also the scene of large scale agricultural activity, for which at Lynch Farm, an ambitious land drainage scheme was necessary (55). The area is also well-studded with villas (56) and may have been the centre of a mosaic-manufacturing school (57).

There is every indication that the major riverside settlements in the Nene Valley were served by waterborne transport but further investigation is clearly needed on an extensive scale, before any firm conclusion can be reached.

The Wash Ferry.

The course of a Roman road which ran eastward from Lincoln has been traced as far as the western outskirts of Burgh-le-Marsh, 4.5 miles (7.2 km) from the present shore of the Wash, at Skegness (58). Margary has tentatively suggested that this road may have continued across the coastal marshes towards the railway station at Seacroft, until it met the coast some 1.5 miles (2.4 km.) South of Skegness (59) where it is nearly opposite the northern terminus of Peddars Way, which strikes the coast of Norfolk somewhere between Hunstanton and Holme-next-the-Sea. The opposition of the termini of these two roads at the mouth of the Wash indicates that this stretch of water must have been crossed by a ferry (60).

Before sea defences were constructed, the coast between Skegness and Mablethorpe, 14 miles (22.5 Km.) to the North, was subject to erosion (61). This erosion exposed the remains of an Iron Age salt-manufacturing settlement at Ingoldmells (62). Considerable quantities of Roman debris, and pottery of the 1st to 3rd centuries, were also washed out (63). The occupation debris from this and other sites is generally found buried under 6 to 8 feet (1.83-2.44 m) of marshland clay or sand. When exposed by wave-action, pre-Roman Iron Age strata are generally found at mid-tide level, while those of the Roman period lie a little above (64). The tide-range in this area is 19 feet (5.79 m.) at present; if this factor has been constant since Roman times, then there must have been a rise in sea-level in relation to that of the land of some 8.5 feet (2.59 m.). It is possible that the contraction and compaction of sub-clay peat has served to exaggerate this figure.

Ingoldmells is too far North to be the terminus of the road from Lincoln which seems to aim for the area South of Skegness. Skegness itself, according to Leland, was once:

" . . . a great haven toun a towne wallid
having also a castelle". (65).

This, he was informed, had been :

" . . . clene consumid and eten up with the se,"

but, he observed :

" . . . at low waters appere yet manifest tokens of old
buildings." (66).

There are references in the Ingoldmells manorial rolls of A.D.1345 and 1422 to a piece of land known variously as, "Chesterland" or "Castelland", land which must have been washed away in the marine incursions of the 15th century (67). Phillips suggests that the Roman pottery which has been washed up from time to time, on the stretch of coast between Chapel St. Leonard's and Gibraltar Point, may, in part, have come from a drowned site. Furthermore, he speculates that the

Wash was, in the Roman period, as much as 4 miles (6.4 km.) narrower than it is now and that the terminal point of the ferry is, therefore, well below the modern low-water mark of tides (68). A detailed study of the post-Glacial history of the coastline of the Wash in the immediate area of Skegness should furnish evidence to confirm or deny Phillip's hypothesis. Coastal salt-manufacturing sites are never far removed from the prevailing H.W.M.S.T., and the proximity of the site at Ingoldmells to the modern shoreline may indicate that considerably less than 4 miles (6.4 km.) of land has been lost. On the other hand this site may have been situated above an inlet or a bay to the North of Skegness.

South of Skegness, Gibraltar Point is a sand and marsh formation, in the lee of which the southerly drift has deposited vast amounts of sand. This has resulted in the formation of an extensive belt of marshland which now lies behind a line of dunes. By A.D.1919, a tract of marshland from 200 yards (183 m.) to 1 mile (1.6 km.) deep had formed on the seaward side of a sea-wall which had been constructed only seventy years previously (69). This wall is one of several that have been built to reclaim marshland. A so-called "Roman bank", which runs behind the 1869 embankment, turns inland South of Skegness and describes the outline of what must once have been a bay; almost all the "Outer" or "Bottom" Marsh here is below the level of modern high tides and would have been submerged, if not free of alluvium, in Roman times. Recent field-work by Simmons has indicated that this bay apparently extended as far West as Burgh-le-Marsh (TF 503651) towards which ran the Roman road from Lincoln (70). Burgh-le-Marsh may, therefore, have been the site of the western terminal of the Wash Ferry. The area now known as the Croft Marshes near the outlet of the Steeping River (TF 550600) just 1 mile (1.6 km.) South of Skegness was similarly sited on the edge of this bay.

Until the course of the road East of Burgh-le-Marsh has been fixed and its date ascertained no firm conclusion can be reached; but if the Roman ferry terminal was in the area South-West of Skegness then its remains could lie preserved beneath these marshes (71). If, on the other hand, the road led to a site between Skegness and Gibraltar Point, all trace of it must long since have been washed away.

Holme-next-the-Sea

TF 705440

Hunstanton

TF 675410

33

The course of Peddar's Way, as it approaches the North-West corner of Norfolk, has been traced as far as Ringstead, some 2 miles (3.2 km.) from the mouth of the Wash but, although the road must have struck the coast somewhere between Hunstanton and Holme-next-the-Sea, its exact course is not known (72).

The modern minor road from Ringstead to Holme is marked on O.S. maps as following the course of Peddars Way. It is more likely, however, that the Roman road followed a more westerly line, along a lane which marks the parish boundary, and which reaches the coast about $\frac{1}{4}$ mile (0.4 km.) West of Holme-next-the-Sea; this lane seems to rest on an agger as it nears Holme (73). If the road followed this line, it would have struck the coast just West of Gore Point, and the modern tidal inlet which is the natural outlet for the drainage of the Holme Marsh. The 1st Edition of the O.S. map (A.D.1883-8) shows that this inlet was then much wider, perhaps about 600 yards (549 m) across from S.W., to N.E., and that it was protected by a spit - Gore Point - to the North. Between the inlet and the higher ground to the South, runs a tract of marshland, part of a belt of accreted ground now occupied by Holme Marsh and the Golf Links, and composed of material eroded from Gore Point (74).

The silted marsh haven of Thornham Harbour, East of Holme-next-the-Sea, was used in the mid-16th century as a coastal port, for the export of corn. In a Muster Roll of A.D. 1570, mention is made of two ships, each of 30 tons (30.4 tonnes), at Holme (75). It is not clear, however, whether these ships were lying at Holme itself or 1.5 miles (2.4 km.) to

the East, at Thornham. Thornham lies too far off the projected line of Peddars Way for it to have been the Roman ferry terminal which must have been sited on an inlet or marsh-creek nearer Holme-next-the-Sea, or even further West.

In 1929, just North of Ringstead Village (TF 707404), a "broad band of parched grass" was noted, which veered away from the line of the modern road to Holme-next-the-Sea and seems to have pursued a course to the West of the route favoured by Margary, heading as if to join the modern road to Hunstanton (76). While no finds of Roman material have been reported from Holme, some graves of the Roman period have been found at Hunstanton (77). All trace of a harbour off Hunstanton itself must long since have been washed away but, about a mile (1.6 km.) North-East of the town, behind Old Hunstanton, the cliffs which dominate the foreshore recede around a low-lying arm of alluvial ground which may once have been the site of a small marsh-haven or inlet, towards which a road in this area may well have headed (78). Until the course of Peddars Way, between Ringstead and the coast has been fixed, the exact location of the eastern terminal of the Wash ferry must remain obscure.

Brancaster

TF 781441

34

The Saxon Shore fort which lies between Brancaster and Brancaster Staithe, about 5 miles (8 km) East of Holme-next-the-Sea, occupied a strategically important site in that it would have overlooked the passage of coastal traffic, plying North and South; it would also have provided a strongly-defended base on a windswept coast for a flotilla, possibly a detachment of the Classis Britannica in the early 3rd century, patrolling the entrance to the Wash, part, presumably, of a network of detachments whose task it was to defend the coast of Britain against predatory incursions (79). The fort was also adjacent to the terminus of Peddar's Way and the eastern terminal of the Wash ferry in the area of Holme-next-the-Sea (80).

The Saxon Shore fort, Branodunum, was built on a sloping site, now some 30-50 feet (9.1-15.2 m) above sea-level (81). The area to the North of the fort is part of an extensive tract of salt marsh, some of which has been reclaimed, which is here penetrated by the marsh-haven known as Mow Creek which approached to within a hundred yards (91 m) of the northern defences (82). This tract of marshland and Scolt Head Island, to the North-East, are comparatively recent formations; mediaeval havens nearby to the East are now choked with silt (83). If the area below the fort was devoid of sand-bars or saltings in Roman times, any marsh-haven would have been open to the full force of the North and north-easterly gales to which this coast is prone. Therefore, it is likely that the old beach-line on which the fort stands was probably fronted by sand and/or mud flats and bars. Access to within a short distance of the settlement may have been gained by an arm of Mow Creek, which would then have been deeper and more extensive (84). The defences, which are of 2nd-3rd century type, enclosed an area of $6\frac{1}{2}$ acres (2.56 Ha). The 9 feet (2.74 m) thick walls were demolished in A.D. 1770, except for footings of loose flint and sand. On this foundation rose a core of flint, ironstone (= carstone) and hard chalk rubble, set in concrete, and faced with blocks of local sandstone on the exterior (85). Although the interior of the fort has not been systematically excavated, aerial photography has recently revealed details of the internal arrangements. St. Joseph found traces of two occupation levels which he assigned to the mid-late 3rd century and to the mid 4th century. The coin and pottery evidence, which shows continuous occupation up to the end of the 4th century (with greater coin losses during the times of Carausius and Constantine, and in the second half of the 4th century), is consistent with an early 3rd century construction date (86). While the *Notitia Dignitatum* lists Branodunum as being commanded by the praepositus equitum Dalmatarum, the area of 4th century structures outside the West gate, has produced a

tile-stamp of Cohors I Aquitanorum which may have been the original garrison (87) .

Crop-marks on aerial photographs indicate an extra-mural settlement of over 56 acres (23 Ha), one of the largest in Icenian territory, lying mostly to the East, but also West and South of the fort, and comprising a complex of enclosures, house-plots and roadways (88). North of the East-West aerial road which ran from, and possibly pre-dated the West gate of the fort, presumably to connect with a coast road from Holme-next-the-Sea, numerous, poorly-constructed timber buildings, occupied in the 4th century, have been excavated (89).

North of the Saxon Shore fort, on a slight rise on the edge of the salt-marsh, traces have been noted, through aerial photography, of a smaller, 1.5 acre (0.64 Ha) earth and timber fort, possibly occupied for a short time prior to the Saxon Shore fort. Within this early fort, crop-marks indicate the presence of a half-acre (0.2 Ha) fortlet which may have been constructed in the aftermath of the Boudiccan revolt (90).

Approximately 181 yards (165 m) from the East gate of the fort, the main East-West axis road met a cross-road which, after running northward for 175 yards (160 m), split, in a T-junction; one branch apparently headed north-eastwards towards what is now an area of low-lying marshland, centred some 437 yards (400 m) from the defences, which is probably the site of a former arm of Mow Creek. The field beyond this "inlet" has produced traces of substantial brick and flint structures, while to the South, crop-marks indicate the presence of a ditch, with a curving corner and an entrance, apparently enclosing the area on the landward side (91). Edwards and Green have suggested that this may have been the site of the harbour and its associated installations, but Roman structures have also been noted some 327 yards (300 m) further East near Staithe House, and pottery 0.6 miles (1 km) East of the fort, at Brancaster Stiathe Harbour (92). Until this largely unexplored area East of the fort has been systematically examined, the precise location of the harbour must remain obscure.

The main East-West axis road may have continued eastward, running South of the possible harbour sites and heading for a crossing of the River Burn near Burnham Overy, and for the Roman road which ran from Toftrees to Holkham (93).

Holkham

TG 870430

A clearly marked Roman road has been traced from the minor settlement at Toftrees to Holkham, 1.5 miles (2.4 Km) West of Wells in Norfolk. North of Holkham a parish boundary may mark the line of the road; it veers slightly eastward and follows the western side of a small valley for 0.5 miles (0.8 Km) as far as Dale Hole on the edge of the sea-marshes (94).

Between the marsh-haven at Wells and the tidal creek at Overy Staithe, to the West, the old shore-line is fronted by a wide tract of reclaimed marshland. Two ridges of dunes - both called Holkham Meols - which run between the projected terminus of the road at Dale Hole and Wells, have been stabilized with plantations of conifers. These were once off-shore bars and it is possible that the area behind them, now reclaimed, was a tidal lagoon or creek in the Roman period. The remains of many of such marsh creeks have been traced in this area (95).

No Roman remains have been reported from this area but the presence of the road indicates that there was a coastal settlement of some sort here in Roman times (96).

Notes to Chapter Four

1. Phillips, C.W., The Roman Ferry across the Wash, Antiquity, vol. VI, 1932, pp.342-8.
2. Swinnerton, H.H., "The Physical History of East Lincolnshire", Trans. Lincolnshire Nat. Union, 1936; this is summarized and discussed in:-
Steers, J.A., "The Coastline of England and Wales", 1964, p.420 ff.
See also: Swinnerton, H.H., "The Post-Glacial Deposits of the Lincolnshire Coast", Quarterly Journal of the Geological Society, vol. 87, 1931, p.360 ff.
3. Swinnerton, op.cit., 1936; Steers, op.cit., p.420, follows Swinnerton's suggestion that this barrier took the form of a broken line of morainic hills, running from Spurn Head to the Norfolk coast. Phillips, op.cit., 1932, p.348, concluded that the barrier was made up of shoals off the Lincolnshire coast and a "huge overhang of shallow water stretching North from Brancaster", off the Norfolk shore.
4. Steers, op.cit., 1964, pp.425-438; Britannia VII, 1976, pp.325-6.
5. Richmond, I.A., "The Roman City of Lincoln", Archaeological Jnl., vol. CIII, 1946 (1947), pp.26-56.
6. Richmond, op.cit., pp.26-8; Baker, F.T., "Ten Seasons" Digging, 1945-1954", Lincoln Archaeological Research Committee, 1955, pp. 6-9; Whitwell, J.B., History of Lincolnshire, Vol.II, "Roman Lincolnshire", 1970, pp.17-21; Colyer, C., "Lincoln", Current Archaeology, 26, Vol. III, No.3, May 1971, pp.67-8; Frere, S.S. & St. Joseph, J.K., "The Roman Fortress at Longthorpe", Britannia V, 1974, p.37 and fn. 52; Thompson, F.H., & Whitwell, J.B., "The Gates of Roman Lincoln", Archaeologia, Vol. 104, 1973, p.144 ff.; Todd, M., "Roman Lincolnshire, 1946-74", Archaeological Jnl., Vol. 131, 1974 (1975), pp.278-9; J.R.S., LV, 1965, p.205; R.I.B., 253-258.
7. Todd, op.cit., p.279; Britannia, IV, 1973, p.286; Whitwell, op.cit., p.21. An auxiliary fort may have been established in the area before A.D.60 to command the crossing-point of the Witham but no trace of it has yet been found; Todd, op.cit., p.279; Richmond, op.cit., p.27; Whitwell, op.cit., p.19; Webster, G., "The Military Situations in Britain between A.D.43 and 71", Britannia I, 1970, p.184. But cf. Colyer, C., "Lincoln: the Archaeology of an historic city", 1975, pp.5-8.
8. Richmond, op.cit., p.40; Baker, op.cit., p.20; Whitwell, op.cit., pp.34-5; Colyer, op.cit., 1971, pp.67, 69; Britannia, III, 1972, p.315; IV, 1973, p.286; V, 1974, pp.421-4; VI, 1975, p.245. Timber-framed buildings, probably of Neronian-Flavian date, have also been found in the area of the "lower colonia", one of which seems to have been a store-building of military type.
9. Ptolemy, Geography, ii, 3, 20; C.I.L., XIII, 6679; R.I.B., 250, 269; Richmond, op.cit., p.29; Whitwell, op.cit., pp.25-6. The "Lindo" element reflects the "pool" or "lake" of the Witham below the colonia; Jackson, K., "Romano-British Names in the Antonine Itinerary", Appendix II of Rivet, A.L.F.; "The British Section of the Antonine Itinerary", Britannia, I, 1970, p.76; Richmond, op.cit., p.26; Colyer, C., op.cit., 1975, p.11, ff.

10. Richmond, op.cit., pp.29, 31-5; Baker, op.cit., pp.9-13; Whitwell, op.cit., pp.25-9; Thompson, F.H., & Whitwell, J.B., op.cit., 1973, pp.129-207; J.R.S., Vol.LV, 1965, p.205 and Vol.LVII, 1967, p.181; Britannia, III, 1972, p.315; V, 1974, p.424; VI, 1975, p.245.
11. Richmond, op.cit., p.40 ff; Baker, op.cit., pp.20-1; Whitwell, op.cit., pp.34-6; Colyer, op.cit., 1971, pp.68, 70; _____, op.cit., 1975, pp.15-16; Todd, op.cit., p.280; Wachter, J.S., "The Towns of Roman Britain", 1975, pp.132-3; Britannia, III, 1972, p.315; IV, 1973, p.286; V, 1974, pp.421-4.
12. Baker, op.cit., pp.9-10; Whitwell, op.cit., p.28; Thompson & Whitwell, op.cit., p.201 ff; Todd, op.cit., pp.279-280; J.R.S., Vol, LV, 1965, p.205 and Vol. LVII, 1967, p.181; Britannia, I, 1970, p.284; III, 1972, p 315; V, 1974, p.424.
A.D.330-340 the West wall-and-rampart of the lower colonia was pierced by a new gateway, the fabric of which contained much re-used building materials, including architectural mouldings, which remained in use until well into the 5th century; Colyer, op.cit., pp.70-1; J.R.S., Vol. LIX, 1969, p.214; Britannia, II, 1971, p.257 ff; III, 1972, p.315.
13. Richmond, op.cit., pp.24-5, 35-8; Baker, op.cit., pp.13-18; Whitwell, op.cit., pp.30-34, 40-2; Thompson, F.H., "The Roman Aqueduct at Lincoln", Archaeological Jnl., Vol. CXI, 1954 (1955), pp.106-128; Colyer, op.cit., 1971, p.67; Todd, op.cit., p.280; Wachter, J.S., 1975, pp.126-131; J.R.S., Vol. XLVIII, 1958, p.136 & Vol. LV, 1965, p.205; Britannia, II, 1971, p.257; VI, 1975, p.245.
14. Richmond, op.cit., pp.38-40, 45; Baker, op.cit., p.20; Whitwell, op.cit., p.38; Colyer, op.cit., 1971, p.71; Todd, op.cit., p.280; Britannia, IV, 1973, p.286; V, 1974, pp.421-4; VI, 1975, p.245.
15. Richmond, op.cit., pp.48-9. A sevir Augustalis of both Lincoln and York was probably a rich merchant; see remarks on York, p. 46
16. Richmond, op.cit., pp.46-7; Baker, op.cit., p.25; Whitwell, op.cit., pp.38-9; Hartley, B.R., "The Roman Occupations of Scotland : The Evidence of Samian Ware, Britannia, III, 1972, pp.47-8; J.R.S.,XLI, 1951, p. 170; XLIV, 1954, p.159.
17. Baker, op.cit., p.27; J.R.S., Vol. XLV, 1955, p.131 (F.H.Thompson).
18. *ibid.*
19. Richmond, I.A., "Industry in Roman Britain", in Wachter, J.S., (Ed.) "The Civitas Capitals of Roman Britain", 1966, p.83 and pl. IX, and citing Ausonius, "Mosella", 362-4.
20. Margary, I.D., "Roman Roads in Britain", Ed. III, 1973, Route 5f (Fosse Way), pp.219-221; Routes 2c and 2d (Ermine Street), pp. 224-9, 236-8; Routes 260 and 262, pp.234-6; Route 28a, p.410 ff; Route 27, pp.238-240. There is some evidence for an embankment, set on clean river sand, which may have carried the approach-road to a Roman bridge over the Witham; Richmond, op.cit., p.45, See also, note 25.
21. Phillips, C.W., "The Present State of Archaeology in Lincolnshire", Archaeological Jnl., Vol.XCI, 1934 (1935), pp.117-8; Toynbee, J.M.C., "Art in Roman Britain", Ed. II, 1963, p.131; no.16; R.I.B.,Nos.274,275.
22. Trollope, E., "Sleaford and the wapentakes of Flaxwell and Aswardhurn", 1872, pp.64-82; Phillips, op.cit., p.117.

23. Phillips, op.cit., 1935, p.117.
24. Phillips, op.cit., 1935, p.117 ff; Salway, P., "The Roman Fenland", in Phillips, C.W. (Ed.), "The Fenland in Roman Times", Royal Geographical Society-Research Report No.5, 1970, pp.11, 13-14; Hallam, S.J., "Settlement Round the Wash", in Phillips, op.cit., 1970, p.32. The Lincolnshire Car Dyke and the Cambridgeshire Car Dyke are not necessarily contemporary nor related waterways.
25. Simmons, B.B., "The Lincolnshire Car Dyke" 1975, pp.14-16; , in Britannia, VII, 1976, pp.325-6; Phillips, op.cit., 1935, p.117.
26. Ptolemy, "Geography", Ed.Muller, II, 3, iv. *Μεταξύς Ελοχούς* ; Salway, P., op.cit., 1970, pp.1-24; Steers, J.A., op.cit., 1964, p.434; Owen, D.J., "The Origins and Development of the Ports of the United Kingdom", 1948, Ed.II, p.201.
27. Frere, S.S., and St. Joseph, J.K., op.cit., 1974, pp. 1-129. See also: J.R.S. LV (1965) p.74-76, Fig.1. & PL ix., LVIII (1968) p.189; LIX (1969) p.219; Britannia II, 1971, p.264-6; III, 1972, p.320; R.C.H.M., 1969, pp.8-12.
28. Frere and St. Joseph, op.cit., pp.4-5, 13. Certain alignments of Ermine Street and the Fen Road, if projected, would pass through the fortress. Margary, I.D., op.cit., 1973, Routes 2b/c and 25, pp.204, 224 and 230. The gravel terrace on which the fortress stands is about 30 feet (9.1 m.) above O.D.; the southern edge of the terrace was found to be eroded. The site is now covered by a golf course.
29. *ibid* p.39.
30. *ibid*. pp.16-39 ff. Tacitus, Annals, XIV.
31. Frere & St. Joseph - op.cit., p.21; cf:- Britannia,VI,1975, p.218
32. Excavations by - A. Challands, G.B.Dannell & J.P.Wilch - Report forthcoming in Britannia. J.R.S., LVIII, 1968, p.189; Britannia, II, 1971, p.264-6 at TL 163974; III, 1972, p.320; IV, 1973, p.271; VI, 1976, 251; V.1974, p.433 - no sign of Roman occupation at TL 164975. A.Ex. - 1972 (1973) p.55-6; R.C.H.M, 1969, p.9, no.6 & Fig,2,P.L.2. After A.D. 65, the land reverted to agriculture
33. R.C.H.M., 1969, pp.5-8, centred on TL 212992, with what may be a Roman Settlement on the western side of the Car Dyke (p.8, no.32, at TL 209007). Near Werrington, to the North, a track (?) seems to run to meet the Car Dyke at TF 174047, at which point "many Roman remains", and pottery of the 3rd-4th centuries, have been found on both sides of the cut (R.C.H.M., 13-14. See also: Pryor, F., "Fengate", Current Archaeology, No.46, Vol. IV, No.11, Jan.1975, p.332-8, plan; cf. C.A., No.45, Vol. IV, No.10, Dec. 1974.
34. Britannia VI, 1975, p.253 - Roman pits and fragments of what may have been a salt-boiling hearth were found at TL 195989; Britannia, IV, 1973, p.294 & A.Ex., 1972, (1973), p.55 - Flavian timber structures. See also R.C.H.M. 1969, pp.3-4.

35. Lethbridge, T.C., Fell, C.I. et al., "Report on a recently discovered Dug-Out Canoe from Peterborough", Proc. Prehistoric Society, vol.17, 1951, pp.229-233, Figs. 1 & 3. The canoe lay on a bed of gravel at a depth of 17 feet (5.18 m) below the surface of the river. It was 32.5 feet (9.86 m) long, was flat-bottomed and 2.5' (0.76 m) wide at the point of greatest beam. The vessel was transom-sterned and was probably punted by one man standing right aft.
36. See note 97.
37. Margary, I.D., op.cit., 1973, Route 25, p.230 ff. Phillips, C.W., (Ed.) op.cit., 1970, p.185, PL. VI. a: The line of this road as it approaches the old Nene crossing was confirmed in 1964; it ran in two alignments from TL 215991 - TL 220992 - TL 22990. It was picked up across Cat's Water as a gravel spread running East, along the South Bank.
38. Dannell, op.cit., R.C.H.M., 1969, pp.40-43, Figs. 16-17. Clark, J.G.D., "Excavations on the Cambridgeshire Car-Dyke - 1947", Antiquaries Jnl., 29, 1949, pp.145-163 - the floor of the cut which linked the R. Cam/Granta with the old West River and the R. Ouse, was flat-bottomed and 28 feet (8.54 m) in width. The sides sloped outwards until at ground level they were 45 feet (13.72 m) apart. The cut was a little over 7 feet (2.13 m) deep. Clark assigned an early date to the pottery in the silts of the canal and concluded that it had been cut as early as A.D.50-60. It had continued in use until the last quarter of the 2nd century, and was out of normal use by the late 3rd-4th centuries. Hartley, B.R., "The Dating of the Cambridgeshire Car Dyke". In Phillips, C.W., (Ed.) op.cit., 1970, p.126., re-examined the sherds and suggested a later date for the original cut - 2nd century. The earliest date for the filling of the channel seems to be ca A.D.325 and, therefore, the Car Dyke may have continued in use throughout the 4th century and even later. Cnut's Dyke starts at the South-East of King's Delph Island and is linked to King's Dyke by the natural Oakley Dyke. Cnut's Dyke, unusually, strikes straight across the peat fen, some of which now drops very close to O.D. (ibid).
39. The course of the Car Dyke as it approaches the North bank of Cat's Water - the old course of the Nene - is difficult to trace but it seems to run straight for the river and ignore the site at Stanground.
40. R.C.H.M., 1969, pp.40-43, Figs. 16-17; Phillips, C.W., op.cit., 1935, pp.119-123; Phillips, op.cit., 1970, p.186 & Gazetteer; Trollope, E., op.cit., 1872, pp.64-82.
See also p. 67ff.
41. Antonine Itinerary, 474.1 - 476.6, Durobrivas - "the fort by the bridge". A milestone, dated by inscription to A.D.276, was found in a field called Bridge Close in A.D.1785. The milestone was found lying in the ditch just West of the North gate of the town. It gives the mileage as m.p.I. and it has been suggested that a settlement at Castor, on the North bank of the River Nene, would make a suitable centre from which the mileage was measured (R.I.B. 2235). A second milestone - temp. Victorinus - A.D.268-270 - was found in A.D.1913, beside Ermine Street, about 50 yards (45.7 m) from the North-West angle of the town wall. (R.I.B.2238).

42. Webster, G., "Fort and Town in Early Roman Britain", In Wachter, J.S., (Ed.), op.cit., 1966, pp.36-37, Fig.4; Antiquity, xiii, 1939, pp.178 & 455; J.R.S., xxix, 1939, p. 208 and xliii, 1953, pl.ix, No.1.
43. St. Joseph, J.K., "The Towns of Roman Britain - the Contribution of Aerial Reconnaissance", In, Wachter, J.S., (Ed.) op.cit., 1966, p.25, PL.iv; J.R.S., vol.xlviii, 1958, p.139; Artis, E.T., "The Durobrivae of Antoninus", 1828, pl.xxiii - Artis' plan which shows twenty-two buildings, or parts thereof, within the walls has been largely confirmed by Aerial Photography - St. Joseph, J.K., op.cit.
44. Ermine Street: Margary, I.D., op.cit., 1973, Route 2b & 2c, pp.204-6 and 224. A by-pass skirts the East wall of the town in three short alignments. After passing by the North angle of the town wall, the road now ends abruptly, due, no doubt to erosion by the Billing Brook, a tributary of the Nene. The stone piers of a bridge have been found in the North bank of the river at Castor (TL 117976) - Dymond, D.P., "Roman Bridges on Dere Street, County Durham", Archaeological Jnl., cxviii, 1963, pp.157 & 163.
45. Margary, op.cit., 1973, Route 570, p.216. This road may be 2nd century in date - Britannia VI, 1975, p.253, Ashton. For timbers of a bridge found in the Nene at Aldwincle, see J.R.S., LVIII, 1968, p.192 and Britannia III, 1972, p.322. (TL 002805) .
46. Stibbington: Wild, J.P., "A 4th century potter's workshop and Kilns at Stibbington, Peterborough", C.B.A., Research Report No.10, "Current Research in Romano-British Coarse Pottery", 1973, pp. 135-8. (TL 085986); Britannia, I, 1970, p.287 - Kilns in production probably from A.D. 325-360.
Stanground, TL 216967, See p.
Sulehay - TL 060991, Britannia VI, 1975, p.255.
Ailsworth. (100 yds. (91 m.) S.W. of.) TL 112984, R.C.H.M., 1969, p.17, no. 19.
Kilns and occupation levels, near to Ermine Street, to the West and up to 1 mile (1.6 Km.) South of Water Newton, J.R.S., xlviii, 1958, pp.139-140, Fig.14; Britannia, V, 1974, p.433; R.C.H.M., 1969, pp.19-20.
See also: Woods, P.J., "Types of Late Belgic and Early Romano - British Pottery Kilns in the Nene Valley", Britannia, V, 1974, pp.262-81; the maximum range of distribution of these early local wares is 20-25 miles (32-40 Km.) cf. Weekley, SP.884818, Britannia, II, 1971, p.264, mid-1st century pottery and Kiln debris.
47. Margary, op.cit., 1973, - Route 26, p.224 - King Street - Castor to Lincoln; Routes 25 and 250-1, p.230 ff.
48. Normangate Field, immediately North of the Nene, has produced vast quantities of pottery, R.C.H.M., 1969, pp.22-28 & Figs.8, 9 & 10. TL 11609792/11789788/11459795/11949789.
49. Margary, I.D., "Roman Roads near Durobrivae", Antiquaries Journal, vol.15, 1935, pp.116-7, Road VI, and op.cit, 1973, p.39, Route 251, The road terminates at TL 13629685.
50. The Boat House Complex - centre TL 136971, R.C.H.M., 1969, p.22 ff. & Fig. 9. Aerial Photograph - R.A.F. Vertical Air Photograph - F22/58/R.A.F./5164: 0084 and 1046-1047. and is here about 25' above O.D.

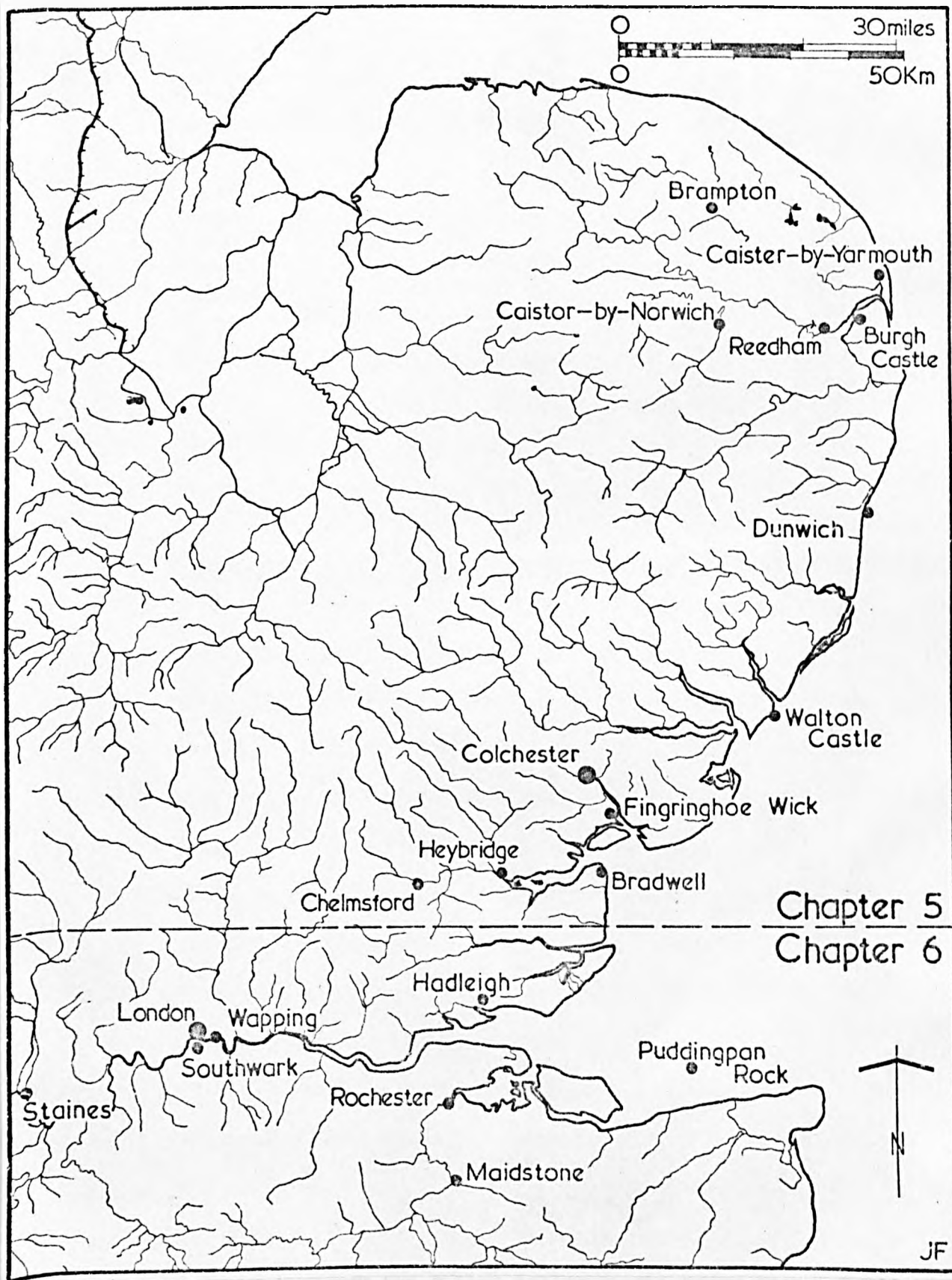
51. Margary - op.cit., 1973, p.39 describes the depression as "large", which description is followed by R.C.H.M. (p.39 a.). In his earlier work, however, he states that the road ended at "a scarp above the flood-plain", and that the depression in the alluvium of that flood-plain was "very slight and almost indistinguishable". He noted that it showed up as a distinct oval patch of lighter colour on aerial photographs - op.cit. 1935, pp.116-7.
52. Margary, op.cit., 1973, Route 571, p.217.
53. J.R.S. LVI 1966, p.207; Todd, M., "The Coritani" pp.109-110.
54. Ashton - TL 048893 - Britannia, VI, 1975, p.253.
Wakerley- SP 940983 - Britannia IV, 1973, p.294.
55. Lynch Farm - Orton Longueville - TL 149971 - occupation ranged from the 3rd century to the first half of the 4th century and lay over Flavian pits and ditches.
Britannia IV, 1973, p.291; V, 1974, p.433; VI, 1975, p.252;
A.Ex., 1972 (1973) p.56.
R.C.H.M., 1969, p.19 ff., p.29 ff., p.31 ff. & Fig 7.
Orton Longueville TL 177955 - the centre of an extensive farmstead of 1st-3rd centuries, which was remodelled ca. A.D.,300; it lies about $\frac{3}{4}$ mile (1.3 Km.) N.E. of another farm at TL 167952 (ca.100 B.C.-A.D.140). Britannia, III, 1972, p.322; VI, 1975, p.252; VIII, 1977, p.398 ff; J.R.S., lviii, 1968, pp.189-190; R.C.H.M., 1969, pp.29-30.
Walton - TF 165023 - 2nd-4th century farmstead - Britannia V,1974,p.433.
Harringworth - SP 934980 - barn (?), ovens and corndryer - Britannia, V, 1974, p.434.
Wakerley - SP. 940983. Iron Age & R.B. agricultural settlement - Britannia V, 1974, p. 434 and IV, 1973, p.294.
56. Castor-Village - TL 125985, R.C.H.M., 1969, pp.24-5 & cf. E.T. Artis' plan (op.cit.) which has been confirmed by excavation : Britannia, II, 1971, p.264; III, 1972, p.320; V, 1974, p.431.
Castor - Mill Hill - TL 128972 - R.C.H.M., 1969, pp.25-6, no.42 & p.39.
Ailsworth at TL 10949767 & possibly another at TL 10469782
R.C.H.M. 1969, p.17, nos. 17 & 18, Figs.5 & 6.
Barnwell - TL 0585 - 4th century villa - Britannia V, 1974, p.434.
Elton - TL 121941 - late 3rd-4th century - Britannia II, 1971,p.264.
57. Smith, D.J., "The Mosaic Pavements", In Rivet, A.L.F., (Ed.), "The Roman Villa in Britain", 1969, pp.97 & 108, Figs. 3 & 4; Johnston, D., "Mosaics", Current Archaeology, No.29, Vol.III, No.6, Nov. 1971, p.160 ff.
58. Margary, I.D., op.cit., 1973, Route 27, p.238 ff.
There may have been a minor-settlement at Burgh-le-Marsh, or a posting-station, as Rivet A.L.F., has suggested in Town & Country in Roman Britain, Ed.II, 1964, p.149. But see Phillips, C.W., op.cit., 1935, p.161; _____, op.cit., & 1932, p.344. (Roman coins from the churchyard of St. Mary and "much Roman pottery from Cock Hill, round barrow).
59. Margary, op.cit., Phillips op.cit., 1932, p.345.
60. Margary, op.cit., 1973, Route 33b, p.258 ff; Phillips op.cit., 1932, pp.342-8; see remarks on Holme-next-the-Sea and Hunstanton, p.75.

61. Steers, op.cit.,; At Mablethorpe, Romano-British Pottery & Coins (3rd century) were found in 1934 on the shore at Low Water Mark, Nottingham Guardian, August 6th 1934. (cited in Phillips op.cit., 1935, p.174.
62. TF 5769 : Swinnerton, H.H., "The Prehistoric pottery sites of the Lincolnshire Coast", *Antiquaries Journal*, vol.12, 1932, p.239 ff. See also: Baker, F.T., "The Iron Age Salt Industry in Lincolnshire", Reports and Papers of the Lincolnshire Architectural and Archaeological Society, n.s., viii, 1960, p.26 ff. and, in the same volume, Hallam, S.J., "The Romano-British Salt Industry in South Lincolnshire, p.35 ff.
63. Phillips, op.cit., 1932, p.345; Swinnerton, op.cit., 1931
64. Away from the coast occupation levels have been located at these or greater depths, below ground level. Phillips, op.cit., 1932.
65. Leland, "Itinerary", ed. L. Toulmin Smith, iv, p.181. This account pre-dates A.D. 1540. Todd, M., op.cit., 1973, p.44, tentatively suggests that this "castelle" was a fort of the Saxon Shore type. He conceded, however, that Brancaster is the most northerly garrison listed in the *Notitia Dignitatum*.
66. Leland, op.cit.
67. Court Rolls, 1422, p.248. Whitwell, J.B., op.cit., 1970, p.52-3. Whitwell thinks it inconceivable that the coast opposite Lincoln would be unprotected and tentatively suggests that there may have been a Saxon Shore fort in the vicinity of Skegness. The Wash ferry may then have been a direct link between a lost Skegness fort and that at Brancaster.
68. Phillips, op.cit., 1932, p.348; cf. Phillips, op.cit., 1935. p.180. (Roman pottery and "Handbricks").
69. Steers, op.cit., who cites: Newmann, L.P., and Walworth, G., *Journal of Ecology*, vol.7, 1919, p.204 ff.
70. No Roman material has been reported as coming from the bank and Phillips thinks that it is mediaeval in date, while other sections may be natural, op.cit., 1932, p.347. cf. Phillips, C.W., op.cit., 1935, pp.123-4 & 133-4.
71. A slight southward deviation in the course of the road would be required to bring it to this point but an example of this type of behaviour has been proved at Winteringham on the River Humber.
72. Ringsted: TF709405. Margary, I.D., op.cit., 1973, Route 33b, pp.260-1.
73. Margary, op.cit., pp.260-1.
74. Steers, J.A., op.cit., 1964, pp.366-370.

75. Steers, op.cit., pp.368-9. A Muster Roll of A.D.1582, of ships of 100 tons (101.6 tonnes) makes no mention of Holme.
76. Observations by O.G.S. Crawford & Insall, cited by Phillips, op.cit., 1932, p.344. It seems that Crawford did not publish his observations; cf. n.72.
77. White, W., Cambridge Antiquarian Comm., vol.IV, 1880, pp.423-6. Recent excavations at Hunstanton have failed to provide evidence for Roman occupation, Current Archaeology, 51, vol.V., no.4, March 1976.
78. Gipsey Green ; TF 690423.
79. Johnson, S., "Late Roman defences and the Limes", in Johnson, D.E., (Ed.), "The Saxon Shore", C.B.A., Research Report No.18, 1977, pp.67-90.
The entrance to the Wash is not visible from Brancaster and signal-stations would have been required to watch these approaches. It was suggested in A.D. 1953 that one such station lay at Thornham, 3.5 miles (5.6 Km) West of Brancaster at TF 726425 - J.R.S.,43, 1953, p.97; Clarke, R.R., "East Anglia", 1960, p.115. Excavation has shown that the site was "intensively" occupied from ca.A.D.40 up to ca. A.D.60 at which time a small fort was built. In the late 2nd century the rampart was robbed out and the ditch filled. The only traces of 3rd-4th century occupation are a few 4th century coins; J.R.S., 51, 1961, p.182.
80. Margary, op.cit., 1973, pp.258-261, Route 33b. See p. ...
It has been suggested that Branodunum may have been associated with a series of lost sites off the Lincolnshire coast & that its harbour was the eastern terminal of the Wash ferry; Whitwell, J.B., op.cit., 1970, pp.52-3; Todd, M., "The Coritani", 1973, pp.42-3; Johnson, op.cit., 1976, p.123.
This seems belied by the fact that the line of Peddar's Way aims not for Brancaster, but at a point somewhere between Hunstanton and Holme-next-the-Sea, some 5½ miles (8.8 Km.) to the West.
(For Lincolnshire coast sites see p. 72 ff.)
See also:- Ward, J.H., "The British Section of the Notitia Dignitatum: an Alternative Interpretation, Britannia, IV, 1973, pp.253-263 and Fig. 1. Ward puts forward the hypothesis that the fort at Brancaster may have been re-used in a re-occupation of the province, after A.D.415-6, in order to ensure safe sea-communications with the Humber estuary.
81. Notitia Dignitatum, Occ., XXVIII.
82. Very high tides flow to within 400 yards (366 m) of the fort.
83. Steers, J.A., op.cit., 1964, pp.358-367, For some considerable time before A.D.1880, the Long Hills on Scolt Head Island formed the line of H.W.M.O.T., while sand-flats stretched to the West. Between A.D.1880 and the mid-20th century, there has been much accretion on the western end of the island, a process which has been reversed of late.
84. Edwards, D.A. and Green, C.J.S., "The Saxon Shore fort and settlement at Brancaster, Norfolk", in Johnson, D.E.(Ed), op.cit.,(n.79) 1977, p.25; St. Joseph, J.K., "The Roman Fort at Brancaster", Antiquaries Jnl., vol.16, 1936, pp.445-6.

85. Edwards & Green, op.cit., 1977, p.25; Warner, J.L., "Notices of the original structure of the Roman fortifications at Brancaster, Norfolk". Proc.Arch.Institute - Norwich - 1847 (1851), pp.9-16 and plans 1, 3; St. Joseph, op.cit., p.444-460. The walls which ca. A.D. 1600, still stood to a height of 12 feet (3.66 m), were 585 feet (177.92 m) long North-South and 575 feet (174.87 m.) East-West; St. Joseph, *ibid*; Spelman, H., "Icenia", written ca. A.D. 1600 but not published until A.D.1698, pp.147-8. In the North-East corner, white sandstone had been used in a bonding course; this stone is said to have come from a quarry some 10 miles (16 Km) away. No tiles, have been found in the masonry; Warner, *ibid*. Warner also encountered an accumulation of charcoal which, he suggested, may have been produced by the fires of beacons the purpose of which was to direct ships into harbour. St. Joseph found spreads of charcoal in the North-West corner of the fort and significantly beneath the rampart; St. Joseph, op.cit., p.447.
86. Edwards & Green, op.cit., 1977, pp.21, 25, 29. A coin of A.D.270 was found in the rough chalk pitching of the road and, elsewhere, both road and rampart were sealed by a rubbish dump - which was deposited after A.D.273; St. Joseph, op.cit., p.447; _____, J.R.S., XXVI, 1936, pp.249-252, Fig.26. Within the North-West and North-East rounded angles of the fort, internal and rectangular turrets had been built and bonded into the fort wall; St. Joseph, op.cit., p.447; Warner, op.cit., p.12 ff; V.C.H., Norfolk, vol.I, 1901, p.304, is based on Warner's account. Gates had been centrally placed in the West & East sides of the fort but these too had been effectively robbed. St. Joseph, op.cit., pp.449-50. Typologically, the fort is similar to Reculver which has been dated to the beginning of the 3rd century, but St. Joseph has indicated that the first serious occupation was in the second half of the 3rd century. Johnson, S., "The Roman Forts of the Saxon Shore, 1976, p.37; St. Joseph, op.cit., pp.444, 451-3. The 900-950 coins found near Choseley Farm, Brancaster in 1942, ran in a short series from Gordian III to Victorinus; of the 465 specimens available for examination, 265 were of Postumus and 77 of Victorinus. Carson, R.A.G., "The Roman Coin Finds at Choseley", Norfolk Archaeology, 30, (1949-52) pp.353-7. The coin series from Brancaster runs from the mid-1st century to the late 4th. V.C.H., Norfolk, I. pp.304-5; J.R.S., 22, 1932, pp.69-71. Rough, chalk-block, pitching and a small patch of concrete flooring, laid on the undisturbed sandy subsoil, were sealed by a 1.5 feet-deep (0.45 m) stratum of rubbish which included mid-late 3rd century pottery. Above this had been laid rough floors of rammed chalk and rude sandstone walls; these included re-used material and contained coins of Constantine and Valens. St. Joseph, op.cit., pp.450-1; _____, J.R.S., XXVI, 1936, pp.249-252. Crop marks on aerial photographs have shown that the principia, unusually large for Saxon Shore forts, faced North, towards the harbour. Britannia, VI, 1975, p.261. The alignment of a complex of rooms N.E. of the principia, possibly the praetorium, corresponds more to that of the extramural settlements than the fort and may pre-date it; Edwards & Green, op.cit., p.25.
87. Notitia Dignitatum, Occ., XXVIII; Britannia, VI, 1975, p.288, No.25 and n.37. (TF 779439). It is unlikely that this tile was imported, even as ship's ballast; Edwards & Green, op.cit., 1977, p.27; Hassall, M.W.C., "The historical background and military units of the Saxon Shore", in Johnston, D.E. (Ed.) op.cit., (n.79), 1977, p.8.

88. Edwards & Green, op.cit., 1977, pp.21, 27; Britannia, V, 1974, p.438; VI, 1975, p.261, and PL.XIX B. A figure of 30 Hectares, (74 acres) for the area of the extramural settlement, is given in A.Ex-1974, 1975, p.59.
89. Edwards & Green, op.cit., 1977, p.27 (TF 779440); Britannia, VI, 1975, p.261; A.Ex. 1974, 1975, p.59; Current Archaeology, 44, Vol. IV, No. 9, Aug. 1974.
90. Centred on TF 78104425. Edwards & Green, op.cit., 1977, pp.27-29.
91. Creek centred on TF 78734421.
92. Brancaster Staithe Harbour - centred on TF 79354438. Edwards & Green, ibid.
93. Edwards & Green, op.cit., 1977, p.27.
94. Margary, I.D., op.cit., 1973, pp.273-4, Route 39.
95. Steers, J.A., op.cit., 1964, pp.354-5.
96. A hoard of coins of the Iceni was found at Burnham, Thorpe, ca. A.D.1900; Archaeological Jnl., XCVI, 1940, p.104.
97. V.C.H., Huntingdonshire, vol. 1, 1926, p.251-2 - this account is based on information from a Mr. Bodger; cf. R.C.H.M., 1969, p.33, no.1 (TL 20849709);
 Coins from the site were of the 1st-4th centuries.
 Other Kilns have been excavated at TL 216967; R.C.H.M., 1969, p.33, J.R.S., LVII, 1967, p.186; LVIII, 1968, p.190-1.
 Dannell, G.B., "The Potter Indixivixvs", In C.B.A., Research Report no.10, 1973, "Current Research in Romano-British Coarse Pottery", Edited by A. Detsicas, pp.139-141. The Stanground pottery, apparently in operation ca. A.D.210-240, marks the eastern limit of the Nene Valley colour-coated industry, thus far known.



Chapter FiveEast Anglia and Essex - from the Bure to the Blackwater

In describing the ports and coastal features of East Anglia and Essex, a regional division, based for the most part on estuaries, has been adopted. The chapter opens with an account of the sites on the Bure-Yare-Waveney system, continues with a description of the eroded sites at Dunwich and Walton Castle, Felixstowe, and concludes with a study of ports on the Colne-Blackwater system.

The Bure-Yare-Waveney System and the sites at Caister-by-Yarmouth, Burgh Castle, Reedham, Caistor-by-Norwich and Brampton

35

The line of often severely eroded cliffs which runs from Weybourne, West of Cromer, in the North as far as Felixstowe in the South, is interrupted by the alluvium-choked joint estuary of the Rivers Waveney, Yare and Bure, at Great Yarmouth, and by a low-lying belt of dunes between Happisburgh and Winterton-on-Sea, behind which much of the flat land that now includes the Norfolk Broads often lies below the high water mark of ordinary tides.

Excavations in the area of Yarmouth and the Broads have shown that the marshlands and estuaries of the Rivers Yare, Bure and Waveney have been subject to considerable change since the Roman period, and that the level of the land in relation to that of the sea has been subject to fluctuation and depression. It is reasonably certain that a sheet of open water once stretched westwards from Yarmouth to Reedham, and from Caister-by-Yarmouth in the North at least as far as Burgh Castle in the South, and that a long arm of the sea ran as far inland as Norwich, in what is now the silted valley of the River Yare. There may have been sandbanks in the estuary, especially at low water, one of which forms the spit on which Great Yarmouth stands. Behind this

town and the higher ground of the former island of Flegg to the North, there are 56,000 acres (22,674 Ha) of marshland all of which lie below 10 feet (3.05 m) above O.D. including extensive areas which are below Ordnance Datum itself. If the protective dunes and sea defences were removed, even a slight depression of land- in relation to sea-level would result in extensive flooding and a return of the former wide expanse of estuarine waters (1).

Caister-by-Yarmouth

TG 517123

It was on the North bank of this estuary, above a sheltered harbour, that the Roman seaport town at Caister-by-Yarmouth (alternatively, Caister-on-Sea) lay. It stood on the southern tip of the former island of Flegg, a remote and rather inaccessible area, which from Neolithic times down to the 2nd century A.D. was apparently uninhabited (2). In the years following the revolt of the Iceni under Boudicca and the subsequent pacification of the area by the Roman forces, this part of East Anglia lagged behind the rest of the province in the processes of Romanisation, but, by the turn of the 1st century, the situation had apparently changed and a settlement was founded at Caister (3). With developments in agriculture and industry in the 2nd century and an apparent rise in the standard of living, there was probably an increased demand for imported commodities, from other parts of Britain and the Continent, to supplement local products. At Caister trade with the Rhineland may have been of special importance, for the settlement lay at the point of the shortest sea-crossing to the mouth of the Rhine, a factor which may have been instrumental in the choice of this comparatively remote place as a seaport (4).

36

The configuration of the 25-foot (7.6 m) contour, and the outline of the reclaimed West Caister Marshes, indicate that the Roman settlement lay above a sheltered bay, the predecessor to the mediaeval

Grubb's Haven, which was apparently protected on its seaward side by a spit formed of debris eroded from soft sea-cliffs to the North (5). Planking, said to be derived from a ship, and anchors are reported to have been recovered from these marshes in the 19th century, but there is nothing to indicate whether they were Roman or Mediaeval in date; some of the reports of anchors being found in this area have not, in fact, been substantiated and must be regarded as local rumour (6). The harbour looked out over the wide estuary of the three rivers, where a channel with depth of water ample for Roman merchantmen would have provided ready access. While there is no evidence as yet to indicate the depth of water higher up the estuary in the 2nd century, it is reasonably certain that it would have been sufficient, at least at H.W.M.O.T., to allow river craft to ply upstream to a port in the area of Norwich, to serve the cantonal capital of Caistor-St-Edmund, Venta Icenorum (7).

The Roman town at Caister-by-Yarmouth was founded early in the 2nd century, apparently in the form of an open settlement on virgin land some 50 feet (15.2 m) above and to the North of the harbour (8). By the middle of the century, the settlement was protected by a clay rampart and timber palisade and subsequently, in the late 2nd-early 3rd century, by a 10-foot (3.05 m) thick wall, encompassing a sub-rectangular area of some 9 to 10 acres (3.6-4.0 Ha); the wall backed by a sandy-clay rampart, was fronted by ditches, the innermost of which was re-cut in the early 4th century. This strongly defended seaport town may have been of considerable strategic importance in the early 3rd century when it possibly formed part of a network of bases for the fleet engaged in the defence of the coasts of Britain (9).

The curtain wall, constructed of flint rubble concrete, laced with flint or occasionally brick bonding courses, rested on

foundations of beach pebbles. The flint is nodular in character and derives from either the Norwich or North Walsham areas. It is reasonably certain that the quantity of material required for such an undertaking would have been transported to the site by water, likely routes being by way of the rivers Yare or Bure and thence across the wide estuary (10).

Green, using the evidence of the extent of the walled area available at the time at which he wrote, calculated that some 500,000-1,000,000 cu.ft. (14,150-28,300 m³), or 25,000-50,000 tons (21,400-42,800 tonnes) of stone would have been needed to construct a wall to enclose an area of 34 acres (13.8 Ha) (11). He assumed that the average capacity of the Roman rivercraft was not more than that of the Norfolk wherries of the last century (25 tons or 21.4 tonnes) and that, allowing time for loading, unloading, repairs and poor weather, each vessel would require one full week for the round journey. If the wall builders were thus supplied over a period of 5 years, 10 barques would be needed; if over 2 years, then 25. His calculations, however, must be modified. Recent excavations have shown that the area within the walls was some 9-10 acres (3.6-4.0 Ha) and the estimate of the volume of the flintwork required must, therefore, be reduced to 277,200 cu.ft. (7,855 m³) or 13,860 tons (14,083 tonnes). The capacity of the Blackfriars Barge is estimated to have been about 92 tons (93.48 tonnes) (12). If similar sailing barges were used, then to transport such a tonnage of material the number of boatloads required would now be 30 per annum over 5 years, and 75 per annum over 2 years. It should be noted that the footings of the exterior walls of such structures as have been excavated at Caister were of the same material as the curtain wall. The whole situation in the late 2nd to early 3rd centuries points, therefore, to the presence of a small fleet of river-boats or barges engaged, at least

during periods of construction work, in the transport of building materials. It is to be expected that the boats thus employed would not return empty upriver (13).

There is no evidence as to the nature of the cargoes that these and other boats carried from Caister westward but some clues may be gained from finds made in the town in particular, and East Anglia in general. Cereals and pewter-ware were found on the site of the 'mansio' at Caister-by-Yarmouth, and also coal. Kimmeridge shale table furnishings, spindle-whorls and bracelets have also been found there (14). From Somerset came blue lias, from the East Midlands and/or Yorkshire, quernstones, from the Rhineland lava millstones and glass, from Gaul, samian ware and bronze paterae, and from Italy and the Pyrenees, white and green marbles. Glass jugs and bowls, from the eastern Mediterranean, and pewter-ware from South-West England may have been imported through Caister as well as other pottery from many localities (15). In the 3rd and 4th centuries the port may have handled coal for use in the cereal-drying processes which the apparent deterioration of the climate in those centuries necessitated. Similarly, it is to be predicted that such commodities as cereals, iron, timber, stone and pottery were exported (16). The presence of these commodities may, however, be the result of trading with, rather than through, Caister and some of them may have been brought overland.

A paved road ran down to the harbour from the South gate, the continuation of which, within the walls, formed the main street (17). To the West of this a large masonry building, erected in the late 2nd century, was one of the structures to have external walls of flint; the roof was tiled. Interpreted as a 'boarding-house' for the use of seamen, it apparently included or comprised a brothel and was restored for the third time in the early part of the 4th century (18).

Outside the walled area a series of inhumations and cremations, and pottery kilns have been found (19). The town may have been served by a continuation of the major road which has been traced from Denver to Smallburgh, which crossed Peddars Way at Castle Acre. This may have turned South-East to Caister just East of Smallburgh, possibly following the line of the main road - the A 149 - which runs between those places. Alternatively, it may have followed the lines of the modern B 1354 to Upper Street and the A 1064, from Burgh St. Margaret to Caister, the incidence of 'street' names in the area indicating a road running to Caister on this line (20).

The sequence of pottery from Caister, beginning with Trajanic types, continues to the end of the 4th century A.D. The coin series commences at A.D.80 but the bulk of specimens date to the years 250-380 (21). While 4th century occupation is well attested, the length of Roman occupation is, as yet, undetermined.

It has been suggested that when the Saxon Shore fort at Burgh Castle was built, it was intended as a new military establishment as distinct from the civilian settlement at Caister-by-Yarmouth. On the other hand, there may have been problems with silting in the town's harbour; in an estuary such as this a sudden change in the course of the channel can block a harbour. However, the fact that the fort was built at Burgh Castle indicates that the estuary was still navigable in the 4th century (22).

The site of the Roman town appears to have been occupied from the 7th century until, at least, the advent of the Danes, ca. A.D.879. Huts and interments of an Anglian settlement have been located within the walls of the Roman town, in vacant spaces and amid its ruins (23). Some 150 inhumations have been found to the South of the walls, over and to the East of the Roman harbour-road (24). Among these interments was a series of pseudo-ship-burials, made out of the sides of clinker-built boats. The wooden parts had decayed but rows of clenched nails

remained to show that the vessels in question were beach skiffs, some 15-20 feet (4.53-6.01 m) in length (25). So, at the time when communications with the Rhineland were resumed in the 7th century, boats were to be found at Caister for use in this way. The availability of these vessels indicates that the harbour at Caister was then open and the estuary navigable.

Burgh Castle

TG 475046

The Saxon Shore fort of Gariannonum, one-time base for the Equites Stablesiani, was built in the North-West corner of the former island of Lothingland, on a site about 30 feet (9.1 m) above sea-level (26). The marshlands and estuary of the River Waveney which flows close by the site on the West to empty into Breydon Water, which runs along the northern edge of Lothingland, was, in the Roman period, an arm of the extensive sheet of estuarine water which stretched from Burgh Castle across to Caister-by-Yarmouth on the northern shore, some 5 miles (8 km) to the North-East (27). The North Sea is only 4 miles (6.4 km) away, to the East, but is not visible from Burgh Castle as the northern edge of Lothingland, which was once heavily forested, interrupts the view (28). Distribution studies show that Lothingland was sparsely populated in the Iron Age and early Roman periods. The site was virtually cut off by inland waterways and is not linked to any known Roman roads (29).

Three sides of the curtain wall still stand and in some places survive to a height of 15 feet (4.57 m) above ground level (30). The West Wall is no longer visible, but once ran along the top of a steep slope overlooking the marshes of the River Waveney; it was probably robbed out during the Middle Ages. The four walls enclosed a trapezoidal area of some 5 acres (2.0 Ha) (31).

The walls and the external bastions which comprised a rubble-concrete core faced with split flints, with triple rows of tiles at

five-course intervals, rested on a foundation of rammed chalk and clay laced with horizontal timbers (32). There was a good local supply of timber on Lothingland but flint had to be brought in by boat, probably from the Norwich or North Walsham areas by way of the River Yare or the River Bure (33).

At the foot of the plateau on which the fort stands and on the edge^{of} the marsh, Harrod's excavations in A.D. 1850 and 1855 38 revealed a line of foundations which may have been part of one or more harbour installations. (34). In Trench 6, some 20 feet (6.1 m) North of the fosse of the Norman Castle, Harrod found a double layer of large flints set into a bed of what appeared to be puddled clay some 6 feet (1.83 m) thick. Further North, in Trenches 5, 4 and 2, beneath an 18-24 inch (45-61 cm) layer of alluvial (?) clay, he encountered a stratum of broken mortar beneath which lay large quantities of flints, tiles and more broken mortar. This debris may have come from the fallen West wall. In one trench though a thin spread of gravel rested on a layer of stones which in turn had been set into clay, possibly the remains of a gravelled area behind a quayside (35). In Trench 3 and nearly 4 feet (1.22m) below ground level lay a fragment of wall, apparently in situ. Its inner face was quite smooth but 5 feet (1.52 m) to the West it was fragmented. Beyond these fragments, towards the marsh, the soil and stones were very wet. Beneath the wall, a number of decayed oak piles extended westwards for 11 feet (3.35 m) from the inner face of the wall. More piles were encountered in Trench 1, 50 feet (15.2 m) North of Trench 3. These were exactly in line with the foundations previously described and again extended westwards for 11 feet (3.35 m). The piles, spaced about 1 foot (0.30 m) apart, had been driven into black mud. Between them clay, lumps of chalk and chunks of mortar had been rammed to a depth of 1.5 feet (45 cm). A layer of clay, mortar and

flints, lay above these foundations, at a depth of 5 feet (1.52 m) below ground level. These foundations may be regarded as the remains of harbour installations and are probably part of a substantial quay. The debris which generally overlies the foundations may have come from the West wall. In Trench 15, at a depth of 7 feet (2.13 m) below ground level, Harrod found a solid mass of mortar; it lay 50 feet (15.2 m) West but on the projected line of the North wall and Morris thought it possible that it was part of the foundations of the North wall (36).

To function effectively, Gariannonum must have been provided with a flotilla of patrol-boats to control the estuaries to the North and West. It was essential that such vessels should not lie heavy in the water and, in order to minimize the effects of waterlogging, they would have been drawn up onto land when not in use. A flotilla base, like Gariannonum, would have had a small dockyard where ships could be drawn up and tackle stored (37). Half a mile South of the fort where the 25 foot (7.6 m) contour recedes and then advances around Belton Fen, was almost certainly a sheltered tidal inlet in the Roman period and may have been the site of the flotilla base. The ground on which the fort stands is brick earth, considerable quantities of which were quarried in the 19th century, especially in the area immediately South of the fort, and this quarrying may well have erased all trace of the flotilla base (38).

It is difficult to establish a date for the construction of the fort. Typologically, it belongs to a transitional phase of military architecture, incorporating features which are characteristic of early - and late - 3rd century styles (39). The main coin series runs from Gordian III to Honorius, with many of the reign of Constantine. One 1st century and three 2nd century coins have come from the site but these may be strays or antiques (40).

Reedham

TG 422018

Modern Reedham rests on a low promontory which overlooks, on the South and East, the estuaries and marshlands of the River Yare and the River Waveney, which were, in Roman times, part of the wide expanse of estuarine water, off which a long channel ran past Reedham and up the Yare valley as far as Norwich (41).

Some foundations, seen a little East of "Low Street", have been interpreted as forming part of a circular Roman tower, a pharos or a watch-tower (42). There are also reports of earthworks in the vicinity. These features are no longer visible and no field work was carried out in the immediate area. Re-used Roman material was, apparently, incorporated into the fabric of the church and Roman pottery and coins have been found in the vicinity (43). The coin series ranges from ca A.D.70-170, most specimens of which are issues of Trajan and Marcus Aurelius (44).

The site commands excellent views across the lower estuary from Mautby (TG 471108), past Caister-by-Yarmouth to the North-West corner of Lothingland where Gariannonum was built. The spit on which modern Yarmouth stands is visible although a small part of the mouth of the lower estuary would have been screened from view by Lothingland. No 3rd-4th century material has yet been found at Reedham and so a link with the late fort at Burgh Castle cannot be proved. That there should have been a pharos here in the 1st-2nd centuries is highly improbable, unless its function was to guide shipping across the estuary-bay and into the channel which led up to a possible port on the Yare in the vicinity of Caistor St. Edmund.

Caistor-by-Norwich

TG 2202

Remains of what may have been a Roman Wharf have been found on the North bank of the R. Yare, just below its confluence with the R. Wensum, East of Norwich. At a depth of 8-9 feet (2.44-2.74 m) below O.D., an extensive timber platform was encountered, with a thick spread of building debris and pottery, including mid-1st to mid-2nd century wares (45). The find is some 2.5 miles (4 Km) North of the cantonal capital, Venta Icenorum, at Caistor-by-Norwich, otherwise known as Caistor-St.-Edmund (46). The wharf is on the opposite bank of the Yare from Venta and its purpose must, therefore, remain in doubt.

A Roman road has been traced, albeit some time ago, running from Venta, in a north-easterly direction, possibly as far as the South-East edge of Kirby Bedon where it was lost. Wachter suggested that it may have crossed the Yare near to Trowse Millgate and then headed North-East for the coast in the same general area as Margary's Route 38. It is equally likely, however, that it was making for a small estuarine port, on the Yare, near to Kirby Bedon village (47).

Brampton

TG 223237

Traces of settlement and industrial activity have been encountered over an area of 75 acres (30 Ha) South of the village of Brampton in the valley of the River Bure, adjacent to the point at which the West-East road from Denver crossed the river en route for Smallburgh and the coast of Norfolk perhaps heading for the seaport town of Caister-by-Yarmouth or a lost site in the vicinity of Happisburgh. Coin and pottery evidence indicates occupation from the late 1st century to ca. A.D.300 or later and approximately 20% of the settlement was enclosed by a defensive ditch, probably at some

time in the 2nd century. Industrial activity included metal-working and large-scale manufacture of pottery; 141 kilns have thus far been excavated.

The course now followed by the Bure represents a diversion intended to create a head of water for Oxnead Mill, whereas in Roman times it apparently flowed further South, along the floor of the valley. Adjacent to the former South bank of the Bure and fronting onto a channel which ran at right angles to the river, the remains of a timber-framed platform, possibly a wharf or the approach to a bridge, have been encountered. Sand, gravel and chalk had been rammed into and over a corduroy timber platform to form a "hard standing" one foot two inches (0.4 m) thick, the edge of which was retained by large horizontal timbers. Some 100 feet (30.5 m) West of this structure, "large vertical timbers 2.4 feet (0.7 m) in diameter, with flat bases resting on the gravel bed of the river", probably formed part of a structure built out into deeper water, according to Knowles whose description this account closely follows (48). The Bure was almost certainly navigable to shallow-draught river craft at least as far as Brampton in Roman times and may have been used to transport the products of the potteries downstream to Caister for transshipment onto sea-going vessels.

Dunwich

TM 478705

The important mediaeval city and port of Donewych, commonly called Dunwich, lay, prior to A.D.1328, at the head of a small haven through which the River Blythe and the Dunwich River flowed to the sea. The haven was sheltered from the North Sea by a shingle spit which, in growing southwards from Southwold, had deflected the Blythe away from the point at which it now has its outlet and towards the site of the mediaeval port. The mouth of the two rivers was constantly

blocked by inrushes of shingle, particularly after storms, and several new cuts through the bar had to be made, to little avail (49).

Coastal erosion has been severe in this area, especially in the Middle Ages, and it has been estimated that a tract of land up to two miles deep has been lost in some places. Erosion has, in fact, removed almost all of the land on which the mediaeval city stood and, in doing so, it could well have accounted for Ptolemy's ἑξοχή which may have once characterized this coastline (50).

The cliffs at Dunwich afford excellent views along the Suffolk coast. Roman pottery and occupation debris have been observed in various places, usually about 5 feet (1.52 m) below the top of these cliffs. Roman tiles and other building materials have been found, re-used, in some of the older buildings of Dunwich, and Roman coins, plus some small objects, were collected in the area in the early 18th century (51). Three, possibly four, Roman roads seem to be making for a site in this area and two of them have been traced as far as Peasenhall, a little over 7 miles (11.2 Km) to the West of Dunwich (52). These finds seem to indicate the presence of Roman settlement in the area. It is commonly thought that the Roman town of Sitomagus lay somewhere in the vicinity, but if ^{it} was situated at or near to the site of the mediaeval city and port then virtually all trace of it must have been washed away (53).

Felixstowe (Walton Castle)

TM 3235

The three-mile (4.8 Km) stretch of coast between the estuaries of the River Orwell and the River Deben is backed by a broad plateau, some 100 feet (30.5 m) above sea level, which terminates on its seaward side in a line of cliffs. These cliffs, which are composed of Red Crag on London clay, are soft and erosion has been severe (54).

To the North-East, the River Deben flows into the North Sea through Bawdsey Haven while to the South-West the River Stour and the River Orwell reach the sea below the modern port of Harwich. South of the Orwell, Hamford Water is a large shallow inlet with several islands which, like the surrounding foreshores, are low-lying and are fringed with soft, sloppy mud (55).

Harwich Harbour itself has changed much since the 17th century, at which time the Stour and the Orwell were lined with marshlands and saltings (56). The eastern bank of the Orwell where it reaches the sea, Landguard Point, is a sand and shingle foreland built by the actions of north-easterly wave-fronts where a fort was built in A.D.1718. Landguard Point formerly stretched much further South and it has been suggested that, in the Roman period, a tract of salt marsh and sand banks stretched across the present exit from Harwich Harbour, forming a lagoon (57). Desmaretz' chart, of A.D.1732, 40 shows that the main channel into Harwich Harbour ran close into the western shore of Landguard Point (58). A chart of Orwell Haven, attributed to Richard Lee and dated A.D.1533-4, shows an inlet 41 cutting into the western shore of Landguard Point, immediately below the higher ground of the plateau (59). This may be the remains of an old outlet of the Orwell, which once ran between Landguard Point and the foot of Bulls Cliff, the site of which is now occupied by marshes (60).

The last remains of Walton Castle which fell over Bulls Cliff in the mid-18th century, occupied a strategically important piece of high ground which afforded excellent views over the estuaries of the Orwell, now some 2 miles (3.2 Km) to the South-West, and the Deben, 1 mile (1.6 Km) to the North East. Both estuaries could have provided sheltered anchorages (61).

The range of small finds which have come from the general area of the fort indicate that allowance must be made for a pre-fort phase of occupation though whether this was a "township", a vicus or a port, as Johnson seems to suggest, is far from clear. All the small finds which antedate the fort could equally well have come from a villa (62).

A pen-and-ink drawing by John Sheppard, dated to A.D.1623, shows a length of the East wall of the fort with what appears to be the cliff in the foreground. There is a gap in the middle of the wall and a bastion at each end. A rough sketch plan of the fort shows it as a narrow rectangle - an unusual shape (63). By A.D.1732, the remaining East wall was 100 yards (91 m) long, 12 feet (3.55 m) broad at each end and survived to a height of 5 feet (1.52 m); it was built of pebble (? local septaria) and "Roman bricks in three courses"; several pieces of wall had fallen onto the beach (64). An account of A.D.1735 states, however, that the surviving section of wall was 187 yards (170.9 m) long and 9 feet (2.74 m) broad. Part of the South end of this wall was washed away in A.D.1740 and the rest had disappeared by A.D.1754 (65). Although there is an obvious discrepancy between these two accounts, and Sheppard's plan of the fort seems to be at fault, the evidence points clearly to its being a fort of the Saxon Shore type built probably well into the second half of the 3rd century (66).

The Colne-Blackwater System and the sites at Fingringhoe, Colchester, Bradwell, Heybridge and Chelmsford.

Fingringhoe

TM 047194

42

Fingringhoe rests on the flat top of a gravel promontory which overlooks to the East, the estuary of the River Colne, which is tidal and navigable to Colchester, some 4 miles (6.4 km) upstream. (67). At Colchester, the Colne is barely 100 feet (30.5 m) wide, but downstream the flood plain broadens until at Fingringhoe the river is 500-600 yards (457-548 m) wide at H.W.M.O.T., while beyond, to the South and South-West, lie extensive salt marshes into which deep tidal creeks run. In the Roman period the growth of this marshland would not have been so far advanced and it is likely, therefore, that this was then an area of sheltered open water, a place well suited to accommodate a large number of vessels at the time of the Conquest (68).

43

The Fingringhoe promontory is separated from the plateau on which Colchester stands by the Roman River, a tributary of the Colne, and at Fingringhoe, where the forested London Boulder Clay gives way to habitable gravel, is the first high and well-drained piece of land above the salt marshes of the lower Colne estuary (69).

Beacon Hard, an old landing-place on the River Colne, which lies due East of the gravel workings at Fingringhoe, is the site of a modern jetty used by the gravel company. This "Hard" is a bank of clay 10 inches (25.4 cm) thick and about 40 feet (12.2 m) wide, embedded in which Roman pottery and tile have been found. From it a hollow track leads up the bluff and towards the site of one of the Roman villas, which led Hull to suggest that the "Hard" is a Roman feature. (70). Except at Sheepen Farm, the Colchester peninsula has a narrow skirt of London Clay and the "Hard" may, therefore, be a natural feature (71).

Since large-scale gravel extraction began in A.D.1928 on the bluff itself, Roman remains have been observed over an area of about 2 acres (0.8 Ha). Within the area bounded by a ditch in which were found sherds of Claudian samian ware, mechanical excavation revealed great numbers of shallow rubbish pits which, according to workmen, were of widely different size, though most of them were small (72). The pits were full of dark soil, food-bones, pottery of the Claudian period, Roman coins, including "unorthodox 'occupation' money", and a few pieces of metal military equipment (73). The pits, which ran in straight, parallel, rows, are similar to those associated with timber barrack-blocks and are probably military in origin. Much of the considerable quantity of Claudian pottery which has been found on the site has come from these rubbish pits.

Clearly, this is the debris of an intensive occupation, probably to be associated with a military base of the Conquest period, possibly operated by the fleet, and which may have been a supply depot or a base for sea-borne forces, or both (74). The bulk of the pottery and coin finds are Claudio-Neronian; both are fairly numerous to A.D.120, after which there is a marked decline. The presence of late 1st and early 2nd century coins and pottery need not necessarily imply continued military occupation (75). It must be emphasised that these finds have been made at random as gravel extraction has proceeded and it is quite possible that traces of Claudian timber structures have escaped the notice of the workmen on the site, virtually all of which has now been destroyed.

Mechanical excavation has also revealed the remains of three villas, none of which have been closely dated, and in one of which tiles and thin slabs of Purbeck marble had been re-used in poorly-constructed walls and a floor, material presumably derived from an earlier house of some pretensions, nearby (76). Kentish ragstone had

also been used in the construction of a hypocaust in this secondary building. A thick occupation layer, following the destruction of the hypocaust, contained 3rd century pottery and coins. Otherwise, very few artifacts of the 3rd and 4th centuries have been found at Fingringhoe and there is a marked absence of 4th century coins (77).

Colchester

TL 994253

44

The mediaeval and modern town of Colchester lies on the northern edge of a flat gravel plateau which is roughly triangular in shape and is bounded, on the North and East, by the River Colne and, on the West and South, by the Roman River. This, like the Fingringhoe promontory, is one of the few places in this part of East Anglia where the naturally-forested London Boulder Clay gives way to well-drained, habitable gravel. The plateau is fringed by a narrow "skirt" of clay, except at Sheepen Hill, the site of a nucleus of the Belgic oppidum of Camulodunum (78).

The River Colne is now tidal and navigable as far as the East gate of the later Roman town, some 2,500 yards (2,300 m) downstream from the Sheepen Farm site. There is, however, some evidence to indicate that, despite the presence of Middlemill Ford (79), the river may have been tidal as far as Sheepen Farm, for briquetage has been found there, in Region 4, and this must indicate that salt water was not far away (80). Apart from Fingringhoe, the gravel and loam margin of the Colne at Sheepen is the first stretch of well-drained riverbank after the saltings and marshes of the lower estuary, where also was to be found the lowest, tide-free ford on the Colne, Sheepen Ford, from which point there was good access overland into the hinterland (81).

The Belgic oppidum seems to have consisted of nuclear settlements,

scattered over a wide area, the whole being protected by a series of dykes (82). Considerable quantities of imported continental wares, found during the excavations at Sheepen, must have been shipped to Camulodunum by way of the Colne during the first two decades of the 1st century at least (83).

Immediately after A.D.43, flimsy wooden buildings were erected over Sheepen Hill. Finds of scrap-metal, slag, crucibles, ovens, furnaces and some 150 rubbish pits indicate that this area was occupied by a work camp, manned, presumably, by native metal-workers under Roman control (84).

Sheepen Hill is cut off from the main plateau to the South by the valley of a small tributary of the River Colne. This brook made its way eastwards from Lexden, and ran parallel to the Colne until it turned North and ran into the river at a point approximately midway between Sheepen Hill and an easterly-projecting prong of the plateau, about 0.5 mile (0.8 km) downstream, to the East (85). It was on the neck of this ridge that the legionary fortress was established (86).

Excavations in Lion Walk have located the eastern defences of the Claudian fortress along with six barrack-blocks and part of a courtyard building (87). The lines of the western and northern defences have been established with some degree of certainty and, if the southern defences ran along the line later occupied by the town wall, the area of the fortress would have been about 50 acres (20.25 Ha) (88). Flimsy wattle and daub buildings, erected ca. A.D.43-49 outside the Balcerne Gate and alongside London Road, were probably part of the civil settlement which developed outside the fortress (89). When the Colonia was established, ca. A.D.49, the defences were filled in and, of the buildings found on the Lion Walk site, the courtyard house was rebuilt and some at least of the barracks were adapted and occupied up to A.D.60-1 when they were destroyed by fire (90).

To the East of the fortress the bank and ditch of an annexe has been located, which, also, had been slighted ca. A.D.49 (91). It has been surmised that, in view of the concentration of public buildings in Insulae 13, 22, 29 and 30 of the later town, this annexe may have been the seat of provincial administration during the early phases of the military occupation of Britain (92).

The site of the fortress offered many advantages. It had good land communications with the supply-base at Fingringhoe and with the hinterland and was linked by the Colne to Kent and the Continent; it lay opposite the mouth of the Rhine and the supply-base at Valkenburg (93). No harbour installations have yet been found at Colchester. If Middlemill ford is an ancient feature then the port probably lay in the area below the East Gate of the later town, which is now the highest point to which spring tides flow (94). If, however, the Colne was navigable to Sheepen in the pre-Roman period, then it is possible that the area of the port lay at the foot of the gently-sloping gravel/loam valley through which a tributary of the Colne runs, immediately upstream and to the West of the fortress. This last site affords easy access to the ridge on which the fortress stood; it lies just above the head of tidal limits but immediately below Sheepen Ford. The gravel-loam margin of the Colne would have been naturally clear of forest, well-drained and free of sticky clay (95).

Colonia Claudia Victricensis was founded in A.D.49-50 as a model town (96). Initially, it occupied the same site as the fortress, some of the buildings of which were either demolished or adapted (97). Living standards were good and individual houses, often of complex plan, were well built (98).

Although no port installations have yet been located at Colchester, the range of imported commodities found there gives some indication of the type of cargoes which arrived there in the 1st and 2nd centuries.

On the South side of Insula X of the later town, the remains of an extensive timber and masonry storehouse covered an area of at least 50 by 70 feet (15.2 x 21.3 m). At the time of its destruction in A.D.60, the rooms and corridor of the storehouse were stocked with a range of commodities: 80 identical flagons, 20 amphorae, 30 mortaria and quantities of wheat. As the flagons are identical it may be that they represent one shipment to the storehouse and Dunnett suggests that, as the numbers of these items seem too large and varied to be the stock of an individual, they could have been part of a regional depot (99). This storehouse is near the site of the North gate of the fortress and to that of the later town and so may have been best approached from that direction; if this was the case then wharves may have lined the bank of the Colne just below the point at which the road from the North Gate crossed the Colne.

Two shops, in Insulae XIX and XXVIII, which sold imported glass from the Rhineland and samian ware from South Gaul, and another shop, in Insula II, which dealt in lamps, were all destroyed in the conflagration of A.D.60 (100). The massive Temple of Claudius, begun soon after A.D.50 and which lay immediately East of the Colonia, was richly furnished with imported stone, including marble from Greece and Egypt, and alabaster (101). Ham Hill stone, which is found near Ilchester, and Kentish ragstone, probably from Maidstone, were also used in the fabric (102). Elsewhere, Purbeck marble was used in at least one of the Sheepen Romano-Celtic temples and in at least eight funerary monuments (103).

Recovery was slow after the destruction of A.D.60 but gathered momentum from the Flavian period onwards (104). Many of the houses built in the 2nd century were particularly substantial and are noteworthy for the large number of mosaic pavements which had been laid in them (105).

The town was surrounded by a wall ca. A.D.125-150 to which was added a rampart ca. A.D.150-175; these enclosed an area of 108 acres (43.73 Ha) (106). Septaria^{was} used to build these walls and also in the Temple of Claudius and other structures; the nearest available source for this stone is in the Walton Cliffs (107). The precise location of the quarries may never be known, as erosion has been severe along that stretch of coast, but the stone must have been transported from quarry to building-site by way of the Colne. In the mid-late 2nd century, when the cavea wall of the theatre at Gosbecks was being built, Kentish ragstone was shipped in, probably from Maidstone, but was thoroughly robbed out when the wall was demolished some fifty years later (108). Kentish ragstone was also used in two walls in the extramural area to the West of the town, an area in which many Kilns have been found (109).

These Kilns produced mortaria, black-burnished ware-category 2 (=B.B.2) and colour-coated wares in very large quantities (110). The mortaria were distributed over two areas, the one covering East Anglia, Kent and London, and the other extending along the lines of the two northern frontier zones where distribution-patterns indicate that the wares were shipped directly to the Tyne and the Forth; very few stamps have been found in Lowland Scotland (111). B.B.2, manufactured from ca A.D.70 onwards, enjoyed a wide distribution in South-East England by the turn of the century and, during the occupation of the Antonine Wall, Colchester appears to have been the major, if not sole, supplier to the North. Military sites in northern England seem only to have received B.B.2 after the re-occupation of Hadrian's Wall, when distribution was confined to the eastern sector of the frontier and supplies were also drawn from potteries in Kent. Although, after the middle of the 3rd century, B.B.2 was no longer exported to the Wall in quantity, Colchester remained the single

largest supplier to the South-East well into the first half of the 4th century, and it is certain that the town remained important and prosperous well into the late Roman period (112).

Bradwell-on-Sea

TM 0308

Othona, a fort of the Saxon Shore, lies in the North-East corner of a narrow promontory which is now known as St. Peter's Head (113). This low-lying promontory is only 0.5 miles (0.8 km) wide, from North to South, but affords extensive views over the coast to the South and the estuaries of the Blackwater and the Colne to the North. There has been much accretion to the North and South of the fort; to the South, extensive tracts of alluvium occupy what must have been, until comparatively recent historical times, a wide, open and shallow bay which stretched southwards from Bradwell as far as Shoebury (114). To the East, where the fort overlooks saltings, erosion has been severe even after sea-defences were constructed in A.D.1864 (115). In 1867, the area below the sea-wall was covered in mud and ooze but, where there was mud, there had once been, within living memory, sand (116). Lewin describes a muddy bank, visible at low water, which then ran out in an easterly direction for about 3 miles (4.8 km), and which may have been the remains of a seaward projection of St. Peter's Head (117).

There may have been a pre-fort settlement on or near the site of the fort as pottery and a brooch of the 2nd century have been found (118). Of the fort itself, which is as yet undated, but possibly built ca. A.D.276-285, only three walls remain (119). The West wall was 522 feet (158.71 m) long but all of the East wall and large parts of the North and South walls have been washed away by the sea (120). The wall, some 12-14 feet (3.66-4.27 m) thick in

A.D.1867, comprised a rubble-concrete core faced, at least on the exterior, with septaria nodules, bonded by triple courses of tiles; septaria is the only local building material (121). An external ditch has been traced along all three surviving sides, but no precise outline has been recovered; it had been cut into stiff marine clay (122). During the 1864-5 excavations a quantity of sea-weed was found, at a height of 5 feet (1.52 m) above high-water mark, immediately South of the fort wall, and Lewin concluded that :

"... the sea must at one time have flowed up to the very walls, and perhaps along the trench by which the castrum was originally environed" (123)

Taylor suggests that the presence of the seaweed was interpreted by Lewin as indicative of a Roman Wharf (124), but nowhere in his description does Lewin make this claim. The site is low-lying and while it is possible that the ditch was flooded in the Roman period, at times of extraordinary high water, it is far more likely that the seaweed was deposited as a result of a more recent incursion.

The enceinte within the surviving walls, some 5 acres (2 Ha) in area, is now some 19 feet (5.79 m) above mean sea-level (125). The remains of some interior structures were found in the 19th century, but no sense was made of them and probably much of the evidence was missed (126).

A road, which runs directly to the fort from the village of Bradwell, to the South-West, follows the highest ground between the marshes to the North and South and was once flanked by ditches, near to Bradwell village; there can be little doubt that it is Roman in origin (127).

Local reports have told of sightings of submerged masonry in the marshland to the East of the fort, which have been tentatively interpreted as being parts of Roman harbour works (128). It is

difficult to see why installations should have been constructed in such an exposed place. The fort overlooks a small inlet and, although this is now choked with silt, there is no reason to doubt that it would have afforded a sheltered anchorage for a small number of vessels at the time when the fort was built (129). Lewin, discussing the site of Ythanceastir, quotes unsubstantiated reports of sightings of house foundations in this marsh (130). In Foulness old walls probably represent areas of reclaimed marsh and it is possible that the "outlines" sighted off Bradwell are the remains of similar activity, but until the marshes have been mapped in detail no firm conclusions can be drawn (131).

Heybridge

TL 850082

The Blackwater estuary above Bradwell, is fringed by salt marsh, which at Goldhanger has been planted with *Spartina Townsendii* in order to stabilize the flats and protect the sea walls from serious erosion. The channel of the River, which would have been wider in Roman times, has been subject to constant change; at Heybridge, before the 18th century, the Blackwater followed a more northerly course than it does nowadays and, below the town, it cut to the South of Northey Island and to the North of Osea Island (132). The banks and islands of the Blackwater are generally made up of London Clay and excavations at the pre-Roman salt-manufacturing site at Maldon, on the South bank of the river opposite Heybridge, have shown that evaporation tanks lay on a low island, amid mud-flats, which was liable to inundation at high water, springs (133). At Heybridge, on the opposing shore, the London Clay gives way to a riverside gravel terrace, which would have afforded a foreshore free of mud or clay (134).

The considerable amount of early Roman pottery found to the South of Heybridge station when the railway cutting was excavated, was

taken to indicate that there may have been a Claudian supply depot or possibly a port in the vicinity (135). Excavation, prior to housing development, of the gravel terrace on the North bank of a pre-18th century channel of the Blackwater, has revealed evidence for Belgic, Roman and Saxon occupation (136). In the early Roman period, a series of shallow pits had been dug into the gravel of the terrace but, by the 2nd century, that part of the site which was nearest to the river was levelled with "industrial waste" and metalled with gravel. This metalling was in turn cut through by a storage pit, in the 3rd century (137). Further South, and near to the old course of the river, "traces of wharves" were found, details of the construction, date and relationship to O.D., of which have yet to be published.

This Roman settlement, the centre of which probably lies some 109 yards (110 m) West of the excavated area, seems to have had an important trading connection with the "small town" at Chelmsford for which it may have served as an estuarine port (138).

A Roman road, revealed by aerial photography and confirmed by excavation, has been traced from a point immediately South-West of the colonia at Colchester, through Gosbecks Farm, where its course was lost; this alignment if projected, would meet the Blackwater estuary somewhere in the vicinity of Heybridge and may have linked the colonia and later town with the estuarine settlement (139).

Ditches of the 4th-5th centuries, and an early Saxon grubenhaus associated with early Germanic pottery, were also found during the excavations of the gravel terrace (140).

The Roman town of Caesaromagus, Chelmsford, lay to the South of the point at which the road from London to Colchester (=Road I) crossed the flood-plains of the Rivers Can and Chelmer. These rivers, which may have been navigable as far as Chelmsford at least for shallow-draught vessels, now converge about half a mile (0.8 km) below the town and flow into the Blackwater just above Heybridge (141).

South of the flood-plain of the Can and some 65 yards (60 m) South-East of Road I, the remains of a turf and clay rampart, an associated V-shaped ditch and three ranges of timber-framed buildings probably represent part of a short-lived fort of the invasion period (fig.46 at B). Military fittings and fragments of early Claudian samian ware have been found in the vicinity, as well as coin issues of Claudius, Augustus and the younger Drusus (142).

About 275 yards (250 m) to the South-West, a second Claudian ditch, a truncated-V shape in profile, which followed the line of the Road I and which had been filled in sometime after ca. A.D.50, may have been part of a work compound associated with the establishment, consequent on the foundation of the colonia at Colchester in A.D.49, of a new cantonal capital for which military assistance may have been forthcoming (fig.46 at S). After this Claudian ditch had been back-filled, a line of timber-framed structures rapidly spread along the street (fig.46 at S & AA) and a start was made on the construction, in masonry in some instances, of public buildings of some sophistication (143). A side road, (=Road II), laid ca. A.D.60, which ran in a south-easterly direction was also apparently lined with timber-framed structures (144).

At Site S, the timber-framed buildings were soon demolished to make way for the rampart and ditch of a fort of unknown extent, presumably associated with the restoration of order after the Boudiccan revolt.

Before they were demolished ca. A.D.78, these defences were refurbished at which time there seems to have been a change of use; possibly the compound was now a road depot rather than a purely military establishment (145). By the early 2nd century, timber-framed strip buildings, including a bakery and a complex associated with the treatment of cloth, had been built along both streets, as well as a mansio nearby; limited industrial activity manifested here and elsewhere in the town need only have served a local market (146). Occupation debris, noted in an area adjacent to the river-bank, some 100 yards (91 m) downstream from the point at which a back-channel flows into the Can, may, Drury has suggested, have been associated with wharves. Little has been published concerning this particular area and its relationship to the development of the town and to river transport still remains obscure (147).

About A.D.160-175, some of the 2nd century timber structures at Site S were demolished to make way for the rampart and ditch of a defensive circuit, which seems to have enclosed an area of some 18 acres (7.2 Ha), comprising the central area of the town, and the mansio which had been rebuilt in stone in the early 2nd century. Soon after ca. A.D.200-220, the area reverted to domestic occupation which lasted through to the end of the Roman period (148). Although the roadside frontages were apparently closely packed with strip buildings, the development of Caesaromagus was hampered by the proximity of Londinium and Camulodunum and it never emerged as anything other than a minor, if relatively prosperous, town.

Notes

1. Green, C. and Hutchinson, J.N., in Lambert, J.M. et.al., "The Making of the Broads", Royal Geographical Society, Research Series: No. 3, 1960, pt.III, pp.114 ff, 129 ff, 137 ff, Figs. 3 & 4; Green, C., (1952a) in "The Times", 2-February-1952; _____ "East Anglian Coastline Levels since Roman Times", *Antiquity*, 35, 1951, p.21 ff; Steers, J.A., "The Coastline of England and Wales", Ed.II, 1964, p.377 ff.
2. Clarke, R.R., "East Anglia", 1960, p.119; Green and Hutchinson, op.cit., pp.118 ff, 136; Green, op.cit., 1952a; Clarke, op.cit., p.110 ff; Steers, op.cit., pp.376-7, 380.
3. Clarke, op.cit., p.110 ff; Rivet, A.L.F., "Town and Country in Roman Britain", Ed.II, 1964, p.156-7; Green and Hutchinson, op.cit., p.137.
4. Clarke, op.cit., pp.119, 123; J.R.S., LII, 1962, pp.175-6; LIII, 1963, p.137. The distance to the Hook of Holland from here is 110 miles (177 Km), while from Colchester it is 145 miles (233 Km) and from London 185 miles (298 Km).
5. Clarke, op.cit., p.119; V.C.H. Norfolk, vol.I, 1901, pp.293-4; Green, op.cit., 1952a. See also, note 1.
6. Green and Hutchinson, op.cit., p.116; Steers, op.cit., p.380. Green, C. (1952b) in J.R.S., xlii, 1952, p.96; V.C.H., Suffolk, vol.I, 1911, p.283 ff. Grubb's Haven opened onto Breydon Water before it was blocked by the Yarmouth Sandbank. A piece of plank, apparently a ship's timber, was found at a depth of 20 feet (6.1 m) below marsh level, by the Yarmouth road. Clowes, T., Roman Antiquities found at Caister, Gents Mag., N.S.8 (2), 1837, p.521.
7. Rivet, op.cit., p.157, suggests that Caister was the seaport for Venta Icenorum. Venta, however, may have been served by a port, at or near the former head of tidal limits, in the vicinity of Kirby Bedon. See remarks on Caister St. Edmunds, p.101
8. Green and Hutchinson, op.cit., p.116; Green, C., op.cit., 1952a; Spelman, H., "Icenia", written ca. A.D.1600 and published in A.D.1698, states that the wall and fortification stood on the very shore; the walls were demolished in the 17th century.
9. Johnson, S., "Late Roman defences and the Limes", in Johnston, D.E. (ed.), "The Saxon Shore", C.B.A. Research Report No.18, 1977, pp.63-69; Green, op.cit., 1952. The defences at Caister are typologically similar to those at Reculver and are approximately the same size. The most recent excavations have indicated a construction date for the walls in the first half of the 3rd century and a military or naval origin for these works is suggested. Johnson, S., "The Roman Forts of the Saxon Shore", 1976, p.18 and Fig.12; Ellison, J.E., *Norfolk Archaeology*, 1966, p.60; Green, op.cit., 1952 a & b; J.R.S., XLII, 1952, pp.96-7; LII, 1962, pp.175-6, Fig.23; LIII, 1963, p.137. The outer ditch was obliterated when a fresh one was cut in the 4th century.

10. Green, op.cit., 1952a and 1957. See also, note 1.
11. Green, op.cit., 1952a and 1952b.
12. Marsden, P., "A Roman ship from Blackfriars, London", 1967, p.28 and Fig.11; _____, "A Boat of the Roman period found at Bruges, Belgium, in 1899, and related types", International Jnl. of Nautical Archaeology and Underwater Exploration, vol.5, pt.1, 1976, pp.23-55; Casson, L., "Harbour and River Boats of Ancient Rome", J.R.S., LV, 1965, pp.31-39.
13. The Walls of the Saxon Shore fort at Burgh Castle, across the estuary, were built from some 12,500 tons (12,700 tonnes) of flint from the Norwich/North Walsham area; this, too, must have been brought in by barges.
14. Green, op.cit., 1952b.
15. Clarke, op.cit., pp.119, 122-4, 128; J.R.S. xliii, 1953, p.122; Tylecote, R.F., "Metallurgy in Archaeology", 1962, Table 25.
16. Green, op.cit., 1952b; V.C.H., Norfolk, vol.I, 1901, p.293 ff; Clarke, op.cit., pp.122, 125-6.
17. Green, C., in "The Times", 23-August-1954; J.R.S., XLV, 1955, p.136.
18. All the rooms, except one, which was burnt out in ca. A.D.340, were in use throughout the 4th century. J.R.S., XLII, 1952, p.96; XLIII, 1953, p.122; XLIV, 1954, p.97. See also, notes 11 and 13.
19. Green and Hutchinson, op.cit., p.116; Clowes, op.cit., pp.519-20; V.C.H., Norfolk, I, 1901, p.293 ff.
20. Margary, I.D., "Roman Roads in Britain", Ed.III, 1973, Route 38, p.271. Route 38 may have continued to a lost site on the coast North of Caister-by-Yarmouth; Clarke, op.cit., p.117, dates this road to ca. A.D.70. Steers, op.cit., pp.375-6; J.R.S.,LVII, 1967, p.189.
21. Coins :- Clowes, op.cit., p.519; J.R.S., XLIII, 1953, p.122; XLII, 1952, p.96; V.C.H., Norfolk, I, 1901, p.239 ff.
Pottery :- J.R.S., XLIII, 1953, p.122; XLII, 1952, p.96; Clarke, op.cit., p.130; Fulford, M. and Bird, J., "Imported Pottery from Germany", Britannia, VI, 1975, p.176.
22. Johnson, op.cit., 1976, p.97.
23. Green, op.cit., 1952b; Green and Hutchinson, p.116.
24. J.R.S., XLV, 1955, p.136.
25. Green, op.cit., 1954.
26. Notitia Dignitatum, Occ. XXVIII; Stevens, C.E., "The British Section of the Notitia Dignitatum", Archaeol.Jnl., vol.97, 1940, pp.125-154.

27. Green, C. and Hutchinson, J.N., in Lambert, J.M. et.al., op.cit., 1960, pp.114, 129-135, 137-144; V.C.H., Suffolk, vol.I, 1911, p.283.
28. Bede, *Historia Ecclesiastica*, III, 19.
29. Morris, A.J., and Hawkes, C.F.C., "The Fort of the Saxon Shore at Burgh Castle, Suffolk", *Archaeol.Jnl.*, vol.106, 1949, pp.66-9; Morris, A.J., "The Saxon Shore Fort at Burgh Castle", *Proc.Suffolk Institute of Archaeology*, XXIV, 1947, p.100; Lewin, T., "The Castra of the Littus Saxonicum", *Archaeologia*, XLI, pt.II, 1867, p.430; Green and Hutchinson, op.cit., Green, op.cit., 1951, p.21 ff; Steers, op.cit., 1964, p.377 ff.
30. The East wall is 640 feet (195.2 m) long while those to the North and South break off at 300 feet (91 m) and 325 feet (98.62 m), respectively. The walls are 11 feet (3.35 m) thick at ground level but are reduced by offsets, on the interior, to a breadth of 5 feet (1.52 m) at the top; Morris, op.cit., p.102-3; V.C.H. Suffolk, 1911, p.301; J.R.S., LII, 1962, p.178. In the last century traces of a defensive ditch were visible on the ground. Lewin, op.cit., pp.429-430.
31. Green, C., in J.R.S., LI, 1961, p.183; Ministry of Public Buildings and Works, "Guide to Burgh Castle", 1967, p.4; Morris and Hawkes, op.cit.; Johnson, op.cit., 1976, p.37. Harrod, H., "Notice of Excavations made at Burgh Castle, Suffolk, in the years 1850 and 1855", *Norfolk Archaeology*, vol.V, 1859, p.156 ff; Morris, op.cit., 1947, pp.102, 107 ff; _____, op.cit., 1951, p.23, Fig.1; V.C.H., Suffolk, 1911, pp.285, 302.
32. Morris, op.cit., pp.103-5; Johnson, op.cit., 1976, p.37, 39, 96-8, 119 ff; Williams, J.H., "Roman Building-Materials in S.E. England", *Britannia*, II, 1971, pp.172, 188, 191. Green, C., in J.R.S., LI, 1961, p.183.
33. Green, C., "The Times", 2-February-1952; See remarks on Caister, p.93 About 12,500 tons (12,700 tonnes) of flint would have been required. Very little is known of the buildings inside the walls. Traces have been found of structures which had been built against the walls. J.R.S., LII, 1962, p.178; LI, 1961, p.183; Harrod, op.cit., p.146 ff.
34. Harrod, op.cit., pp.145-160; Harrod's account is followed by Morris, op.cit., pp.108-9 and Hawkes & Morris, op.cit., pp.66-9; see also, note 31.
35. See remarks on Heybridge and Caerleon, pp.115, 307.
36. Flanking walls extended down towards the water-front at Caer Gybi, (p. 328), and at Dunaszekcső on the River Danube. Mocsy, A., "Die Spätrömische Schiffslände in Contra Florentiam", *Folia Archaeologica*, 1958, pp.89-104.
37. Casson, L., "Ships and Seamanship in the Ancient World", 1971, pp.367 ff. and n.39.
38. Green and Hutchinson, op.cit., p.138.

39. Johnson, *op.cit.*, 1976, pp.37-38, 96-8, 109, 120 ff; Morris, *op.cit.*, pp.105-6, 120.
40. Morris, *op.cit.*, pp.111-3; Lewin, *op.cit.*, p.430. Johnson, *op.cit.*, 1976, p.40, apparently following V.C.H., Suffolk, 1911, p.302 gives it as Gallienus to Arcadius.
41. Steers, *op.cit.*, 1964, p.377. See remarks on Caister-by-Yarmouth, pp.91-3, and note 1.
42. *Archaeologia*, vol. XXIII, 1831, p.364; V.C.H., Norfolk, vol.I, 1901, pp.298, 305; Talfourd Ely, "A Roman Lighthouse", *Archaeol.Jnl.*, vol.60, 1903, p.250.
43. V.C.H., Norfolk, 1901, p.298.
44. V.C.H., Norfolk, 1901, p.298, includes a coin of Gordian and refers to the report in *Archaeologia*, vol.XXIII, 1831, p.364; this, however, makes no mention of such a coin.
45. Clarke, R.R., *J.R.S.*, LII, 1962, p.176.
46. Antonine Itinerary, 474.1 - 476.6 and 479.10 - 480.8. Wachter, J.S., "The Towns of Roman Britain", 1975, pp.227-238; Frere, S.S., "The Forum and Baths at Caistor by Norwich". *Britannia* II, 1971, pp.1-26, with a plan showing the circuit of the later defences and the more extensive street grid (p.2). Clarke, *op.cit.*, 1960, pp.117 ff and 128; Atkinson, D., "Caistor Excavations - 1929", *Norfolk Archaeology*, XXIV, 1931, pp.93-139.
The town walls were of similar type to those found at Caister-by-Yarmouth.
47. at TG2806; Margary, *op.cit.*, 1973, Route 300, p.270 and Route 38, p.271 ff; Wachter, *op.cit.*, p.238.
48. Knowles, A.K., "The Roman Settlement at Brampton, Norfolk : Interim Report", *Britannia*, vol.VIII, 1977, pp.209-221; *Britannia* VIII, 1977, p.403, VII, 1976, p.341; Margary, *op.cit.*, 1973, Route 38, pp.271-3. See also n.50.
49. Steers, *op.cit.*, 1964, pp.383-5. Steers doubts whether this was the first haven at Dunwich but finds it impossible to determine what the situation was before A.D.1328. The southward growth of the Southwold spit, deflecting the outlet of the R. Blythe, is remarkably similar in formation and date to the movement of the Yarmouth spit across the joint outlet of the Rivers Yare, Bure and Waveney. Lambert, *op.cit.*, 1960, pp.129-135. If these situations are analogous, then it seems reasonable to postulate that, in the Roman period, Dunwich lay on the southern shore of a wide estuary, the site of which is now occupied by marshlands, and which may have been protected from the full force of storms by short spit, off-shore bars or even a low headland.
50. Ptolemy, *Geography*, II, 3, 6; Muller, p.90, translates it as "promentia litoris"; Rivet, A.L.F., "The British Section of the Antonine Itinerary", *Britannia* I, 1970, p.53.

51. V.C.H., Suffolk, 1911, p.304.
52. Margary, op.cit., 1973, Route 35, p.268, Route 34b, p.265, Route 36, p.268 and Route 340, pp.266, 522.
53. Antonine Itinerary, 479.10 - 480.8.
The Peutinger Table, illustrated in Rivet, op.cit., PL.VII and p.53, gives the name as Sinomagi or Senomagi; Dunnett, R., "The Trinovantes", 1975, p.57; Johnson, op.cit., 1976, p.19. The double towers shown on the Peutinger Table do not necessarily imply that the town was walled; this sign is often used to denote remote and unimportant places of uncertain character. A. and M. Levi, "Itineraria Picta : Contributo allo studio della Tabulo Peutingeriana", 1967 reviewed by Rivet, A.L.F., in J.R.S., LX, 1970, pp.242-3.
54. Steers, op.cit., 1964, pp.389-390.
55. Steers, op.cit., p.390.
56. Greenville Collins - A Chart of the approaches to Harwich - Woodbridge and Handsfordwater, with the sands from Nazeland to Horsely Bay, A.D.1686, Admiralty Hydrographic Department, B 882; J. P. Desmaretz - Chart of Harwich Harbour, A.D.1732, Admiralty Hydrographic Dept., L3314 5c.
57. V.C.H., Suffolk, 1911, p.288. Steers, op.cit., pp.389-90, follows Redman, J.B., "The East Coast between the Thames and the Wash", Minutes of the Proceedings of the Institution of Civil Engineers, vol.23, 1863-4. Desmaretz and Collins show sandbanks in the channel of the Orwell and across the outlet into the North Sea. cf. Johnson, op.cit., 1976, p.42.
58. A second, South, channel is shown which ran approximately mid-way between the opposing shores of the estuary; this channel was much more shallow, having an average depth of $3\frac{1}{2}$ fathoms (6.4 m) while that of the main channel was $5\frac{1}{2}$ fathoms (10 m) in most places.
59. British Museum, Cotton, M.S., Aug. I, i, 56. This inlet is also marked on Greenville Collin's chart of A.D.1686.
60. V.C.H. Suffolk, 1911, p.288 - refers to traces, on the ground, of an old watercourse. Steers, op.cit., cites Emmanuel Bowen's chart of A.D.1750 which seems to suggest that Landguard fort was then on a sandbank. Desmaretz' chart, of A.D.1732 shows clearly that the fort was then on the mainland. See also : Taylor, S., "The History and Antiquities of Harwich and Dovercourt", A.D.1730.
61. Notitia Dignitatum, Occ., XXVIII; For a discussion on its name and the Notitia Dignitatum, see Johnson, op.cit., 1976, pp.67-70; V.C.H. Suffolk, 1911, pp.289, 291; Rigold, S.E., Jnl. British Archaeological Ass., XXIV, 1961, p.55 ff; Cunliffe, B., "Excavations at Portchester Castle" Vol.I: Roman, Reports of the Research Committee of the Society of Antiquaries of London, No.XXXII, 1975, pp.430-1.
The site was also occupied by a Keep of the 12th century.

62. Johnson, *op.cit.*, 1976, pp.19, 42. During work in the "Park", near to Felixstowe Church and in, or adjacent to, the field in which the fort stood, many small objects were found. They include :- a samian "vase", brick flue-tiles, amphorae, lagenae, a small glass phial, bronze pins, a mirror, several fibulae, gold and silver rings, a gold chain, roundels of lead or bronze, sepulchral urns and an abundance of shells. Few of these objects have been securely dated. A few coins, from Severus to Arcadius, also came from the "excavation" - E.St.F. Moore, *Proc. Soc. Antiq.*, Ser. 2, vol.XI, 1885, pp.12-14. For other small finds see V.C.H., Suffolk, 1911, pp.306-7; Collingwood, R.G., *Antiq.Jnl.*, vol.4, 1924, pp.154-5 (Antonine samian from Rheinzabern). Leaden seals, as yet undated, have also been found at Felixstowe, but it is not known to what kind of commodities they were attached - Smith, C.R., *Collectanea Antiqua*, vol.3, ca.1854, pp.197-8. Roman bricks and the remains of a tessellated pavement and of a road were seen near Beacon Hill, near Harwich, in the mid-18th century. Two sherds of 1st century pottery, traces of a ditch and a heavy deposit of broken Roman roof tiles, plus Belgic and Roman pottery, were found in two places, at N.G.R. TM 238311 in A.D.1955; V.C.H., Essex, Vol.I, p.285.
63. V.C.H., Suffolk, 1911, p.306 ff; Johnson, *op.cit.*, 1976, p.40-2. A print taken off a sketch made in A.D.1700 by Thomas Bates shows a circular bastion on the edge of the cliff with a short length of wall running over the precipice.
64. A letter, dated 18-xi-1722, by Dr. Knight, in the Minute Book of the Society of Antiquaries of London, i, 71, 2; cf.V.C.H., Suffolk, 1911, pp.289, 305; Johnson, *op.cit.*, 1976, pp.40-2.
65. Kirby's "Suffolk Traveller", Ed.I, 1735 and Ed.II, 1754; V.C.H., Suffolk, 1911, p.289.
66. Johnson, *op.cit.*, 1976, pp.42, 67, 109. The scant coin series from Felixstowe is much the same as those of other forts of similar type. The "Park" site yielded coins from Severus to Arcadius, of which those of Constantine are said to have been numerous; Moore, *op.cit.*, p.14 and Bushe-Fox, J.P., "Some Notes on Roman Coast Defences", *J.R.S.*, vol.22, 1932, pp.69-71. A collection made in A.D.1742-4 includes 420 specimens, ranging from Pompey to Honorius; *Suff.Coll.*, B.M., MSS. 19087, fol.53-60. Since the 18th century coins of Victorinus, Tetricus, Valens (2) and Gratian have been found; V.C.H., Suffolk, 1911, p.306. See also, Cunliffe, B., "The Saxon Shore - some problems and misconceptions", in Johnston D.E. (ed.), *op.cit.*, 1977, p.3.
67. V.C.H. Essex, Vol. III, "Roman Essex", 1963, p.4; Steers, *op.cit.*, 1964, pp.392, 395. Considerable quantities of continental wares, found at Colchester were imported before, and during the Roman period, while mortaria were exported from there to Kent and to the Hadrianic and Antonine Walls: Hull, M.R., "The Roman Potters' Kilns of Colchester", *Reports of the Research Committee of the Society of Antiquaries of London*, No.XXI, 1963, pp.114-6; Hawkes, C.F.C. and Hull, M.R., "Camulodunum", *Reports of the Research Committee of the Society of Antiquaries of London*, No. XIV, 1947, pp.28-9, 180-191 and 195. For this trade, the River Colne must have been navigable as far as Colchester.

68. This also seems to have been a factor in the choice of sites at Richborough, Fishbourne and Hamworthy.
69. A smaller area of gravel is to be found at Wivenhoe, on the East bank of the Colne, midway between Colchester and Fingringhoe; Hawkes and Hull, 1947, op.cit., p.19; Ordnance Survey, "Geological Map of Great Britain", Sheet 2, Edn.II, 1957.
70. V.C.H., Essex, III, 1963, pp.130-132.
71. There is no evidence to show whether the Roman debris was in situ or had arrived there as a result of more recent, industrial, activity. At Brough-on-Humber, Winteringham and Heybridge a sand/gravel floor seems to have been preferred to one of clay, pp.47ff.& 52ff.
72. The plan and the dimensions of the ditch have not been preserved; Hawkes and Hull, op.cit., p.19; V.C.H. Essex, 1963, pp.130-2. One pit, at about TM 037201, was 100 feet (30.5 m) in diameter.
73. *ibid*; J.R.S., 25, 1935, p.215; 31, 1941, p.138. Much of the early pottery found on the site came from these rubbish pits; it included many South Gaulish stamps of the mid-1st century, a fragment of an early Form 29 Bowl and Belgic stamps. Walters, H.B., "Catalogue of the Roman pottery in the Colchester and Essex Museum", 1930; Colchester Museum Reports - 1918, p.9; 1933, p.15; 1944, pp.22 & 33; 1948, p.19 and 1950, p.23. A fine series of brooches, nearly all of which are Claudian, have also been found, V.C.H., Essex, 1963, pp.130-2.
74. See note 72 above. For remains of similar supply bases, see remarks on Fishbourne and Richborough, and :- Cleere, H., "The Classis Britannica", in Johnston, D.E. (ed.), op.cit., 1977, p.16 ff.
75. V.C.H., Essex, 1963, pp.130-2; Dunnett, R., op.cit., 1975, p.97.
76. V.C.H., Essex, 1963, pp.130-2; J.R.S., 25, 1935, p.215; 43, 1953, p.122; Dunnett, R., op.cit., p.97. Another villa at Alresford (TM 061199), on the opposite bank of the Colne, was built near the foot of a slope overlooking both the river and Alresford Creek, V.C.H. Essex, 1963, p.37.
77. TM 038201. Appleby, R.J. and Hull, M.R., J.R.S., 28, 1938, p.189; V.C.H. Essex, 1963, p.131. Liversidge, J., "Furniture and Interior Decoration", in Rivet, A.L.F., (Ed.), "The Roman Villa in Britain", 1969, p.153 and n.6. Kentish ragstone was also used in stone structures at Colchester. Hull, op.cit., 1963, pp.18-19, 41-42, 141.
78. Suetonius, "Caligula", 44; "Claudius", 17; Caesar, "De Bello Gallico", v.20-22; Dio, History, lx, 19-23; Hawkes, and Hull, op.cit., 1947, pp.4 ff. and 44; Ordnance Survey, "Geological Map of Great Britain - Sheet 2," Ed. 2., 1957; Dunnett, B.R.K., (1971a) "Colchester", Current Archaeology, 26, Vol.III, No.3, May 1971, pp.62-6; _____, op.cit., 1975, pp.15-27. At Sheepen, the subsoil is a mixture of gravel and loam. Other, smaller, areas of gravel occur at Wivenhoe, on the East bank of the Colne below Colchester, and at Fingringhoe.

79. Middlemill Ford is marked on the plan of Colchester (after R. Niblett) in Wachter, op.cit., 1975, pp.106-7; Hawkes & Hull, op.cit., pp.4 & 50, ignore this ford and state specifically that Sheepen Ford was the lowest tide-free ford on the River Colne. The roads from the North and East gates of the Roman town seem to have crossed the river by way of bridges: Dymond, D.P., "Roman Bridges on Dere Street, County Durham", *Archaeological Jnl.*, 118, 1963, p.161. Ordnance Survey, 1; 25 000, Sheet TL 92/TMO2, Ser. 2, 1973 shows a weir at this point (TL 99702565) and it is possible that Middlemill Ford is, as the name suggests, a post-Roman feature.
80. Hawkes and Hull, op.cit., pp.4, 48 & 347; Phillips, C.W., "The present state of archaeology in Lincolnshire : part II", *Arch. Jnl.* XCI, 1934 (1935), passim; Hallam, S.J., "Settlement round the Wash", In Phillips, C.W. (Ed.), "The Fenland in Roman Times", Royal Geographical Society, Research Series, No.5, 1970, pp.22-113; Hallam, S.J., "The Romano-British Salt Industry in South Lincolnshire", *Reports & Papers of the Lincolnshire Architectural & Archaeological Society*, n.s.viii, 1960, p.35 ff. For an example of river navigation above a ford, see Caerhûn, p.330
81. Hawkes & Hull, op.cit., p.4.
82. Hawkes & Hull, op.cit., pp.5, 8-14, 57-140; *Britannia* II, 1971, p.272; Dunnett, op.cit., 1971a and 1975.
83. For a description of these imported Arretine and Gallo-Belgic wares, see Hawkes & Hull, op.cit., pp.28-9, 46, 180-191, 195, 205.
84. Numerous items of military equipment and a 20 lb. (9 kg) bronze ingot came from the rubbish pits, *Britannia* II, 1971, pp.272 and 295, No.40 (TL 987257); Hawkes and Hull, op.cit., pp.23-6, 34-8, 54, & 341 ff; Dunnett, op.cit., 1971a, p.65. The occupation of this area was severely disrupted in A.D.60 and abruptly terminated in A.D.80-90; Hawkes and Hull, op.cit., pp.24 & 38 ff; *Britannia* II, 1971, p.272.
85. Hawkes and Hull, op.cit., p.46. On page 21 of the same work, they state that the base of this little valley is of clay.
86. An enormous enclosure delimited by the Colne on the North, Peartree Dyke on the South, Grimes Dyke on the West and Triple Dyke on the East, may have served to accommodate the invasion forces in the winter of A.D.43-4; Dunnett, op.cit., 1975, pp.32-3 (information from C.F.C. Hawkes) at TL 961256 - centre; cf., *Colchester Museum Reports*, 1950-1954, p.23.
87. Lion Walk Site, TL 997251, in the South-East corner of the fortress :- Crummy, P., "Colchester: the Roman Fortress and the Development of the Colonia", *Britannia*, vol. VIII, 1977, pp.69-74, 82-85; _____, "Not only a matter of time - a survey outlining the archaeology of the Colchester District", 1975, p.8 ff; _____, "Colchester: recent excavation and research", 1974, passim, and cf. *Current Archaeology*, 43, Vol.IV, No.8, Aug.1974, pp.237-243; A.Ex., 1972 (1973), p.48; 1973 (1974), p.42 ff; *Britannia* III, 1972, p.331; IV, 1973, pp.302-4; V, 1974, pp.439-442.

88. Crummy, op.cit., 1977, pp.65-9, 74-6.
 (i) The Western defences have been sectioned at TL 992252, 65 feet (20 m) West of the Balcerne Gate; Britannia V, 1974, p.440; VI, 1975, p.263; A.Ex., 1973 (1974), pp.42-3.
 (ii) A V-shaped ditch, 5.5 (1.67 m) deep was encountered in excavations some 300 feet (91 m) South of the later town (North) wall; it was traced for 600 feet (183 m) and ran in an East-West direction; J.R.S. 55, 1965, p.214; 58, 1968, p.196; Dunnett, op.cit., 1971a, p.64. If this is not part of the northern defences of the fortress, as seems certain, then it must demarcate an early part of the town.
 (iii) Claudian rubbish pits have been found in Insulae 10, 11 & 25 of the later town. Those in Insulae 11 and 25 contained items of military equipment; J.R.S., 56, 1966, p.210; 57, 1967, p.189; 58, 1968, p.196. For a discussion of the distribution of Claudian coins and samian ware in the North Hill area, see Dunnett, op.cit., 1971a, p.64; _____, (1971b) "Excavations in Colchester, 1964-1968", Trans. Essex Archaeological Society, Ser.3, 3, pt.1, 1971, pp.1-130; Britannia VI, 1975, p.263.
 (iv) For the presence of auxiliary as well as legionary troops at Colchester, see R.I.B. 200 and 201. (both tombstones are of Bath oolite); Dunnett, op.cit., 1975, pp.36-9; Phillips, E.J., "Gravestone of M. Favonius Facilis at Colchester", Britannia, VI, 1975, pp.102-4.
89. Crummy, op.cit., 1977, pp.74-6; Britannia, VII, 1976, p.343.
90. Defences: Britannia, V, 1974, p.439; VI, 1975, p.263; VII, 1976, p.343.
Lion Walk site : see note 88, and Crummy, op.cit., 1977, pp.76 ff, 81-2.
91. Britannia IV, 1973, p.302; V, 1974, pp.439-442.
92. Crummy, P., in Britannia IV, 1973, pp.302-4.
93. For descriptions of the roads which radiated from the Colonia into the hinterland and, in particular, those which led to Fingringhoe (?), Heybridge (?), Chelmsford & Stratford St. Mary see : Margary, op.cit., 1973, pp.210 (Route 24), 247 (Route 3b), 252 (Route 32), 254 (Routes 320/1/2) & 264 (Route 3c); Dunnett, op.cit., 1975, p.60 ff.; Hawkes & Hull, op.cit., p.16 ff.
94. See note 79 above.
95. See : Brough-on-Humber and Winteringham. pp.47ff. & 52ff.
96. Antonine Itinerary, 474.1 - 476.6 (Colonia) and 479.10 - 480.8 (Camoloduno); Tacitus, Annals, XII, 32.
97. A.Ex., 1972 (1973), p.48; 1973 (1974), p.42 ff., Britannia, III, 1972, p.331; IV, 1973, pp.302-4; Dunnett, B.R.K., Trans. Essex Archaeological Society, Ser.3, Vol.2, 1968, pp.137-142; Crummy, op.cit., 1977, pp.76-82, 85-87, with plan.
98. Britannia V, 1974, p.440; J.R.S., 53, 1963, p.138; 57, 1967, p.189; 58, 1968, p.196.
99. J.R.S., 56, 1966, p.210.

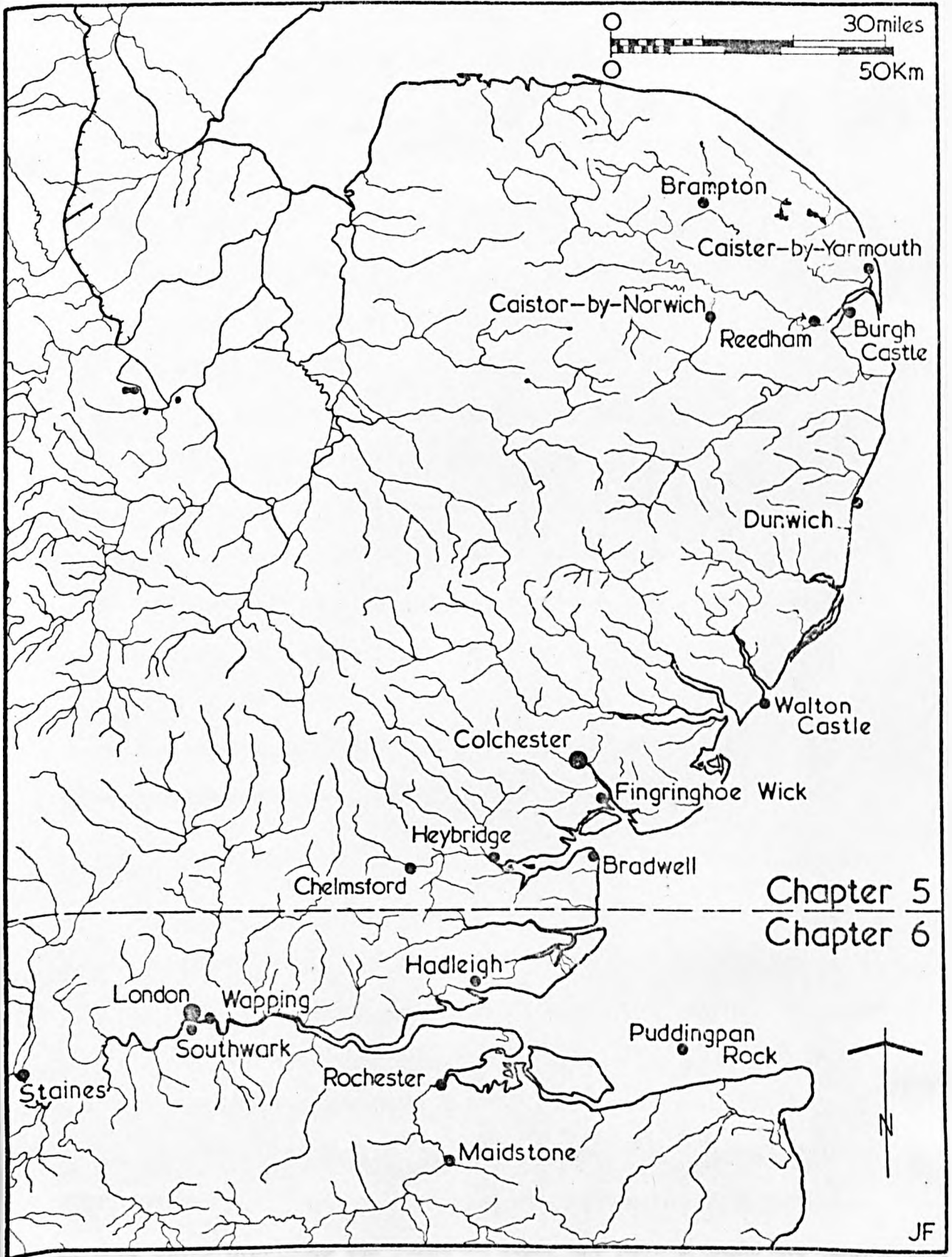
100. Dunnett, op.cit., 1975, pp.50 and 69; Hawkes and Hull, op.cit., pp.20-1, n.7, pp.39 and 56, n.1. A child's grave of the Claudio - Neronian period, found in a cemetery to the West of the town, contained imported Rhineland flagons - Dunnett, op.cit., 1975, p.69.
101. Hebditch, M., "Excavations on the South side of the Temple precinct at Colchester", Trans. Essex A.S., Ser.3, vol.III, pt.1, 1971, p.115 ff; Hull, M.R., "Roman Colchester", 1958, pp.169-178.
102. Williams, J.H., "Roman Building-Materials in South-East England", Britannia II, 1971, pp.172-4; Fishwick, D., "Templum Divo Claudio Constitutum", Britannia, III, 1972, pp.164-181; _____, Britannia IV, 1973, p.264.
103. Hull, op.cit., 1958, pp.224-236; J.R.S., 51, 1961, p.185; R.I.B. 193, 202-5, 207-8, 210.
104. Tacitus, Annals, XIV, 31-39.
Dunnett, B.R.K., "Excavations on North Hill, Colchester - 1965", Archaeological Jnl., CXXXIII, 1967, p.27; _____, op.cit., 1975, pp.70-73 ff; _____, op.cit., 1971a, p.64. J.R.S., 53, 1963, p.138; 56, 1966, p.210; 57, 1967, p.189; 58, 1968, p.196. Britannia III, 1972, p.331; IV, 1973, p.304; V, 1974, p.440; VI, 1975, p.263; VII, 1976, p.344; A.Ex., 1972 (1973), p.48.
105. Wachter, op.cit., p.115; Dunnett, op.cit., 1975, p.76; Britannia, VII, 1976, p.344.
106. Crummy, op.cit., 1977, pp.91-2, 95-8, 101-4; Dunnett, 1971 b; J.R.S., 58, 1968, 196; Britannia, I, 1970, p.290; II, 1971, p.272; VI, 1975, p.263; VII, 1976, p.344; A.Ex., 1972 (1973) p.48.
107. Septaria now outcrops at Harwich, Walton-on-Naze, Frinton, Clacton and elsewhere. V.C.H., Essex, III, 1963, p.9 and n.55, pp.106-9. and 117 ff. (in a wall, East of the Temple at Gosbecks).
108. Dunnett, B.R.K., "The Excavation of the Roman Theatre at Gosbecks", Britannia II, 1971, pp.35, 41, 44 ⁿ² and 46 ⁿ⁸.
109. Kilns have also been excavated on the South slope of Sheepen Hill. Hull, M.R., "The Roman potters' Kilns of Colchester". Reports of the Research Committee of the Society of Antiquaries of London, no.21, 1963, pp.2, 11 and 13.
110. *ibid*, pp.90, 178.
111. Only two stamps have been found in the area between Hadrian's Wall and East Anglia; these were found at Wilderspool and York., *ibid*, pp.114-6 and 149. At Cadder, Camelon, Castlecary, Inveresk, and Rough Castle, Colchester stamps account for 50% of the known total and, along with Lincoln wares, are associated with the Antonine II phase. Hartley, B.R., "The Roman Occupations of Scotland", Britannia III, 1972, p.47 ff; Hull, op.cit., 1963, pp.115 ⁿ² and 149; Rae, A. and V., "The Roman Fort at Cramond", Britannia V, 1974, p.210 ff.

- Of the Kilns excavated in 1933 and 1959, two were in use ca.A.D.60; eighteen - ca.A.D.175-210; two - in the first half of the 3rd century; four - in the late 3rd-4th centuries and one in the mid-4th century; Hull, *op.cit.*, 1963, pp.143 and 177. Local clay was readily available and seems to have been dug along the South bank of the Colne, to the West of Region 2 - Sheepen Farm; Hull, *op.cit.*, 1963, p.13; Hawkes and Hull, pp.71 ff., 121 and 281.
112. Williams, D.F., "The Romano-British Black-Burnished Industry: an essay on characterization by heavy mineral analysis", in Peacock, D.P.S. (ed.), "Pottery and Early Commerce", 1977, 207-213; _____, "Black-Burnished Ware from Mumrills: a re-appraisal of sources by heavy mineral analysis", in Dore, J. & Greene, K. (ed.), "Roman Pottery Studies in Britain and Beyond", B.A.R. Supplementary Series No.30, 1977, pp.177-181; Dunnett, *op.cit.*, 1975, pp.79-80; *Current Archaeology*, 43, Vol.IV, No.8, Aug.1974, pp.237-243. See also, notes 105-6.
113. *Notitia Dignitatum*, Occ., XXVIII, 13, cf. Bede, H.E., III, 22, who refers to a town called Ythanceastir which must have been built on or near the site of the fort. For a discussion of the name and garrison of the fort see :- Johnson, *op.cit.*, 1976, p.66; Hull, M.R., in V.C.H. Essex, 1963, pp.52-5; Taylor, M.V., "The Roman Fort in the Parish of Bradwell-juxta-Mare", *Trans. Essex Archaeological Society*, N.S., 17, 1920, pp.198-202; Raven, J.J., "Othona and the Count of the Saxon Shore", *Trans. Essex Arch.Soc.*, N.S., 6, 1898, pp.291-7; Piggott, J., "Othona", *Notes & Queries.*, Ser.4, IV, 1869, pp.317-8.
114. Steers, *op.cit.*, 1964, p.392. This alluvial tract has, in places, been converted into arable or pasture land; Edmond Halley, "Survey of the English Channel", 1700.
115. Steers, *op.cit.*
116. Lewin, *op.cit.*, 1867, pp.439-452. Lewin's description of the excavations of 1864/5 forms the basis of the account that follows.
117. Lewin, *op.cit.*, p.440; Halley, *op.cit.*
118. Taylor, *op.cit.*, p.202; V.C.H., Essex, 1963, *ibid*; Johnson, *op.cit.*, 1976, p.18.
119. Johnson, *op.cit.*, 1976, p.109. The coin series is similar to that of Pevensey; it runs from Saloninus (A.D.259) to Arcadius, the majority of the coins being of the Constantinian period:- Johnson, *op.cit.*, p.44; Lewin, *op.cit.*, p.445; Bushe-Fox, *op.cit.*, 1932, pp.69-71. See also, Cunliffe, B., "The Saxon Shore - some problems and misconceptions", in Johnston, D.E. (ed.), *op.cit.*, 1977, p.3.
120. Of the North and South walls, 290 feet (88.4 m) and 150 feet (45.7 m) remain; all three walls have been extensively robbed. The North and South walls were not parallel; Lewin, *op.cit.*, p.441. Lewin makes no mention of a rampart (*op.cit.*, p.440) although this may have been missed (Johnson, *op.cit.*, 1976, pp.42-4; V.C.H., Essex, 1963, *ibid*).

121. Lewin, op.cit., p.441; V.C.H., Essex, *ibid*; Johnson, op.cit., 1976, 42-4. See remarks on Colchester, p.112
Traces have been found of bastions spaced, apparently, at intervals of 33 m (107.8 feet) all along the West wall; V.C.H., Essex, 1963, *ibid*; Dunnett, op.cit., 1975, p.55; Lewin, op.cit., p.442; Taylor, op.cit., pp.200-1; Johnson, op.cit., 1976, pp.42-4. All these bastions are semicircular in plan except for one which appears to be pear-shaped.
122. Lewin, op.cit., p.441; Johnson, op.cit., 1976, pp.42-4; Taylor, op.cit., p.201; V.C.H., Essex, 1963, *ibid*.
123. Lewin, op.cit., p.442.
124. Taylor, op.cit., p.201; R.C.H.M., Essex, vol.4, 1923, pp.13-14, cf. V.C.H., Essex, 1963, *ibid*.
125. Lewin, op.cit., p.441; V.C.H., Essex, 1963, *ibid*.
126. Lewin, op.cit., p.400; Taylor, op.cit., pp.200-1; V.C.H., Essex, 1963, *ibid*; Johnson, op.cit., 1976, p.44. The pottery from the site includes an unstratified sherd of a 4th century lid-seated jar, probably from the Eifel/Rhine region of Germany:- Fulford and Bird, op.cit., 1975, p.176.
127. Margary, op.cit., 1973, p.252, Route 31; Taylor, op.cit., p.201; V.C.H., Essex, 1963, *ibid*; Dunnett, op.cit., 1975, p.55 states that the camber of the Roman road was visible in a field some 100 m (328 feet) to the West of the fort.
128. Johnson, op.cit., 1976, p.44; the precise location of these remains has not been published.
129. Johnson, op.cit., 1976, p.126; Dunnett, op.cit., 1975, p.54; V.C.H., Essex, 1963, *ibid*; Taylor, op.cit., p.200.
130. Lewin, op.cit., p.450.
131. Steers, op.cit., p.393.
132. V.C.H., Essex, 1963, pp.13-14; Ordnance Survey, "Geological Map of Great Britain", Ed.II, 1957, Sheet 2; Steers, op.cit., 1964, pp.392-394. Drury, P.J., in *Britannia*, IV, 1973, pp.304-5 - full report forthcoming.
133. T.L.887075.
de Brisay, K., *Colchester Arch. Group, Bulletin*, XV, 1972, p.23 ff; XVI, 1973, p.19 ff; *Britannia*, IV, 1973, p.305.
Dunnett, op.cit., 1975, Fig.37, p.126 and Fig.38, p.127.
134. See also, remarks on Colchester, & Fingringhoe. The floors of the harbours at Brough-on-Humber & Winteringham were of gravel and/or sand while those of the neighbouring pre-Roman ferry terminals at North & South Ferriby were of clay/mud, pp.47,52.

135. Hawkes & Hull, *op.cit.*, 1947, pp.16-19. (Colchester Museum Reports, 1913. 10, 11, pl.II; 1922, 9, pl.II and 10, pl.V). For the Roman interment, found at Heybridge in the 19th century, see :- Piggott, J., *Trans. Essex Arch. Soc.*, V. 1873, p.323.
136. Archaeological Excavations, 1972 (1973), p.50; *Britannia* IV, 1973, pp.304-5 = information from P.J. Drury (TL 850082 - Crescent Road, Heybridge).
137. *A.Ex.*, 1972 (1973) p.28; Dunnett, *op.cit.*, 1975, pp.89 ff, 124, citing information from the excavator, P.J. Drury, in advance of publication. The "industrial waste" comprised: ash, charcoal, iron slag, tile-wasters, fragments of kilns and furnaces, lead droplets and offcuts; cf. note 136, above.
138. Drury, P.J., (1975a) "Roman Chelmsford - Caesaromagus" in. Rodwell, W.J. & Rowley, R.T. (Ed.), "The 'Small Towns' of Roman Britain", 1975, p.159 ff, and n.133, above. Rodwell, W.J., "Milestones, Civic Territories and the Antonine Itinerary", *Britannia*, VI, 1975, p.80; Drury, P.J., in *Britannia*, III, 1972, pp.331-2; IV, 1973, p.301 ff; VI, 1975, p.263.
139. Margary, I.D., *op.cit.*, 1973, Route 321, p.254; V.C.H., Essex, 1963, Pl. I. B. Hawkes, and Hull, *op.cit.*, 1947, pp.16-19. Late 1st century pottery was found in the roadside ditches - J.R.S., XXVII, 1937, p.240.
140. *A.Ex.*, 1972 (1973), pp.50 & 81; *Britannia*, IV, 1973, pp.304-5; Dunnett, *op.cit.*, 1975, p.140.
141. Margary, *op.cit.*, 1973, Route 3 a/b, pp.246-7.
142. Drury, P.J. (1973a), "Chelmsford", *Current Archaeology*, 41, vol.IV, No.6, Nov.1973, p.174; _____, *op.cit.*, 1975a, p.159 ff; *Britannia*, vol.IV, 1973, p.301; VII, 1976, pp.342-3; To the North of back-channel lay a flood-plain some 800 feet (244 m) wide from N.E. to S.W., through which ran the Can and the Chelmer. Between these two rivers, at 63-6 High Street, an early Roman ditch of unknown function has been recorded.
143. Drury, *op.cit.*, 1975a, pp.159-163; 1973a, pp.170-3; *Britannia*, vol.IV, 1973, p.301; Antonine Itinerary, 474.1-476.6 and 479.10-480.8; Stevens, C.E., "Gildas and the civitates of Britain", *English Historical Review*, lii, 1937, p.193 ff; V.C.H., Essex, 1963, p.16, s.v.; Wachter, *op.cit.*, 1975, pp.120, 178, 196-8, 200.
144. Drury, in *Britannia* II, 1971, p.271; III, 1972, p.331; IV, 1973, p.301, VII, 1976, p.343; *A.Ex.*, 1974 (1975), p.43; _____, *op.cit.*, 1973a. The Antonine Itinerary gives different distances between Colchester, Chelmsford and London (n.143). Rodwell suggests that there may have been an important trading link between Chelmsford and Heybridge and that an eastern route, via the coast seems possible; Rodwell, *op.cit.*, 1975, p.80, apparently following Drury, *op.cit.*, 1975a; Dunnett, *op.cit.*, 1975, p.61, disagrees with this theory and tentatively suggests that Chigwell and not Romford may be Durolitum, thus accounting for the discrepancy.

145. Drury, op.cit., 1975a, pp.159-162; 1973a, *ibid*; *Britannia*, IV, 1973, p.302.
146. Drury, op.cit., 1975a, pp.165-170 & fig.3; 1973a, pp.169-170, 174; *J.R.S.*, LIX, 1969, p.223; *Britannia*, II, 1971, p.271; IV, 1973, pp.301-2; VI, 1975, p.263; VII, 1976, pp.342-3; *A.Ex.*, 1972 (1973), p.47; Dunnett, op.cit., 1975, pp.83-5.
147. Drury, in *Britannia*, II, 1971, p.272; Dunnett, op.cit., 1975, p.85.
148. Drury, op.cit., 1975a, pp.163-5, 170-2; 1973a, pp.167-174; *Britannia*, III, 1972, p.331; IV, 1973, pp.301-2; VII, 1976, pp.342-3; *A.Ex.*, 1972 (1973), p.47; Dunnett, op.cit., 1975, p.83; Wachter, op.cit., 1975, p.200. An octagonal, masonry, Romano-Celtic temple was built ca. A.D.320-325 in a sacred precinct that was in continuous occupation from prehistoric times down to the early 5th century. A 4th century hoard of jet objects has also been found, at a point just South of the branch-road.



Chapter SixLondon and the Thames Estuary

Mediaeval and modern canalization and embankment projects along the banks of the Thames, combined with a steady rise in absolute sea-level of some 1.5 feet (0.5 m) and significant regional subsidence of the land surface since the Roman period, have served to narrow the river and push high tides much further upstream as far as Teddington Weir, whereas in early Roman times the Thames was probably tidal only up to the Pool of London. Excavations at the Old Custom House Site, London, in 1973 revealed that the river was then at least 380 yards (350 m) wide in the pre-Roman period, compared with 275 yards (250 m) at present. High water mark of tides in early Roman times, on the site of the Old Custom House, cannot have risen above Ordnance Datum and low water must have dropped to below 5.27 feet (1.6 m) below O.D.; analysis of organic remains associated with the quays showed only freshwater conditions, indicating that the bridgehead fort and subsequent settlement lay just above the head of tidal limits (1).

Staines

TQ 036715

Traces of the roads, ditches and occupation levels of a 1st-4th century riverside settlement have been found, on either side of Roman arterial road from London to Silchester, at Staines, at the confluence of the Thames and the Colne and some 17 miles (27.4 km) above the present head of tidal limits at Teddington Weir. Timber-framed structures of the settlement, dated to the late 1st-2nd, and early to mid-4th, centuries, seem to have been crowded onto a small gravel terrace which overlooks the point at which the road crossed the Thames (2).

Mid-1st century imported pottery and military fittings have come from the site, indicating military activity, possibly in the form of a fort or a mansio, in the area in which the early settlement

developed. Millett suggested that there sprang up a small, but prosperous, town which was presumably a market centre for areas on either side of the Thames. A number of 2nd century Spanish amphorae have been found, the necks of which had been removed before they had been re-used, apparently for storing corn (3). Millett concluded that the presence of these amphorae and the proximity of the settlement to this important bridging point indicates that there was at least a small port for river-borne traders below the town (4). If this town was the Pontibus of the Antonine Itinerary, then it is implicit that more than one bridge was required to span the river which may have been encumbered with eyots, shoals or marshland in this reach (5). In the early Roman period, the head of tidal limits lay a short way below Roman London Bridge and there was a ford across the Thames in the Westminster area (6). There must, therefore, be some considerable doubt as to whether the river was navigable to other than shallow-draft river craft as far as Staines.

London

TQ 3281

The persistent accumulation of silt and gravel against the river frontages of mediaeval and modern London and the consequent need to build new installations out into deep water, has meant that any surviving features of the Roman port lie buried, deep beneath the modern buildings which front onto Thames Street (7). To the North of the foreshore, the Roman land-surface rose quite sharply to a height of just under 30 feet (9.1 m) above O.D., at which point the ascent to the crests of two rounded hills, now known as Aldersgate and Cornhill, eased somewhat. This higher ground was bisected by the steep-sided valley of a tributary of the Thames, the Walbrook, which flowed into the river at a point immediately South of Southwark Bridge. The lower reaches of this tributary were quite shallow and it was

never much wider than 12-14 feet (3.66-4.27 m) except at its mouth. A second tributary, the Fleet, was much larger but lay well to the West of the early settlement (8).

A considerable quantity of largely undatable military equipment has been found in the City of London, particularly in the bed of the Walbrook (9). Some of the pieces are early and this has given rise to the suggestion that the civilian settlement developed from the vicus of a bridgehead fort (10). Merrifield suggests that London may have been the site of the main supplies base and "nerve centre" of the entire campaign of conquest; the base at Richborough, however, continued in use until ca. A.D.85, although on an apparently reduced scale, and it is almost certain that any supply-base in the London area would have been short-lived (11). Excavations at Aldgate and Bush Lane House in 1972, exposed a pre-Flavian V-shaped ditch, and timber structures of military character, including a granary (?) to the South-East. The ditch had soon been backfilled but, amid the small quantity of rapid silt lay the grip of a gladius. All these features were overlain by timber structures which were destroyed during the rebellion of Boudicca (12). Although the site of the Roman bridge is not known for certain - it probably lay in the immediate vicinity of London Bridge - it is almost certain that a fort would have been built to command the crossing (13).

In the seventeen years between the conquest and the rebellion of Boudicca the civilian settlement, which was sited at a major junction of land and sea routes, rapidly developed into an important centre for business and trade, a prosperous and expanding town in which a conventus may have been established by A.D.60 (14). When the rebellion broke out, Catus Decianus, the procurator, was not at Colchester; Julius Classicianus, his replacement in A.D.61, died in office and was buried at London which was, presumably, the seat of his office (15).

Very little is known about the settlement at this time of rapid growth and commercial development. Claudian metalled roads and timber buildings on the site of the later Forum were quickly superseded by massive, wooden-framed rectilinear structures which fronted onto a main East-West road. The Aldgate excavations produced a series of timber buildings which, like those erected on the Forum site, were devastated, apparently in A.D.60-1 when Suetonius withdrew his forces and left those people who stayed behind to be prey to the rebels (16).

The decade following the rebellion must have been one of reconsolidation. The occupied area was apparently extended and a substantial masonry building, measuring some 360 feet (109.3 m) by 200 feet (61 m) was built on what was later to be the site of the Forum; its function is obscure but it may have housed major administrative offices (17). It was demolished in late Flavian times, probably in the last decade of the 1st century, to make way for a vast forum-basilica complex, covering an area of some $7\frac{1}{2}$ acres (3.0 Ha), which may not have been completed until the time of Hadrian. The construction of such a complex indicates that the town was now a self-governing municipium or, less likely, a colonia (18). At about the same time as construction work commenced on the forum-basilica, the river-bank above the Thames in the area of Cannon Street Station was terraced to make room for a palatial building, measuring at least 340 feet (103.2 m) by 430 feet (131.1 m), which has been provisionally identified as the residence of the provincial governor (19). In the early 2nd century an 11 acre (4.4 Ha) fort was built at what is now Cripplegate; it lay within easy reach of the "palace" and was presumably designed to accommodate the equites and pedites singulares of the Governor's Guard, officers on special duties in his office ~~or the urban cohort~~ (20).

The distribution of debris resulting from a fire in the reign of Hadrian shows that the city had by then expanded eastwards and, to a lesser extent, westwards beyond the Walbrook. The slopes above both

the Thames and the Walbrook had been terraced in places to take substantial masonry residences of some sophistication; other structures, built in wattle and daub, may have been shops or workshops (21).

Shipping and the Thames

Kentish ragstone, used as building-material even in pre-Boudiccan structures and remaining in use into the 4th century, appears to have been shipped direct to London from quarries in the Maidstone area (22). The Blackfriars barge which sank in some 14 feet (4.27 m) of water about 130 yards (118.4 m) out from and slightly East of the mouth of the Fleet, sometime during the 2nd century, was carrying a cargo of Kentish ragstone (23). It was a carvel-built, single-masted craft, some 50-51 feet (15.2-15.5 m) long with a beam of about 22 feet (6.71 m); it was flat-bottomed enabling it to sit on the strand at low water and would have displaced an estimated 92 tons (93.5 tonnes). The depth of the barge was tentatively estimated at approximately 7 feet (2.13 m) although the height of the deck is not known as its gunwale and deck beams were not found. The timbers were infested with the ship-worms *Teredo* and, to a far lesser extent, *Limnoria*, indicating frequent trips out into the estuary, probably to Maidstone (24).

A second carvel-built boat, found in a tributary (?) stream at New Guy's House, Bermondsey, in 1958, had been abandoned ca A.D.200, if not before. The dimensions of the surviving oaken timbers indicated that the craft had originally been about 14 feet (4.27 m) in the beam and some 50 feet (15.2 m) long. That the depth amidships was no more than 3-4 feet (0.91-1.22 m) was indicated by the fact that the maximum depth of the stream in which it lay was less than 3 feet (0.91 m). It had been a beamy, open boat with a low freeboard, probably a river barge, although it is not known what cargoes it carried (25).

Large quantities of ragstone and presumably other building-materials were brought to London from the mid-1st century onwards, and a small fleet of barges would have been needed to transport the vast quantity of ragstone used in the 2 mile (3.2 Km) run of the landward city wall, which was built ca.A.D.190-220 (26).

While Richborough remained, at least until the early 3rd century, the official accessus Britanniae, traders seem to have by-passed it in favour of other centres such as London (27). Such commodities as wines, oils, pottery and the numerous mass-produced Gaulish "Mother Goddess" and Venus figurines recovered from the Walbrook, were almost certainly shipped direct to the city from the Continent (28). The numerous fragments of samian were found on and around the Puddingpan Rock, 2.5 miles (4 Km) North-East of Herne Bay, were probably derived from the cargo of a vessel bringing Lezoux pottery to Britain, possibly to London, ca. A.D.160 (29).

A ship found on the County Hall Site in 1910, which may have been a small, sea-going merchant vessel or coaster, had sunk after A.D.293 and, therefore, probably belonged to the second half of the 3rd century. It was a carvel-built, oak ship, originally about 6 feet (1.83 m) deep and some 60-70 feet (18.3-21.3 m) long, with a beam of approximately 15-16½ feet (4.57-5.03 m); the hull was rounded and similar in shape to merchant vessels of the Mediterranean (30).

Harbour Installations

48-57

In 1972, excavations on the site of the Old Custom House, at TQ 33308059 about 0.5 mile (0.8 Km) downstream from the mouth of the Walbrook, revealed the remains of two phases of the 2nd century river frontage (31). Along the northern half of the site, Roman timber quays had been built into a former bank of the Thames which here rose steeply from 13.1 feet (4 m) up to 4.9 feet (1.5 m) below O.D. (32).

A slight change of alignment in the waterfront may have been designed to allow for the outlet of a small stream (33). Part of an early 2nd century quay was located in the North-East corner of the site but was not fully excavated due to its proximity to the frontage of Lower Thames Street. It appeared to consist of a series of posts and planks backed by horizontal beams which had been laid along the same alignment as the riverbank. Clay and a little mortar and chalk, containing pottery of the late 1st-early 2nd century, had been packed behind the timberwork. The posts had been pulled forward when the planking and baulks had been robbed out, possibly in the late Roman period. The quay had probably been constructed by the early years of the reign of Hadrian and its position is significant in that it is so far removed from the mouth of the Walbrook (34).

In the second half of the 2nd century, possibly ca. A.D. 180-190 a massive timber quay was constructed some 20 feet (6.1 m) further South, out into deeper water (35). The western part of the structure, which was traced over a length of a little under 100 feet, (30.5 m) consisted of a series of boxes ca 5.5 feet (1.7 m) square, at least three units deep by more than 10 long; this had presumably been built as a timber staging surfaced with planking, none of which survived. At least four tiers of massive, horizontal oak baulks, secured vertically with 58 regularly-spaced false tenons were joined at intervals of about 5.5 feet (1.66 m) to a series of lesser transverse members, each at least 13 feet (4 m) long, by a half-dovetail joint (36). There was a vertical gap between each of these transverse members of about 7.5 inches (19 cm) which was filled, at the point where they were jointed into the main baulks, by a series of horizontal beams, each 7.5 inches (19 cm) in cross-section, which ran behind and parallel to the main wall of baulks. The function of these additional beams was to relieve some of the pressure on the half-dovetails. This was not altogether successful; the staging had been gradually squeezed out of true by

the time the box-sections had become filled with fine silt before the 4th century and while some joints became pinched others broke under the strain (37).

Some 1.6 m (5.27 feet) and 3.2 m (10.46 feet) further North ran two more walls of baulks to which the transverse members were attached by means of half-lap joints. There were no intervals between these East-West baulks, up to nine of which had been superimposed on top of each other, no vertical joints were found, and the beams must have been kept in place by their own weight and by the transverse members which were keyed into the vertically-jointed South "wall".

Several lines of vertical posts were encountered within the box-sections, none of which had been jointed to any of the horizontal beams. A series of piles and planks in front of the quay, possibly secondary to the framework, may have formed part of the substructure of quayside buildings or else served to keep the staging in position (38). 59

None of the box-sections had been filled in once the construction was complete; fine silt gradually accumulated over a protracted period, on top of which lay 4th century pottery which may have fallen through the planking of the "deck" when it was in a state of some delapidation (39). Analysis of organic remains associated with the quays showed only freshwater conditions, indicating that the quay lay above the head of tidal limits. Assuming a vertical front to the quay of at least 5 feet (1.52 m), there could only have been some 3-4 feet (0.91-1.22 m) of water alongside it, leaving very little leeway between keel and floor for sea-going vessels (40). The quay became submerged in the late Roman period, the upper levels being washed away prior to the deposition of fine sandy gravel and it was not until the late 13th century that a new quay could be built on the same spot (41).

In the eastern part of the Customs House Site, all the timbers of the waterfront, here of different construction, had been thoroughly robbed except in one place. At least three rows of vertical posts

with camp-sheathing between each row, had been driven into the London Clay, immediately behind which had been laid a series of massive beams running from East to West. This wall of horizontal baulks had been tied into the bank by lesser transverse beams which had been jointed into the topmost members. In one place, rubble, the lowest levels of which contained much late 1st-early 2nd century samian ware, had been packed round the timbers (42). This staging, which lay presumably at or near the eastern terminus of the wharfage of Londinium, may, suggested Tatton-Brown whose report this description closely follows, have extended for a considerable distance eastwards towards Roman London Bridge some quarter-mile (0.4 km) upstream (43).

A short way downstream of the general area of the Roman bridging-point, rescue excavations in two areas on the New Fresh Wharf Site, ⁶⁰ at TQ 32958066, have located a further 70-foot (21 m) stretch of the 2nd century river frontage. Because of dangerous flooding excavation was abandoned at a depth of 11.5 feet (3.5 m) below O.D., approximately 34 feet (10.3 m) below street level, in early 2nd century river silt; piles and planking of an early riverside feature of which only the front could be investigated, may have been the revetment of a quay of chalk and rubble, laced with timbers, similar to that of the early 2nd century found on the Old Custom House Site (44).

Some 13 feet (3.96 m) further South, a well-preserved quay of massive proportions had, not long after the middle of the 2nd century, been built out into deeper water (45). Squared oak piles, approximately 11 by 11.4 inches (28 x 30 cm or one Roman foot square, planed down by one digitus) in cross-section, and 2.7 to 3.7 feet (0.83-1.14m) long had been driven into the foreshore (fig.61:1), which in Area III had been consolidated by a dumped layer of building material (fig.61:2), probably intended as a dry spread for builders to walk on (46). On some of these piles had been set the southern ends of transverse, or

cradling, beams the northern ends of which had apparently been secured by full or half lap joints to further piling, usually 11.4 by 13 inches (30 x 33 cm or $1 \times 1\frac{1}{8}$ Roman feet) (fig.61 :3). Notches, a standard 4.7 by 5.1 inches (12 x 13 cm, possibly corresponding to two palmi planed or adzed down by a digitus) deep had been cut through the upper surface of the transverse members to make a wedged full lap joint with sill-beams, a standard 14.5 by 29.1 inches (37 x 74 cm or $1\frac{1}{4} \times 2\frac{1}{2}$ Roman feet) in cross-section and of variable length up to 26 feet (7.96 m) long, which ran across the front of the structure (fig.61 :4). The excessive length of the notches and the simple butt-joints employed to join the ends of the sill-beams, may have been intended to allow for the slight deviation in alignment evident in Areas II and III which, with a slight rise in the foreshore, may represent a turn inland towards the bridge approach on the West (47). The lowest sill-beam was the largest of four, or possibly five, baulks which had been secured vertically by false tenons (fig.61 :6-10) and braced to the rear by structural piles. In Area III (fig.61 :5), five pairs of piles, forming four East-West bays of about 6.6 feet (2 m) each, had been driven into the foreshore immediately behind the sill-beams, probably representing the sub-structure of a waterfront building or a crane (48). In Area II (fig.61 :6), and 6.6-9.8 feet (2-3m) behind the front of the quay, a second series of piles set in three groups of four arranged North-South, served to support horizontal tieback braces (fig.61 :7 & 8), secured on the North by nailed full or half lap joints to the piles, and on the South by lapped dovetail joints to the second tier of sill-beams sitting against a 0.8 inch (2 cm) lip at the back of the beam. A third tier of quayfront beams (fig.61 :9), 15 x 9 inches (39 x 23 cm or $1\frac{1}{2} \times \frac{3}{4}$ Roman feet) in cross-section were similarly braced by a second set of tieback members (fig.61 :10), reinforced by diagonal timbers secured to groundpiles beneath some of the sill-beams (fig.61 :11). Traces of a fourth and fifth tier of smaller quayfront beams were noted

but nothing directly attributable to the superstructure or deck, which, on analogy with the Xanten quay, was tentatively restored at 0 to 3.3 feet (0 to 1 m) above O.D., giving a vertical face of 3.8 - 6.6 feet (1.15 - 2 m).

Although in Area II, this quay had the superficial form of a box-like structure, it was based essentially on anchor-beams and tieback braces rather than the true box-type construction found in the western part of the Old Custom House Site; it was, similarly, not meant to float and was partly pre-fabricated (49).

During the 3rd and 4th centuries, slack water had caused the deposition of quantities of fine silt in which were found Gaulish Venus figurines and large amounts of pottery, "including several crate loads of broken, unused samian cups, bowls and dishes, presumably swept as breakages from unloading ships, with Rhenish wares and the largest group of mortaria from the 2nd century German maker Verecundus so far excavated in this country" which led Schofield and Miller, on whose report this account is largely based, to conclude that this was a quay for ships with pottery; Fulford has pointed out, however, that there is little proof, even from Mediterranean wrecks, that pottery, as distinct from amphorae holding other commodities, was ever widely traded on its own (50). Fourth century pottery, including sherds of 4th-5th century Palestinian amphorae, were found in late Roman silt within the structure, and sherds provisionally dated to the 6th-9th centuries in warp deposited against its front. The quay seems to have gradually fallen into decay until the 9th century when it was extensively robbed (51).

Oak and chestnut piles were encountered during sewer excavations in Botolph's Wharf gateway, Lower Thames Street, opposite the foot of Botolph Lane in 1834. The depth at which the timbers lay was apparently not recorded and they were not securely dated, but from their position in relation to Lower Thames Street it is just possible that they were part of the river frontage (52).

Remains of extensive timber structures, apparently similar to the box-framework quay found on the Old Custom House site, were encountered just North of Thames Street, on either side of King William Street and Miles Lane in 1920 and 1929. On the East side of King William Street on the Regis House Site, massive oak baulks, some 20 feet (6.1m) long, with a cross-section of 18 x 18 inches (45.7-45.7 cm) ran in an East-West direction. To the South lay piles and planking while to the North ran a series of transverse members which had been jointed into the main baulks. A mass of oyster-shells, containing 1st century samian ware filled the cavities between the timbers (53). This framework was almost certainly contiguous with extensive box-staging waterfront found during excavation between King William Street and Miles Lane in ca. 1920-1. A main East-West wall of superimposed timber baulks was met at an angle of 90° by a series of similarly-constructed transverse "walls" which ran off both to North and South, those to the North being spaced at regular intervals of 7-9 feet (2.13-2.74 m). To the South of the southern transverse members ran a line of elm piling to which had been fixed camp-sheathing and what appeared to be the remains of a chute. Pottery of the late 1st century was found to be associated with the framework itself while sherds of the first half of the 2nd century were found to the South of the piles (54). Traces of timber framework of similar but lighter construction were found, on the West side of Miles Lane in 1926, on the King William Street House Site where a further line of timber walling was encountered some 23 feet (7.01 m) South of the main framework (55). All the timber structures found in the vicinity of King William Street and Miles Lane lie just North of Thames Street, a short distance behind the 2nd century waterfront as located on the New Fresh Wharf and Seal House Sites; no levels were recorded that can be related to Ordnance Datum. These features almost certainly had no functional connection with even the 1st century

waterfront but probably formed part of the massive substructure of a terrace.

A line of massive chestnut and oak piles was found, some 10 feet (3.05 m) below ground level, under the South abutment of the Thames Street land arch of the London Bridge Approach in 1831. A hurdlework revetment had been attached to the piles which may indicate that the feature is not Roman but mediaeval in date (56).

The Seal House rescue excavations uncovered several periods of mediaeval waterfront structures but only the surface of the 2nd century river frontage. East-West baulks, piles and occasional tie-back beams, dated by dendrochronological analysis to A.D. 155 \pm 5 yrs, showed identical growth patterns to those found in a similar context on the New Fresh Wharf Site; they were almost certainly derived from the same source, but were not necessarily part of the same contiguous structure, as Morgan seemed to suggest, as the two quays lay on either side of the site of Roman London Bridge. A group of horizontal logs, which lay approximately 1 foot (0.3 m) above O.D., were thought to represent the beam flooring of the quay. In marked contrast to the New Fresh Wharf Site, very little pottery was recovered, apparently implying that this quay was used for vessels which carried a relatively low proportion of fragile commodities. Schofield suggested that perhaps timber, animals or people were landed at this point, and by craft which plied the higher reaches of the Thames above the bridge, rather than the estuary and the open sea. The installation had been submerged and partially destroyed when the level of the river had risen in late Roman-Saxon times, and was sealed beneath an accumulation of silts, gravels and organic material of the 4th-12th centuries (57).

Excavations for an electricity tunnel in 1927, on the North side of Upper Thames Street, encountered a timber some 45 yards (41.1 m) West of the Seal House Site. Further West, two heavy composite baulks were met, at a depth of 15-20 feet (4.57-6.1 m) below ground level, near the

foot of Suffolk Lane, with a lighter timber construction 35 feet (10.6 m) away to the East; between these two features the excavators came across a flint wall 2.5 feet (0.76 m) thick and although the composite baulks were said to slope towards the Thames, it is more likely that these finds were associated with the riverside defensive wall than with the waterfront (58).

Observers on the Site of the Public Cleansing Depot in 1959, noted undated piles and large timbers near to the "North edge of the old road" and, "well out into the river bed", a few piles which had been driven into the river gravel in the 1st-2nd centuries and were sealed by gravel which contained later Roman material. Two distinct layers of river gravel were seen : the lower layer which contained much 1st-2nd century pottery and which occurred in lens-shaped heaps, possibly ballast dumped on the bed of the river from boats, was encountered as far North as the South side of Upper Thames Street (59) : the upper stratum of gravel, which contained some 3rd-4th century wares, was much more muddy, possibly indicating an area of slack water, off the mouth of the Walbrook and a slight rise in sea-level in relation to that of the land; that this was not a severe transgression is implied, if the evidence is reliable, by the fact that the 3rd-4th century strata did not apparently extend as far North as those of the 2nd century.

The Roman river frontage was not encountered on the Trig Lane Site at TQ 32158075 and must have lain behind the 15 century waterfront, presumably below or immediately adjacent to Upper Thames Street (60). Some 330 yards (300 m) further West, on the Mermaid Site, between Upper Thames Street and Victoria Street, there had been little activity until the late 3rd-late 4th century when material had been dumped along the edge of the floodplain and a wall, 5.27 feet (1.6 m) thick had been built (61). Further excavations in this area, the site of Baynards Castle, have proved that it was part of a Roman riverside defensive wall,

constructed after A.D.330, possibly in the 370's or 390's, which, with other sections of similar construction found along the general line of Thames Street from Blackfriars to the Tower, seems to be that referred to by Fitzstephen in the 12th century (62). The 125 foot (38 m) length of ragstone ashlar walling, including re-used material, which survived to a height of 13.6 feet (4.16 m) was excavated near the junction of Bennett's Hill and Upper Thames Street in 1974 (area centred on TQ 320809). Foundations had been constructed approximately 3 feet (0.91 m) above the contemporary level of the Thames; a raft of chalk had been rammed between and above five rows of squared oak piles, while elsewhere ragstone blocks had been hammered into natural clay; above this, ragstone footings, ashlar masonry and tile bonding courses of the wall had been set. The South face of the wall had been undermined and broken down by the rising waters of the Thames which had deposited black river silt above the exposed foundations (63).

Bastions were added to the defensive circuit probably in the late 3rd-4th centuries (64). About 1 Km (0.62 miles) East of the enceinte, and above the steeply-sloping North bank of the Thames, the foundations of a tower some 8.7 m (28.5 feet) square have been excavated at Wapping. The ragstone-and-tile walls, about 1.9 m (6.25 feet) thick at ground level, lay within an enclosure defended by a palissade and a pair of ditches. The structure, which was apparently built in the late 3rd century, remained in use until the middle of the 4th century; it commands extensive views of the Thames below London and may have functioned as an outlying watch-tower (65). A ditched enclosure, some 200 feet (61 m) square and some 200 feet (61 m) above the North bank of the Thames, at Hadleigh, may also have been part of this defensive system (66).

Little is known of late-Roman London. After the recovery of the province by Constantius, it seems certain that it was still the capital

of Britannia Superior. It was later established as the seat of both the praepositus thesaurorum Augustensium, and, possibly, the vicarius Brittaniarum during the reforms initiated during the reign of Diocletian. London was the base for both Lupicinus (A.D. 360) and Count Theodosius (A.D. 367-8) during their campaigns and the title Augusta which was bestowed on the city sometime between A.D. 326 and the late 4th century may have been awarded by the latter (67). Pottery distribution studies have indicated that London, as well as Richborough, may have been a major centre for the importation of Argonne and German coarse wares in the first half of the 4th century, and export points for British-produced pottery found on the Continent (68). Cargoes may still have been shipped to London a century later, as sherds of apparently 5th century Mediterranean amphorae were found in the stokehole of the Billingsgate bathhouse, which was evidently under "Roman style occupation" until ca. A.D. 450 (69).

Southwark

TQ 3279

Excavations on the South bank of the Thames at Southwark have revealed the metalling of two major roads which, as they approached the Roman bridging-point from the South and South-West, crossed from a gravel terrace onto low-lying sand and clay banks, which lay between 4 and 5½ feet (1.2-1.7 m) above O.D., an area fringed with mud-banks and flood-plain gravels to East and West and drained by ditches and water-channels, two at least of which had been unsuccessfully revetted to combat erosion and which had been built over by the middle of the 2nd century. Severe erosion removed much of the waterfront in the late 13th century, and probably such Roman riverside installations as may have lain to its rear (70).

Wattle and daub, and clay-walled, buildings were erected along or in the vicinity of the two roads in the late 1st and 2nd centuries, and

a ragstone structure with pilae after A.D. 250. There is, however, evidence of increasing dilapidation, in places, after ca. A.D.160-170, perhaps associated with drainage problems and rising water-levels, and by the 4th century much of the suburb had apparently been put down to agriculture (71).

Rochester

TQ 744684

62

The Roman town of Durobrivae lay on a flat promontory of chalk and gravel, with the Medway or its associated marshlands on all but the South side, and at the lowest point at which this tidal river could be bridged (72). Upstream, the Medway was bordered by high ground, and by marshes some of which have been drained since Roman times (Fig.62). Downstream, the river broadens out into the salt marshes which lie to the South of the Isle of Sheppey and East of the Isle of Queensborough, an area is dotted with small islands part of which have been reclaimed since Roman times, considerable areas now lying below the High Water Mark of tides : Sheerness is a case in point. It has been shown that the Roman land surface has been submerged to a depth of some fifteen feet (4.6 m) as a result of a rise in sea-level and regional subsidence which began to have some effect on coastal areas by the 5th century (73). It follows that any riverside installations which may have been constructed in the area of Durobrivae, must lie well below H.W.M.O.T. and that considerable areas of what is now salt marsh would have been above H.W.M.O.T. in the 1st-3rd centuries, before this marine transgression began to take effect.

The Roman settlement at Rochester was preceded by Belgic occupation, apparently a place of some importance as indicated by the finding in 1962 of coin-moulds, and the Roman name Durobrivae implies the existence of a pre-Roman bridge (74).

Roman occupation levels of the 1st and 2nd centuries have been located within the area of the Phase II-Walls, but no positive evidence

has yet been found of a Claudian fort, as suggested by Webster; a likely site for a Claudian bridge-head fort would be at Strood on the opposing western bank of the Medway (75).

Roman Watling Street ran through the town and was bordered by buildings of timber and daub. After one remetalling, the road was widened from ca. 9 feet (2.75 m) to ca. 22 feet (6.7 m) and was provided with a central stone-built drain but, after two remetallings, the S.W. carriageway went out of use and was later built over (76).

Durobrivae was a bridge settlement; this is explicit in its very name, which means "the walled town by the bridges" (72). The defences have been traced on the South, East and North sides, estuary water apparently coming right up to the North wall, but the exact line on the West, overlooking the Medway, 'is not known' for certain (77). The defences were constructed in two phases : first on earth rampart of the late 2nd century, and a wall which must be later than A.D.200 (78). These enclosed an irregular pentagonal area of 23.25 acres (9.3 Ha). The width of the base of the wall varies from 8 to 14 feet (2.5-4.8 m) and survives up to a height of 16 feet (4.9 m); both the facing and the rubble core of the wall are of Kentish ragstone which was almost certainly brought to wharves or quays here from quarries in the Maidstone area by way of the Medway (79).

There are various descriptions of structures said to be associated with the Roman bridge over the Medway. Codrington described the remains of a causeway on oak piles located in 1897, opposite Station Road. Timber sills had been laid across piles upon which had been set successive strata of flints, ragstone with fragments of Roman tiles, rammed chalk, finely broken flint, gravel, and "a paved surface ... of Kentish rag of polygonal shape fitted together, and jointed with fine gravel". The causeway was about 14 feet (4.3 m) wide, was rutted and lay "in the river mud ... at about 8 feet 6 inches below the present surface of the road" (80). The position, alignment and height above

H.W.M.O.T. of these remains must mean that they are part of an approach road to a Roman bridge, rather than the remains of a wharf or quay which would probably be found to lie at a depth of about 20 feet (6.1 m) below O.D. (81).

A stone pier, found, in 1851 during the erection of the present road bridge, beneath the Strood Pier may, it has been suggested, have been part of a bridge described in A.D. 1115 as resting on nine stone piers, 43 feet (13.1 m) from centre to centre (82). The mediaeval successor to this bridge stood some 60 yards (55 m) upstream of the present road bridge. On the other hand, "very solid foundations of an ancient work" were discovered during construction of the southern railway bridge, which lies immediately downstream of the modern road bridge and at a point towards which Roman Watling Street seems to aim (83). If the remains described above were not part of bridge works, they could conceivably have had some functional connection with the waterfront but, as no details are given regarding the position of these structures in relation to O.D., this can only be mere supposition.

A 'pile', found on the Strood bank, between the Strood bridge approach and the disused railway viaduct, was never securely dated and could be Roman or mediaeval in date (84).

There is a comparatively high density of villas around Rochester and Canterbury, notably Eccles, and it is to be expected that these two towns became focal points for commerce. Both are associated with gaps in the Downs, river crossings and road junctions. The main road from Canterbury and the Channel ports ran through Rochester on its way to London and was joined just South of the town by Margary's Route No. 13 which ran Northwards from the iron-producing areas of the Weald (85). This latter road, presumably commercial in function, may have been constructed, Cleere suggested, in the early 3rd century, before the industry in the eastern part of the Weald had virtually ceased production by the middle of the 3rd century; there was a

marked decline at the beginning of the 3rd century at Bodiham and it is possible that iron was then being transported overland to the Medway, and thence into the Thames estuary, by way of river ports at Rochester or Maidstone (86).

It is reasonably certain that Kentish ragstone was transported in vast quantities from the Maidstone area by way of the River Medway, to such places as London, Colchester, Reculver and Richborough, a traffic in which Rochester may have played some part (87).

Maidstone

TQ 756563

Although the Medway is now tidal up to Allington lock just below Maidstone and barges can sail upstream for some distance above the town, modern draining and embanking of the marshes which used to border the lower reaches of the Medway above Rochester, and a steady rise in sea level and substantial regional subsidence since the 5th century must have forced tides to run further upstream; therefore it is not certain, although likely, that the Medway was navigable up to Maidstone in Roman times (88).

The last cargo of the Blackfriars sailing barge was a load of Kentish Ragstone, derived from the Hythe Beds of Greensand in Kent which outcrop in a belt from Sevenoaks, through Maidstone, to Hythe and Folkestone. From the fossil content of one particular sample it was possible to suggest the Maidstone area as a likely source. Apart from Folkestone, the River Medway is the only waterway navigable up to the areas where the stone outcrops (89). Kentish ragstone has been extensively quarried in the Maidstone area in recent times as nowhere else on a commercial basis. Such modern quarrying has probably removed all trace of Roman industrial activities in the immediate area although remains of riverside installations may have survived. The modern method of loading the stone was to transfer it into the barges by means of chutes. Many of the stones in the Blackfriars cargo weigh between

60 and 70 pounds (27.2-31.7 kg) and would have severely damaged the barge if they were loaded in such a way. It is likely, therefore, that they were lowered into the barges, probably with the help of derricks or cranes (90).

Kentish ragstone, used in building construction at London from the mid-1st century, and in large quantities in the Flavian Period, was the material utilized when the city wall was built, ca. A.D.190-220 (91). Similar stone was also used in the construction of the walls at Rochester, Reculver and Richborough and has been found as far afield as Colchester and Dover (92). This is indicative of quarrying on a large scale and of a considerable movement of traffic up and down the Medway.

NOTES

1. Willcox, G.H., "Environmental Research", in Hobley, B., Schofield, J. et al., "Excavations in the City of London : First Interim Report, 1974-5", *Antiquaries Jnl.*, vol. LVII, pt. 1, 1977, p.60; _____, "Problems and possible conclusions related to the history and archaeology of the Thames in the London Region", *Trans. London and Middlesex Arch. Soc.*, vol.26, 1975, pp.285-292 (commercial boring and the position of ancient embankments indicate that the main channel of the Thames at London Bridge was slightly further North and that the river was less voluminous); Tatton-Brown, T., (=1974a), "Excavations at the Custom House Site, City of London, 1973", *Trans. London & Middlesex Arch. Soc.*, vol.25, 1974, pp.119-121; _____, (=1974b), "Roman London : some current problems", *London Archaeol.*, vol.2, 1974, pp.194-6 (cf p.155); Merrifield, R., "Roman London", 1969, p.2; Spurrel, F.C.J., "Early Sites and Embankments on the Margins of the Thames Estuary", *Archaeological Jnl.*, vol. XLII, 1885, pp.274-291; Dio, *Roman History*, LX. 20, See also note 13.
2. Crouch, K., "The Archaeology of Staines and the Excavations at Elmsleigh House - part 1", *Trans. London & Middlesex Arch. Soc.*, vol.27, 1976, pp.71-134; Millett, M., "The Native Towns of Roman Britain", *Current Archaeology*, 52, vol. V, No.5, May, 1976, pp.136-7; Margary, I.D., "Roman Roads in Britain", Ed. III, 1973, pp.57, 84 ff. Route 4a; *Britannia*, vol. I, 1970, p.292.
3. Millett, *ibid*; Crouch, *op.cit.*, 1976, pp.72-3.
4. Millett, *ibid*; Crouch, *op.cit.*, 1976, p.76.
5. Antonine Itinerary, 478.2.
6. Steers, J.A., "The Coastline of England and Wales", Ed.II, 1964, p.400; Spurrel, *op.cit.*, 1885, p.274 ff; Dio, Cassius, *Hist.* XL, 3; V.C.H., London, vol. I, 1909, p.29 ff. (Westminster); Owen, D.J., "The Origin and Development of the Ports of the United Kingdom", Ed.II, 1948, p.12; Merrifield, R., "The Roman City of London", 1965, p.32 ff; Vincent, J.E., "The Story of the Thames", 1909; V.C.H., Middlesex, vol.III., 1962, p.66.
7. i.e. Upper and Lower Thames Streets. Tatton-Brown, *op.cit.*, 1974a, pp.117-138, fig.2; Schofield, J. "Seal House", *Current Archaeology*, 49, Vol. V, No.2, Sept. 1975, pp.54-7; Harrison, M. "Trig Lane", *ibid*, pp.57-9; Merrifield, *op.cit.*, 1969, pp.11, 85.
8. Biddle, M., Hudson, D., & Heighway, C., "The Future of London's Past", *Rescue Publications No.4.*, 1973, Map 6; Merrifield, *op.cit.*, 1965, Nos. 25, 247 & 260; _____, "Coins from the Bed of the Walbrook and their significance", *Antiquaries Jnl.*, Vol.XLII, 1962, pp.38-52; J.R.S., vol.XLIX, 1959, p.125:

- The outlet of the Walbrook was seen in section in a sewer-trench in 1958, South of the Innholders' Hall; at this point it was 20-21 feet (6.1-6.4 m) wide between revetted banks. Although excavation went down to 22-25 feet (6.71-7.62 m) below modern ground level, below 1.5 feet (0.5 m) O.D., the floor of the channel was not reached. The vessels found near Blackfriars Bridge, County Hall and New Guy's House were 22 feet (6.71 m), 15-16 feet (4.57-4.88 m) and 14 feet (4.27 m) respectively in the beam; Marsden, P., (1967a) "A Roman Ship from Blackfriars", 1967, pp.27, 30-1 & Fig. 10; Casson, L., "Harbour and River Boats of Ancient Rome", J.R.S., vol.LV, 1965, pp.31-9.
9. Webster, G., "The Roman Military Advance under Ostorius Scapula", *Archaeological Jnl.*, vol.CXV, 1958, (1959), p. 84 ff; Merrifield, op.cit., 1965, p.35; 1969, p.28.
 10. Philp, B.J., "The Forum of Roman London : Excavations of 1968-9", *Britannia*, vol.VIII, 1977, p.7; Tatton-Brown, op.cit., 1974b, p.196; Biddle, Hudson & Heighway, op.cit., 1973, p.12; Margary, op.cit., 1973, pp.53-9; Merrifield, op.cit., 1969, pp.10-27 and Ch. III-IV; cf. _____, 1965, p.39: while Stane Street and Ermine Street originate at London Bridge, the Silchester Road and Watling Street, clearly two primary roads, miss the City altogether, the latter apparently crossing the Thames by a ford at Westminster.
 11. Philp, op.cit., 1977, pp.7-9, 34-5; Wachter, J.S., "The Towns of Roman Britain", 1975, p.87; Merrifield, op.cit., 1969, p.29. See also, remarks on Richborough, p.174 ff.
 12. Chapman, H., & Johnson, T., "Excavations at Aldgate and Bush Lane House in the City of London, 1972", *Trans. London & Middlesex Arch. Soc.*, vol.24, 1973, pp.1-73, at SQ 335811; *Britannia*, IV, 1973, p.306; *Archaeological Excavations, 1972 (1973)*, p.43.
 13. Dawson, G.J., "Roads, bridges and origin of Roman London", *Surrey Arch. Coll.*, vol.71, 1977, pp.43-55; Merrifield, R., & Sheldon, H., "Roman London Bridge : a view from both banks", *London Archaeol.*, vol.2, 1974, pp.183-191; Merrifield, R., "Roman London Bridge: further observations on its site", *London Archaeol.*, vol.1, 1970, pp.186-7; op.cit., 1969, pp.23-5, 28; op.cit., 1965, pp.4, 32-5; Honeybourne, M.B., "The Pre-Norman Bridge of London", in Hollaender, A.E.J., & Kellaway, W. (Ed.), "Studies in London History presented to Philip Edmund Jones", 1969, pp.17-39. Firm gravel provides good access to both banks just below London Bridge, at a point accessible to sea-going ships but just above the head of tidal limits. See also Smith, C.R., *Archaeological Jnl.*, vol. I, 1845, p.113.
 14. Tacitus, *Annals*, XIV, 33; Wachter, op.cit., 1975, p.80, suggests that this may have been due to the drive of the inhabitants as much as to the ease of approach from the continent.

15. Tacitus, *Annals*, XIV, 38; R.I.B., 12; Wachter, *op.cit.*, 1975, pp.80, 88; Frere, S.S., "Britannia", 1967, p.195 ff; Merrifield, *op.cit.*, 1969, pp.68-84.
16. Tacitus, *Annals*, XIV, 33; A.Ex., 1974 (1975), p.55; *Britannia*, V., 1974, p.445; IV, 1973, p.306; Chapman and Johnson, 1973, *ibid*; Philp, *op.cit.*, 1977, pp.9-16, 34-5; _____, "The London Forum", *Current Archaeology*, 19, Vol. II, No.8, March 1970, pp.219-22. Kentish ragstone was used in this pre-Forum structure, indicating early exploitation of quarries, probably in the Maidstone area (v.i.); J.R.S., Vol. LII, 1962, p.179. Merrifield, *op.cit.*, 1965, pp.36-40, 90 ff., suggests that there was still an important supplies base here at the time of the rebellion, at the hub of the communications network. Tacitus implies, however, that the rebels made for undefended settlements. The distribution of burnt Claudio-Neronian samian ware has been plotted by Dunning, G.C., in "Two Fires of Roman London", *Antiquaries Jnl.*, vol.XXV, 1945, pp.45-77. For timber buildings found in Fenchurch Street, see J.R.S., Vol.59, 1969, p.224.
17. Philp, *op.cit.*, 1977, pp.16-24; 1970, p.220.
18. Frere, *op.cit.*, p.205; Philp, *op.cit.*, 1977, pp.24-30; 1970, p.220 ff.
19. Marsden, P., "The Excavation of a Roman Palace Site in London", *Trans. London & Middlesex Arch. Soc.*, vol.26, 1975, pp.1-102; A.Ex., 1972 (1973), p.43; *Britannia*, IV, 1973, p.306; I, 1970, p.292; J.R.S., vol. LVII, 1967, p.192; vol. LVI, 1966, p.210-11; vol. LII, 1962, p.179; Vol. LI, 1961, pp.185-6; Guildhall Museum, "Archaeological Finds in the City of London, 1966-8", *Trans. London & Middlesex Arch. Soc.*, Vol.22, 1969, pp.1-26; Merrifield, *op.cit.*, 1969, p.81. Kentish ragstone was also used in some of the massive walls of this structure. Numerous piles and transverse beams, part of a network of timbers, were encountered at a depth of 20-25 feet (6.1-7.62 m) below ground level during excavations on the site of the Steelyard in Lower Thames Street, during the extension of the railway in 1863. Many of the beams were up to 18 inches (0.45 m) square and were of great length. Although they were identified as forming part of the Roman waterfront, great quantities of pottery and large masses of Roman masonry were also found and both debris and timbers may, therefore, have been part of the terracing for the "palace"; Price, J.E., "Reminiscences of the Steelyard formerly in Upper Thames Street", *Trans. London and Middlesex Arch. Soc.*, vol.III, 1870, pp.67-78.
20. Grimes, W.F., "The Excavation of Roman and Mediaeval London", 1968, pp.15-40; Merrifield, *op.cit.*, 1969, p.110; Webster, G., "Fort & Town in Early Roman Britain", in Wachter, J.S. (ed.), "The Civitas Capitals of Roman Britain", 1966, p.42; Hassall, M.W.C., "Roman Soldiers in Roman London", in Strong, D.E., (Ed.), "Archaeological Theory and Practice", 1973, pp.231-7; Frere, *op.cit.*, 1967, p.195; J.R.S., vol. LIII, 1963, p.139; R.I.B., Nos. 3, 11, 13, 17, 18 & 19 (Tombstones of men of the Second, Sixth and Twentieth Legions, including that of Celsus,

- a speculator). An apparently unused writing tablet bearing the inscription : PROC. AVG. DEDERUNT/BRIT.PROV, has been found in the Walbrook and bricks stamped with the legends : P. PR. BR. or P. P. BR., and used in public buildings, indicate that the procurator had his seat in London : Merrifield, op.cit., 1965, p.43; British Museum "Guide to the Antiquities of Roman Britain", 1958, p.48.
21. Hobley & Schofield, op.cit., 1977, p.34; Parnell, G., "Excavations at the Tower of London, 1976-7", London Archaeol., vol.3, no.4, Autumn 1977, pp.97-99; Wachter, op.cit., 1975, pp. 94, 100; Dunning, ibid; Guildhall Museum, "Archaeological Finds in the City of London, 1961", Trans. London & Middlesex Arch. Soc., vol. 21, pt. i, 1963, p.76; Britannia, vol. VI, 1975, p.268; A.Ex., 1974 (1975), pp.53-5; J.R.S., LIX, 1969, p.224; LII, 1962, p.179; LI, 1961, p.185.
 22. Williams, J.H., "Building-Materials in South-East England", Britannia, vol.II, 1971, pp.172, 183; Merrifield, op.cit., 1965, pp.131, 196; J.R.S., vol. LV, 1965, p.214; vol. LII, 1962, p.179; vol. LI, 1961, pp.185-6. See also note 25.
 23. Marsden, op.cit., 1967a, passim; _____, (1967b), "Archaeological Finds in the City of London. 1963-4", Trans. London and Middlesex Arch. Soc., vol.21, 1967, pp.189-221.
 24. Marsden, op.cit., 1967a, pp.39-41; _____, "A Boat of the Roman Period found at Bruges, Belgium in 1899 and Related Types", International Jnl. of Nautical Archaeology and Underwater Exploration, vol.5, no.1, 1976, pp.42-4. See also remarks on Maidstone, p.153.
 25. Marsden, P., "A Boat of the Roman Period discovered on the site of New Guy's House, Bermondsey, 1958", Trans. London and Middlesex Arch. Soc., vol.21: 2, 1965, (=1965a), pp.118-131; _____, op.cit., 1976, p.49. The vessel lay about 6 inches (0.15 m) below O.D., and below some 7 feet (2.13 m) of silt and 9 feet (2.74 m) of mediaeval rubbish.
 26. Merrifield, R., "The Archaeology of the London Area : current knowledge and problems", London & Middlesex Arch. Soc., Special Paper 1, 1976, p.52; _____, op.cit., 1969, p.119; 1965, pp.48-9, 104, 107-8; Britannia VI, 1975, p.265; J.R.S., vol. LVIII, 1968, p.197; vol. LVII, 1967, p.192. Bastions were apparently added to the landward wall in the late 3rd-4th centuries; Tatton-Brown, op.cit., 1974b, p.197; Marsden, P.R.V., "Archaeological Finds in the City of London, 1966-9", Trans. London & Middlesex Arch. Soc. vol.22, 1970, pp.1-9; but cf. Biddle, Hudson & Heighway, op.cit., p.14.
 27. See remarks on Richborough, p.175 & n.42.
 28. Jenkins, F., "Roman Gaulish Figurines found in London", in "Hommages à Marcel Renard III", Coll. Latomus, 103, 1969, pp.312-327.

29. Smith, C.R., "The Antiquities of Richborough, Reculver and Lympne", 1850, pp.65-7; V.C.H., Kent, vol.III, 1932, pp.162-3. Spurrell, op.cit., 1885, pp.281-3, relates that quantities of brickwork and tiles were dredged up in this area in the 18th century and he suggests that the rock which may then have been joined to the mainland was the site of a castellum or pharos; cf. Steers, op.cit., 1964, p.401. If this "brickwork" was in fact Roman it may have arrived there as ballast from the wrecked vessel.
30. Marsden, op.cit., 1976, p.51; _____, "The County Hall Ship, London", International Jnl. of Nautical Archaeology and Underwater Exploration, Vol.3, no.1, 1974, pp.55-65; _____, op.cit., 1967a, pp.30-1; _____, (=1965b), "The County Hall Ship", Trans. London and Middlesex Arch. Soc., vol.21, 1965, pp.109-117; Riley, W.E., "Ship of the Roman Period discovered on the site of the New County Hall", Ed.II, 1912. The tonnage of a vessel may be ascertained by this formula :-

$$\frac{\text{Length of Keel} \times 1\frac{1}{2} \text{ width of beam}}{94} = \text{tonnage.}$$
31. Tatton-Brown, op.cit., 1974a, pp.117-219; _____, (1974c), "Rescue Excavations on the Old Custom House Site, Part 2 :- Roman", London Archaeol., vol.2, 1974, pp.155-9.
32. Tatton-Brown, op.cit., 1974a, p.118, fig.2. The excavations produced some information relating to water-levels in the Thames in the 2nd century, to which reference has already been made, p.
33. Tatton-Brown, op.cit., 1974a, pp.120-1, fig. 4.
34. Tatton-brown, op.cit., 1974a, p.122, fig. 4, 6.
35. Fletcher, J.M., Tapper, M.C. & Walker, F.S., "Dendrochronology - a reference curve for slow grown oaks - A.D. 1230 to 1546", Archaeometry, vol.16, pt.1, Feb.1974, pp. 31-40; Tatton-Brown, op.cit., 1974a, pp.122, 126, 212-215, fig.4; Britannia, V, 1974, p.446, Fig. 17-18. A detailed comparison with the superficially similar Dover Mole has not been attempted as much of the plan published by Rigold is a restoration based on accounts which embody inaccuracies.
36. Most beams were joined longitudinally by simple butting as at the New Fresh Wharf Site, except in one case, ex situ, where a simple halving was used. The cross-section of the baulks used in the "wall" diminished progressively from the lowest tier to the highest :- 46 x 31 cm. (18.1 x 11.9 inches); 38 x 33 cm. (15.0 x 13.0 inches); 32 x 32 cm. (12.6 x 12.6 inches); 22 x 34 cm. (8.7 x 13.4 inches). The lesser tie-beams were either 19 x 19 cm. (7.5 x 7.5 inches) or 16 x 19 cm. (6.3 x 7.5 inches) in cross-section.
37. Tatton-Brown, op.cit., 1974a, pp.123, 127, fig. 8, 9.
38. *ibid*, pp.123-4, fig. 7-9; the piles measured 20 x 15 cm (7.9 x 5.7 inches) in cross-section, with sharpened ends.

39. *ibid*, pp.124, 128.
40. *ibid*, p.124, 210, fig.24, 25. If the quay was above tidal limits then the level of water in the late 2nd century may have been about 0 to 1.5 m (0 to 5 feet) O.D.
41. *ibid*, pp.120-1.
42. *ibid*, pp.126-7, fig. 7, 10.
43. *ibid*, p.124, fig. 5.
44. Hobley & Schofield, *op.cit.*, 1977, p.34; Schofield, J. & Miller, L., (=1976a), "New Fresh Wharf : 1, The Roman Waterfront", *London Archaeol.*, vol.2, no. 15, Summer 1976, pp.390-393 and figs. 1 & 2 (Area II); Schofield, J., (1976b) in *London Archaeol.*, vol.2, no. 14, 1976, p.370; *Britannia*, VI, 1975, pp.265-8, fig. 15; *A.Ex.*, 1974 (1975), pp.54-5; *Current Archaeology* 45, vol.IV, No.10, Dec. 1974, pp.303-4.
45. Dendrochronological analysis indicates that the timbers had been cut, and worked in green condition as on the Seal House Site, in A.D.155 \pm yrs; other timbers, mainly piles and braces were inserted later one of which, Timber 213, had been felled in A.D.320 \pm 70 yrs. Examination of the timbers from the New Fresh Wharf and Seal House Sites (v.i.) showed identical growth patterns which while of similar date to those found on the Custom House Site, could be derived from a widely different source; Morgan, R., "Tree-ring dating of the London Waterfronts", *London Archaeol.*, vol.3, no.2, Spring 1977, pp.40-45; Hobley & Schofield, *op.cit.*, 1977, p.35; cf. Schofield & Miller, *op.cit.*, 1976a, p.393.
46. Hobley & Schofield, *op.cit.*, 1977, p.35; Schofield & Miller, *op.cit.*, 1976a, p.393; *Britannia*, VII, 1976, p.347.
47. Hobley & Schofield, *ibid*; Schofield & Miller, *op.cit.*, 1976a, pp. 393-4 & figs. 6 & 7. The sill-beams decrease in overall scantling from West to East. At the West end of Area III, as the foreshore rose, a rougher sill-beam was stepped up over a series of cradles (fig.61:4a). At the western end of Beam 378, a carpenter's mark, a figure IV, V-cut in slightly sloping script, may possibly have been related to the unusual jointing of a diagonal brace to a groundpile by a nailed scarf joint.
48. Hobley & Schofield, *ibid*; Schofield & Miller, *op.cit.*, 1976a, p.394 & fig.7 : triangular marks found on some of the piles were interpreted piling marks, to gauge the depth required.
49. Hobley & Schofield, *op.cit.*, 1977, pp.34-5; Schofield & Miller, *op.cit.*, 1976a, pp.393 & 394, fig. 8.

50. Schofield & Miller, op.cit., 1976a, p.395; Fulford, M., "Pottery and Britain's Foreign Trade in the Later Roman Period", in Peacock, D.P.S. (ed.), "Pottery and Early Commerce", 1977, pp.38-9.
51. Hobley & Schofield, op.cit., 1977, pp.35-7; Schofield & Miller, 1976a, *ibid*; Schofield, op.cit., 1976b, p.370; *Britannia*, VII, 1976, p.347.
52. Merrifield, op.cit., 1965, No.315, p.285; R.C.H.M., London, Vol.III, "Roman London", 1928, p.143, at TQ 32998062.
53. Merrifield, op.cit., 1965, No.308, p.284; J.R.S., Vol. XIX, 1929, p.201, fig.10, at TQ 32778071. The timbers were sealed by debris associated with the fire in the reign of Hadrian; Dunning, *ibid*.
54. Merrifield, op.cit., 1965, No.306, pp.283-4; Lambert, F., "Some recent excavations in London", *Archaeologia*, vol. LXXI, 1921, pp.62-72; R.C.H.M., 1928, pp.132-4, fig.50; J.R.S., vol.XIX, 1929, fig.10 at TQ 32738072.
55. Merrifield, op.cit., 1965, No.304, p.283; R.C.H.M., 1928, p.134; J.R.S., vol.XIX, 1929, fig.10, at TQ 32808075.
56. Merrifield, op.cit., 1965, No.307, p.284; R.C.H.M., 1928, pp.129-130, at TQ 32848069.
57. Hobley & Schofield, op.cit., 1977, pp.37-9; Morgan, op.cit., 1977, pp.40-5; Schofield & Miller, op.cit., 1976a, pp.394-5; Schofield, J., (=1976c), "Seal House", *London Archaeol.*, vol.2, no.15, 1976, p.401; ———, op.cit., 1975, pp.54-7, at TQ 32788070; *Britannia*, VII, 1976, p.345ff; VI, 1975, p.265.
58. At TQ 32748073 & 32668076. R.C.H.M., 1928, p.143; Merrifield, op.cit., 1965, No.303, p.283 & No.280, pp.275-6.
59. Merrifield, op.cit., 1965, No.262, p.270, in area centred on TQ 32538075.
60. Hobley & Schofield, op.cit., 1977, pp.41-3; Harrison, op.cit., 1975, pp.57-9; cf. *Current Archaeology*, 45, Vol. IV, no.10, Dec. 1974, pp.304-5.
61. Hobley & Schofield, op.cit., 1977, p.45 ff; Millett, M., "A trench across Upper Thames Street : Roman Riverside Wall Discovered", *London Archaeol.*, vol.2, no.9, Winter 1974, pp.232-3; *A.Ex.*, 1974 (1975), p.54, at TQ 31868093.
62. Hobley & Schofield, op.cit., 1977, pp.34, 45-51; Hill, C., "The London Riverside Wall", *Current Archaeology*, 57, Vol. V, no.10, July 1977, pp.308-310; Parnell, op.cit., 1977, pp.97-9; Merrifield, op.cit., 1976, p.52; Tatton-Brown, op.cit., 1974a, p.126; 1974b, pp.155, 197; Merrifield, op.cit., 1965, Nos. 114, 123-4, 261, 279, 311 & 354, & p.108; 1969, p.131; Grimes, op.cit.,

- 1968, pp.56-64; Marsden, P.R.V., "The Riverside Defensive Wall of Roman London", *Trans. London & Middlesex Arch. Soc.*, Vol.21, 1967 (=1967c), pp.149-156; Smith, C.R., *Archaeological Jnl.*, Vol.1, 1845, pp.113-4; *Britannia* IV, 1973, p.306; *A.Ex.*, 1972 (1973), p.95; 1974 (1975), p.98. See also n.26.
63. Hill, *op.cit.*, *supra*;——, "The Roman Riverside Wall in the City", *London Archaeol.*, Vol.2, no.10, 1975, pp.260-1; *Britannia*, VI, 1975, p.265, pl.XVI B; VII, 1976, p.347.
64. Hobley & Schofield, *op.cit.*, 1977, pp.44-5; Merrifield, *op.cit.*, 1976, p.53 (some of the hollow bastions are mediaeval). See note 26. A medallion struck to commemorate the recapture of Britain after the defeat of Allectus in A.D.296 shows a figure, the personification of London, kneeling outside a symbolic representation of the city. An oared boat is shown on the Thames and the bastions and walls of the city rise up in the background; Johnson, S., "The Roman Forts of the Saxon Shore", 1976, fig.19.
65. Area centred on TQ 34878073; *A.Ex.*, 1974 (1975), pp.58-9; *Britannia*, VI, 1975, p.269; VII, 1976, p.351.
66. Johnson, S., *op.cit.*, 1976, p.126; J.K. St. Joseph, *J.R.S.* vol.XLIII, 1953, p.97, pl.XVI, 2, at TQ 807869.
67. *Notitia Dignitatum*, Occ., XI, 37; Frere, *op.cit.*, pp.176-9, 210; Merrifield, *op.cit.*, 1965, pp.61-5.
68. Fulford, *op.cit.*, 1977, pp.39-45, 57.
69. Hobley & Schofield, *op.cit.*, 1977, p.54 ff; Biddle, Hudson & Heighway, *op.cit.*, p.14; Grimes, *op.cit.*, Ch.IV; Merrifield, *op.cit.*, 1965, pp.52-7; *Britannia* VII, 1976, p.350; I, 1970, p.292; *J.R.S.*, LIX, 1969, p.224.
70. Area centred on TQ 327803, some 73 yards (67 m) West of London Bridge.
71. Willcox, *op.cit.*, 1977, p.60; Merrifield, R., *op.cit.*, 1976, p.50; Sheldon, H., "Recent Developments in the Archaeology of Greater London", *Jnl. Royal Society of Arts*, Vol.CXXIV, no.5240, July 1976, pp.420, 424-5; Schaaf, L., "Excavations at 175-7, Borough High Street, Southwark", *London Archaeol.*, Vol.3, no.1, 1976, pp.3-7; Merrifield, *op.cit.*, 1969, pp.26-7; *Britannia*, Vol.VIII, 1977, pp.409-410; VII, 1976, pp.351-2 & fig.18; VI, 1975, p.270-1; IV, 1973, p.307; II, 1971, p.274; I, 1970, pp.292-3.
72. Antonine Itinerary 466. 5-473.10.- variously referred to as 'Durobrovis', 'Durobrius' and 'Durobrivis' - Durobrivis is "The Walled Town by the Bridges" - Jackson, K., "Romano - British Names in the Antonine Itinerary" - App.II of A.L.F. Rivet, "The British Section of the Antonine Itinerary", *Britannia* I, 1970, p.72-73.

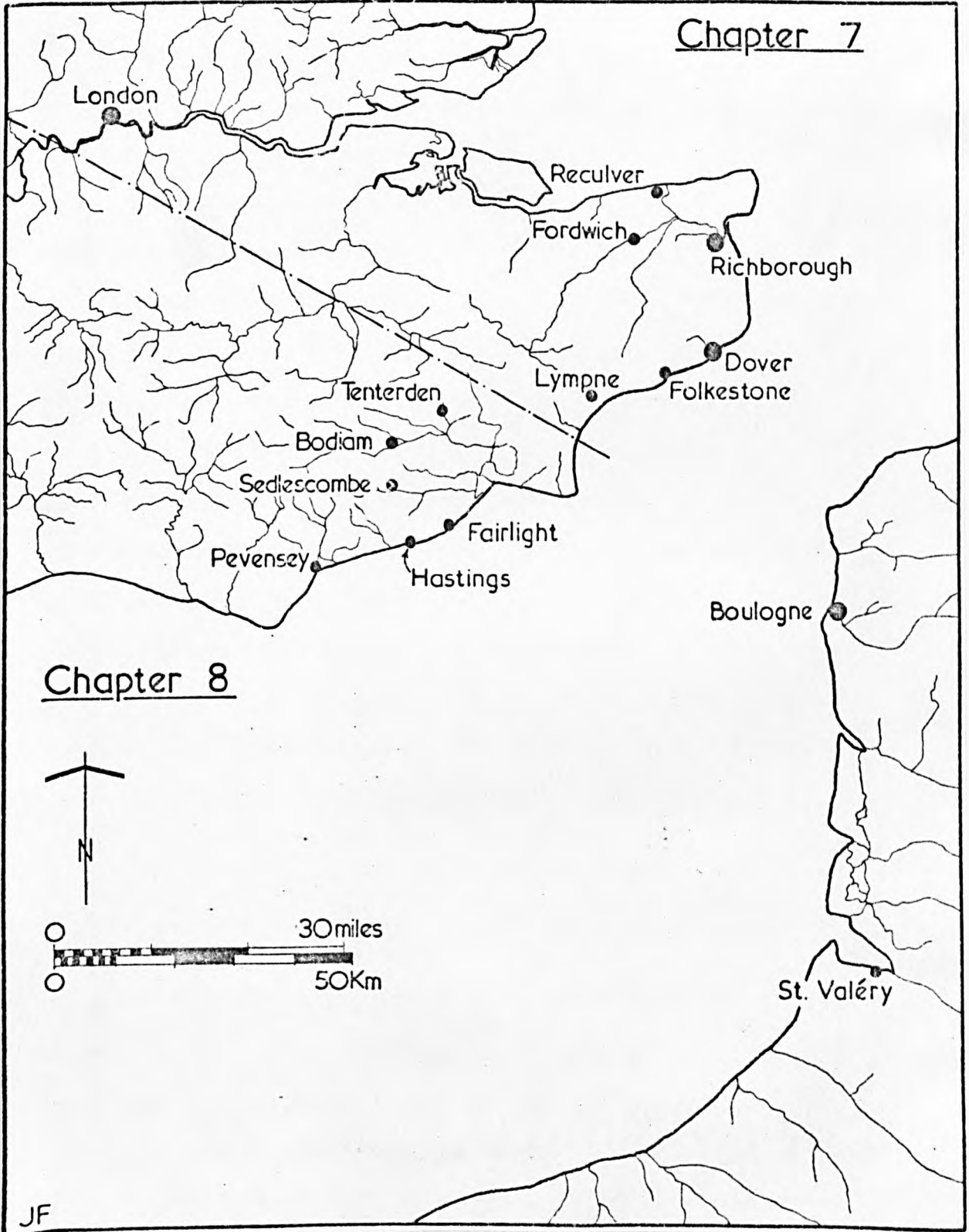
73. Steers, op.cit., 1964, pp.400-402; Evans, J.H., *Archaeologia Cantiana*, LXVI, 1953, p.103f. R.C.H.M., London, 1928, p.13 cf. a late mediaeval level at Rochester; Harrison, A.C., *Archaeologia Cantiana*, LXXXIII 1968, p.259.
74. Tester, P.J., in "The Roman and Mediaeval Defences of Rochester, in the light of recent excavations", *Archaeologia Cantiana*, LXXXIII, 1968, p.75 ff; Chaplin, R.E., *J.R.S.* LIII, 1963, p.158; cf *Archaeologia Cantiana*, LXXVII, 1962, 1; Jackson, K., in Rivet, A.L.F., op.cit.; but cf. Dio, LX, 20, 2-4, who implies that no bridge was in existence at the time of the Claudian invasion.
75. Harrison, A.C., "Excavations in Rochester", *Archaeologia Cantiana*, LXXXV, 1970 (1971), pp.95-112 (excavations N.E. of High St., on the site of the Old Corn Exchange); Webster, G., "Military Situations in Britain, A.D.43-71", *Britannia* I, 1970, p.183.
76. Chaplin, R.E., *J.R.S.*, LIII, 1963, p.158 - No dating evidence was given for the road and the report of the 1962 excavations has remained unpublished.
77. A part of the northern corner of the wall was found, 100' (30 m) from the river, in Gill's Shipping Yard, off St. Clement's Lane, in 1889, and again in 1903 - For these and other finds in this area see : V.C.H., Kent, 1932, p.84, with references; *Britannia*, VII, 1976, p.377.
78. For the date of the rampart and the wall, see :- Harrison, A.C., "Excavations in Rochester", *Archaeologia Cantiana*, LXXXV, 1970 (1971), pp.95-112; _____, "Rochester - East Gate - 1969", *Archaeologia Cantiana*, LXXXVII, 1972 (1973), pp.121-157. cf. Harrison, A.C., Flight, C. and Tester, P.J., "The Roman and Mediaeval Defences of Rochester in the light of recent excavations", *Archaeologia Cantiana*, LXXXIII, 1968, pp.55-104. No evidence has been found for defences prior to the third quarter of the 2nd century. cf the date for the walls at Reculver, p.168.
79. cf. Maidstone. For details of the wall see :- Tester, P.J., *Archaeologia Cantiana*, LXXXIII, 1968, p.75 ff.
80. This surface was again located at the junction of High St. and North St., Codrington, T., "Roman Roads in Britain", 1903, revised in 1918, p.44, cited in Margary, op.cit., 1973, p.51.
81. cf. Steers, op.cit., 1964; Evans, op.cit., 1953.
82. V.C.H. Kent, 1932, p.85. For discussion see :- Arnold, A.A., in "The Earliest Rochester Bridge - Was it built by the Romans?", *Archaeologia Cantiana*, XXXV, 1921, p.127 ff: he concluded that this was a Roman work; cf. Dymond, D.P., "Roman Bridges on Dere Street, County Durham". *Archaeological Journal*, CXVIII, 1963, p.154, who comments that the openings of this bridge are rather wide for a Roman structure.

83. V.C.H. Kent, 1932, p.85 - with reference to Smiles, "Lives of the Engineers", 1874, ii, p.44 (not traced).
84. Harrison, A.C., *Archaeologia Cantiana*, LXXXIII, 1968, p.259.
85. Margary, *op.cit.*, 1973, pp.42-47 and pp.51-52.
86. Margary, *op.cit.*, pp.44-47; Cleere, H. "The Roman Iron Industry of the Weald and its connections with the Classis Britannica", *Archaeological Journal*, 131, 1974, (1975) p.181 ff; At Footlands, Sedlescombe, Sussex, (TQ 72198), pottery finds indicate occupation down to the 4th century; Cleere, *op.cit.*, p.194, no.11.
87. cf. Maidstone, Just North of Rochester Bridge, of a double line of elm-wood piles, approximately 15 inches (0.4 m) in diameter and 4 feet (1.22 m) apart, and "capped" with ragstone slabs, may have been part of a wharf - but of comparatively late date as the piles had been driven through a late mediaeval tiled floor; Harrison, A.C., *Archaeologia Cantiana*, LXXXIII, 1968, p.259.
88. V.C.H. Kent, 1932, p.80.
89. Marsden, P.R.V., *op.cit.*, 1967a, p.36 ff & n.27; Marsden emphasises that the ragstone was not ballast but cargo. He compares the Blackfriars vessel with a Thames barge and it is clear that it would have had at least as much stability without ballast. cf. Kapitän, G., "A Roman 3rd century shipwreck at Cape Ognina, (Siracusa, Sicily)" *International Journal of Nautical Archaeology*, Vol.3, No.1, 1974, (notes & news); Marsden, *op.cit.*, 1974, p.55 ff. Arnold, B., "The Gallo-Roman boat from the Bay of Bevaix, Lake Neuchâtel, Switzerland", *Int.Jnl. Nautical Archaeology*. Vol.4, No.1, 1975, p.123 ff.
The presence of holes in the barge timbers caused by *Teredo* and *Limnoria* borers proves that the vessel made frequent trips into the salt water of the Thames Estuary.
90. Marsden, *op.cit.*, 1967a and Plate 10; Hodges, H., "Technology in the Ancient World", 1970, p.188 ff., illustrations 215 and 216.
91. Guildhall Museum, *op.cit.*, 1963, p.74. See also, p.148.
92. Greensand was used in the Temple of Claudius at Colchester, the pharos at Dover, and in the fort walls at Richborough and Reculver; Williams, *op.cit.*, 1971, p.172; (Reculver) Philp, B., "The Roman Fort at Reculver", 1969, p.15; (Colchester) Hull, M.R., "The Roman Potters' Kilns of Colchester", *Reports of the Research Committee of the Society of Antiquaries of London*, no.XXI, 1963, pp.18-19, 41-42, 141, 151; (Dover) Wheeler, R.E.M., "The Roman Lighthouses at Dover", *Archaeological Journal*, 86, 1929, p.29 ff;

(Rochester) Tester, P.J., *Archaeologia Cantiana*, LXXXIII, 1968, p.75 ff.

It is probable, however, that the stone used at Dover was brought from a more convenient source, perhaps somewhere in the Folkestone - Hythe area.

Chapter 7



Chapter 8



JF

Chapter SevenThe Wantsum Channel and the Strait of Dover

Between the Isle of Thanet and the "mainland" of Kent, a broad arc of marshland which runs in a generally north-westerly direction from a point just North-East of the Roman fort at Richborough to the Thames Estuary opposite Reculver, marks the line of what was in the Roman period a navigable arm of the sea, the Wantsum Channel, which is alternatively known as the Wantsum Strait. Although an Elizabethan chart of the Isle of Thanet and the Wantsum shows river beds meandering through marshland between Reculver and Richborough, the channel was, in historical times, an important shipping route from the Strait of Dover to the Thames Estuary, avoiding the exposed waters off the cliffs of the North Foreland, and providing access by way of the River Stour inland, towards Canterbury. (1). Charters of the 8th and 9th centuries show that the Minster Nunnery was engaged in maritime trade between its harbour on the Wantsum and London, Canterbury and the Continent. Bede, describing the events of A.D.597, states that the strait was three furlongs (603 m) broad and fordable in only two places :

"....., qui est latitudinis circiter trium stadiorum, et duobus tantum in locis est transmeabilis; utrumque enim caput protendit in mare" (2).

Little is known of the littoral topography of the strait in the 1st-4th centuries; the shoreline lies at a considerable depth, up to 15 feet (4.47 m) below marsh-level near to Richborough, marsh formation was probably already far advanced in places, and conditions may have varied considerably with even a slight rise in sea-level in relation to that of the land. The limit of marsh accretion was reached in only comparatively recent times when the construction of sea-walls ended all but exceptional flooding, and the deposition of alluvium (3).

South of Deal, the line of imposing cliffs which runs from St. Margaret's at Cliffe, round the South Foreland, to Sandgate was broken by a small haven at Folkestone and a wide, natural harbour at Dover.

Reculver

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63-4

Commanding the northern mouth of the Wantsum Channel, the Shore Fort, of Regulbium, at Reculver, lay at the head of a short promontory, the last seaward extension of the Blean Hills. During the early phases of the Conquest in A.D.43, a small one-acre (0.4 Ha) fortlet of earth and timber, possibly a surveillance position for the bridgehead and later supply base at Richborough, was built on the promontory; it was in use for a short period after which the site was apparently abandoned until the Shore Fort was built, possibly in the early decades of the 3rd century and certainly before ca.A.D.250 (4). Erosion by the sea has accounted for an estimated $\frac{3}{4}$ -mile (1.25 km) wide strip of land on this part of the North Kent coast including much of the fort (5).

The walls, laid out in the form of a rectangle, having sides probably 570 feet (173.3 m) by 585 feet (178 m) in length with rounded corners, were 10 feet (3.05 m) wide at base, being reduced by off-sets to eight feet (2.44 m) at walk-way level and were provided with internal corner turrets, a rampart and a double-ditch system (6). There is a typological similarity between this fort and that which was built at Brancaster and it has been suggested that both may have been constructed to serve the same function, to combat, perhaps as part of a network of bases, the threat of pirate incursions on the eastern seaboard and to protect in particular two important points of entry, the Thames Estuary and the Wash. The Classis Britannica fort at Dover was abandoned about the turn of the 2nd century, implying at least partial re-organization of the fleet, and it is just possible that with

the re-establishment of the Hadrianic frontier line after Severus' Scottish campaigns, for which massive naval logistical support would have been imperative, such detachments of the fleet as had seen service in the North were re-allocated to army units in the military zone. The dates for the abandonment of the Classis Britannica fort at Dover and the commencement of work on the enceinte at Reculver have yet to be firmly established and the strategic relationship between the two events, if any, remains obscure. Given a sweeping re-organization of the fleet, it would have remained essential to maintain and protect supply-lines with the Continent and the North, in the context of which the fort at Reculver may well have been strategically important (7).

The fort walls probably enclosed some 8 acres (3.2 Ha) of land, apparently too large an area for the garrison listed in the Notitia Dignitatum, the Cohors I Baetasiorum, and implying a capability of housing other forces, which could well have been naval in character (8). Bricks, stamped C.I.B., have been found within the fort, as well as a few unstamped specimens, re-used in the later church, of a material petrologically indistinguishable from the Classis Britannica-stamped tiles of Fabric 2 found at Dover. It may be significant that, before being transferred to Reculver, the Cohors I Baetasiorum had been stationed, in the late 2nd century, at Maryport on the Cumbrian coast where it almost certainly would have had experience of duties connected with coastal patrols (9).

While the roads and foundations of the buildings within the fort were of beach pebbles, the lower courses of walls were usually of sandstone blocks. The external facing of the walls of the fort was of ragstone which was also used, as rubble, in places in the core of the wall, and which may have been shipped from Maidstone. The flint core of the walls - some 12,000 cubic yards (9.250 m) - seems to have been transported from Birchington on the Isle of Thanet (10).

The South gate of the fort, the porta decumana was excavated in 1964 and the remains of an "impressive" arch were identified; this had spanned a nine-foot wide single carriageway which led towards what was the harbour area in the 3rd century. This road had been re-metalled six times, involving a rise of three feet (0.91 m) in its height (11). From the West gate, the main entrance to the fort, a road ran to Canterbury by way of Sturry. The sea has cut through this road and uncovered evidence of occupation, but not as yet buildings, in an area some 200 yards (183 m) West of the fort (12).

Towards the end of the 3rd century, when the shore fort at Richborough was built, there is evidence of increased activity in the fort at Reculver, followed by an apparent decline; rubbish collected inside the enceinte and buildings fell into disrepair. In the 4th century repairs were made to the walls and some timber buildings erected (13). The roads and buildings were, however, soon deeply covered with debris. The coin series ends abruptly at ca. A.D.350-360 and there is no large quantity of late 4th century pottery such as has been found at Richborough.

It is probable that the southward extension of the via decumana led down to a harbour, at the northern edge of an area of sheltered water, a lagoon or a sheltered arm of the sea which would have been sheltered from North or north-easterly winds by the promontory but would have had good access into the estuary of the Thames to the North or onto the Wantsum Strait and Richborough to the South. A storm in 1953 breached the sea-wall near Reculver and inundated the marshes. The flood water followed the course of the old channel and flowed into the area to the South of the fort, indicating the approximate configuration of the anchorage (14). Excavation undertaken with a mechanical excavator in this area in 1970 uncovered clay, sand and gravel down to a depth of three to four feet, below which it was not possible to excavate because of flooding and consequent collapse of

the sides of the cut. The Roman shoreline near Richborough lies at a depth of about 15 feet (4.47 m) below marsh-level while the base of the alluvium in the middle of the Wantsum lies about 40 feet (12.2 m) below surface (15). Hence the difficulties involved in the excavation of the harbour area at Reculver are likely to be considerable, to say the least.

A little under a mile (1.4 Km) South-East of Reculver and due East of Fowler's Bridge (area centred at TR 238682), an area of light-toned crop-marks revealed by aerial photography (16), including a rectangular feature, represents the remains of an old decoy, according to the records of the Ordnance Survey (17).

Fordwich

TR 1860

Fordwich lies at the head of the navigable waters of the River Stour, some three miles East of Canterbury, and on the Roman road from Canterbury to Upstreet (18). Extensive quarrying for gravel and sand have revealed the remains of a riverside settlement of the Roman period (19). Rescue excavation, carried out in part of the Westbere marshes, although limited in scale to trial trenches and hampered by a water level which lies only 2 feet (0.61 m) below present ground level, has revealed the remains of what may have been a Roman harbour installation. A considerable number of large stakes and a heavy beam, all of oak, were found lying at the edge of the alluvium which was thought to represent the former shoreline of a creek of the River Stour (20). The trees from which these timbers derive were felled about the middle of the 3rd century A.D., a date coinciding with that of pottery found in the stratified levels of the site itself (21). Without details of the size and position of these timbers, it is not possible to reach any conclusion other than that their presence and position indicates a functional connection with the waterfront, perhaps in the form of a revetment or a wharf. They may equally well be the

remains of riverside buildings or a water-mill.

It seems that many structural features had already been destroyed prior to rescue excavations but some did remain to attest to occupation in the 2nd and 3rd centuries A.D., lasting possibly into the 4th century (22). Roman interments have been found astride the Roman road from Canterbury in and prior to A.D.1881, over an area of 30 acres (12 hectares), at Somer's Hill, West of Westbere - a region worked extensively for sand and gravel in the 19th century (23).

These discoveries point to the existence of a riverside settlement at Fordwich in the 2nd, 3rd and possibly 4th centuries A.D., together with some sort of installation perhaps for the use of river traffic. The site, at the head of the navigable waters of the River Stour and linked by road to Canterbury, is well situated to have been ^{an} estuarine port, a port at which cargoes could be off-loaded from river boats and transferred to carts for the rest of the journey to Durovernum Cantiacorum (24). It is interesting to note that a late Saxon port is known to have existed here, a limb of the Cinque Port of Sandwich, and by the reign of Edward the Confessor, ca A.D.1042, was a port of sufficient importance to contribute ship money to the king's navy (25).

Richborough

Richborough lies just under 2 miles (3.2 km) N.N.W. of the Cinque Port of Sandwich, on an isolated hill which rises up to 60 feet (18.3 m) above the marshlands of the meandering River Stour, once part of the navigable arm of the sea, the Wantsum Channel (26). It appears that Richborough Hill was in the Roman period a small peninsula, joined to the mainland by a low-lying causeway of alluvial clay along which the Roman road to Canterbury was constructed, presumably at the same time as the establishment of the supplies base (27). To the South and East of the hill lay a wide, tidal bay,

TR 324602

67-8

or a lagoon, the area of which is now occupied by the marshes of Goshall Valley, the North and South Poulders, and bordered by the shingle bank on which Stonar stands. It appears that the Stonar bank had formed by Roman times and may have acted as a breakwater, shielding the anchorage during storms (28). Winbolt suggests that the Roman harbour lay just North of the Fleet Causeway, in the area immediately East of Richborough Farm. The development of the marshlands may have already been well advanced and a site immediately East of the hill on which the Shore Fort stands may have been preferred (29). The eastern side of the peninsula has been eroded by the Stour and a section adjacent to, and South of, the fort was cut away during the construction of the railway track. It has been estimated that the Roman shoreline lies at a considerable depth, up to 15 feet (4.57 m) below marsh-level, and it is just possible, therefore, that remains of harbour installation may have survived (30). 69

In the 18th century, a structure was discovered ... "in the plain at the foot of the bank about 40 rods" (=220 yards/201.3 m) "to the northward of the castle a little way under ground" (31). It was triangular in plan, the apex projecting eastwards towards the sea, each side being approximately 10 feet (3.05 m) long and 4 feet (1.22 m) high. 70

"It was a shell of brickwork, two bricks thick, filled with earth; the two projecting sides tied together with a brace of the same materials". (32).

Two sizes of 'brick' had been used in the building; one type measured 18 x 12 x 3.5 inches (45.7 x 30.5 x 8.9 cm) and the other 17 x 11 x 1.25 inches (43.2 x 27.9 x 3.2 cm), all of which were removed to pave a courtyard in London. The structure was interpreted as a wharf or landing-place. Boys does not state whether any Roman material was associated with the feature and no drawings of it appear to have been made. There is nothing to indicate whether it is Roman or mediaeval

in date although it lies in an area where Roman harbour installations may have survived. The base of the feature appears to have lain somewhat higher than the estimated level of the Roman shoreline and until this has been ascertained the function of the structure must remain obscure.

The first phase of Roman occupation at Richborough is represented by two parallel defensive ditches and a gate which have been attributed to the earliest days of the invasion of A.D.43. The ditches extend for some 700 yards (640 m) across the hill on a NNE - SSW alignment; they begin to turn eastward, but run out over the edge of the escarpment. It has been estimated that the area thus enclosed could have been no less than 500 feet (152 m) deep from West to East. The life of this beach-head camp appears to have been short for the ditches were soon back-filled to make way for the street-grid and buildings of a Claudian supply base (33).

To the South of a main East-West road lay at least ten granaries, two of which were dismantled to make way for a series of units that have been tentatively identified as shops or stores, some time before A.D.70 (34). To the North of the road a complex of timber buildings included another granary and the superimposed remains of three successive courtyard buildings which may have been the mansio of the port or a building used for administrative purposes (35). The full extent of the stores base is not known and some of the features observed by Roach Smith and Dowker may belong to this phase (36). Although supplies and reinforcements may have been ferried direct to other early supply bases such as that at Fishbourne, that at Richborough, at the point of the shortest sea-crossing, must have been pre-eminent and it remained in use, with modification, until ca. A.D.85, when all the timber buildings in Insulae I - VI

were demolished and some, at least, of the roads reinstalled preparatory to the construction of the Great Monument (37). It has been suggested that the 2nd century Classis Britannica fort at Dover succeeded or supplemented a base at Richborough. The single Classis Britannica-stamped tile found at Richborough may have arrived on site in a load of ballast or as re-used material derived from a Classis Britannica structure elsewhere, and need not necessarily imply a fleet base at Richborough although, as Cunliffe suggests, it may well have lain outside the area of the Shore Fort (38).

Richborough had been the primary and most important base during the invasion of A.D.43. It was always thought of as the gateway to the province and to some ancient writers it was synonymous with "British". There can be little doubt, therefore, that the monumental tetrapylon on which construction work started ca. A.D.80-90, was intended to symbolise the "accessus Britanniae" (39). The Monument was encased in imported marble from Carrara and would have been surmounted by massive bronze statuary; it has been estimated that the main columns could not have been less than 50 feet (15.2 m) high. By about the middle of the third century, however, much of the architectural decoration had disappeared and it had been surrounded by the massive earth rampart and triple ditches of a small 1.1-acre (0.44 Ha) fort, within which the core of the arch may have served as a lookout post or signalling tower functioning, presumably, in conjunction with the fort at Reculver (40). 69

Little is known about occupation attributable to the late 1st century elsewhere on the site, although it is to be expected that the artisans and traders who would have been attracted by the supply base and construction work on the Monument, may have set up shop at what must have been a thriving port (41). The settlement flourished in the first half of the 2nd century but thereafter a decline may possibly

have set in. Rubbish was allowed to accumulate over one road and others fell into disrepair; building activity slackened markedly and some structures were abandoned. Although Richborough remained a place of embarkation - the mansio was still in use - traders appear to have by-passed it in favour of London, Colchester, or Dover (42).

The triple ditches surrounding the Monument appear to have been back-filled, and ^{the} surviving core of the structure demolished, ca.A.D.273 as part of the preparations for the construction of a fort of the Saxon Shore type (43). This fort, garrisoned by the Legio II Augusta in the 4th century, did not lie in a naturally strong defensive position but would have provided a secure enceinte for the harbour when under threat from pirates (44). The fort wall, which was 10.5-11.5 feet (3.2-3.5 m) wide at its base, survives in places to a height of 25 feet (6.62 m); the rubble-concrete core was faced with neatly squared blocks of greensand which may have been quarried in the Maidstone or Folkestone areas (45). The remetalled main road to the West passed through a main gate in the West wall, while a postern gate opened onto the area North of the fort. Solid, circular towers projecting from the two surviving corners of the fort and rectangular bastions set midway between them and the gates, lay within two V-shaped defensive ditches (46).

Little is known of buildings within the fort, except for a small bath-house and three stone structures the function of which is uncertain, and few levels of the late 3rd to 4th centuries have survived or been recognized (47). Pottery distribution studies have, however, indicated that Richborough may have been a major centre for the importation of Argonne and German coarse wares in the first half of the 4th century, the former via the Meuse and Rhine, the Seine, or a port on the northern coast of France such as Boulogne, and the latter probably by way of the Rhine, and that it may possibly have served as a point of

export for British pottery found on the Continent (48). In an attempt to explain the high level of coin losses for the late 4th century, Cunliffe has tentatively suggested that Richborough may have served as "some kind of currency control post between Britain and the Continent in the last years of Roman rule" (49). Occupation of the site continued well into the early 5th century when a Christian church was erected in the North-West corner of the enceinte (50).

Dover

TR 318414

Portus Dubris lies on the western bank of the River Dour above its outlet into the English Channel (51). There was once a natural harbour here which was mentioned in Domesday Book but which, by 1533, had ceased to exist (52). The valley of the Dour cuts deeply through the East Kent Uplands until at Dover it is bounded by chalk downs which tower over 400 feet (122 m) above the river. To the East of the river rise the Heights on which the Normans built their castle, and which terminate in chalk cliffs on their seaward side. The Western Heights are less precipitous but still give much shelter from the prevailing South-West winds. The chalk cliffs have been subject to erosion and this, combined with the habitual inrush of shingle, provided the material with which wave-fronts, running in a direction just North of East, had probably built up a spit by the 2nd century (53). This "old" spit would have protected the haven itself but the approaches to the harbour can, even now, be difficult: the water is quite shallow and, consequently, the sea can become quite rough at times.

However, except for a tiny haven at Folkestone, the harbour at Dover is the only natural refuge in the line of chalk cliffs, which run from Walmer to Hythe. Opposite Dover, the English Channel is at its narrowest and thus the port there holds a commanding position on sea routes (54).

Evidence of Roman occupation at Dover has been found over the

last two hundred years but it has been a matter of some debate as to what form this occupation took. Leland stated :

"There hath bene a haven yn tyme past and yn token thereof the ground that lyith up betwyxt the hilles is yet in digging fownd wosye there hath be found also pieces of cabelles and anchores, and ltinerarium Antonini cawleth hyt by the name of haven." (55).

Wheeler, interpreting the work of Amos, tentatively suggested the outlines of a late fort of the "Saxon Shore" type, but decided that the evidence pointed to a small military or naval station. He concluded :

"It" (i.e. the Roman station), "gave no anticipation of the importance of mediaeval and modern Dover as the bridgehead of the Calais-crossing." (56).

In 1969, Rigold compiled all the available evidence and commented :

"Roman Dover, at any rate during the late 1st and 2nd centuries, was a port, not a fort beside an anchorage." (57).

Rigold's conclusions were abruptly contradicted by the results of Philp's rescue excavations on the line of the new ring road (58). He located, in the area to the North and South of Queen Street (TR 31834136), two forts - one of the early 2nd century and another dated to the late 3rd century, as well as evidence for early occupation.

A scatter of Neolithic material covered a wide area and pits and a small hut of the Iron Age were excavated near to Princes Street (59). The site was also occupied in the 2nd century before the Classis Britannica fort was built. A start had been made on construction work but this had never been completed; the buildings stretched beyond the limits of the fort and were on a different alignment to it. The precise date and nature of this occupation have, however, yet to be determined (60).

Classis Britannica Fort

In the first half of the 2nd century, a small fort, over 2 acres

(0.8 Ha) in area, was built on the slopes above the western bank of the river.

72

Almost all of it has been excavated; the four walls and all but two of the internal buildings have been revealed (61). These were mostly barrack-blocks but parts of at least three granaries have also been traced : in fact, the walls were still standing to a height of 3 to 9 feet (0.9-2.7 m) (62). Generally, the barracks had been rebuilt at least twice, each time being enlarged until they eventually encroached onto the intervallum road : this must reflect an increase in the strength of the garrison. About eight hundred "Classis Britannica"-stamped tiles of Fabric 2, from the Hastings-Fairlight area, were found in direct association with these buildings. It is almost certain, therefore, that the fort was built and occupied by part of the Classis Britannica (63). The defences of this fort were modest. The walls were 3.85 feet (1.17 m) thick and were built of chalk, or tufa blocks. No rampart was found. In front of the wall lay a slight, V-shaped, ditch, which had been re-cut (64). A small guard-room, some 11.6 feet (3.9 m) wide, at the porta principalis dextra, had been rebuilt in the 2nd century but had been partly destroyed when the ditch of the late fort was cut (65). The wall and ditch were probably mere "token" defences and were never intended to withstand assault.

734

An extensive network of roads, drains, gutters and waterpipes was also traced. Water had been fed to the N.W. corner of the fort along an open aqueduct and, once inside the walls, flowed through the network of pipes and drains towards the S.E. corner where a culvert led it through the fort wall. Its outfall has been found, about 100 feet (30 m) away, close to the modern inner harbour (66). The many roads within the fort had been laid out in a regular rectilinear pattern and some had been remodelled on as many as six occasions (67).

Several extramural buildings have been excavated. On the Dadorne House Site structures adjacent to the porta praetoria showed seven phases of construction. Some distance North of the fort a "painted house" has been found. The walls of three heated rooms had been preserved, to a height of 6-9 feet (1.83-2.74 m), in the rampart of the late fort. These walls had been painted in an illusionistic architectural style. Probably the rooms were part of an inn or a private residence which, Philp has suggested, may have been occupied by an officer or even a commandant. The western part of this building had been destroyed when the late fort wall was constructed in the 3rd century (68). Remains of other buildings have been found to the North of the fort which have been interpreted as "comfortable, but not splendid" accommodation: one such structure included a bath-suite and incorporated Classis Britannica tiles in its fabric (69). 72²²⁻³

The association of great quantities of Classis Britannica tiles - Fabric 2 (from the Hastings-Fairlight area), with the buildings of the fort indicate that it was part of a major naval base during the 2nd century, and quite possibly the headquarters of the Fleet (70). It was adjacent to a sheltered harbour which must have been provided with major harbour installations, perhaps including facilities for ship repairs (71). 72²⁰⁻²

The fort was abandoned about the turn of the 2nd century. Finds of the first half of the third century are rare and this may be indicative of a decline in occupation. The fort appears to have fallen into decay and was probably neglected for some fifty years. Until the date of its abandonment has been established, it remains uncertain whether it was associated with a re-organisation of the fleet after Severus' Scottish campaigns or the revolt of Albinus in A.D.196, as Philp has suggested (72). It is quite possible, however, that the areas of the western, and, perhaps, the eastern inlets had become

choked with silt and shingle and were no longer viable parts of a naval base and it may be significant that when the Saxon Shore fort was built, ca. A.D.275, it lay over the former western inlet.

The Harbour

Rigold has suggested that the 25 feet (7 m) contour-line may describe the outline of an inner basin of the Roman haven: even today the ground below this line is saturated (73). The canalized Dour enters the area of this "basin" at its N.W. corner and runs in a south-easterly direction until it turns sharply through an angle of 110° to head S.W. (Fig. 72). Rigold thought that this sharp turn was caused by a concealed obstacle, "presumably, a spit of shingle" (74). Samian and other pottery has been found in the area of this "old" spit although there is no reliable information as to the depth at which it lay, a critical factor (75). It is to be expected that the naval base at Dover would have been provided with extensive harbour installations and it is quite possible that Rigold's "concealed obstacle" is, in fact, the remains of stone-built quays or wharves. 72

South of the sharp bend in the river, the 20 feet (6 m) contour-lines on each bank of the Dour converge until there is only a 55 yard (50 m) gap between them. South of these projections the contour-lines recede and then advance again to form what Rigold describes as the eastern and western inlets (76). The contour-line advances slightly along the southern 'shore' of the inlets, forming shallow promontories. Then the Dour turns, again sharply, South-West, deflected through an angle of 90° by an extensive shingle spit which had probably begun to form by late Roman times. This "new" spit had made the old haven unusable by the 15th century (77). 726

Both Rigold and Philp have placed much emphasis on the supposed marine transgression of the 3rd century and both have interpreted the

remains of the harbour installations in the light of that theory. There is, however, no evidence, anywhere in the world, for a sudden rise in absolute sea-level in the 3rd century. Studies carried out in the Mediterranean and around the coasts of South-West England have indicated that there has been a steady rise in sea-level over the last two millennia - a rise which has accelerated slightly in the 20th century and any "apparent" sudden rise in sea-level must, therefore, be due to local or regional subsidence. It has been calculated that early Roman sea-level was some 1.5 feet (0.5 m) lower than that of modern times (78). High water at Dover now varies between 6 and 10 feet (1.85-3.05 m) above O.D.; exceptionally, it rises to 15.7 feet (4.8 m). This means, therefore, that high tides in the 1st-3rd centuries would have ranged between 4.44 and 8.40 feet (1.35-2.55 m), rising exceptionally to 14.08 feet (4.3 m), above O.D. Occupation levels of the 1st-3rd centuries show that normal spring tides could not have exceeded 9 feet (2.74 m), above O.D. (79)

72¹⁷⁻²¹

It is possible that there has been some lowering of absolute land-level at Dover due to regional or local settling or subsidence but it is quite unlikely that it could have anything other than a relatively insignificant effect over a century. In the light of this development, it is necessary to re-assess the evidence for the harbour installations.

The "Mole"

In 1855, a pit was excavated for a gasholder some 129 yards (118 m) East of Market Square, at 32124143 (centre). At a depth of 20 feet (6.1 m) below ground level, and slightly below O.D., a framework of massive oak timbers was uncovered, running across the excavation (Fig. 75-6). The framework ran beyond the confines of the pit and its terminals were not located (80). However, the observed length of the structure was 100 feet (30.5 m). The precise orientation of the

72³

feature is not known for certain. It was said to have run North-East by South-West, or at right angles to the river (81). The average width of the structure was 15 feet (4.5 m) and its height was about 4.5 feet (1.37 m). In fact, the eastern end of the work was slightly wider and more elevated than the western part (82).

The framework was embedded in "bog-earth" on its northern side. This "bog-earth" (alluvium, containing Roman debris) continued northwards into Dolphin Lane (83). When the offices of the adjacent Phoenix Brewery were being constructed, a "log canoe" was found (84) and Puckle reported that, during excavations for the Russell Street Gasworks, "timbered quays, groins, warping gear, hawser rings and other remains of a rough mariner's craft," were found (85). 72⁵

The southern face of the structure was embedded in "sea-sand" (86). Rigold comments that the condition of preservation of the timbers would suggest that they were in contact with something more sterilizing than sand (87).

While Knocker's stratigraphy produces bed-rock at about 5 feet (1.52 m) below O.D., Elsted's figures would place it at 13 feet (4 m) below O.D. Rigold suggests that different conditions on either side of the framework have been added together to produce this greater depth (88). If Knocker's figures are correct then the upper surface of the timbers lay just below O.D. Occupation levels elsewhere indicate that normal spring tides could not have exceeded 9 feet (2.74 m) above O.D. in the 2nd-3rd centuries. Thus the surface of the framework would have lain in 4.44-8.40 feet (1.35-2.55 m) of water at high tide.

A thin stratum of water-worn chalk and flints and, above that, 4-5 feet (1.22-1.52 m) of sand (with sea shells low down in it) overlay the baulks. Rigold attributed this to a 3rd century marine transgression (89), but it is more likely that this accumulation of

sand is the product of the habitual inrush of shingle and sand which has always been a problem at Dover.

The best description of the timbering and jointing of the framework is to be found in Rigold's analysis of all available information, in the *Archaeological Journal* and the account that follows is based on that paper unless otherwise stated (90).

The framework was formed of four massive oak baulks, one above the other, measuring 10-12 inches (ca. 0.3 m) in square section. These formed a solid wall about 4.5 feet (1.37 m) in height (Fig. 7.7). These baulks were tied to each other, end to end, by means of "simple, full-depth tenons or 'bridles', of asymmetrically dovetailed form." The structure was braced by transverse beams set at regular intervals of 11 feet (3.35 m) on each tier; each of these transverse beams was also set a quarter of the interval (2.75 feet/0.84 m) in advance of those on the tier above (91). These tie-beams formed a stepped series, lap-jointed and notched or half-dovetailed, in facing pairs, into the lateral timbers (or "walls") on one side of each tier; the lap-joints were secured with pegs. The lateral timbers were then trenched into the opposite baulk, beyond which they projected. This arrangement alternated from side to side at each tier (92). Rigold illustrates a laterally rigid form of construction in his paper; he emphasises the vertical independence of each tier by representing the uppermost tier as having been lifted off the one below; this also serves to show the alternation of the joints. He did point out, however, that it is possible that the transverse beams were only about half the depth of the lateral ones; such an arrangement would have allowed them to move freely in their trenches, thus allowing the structure to expand (93).

The interior of the timber framework was found to be packed with shingle and "hard ballast" (94).

About 1922, on or near the alignment of this feature, ill-preserved timbers were found at Leney's Brewery (32064141) and may have been part of the mole (95). 72⁴

This massive framework has always been regarded as the solid substructure of a mole or breakwater of the early Roman period when, it has been claimed, sea-level was somewhat lower than present. It is now evident that the topmost surviving timbers lay in about 4.44-8.40 feet (1.35-2.55 m) of water at High Tide, Neaps and Springs respectively. At its present height, the structure would, therefore, have had little or no effect in disrupting the movement of incoming waves, at least at High Water.

The English Channel is too narrow opposite Dover to allow the formation of large wave-fronts from the South East. Waves can build up to a considerable height, however, out in the Atlantic Ocean and the North Sea, when driven in by South-westerly and North-easterly winds, respectively. The prevailing winds are from the South West from whence they can whip up wave-fronts which strike the harbour mouth at Dover in a direction just West of South (96).

Although the Western Heights provide some shelter from these South-West winds, associated wave-fronts would run straight into the inner harbour at Dover unless prevented from so doing by a breakwater coming out of the West bank of the Dour estuary and the presence of such a concealed obstacle may be one of the causes of the contorted course of the river (97).

While the Eastern Heights afford much shelter from Northerly winds, the estuary of the Dour is also open to wave-fronts coming from points just North of East (Fig. 72). These can run in a direction nearly parallel to the line of the "mole" which would have done little to break or divert the force of the waves, especially during storms.

Furthermore, the western bank of the Dour estuary, below the Classis Britannica Fort, would have been exposed to these wave-fronts. It is thought that the "new" spit at Dover may have begun to form in Roman times and it is possible that beneath it lie the remains of an eastern breakwater, running in a South-westerly direction somewhere near the line of the Mediaeval Town Wall (98). Soundings in 1784 are said to have revealed the Roman sea-bed at least 20 feet (6.1 m) below O.D., at a point "one hundred yards from the shore" (99). These findings need not be incompatible with the presence of a breakwater in the area described above. It is significant that the "new" spit was built up by westward drift; a breakwater beneath this "new" spit, may have been intended to inhibit the inrush of shingle; debris may have built up in front of this hypothetical feature and have represented the early stages of the formation of this spit. 727

What then was the function of the "mole" ? Between it and the "old" spit there can have been barely no more than 100 feet (30.5 m) of open water. Here, fairly deep, but unscoured conditions have been found, "with dark silt" from 1.64-4.94 feet (0.5-1.5 m) below O.D., to the base of the "mole", (100); alluvium, containing Roman debris, was found against the North face of the "mole" and this may indicate that Rigold's Eastern inlet was subject to silting. There seems to be no way in which this deposition could have been prevented unless a channel was once cut across the base of the 'old' spit to allow some of the waters of the Inner Basin to de-silt the upper reaches of the Eastern Inlet (101). On the other hand there could have been a stretch of 350 feet (106.2 m) of open water between the "mole" and a breakwater in the area just South of the Mediaeval Town Wall. This area could have been kept clear of silt by collecting sea-water at high tide and releasing it through sluice gates into the harbour, and out to sea (102). It is possible that the timber framework found 725

during the gasholder excavations may have been part of a low dam, the function of which was to retain a head of water which could be released into the harbour at low tide. It is equally possible that it provided the substructure for a quay, projecting out from the shore into deeper water.

To fulfil this function the framework would have required a superstructure, for which there is no indication in surviving descriptions of the excavations (103). The framework is too long and too narrow to be the substructure of a slipway. Rigold has also suggested that, if the hypothetical superstructure rose to the level of high water (i.e. another 8.5 feet (2.59 m)), it may have come sufficiently close to the opposite bank to have been joined to it by a bridge of boats, or a chain, as at Miletus; it may then have served also as a line of defence (104). The fact remains that no evidence for a superstructure was observed during the excavations for the gasholder and it is reasonable to expect that some traces of the jointing for, or the vertical baulks of, such a superstructure would have been observed if they had been present.

It seems to have been standard practice to construct breakwaters by depositing considerable quantities of stone or concrete into the sea (105). Tie-beams were used, as in the mole at Thapsus (106), but in no case known to the writer, has a breakwater been built in timber in the manner of the Dover "mole".

The evidence to explain satisfactorily the function of the "mole", and the configuration of the outer harbour at Dover is not yet available. No doubt the answer lies under the millions of tons of shingle which make up the "new" spit.

The Quays

728,979

1. Excavations during large-scale building operations in 1955-1956, revealed the remains of what seems to have been a quay of the Roman period. The site, low-lying and West of the now-canalized River Dour, was situated at Stembrook, in the angle formed by the intersection of Church Street and Stembrook Street (107). The excavations, for stanchions and a boiler-house, revealed two features, lying some 60 feet (18.3 m) apart. The one, designated "A" in the excavation report; was interpreted as a quay; the other, ("B") as a jetty. Both lay some 380 feet (116 m) N.W. of the "mole" (Fig. 79).

"Natural", sand and heavy gravel, was found to slope gradually to the East and to the South, from 4.5 feet (1.37 m) above O.D., near to Church Street, to 2.4 feet (0.73 m) below O.D., some 104 feet (31.72 m) away near to Castle Street (108). The lower part of this slope had been made up to a level surface by a platform of chalk blocks (Fig. 81). These blocks had an average size of 1.5' x 0.75' x 0.75' (45.72cm x 22.86cm x 22.86cm): they were roughly coursed, without mortar. Although the edges of the platform were secured by camp-sheathing and piles, the chalk blocks were held in place mainly by their own weight. Nine piles and seven other timbers were associated with the platform. The piles (Fig. 80) were 4-7 feet (1.22-2.13 m) long; usually they had been squared and had an average scantling of 0.5 feet (15.4 cm). They had been shaped to a squared taper at one end which culminated in a batter with a "shoulder", where they had been driven into the basal gravel. One was possibly a re-used ship's timber (109). So few of these piles were found in situ that their original spacing remains uncertain. In places, planking was found to be nailed to the heads of the piles serving, apparently, to support the top of the platform.

In the area of the Boiler-house (Fig. 79), the chalk-platform had a well-defined eastern edge but, in Hole 18 to the South-West, no firm coursing was found, although one pile did lie on the same alignment as the "front" of the quay. Some 7 feet (2.13 m) to the North-West of this pile, lay three others, to two of which had been nailed a curved (warped ?) plank.

Rigold states that the piles had been driven into a bed of mud which lay at a depth of about 1m (3.3 feet) above O.D. (110). On the other hand, Rahtz, the excavator, states clearly that the timbers had been driven into natural, "yellow sand and heavy gravel", which in the immediate vicinity of the piles was level with O.D., \pm 0.1 feet (3.05 cm) (111).

The surface of the chalk platform was level with the heads of the piles at 6 feet (1.83 m) above O.D. It has been thought that the chalk blocks may represent the original surface of the quay. If this was the case then it would have been submerged to a depth of 2.36 feet (0.72 m) at High Water-Springs. It is quite likely, therefore, that a low superstructure rested on the chalk blocks, no traces of which, however, were observed during the excavations (112).

For at least 30 feet (9.1 m) East of the quay the surface of the basal gravel does not seem to have been deeper than 1.4 feet (42 cm) below O.D. and the lowest depth which it reached between the platform and Feature B, the Jetty 75 feet (22.8 m) to the North-West, was 2.4 feet (73 cm) below O.D. (113). In the immediate vicinity of the quay the natural gravel lies 0.1-0.4 feet (3-12 cm) below O.D. This would give a depth of water of 4.54-4.58 feet (1.38-1.47 m) at neaps and 8.37-8.40 feet (2.58-2.67 m) at springs, alongside the quay (114); the floor of the channel would have been exposed at low water.

There was a sharp drop from the area of the Boiler-house southwards (near to Hole 17) of about 4 feet (1.22 m). It seems that the quay may have turned westward, near Hole 18, although further chalk blocks are recorded as coming from Hole 9. Along this southern flank the basal gravel drops from 4.5 feet (1.37 m) above O.D. in Hole 15, to 0.4 feet (0.12 m) below O.D. in Hole 17, rising a fraction to 0.1 feet (0.03 m) below O.D., in Hole 18, the hole in which were found the piles and the plank (115).

These timbers seem to represent the seaward end of the quay. The chalk-block structure, 10 feet (3.05 m) to the South in Hole 9, may too have had some functional connection with the waterfront. It lies on a slightly different alignment to the quay and does not seem to have been part of it.

The facade of the quay is parallel with the present course of the River Dour and may have stretched northwards for some considerable distance (116). The excavated section lies on the end of the low promontory just North of the entrance to the "Western Inlet", and opposite the "old" spit. To judge from the 6m (18 feet) contour this would allow for a channel of some 100 feet (30.5 m) maximum width to the East of the quay.

In this channel, in the immediate vicinity of the quay, the natural yellow sand and heavy gravel was covered by 1.5-2.0 feet (45-61 cm) of buff flint gravel and silt; this accumulated after the construction of the quay and the jetty and contained pottery of the late 1st and 2nd centuries (117). Above this gravel and silt, a 5 feet (1.52 m) deep stratum of dark silt which also contained sherds of the late 1st and 2nd centuries, rose up to the level of the top of the quay. If these data, recovered during building operations, are to be trusted it would appear that the quay was built sometime in the late 1st and 2nd centuries. It is virtually certain that it forms part

of the harbour installations of the Classis Britannica base.

It would appear that a considerable quantity of debris (Layer C and possibly part of Layer D) was deliberately tipped in front of the quay and out into the channel towards the jetty after they had gone out of use (118). At a time of active use the harbour must have been kept clear of silt and shingle but it has always been a problem at Dover to stop the inrush of such debris. Perhaps by the end of the 2nd century silt and/or shingle had choked the harbour mouth and made its inner reaches unusable (119).

Finally, a layer of loose clayey soil and gravel, with patches of chalk rubble, lay on top and to the East of the quay (120). This was regarded as being post-Roman silt and debris; there was no pottery contained in it.

It is probable that Layer C, and possibly B, are associated with the site preparations for the construction of the Saxon-Shore fort (121) and it is evident that by the late 3rd century, the area of the Western Inlet had become choked and unusable because it was over this area that the late fort was constructed.

2. In 1956, on the West side of Market Square, a pit, about 72¹¹ 70 feet (21.3 m) by 80 feet (24.4 m) was dug mechanically to the depth of 16 feet (4.88 m) (122). The West bank of the Dour estuary was revealed, sloping steeply eastwards towards Market Square and forming part of the shore-line of Rigold's Western Inlet (123). The original bank of the inlet was obscured by an area of made-up ground, some 8 feet (2.44 m) deep, upon which rested Roman occupation levels of the first half of the 2nd century. A massive, chalk-block foundation, running South-East to North-West, acted as a retaining wall for this embankment (124). Late 1st and early 2nd century levels, which rested

on the pre-Roman estuary bank had been cut back to make way for this structure and it has been tentatively dated to the 2nd century. It can be regarded as a quay (125). At the rear, its base lay 4 feet (1.22 m) above O.D. at a similar depth to that of the Stembrook Quay. No information was given about the depth of the area in front of the platform; presumably the natural ground surface sloped away beneath it towards the inlet. The upper surviving surface of the structure lay at about 8 feet (2.44 m) above O.D. and this fits in well with the estimated levels of tides in the 1st-3rd centuries.

If this feature was a quay in the 2nd century it must have been part of the Classis Britannica base but, by the late 3rd century, it could no longer have been in use, as the Saxon-Shore fort was built over the area in which it lay.

The Jetty

Some 60 feet (18.3 m) North-East of the Stembrook Quay, the ^{72⁹, 79-80} building excavations revealed the remains of an unrevetted chalk platform which has been interpreted as a jetty (126). The structure, built of chalk blocks, was some 6.75 feet (2.06 m) wide from East to West and lay at an oblique angle to the Quay. On the block platform lay a framework of timbers surrounding an area of horizontal planking, which may have carried a superstructure.

Unlike the quay, here no piles held the chalk blocks in place, although two piles were found nearby. A plank was also found between the piles and the platform and lying "loose in the filling" (127).

The timber framework which surrounded the top of the platform was secured to the horizontal cross-sleepers by a halved joint. A rebate cut into the end of each sleeper rested on an off-set in the transverse plate; this offset was formed by the superimposition of two timbers each lying, on edge, along the face of the platform (128).

The whole structure was built up from the natural gravel, the surface of which ranged here from 0.1-0.2 feet (3.0 to 6.6 cm) below O.D.; the top of the timber framework survived up to 4.6 feet (1.4 m) above O.D.

At this height the surface of the jetty would have been continually flooded at high tide. This could not have been acceptable as a norm and so it is probable that a low superstructure once rested on the cross-sleepers. The jetty may also have had the secondary function of breaking up the steady flow of water in the harbour area, thus decreasing the rate of deposition of silt.

The edges of the jetty were located on the North, East and West. It cannot have extended far to the South or else it would have been

encountered in Box 4. The structure may have turned East, between Boxes 1 and 4, but it seems most likely that it was a short, isolated, staging.

The jetty was surrounded to the South-East and North-West, and was thinly covered, by the layer of "dark silt", encountered immediately East of the quay (129). This must post-date the jetty which clearly belongs to the late 1st and 2nd centuries - another installation probably to be associated with the Classis Britannica base.

The channel around the jetty must have been kept clear of silt and debris while this installation was in use. The accumulation of such a depth of silt and debris may have been the result of deliberate tipping in the late Roman and early Mediaeval periods, most likely in the late 3rd century when a considerable area of ground must have been made-up to make way for the building of the Saxon-Shore Fort, by which time the channel West of the jetty had gone out of use (130).

The shallow channel between the Stembrook Quay and the jetty need not have been the main course of the Dour: this may have followed a more easterly line in closer proximity to the modern canalized river (131). It is possible that harbour installations may once have lined the East bank of the Roman Dour and that they lay on NNE-SSW alignment, between the modern river bed and the 20 feet (6.1 m) contour (Fig. 72).

Inner Basin

An area of open water may once have stretched Northwards from the quay and jetty at Stembrook, as far as Dew Stone (Dieu Stone) Lane or beyond; Rigold suggests that a barrage on or above this line seems required by the higher water levels of the inner basin (132). Some 1000 feet (300 m) North West of the Stembrook site, four sites in the

precinct of the former Maison Dieu, have yielded evidence relating to Rigold's "Inner Basin".

72³³⁻⁶

In 1966-8, during excavations for an Auxiliary Telephone Exchange, a layer of "dense silt" was encountered (133). This lay over and to the South-West of the old river-bed. On the N.E. lip of this channel the silt ran from 15.7-15.4 feet (4.8-4.7 m), down to natural chalk at 13.75 feet (3.9 m) above O.D. In the centre of the old water-course the silt was sounded down to 6.6-8.2 feet (2.0-2.5 m) and, in one place, to about 3.3 feet (1 m) above O.D. The floor of this channel lay, therefore, just below the level of high water, neaps, but would have been flooded to a depth of approximately 8 feet (2.44 m) at high water springs. A 3.3 feet (1 m)-deep stratum of dark peaty soil overlay the dense silt and was clearly a long accumulation in a boggy river valley. The dense silt on the other hand was probably the result of deeper, cleaner, conditions; its upper surface lies well above the limit of 'extreme' Roman high water and it must be riverine in origin.

72³³

In the silt of the old water-course lay a lens of sand, mud and water-worn flints (134). Rigold believes that this lens was deposited when a tidal-stream scoured into already consolidated silt, during a severe marine transgression in the 3rd century. However, there is no evidence for such a sudden rise in absolute sea-level in the 3rd century and there is no reason why the scouring could not have been caused by the waters of the Dour itself or, at times of exceptionally high water, by tidal action (135). While Roman sherds of the late 1st-2nd centuries were found near the base of the dense silt it is far from certain that the upper levels of the layer, or the lens itself, are Roman in origin. This stratum may be the result of a slow accumulation over a long period. Therefore, the evidence from the Maison Dieu site is not inconsistent

with the theory of a steady rise in sea-level in the 1st-4th centuries.

The dense silt was also encountered some 80 m (262 feet) to the South of Site 33 below Biggin Street, during the cutting of a cable-trench. Here, the top of the silt also lay at 15.7 feet (4.8 m) above O.D. and was at least 3 feet (0.9 m) deep; the bed of the basin was not reached (136). 72³⁶

In 1968, 164 feet (50 m) West of the Biggin Street trench, on the site of St. Edmund's Chapel, the top of the dense silt was again located at 15.7 feet (4.8 m) above O.D. but here, near the western margin of the basin, it was only 2 feet (0.61 m) thick (137). 72³⁵

In 1913, on the Post Office Site, some 130 feet (40 m) South-East of the Biggin Street Site, 2nd century pottery was found "in the original silty soil . . . perhaps not quite on the chalk bottom" at 7.91-8.60 feet (2.0-2.4 m) above O.D. (138). 'Nearby' "the 'sandy chalk' bed of a brook" was encountered: this was probably a tributary of the Dour. The 'original' silty soil in which the sherds lay would have been 2 feet (0.61 m) below high water springs, but well above high water, neaps. 72³⁴

Thus a picture is emerging of a shallow, riverine, basin, the floor of which, at least on its western margin, lay about 2 feet (0.61 m) below the level of spring tides. It is almost certain that the dense silt, or mud, which was encountered in the vicinity of the Maison Dieu, is riverine; its surface lies well above the level of even exceptionally high tides and it contains nothing in its upper levels to indicate that it is marine in origin. It may have been deposited at a time when the haven had become choked and unusable. However, it is significant that only 1st to 2nd century pottery was recovered from the dense silt and that, on the Post Office Site, the sherds were not at all worn (139). This may indicate that silt was allowed to accumulate some short time after, if not during, the second half of the 2nd century, at a time when

the harbour seems to have been most in use. It is conceivable that the dense silt is the product of a deliberate de-silting programme. It has always been a problem to keep the harbour at Dover free of silt and shingle and it is possible that a barrage or pound, cataracta, was constructed to hold back the waters of the Dour. The area of relatively still water upstream of a cataract would have acted as a settling tank from which silt-free water could have been discharged into the harbour through sluice gates (140). This discharge would serve to keep the water in the harbour moving, and ensure that any silt present remained in suspension.

The evidence to explain the formation and use of this presumed inner basin is not yet available. The answer lies hidden beneath modern Dover in the area North of Dieu Stone Lane.

Roads in the vicinity of the Inner Basin (Fig.71-2)

Rigold has suggested that the road from Richborough may have crossed the inner basin on a causeway following the line of Park Avenue towards a promontory in the area of Pencester Road (141). However, the road from Richborough probably crossed the Dour much further upstream, and followed the line of Frith Road and Bridge Street. This road crossed Watling Street on or near the present intersection of Bridge Street and High Street and continued westward, over Stepping Down, towards Lympne (142).

The Lighthouses - The Eastern Pharos

The eastern Pharos stands within the curtain wall of Dover Castle on Castle Hill (143). It owes its survival to the fact that it has been used for a variety of purposes: it has served as a church tower, a fortification, a belfry and as a store-house (144). It has, however, undergone much modification; the external walls have been re-faced, the windows blocked-up and upper Roman storeys demolished.

71

82-3

86

The present tower survives to a height of 62 feet (18.91 m) of which 43 feet (13.11 m) is Roman work (145). The structure is 13.9 feet (4.27 m) square internally. (Fig. 82-4. Externally, it is octagonal in plan, each face being approximately 15 feet (4.57 m) long (146). While the interior walls are vertical, the exterior faces now diminish upwards in a uniform batter. Originally, these exterior faces were recessed in stages in a form of stepped-construction (Fig. 85), each step being horizontal and about 1 foot (0.3 m) in 88 depth (147). The walls are 12 feet (3.66 m) thick at the base of the tower diminishing by offsets to 7 feet (2.13 m) at the top of the Roman work. If the outline of the walls is continued upwards the original height of the structure may have been about 80 feet (24.4 m) with a 3.75 feet (1.14 m) thick wall around the top stage. The core of the walling, of tufa, limestone and flint bonded with white lime mortar, was faced in ashlar with green sandstone and tufa held by "pink brick-dust mortar" (148). The "green sandstone" or greensand is similar to that found in the Hythe Beds of Kentish ragstone which outcrop in a belt from Sevenoaks, through Maidstone, to Hythe and Folkestone. This stone need not necessarily have been shipped from Maidstone as a more convenient supply was available in the Folkestone area (149).

The ashlar masonry of the Tower was levelled at regular intervals of seven courses with "double (rarely single or triple) courses of brick" of Fabric 2 (150) which, where visible, appear to run right through the wall (151). 'Bricks' were also used in the arches of the doorway and windows. None of these bricks or tiles have been found to bear the stamp of the Classis Britannica and may, therefore, have been manufactured at a time before that practice was introduced, the late 1st-early 2nd centuries, perhaps. The few CL BR tiles which have been found near the tower and within the fabric of the adjacent church of

St. Mary-in-Castro may have been "robbed" from the debris of the 2nd century fort (152). The extant part of the Roman work comprises four storeys each 7.5-8.0 feet (2.28-2.44 m) high, except for the ground floor which seems to have been 17.75 feet (5.4 m) from floor to ceiling. If the original height of the tower was about 80 feet (24.4 m) this would allow for eight storeys altogether. The timber floors of each storey were carried on two main baulks, each almost 1 foot (0.3 m) in square section; these had been set into sockets in the North and South Walls (153). Other sockets in the North-East and South-East corners may have been intended to take the supports of a staircase.

Entry to the ground floor was gained through a doorway 4 feet (1.22 m) wide and 9.5 feet (2.9 m) high set into the South wall; this was arched with tufa voussoirs alternating with pairs of tiles. Opposite this doorway, in the North interior face, was an arched recess, 11 feet (3.35 m) high, with a small, arched, window above; its function is uncertain but it may have had something to do with the stairway. While it is possible that each storey, above the ground floor, may have been provided with three or four arched windows, this need not necessarily have been the case :-

"With the exception of the south wall of the third storey, they retain in each wall the remains of an original arched recess, from 6 to $6\frac{1}{2}$ feet high and from 8 to 6 feet in depth - the depth diminishing from storey to storey in consonance with the receding stages of the tower. The removal of much of the outer masonry of the tower has made it difficult or impossible to say how many of these recesses originally contained windows. It is possible, for example, that the relatively wide openings of the fourth storey were never more than blind recesses, intended merely to enlarge the capacity of the room. On the other hand, some at least were pierced to the outer air. The only recess which is still substantially complete is that in the east wall of the third storey. Here the outer end of the recess is almost filled by a masonry screen about 2 feet thick and of one build with the main structure. In the upper part of this screen is a small opening (now blocked), 2 feet high and 1 foot wide - a

spy-hole at a convenient height for a watcher standing in the recess. Whether other windows were of more ample dimensions we cannot now tell; there were obvious advantages in restricting their size in this windswept tower. In the middle ages and again in the nineteenth century the tattered remains of them were largely built up, and so they remained until partially uncovered in modern times." (154).

The hill on which this lighthouse was built rises here to 380 feet (115.4 m) above O.D. Thus, the tower would have been visible for a distance of a little over 26 miles (ca 42 km) from sea-level: the distance to Grisnez is 21 miles (33.8 km) while that to Boulogne is 29 miles (46.67 km). Moreover, sea-fogs in the Dover area frequently cling to the lower levels and leave the heights visible above a bank of mist; the functioning of the lighthouse would, therefore, remain unaffected in such conditions. By day the tower itself would have served as a land-mark while by night a beacon would have been used to guide shipping (155). Fuel for the beacon may have been taken up to the top of the tower by way of an internal stairway or else hoisted up the outside by a crane (156). 88-9

This Eastern Pharos at Dover does not apparently contain any re-used material and this is indicative of a relatively early date, and none of the tiles and/or bricks which were incorporated into its fabric, have as yet been found to bear the stamp of the Classis Britannica (157). Wheeler tentatively associated the pharos with the activities of the British Fleet (and the "mercantile marine") and this is now substantiated by the discovery of the Classis Britannica Fort. Therefore, it is almost certain that this pharos was built in the late 1st-early 2nd centuries A.D.

The Western Pharos

A second pharos, known as the Bredenstone, was built $\frac{3}{4}$ of a mile (1.2 km) West of the Castle Hill pharos, on the Western Heights (158). 72²,71,87

Leland, Lambarde and Camden all mention this western pharos and ignore the other. Leland describes it thus :-

"On the toppe of the hye clive between the towne and the peere remayneth yet, about a flyte shot up ynto the land from the very brymme of the se clyffe, a ruine of a towr, the which hath bene as a pharos or a mark to shyppes on the se" (159).

This tower was still prominent above the Dover sky-line ca. 1690 (160) but had, by 1760, been reduced to a "formless chunk of masonry" (161); it was finally buried, in 1805-6, under debris thrown up in the course of the construction of fortifications. There it was to remain until 1861 when it was re-discovered during excavations for barrack-blocks.

Some 11-12 feet (3.35-3.66 m) below ground level, the surface of a platform of "solid masonry" was encountered. This platform was about 1.25 feet (37.6 cm) thick and was composed of very hard reddish concrete, flint and Kentish ragstone, "with tiles placed in it longitudinally" (162). There seems to have been one or more layers of the tiles, possibly the remains of a bonding-course (163). The tiles varied in thickness, in pattern and in form. The "platform", some 30 feet (9.1 m) in total width, appeared to take the form of a hexagon, one face of which was about 12-14 feet (3.66-4.27 m) in width. This in turn lay on "a pavement of flint formation" of about the same thickness, which extended about 6 feet (1.83 m) beyond it (164).

Unlike the Eastern pharos, Classis-Britannica-stamped tiles of Fabric 2 and some re-used materials had been incorporated within its fabric (165). It would be surprising to find such re-used material in an early 2nd century context, as there would have been little demolition material available in Dover at that time. However, such debris was to hand, in great quantities in the third quarter of the 3rd century, when the Classis Britannica fort was demolished, to make way for the Saxon Shore fort. If, therefore, the tiles are primary to the structure, and were not introduced during repair work, it is to this period that the Western Pharos may tentatively be assigned. That the tower was a

lighthouse is evident from its commanding position on the Western Heights. The edge of the 'platform' is still visible in one of the casemates of the now redundant Drop Redoubt and two pieces of broken masonry were also placed on the surface of the redoubt, immediately above it (166).

It has been suggested that the two lighthouses were part of a double-system of signal lights (167). There is no evidence to show whether or not the Eastern Pharos was in use in the 3rd century and, although such a possibility cannot be ruled out, it is unlikely that both pharoi were in use at the same time; the lighthouses at La Coruña, Leptis Magna, and Boulogne were all, apparently, isolated structures (168).

The Saxon Shore Fort

In the second half of the 3rd century, perhaps ca A.D.275, a new fort was built, referred to in the Notitia as 'Dubris' under the Count of the Saxon Shore (169). Its S.W. corner overlapped the decayed Classis Britannica fort by ca 45 m and its West wall cut through the "Painted House". About 500 feet (152 m) of its defensive walling has been traced, comprising ca 120 feet (36.6 m) of the South Wall and 300 feet (91 m) of the West wall (170). Parts of the West wall had been almost totally robbed out, except for the foundation trench, but other sections showed that the wall was 8 feet (2.42 m) thick; it had been built of squared tufa and chalk blocks which had been set in hard white mortar. To the West of the West wall lay a huge V-shaped ditch dug in later Roman times and silted up by late Saxon; it was some 40 feet (12.2 m) wide, and may have been one of a pair. The S.W. corner of the fort was located and it was found that the S. & W. walls met at an angle of ca 100°. The fort is not, therefore, rectangular, but probably trapezoidal in plan; this fits neatly into

72

73

the typological sequence of the Saxon Shore forts (171).

The remains of four semicircular bastions have been excavated, one of which was integral with the wall while three were secondary to it (172).

If the line of the excavated sections of the S. wall is projected eastward, it coincides exactly with the alignment of two sections of wall seen in Market Lane and Gaol Lane in the early part of ^{the} 20th century (173). 72¹⁵⁶ The core and the North face of this wall was 6-7 feet (1.83-2.13 m) thick; the South face was missing, presumably robbed out as there was an intrusion between the core and the bank to the South. Livett states that the South face had been built against Roman debris which contained a considerable quantity of sherds of samian and other Roman wares, Classis Britannica 'bricks' and patches of charcoal. This 'bank' sloped down from its top, about 1 foot (0.30 m) below ground level, 'till it thinned out about 23 feet (7.01 m) from the foot of the wall. This "bank" was overlain by "fine blown sand". (174). A coin of Philip (A.D. 244-249) was found amongst this debris.

Rigold interpreted these remains as being part of late Roman sea defences, embankments of a reconstituted western inlet. On the contrary, it is now apparent that this is debris from the demolition of earlier buildings which was used to prepare the lower ground for the construction of the walls of the Saxon Shore Fort. Other demolition debris, often sealed with 'blown sand', has been found over a wide area to the North of Queen Street and the spread of this material should indicate the approximate area of the late fort (Fig. 72). 72¹⁹ Some 66 feet (20 m) North of these features, "a layer of black peaty soil, with Roman bricks, (including a CL.BR. tile) still sharp and unworn" was found to overlies waterworn chalk, Roman tile and potsherds, all consolidated in a layer of sandy silt (175).

In 1908, a massive 12 feet (3.66 m) thick wall was found in Church Street, close to the N.E. corner of the market-place. It too rested on the natural surface. To the S. side, only modern-made ground was observed, but to the North there was an extensive scatter of Roman debris, "many cartloads of flints, squared tufa, green sandstone, squared chalk, Roman concrete, ... wall plaster ... much Roman pottery, and tiles (both roofing and other)" of which two bore CL.BR. stamps. The layer of debris extended ca 50 yards (45.7 m) N.W. and then thinned out (176). 72^{10,26}

During the Stembrook excavations in 1955-6, a thin spread of debris of Roman or immediately post-Roman date was found to the East of the quay and, "thinly", over and around the jetty. The debris was thought to post-date these structures but no great emphasis can be placed on such evidence, gleaned as it was during building operations (177). 72⁸⁻⁹

Roman pottery including samian ware of Hadrianic and Antonine periods was found in 1914 and ca 1950 at 4-6, Market Square and 9, Cannon Street but there is no mention of any building debris having been found. It was suggested that the sherds were derived from early occupation levels and that they were not associated with the debris observed in Church Street in 1908 (178). 72^{17&18}

More Roman debris was found at 31914149 and 31924148 :- "much mortar, Roman potsherds and rubbish and ... flint boulders in white mortar" (179). These could have been the remains of a floor and need not necessarily be associated with the spread of demolition material referred to above. 72^{24&25}

Finally evidence for a 'thorough demolition' was found during building work on the site N. of St. Martin le Grande in 1950 and 1956 (180). 72²¹

It is clear that, prior to the building of the walls of the Saxon Shore Fort there was a thorough clearance of the site. Building debris which includes CL.BR. tiles and other 2nd century material has been found in the area from Queen Street northwards as far as the passage South of St. Mary's Church, a distance of about 400 feet (122 m). This debris seems to have been dumped in such a way as to level up the ground surface. In 1908, at the southern end of Church Street the rubble tapered out to the North-West; the natural slope here is running downbank to the S.E. (181).

Rigold has claimed that the supposed marine transgression in the 3rd century opened up the harbour again. Not only is there no evidence for a sudden fluctuation in sea-level at any time during the Roman period, but it now appears that at Dover there was a widespread dumping of demolition material in the general area of the western inlet. It is quite possible that it had been choked with shingle or sand and that when the Saxon Shore Fort was constructed it was built over this part of the old harbour and closer to such open water as there was in the late 3rd century.

In the 5th century, the defensive ditch was filled in with about 4 feet (1.22 m) of dumped material. The fort was "occupied" into the Saxon Period: parts of it were still visible in the mid-7th century for, before A.D.640, King Eadbald of Kent founded a monastery "in the castle of Dover". There is no evidence of a Saxon castle on the Heights, so this reference should apply to the late shore fort. (182).

Folkestone

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The remains of a villa have been found above the cliffs in East Wear Bay, Folkestone (183). The site lies on a plateau, about 130 feet (39.6 m) above O.D.; the ground slopes gently towards the edge of the cliff over which parts of the villa have fallen. Shelter from the prevailing winds is provided by chalk cliffs to the North and North-West and by the rising ground of Copt Point to the South-West; the site is, however, exposed to North-East winds. A hill, 100 yards (91 m) to the North of the plateau, commands extensive views of the Channel, from the heights above Dover round to the hill above Lymne. The villa itself looks to the South-East, towards the heights above Boulogne (184).

Erosion has been severe around Copt Point and there have been many major landslips along the 3-mile (4.8 km) stretch of cliffs, known as the Warren, in East Wear Bay (185). Winbolt speculated that the terrain descended gently to a shoreline about 0.5 mile (0.8 km) away in the Roman period and that Copt Point formerly extended eastwards so as to shelter a possible landing-place from the South-West winds, the site, Rigold suggested, of a pharos (186). Such speculation must be treated with some caution as the estimates of the rate of erosion on which Winbolt's theories are based may have been exaggerated (187). However, a tiny harbour did once exist to the West of Copt Point, at the mouth of the Foord Valley (188).

Winbolt's excavations on the site of the villa exposed the remains of two detached wings which flanked two sides of a courtyard. They had been built, apparently, in the 2nd century but had undergone a major reconstruction (189). In Phase 1 the walls were of tufa but when parts of the villa were later rebuilt, faced green sandstone (= Greensand) was used, resting on a foundation of water-worn stones

("of the same quality as the quarried stone") and gault clay (190). Seven tiles bearing the stamp of the Classis Britannica were also found in a 2nd century context; Winbolt noted that some of them were complete and had not, apparently, been re-used but their orange-red fabric may, Peacock has suggested, indicate that they had been imported from a Classis structure (191). If these tiles were not re-used when they were incorporated into the fabric of the villa, it would seem to imply that men of the Classis Britannica took part in its construction and that it may then have been owned by a commander of the fleet (192). The pottery and coins that have come from the site indicate that it was occupied from the early 2nd to the first half of the 4th century, at least (193).

The cliff on which the villa rests is composed of greensand in gault, above dark greensand (h^3), but from Copt Point westward, as far as Hythe, the outcrop is of the Lower Greensand (h^2) (194). Tufa, from the Upper Greensand, was dug in large quantities in the Middle Ages and was also used in the fabric of the Phase 1 villa. Winbolt refers to an unconfirmed report that the material was to be found in outcrops in the Alkham and Elham Valleys, to the North-West and North-East of the villa, respectively (195). Lower Greensand, the building-material used when the villa was reconstructed, is also to be found in the fort-walls at Lympne, Richborough and Reculver and, in addition to tufa, in the Pharos at Dover (196). The stone used in the walls at Lympne may have been quarried in the vicinity of Hythe but the other sites could not draw on a similar local supply. All these places could have been supplied by sea and although it is commonly thought that quarries at Maidstone are the most likely source of the material, it is possible that the Lower Greensand was also quarried in the area between Folkestone and Hythe (197). "Folkestone stone" is mentioned in a valuation of the manor of Folkestone in A.D.1263 when certain quarries were worth 20 shillings. At the time of Elizabeth, a hundred

labourers were engaged in hewing stone for harbour works at Dover and under Cromwell large quantities of it were shipped to Dunkerque for the harbour there (198). It has been suggested that this stone was at some time quarried from beds, which are now submerged, at some point South of Folkestone (199). There must be some doubt as to which stone these reports relate, the Lower or the Upper Greensand, and they must be treated with caution.

Little is known about the organization of quarries in Roman Britain but it is likely that those from which the stone used at Dover, Richborough, Reculver and Lympne was cut were under governmental supervision, as the stone was for use in military projects (200). It appears that the Classis Britannica controlled the iron-manufacturing sites of the eastern Weald from a base at Dover and it is conceivable, therefore, that its commanders exercised similar control over an equally essential commodity, building stone, which may account for the presence of the Classis Britannica tiles at Folkestone. Around the Mediterranean, a number of ancient quarries have been found, the floors of which are either submerged in shallow water or are adjacent to the shore (201). At H. Theodori, in Crete, Blackman has found traces of quarrying near the shore and a small rock-cut tank, some 10 m (32.8 feet) wide and at least 12 m (39.4 feet) long. He suggests that this could have been a dock alongside which quarried material may have been loaded into small barges or lighters (202).

There are grounds, therefore, for surmising that there may have been at least a small port at Folkestone, engaged in the transport of building stone. Perhaps, both tufa and greensand were won here, from quarries a little way inland or even, as at Tipasa and H. Theodori, on the shore itself. That these quarries should have been under the control of the Classis Britannica would neatly explain the presence

of stamped tiles in the villa and act as a corollary to what is known about the iron-manufacturing sites of the eastern Weald. This, however, can be no more than mere supposition as it is based on circumstantial evidence. All that is known, effectively, about Roman Folkestone is that in the fabric of a villa built here in the 2nd century and occupied into the 4th century, Classis Britannica-stamped tiles have been found; tufa and greensand were also used for the walls of the villa, which may have been quarried locally from sources yet to be located.

NOTES

1. Steers, J.A., "The coastline of England and Wales", 1964, pp.334-337; Hawkes, S.C., "The Physical Geography of Richborough", in Cunliffe, B.W. (ed.), "Fifth Report on the Excavations of the Roman Fort at Richborough, Kent", Reports of the Research Committee of the Society of Antiquaries of London, No.XXIII, 1968, pp.224-230; British Museum, Cotton MS., Aug. I.i.54 cf. William Borough, "A Chart of the South-East of England from London to Shoreham", A.D.1596, British Museum, Cotton MS., Aug. I.i.17 and Thomas Conway's printed chart of the waters off Reculver, third quarter of the 18th century, Admiralty, Hydrographic Department, 16 Qe.
2. Bede, *Historia Ecclesiastica*, I, xxv; Hardman and Stebbing, "Stonar and the Wantsum Channel" *Arch.Cant.* Vol.liv, 1941, ii, p.44.
3. Hawkes, *op.cit.*, 1968, pp.227, 229; Steers, *op.cit.*, p.337.
4. Philp, B., "The Roman Fort at Reculver", 1969, p.4ff; _____, *Arch.Cant.*, vol. lxxi, 1957, p.173; Clayton, P.A., *Arch.Cant.*, vol. lxxii, 1958, p.208; cf. White, D.A., "Litus Saxonicum", 1961, p.33 ff. The sacellum inscription may date from any time in the 3rd century, after the reign of Severus, rather than A.D.210 as previously thought; Mann, J.C., "The Reculver Inscription - a note", in Johnston, D.E. (ed.), "The Saxon Shore", C.B.A. Research Report No.18, 1977, p.15; Richmond, I.A., "A New Building Inscription from the Saxon-Shore Fort at Reculver, Kent", *Antiquaries Jnl.*, vol.XLI, 1961, pp.224-8.
5. Jessup, R.F., "Reculver", *Antiquity*, vol.X, 1936, p.188.
6. Philp, 1969, *ibid*; V.C.H. Kent, vol.III, 1932, p.20 and notes 21 & 22; Jessup, *op.cit.*, pp.188-190; Thompson, *Arch. Cant.*, vol.lxvi, 1953, pp.52-59.
7. For details of the 2nd century depot of the *Classis Britannica* at Dover, see p.178ff; White, D.A., *op.cit.*, 1961, p.33 ff; Philp, *op.cit.*, 1969, p.18; Cunliffe, *op.cit.*, 1968, p.255 ff; _____, "The Saxon Shore - some problems and misconceptions", (=1977a) in Johnston (ed.) *op.cit.*, 1977, p.5 ff; Cleere, H., "The *Classis Britannica*", *ibid*, pp.16-19; Johnson, S., "Late Roman Defences and the Limes", *ibid*, p.68 ff.
8. Frere, "Britannia", 1967, p.184; The Cohors I Baetasiorum is listed in the *Notitia Dignitatum* as being garrisoned at Regulbium under the command of the Comes Litoris Saxonici (*Notitia Dignitatum*, Occ., xxviii).
9. Peacock, D.P.S., (=1977a), "Bricks and Tiles of the *Classis Britannica*: Petrology and Origin", *Britannia*, vol.viii, 1977, p.238 ff; Peacock has made allowance for the fact that these "Fabric 2" tiles may have been manufactured from a minor clay, local to Reculver. *J.R.S.*, vol. lix, 1969, p.242, no.37; Philp, *op.cit.*, 1969, p.14.

10. Philp, B., "Discoveries at Reculver, 1955-7", *Archaeologia Cantiana*, vol. lxxii, 1958, pp.160-166, esp. p.165 ff; _____, op.cit., 1969, pp.7, 15.
11. Philp, op.cit., 1969, pp.5-6.
12. Margary, I.D., "Roman Roads in Britain", Ed.III, 1973, p.41, Route 110; Philp, B., op.cit., 1958, p.165; _____, op.cit., 1969, pp.13-4.
Britannia, VII, 1976, p.376; three ditches, associated with metalling, had been re-cut and contained 3rd-4th century sherds.
13. J.R.S., vol. lix, 1969, p.233; Philp, op.cit., 1969, p.18.
14. Philp, op.cit., 1958, p.165 ff.
15. Information from B. Philp.
Evans, J., "Archaeological Horizons in the North Kent Marshes", *Arch. Cant.*, vol. lxvi, 1953, pp.122, 129 ff; Francis, A.G., *Essex Naturalist*, vol.xxiii, 1932, p.151 ff; Jenkins, F., "The Post-Roman Submergence of the land surface at Canterbury, Kent", *Archaeological News Letter*, v.1954, p.34 ff; _____, *Arch. Cant.*, vol. lxiv, 1951, p.68 ff; Steers, op.cit., p.337.
16. Aerial Photographs : F63 543/RAF/4304/ - 0537 and 0540 (after D.O.E.);
17. Information from A. Clarke, Archaeology Division, Ordnance Survey.
18. Margary, op.cit., 1973, route II, pp.40 ff.
19. Since 1945, the gravel workings have been exploited over an area of about 200 acres (80 Ha) along the North bank of the River Stour, covering a total length of 1.4 miles (2.25 km) downstream of the bridge which crosses that river at Fordwich. The find-spot lies some 0.4 miles (700 m) East of this bridge amid the gravel workings and an estimated quarter of a mile (400 m) North of the present course of the river. The area of the finds has suffered total destruction in the course of the industrial operations and has been back-filled by a silting process connected with the extraction of the gravel. This area is now very wet ground, covered with marsh vegetation and young trees.
20. The beam was left at the works, untreated, and has since disintegrated. No details of dimensions or of any shaping or jointing were published.
It is regrettable also that no details have been furnished in the report of the rescue excavations of the depth at which the stakes were found and their relationship with the estuarine deposits. Jenkins, F., (1949a) *Archaeologia Cantiana*, 62, 1949, pp.145-6; (1949b), *Journal of Roman Studies*, 39, 1949, pp.111-112; (1949c) *Archaeological News Letter*, i, no.12, April 1949, p.3.

21. Lowther, A.W.G., in Jenkins, op.cit., 1949a, compares them with timber found at Little Plaxton, Hampshire, in a 3rd century A.D. context; Jenkins, op.cit., 1949, b & c.
22. A rubbish pit contained 3rd century samian. Finds from the excavations included also two fibulae, one of which has been assigned to the 3rd century, together with a coin of Antoninus Pius, ca A.D.140. No occupation levels were recognised but lengths of brick footings were located and an open drain of flanged tiles set in a trench. Jenkins, op.cit., 1949, a & c.
23. Burials of the Roman and pre-Roman Iron Age have been found over an area of 30 acres (12 Ha) in the 18th and 19th centuries on the South side of the Canterbury to Ramsgate road, at Somer's Hill (or Staines Hill), three miles East of Canterbury, on the estates of Whatmer Hall. These include a lead coffin found in 1755, a coffin of slightly-baked clay containing some bones and three cinerary urns, two of which were associated with samian of Saturninus and Aventinus and a 1st century A.D. fibula. For accounts see :- V.C.H., Kent, 1932, p.174 with ref. to Payne, G., *Archaeologia Cantiana*, 15, 1883, p.318 (from mss. of J. Brent); *Proc.Soc.Ant. London*, s2, vi, 1874, p.152. (from mss. of J. Brent); Hasted, *History of Kent*, III, 1790, p.615.
24. The river is now only navigable up to Fordwich and it is not known if it was navigable above this point in Roman times.
25. *Archaeologia Cantiana*, 74, 1960, p.57.
26. Solinus, *Collectanea Rerum Memorabilium*, 22 (ed.Mommsen, 1895); Bede, *Historia Ecclesiastica*, I, XXV, (ed. Plummer 1896); Hawkes, op.cit., 1968, pp.225-231.
27. Cunliffe, op.cit., 1968, pp.37-40; Hawkes, *ibid*, p.231; Margary, op.cit., 1973, Route 10, pp.36-9; Winbolt, S.E., "Roman Folkestone", 1925, pp.150-155; White, op.cit., 1961, p.36.
28. Hawkes, op.cit., 1968, pp.227-9; Steers, op.cit., 1964, pp.334-7.
29. Winbolt, op.cit., pp.152-3; Hawkes, *op.cit.*, 1968, p.231.
30. Hawkes, op.cit., 1968, p.226.
31. Boys, W., "Collection for an History of Sandwich", 1792 (1892), p.868.
32. *ibid*.
33. Bushe-Fox, J.P., "Fourth Report on the Excavations of the Roman Fort at Richborough, Kent", *Reports of the Research Committee of the Society of Antiquaries of London*, No.XVI, 1949, pp.11-18, 56, fig. 4 & 5; Cunliffe, op.cit., 1968, pp.232-4.

34. Bushe-Fox, op.cit., 1949, pp.15, 26-34, 44-6, 56, Fig.9; _____, "Third Report on the Excavations of the Roman Fort at Richborough, Kent", Reports of the Research Committee of the Society of Antiquaries of London, No.X, 1932, p.17; Cunliffe, op.cit., 1968, pp.6-8, 10-11, 234-6, Fig.2-4.
35. Cunliffe, op.cit., 1968, p.11, 18-19, 236-7, Fig.5, 27, 28.
36. Smith, C.R., "The Antiquities of Richborough, Reculver and Lymne", 1850, p.44 (plan); Dowker, G., "Excavations at Richborough in 1887", *Archaeologia Cantiana*, vol.XVIII, 1889, pp.6-14.
37. Bushe-Fox, op.cit., 1949, pp.33, 57-8; Cunliffe, op.cit., 1968, pp.11, 18-19, 237-8; Branigan, K., "Vespasian and the South-West", *Proc. Dorset. Nat. Hist. & Arch. Soc.*, vol.95, 1973, (1974), p.52; Webster, G., "The Military Situation in Britain between A.D.43 and 71", *Britannia*, I, 1970, pp.181-3. Tacitus' reference to "Portus Trucculensis" probably applied to a harbour high up on the North-West coast of Scotland, and not to the base at Richborough. Tacitus, "De Vita Agricola", (edited by Ogilvie, R.M., & Richmond, I.A., 1967), XXXVIII, 4; Reed, N., "The Fifth Year of Agricola's Campaigns", *Britannia*, II, 1971, pp.143-8.
38. Cunliffe, op.cit., 1968, p.258; Peacock, op.cit., 1977a, pp.245-6; Cleere, op.cit., 1977, p.17. Microscopic examination of material derived from the walls of the Shore Fort, and superficially similar to the tiles of Fabric 2 found at Dover, proved that they were dissimilar; Peacock, *ibid.*
39. Lucan, "Pharsalia", VI, 67 (Rutupina Litora); Juvenal, Sat.IV, 141. (Rutupino); Ausonius, "Parentalia", (Rutupina). Ptolemy, *Geog.*, II, iii, 12; Antonine Itinerary, 472-6 (Ad Portum Ritupis); Ammianus Marcellinus, XX, i, 3; XXVII, 8, 6, (Lupicinus landed here with his fleet, temp. Julian, and also Theodosius, later in the 4th century); *Notitia Dignitatum*, Occ. XXVIII, 9; Peutinger Table; Orosius *Hist. contra pag.*, I, ii, 16; Bede, H.E., I. i. Philp has suggested, alternatively, that Dover may have been the "Gateway to Roman Britain" from the 2nd century onwards, apparently ignoring the evidence of the Monument and the implications of the literary sources; Philp, B., "Dover", in Johnston, D.E. (ed.), "The Saxon Shore", C.B.A. Research Report No.18, 1977, p.21.
40. The Monument:- Cunliffe, op.cit., 1968, pp.40-73. The inscription on the Arch of Trajan, on the harbour mole at Ancona, records that it was intended as a symbol of the accessus Italiae; similar monuments had been previously erected at the two main entrances into Egypt, in honour of Claudius. The Third Century Earth Fort:- Cunliffe, *ibid.*, pp.22-27, 244-5, Fig.32; Bushe-Fox, op.cit., 1949, pp.60-6; 1932, pp.22-25; _____, "Second Report on the Excavation of the Roman Fort at Richborough, Kent". Reports of the Research Committee of the Society of Antiquaries of London, No.VII, 1928, pp.18-22.

41. Cunliffe, op.cit., 1968, pp.239-41, Fig.29; Bushe-Fox, op.cit., pp.25, 37-8, 51-3; 1928, pp.13-15.
42. Cunliffe, op.cit., 1968, pp.241-243; Bushe-Fox, op.cit., 1949, p.92; 1928, pp.15-18; _____, "First Report on the Excavation of the Roman Fort at Richborough, Kent". Reports of the Research Committee of the Society of Antiquaries of London, No.VI, 1926, pp.14-17.
43. Johnson, J.S., "The Date of the Construction of the Saxon Shore Fort at Richborough", *Britannia*, I, 1970, pp.240-8; Bushe-Fox, op.cit., 1949, p.65; Cunliffe, op.cit., pp.26-7, 245 ff. Johnson, following Bushe-Fox, suggests that work on the fort was begun under Probus ca. A.D.277, and completed ca. A.D.285, while Cunliffe assigns the construction work to Carausius.
44. Johnson, op.cit., 1970, pp.242-3, emphasises that Allectus did not try to hold the fort at Portchester but made to intercept the fleet of Asclepiodotus off the Isle of Wight. *Notitia Dignitatum*, Occ. xxviii, 9.
45. Williams, J.H., "Roman Building-Materials in South-East England", *Britannia*, II, 1971, pp.172, 174-5; Cunliffe, op.cit., 1968, pp.29, 245 ff, Fig.33. Much re-used material was incorporated in the fabric of the fort wall and gates.
46. Cunliffe, op.cit., 1968, p.246, ff; Fig.33; Bushe-Fox, op.cit., 1949, pp.66-75; 1932, pp.31-2; 1926, pp.29-34.
47. Cunliffe, op.cit., 1968, p.247; _____, 1977(a), p.6b.
48. Fulford, M., "Pottery and Britain's Foreign Trade in the Later Roman Period", in Peacock, D.P.S. (ed.), "Pottery and Early Commerce", 1977, (=1977b), pp.39-45, 47-50, 57.
49. Cunliffe, op.cit., 1977a, p.6b, after Reece, R., "Summary of the Roman coins from Richborough", in Cunliffe, op.cit., 1968, pp.200-217.
50. Cunliffe, op.cit., 1968, pp.249-51; Johnson, S., "The Roman Forts of the Saxon Shore!" 1976, pp.50-1; Brown, P.D.C., "The Church at Richborough", *Britannia*, II, 1971, p.225-31; *Notitia Dignitatum*, Occ, XXVIII.
51. Antonine Itinerary, 473. 1 - 473. 5.
cf. Rivet, A.L.F., "The British Section of the Antonine Itinerary", *Britannia*, I, 1970, pp.34-82.
52. Steers, op.cit., 1964, pp.332-3; L. and P., Henry VIII, vi.1472.
53. Steers, op.cit., p.333, cf. pp.318-331 (eastern wave-fronts). For a discussion on the course of the R. Dour and the inner haven, see Rigold, S.E., "The Roman Haven of Dover", *Archaeological Jnl.*, vol. 126, 1970, pp.81, 89 and Fig. 1.
54. Steers, op.cit., p.333.

55. Leland, "Itinerary", ed. L. Toulmin Smith, 1909, viii, pp.49-50. The original dates from 1535-1543.
56. Amos, E.G.J. and Wheeler, R.E.M., "The Saxon-Shore Fortress at Dover", *Archaeological Jnl.*, vol.86, 1929, pp.47-58.
57. Rigold, *op.cit.*, pp.78-100.
58. Philp, B., *Current Archaeology*, 23 (vol.II, No.12) Nov. 1970, p.336. _____, *Britannia*, II, 1971, p.286.
59. Philp, B., *Kent Archaeological Review*, No.27, Spring 1972, p.211. _____, Department of the Environment, "Archaeological Excavations - 1971", 1972, p.20.
60. Philp, B., *C.A.*, 38 (Vol.IV No.3.) May 1973, pp.86-88; *C.A.*, 25 (Vol.III no.2.) March, 1971, pp.52-55.
61. Philp, B., *op.cit.*, 1977, pp.20-1; *C.A.*, 28, (Vol.III, no.5.) Sept.1971, p.133; *K.A.R.* No.27, Spring 1972, p.211; *A.Ex.*, 1974 (1975) p.48; *Britannia* VI, 1975, p.283; VII, 1976, p.376.
62. _____, *C.A.*, 28 (Vol.III no.5.) Sept. 1971, p.133; *Britannia*, III, 1972, p.351; II, 1971, p.286; *A.Ex.*, 1971 (1972), p.20.
63. _____, *op.cit.*, 1977, p.20; *A.Ex.* 1971 (1972), p.20; *Britannia*, II, 1971, p.286. *C.A.*, 25 (Vol.III No.2.) March 1971, pp.52-55; Peacock, *op.cit.*, 1977a, pp.238-242.
64. _____, *Britannia*, II, 1971, p.286; *C.A.*, 25 (Vol.III No.2.) March, 1971, p.52-55, where some 35 m. (115 feet) of the North Wall of the fort is illustrated. For East wall and N.E. corner see, *A.Ex.*, 1974 (1975) p.48; *Britannia*, VI, 1975, p.283.
65. _____, *Britannia*, II, 1971, p.286; *C.A.*, 25 (Vol.III No.2.) March 1971, pp.52-55. 2nd century pits and minor structures were found outside this North Gate, *A.Ex.*, 1972 (1973) p.57; *Britannia*, IV, 1973, p.322. On the Dadorne House Site, the porta praetoria was located beneath the Saxon-Shore fort wall and bastion; the long axis of the Classis Britannica fort is therefore at right angles to the River Dour, *A.Ex.*, 1974 (1975), p.48; *Britannia*, VI, 1975, p.283.
66. _____, *C.A.*, 38, (Vol.IV No.3.) May, 1973, pp.86-88; *A.Ex.*, 1971 (1972), p.20; *Britannia*, III, 1972, p.351. The outlet had been covered by sand dunes which had built up in the post-Roman period.
67. _____, *Britannia*, II, 1971, p.286; *C.A.*, 25 (Vol.III No.2.) March 1971, pp.52-55.
68. Philp, B., *A.Ex.*, 1974 (1975), p.48; *Britannia*, VI, 1975, p.283. (East Gate). *C.A.*, 25 (Vol.III No.2.) March 1971, pp.52-55; *C.A.*, 38 (Vol.IV No.3.) May 1973, pp.86-88. *A.Ex.*, 1971 (1972), p.20; 1972 (1973), p.57. *Britannia*, III, 1972, p.351; IV, 1973, p.322; VII, 1976, p.376; VIII, 1977, p.424; *K.A.R.*, No.29, Autumn

- 1972, p.259-264. A building, noted in the late 18th and 19th centuries, beneath St. Mary's Church (31914152), incorporated Classis Britannica tiles in its fabric : this structure may have been associated with the 'baths' described by Canon Puckle in 1893, Arch. Cantiana, XX, 1893, p.128 ff. See also Amos & Wheeler, op.cit., p.48, no.2 and Rigold, op.cit., p.86, nos. 22 & 23.
69. Rigold, op.cit., pp.85-86, nos. 20, 21 & 22.
70. Philp, B., op.cit., 1977, p.21; Cleere, op.cit., 1977, p.18; C.A., 38 (Vol.IV No.3.) May 1973, pp.86-88 and cf. Wheeler, R.E.M., K.A.R., No.29, Autumn 1972, p.259 ff. For finds of Classis Britannica tiles on other sites see, Brodribb, G. "Stamped tiles of the Classis Britannica", S.A.C., 107, 1969, pp.102-125. One tile of Fabric 1, produced at or near Boulogne, may have arrived on site as ballast or building material; Amos & Wheeler, op.cit., 1929, pl.IIIA; Peacock, op.cit., 1977a, p.236.
71. For a discussion and description of the installations, see below, p.7 ff. and cf. the military harbour and slipways at Carthage, referred to in Yorke, R.A., and Little, J.H., "Offshore survey at Carthage, Tunisia, 1973", International Journal of Nautical Archaeology and Underwater Exploration, Vol.4 no.1, 1975, pp.85-101.
72. See also, remarks on Reculver, p. 168 ff.
Philp, op.cit., 1977, p.20; C.A., 25, (Vol.III No.2.) March 1971, pp.52-55; 38 (Vol.IV No.3.) May 1973, pp.86-88. For evidence of structures with a t.p.q. in the 3rd century outside the North gate of the Classis Britannica fort, see Britannia VII, 1976, p.376.
73. Rigold, op.cit., pp.80-82, Figure 1.
74. ibid.
75. Rigold, op.cit., p.83, no.6 at 32084148, and 32104154 "or further N.E.," with references.
76. Rigold, op.cit., p.81 & Fig.1. The Western Inlet, a maximum of 230 feet (70 m) long, East to West and 230 feet (70 m) across its mouth, lies beneath Market Square. The Eastern Inlet may have been longer at about 394 feet (120 m) but was much narrower (82.5 feet (25 m), maximum).
77. See above, note 52.
78. Flemming, N.C., Czartoryska, N.M.G. and Hunter, P.M., "Archaeological Evidence for Eustatic and Tectonic Components of Relative Sea Level Change in the South Aegean", in Blackman, D.J., (Ed.) "Marine Archaeology", Proceedings of the 23rd Symposium of the Colston Research Society - 1971 (1973), pp.1-66; Hawkins, A.B., "Sea Level Changes around South-West England", in Blackman, op.cit., pp.67-88; Blackman, D.J., "Evidence of sea level change in ancient harbours and coastal installations", in Blackman, op.cit., pp.115-139. and cf. Lewis, J.D., "Cosa - an early Roman Harbour", in Blackman (Ed.) op.cit., p.242 ff. See also, remarks on Brough-on-Humber, pp.479.

79. Rigold, op.cit., p.82, nos. 17-21.
80. Elsted, W.P. and Beldam, J., *Archaeological Jnl.*, vol.13, 1856, pp.101-2, (where Elsted states that the top of the framework was 24 feet (7.32 m) below ground level, or 4 feet (1.22 m) below O.D.); Knocker, E., "On the Antiquities of Dover, delivered before the Dover Museum and Philosophical Institution", Nov. 24th, 1857, pp.16-19; Amos and Wheeler, op.cit., p.52 ff. No.10; Rigold, op.cit., pp.90-92, App.A. and Fig.2.
81. Elsted reported that the framework extended on each side of the excavation into neighbouring property where its course could not be traced. Elsted, op.cit., p.102.
82. Amos and Wheeler, op.cit., p.52, no.10; Rigold, op.cit., p.90, App.A. but cf. Elsted, op.cit., p.102, who reported that the timber "walls" were 10-12 inches (ca. 0.3 m) thick and that the intervening space was 10.75 feet (3.27 m) wide - giving a total width of 11.5 feet (3.5 m).
83. Knocker, op.cit.; Amos and Wheeler, op.cit., p.52, no.10 (following Knocker's account); Rigold, op.cit., p.82, no.5, places it at 32084144.
84. V.C.H. Kent, 1932, p.46.
85. Canon Puckle, "Vestiges of Roman Dover", *Arch.Cant.*, XX, 1893, p.129. No information was given as to the exact locality in which these objects were found or their stratigraphical relationship to the "timbered quays" (i.e. the mole).
86. See note 83.
87. Rigold, op.cit., p.90.
88. *ibid.*
89. Rigold, op.cit., p.81.
90. _____, op.cit., pp.90-92, App.A., Fig.1.
91. Elsted, op.cit., p.102, states that the intervals between the transverse beams were 2 feet (0.61 m) wide. This distance is very close to the amount of the overlap from one tier to another (2.75 feet/0.84 m) and may be the result of confusing the measurements of the distances between the tie beams on each tier and those on the tier above.
92. Rigold discusses the exact nature of these trench joints. It is not certain whether or not the members were truly halved at the trench.
93. Figure .77., 'A' .. A half-depth joint is shown as an alternative - 'B'; cf. the simple one-level lap joint which seems to have been used in the jetty. See below p.193ff.
94. Elsted, op.cit., p.102; cf. Amos and Wheeler, op.cit., p.52, no.10.

95. Rigold, op.cit., p.82, no.4 and p.90.
96. cf. Dungeness in Steers, op.cit., p.318 ff.
97. Fig. 77 at "A". For a discussion of different types of breakwater see Lewis, J.D., op.cit., p.240 ff.
98. Fig. 77 at "B" cf. Frost, H., "Tyre", Int. Jnl. Naut, Arch., vol. 2 : 1, 1973, p.75 ff.
99. Rigold, op.cit., p.83 no.7.
Batcheller, "Picture of Dover", 8th Ed., 1862, p.51.
(not traced).
100. Rigold, op.cit., p.82, no.5; cf. Lewis, J.D., in Blackman (Ed.) op.cit., 1971, p.237 ff.
Batcheller, op.cit., supra.
101. cf. Lewis, J.D., in Blackman (Ed.) op.cit., 1971, pp.233-260, Section 8-9.
102. Poidebard, A. & Lauffray, J. "Sidon. Amenagements Antiques du Port de Saida", 1951, PL.II.
103. Rigold suggested that such a superstructure may have been open framing, or a facing in ashlar, laced with timber, which was filled with more shingle, op.cit., pp.90-92.
104. ibid, and observation on site, in Turkey.
105. McCann, A.M., "Cosa" - Int. Jnl. Naut, Arch., 1 : 2, 1972, p.200; Yorke, R.A., Little, J., & Davidson, D., "Locra", ibid, p.200-201; Testaguzza, O., "Portus : Illustrazione dei porti di Claudio e Traiano e della citta, di porti a Fiumicino" 1970; Frost, op.cit., 1973, p.75 ff; Yorke, R.A., and Davidson, D.P., "Roman Harbours of Algeria" 1968, p.11 - Cherhel, - under Trajan, the base for the Classis Syriaca and the Classis Alexandrina; Dallas, M.F. and Yorke, R.A., "Underwater surveys of North Africa, Jugoslavia and Italy". Underwater Association Report, 1968. For discontinuous piers used as breakwaters see Lewis op.cit., p.238.
106. Lezine, A., "Architecture romaine d'Afrique", 1962, p.143 ff. PL.XXI; Dallas, M.F., and Yorke, R.A., op.cit., "Thapsus", p.25 & Fig.4 ; this mole extended in a sweeping arc, often 100 m. wide, for a length of 1000 m (3,280 feet).
107. Rahtz, P.A., "Dover : Stembrook and St. Martin-le-Grand - 1956 Arch. Cant., LXXII, 1958, p.111 ff. Grid Reference : 31994146-9.
108. _____, op.cit., - Figure 1, Boxes 15 and 5, and figure 2, A and B, layer E.
109. One timber was subjected to laboratory examination; Rahtz, op.cit., App. D. Report on the timbers by J.F. Levy and L. Biek. It was about 3.5 feet (1 m) in length and had a sub-rectangular section with a maximum width of about 3.5 inches (9 cms.). All

the faces had been worked to some extent, in some places very carefully, to produce a chamfer. One end shows evidence of a "most probably modern" saw cut. (Fig. 8Q ~~A.B.C.D.~~) Across the middle of one side a wide shallow slot had been cut away. (Fig. 8Q ~~E.F.G.H.I.~~) On the same side as this slot were six "tunnels" and the remains of a truncated seventh ("E"). Each of these holes was $\frac{1}{2}$ inch (1.25 cms) in diameter and penetrated right through the thickness of the wood. Iron objects had been present in the holes : the wood had a remarkably high iron content of 4.5%. These iron objects had seemingly been kept in place by means of wedges or plugs of oak. It is highly unlikely that any of the iron was in the wood when it was placed in the position in which it was found. There must have been a short time when this timber was exposed to conditions other than those that prevailed on the site of the quay, conditions predominantly moist and aerobic, after which time the iron was removed. The timber was, therefore, not originally a pile; it may have been a re-used ship's timber (position unidentified) or the stock of an anchor (Mr. G.F. Campbell, Naval Architect to London County Council in Op.Cit.Supra.).

110. Rigold, op.cit., p.83, no.8.
111. Rahtz, op.cit., Fig.2, A and Fig.1 at A.
112. See remarks on the Jetty, below, p.193 ff.
All the timbers were of oak. From their state of preservation, all seem to have been subjected to waterlogged conditions for almost the entire period since they had been driven into the sand and gravel, when the quay was being erected. It was thought that they had hardly, if ever, been exposed to air. Rahtz, op.cit., Appendix D. by Levy and Biek.
113. Rahtz, op.cit., Fig.1. Box 5.
114. See remarks on the quays on the Custom House Site at London, p.139 and South of the fortress at Caerleon, p.307.
115. Rahtz, op.cit. - Fig.1.
In Hole 15 remains of an embankment were uncovered. See below.
116. Rigold, op.cit., p.83 suggested a potential length of 400-500 feet (122-152 m). On the other hand it is quite possible that the quay turned to the North-West somewhere near its northern observed extremity. (cf. 6m (18 feet) contour - Fig.72.)
117. Rahtz, op.cit., Fig.2. Sections A & B, Layer D.
The pottery was not securely stratified. Only obviously antique sherds were preserved by the workmen and none were recorded individually either by area or depth. Layer D was not clearly demarcated from Layer C; sherds from Layer C and the top of Layer D were generally dated to the late 1st and 2nd centuries A.D.; there was very little later pottery. Rahtz, op.cit., p.111 ff.
118. See remarks on the jetty, note 130; Rahtz, op.cit., p.117.

119. cf. pp.194-7.
120. Rahtz, op.cit., Fig. 2. Sections A. & B., Layer B.
121. See the description of the Saxon Shore Fort, below, p.202
122. Rahtz, op.cit., "St. Martins", p.117 ff, Figs.3-7, N.G.R. 31934143.
123. Rigold, op.cit., Fig. 1. and p.81.
124. Rahtz, op.cit., p.117 ff., Fig.3., Feature F.2.
125. cf. Rigold, op.cit., p.83, no.11.
126. Rahtz, op.cit., p.111 ff., Fig. 1, Feature B and Fig.2, Section B; N.G.R:- 32014148.
127. Rahtz, op.cit., Fig.1, Box 1.
It is interesting to note that "chalk" blocks were used in the construction of both quays and jetty. This material is not usually durable when exposed to water action, and, unless protected by timber sheathing, would have been liable to rapid erosion.
128. Rahtz, op.cit., Fig. 2., Section B.
129. For the date and description of this - Layer C - see above p.190 ff.
130. The schematized sections published by Rahtz do not seem to support this theory, but rather to indicate that the area between the Jetty and the Quay became choked with silt. There has always been a problem at Dover with regard to the inrush of silt and shingle and this may have choked the harbour thus accounting for the presence of the dark silt. However, it should be noted that the original information was gleaned, in far from satisfactory conditions, during the course of building excavations.
131. Rahtz, op.cit., p.111 ff.
132. Rigold, op.cit., p.89.
Lehmann-Hartleben, K., Die antiken Hafenanlagen des Mittelmeers, Klio Beiheft, xiv, 1923, p.176, plan xxix and pp.233-247, plan xxx (Misenum and Ostia); Lewis, J.D., op.cit., p.254 ff.
133. Rigold, op.cit., p.87, no.33 (N.G.R.31684172), p.94, Appendix C, Fig.4: 1, 3; Appendix E, p.97.
Deposits of Roman pottery of the late 1st-mid 2nd centuries were reported as coming from the base of the silt. The silt was sealed by a 3 feet (ca 1 m) stratum of dark peaty soil over which had been built a mediaeval wall.
134. Rigold, *ibid.*
135. For remarks on tide levels see above, p.182.

136. Rigold, op.cit., p.87, no.36. (N.G.R. 31704166) and p.96.
137. Rigold, op.cit., p.87, no.35. (N.G.R. 31654166).
138. Rigold, op.cit., p.87, no.34. (N.G.R. 31734162); p.96, Appendix D; p.98, Appendix E. The sherds lay just below Roman H.W.M.S.T.
139. *ibid.*
140. Vitruvius, XII, 2.
For the use of sluice gates see, Pliny, Letters, X, 41 ff. and X, 61. (Cataractis). cf: Tacitus, Annals, XIII, 52; Pliny, Natural History, III, 53 and Strabo 17, 1,25.
For the use of sluice-gates and de-silting systems from excavations see: Poidebard and Lauffray, op.cit., 1951, (flushing-tanks) pp.22, 42. Lewis, J.D., op.cit., p.254 ff. and Fig. 3. Brown, F.E., "Cosa, I : History and Topography". Memoirs of the American Academy in Rome, 20, 1951, p.95. Figs.96-98. (sluice-gate). Yorke and Davidson, op.cit., 1968, p.13, possible sluice-gates at Cherchel, Map.3.
141. Rigold, op.cit., p.82 (Pencester Road) and Fig.1. which seems to follow the line of Park Avenue.
142. Margary, op.cit., 1973, p.35, Route 1a, p.40, Route 100 and p.50, Route 131.
143. N.G.R. 32644178.
144. V.C.H., Kent, 1932, p.47 ff.
145. Wheeler, R.E.M., "The Roman Lighthouses at Dover", Archaeological Journal, LXXXVI, 1929, pp.29-46. The plans and sections published by Wheeler are slightly modified copies of ones drawn by the architects of the Office of Works during repair-work in 1913-1915. Wheeler, op.cit., Plates I & II.
146. The eight faces are, in fact, 4.23, 4.70, 4.52, 4.60, 4.50, 4.90, 3.80, 4.85 m in length at ground level; this variation may be due to modifications to, or robbing of, the original structure. The pharos at Leptis Magna was 13.03m square internally and 18.03m externally.
Hague, D.B. "Lighthouses" in Blackman, D.J., op.cit., 1971, *supra*, p.296.
147. Wheeler, op.cit., 1929, p.31., Fig.3, PL.vii and p.37. The Tour d'Ordre at Boulogne, illustrated by Wheeler, *ibid*, Fig.5, was of similar design.
This stepped construction can best be seen on the South-East face of the tower. At the base of the tower the step is 1.5' (0.45 m) deep.
See also below, note 155.
148. This description follows that given by Wheeler, op.cit., 1929, p.33.

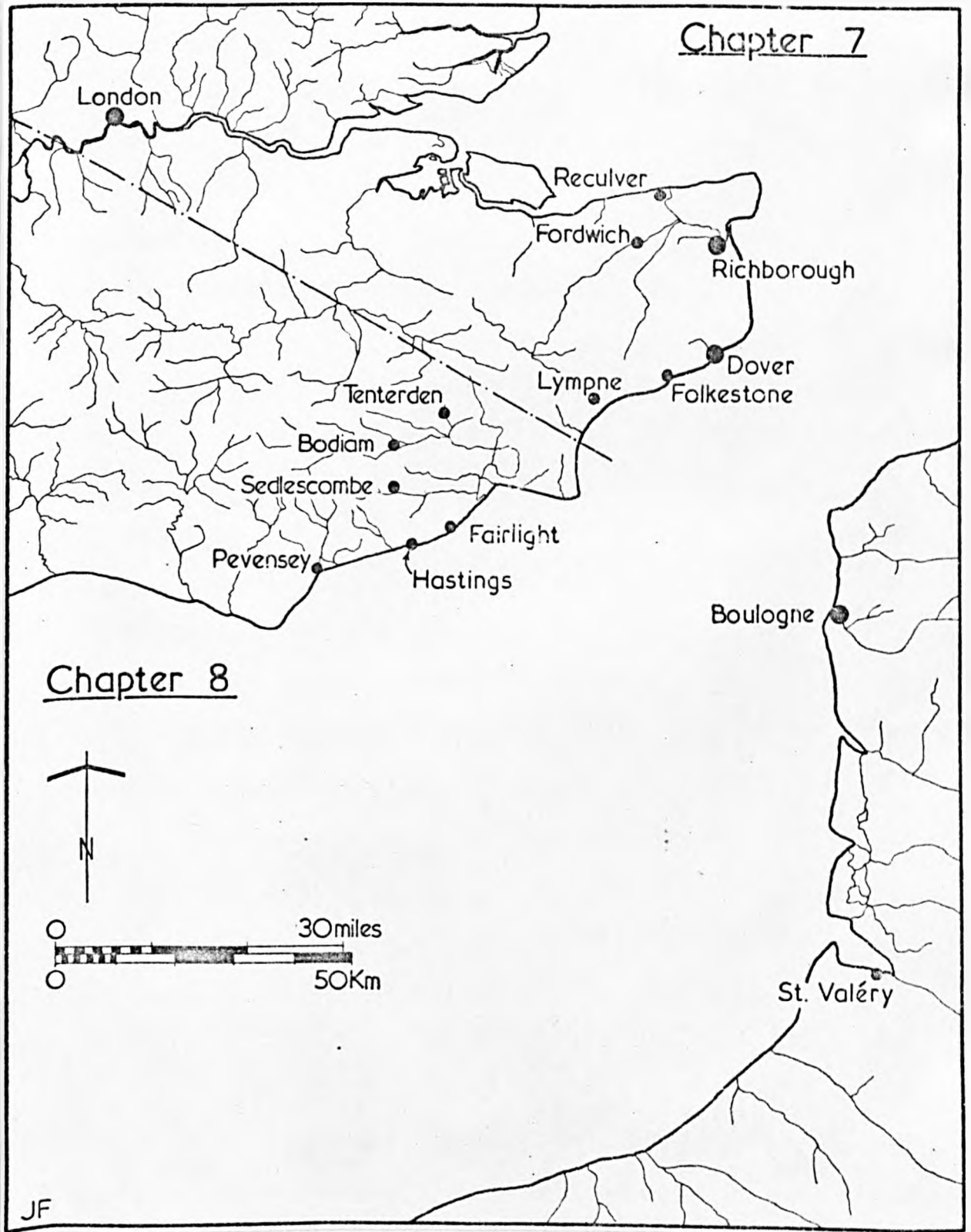
149. See remarks on Maidstone, p.153 and Folkestone, p.206 ff..
150. Wheeler, op.cit., 1929, p.33. Nine of these bonding courses are visible.
151. Observations on site.
152. Rigold, op.cit., p.82, no.1; Brodribb, op.cit., 1969, pp.108 and 116 ff; Peacock, op.cit., 1977a, pp.244-5; alternatively, they may have been for use in repair work.
153. Wheeler, op.cit., 1929, p.33, PL,II.
154. Wheeler, op.cit., 1929, p.35.
155. Hague, D.B., op.cit., p.295, Fig.2. (La Coruffa), p.296, Fig.3. (in the relief on a sarcophagus from Ostia a four-storey "stepped" lighthouse is shown; a beacon blazes from the roof of the 4th storey); p.299, Fig.7, a similar structure is shown on a mosaic from Ostia.
156. There is good evidence that at La Coruffa a ramp ran up the outside of the pharos, wide enough to accommodate pack animals. Hague, op.cit., p.297 ff. The "steps" in the Dover pharos are horizontal as are the lines of put-log holes. There is, therefore, no reason to suppose that it was provided with an external ramp. See also Hague, D.B., "Lighthouses : their architecture, history and archaeology" 1975 Chapters 1 and 3.
157. See above, p.178ff.
A note, in the Dover Handbook of the British Association, 1899, p.25, states that CL. BR. tiles have been found in the fabric (This is cited in Wheeler, op.cit., 1929, p.39, n.1.); this report has never, however, been adequately substantiated.
158. N.G.R. 31604111.
159. Leland, op.cit., iv, p.50; cf. Camden, "Britannia", 1607, p.243.
& Lambarde, "Perambulation of Kent", Ed.2., 1596, p.158; 1701, p.163. Bernard de Montfauçon, "L' Antiquité expliquée et représentée en figures", tòm. suppl., iv, 1757, p.137, describes it as :-
"un grand monceau de mazures, de pierres et de chaux, qu'on voit auprès de Douvre, que les gens du pays appellent ... la goutte de Diable."
(not seen).
All these sources are quoted by Wheeler, op.cit., 1929, p.40,42.
160. Wheeler also published reproductions of a drawing of 1543 and a painting of ca 1690 both of which show an isolated tower on the Western Heights. Wheeler op.cit., 1929, Plate viii (British Museum. Cotton MSS. Aug., I, i, 22, 23, also reproduced in Archaeologia lxxii, 1921-1922, PL. xxxvi) and Plates ix and x.

161. Wheeler, op.cit., 1929, Plate xi, being a reproduction of a drawing of 1760, published in Darell's, "History of Dover Castle", 1786.
162. Knocker, E., "An account of the Grand Court of Shepway", 1862, p.47 ff.
163. cf. the description of the Eastern Pharos, supra.
164. Knocker, 1862, op.cit.
Wheeler has published a photograph of the excavated pit, taken in 1861, op.cit., 1929, PL xii. This also shows, overlying the central part of the structure, a stratum of charred wood and ashes - the reason for which is unknown.
165. Wheeler, op.cit., 1929, p.45. (e.g. flue-tiles and a flat block of ragstone which was possibly a fragment of re-used carving). A CL BR tile is illustrated in Wheeler, op.cit., PL.XIII b, and p.45. It is not clear whether the Classis Britannica tile had been re-used; Peacock, op.cit., 1977a, p.245.
166. Wheeler, op.cit., 1929, PL.3A,11B; Peacock, 1977a, ibid.
167. Rev. Canon Puckle, Arch. Cant. XX, 1893, p.128.
168. Hague, op.cit., 1973, pp.293-303.
169. Notitia Dignitatum - Occ. xxviii; Philp, op.cit., 1977, p.21.
170. Philp. - C.A.23 (Vol.II No.12.) Nov.1970, p.336; 38 (Vol.IV No.3.) May 1973, p.86-88; Britannia II, 1971, p.286; VII, 1976, p.376; VIII, 1977, p.424. A sequence of late 3rd century timber buildings within the South-West corner of the fort were found in 1975.
171. West Wall. C.A.25 (Vol.III No.2.) March 1971, p.52-55; 28, Vol.III No.5, Sept.71, p.133; 38, (Vol.IV No.3.) May 1973, p.86-88; A.Ex.1971 (1972) p.20; A.Ex. 1972 (1973) p.57; Britannia II, 1971, p.286.
South Wall. C.A.25 (Vol.III No.2.) March 1971, p.52-55; C.A.38 (Vol.IV, No.3.) May 1973, pp.86-88; C.A.28 (Vol.III No.5.) Sept. 1971, p.133; A.Ex. 1974 (1975) p.48; Britannia II, 1971, p.286; VI, 1975, p.283.
172. Philp, op.cit., 1977, p.21; A.Ex. 1972 (1973), p.57; A.Ex. 1974 (1975), p.48; Britannia VI, 1975, p.283; C.A.25, (Vol.III No.2.) March 1971, pp.52-5; 38 (IV. No.3.) May 1973, pp.86-88; Britannia II, 1971, p.286.
173. cf. Burgh Castle & Bradwell, p.97 ;113.
Philp, B., C.A.25 (Vol.III No.2.) March 1971, pp.52-55. Although the South Wall is approximately where Wheeler 'placed' it, its irregular shape may explain why it has not been located before. Rigold, op.cit., pp.84-85, nos.15 & 16; Amos and Wheeler, pp.49-50, nos. 6 & 7; Livett, Proceedings of the Society of Antiquaries, 2S, XXVII, 1914-1915, pp.263-264.

174. Livett, op.cit., This lay well above the height of even the most extreme tides and cannot be a marine deposit.
175. Excavations on the South side of the Market-Place in 1923. Rigold, op.cit., p.85, no.19 & Appendix B. Amos & Wheeler, op.cit., p.50, no.8.
176. Rigold, op.cit., p.83, no.10, & p.86, no.26. Amos & Wheeler, op.cit., pp.51-52, no.9 and Plate III. There is no reference in Amos & Wheeler's account of the finds on the East side of Church Street (Rigold No.26) to any overlying or associated debris.
177. Rigold, op.cit., p.83, nos. 8 & 9. Rahtz, op.cit., 1958, Stembrook and St. Martin-le-Grand, pp.111-117.
178. Rigold, op.cit., p.85, nos. 17 & 18. For the 1908 material, see n.28.
179. Amos & Wheeler, op.cit., p.49, no.4. Rigold, op.cit., p.86, nos. 24 & 25.
180. Rahtz, op.cit., 1958, St. Martin-le-Grand, p.111 ff. Rigold, op.cit., p.85, no.21.
181. cf. Britannia, VII, 1976, p.376; VIII, 1977, p.424.
182. Philp - C.A.38 (Vol.IV No.3.) May 1973, p.86-88.
183. Traces of structures, including a bath and hypocaust, were located some 600 yards (549 m) to the South-West of the villa on the site of a reservoir and 1st century cinetary urns have been found in allotments, West of Radnor Park, Folkestone. Winbolt, op.cit., 1925, pp.5, 19; V.C.H., Kent, 1932, p.114.
184. Winbolt, op.cit., pp.10, 77.
185. A cottage and a road laid in A.D.1880 had disappeared over the cliff by A.D.1925. Winbolt, op.cit., pp.10, 31, 77; Steers, op.cit., 1964, p.321 (TR 2537).
186. Winbolt, op.cit., pp.6, 77; Rigold, S.E., "Roman Folkestone Reconsidered", Arch. Cant., vol.87, 1973, pp.31-41. Rigold discusses the implications of the "-stan" element of "Folkestone" and suggests that it may indicate that this was an important Roman site. Winbolt refers to "Walton", a forgotten suburb, and reaches the same conclusion - op.cit., p.18.
187. Steers, op.cit., pp.321-2; Gulliver, F.P., "Dungeness Foreland", Geog. Jnl., vol.IX, 1887, p.536.
188. Steers, op.cit., p.332; Winbolt, op.cit., p.76.
189. Winbolt, op.cit., pp.13, 27, 30, 36, 49 & 66; Richmond, I.A., "The Plans of Roman Villas in Britain", in Rivet, A.L.F., (Ed.), "The Roman Villa in Britain", 1969, pp.58-60, 64; V.C.H., Kent, p.114; Rigold, op.cit., 1973, pp.31-41.

190. Winbolt, op.cit., pp.10, 36, 41 ff, 66; Williams, op.cit., 1971, p.174. Some imported stone may also have been used. Liversidge, J., "Furniture and Interior Decoration", in Rivet, op.cit., 1969, p.153.
191. Winbolt, op.cit., pp.10, 15, 20, 28, 103 ff., 112; Brodribb, op.cit., 1969, pp.106, 109, 117, 120; Cunliffe, op.cit., 1968, p.260; Peacock, op.cit., 1977a, p.238.
192. Winbolt, op.cit., pp.37, 61, 76, 186; Cunliffe, op.cit., 1968, p.260. A detachment of the Classis Britannica was also involved with the construction of a granary at Benwell, R.I.B., 1340 (A.D. 122-4).
193. Winbolt, op.cit., pp.13, 20, 43, 92 (pottery) and 9, 83, 111-4 (coins), there was an even distribution of 3rd-4th century coinage. Five 1st century coins have been found in the area, three from the villa excavations and two from Sugar Loaf Hill which lies about 2 Km (1.24 m) to the North-West (TR 225380). Britannia, V, 1974, p.459. See also Fulford, M. & Bird, J., "Imported Pottery from Germany in late Roman Britain", Britannia, VI, 1975, p.176.
194. Steers, op.cit., p.332; Ordnance Survey, "Geological Map of Great Britain", Sheet 2, Ed. 2, 1957; Winbolt, op.cit., p.18.
195. Williams, op.cit., p.174; Winbolt, op.cit., pp.36, 110.
196. Williams, op.cit., p.172 ff; Winbolt, op.cit., p.66.
197. See remarks on Maidstone, p. 153.
198. This account closely follows Winbolt, op.cit., p.108.
199. Winbolt, op.cit., pp.32, 109, places the beck opposite the Pavilion Hotel, which, it appears, no longer bears that name.
200. Jones, A.H.M., "The Later Roman Empire", Vol.II, 1964, pp.837-8.
201. Flemming, Czartoryska & Hunter, op.cit., 1973, pp.7-10, 16.
202. Blackman, 1973, p.132 and Fig.28. who cites the following authorities :-
 Marinatos, Sp., "Anaskaphai Nirou Khani Kritis - "
 Praktika, 1926, pp.141-7; Hafemann, D., "Die Niveauveränderungen an den Küsten Kretas seit dem Altertum." AbhdlAkadMainz, math.-nat.K1. 1965, No.12, 69 (673); Frost, H., "Under the Mediterranean, 1963, pp.107-9.
 At Cnidus, Blackman found a rock-cut quay - op.cit., pp.120-4. Neither of these features has been securely dated.
 An ancient quarry (1) which faces onto the modern harbour at Tipasa, Algeria, may have been protected by a breakwater which runs parallel to the shore. In the ancient harbour at Tipasa, quarry - 2 probably provided most of the stone for the Roman installations "and mole 3 would have been constructed by simply tipping the stone into the sea as soon as it was cut". Yorke & Davidson, op.cit., 1968, pp.14-16 and Figs. 4 & 5. A basalt

quarry at Cap Djinet, marble quarries at Djebel Filfella and granite quarries at Chetaibi may all have been worked in the Roman period and lie close to possible harbour sites. Yorke and Davidson, *ibid*, pp.18, 22-3.



Chapter Eight.

Romney Marsh and the Pevensey Levels.

Behind the extensive alluvial tracts of Romney Marsh and Walland Marsh, and the vast shingle spread of Dungeness, the line of high ground which emerges as cliffs on the Strait of Dover near Hythe, in the North East and Hastings in the South-West, sweeps inland and is broken by the silt-choked valleys of the once navigable Rivers Rother, Brede and Tillingham (1). Further West, between the cliffs at Fairlight, North-East of Hastings, where severe marine erosion still removes on average a yard (0.91 m) of land each year, and the towering precipices of Beachy Head, the largely-reclaimed area of marshland, known as Pevensey Levels, was once a wide inlet of the sea (2). In both these regions natural changes have been so great that the Saxon Shore forts at Pevensey and Lympne now lie about 1.0 and 1.5 miles (1.6 and 2.4 km), respectively, away from the sea, behind banks of shingle or marshland. The possible port sites at Bodiam, Sedlescombe and Tenterden are now inaccessible to water-borne transport, whilst any tile-works in the area of Fairlight may either have been swept away or lie buried beneath alluvium. The River Brede, which once flowed into the sea in the vicinity of Fairlight, now has its outlet at Rye, and it is still a matter of some debate as to whether the River Rother emptied into the Strait of Dover at Romney or Lympne, instead of Rye (3)

Lympne

TR 1134

The Saxon Shore fort of Lemannis, built on the lower part of a steep slope along the crest of which runs a long shelf of high ground, some 300 feet (91 m) above O.D., took the form of an irregular pentagon, some 9-11 acres (3.6-4.4 Ha) in area, the northernmost point of which is some 130 feet (39.6 m) above the flat expanse of Romney Marsh, from which the southern part of the fort area is separated by the Royal Military Canal (4). Considerable lengths of the broken and ruinous fort walls have been displaced by landslips of the waterlogged clay subsoil. No trace is now visible of the South Wall and this misled several early writers into thinking that the only defence on the South face was a wide ditch between the fort and

90

91

marshlands (5). The fort was vulnerable to assault from the high ground to the North and must have been intended to protect a harbour and form a base for patrols against sea-raiders in the Straits of Dover (6).

The position and configuration of the Roman Harbour are not known and there is some debate as to whether the fort lay above the estuary of a now extinct River Lemana or on the northern shore of a tidal inlet, since choked by accretion of shingle and the growth of marshland. Physiographical and engineering studies of Romney Marsh tend to oppose the view, largely based on information drawn from 8th-9th century charters, that the River Lemana flowed eastwards past Lympne. If the Rhee Wall is a Roman construction then the eastern side of Romney Marsh must already have been protected by a shingle bar on or near the line of the modern sea-defence, the Dymchurch Wall, and the development of marshland well-advanced. Many close recurves in the shingle banks near to Hythe indicate that there was once an outlet there although this may have been a tidal creek enclosed by shingle rather than an estuary and it is possible that 8th-9th century references to the Lemana may be referring to such a creek in the marshlands (7). Smith noted the outline of a bay or estuary from Lympne as far East as Hythe, standing out from the marshland around Dymchurch, where Roman occupation debris has been found, as "seasand" which would have been liable to inundation at high tide were it not for the Dymchurch Wall. (8).

The walls of the late fort, probably constructed in the third quarter of the 3rd century were of greensand rubble/concrete faced with well-cut blocks of locally-quarried greensand and bonded by regular courses of tiles; the walls survive to a height of 20 feet (6.1 m) in places and were originally 12-14 feet (3.66-4.27m) thick (9). All, except one of the semicircular, projecting bastions which have so far been noted, were of one build with the fort wall and traces have been observed of what may have been a defensive ditch to the West of the enceinte. Of the gateways, one in the East wall was more monumental than the rest, some of which may in fact have been 'formed' when sections of wall slid down the hill (10).

The fabric of this East gate was found to contain re-used material, including an altar, dedicated to Neptune by one Lucius Aufidius Pantera, who served as praefectus classis Britannicae towards the middle of the 2nd century A.D. The surface of this altar had evidently been exposed to the sea before it was re-used in the gate platform as it was encrusted with barnacles (11). Four Classis Britannica-stamped tiles were found re-used in the fort wall and internal buildings during Smith's excavations in 1850 and at least two more were recovered by Horsley in 1893-4. These taken in conjunction with the altar, indicate the presence of at least a detachment of the Classis Britannica in the vicinity, probably in the early 3rd century (12). No trace has yet been found of the buildings and installations to be expected in a fleet-base and, if the state of the altar is typical of the re-used material, it would appear that the base had fallen into disuse and decay some time before it was exploited as a source of building material. The suggestion that some at least of the fragmentary masonry structures found within the late fort were part of this earlier base seems to be negated by Smith's clear statement that Classis Britannica-stamped tiles were found re-used in the fabric of at least one of the structures in the northern part of the enceinte (13).

The behaviour of the Roman Road, Stone Street, which has been traced from Canterbury as far as Shipway Cross on the high ground above West Hythe led Margary to suggest that the Portus Lemanis of the Antonine Itinerary and, by implication, the fleet-base lay near to West Hythe, some 1000 yards (910 m) East of the late fort (14). So little is known about the littoral topography of this section of Romney Marsh between Hythe and Lympne that the location of the presumed fleet-base and the configuration of the harbour South of the late fort, if they are not one and the same, must remain obscure until the area has been adequately examined by excavation.

Tenterden.

The Roman road which ran eastwards from Benenden, connecting Canterbury with the Wealden ironworking areas, ran close to Tenterden, just to the North of what was once a tidal estuary or inlet; West of Tenterden, two branch-roads seem to have run in a southerly direction towards the shore, near Tenterden Station (15). Parts of this Route 130 were metalled with iron slag; it is unlikely that such material would have been brought any great distance just to make-up a road surface, and this led Cleere to suggest that there may be undiscovered ironworking sites in the area (16). The products of such works may have been shipped out by way of a port near the southern termini of the branch roads, in the vicinity of Tenterden Station.

A number of Classis Britannica - Fabric 2 - tiles have been found during excavations at Little Farningham Farm, near Sissinghurst, associated with a substantial stone-built structure which lies close to Routes 13 and 130 (17).

Sedlescombe

TQ 7819

Sedlescombe lies at what was an important point in the communications system of the Roman Weald. The River Brede here flows through a low-lying alluvial valley with land rising to about 300 feet (91 m) to North and South. It was almost certainly navigable to Sedlescombe in Roman times although its lower reaches have since been choked by the deposition of silt (18).

Sedlescombe seems also to have been the lowest bridging point on the Brede, for the Roman Road which runs North to Rochester and South to Ore, above Hastings, crosses it here (19). Traces have also been found of other roads and tracks leading to nearby ironworks at Oaklands Park, Footlands and Chitcombe and to the mining site at Petley Wood (20).

It is probable that there was once a port on the River Brede in the vicinity of Sedlescombe through which the products of the ironworks could be shipped down the estuary and thence to Richborough, Dover, Lympne or Pevensey (21). Cleere and Margary have suggested that such a port on the Brede may have superseded one in the Fairlight/Hastings area and was in turn substituted by another at Bodiam ca. A.D.140-150 (22). It is conceivable

that navigation of the Brede had become hazardous due to deposition of silt in its channel or to movements of dangerous shoals in the estuary, but until the site of the port is located and excavated no firm conclusion can be reached. However, a short, straight Roman road has been traced running South from the River Brede, just to the East of Oaklands Park, the northern terminus of which road may well mark the site of the Roman port(23).

Bodiam

TQ 783250

Bodiam lies in the valley of the River Rother at the head of what was once a navigable estuary; the land to the East of Bodiam Castle is still liable to flooding. In ca. A.D.1030, ships could sail up the river as far as Bodiam and, in 1385, under threat of invasion from France, a licence was granted to crenellate the manor ... "by the sea" and "to make a castle thereof in defence of the adjacent country". There was once a small harbour to the South of the castle moat, and mooring rings were set into the walls (24).

The Rother may have been a rather hazardous and tortuous river to navigate in Roman times, bordered by marshes and encumbered, no doubt, with shifting sandbanks, rather like parts of the River Humber today (25).

Excavations on the South bank of the Rother, opposite Bodiam, have shown that although the site was occupied in the 1st century, the main period of activity was in the 2nd and early 3rd centuries (26). Classis Britannica-stamped tiles and bricks (Fabric 2) have also been found, in a late -2nd century context (27).

The course of the Roman road from Rochester has been traced as far as Ore, near Hastings. Above the North bank of the Rother, just East of the present road near to Bodiam Mill, it was found to be metalled with slag. Thence, the road ran past the West side of Bodiam Castle and seems to have crossed the river at the present causeway, in which area more slag has been found (28). This was probably the lowest point at which the river could be bridged or forded.

It is most likely that there was a port at Bodiam, at least in the second half of the 2nd, and early 3rd centuries. Such a port would have

been well situated to take the products of all the main centres of iron production. These could then have been transported down the Rother estuary in barges - possibly to Dover, there to be distributed as required (29). It has been suggested that some of this traffic may have been transferred to Bodiam from a port in the Sedlescombe area in the mid-2nd century but there is no reason why both ports should not have co-existed and until the port on the River Brede is excavated such a suggestion must be mere conjecture (30). It is conceivable, however, that silting in the Brede may have made navigation hazardous and thus caused traffic to use Bodiam instead (v.s.).

The presence of Classis Britannica-stamped tiles and bricks on this and several iron working sites indicates that the British Fleet was connected with the iron industry in the second half of the 2nd century at least, and it was in this period that a depot for the Fleet was built at Dover; but the absence of CL. BR. tiles from earlier contexts need not necessarily imply that there was no connexion between the Fleet and the iron industry at an earlier date (31).

After the early 3rd century there is evidence of a marked decline in the occupation at Bodiam. It is possible that the channels of the Rother estuary were becoming hazardous because of silting, although they were still in use in the 11th and 14th centuries. By ca. A.D.250, most of the major ironworking sites were no longer functioning, except for Footlands, near Sedlescombe (32). The tortuous and marshy estuaries of the Brede and the Rother would have aided raiders and pirates - especially in the early 3rd century and it is possible that at such a time of insecurity, it would have been preferable to transport the products of the ironworks overland.

Hastings
Fairlight

TQ 8109
TQ 8712

The coastline in the area of Hastings and Fairlight has changed considerably during the last thousand years. It is now fairly straight with a line of cliffs up to 100 feet (37.5 m) high, running eastwards from Hastings, through Fairlight, to Cliff End, behind which the land rises to a height of 500 feet (152 m). Several small valleys cut seawards

through this high ground, namely - Priory and Bourne Valleys, at Hastings, and the hanging valleys at Ecclesbourne and Fairlight. Much land to the South of these cliffs and at St. Leonards, West of Hastings, has been lost to the sea; at Fairlight, until recently, the rate of erosion was in the region of one yard (0.9 m) per annum (33). The debris thus washed out has drifted eastwards and the once-tidal inlet of Priory Valley has been choked with alluvium. Other debris has been borne further eastwards and has been deposited in a huge spread of shingle at Dungeness. 93

There was a settlement at Hastings in the 11th century and this was important enough in the 12th century to be contributing, as one of the Cinque Ports, 20 ships to the King's fleet. The contingent from Dover was also 20 vessels but Romney, Hythe and Sandwich had only to provide 5 ships (34). The land on which this Norman port stood had been abandoned by A.D.1412, having become unsuitable for habitation because of inundation, and has since been completely washed away (35). There is evidence that, even in the 12th century, this tidal inlet was becoming choked with silt, although it was marked as a haven on a map of A.D.1746. Although, in the late 18th century, tides still penetrated about a mile up Priory Valley, the whole tract was reclaimed and used for building in the middle of the next century (36).

No Roman occupation levels have been reported at Hastings, but a number of coins have been found, scattered over a wide area to the East and West of the modern town (37). Perhaps significantly, no Roman finds were made in the recent excavations on the Augustinian Priory (38). This need not preclude the existence of a settlement here; even substantial remains could well have been completely washed away.

It has been suggested that the products of some Roman Ironworks in the Weald may have been transported to a port in the Hastings area from the time of the Conquest to A.D.140-150 (39). A Roman road, possibly quite early in date, which has been traced to a point near Ore, above Hastings, ran South from the Brede estuary at Sedlescombe and may have been used for transporting iron products (40).

However, the most southerly section yet traced of this Route 13 is aligned on Fairlight, East of Hastings, and not Hastings itself. Fairlight Clays were almost certainly used in the manufacture of the Classis Britannica-stamped tiles (- Fabric 2) found at Richborough, Dover, Lympne, Pevensey and Boulogne, and there may well have been a tile-works served by a port in the area (41). None of the Cl.Br. tiles has yet been found in any context earlier than the second half of the 2nd century, but this need not preclude a connection between the Fleet and the ironworks in the years before the introduction of tile-stamps (v.s.)

Natural changes have been considerable at Fairlight; the River Tillingham and the River Brede may once have had their outlets in the vicinity and it is also possible that the shingle bar on which Old Winchelsea^a is thought to have stood may have once protected a sheltered haven, a haven which may have been represented by the tract of marshland which once lay behind Old Winchelsea and which, when inundated, created a haven for the mediaeval town (42).

Although Fairlight itself dates at least from Saxon times, no Roman finds have been reported (43). The remains of the tile-works and the installations of the port may have been washed away but it is equally possible that they lie buried beneath the extensive tract of alluvium which lies to the East of Cliff End.

Pevensey

TQ 6404

The late shore fort of Anderida stands on a low Knoll at the eastern end of a remote and shallow peninsula which rises some 25-30 feet (7.62-9.10 m) above the marshes of the Pevensey Levels (44). These marshes, which fringe the peninsula to the North, South and East, occupy what was in Roman times the site of a wide tidal inlet (45). The sea is now some 0.5-1.0 miles (0.8-1.6 Km) away, behind a shingle bank. The Ashburn and Hurst Haven and many tributaries once made a passage through this shingle bank, forming Pevensey Harbour, in which the vessels of Earl Harold and Earl Godwin lay at anchor in A.D.1046 & 1050, respectively. Deposition of silt behind the shingle bank allowed marshlands to grow, considerable tracts of which had

been reclaimed by A.D.1180. Iron was exported from Pevensey Harbour for some time after A.D.1580 but by A.D.1690, although vessels of 50-60 tons (50.8-51.8 tonnes) could sail in as far as the town bridge, only vessels of 14 tons (14.23 tonnes) or less could enter the mouth of the haven, and then with difficulty (46).

The fort walls enclose an approximately oval area of some 8 acres (3.2 Ha), following the contour of the Knoll on which they stand. They rise from a foundation plinth of stones set in mortar which was laid on a framework of horizontal beams, which was in turn set upon a layer of flint and chalk 1.5-3.0 feet (0.45-0.91m) thick which had been rammed between between oak piles. The wall itself, 12 feet (3.66 m) wide at its base but reduced by an interior offset, and rising to a height of at least 26 feet (7.93 m) above ground level, comprised a flint-concrete core faced with small blocks of ashlar, some of which were ironstone and others greensand, both probably quarried in the vicinity (47). Eleven U-shaped, solid projecting bastions, of one build with the wall, were apparently concentrated at points where the fort wall curves (48).

The fort was linked to the mainland by a service road which ran along the peninsula from what is now Polegate and entered the enceinte through the main West gate (49). Postern gates in the North and South walls may have been designed to give access to the Roman harbour, the site of which is not known. Presumably, the formation of marshland was well advanced by the 4th century and until more is known of the littoral topography of the Pevensey peninsula the location and configuration of the late-Roman harbour must remain an unknown factor.

Very little is known of the interior of the fort; in 1906-8, Salzmann found traces of tiled hearths, a series of mortar "beds", a pit and a timber-lined well in the North-West corner of the fort, but no traces of timber structures were reported (50).

Although large amounts of late-3rd century pottery and Carausian coins came up in the 1930 excavations and a sherd of 2nd century pottery was found

when emptying the ditch to the West of the fort, the bulk of the coins found on the site fall into the period A.D.306-364 (51). A mid-4th century date for the construction of the fort wall would seem to be confirmed by the finding of a coin of A.D.350-5 in a void, possibly a beam socket, some 3 to 4 feet (0.91-1.22 m) "under the thickness of a bastion" (52). The enceinte seems, therefore, to have been a late addition to the system of coastal defences, probably acting as a long-stop in case patrols in the Dover Straits failed to intercept raiding parties (53). The Notitia gives the garrison of Anderida as a numerus Abulcorum (54). The milites Anderetianorum listed as being stationed at Vicus Julius (Gemersheim) and the classis Anderetianorum at Paris must once also have been stationed at Pevensey, the existence of the latter indicating that there must once have been a flotilla, almost certainly a detachment of the fleet associated with the fort (55).

The site has produced several fragments of Classis Britannica-stamped tiles (- Fabric 2) which must be derived from an earlier context than the fort, possibly an early 3rd century base for the fleet (56). Samian ware and coins of the late 1st-mid 2nd centuries indicate even earlier occupation elsewhere on the peninsula or to the West, in the Pevensey-Glynde area, but these and numerous trackways seem to have been associated with a land settlement scheme, rather than a fleet base (57).

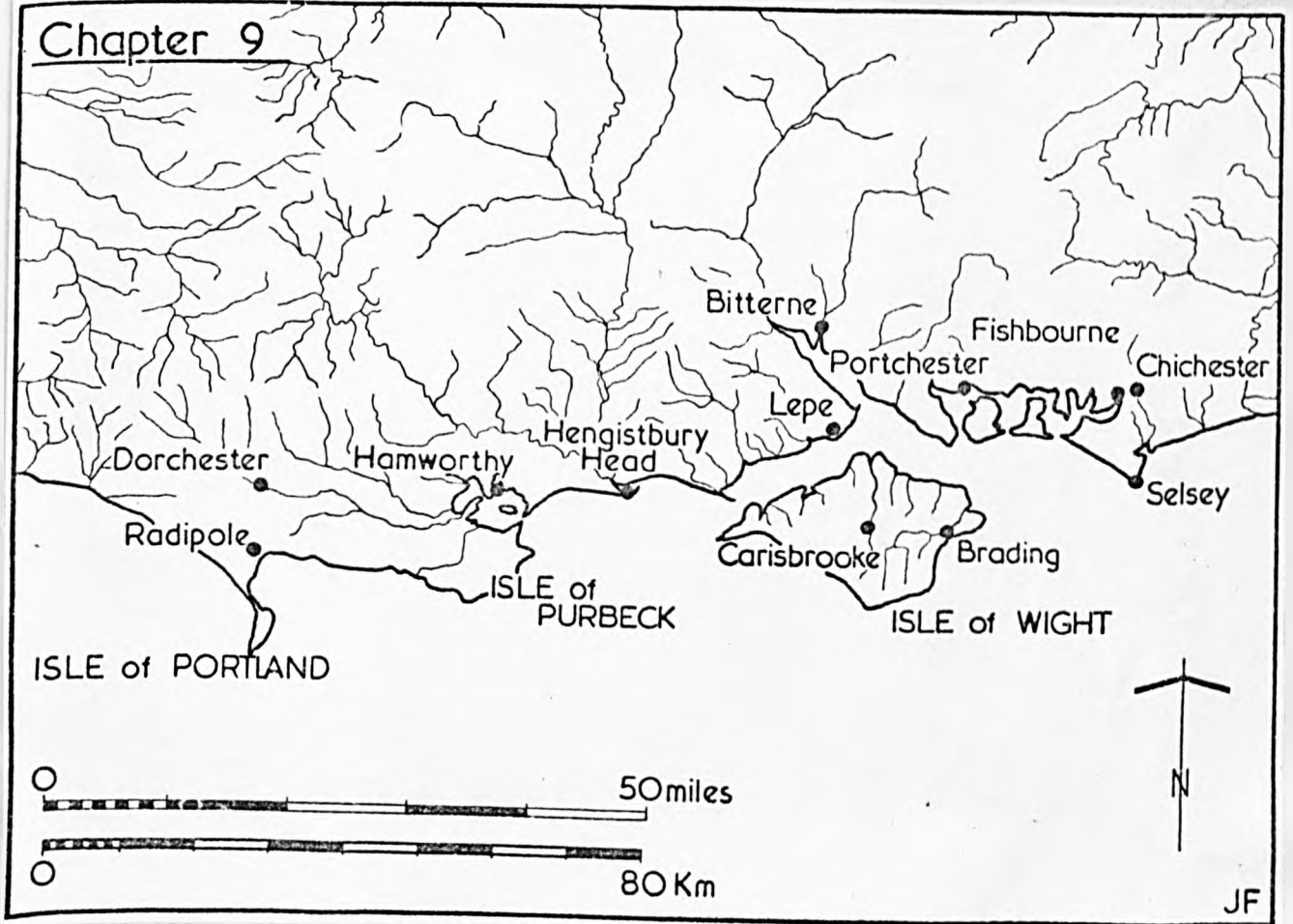
Notes.

1. Steers, J.A., "The Coastline of England and Wales", 1964, pp.316-331.
2. Steers, op.cit., 1964, pp.312-316.
3. Steers, op.cit., 1964, pp.316-331.
4. The Notitia Dignitatum, Occ. XXVIII, 15, gives the garrison as a numerus Turnacensium; Peutinger Table - Lemaus; Ravenna Cosmography, 70-Lemanis. Johnson, S., "The Roman Forts of the Saxon Shore", 1976, p.53; V.C.H., Kent, Vol.III, 1932, p.55; Smith, C.R., "The Antiquities of Richborough, Reculver and Lymne", 1850, pp.246-9.
5. Johnson, op.cit., 1976, p.53; Smith, op.cit., 1850, pp.244, 247, 249, 262; V.C.H., 1932, p.56; J.R.S., vol.XXXIV, 1944, p.85 (referring to Horsley's excavations in 1893-4; Smith, C.R., "The Roman Castrum at Lymne", Archaeologia Cantiana, vol.XVIII, 1889, p.41 ff; cf. Lewin, T., "On the Position of the Portus Lemanis of the Romans", Archaeologia, vol. XL, 1866, pp.361-374; _____, "The Castra of the Littus Saxonicum", Archaeologia, vol. XLI, pt.II, 1867, p.436: Lewin suggested that Portus Lemanis was not at the foot of Lymne Hill but at Hythe, and that by the time of the erection of the late fort the R. Lemana (Revena, 266) had been diverted to Romney.
6. Johnson, op.cit., 1976, pp.104, 126, 128.
7. Steers, op.cit., 1964, pp.318-321, 325-330; Lewin, op.cit., 1866, pp.361-374; 1867, pp.435-6; V.C.H., 1932, p.55; Smith, op.cit., 1850, pp.237-9, 243-5.
8. Smith, op.cit., 1850, pp.243-5.
9. Smith, op.cit., 1850, pp.248, 255; G.E., "The Roman Coast Fortresses of Kent", Archaeological Jnl., vol.LIII, (Ser.2, vol.III) 1896, p.366; V.C.H., 1932, p.56; Johnson, op.cit., 1976, p.53, 56, 109; Williams, J.H., "Roman Building-Materials in South-East England", Britannia II, 1971, p.172; Cunliffe (1977b) "Lymne - a preparatory comment", in Johnston, D.E. (Ed.), "The Saxon Shore", C.B.A. Research Report No.18, 1977, pp.29-30.
10. Smith, op.cit., 1850, p.248; _____, (1852a), "Antiquarian Excavations on the site of the Roman Station at Lymne, in Kent", Collectanea Antiqua, vol.II, 1852, Appendix I, p.1; _____, op.cit., 1889, p.41 ff; Fox, op.cit., pp.366-7. V.C.H., 1932, p.56; Johnson, op.cit., p.53; Cunliffe, op.cit., 1977b, p.30; Britannia VIII, 1977, p.425.
11. Smith, op.cit., 1850, pp.249, 254, 267; 1852a, p.1; 1889, p.41 ff; Fox op.cit., pp.367, 369; V.C.H., 1932, p.56; Johnson, op.cit., 1976, pp.15, 52; R.I.B., No.66; Cunliffe, op.cit., 1977b, p.29.
12. Smith, op.cit., 1850, pp.258-9; 1852a, p.10; _____, 1852b, "Report on the Excavations made on the site of the Roman Castrum at Lymne, in Kent in 1850", 1852, pl.VI; J.R.S., XXXIV, 1944, p.85; Brodribb, G., "Stamped Tiles of the 'Classis Britannica'", Sussex Archaeological Collections, vol. 107, 1969, pp.108-9, cf. Cunliffe, op.cit., 1977b; Peacock, D.P.S., "Bricks and Tiles of the Classis Britannica: Petrology and Origin", Britannia, vol.VIII, 1977, pp.237-246; Cleere, H., "The Classis Britannica", in Johnston, D.E. (Ed.) op.cit., 1977, pp.16-19; Johnson, S., "Late Roman Defences and the Limes" in Johnston, D.E.(Ed.), *ibid*, pp.67-69.

13. Smith, op.cit., 1852a, p.10; 1889, p.41 ff; Fox, op.cit., pp.368-9; V.C.H., 1932, p.57; Johnson, op.cit., 1976, pp.20,53-4, 94; cf. Cunliffe, op.cit., 1977b, p.29.
14. Margary, I.D., "Roman Roads in Britain", Ed.III, 1973, Routes 12, p.41 & 131, p.49; Smith, op.cit., 1850, pp.233, 235, 254. Antonine Itinerary, 473.7 - 473.10.
For the derivation of "Lemanis" see, Smith, op.cit., 1850, pp.234-5 & Lewin, op.cit., p.362; Jackson, K., "Romano-British Names in the Antonine Itinerary", in Rivet, A.L.F., "The British Section of the Antonine Itinerary", Britannia I, 1970, Appendix II, p.78.
15. Margary, op.cit., 1973, p.47 ff., Route 130. It is possible that parts of this low-lying land were reclaimed in Roman times: Steers, op.cit., 1964, p.318 ff. Ships could reach Appledore, however, in the 12th century - V.C.H., Sussex, vol.9, 1937, p.34 ff. In Edmond Halley's "Survey of the English Channel," 1700, a deep inlet is shown, running inland as far as Appledore, from a point about 6 miles West of Dungeness. The "Survey" is to be found in the Navigation Room, National Maritime Museum, Greenwich.
16. Cleere, H., "The Roman Iron Industry of the Weald and its Connexion with the Classis Britannica", "Archaeological Journal", vol.131, 1975, p.183, who refers to it as being at Rolvenden.
17. Cleere, op.cit., 1975, p.195, No.18; Peacock, op.cit., 1977, fig.2, p.237.
18. Steers, op.cit., 1964, p.323 ff., with references.
19. Margary, op.cit., 1973, p.46. and Cleere, op.cit., 1975, p.181 ff, figure 1.
20. Oaklands Park - TQ 785176 - Cleere, op.cit., 1975, p.197, no.26.
Footlands - TQ 772198 - Cleere, ibid, p.194, no.11.
Chitcombe - TQ 814211 - Cleere, ibid, p.193, no.7.
Petley Wood - TQ 764176 - Cleere, ibid, p.198, no.39.
There is evidence for occupation of all these sites in the 2nd and early 3rd centuries, except at Oaklands Park where definitive dating evidence for 3rd century occupation is lacking; coins of Hadrian found there indicate 2nd century occupation. No secure evidence for 4th century activity at Footlands has been published. (Cleere, ibid, p.181 ff, s.v.)
21. Cleere, op.cit., 1977, pp.17-19.
22. Cleere, op.cit., 1975, p.181 ff; Margary, I.D., "Roman Communications between Kent and the East Sussex Ironworks", Sussex Archaeological Collections, vol.86, 1947, p.22 ff. See also pp.233-5.
23. At TQ 788173 Margary, op.cit., 1973, p.46.
24. V.C.H., Sussex, 1937, p.34 ff., "The Cinque Ports", and pp.263 (with reference to Cal.Pat., 1385-9, p.42) and 259; Steers, op.cit., 1964, p.644.
25. Steers, op.cit., 1964, p.318 ff.

26. Lemmon, C.M. and Hill, J.D., *Sussex Archaeological Collections*, vol. civ, 1966, p.96 ff. and Figure 1.
Cleere, op.cit., 1975, p.171 ff; here Cleere quotes Peacock's theory that Bodiam was Ptolemy's Portus Novus which could, however, also have lain in the area of Hastings.
27. Erodribb, G., J.R.S., Lvii, 1967, p.208, No.31. and Lviii, 1968, p.211, no.46 - fifteen stamps in all; Peacock, op.cit., 1977, fig.2, p.237.
28. Margary, op.cit., 1973, p.46. Route 13.
29. Cleere, op.cit., 1975, p.181 ff.
30. Cleere, op.cit., 1975, p.183.
31. Cunliffe, B., quoted in Cleere op.cit., 1975, p.188;
Peacock, op.cit., 1977, p.244.
32. Cleere, op.cit., 1975, pp.184 and 194.
33. Steers, op.cit., 1964, pp.316-318.
34. V.C.H., *Sussex*, 1937, p.36 ff.
35. Ward, E.M., "The Evolution of the Hastings Coastline", *Geographical Journal*, vol.56, 1920, p.107 ff.
discussed in Steers, op.cit., 1964, pp.316-318.
36. Steers, *ibid.*
37. Baines, J.M., "Hastings and the Romans", *Sussex Notes and Queries*, vol.11, 1946-7, pp.35-38.
38. Martin, D., *Hastings Area Archaeological Papers*, 2, 1973.
39. Cleere, op.cit., 1975, p.182.
40. Margary, op.cit., 1973, p.46, Route 13;
Margary, op.cit., 1947, p.22 ff.
41. Cleere, op.cit., p.182; Peacock, op.cit., 1977, pp.237-245.
42. Steers, op.cit., 1964, p.324. This is shown in a "Survey of the English Channel", Edmond Halley, A.D.1700, Navigation Room, National Maritime Museum, Greenwich.
The marshland may be represented in the place-name 'Old Marsham' which lies on the eastern edge of the parish of Fairlight cf., Ward, G., "The Little Brooks of Old Winchelsea", *Sussex Archaeological Collections*, vol.75, 1934, p.192 ff.
43. V.C.H., *Sussex*, 1937, p.176 ff.
44. *Notitia Dignitatum*, Occ., XXVIII; Lewin, op.cit., 1867, pp.437-9.
45. Steers, op.cit., 1964, pp.314-5.
46. Lewin, *ibid*; Steers, *ibid.*

47. Lewin, op.cit., p.438; Salzmann, L.F., (1908a) "Excavations on the Site of the Roman Fortress at Pevensey, 1907-8", *Archaeological Jnl.*, vol.LXV,,1908, p.125; _____ (1908b), Report on recent excavations on the site of the Roman Fort at Pevensey, Sussex, *Proc. Society of Antiquaries Ser. 2*, vol.XXII, 1908, pp.151-3; Johnson, op.cit., 1976, pp.57-8; Williams, op.cit., 1971, pp.172, 174.
48. Johnson, op.cit., 1976, pp.57-8.
49. Johnson, op.cit., 1976, pp.56, 58; Margary, op.cit., 1973, Route 142, p.71.
50. Salzmann, op.cit., 1908a, pp.126-131; 1908b, pp.152-3.
51. Salzmann, op.cit., 1908a, p.131; Johnson, op.cit., 1976, p.59; Cunliffe, B.W., (Ed.), "Fifth Report on the Excavations of the Roman Fort at Richborough, Kent", *Reports of the Research Committee of the Society of Antiquaries of London*, No.XXIII, 1968, pp.265-6 & fig.35.
52. Bushe-Fox, J.P., (= 1932b), "Some Notes on Roman Coast Defences", *J.R.S.*, vol.XXII, 1932, pp.67, 70.
53. Johnson, op.cit., 1976, pp.121, 128, 141.
54. *Notitia Dignitatum*, Occ., XXVIII.
55. *Notitia Dignitatum*, Occ., XLI, 17; XLII, 23; Johnson, op.cit., 1976, p.123.
56. Salzmann, op.cit., (1908), pp.131-2; Cunliffe, op.cit., 1968, p.258; Lewin, op.cit., p.439; Brodribb, op.cit., 1969, p.108-9; Cleere, op.cit., 1977, p.17; Peacock, op.cit., 1977, pp.237-246.
57. Margary, op.cit., 1973, Routes 142, 143, 146, pp.70-3.



Chapter Nine

The Isle of Wight, and the Mainland Coasts from Selsey Bill to the Isle of Portland.

The mainland coasts of the Solent and the intricately indented shoreline between Spithead and Chichester Harbour have been protected from the severe marine erosion, which is evident eastwards from Selsey Bill, by the Isle of Wight. Despite considerable changes due to the growth of marshland and shingle bars, reclamation and local erosion, the deep-water channels of Chichester Harbour, Portsmouth Harbour and Southampton Water, favoured by the Romans, still shelter shipping from the prevailing south-westerly winds. On the exposed coast westwards from the Isle of Wight to the Isle of Portland, the almost enclosed waters of Christchurch Harbour, the numerous creeks and inlets of Poole Harbour, behind Poole Bay, and the backwater commonly known as Radipole Lake, behind Weymouth Bay, lie in the lee of projecting headlands, Hengistbury Head, the Isle of Purbeck and the Isle of Portland. These would have afforded similarly generous protection, a feature which would have been particularly advantageous in the invasion period.

Fishbourne

SU 840047

The site lies at the head of the most easterly inlet of Chichester Harbour, the Fishbourne Channel. At the head of this channel, the inlet bifurcates; the eastern arm, which ran to the South of the Flavian Palace, is silted up while that to the West, which forms the western boundary of the site, is choked with marsh vegetation but is tidal as far North as the main A27 trunk road. In the early 1st century A.D., a rapidly-flowing stream flowed through a shallow, gravel-floored valley into the eastern arm of the inlet which then appears to have taken the form of a marshy tidal lagoon; a second stream flowed into this lagoon from the East, serving to keep any silt in the water in suspension and thus limiting the deposition of alluvium. A ground survey of the upper reaches of the western creek indicated that this too had been fed by two streams which converged to form a wide inlet (1). Although early writers favoured Bosham as the site of the base for Vespasian's expedition against the Isle of Wight, excavations at Fishbourne have produced

94

95

evidence for two very early Roman timber structures of military character, apparently part of a supply-base which may have been operated by the fleet, in conjunction with a main camp at Chichester, some 2 miles (3.2 Km) to the East (2). A Period IA structure, which was about 100 feet (30.5 m) long by 22 feet (6.71 m) wide, may have been a granary served by a gravelled area to the North. Much of the pottery associated with the structure was early Claudian and the gravelled area was sealed by debris containing Tiberio - Claudian samian wares (3). Beneath the North wing of the Flavian Palace, another large timber building, probably a stores building or barrack-blocks, 97 feet (29.56 m) long by 52 feet (15.85 m) wide, was based on 78 equally-spaced vertical uprights some 8 feet (2.44 m) apart; it had a verandah, or loading-platform, to the South and was apparently roofed with tiles. The post-holes were dug before any occupation debris had accumulated on the site and the filling of re-deposited material was clean except in one hole where a thin occupation streak produced sherds of Roman coarse-ware and pre-Roman Southern III B ware (4). Two major roads, consisting of a cambered gravel-spread over unprepared natural, ran across the site from East to West, some 110 feet (33.53 m) apart and traces have also been found on the eastern edge of the site of a North-South track which may have run between them. Several drainage gullies were also located. Other early buildings may lie on higher ground to the East of the excavated area (5).

Soon after A.D.43, the "granary" of the supply-base was demolished: the Legio II had moved out. Civilian development ensued making use of the existing installations; the roads were retailed and the drainage system improved; a bridge over the stream was built and new timber buildings constructed (6). One of these buildings, evidently a house of some quality, comprised a single range of five rooms with floors of clay, sandy clay or mortar, much worn, with two additional rooms to the North and a 'working area' to the East. A second unit further South but apparently part of the same scheme, and possibly a workshop, consisted of a single range, 18 feet (5.51 m) wide and at least 55 feet (16.71 m) long, with a verandah (7). A third

timber-framed structure was found 25 yards (22.8 m) further South, associated with a ditched enclosure (8). More timber buildings have been found to the North of the Flavian Palace and much pre-Flavian and Flavian pottery came up in the area East of the main excavations and in the Mill Pond (9). Cunliffe estimates that the 6 acres (2.4 Ha) which have been excavated may represent only 10% of the area occupied by this harbour settlement (10).

In 1969, a series of rescue excavations on a building-site South of the Woolpack Inn and the A27, revealed the original ground surface of shingly water-washed gravel beneath a stratum of thick peat. The bank of one of several channels which ran across the area had been made-up by dumping quantities of large greensand and limestone blocks. Although no trace of a timber revetment was found, this may have had some functional connection with the creek to the South, possibly as a small quayside (11).

Stone found lying loose or in the footings of Period I B structures includes greensand derived from quarries in the Weald or the Isle of Wight and fine-grained glauconitic sandstone probably from the Church Rocks or Mixon Reefs off Selsey Bill. Blocks of igneous rock from Cornwall, the Channel Islands and Brittany probably arrived on site as ballast in sea-going ships or, less likely, through geomorphological agencies; two specimens of foraminiferal limestone of Mediterranean origins may also have arrived here as ballast or as decorative building-materials for the 'proto-palace' (12). The large quantity of coarse ware imported to Fishbourne prior to A.D. 75, as well as amphorae and samian ware, cannot, therefore, represent the sum total of the commodities landed at the harbour settlement (13).

Sometime between A.D. 65-70, the two Period I B buildings found beneath the Flavian Palace were demolished to make way for a stone-mason's yard and a masonry building which was elaborate in style and complex in plan - a "proto-palace" (14). Fragments of waste material found in the working yard include Purbeck "marble", and, in smaller quantities, breccia from the Côte d'Or, white marble from Carrara, and slabs of Kimmeridge shale; the stone had evidently been shipped to the site as roughly-dressed blocks,

there to be processed into the finished product, probably for use in the "proto-palace" (15). This magnificent, sophisticated building, 25,000 sq.ft. (2,300 m²) in area, comprised a courtyard 58 feet (17.7 m) in width and surrounded by verandahs, an elaborate bath-suite and a range of rooms flanked by corridors, for the walls of which blocks of upper greensand had been used (16). Blocks of igneous rocks from the West coast of Britain, the Channel Islands and Brittany were again used in the wall-footings. Foraminiferal limestone, probably of Mediterranean origins, was fashioned into Corinthian capitals and fine-grained glauconitic sandstone, probably from the Church Rocks reef, off Selsey Bill, was turned to make column drums (17). A second masonry building, which lay some 380 feet (115.4 m) to the North-West had, apparently, never been completed (18). About A.D.75, the stream which ran into the eastern arm of the harbour was diverted into a new, more easterly channel to make way for the platform on which a huge Flavian Palace was erected (19).

The palace comprised four wings set around a formal garden, which was some 250 feet (76 m) wide, the East wing incorporating most of the "proto-palace" (20). The interior decoration of the palace was of a high standard; virtually all the rooms were furnished with mosaics, painted walls, and inlaid marble veneers and mouldings for the manufacture of which craftsmen must have been imported from the Mediterranean (21). Large blocks of glauconitic sandstone of Wealden origin were used for guttering in front of the West wing, and shelly white limestone from Bembridge or Headon Hill on the Isle of Wight was chosen for all stylobates and gutter-blocks along the North and East sides of the formal garden (22). Small blocks of fossiliferous limestone, from the Mixon Reef, off Selsey Bill, were used as facing-stone in the West wing. Most columns were turned from blocks of soft, cream-coloured granular limestone, probably Caen Stone from La Maladrerie Quarry, near to Caen, although some were of white foraminiferal limestone or pale yellow bioclastic, pisolitic limestone from the Mediterranean or France, and Gloucestershire, respectively. (23). Stone and marble, used for mouldings, architectural details and decorative inlays were imported,

perhaps indirectly, from Erdek and Phrygia in Turkey, Skyros and Lakonia in Greece, Tuscany and Versalia in Italy, the Haute Garonne, Pyrenees and Côte d'Or in France, from Guernsey in the Channel Islands and the Isle of Purbeck (24).

In the area between the South Wing of the Palace and the head of the inlet, up to 5 feet (1.52 m) of silt, gravel and clay were dumped onto natural slope, thus forming a terrace which was, apparently, landscaped to create an informal, private garden. The full extent of the terrace is not known but it seems to have occupied a roughly square area, some 350 feet (106.2 m) from North to South by about 320 feet (97.1 m) from East to West, not a triangle as previously suggested (25). The South side of the terrace was revetted with timber piles, behind which were piled heaps of massive blocks of limestone and greensand. At the foot of this revetment, up to 2 feet (0.6 m) of natural gravel had been dredged out in a strip 32 feet (9.71 m) wide to form a deep-water channel, the floor of which lay 6-7 feet (1.83-2.13 m) below the upper surface of the terrace. The deep-water channel narrowed at the eastern end of the excavated area to a width of 16 feet (4.85 m) at which point the southern bank had also been revetted with timber and ballast (26). The basin South of the terrace and the channel had once been flooded with sea-water, which must have lapped close to the surface of the terrace in Roman times (27). Cunliffe implies that this water was retained in the basin by artificial means and Wallace, basing his theories on an estimate that in the 1st century A.D. sea-level was some 10-20 feet (3.05-6.1 m) below the present, has suggested that access was gained to the basin by means of one or more locks, traces of which, he claimed, are still visible in the Fishbourne Channel (28).

96

An analysis of a small sample of insect fauna from a layer of peaty soil, representing the old ground surface sealed by the artificial terrace, revealed that there had once been a eutrophic pond or slowly-flowing stream at this point. Aquatic plants had grown in shallow water near to muddy banks and the pond/stream itself, its floor covered with mud and vegetable detritus, had

probably been used as a watering place for cattle and other livestock (29). The terrace itself was sealed by a layer of estuarine silt which has not been closely dated and may be post-Roman in origin. Unfortunately Cunliffe does not give details of the precise relationship of the "pond", the revetment or the deep-water channel to Ordnance Datum and this must, therefore, be inferred from the contours given in his plans.

South of the palace the 10-foot (3.05 m) contour of the natural ground surface recedes from a point 400 feet (122 m) South of the South-West corner of the South wing until it skirts close around the South-East corner of the East wing. As up to 5 feet (1.52 m) of silt, gravel and clay were dumped on this old land surface to form the terrace on which the palace and the informal garden were set out, the level of the terrace, in the vicinity of the deep-water channel must have been about 14 feet (4.27 m) \pm ca. 1 foot (0.3 m) above O.D. (30). As the floor of the deep-water channel lay 6-7 feet (1.83-2.13 m) below the surface of the terrace, it must have lain about 7-8 feet (2.13-2.44 m), \pm 2 feet (0.61 m) above O.D. These figures are too inaccurate and unreliable to allow even an estimate of the possible depth of sea-water in the basin and the channel and no firm conclusions can be drawn^{as} to the relationship of these features to sea-level until the results of the excavations in the harbour area have been published.

Despite a slight decline towards the end of the 1st century, the next 180 years saw a series of complex alterations and modifications to the palace, particularly in the North wing and the aisled hall. One new bath-suite replaced another, several polychrome mosaics were laid and a new hypocaust was inserted as late as ca. A.D.280 (31). In about A.D.280-290 a conflagration destroyed the North wing and at least part of the West wing. The palace was then systematically demolished and by ca.A.D.320 was abandoned (32).

Portchester.

SU 625045

97

Portchester Castle, Portus Adurni, stands on a low-lying promontory at the head of Portsmouth Harbour, a sheet of water which is roughly triangular in shape. The harbour is sheltered from the prevailing West and South-westerly winds by the Isle of Wight and access into the Solent is gained

by way of a narrow passage opposite the modern naval dockyards at Portsmouth (33).

Extensive erosion over a protracted period has necessitated the construction of sea-defences in order to ensure that the East and South walls of the fort are not undermined. A chart of Portsmouth Harbour, 98 prepared in A.D.1716, shows a strip of land, upwards of 100 feet (30.5 m) wide, flanking the East and South walls of the fort; the land has since 100 been completely removed by the sea (34). The chart also shows extensive tracts of "ouze" throughout the harbour which are cut by three deep-water channels, one of which - "Port Caesar Lake" - runs up between Portchester Castle and Horsea Island. Opposite the fort this channel was 7-9 feet (2.13-2.74 m) deep at low water while to the North it became gradually more shallow until, opposite modern Paulsgrove, it was only 3-4 feet (0.91-1.22 m) in depth. In the early 18th century therefore, Portchester was at or near the head of navigable water, at least at L.W.M.O.T. (35).

The configuration of the Roman shoreline has not been established 99 but it was probably similar to that of the 20th century harbour (36). Cunliffe estimates that the Roman shoreline to the East of the fort probably lay near to the western margin of the present deep-water channel or some 500 feet (152 m) from the East gate; there may have been considerably more land to the South of the fort (37).

The land on which the fort lies is now only 16 feet (4.88 m) above O.D. Cunliffe has shown that, ca. A.D.285, up to $2\frac{1}{2}$ feet (0.76 m) of brickearth and chalk marl were deposited on the pre-Roman land surface within the South fort wall in order to level the ground (38). 100 Therefore the terrain outside the East and South fort walls can only have sloped gently down to the waters of the harbour, and would have provided a shallow beach onto which vessels could be drawn (39). The shore to the East of the fort lay in the lee of the prevailing winds and would have made an ideal anchorage. In discussing the position of the harbour, it is significant that the North and South walls were provided with postern gates while those on the West

and East were the main gates, the latter being used as the mediaeval Watergate (40).

Cunliffe cut a trench in the shore, somewhere opposite the East fort wall, but the results were inconclusive (41). He has also published an aerial photograph of the Castle which shows traces of a feature, probably a hard way, leading from the East Gate, down into the sea and towards the western margin of the deep-water channel. This feature is probably post-Roman in origin as any Roman harbour installations in this area are likely to have been washed away; even so, it might well repay further underwater investigation (42).

Cunliffe states that no trace has yet been found of the service road which must have linked the fort with the road system to the North (43). The chart of A.D.1716, which was largely concerned with land detail, shows a road, which follows a single straight alignment, from the North-West, along the ridge of the promontory, towards the West gate of the fort (44). This could well mark the line of the road to the fort.

The Portchester peninsula does not appear to have been occupied during the two millennia before the establishment of the fort ca.A.D.285 (45). The massive stone walls of the fort, 10 feet (3.05 m) thick and at least 20 feet (6.1 m) high, enclosed an almost square area of 8.48 acres (3.39 Ha) (46). Twenty forward-projecting bastions stood on a foundation platform common to that of the walls into which they had been bonded (47).

Flint, and to a lesser extent, chalk, probably from Portsdown or further inland, were used in the foundations and superstructure of the walls (48). At ground level the front face of the wall was stepped back by 9 inches (23 cm) and faced with slabs of limestone, probably from the Isle of Wight (49). While Upper Greensand (= tufa?) was selected for the facing of the guard chamber and for the vaults of the postern gates in the North and South walls, Lower Greensand was used in the gates and, as rubble (= offcuts ?), in the wall between Bastions 14 & 15 (50). Both ^{the} Upper- and the Lower Greensand may be of Wealden origin but extensive outcrops do occur in the Isle of Wight and in the Sussex Weald. The Isle of Wight is only

a short distance away and the stone²⁵¹ could have been easily transported thence by boat to Portchester (51). Two closely-spaced ditches have been located outside the West wall and, although all trace of these has been washed away on the eastern side, it is likely that they encompassed the walls (52).

Post-Roman occupation of the area within the fort walls has removed virtually all trace of 3rd-4th century features, but enough stratified layers have survived to allow a tentative reconstruction of the history of the site (53). It was constructed, ca. A.D.285, probably as a base for a detachment of the Classis Britannia, as part of the overall strategy for stamping out piracy probably by acting as a long-stop against any raiders who had penetrated the Straits of Dover. Very little occupation debris has been found of the period ca. A.D.290-300 and this led Cunliffe to suggest that the fort may soon have been abandoned (consequent to Carausius' implied rapid success over the incursors (54). This seems strange in view of the presence of Allectus' fleet off the Isle of Wight in A.D.296, for which Portchester would have made an ideal base (55). Cunliffe does, however, allow for a 'clean occupation' of the site at this time, and it may, after all, have been in use as a base for Allectus' fleet (56). From ca.A.D.300-345, occupation debris was allowed to accumulate within the fort; a wide range of activities was pursued and the presence of women and children indicates that at least part of the population was civilian; the site, was however, tidied up ca. A.D.325 and in ca. A.D.345 when raids are again recorded (57). From ca. A.D.345 occupation appears to have been 'ordered', until ca. A.D.364 after which time a considerable amount of rubbish was again allowed to accumulate until ca. A.D.378 (58). This may be connected with a possible transfer of emphasis to Bitterne after A.D.367, although the construction of defences there may have been nothing more than the provision of an additional refuge (59). It is conceivable that small craft may have had some difficulty in emerging from Portchester Harvour into the Solent in certain weather conditions and that the navigation of Southampton water and

the R. Itchen was found to be less of a problem (60). After ca.A.D.378 the disordered occupation at Portchester continued but on a diminishing scale (61).

Bitterne.

101

About three miles above its entry into Southampton Water, the River Itchen makes an almost semi-circular bend, enclosing on its East bank a sub-triangular promontory. Here was situated a Roman settlement which is commonly regarded as the Clauentum of the Antonine Itinerary (62). The promontory is flat and low-lying, with a sub-soil of river gravel. While two sides of the site are bounded by the River Itchen, the third is marked by the parallel lines of defence which ran in the straight line across the neck of the promontory. The areas thus enclosed were 8.0 acres (3.2 Ha) and 27.5 acres (110 Ha). (63).

Until the early nineteenth century, the river boundaries of the promontory were, it seems, much the same as in Roman times. Since the last century there has been considerable reclamation of land, especially on the North and East sides of the promontory, but the line of the 19th century river bank can still be traced in such areas as have not been built upon, where the old riverbank lies higher than the reclaimed land. In the early 19th century the waters of the river reached up to this old frontage at high tide (64).

The Roman occupation of Bitterne is thought to have begun ca. A.D.70. Excavators have allowed for a pre-Flavian Period I, although stratified material of that time has yet to be excavated (65). During the early stages of the campaign of the Legio II Augusta along the South Coast, use seems to have been made of a supply base at Fishbourne, which seems to have been superseded by a site further west on Poole Harbour (66). It is unlikely that there was a supply base at Clauentum,^{although} a station here would have been in a position to supervise the river-valley which led inland to Winchester. Clauentum may also have figured in the communications system with the Isle of Wight, although a terminal at Lepe would have afforded a much shorter crossing (67).

Little is known of the settlement at Bitterne in Flavian times, although occupation, possibly civilian, is attested in the area (68). It has been suggested that wharves were constructed along the riverbank at this time. Roach Smith describes "a very substantial wooden pile framework for boats and galleys" which had been partially excavated some years before A.D.1883 (69). He does not mention whether any Roman material was associated with the structure; no measurements seem to have been taken, nor drawings made. Davies also refers to a "strong wooden frame or quaywork" near the foot of the remains of the late "wall", but his suggestion that it was a Roman work remained unsubstantiated (70).

In A.D. 1918, on the line of the old wall which marked the former limit of high water, workmen, excavating foundations for an engineering works, found two pigs of lead at a depth of 25 feet (7.62 m). The pigs were dated by inscription to A.D. 68-79 (71). These pigs and others found in the area between Bitterne and Charterhouse may have been 'lost' while being transported overland to Clausentum, to be used on the spot or shipped elsewhere. A lead ingot, produced in Flint or Shropshire, found at St. Valéry - sur - Somme, bore the inscription:- "NERONIS AVG BRITAN L II" (72). In A.D. 1783, a pig, dated by inscription to A.D.60, was found at Bossington, near Stockbridge, Hampshire, on the line of the Roman road which ran West from Winchester (72). Metallurgical analysis has shown that it is derived from the Flint lead-producing areas (74). The twenty-six ingots of lead found in the general area of the Mendips and the South coast can only represent a small portion of the total produced, and the evidence points to the early development of a well organised lead-producing industry in Roman times, with some pigs being exported to the continent, possibly through Southampton Water (75). Present evidence indicates Flavian occupation of the area to the West of the outer bank at Bitterne and there~~is~~, therefore, every possibility that Clausentum was in use as a port at this time (76).

Traces of timber structures attributable to the Trajanic period have been found at Bitterne, one of which was apparently destroyed by fire (77).

Between A.D.120 and 150, a ditch was cut, running across the neck of the promontory, enclosing an area of less than 8 acres (3.24 Ha) inside which a wooden stockade was constructed ca. A.D. 150 (78). By A.D.150-170 the ditch was silting up and both were apparently out of use by the end of the 2nd century (79). While no buildings attributable to this period have been found, an occupation level, rich in pottery, did accumulate up to A.D.170-180 (80). About A.D.170-180, stone was imported to build a bathhouse and two dwellings. Footings and squared wall blocks used in the bathhouse were said to be of Bembridge limestone which could have been brought direct to Clausentum from quarries on the Isle of Wight by boat (81). Late in the 3rd century alterations were made to the bathhouse to convert it into a makeshift two-roomed dwelling, although the quality of the workmanship was poor (82).

There appears to be a break in occupation levels for the years from the beginning of the 3rd century until A.D.250-270 and about the end of the 3rd century the remodelled bathhouse was demolished and a second building destroyed by fire (83). There was some building activity ca. A.D.350, but in the late 3rd and early 4th centuries the settlement fell into decline. Clausentum may have had been of some importance to Carausius & Allectus, and it has been suggested that a Carausian mint may have been located here (84).

By the time the defensive wall was constructed across the promontory ca A.D.370 the settlement at Bitterne could no longer have been in decline and may even have taken over from Portchester as one of the defended enceintes of the Litus Saxonicum (85). The stone of which the wall was built, and some at least of the milestones which were incorporated into it, almost certainly came from the Isle of Wight (86). If this was the case then facilities must have existed at Clausentum to off-load the stone; wharves may have been built specifically for such work if none were already available. Furthermore, if the building of the wall at Clausentum was linked with the transfer of the garrison from Portchester to Clausentum then harbour facilities would have been necessary for the maintenance of a flotilla of patrol vessels. It is conceivable, however, that the enceinte was intended only as a refuge in

the event of a raid (87).

The construction of the town wall was accompanied by some other building activity; a start was made on building a new bath-house, but it was never finished. Debris accumulated on the site until ca. A.D.390 when the walls of the bath-house collapsed. An abortive attempt was made to finish it, and occupation debris indicates that it was inhabited from ca. A.D.390 into the early 5th century (88).

Lepe

SU 990460

102

The village of Lepe lies opposite the mouth of the Beaulieu River, on a ridge some 500 yards (475 m) West of the point at which the Dark Water enters the Solent. Eastward drift has choked the estuary of the Dark Water with sand, shingle and mud, on which marshland vegetation has taken hold, some of which has been reclaimed (89). It is virtually certain that there would have been a small haven here in Roman times, offering shelter from the prevailing south-westerly winds, as the estuary of the Dark Water was used as a port of embarkation during the Middle Ages (90). To the East of the estuary the land rises sharply to a low-lying spur, the western flank of which has been put down to plantation. This narrow spur runs southwards as far as Stone Point where it ends in a sharp bluff.

A Roman road has been traced, running in a generally southerly direction and parallel to the western shore of Southampton Water, from Dibden as far South as Langley (91). Beyond Langley, from Whitefield Farm as far as Stone Farm, Stone Point, a modern road and then a farm track follow the same alignment and may lie over the Roman road (92). No metalling is visible in the face of the bluff at Stone Point and the road seems to be heading towards a possible settlement on the western edge of the spur at a point at which a prong dips towards the estuary and the marshlands of the Dark Water. Williams-
Freeman surmised that this Roman road followed the line of an Iron Age predecessor along which tin was transported on its way to a causeway linking the Isle of Wight with Stone Point at low water (93). It is most unlikely that such a causeway was in existence in Roman times or even during the pre-Roman Iron Age and there is no evidence for any activity connected with the tin-trade at Stone Point (94). Margary suggested that the Roman road was designed to link the southern road system with a small port at Stone Point (95).

This is the most likely explanation of the behaviour of the road and in this context the port would have functioned as the terminal of a ferry to the Isle of Wight (96).

103

A wood, known as Pits Copse, lies just South-East of the point at which the alignment of the Roman road is lost. The name suggests that gravel was once extracted from the spur at this point, and earth-works consisting of a series of banks are visible on the ground (97). The outer banks on the seaward side curve inwards to form what appears to be an entrance to the workings, through which the waters of the Solent would flow but for a strip of marshland and sea-defences to the South. Sanders has suggested that this quarry was used as a source for ballast with which to stabilize ships engaged in the transport of stone from the Isle of Wight (98). Williams-Freeman noted that a good deal of Bembridge Limestone was to be found lying on the beach just above L.W.M.O.T. to the South of Stone Point, and he referred to a local tradition that it was dropped there while being conveyed from the Isle of Wight to build Stone Farm, which was erected in A.D.1685; Binstead Stone was used to build Beaulieu Abbey and many churches in Hampshire; indications of traffic in quarried stone between the Isle of Wight and a small port at Lepe, from the Middle Ages up to the 17th century (99). Stone from the island was used in Roman times at Portchester Castle and at Bitterne but it is most unlikely that it would have been shipped through a port at Lepe when more direct routes were available.

Williams-Freeman also refers to traces of old foundations at several points along the East bank of the estuary of the Dark Water but they have not been securely dated (100). He also suggests that the Roman harbour was to be found near the mouth of the estuary. It has not been proved, however, that the Roman road did run as far as Stone Point and it is conceivable that it stopped short, a little way up the estuary. It has been shown elsewhere that Roman ports were often sited at or near the head of tidal limits and there is little reason to doubt that a port on the Dark Water would not have been similarly sited (101).

104

Isle of Wight

The Isle of Wight was conquered by Vespasian whilst operating as a legionary commander (102), and at first sight its capture seems to imply the use of sea-borne forces operating, probably, from a base at Fishbourne (103). It has been suggested, however, that the Isle of Wight is the "Ictis" of Diodorus Siculus and that it was, therefore joined to the mainland by a causeway at low water (104). Diodorus, in discussing the tin-trade of the pre-Roman Iron Age, states that the inhabitants of Belerium conveyed tin to an island off the coast of Britain, called Ictis; waggons could, apparently, cross to the island on a causeway which became viable at low water. On the island itself, merchants bought the tin and then shipped it across the Channel to Gaul (105). Laing has studied the incidence and authenticity of finds of Greek pottery and coins in southern England and has concluded that a small proportion of the finds are genuine Iron Age losses, the distribution pattern of which points to the existence of an Early Iron Age port on or near to the Isle of Wight (106).

At the beginning of the 20th century, a geological survey of the Isle of Wight and the mainland opposite was made by Reid who suggested that a causeway probably once existed between the Black Rock at Yarmouth and the Pennington Marshes in Hampshire (107). Laing cites an unpublished thesis by MacFarquhar who claimed to have found evidence that waggons crossed to the Isle of Wight, along a causeway, in the Middle Ages (108). This evidence has, however, not been substantiated and the argument for the existence of a causeway rests solely on geological evidence which may not apply to so late a period (109).

If it was not possible to travel along a causeway to the island in Roman times, then a ferry would have been needed; this may conceivably have run from the now-silted harbour at Lepe across to an undiscovered terminal somewhere in Gurnard Bay or, more probably, on the estuary of the Medina (110).

A Roman road is said to have run from Puckaster Cove, immediately East of St. Catherine's Point on the South coast of the Isle of Wight, to the Roman villa at Gurnard Bay, the course of which is now marked by "Rue Street" (111). There appears to be no evidence, apart from the incidence of the "street" element, to warrant the assignation of this road to the Roman period and the exact locality of the ferry terminal must remain obscure.

* * * * *

Five villas have been located on the Isle of Wight of which four, those at Carisbrooke, Newport, Combley and Rock are situated towards the centre of the island (112). A fourth villa, that at Brading, once overlooked a tidal inlet - Brading Harbour. The terrain to the South of the villa, towards Sandown, is low-lying and is covered by the sea at very high tides. Two boat-hooks have been found on the site of the villa; the head of one was $11\frac{3}{8}$ inches (28.8 cm) long, with a protruding spike and a bent-back hook (113). Pottery finds from Brading indicate that the site was occupied from the 1st century A.D. onwards, the villa reaching its final form in the 4th century. Parts of the building were used for agricultural purposes and there is every reason to suppose that the villa was once the centre of a large estate (114).

* * * * *

From the central chalk ridge ^{north-}wards, the Isle of Wight is formed of beds of Tertiary limestone (115). Limestone was used in the walls of Portchester Castle, ca. A.D.285 and, in considerable quantities, at Fishbourne in the 1st century A.D.(116). Limestone of Tertiary origins outcrops on the coasts of the Isle of Wight; to the North end of Whitecliff Bay, beds of Bembridge Limestone run into the sea as the Bembridge Ledge and elsewhere it is found along the shelving Spithead shore, the bolder coastline of the Solent, and on the high ground between Blackgang and Luccombe Chine (117). The southern coast of the island is exposed to the prevailing South-West winds but the drowned valley of the Eastern Yar, much of which has been reclaimed, would have provided a sheltered harbour at a point convenient for the crossing to Portsmouth Harbour (118).

Bembridge Limestone was used in the construction of a small bath-house at Bitterne, ca. A.D.170-180 and, possibly, in the town wall which was constructed ca. A.D. 370 (119). An altar to Ancasta and a milestone inscribed to Gordian III and, later, to Tetricus, were recovered from this town wall in the 19th century; both were fashioned from Bembridge Limestone, probably from the Binstead area from which the stone could have been shipped, possibly as ballast, to the mainland by way of Wootton Creek or, more probably, from the estuary of the Eastern Yar. (120).

A pillar, probably a milestone, bearing a dedicatory inscription to Tetricus was found at Bitterne in A.D. 1841; the material is Upper Green Sandstone, probably from the southern part of the Isle of Wight (121). Upper and Lower Greensand were used in the gates at Portchester Castle, ca. A.D. 285 and, as rubble, in part of the fort wall; Cunliffe suggests that this stone is of Wealden origin but notes that it does outcrop in the Sussex Weald and in the Isle of Wight (122). Wealden Beds outcrop in cliffs on the West coast of the Isle of Wight between Compton Bay and Atherfield Point and, on the East coast, in Sandown Bay. Lower Greensand outcrops in Sandown Bay and at Atherfield and in both places the rock at its base runs out to sea, forming dangerous reefs (123). Upper Greensand is to be found in Compton Bay and at the Culvers; it emerges again near to Ventnor in the lower cliff and, between Niton and Bonchurch, it has slipped forward to form the Undercliff (124).

The presence of quantities of stone derived from the Isle of Wight on mainland sites indicates that shipping was available for transportation; it need not, however, imply harbour installations at the source of the material. Cunliffe suggests that some of the blocks of limestone used in the fort wall at Portchester have the appearance of being water-worn and it is conceivable that much of this and other material from the island is derived from quarries situated on or near to the shore, in a position convenient for loading into boats (125). Much stone has slipped forward to form undercliffs or has fallen from outcrops in cliffs on to the shore over a protracted period, and it is conceivable that there would have been little

need for extensive quarrying around these coasts in Roman times (126).

* * * * *

A fort, apparently of the Saxon Shore type, lies under the Norman mound of Carisbrooke Castle. The East and West walls survive to a height of 5 feet (1.52 m) and are some 10 feet (3.05 m) thick. The area thus enclosed seems to be squarish in plan, and is approximately 440 feet (134 m) wide by 480 feet (146 m) long. The East gate is recessed between curved inturns of the fort wall; there are slight traces of bastions, one of which appears to be circular in plan and to be set astride the fort wall. The superimposition of the Norman mound upon the fort has served to restrict excavation and although a late-Roman date is likely, it has not been possible thus far to prove it with any degree of certainty; little Roman pottery has come from the site (127). The fort lies a little over 1 mile (1.6 Km) West of the Medina. The extent to which the navigation of this drowned valley has been restricted by post-Roman reclamation in the area of Newport is an unknown factor but it is improbable that the fort was designed to operate as the base for a flotilla, unlike other late shore forts. Rather, it may be seen as a refuge for the local population.

* * * * *

Hengistbury Head

SZ 1891

While the southern shore of the one mile (1.6 km) long peninsula - Hengistbury Head, has been severely eroded by prevailing south-westerly winds, the sheltered lagoon to the North, now known as Christchurch Harbour, has been subject to extensive silting away from the ^{main} channels, which has obscured the outline of a 2nd-1st century B.C. haven, a major port with overseas trading contacts with Atlantic France and Italy for upwards of a century after ca. 100 B.C.(128). The abundance of imported and local coins and pottery, including Dressel-Type IA amphorae representing possibly many shiploads of Italian wine in the first half of the 1st century B.C., the wealth of luxury commodities, and the range of manufacturing activities, particularly metal-working in lead, possibly from the Mendips, argentiferous copper, possibly from Cornwall, gold and local iron, but not, apparently, tin, indicate that

this was a pre-eminent urban community with extensive overseas and coastal trading systems, and possibly the main port of entry for Italian wine in the first half of the 1st century B.C. The scarcity of imported Gallo-Belgic and Italian pottery, including the virtual absence of Dressel - Type IB amphorae, suggest that trade was severely restricted between 56 B.C. and A.D. 43, although the settlement may still have been a market centre with coastal trade with the Dumnonii and the Dobunni. From ^{ca}A.D. 43 up to the early 4th century, occupation debris is consistent with nothing more than a peasant community which relied on farming, fishing and salt extraction, in contrast to trading, for its survival (129).

Hamworthy

SZ 002904

105-7

106

Poole Harbour is a broad lagoon which was formed when an area of low moorland was submerged. It is cut off from Poole Bay by the narrow Sandbanks Peninsula in the North and from Studland Bay by the broader South Haven Peninsula in the South. Between the points of these peninsulas runs a narrow but deep channel through which currents flow at up to five knots at springs. The entrance to the channel is sheltered from the prevailing South-West winds by the Isle of Purbeck and it is exposed only to wave-fronts coming from the South-East. The shoreline of Poole Harbour itself is much indented with creeks and inlets. Deep-water channels wind round sandy islands in the lagoon but rarely approach the shore which is mostly fronted by a mixture of gravel and sand, with mud further out (130). The Main Channel does run close into the southern shore of the Hamworthy Peninsula at Lake and an offshoot, the Back Water (or Quay Channel), flows between the opposing points of the Poole and Hamworthy Peninsulas into Holes Bay, providing a sheltered deep-water anchorage, close into shore, at all states of the tide. The channel is scoured by four tides a day which serve to keep it free of silt.

A chronologically-compact group of coins and pottery of the Tiberio-Claudian period has been found in sporadic rescue excavations at Hamworthy on a site which was once adjacent to the northern shore of the peninsula and close

to the deep-water anchorage (131). The Roman shoreline has been obscured by modern land reclamation but a tidal creek still runs up to the site and could well mark the approximate position of the Roman harbour (132). The conditions in which the rescue excavations were carried out were far from hygienic and although the excavator reported the finding of several dished areas which he identified as huts, one of which was apparently of Roman date, traces of other more ephemeral structures may well have been missed. Pits, ditches, hearths and occupation debris, including briquetage, of Iron Age and Roman date were also reported (133). 107

Two of the dished areas were sealed by a 10-inch (25.4 cm) layer of compact yellow shingle containing fragments of Gallo-Roman ware and Roman amphorae, which Smith interpreted as a spur of the Roman road which ran southwards from Badbury Rings to Hamworthy (134). The behaviour of this road and the proximity of the 42-acre (16.8 Ha) vexillation - fortress at Lake near Wimborne, some 5 miles (8 Km) to the North, indicate that there may have been an early supply base somewhere on the Hamworthy Peninsula, probably operated by the fleet (135). There is some evidence that a trade-route operated out of Poole Harbour in the Iron Age implying the use of at least one trackway into the hinterland; within Poole Harbour, the Hamworthy Peninsula affords good access to Wimborne and the North, and yet it is adjacent to a fine, sheltered, deep-water anchorage; it was the obvious site to choose for a supply base (136).

The material from the rescue excavations indicates Claudian occupation but neither military equipment nor military structures have been found, with the exception of the Niedermendig lava donkey-mill (137). Briquetage was found but not recognised during the rescue excavations and this was also found associated with oven bases found in 1949 at SZ 00249045, just North of Smith's excavations (138). There is every indication, therefore, that this was an Iron Age and Roman salt-manufacturing site; the supplies base may lie elsewhere in the peninsula. Traces of agger and metalling have been seen in several places on the projected line of the Hamworthy Common - Manor House alignment (Fig. 105 at N), and it is possible that the road

continued southwards to meet the shore of the Hamworthy Peninsula at or near the Railway Station (139). It may, however, have turned eastwards to meet the northern shore of the peninsula near to the mouth of Quay Channel and close to the site of the lift bridge, South of which there was once a large oval-shaped deep-water basin (Q).

Analysis of the heavy mineral content of the tourmaline-rich clays from which black-burnished ware, category one^(=BB1), was manufactured has indicated the existence of a major industry in the Wareham/Poole Harbour area (140). Only one Kiln has been found in the vicinity of Poole Harbour, that at Ower, and this need not necessarily have been used for the manufacture of B.B.I. (141). Other sites in the area have produced layers of ash associated with B.B.I ware in context which indicate that the pottery had been fired in bonfires (142). For the Iron Age and the 1st century, the distribution pattern of B.B.I ware is restricted to the South-West but, ca.A.D.120, it appears in considerable quantities on the line of Hadrian's Wall and its hinterland to which it was probably shipped by way of the Bristol Channel and the Solway (143). With the re-occupation of Scotland, ca.A.D.140, and for the next two decades, B.B.I. was eclipsed along the line of the frontier by B.B.2., which was almost certainly the product of the Colchester potteries. B.B.I. continued in use on the Tyne-Solway isthmus and B.B.2 was not introduced there until ca.A.D.163, when Hadrian's Wall was re-occupied. Although B.B.2 was supplied to Corbridge, South Shields and the eastern half of the Wall, it did not penetrate the western sector where B.B.I remained abundant until the late 3rd - early 4th centuries (144). While 75% of black-burnished ware from West Midlands sites appears to be derived from Dorset sources it is also found as far afield as Colchester and Kent to the East, and Mumrills to the North (145). Little trace has yet been found in the Poole Harbour area of major industrial activity, but if the facilities of one or more ports were required for transport of products to the North then the most suitable sites are those which are adjacent to a deep-water anchorage of which Ower is a good example.

It is probable that a 2nd-3rd century port developed at or near to the terminus of the road from Badbury Rings, but provision must be made for a port on the southern shore of Poole Harbour which could have served potteries and quarries, on the Isle of Purbeck (146). Scattered finds of 3rd-4th century pottery and coins have been reported from Hamworthy and Poole, but not in sufficient quantities to indicate a thriving harbour settlement (147).

Radipole, Weymouth
(Isle of Portland)

SY 669812

Occupation debris and inhumation burials have been found at the North end of Radipole Lake, which is otherwise known as Weymouth Backwater (148). The "lake", once the estuary of the River Wey, was open to the sea prior to the construction of the Backwater Dam. Land has been reclaimed around it, notably between Radipole Park Drive and the railway, and the area of open water has been considerably reduced (149). Between Radipole Lake and Weymouth Beach the land is low-lying, but to the North it rises to the ridge of Spa Hill, some 100 feet (30.5 m) above sea-level.

Part of an opus signinum floor was found on Spa Hill in A.D.1937 along with a 1st century brooch, sherds of samian ware, coarse ware, some of which was assigned to the 4th century, and three coins including one of Gratian (150). Seven Romano-British burials, black-ware urns and samian ware, were found in ca. A.D.1844 near to Spa Road, on the crest of the hill (151). These finds are indicative of Romano-British settlement but they lie in an area which has been 'developed' in the 20th century.

A Roman road which led from the South Gate of Dorchester to Radipole Lake may have passed by the Spa Hill site. The line is known as far as Ridgeway Hill, some 2.6 miles (4.2 Km) to the North, where a slight turn to the South was made, after which the line is lost. The road may have continued on the same alignment, passing by the Spa Hill site before descending to the "lake". Although Margary suggests that the road turned S.S.W. at Redlands Corner (SY 668⁸21) to reach the head of Radipole Lake by a gentler decline, he does, however, allow for a continuation of the alignment along the crest of Spa Hill (152). The remains of a Roman 'causeway' of pitched stones, ashes,

sherds, bones and shells have been reported in a extensive area of made ground, apparently near to the Spa Hill site, and included Roman tile and coins; this seems, however, more likely to have been occupation debris rather than the metalling of the road (153).

Two inhumation burials, one of which was 3rd-4th century in date, and occupation debris have been found about 0.5 mile (0.8 Km) South-West of the Spa Hill site on South Hill, which rises some 100 feet (30.5 m) above sea-level to the West of the River Wey. Romano-British sherds have been found in builders' excavations in the vicinity of the inhumations, and on the crest and slopes of the hill (154).

An amphora, probably attributable to the first half of the 1st century A.D. was found ca. A.D.1890 in mid-channel silt between the Backwater Dam and the Gasworks tunnel. Roman bricks, tiles, coins, pottery and remnants of Kimmeridge Shale urns have also been found in the Backwater, near to the Gasworks and a 3rd-4th century coarse-ware bowl has been recovered from the North end to the Lake (155). A second amphora was found out in Weymouth Bay ca. A.D. 1880 and a third in Portland Harbour during the First World War (156).

The most likely explanation of the behaviour of the Roman road from Dorchester to Radipole is that it led to a port on the Wey estuary, somewhere along the northern shore of Radipole Lake. The floor of the lake is of mud and use may have been made of the River Wey itself as a de-silting agent, in which case harbour installations may have been situated near to the head of the estuary, in an area where land has been reclaimed since Roman times. The small quantity of Claudian material which has been recovered from Radipole may indicate that use was made of this sheltered haven during the campaigns of Vespasian in the South-West (157); despite the lack of evidence for early structures at Dorchester, sufficient samian and imported coarse wares have been found to indicate that the site was occupied in the pre-Flavian, if not the Claudian, period and Frere has suggested that the headquarters of the Legio II Augusta may have been there or ^{at} Exeter ca. A.D. 43-67 (158).

Much Purbeck Stone was used in 4th century structures and in the town wall at Dorchester which was built perhaps ca. A.D. 300 or later.

Beds of this stone outcrop between Dorchester and Radipole and there would have been no need to transport it from a more distant source. Purbeck "marble", which was used for the 1st-2nd century tombstone of Carinus, does not outcrop locally and must have been brought from quarries on the Isle of Purbeck itself (159). Articles of Kimmeridge Shale and a considerable quantity of coarse-ware pottery also indicate trade with the Isle of Purbeck. Gaulish samian and small quantities of Rhineland and Nene Valley wares were also imported, until the town became a major market for New Forest Wares in the 4th century (160). While these commodities may have been shipped to Dorchester by way of a port on Radipole Lake, it appears that some materials such as Ham Hill Stone were transported overland to the town (161).

Quarries on the Isle of Portland also provided material for use in building construction as late as the 4th century at Dorchester. If this stone was not shipped directly from the quarries to Radipole, it must have been transported to the mainland by way of a ferry between Wyke Regis and the island. The water is consistently deep at Ferry Bridge on the mainland and traces have been observed of what may have been the footings of a wall, which ran in an East-West direction and projected for a distance of 8 feet (2.44 m) East of the modern bridge. Although this feature may have had some functional connection with the waterfront there is no evidence to prove that it is Roman (162). Inhumation burials, and occupation debris have been found on the Isle of Portland, most of which appear to be 2nd-4th century in date, and in Wyke Regis (163).

Roman pottery coins and other objects which have been found on Chesil Beach, about 1 mile (1.6 Km) North-West of Portland, may be derived from wrecks. (164).

Notes.

1. Cunliffe, B.W., (1971-I) "Excavations at Fishbourne", 1961-1969", Reports of the Research Committee of the Society of Antiquaries of London, No.XXVI, 1971, Vol.I: The Site, pp.5-8, fig.3; _____, "Excavations at Fishbourne, 1961", Antiquaries Jnl., vol.XLII, pt.1, 1962, p.15.

2. Cunliffe, op.cit., 1971-I, pp.1-3; Gents.Mag., 1805, pt.II, pp.926-7; "The Times", 11-ii-1929; Mitchell, H., "Early Traditions of Bosham", Sussex Archaeological Collections, vol.XVIII, 1866, pp.1-9; V.C.H., Sussex, vol.III, 1935, p.50, 56; Musgrave, "Antiquitates Britanno-Belgicae", 1719, p.96.
 It appears that Fishbourne was not occupied in the pre-Roman Iron Age, as only a few sherds of 1st century B.C. wares have been found there. Considerable areas of ancient fields and salt-manufacturing sites have been detected around Selsey Bill, which may have been the site of an important oppidum, of the Atrebates. Cunliffe, op.cit., 1971-I, pp.8, 15-16, 30, 32; _____, (1971-II), "Excavations at Fishbourne, 1961-1969", Reports of the Research Committee of the Society of Antiquaries of London, No.XXVII, 1971, Vol.II: The Finds, pp.158-160; Heron-Allen, E., "Selsey Bill, Historic and Prehistoric", 1911; Allen, D., "The Belgic Dynasties of Britain and their coins", Archaeologia, vol.XC, 1944, pp.4-6; _____, "The Origins of Coinage in Britain : a Reappraisal", in Frere, S.S., (Ed.), "Problems of the Iron Age in Southern Britain", 1961, pp.97-308; White, G.M., "Prehistoric Remains from Selsey Bill", Antiquaries Jnl. vol.XIV, pt. I, 1934, pp.40-52; Willett, E.H. "Ancient British Coins of Sussex", Sussex Archaeological Collections, vol.29, 1879, pp.72-113, and vol. 30, 1880, pp.1-30;
 Selsey^{Bill} must have been virtually cut off from the mainland in the pre-Roman Iron Age except, perhaps, for a connecting shingle tongue at Medmeney; many hundreds of acres of land have been removed by the sea along the southern shores of the peninsula and with them, presumably, the Atrebatian oppidum. Bede, Historic Ecclesiastica, IV, 13; Anon, "Sketch of the Island of Selsey in the County of Sussex, 1672"; Dixon, F., "Geology of Sussex", Ed. I, 1850, pp.7-16 and Ed. II, 1878, pp.16 ff., 45, 50; Ballard, A., "The Sussex Coast-line", Sussex Archaeological Collections, vol.LIII, 1910, pp.5-25; Heron-Allen, op.cit., pp.169, 259, 294; V.C.H., Sussex, IV, 1953, pp.205-6; Steers, J.A., "The Coastline of England and Wales", Ed. II, 1964, p.304 ff..
Supply base at Fishbourne :
 Cunliffe, op.cit., 1971-I, p.XXV.; _____, (1968-C), "Fishbourne, the Roman Palace & its History", 1968; Branigan, K., "Vespasian and the South-West", Proc. Dorset Natural History and Archaeological Society, vol.95, 1973 (1974) pp.50-6; Britannia VII, 1976, p.373, cf. Hamworthy and Lake, Radipole and Dorchester, Fingringhoe Wick and Colchester. Pieces of military equipment have been found at, or near, Fishbourne, including weapons and pieces of bronzework from uniforms; a bronze helmet has been dredged up from the harbour. It is just possible that the Period IA structures belonged not to a supply base but to a beach-head camp of the invasion itself. Cunliffe, op.cit., 1971-I, pp.73-4; _____, 1968-C, ibid; Branigan, ibid.

3. Cunliffe, op.cit., 1971-I, pp.39-40; _____, "Excavations at Fishbourne, 1962", Antiquaries Jnl., vol.XLIII, pt.I, 1963, pp.1-14; _____, "Excavations at Fishbourne, 1965", Antiquaries Jnl., vol.XLVI, pt.I, 1966, pp.26-38; _____, (Ed.), (1968 A), "Fifth Report on the Excavations of the Roman Fort at Richborough, Kent", Reports of the Research Committee of the Society of Antiquaries of London, No.XXIII, 1968.

4. Cunliffe, op.cit., 1971-I, pp.41-2, fig.9; _____, "Excavations at Fishbourne, 1964", *Antiquaries Jnl.*, vol.XLV, pt.I, 1965, pp.1-11; _____ (1968-B), "Excavations at Fishbourne, 1967", *Antiquaries Jnl.*, Vol.XLVIII, pt. I, 1968, pp.32-40.
5. Cunliffe, op.cit., 1971-I, pp.38 ff., 43-5, 73-4; 1966, *ibid.*
6. Cunliffe, op.cit., 1971-I, pp.XXV, 46.
7. Cunliffe, op.cit., 1971-I, pp.47-49; 1963, *ibid.*
8. Cunliffe, B.W., "Excavations at Fishbourne, 1963", *Antiquaries Jnl.*, vol.XLIV, pt.I, 1964, pp.1-8.
9. Cunliffe, op.cit., 1971-I, p.74.
10. Cunliffe, op.cit., 1971-I, p.5.
11. Cunliffe, op.cit. ; 1971-I, p.53, fig.3. A layer of silt had been deposited above the natural gravel surface, to the East of the Flavian Palace and was encountered again in the excavations South of the South wing. These deposits have not been closely dated and do not necessarily betoken a sudden rise in sea-level in the late Roman period, as Cunliffe implies. Cunliffe, *ibid.*, pp.8-9.
12. Cunliffe, op.cit., 1971-II, pp.1-3, 11 ff.
13. Cunliffe, op.cit., 1971-II, pp.252-5.
14. Cunliffe, op.cit., 1971-I, pp.58-61; 1965, *ibid.*
15. *ibid.*; it appears that Côte d'Or breccia and the Carrara marble were not used in the Flavian Palace.
16. Cunliffe, op.cit., 1971-I, pp.61-69, fig.18; 1965, *ibid.*
17. Cunliffe, op.cit., 1971-II, pp.1-2, 11 ff; 1968-C; *ibid.*, 1965, *ibid.*
18. Cunliffe, op.cit., 1971-I, pp.69-72, fig.19.
19. Cunliffe, op.cit., 1971-I, pp.8, 55-6.
20. Cunliffe, op.cit., 1971-I, pp.13-14, 77-131.
21. Cunliffe, op.cit., 1971-I, pp.140-150; 1968-C, *ibid.*
22. Cunliffe, op.cit., 1971-II, p.1; 1962, p.17.
23. Cunliffe, op.cit., 1971-II, p.2.
24. Cunliffe, op.cit., 1971-II, pp.16-17; 1962, *ibid.*
25. Cunliffe, op.cit., 1971-I, pp.132-4, fig.39; 1968-B, pp.34-5; *Britannia I*, 1970, p.303.
26. Cunliffe, op.cit., 1971-I, pp.132-4, fig.39. Cunliffe tentatively suggests that there may have been a lock at this point. The channel has been traced at least 1,300 feet (396 m) E.of the presumed lock.
27. *ibid.*
28. Information from Mr. Hume Wallace. See also, Wallace, H., "Selsey & Chichester Harbour", *Committee for Nautical Archaeology, Newsletter*, 3, 1969, pp.18-21. But see p.182.

29. Osborne, P.J., "Insect Fauna from the Roman Harbour", in Cunliffe, op.cit., 1971-II, pp.393-6.
30. Cunliffe, op.cit., 1971-I, Fig.3, 39. These estimates are based on the contours of the pre-palace ground surface drawn by Cunliffe. His figure 39 shows a 12-foot (3.66 m) ^{contour} running beneath the southern edge of the terrace; if this is not referring to the level of a later ground-surface, then the figure of + 2 feet (0.61 m) must be added to the levels given for the floor of the channel and the surface of the terrace.
31. Cunliffe, op.cit., 1971-I, pp.XXVI, 150-186.
32. Cunliffe, op.cit., 1971-I, pp.187-193.
33. Cunliffe, B., "Excavations at Portchester Castle, Volume I, Roman", Reports of the Research Committee of the Society of Antiquaries of London, No.XXXII, 1975, pp.1-4;
Steers, J.A., op.cit., 1964, pp.295-7;
Cunliffe, B., 1977a, "The Saxon Shore - some problems and misconceptions", in Johnston, D.E.(Ed.), "The Saxon Shore", C.B.A. Research Report No.18, 1977, p.3.
34. Cunliffe, op.cit., 1975, p.4, notes that several feet of land, to the South of the fort, were removed by the sea between A.D.1961 and 1972. He also cites documentary evidence describing serious erosion and flooding in this area in the early 14th century. "A Plan of Portsmouth", dated A.D.1716, probably prepared by Talbot Edwards, Bodleian Library, Gough Maps, Hampshire 12; Ordnance Survey, 1 : 25,000, Sheet SU 60, Provisional Edition, 1964. In 1716, the sea was already encroaching on the S.E.corner of the fort.
35. *ibid.* The 18th century chart does not show the depth of water at H.W.M.O.T. in the vicinity of the Portchester promontory.
36. Cunliffe, op.cit., 1975, p.3. - allowing for erosion, shallowing and artificial alterations to the harbour in the post-Roman period.
37. Cunliffe, op.cit., 1975, p.4. The position of the deep-water channel appears to have changed little since A.D.1716 and there seems no reason to doubt that it ran close by this point in Roman times.
38. Cunliffe, op.cit., 1975, pp.40-1, PL. XXVI b.
39. Casson, L., "Ships and Seamanship in the Ancient World", 1971, pp.363-5.
40. Cunliffe, op.cit., 1975, pp.10, 13, 26-7, 29-37, 420.
41. Cunliffe, op.cit., 1975, p.37, was looking for traces of the defence ditches.
42. Cunliffe, op.cit., 1975, PL. I by A. Rule; the photograph was taken at or near the time of high water. The feature shows up as a light linear spread against the darker shingle of the beach and, below water level, as a darker area standing out from the "ouze" of the harbour floor.
Rule's photograph also shows another linear feature running down into the water to the North of the fort. At first sight this appears to have some functional connexion with the local yacht club or boat-houses. However, a feature similar to this is shown on the A.D.1716 chart, being marked with a pair of parallel dotted lines. Similar dotted lines link Horsea Island to Portsea Island, West of Hilsea, and appear to mark the

line of the wade way, or ford, which is shown on the 1964 Edition of Ordnance Survey Sheet SU 60. These two features may, therefore, be interpreted as hard ways leading down to the edge of the deep-water channel.

43. Margary, I.D., "Roman Roads in Britain", Ed.III, 1973, Route 421, pp.92, 521; Cunliffe, op.cit., 1975, pp.4,6.
44. See note 34.
45. Cunliffe, op.cit., 1975, pp.6, 8-9, 194. A group of mid-1st century pottery and a coin of Claudius, found within the fort, are best explained in terms of transitory settlement by a very small group of people. The fort may have been the Portus Adurni of the Notitia Dignitatum (Occ. XXVIII), but see remarked on Felixstowe.
46. Cunliffe, op.cit., 1975, pp.10, 13, 419. It is, therefore, comparable with Lympne and Pevensey in size.
47. Cunliffe, op.cit., 1975, pp.10, 21-26, 419-20.
48. Cunliffe, op.cit., 1975, pp.13-14, 17-20, fig.9.
49. This limestone was also used, instead of tiles, in some of the bonding courses of the walls, and, in rough lumps, in the North inturned wall of the East Gate and in Bastion 20. Cunliffe, op.cit., 1975, pp.17-20, 29. See also p.259
50. Cunliffe, op.cit., 1975, pp.20-1, 26, 29-36.
51. Cunliffe, op.cit., 1975, pp.21. Of the seventeen whetstones found on the site, five are very similar to some 3rd century specimens found at Fishbourne; and which are said to be derived from the Hythe Beds of Kent. Peacock, D.P.S., "Whetstones", in Cunliffe, B., op.cit., 1971-II, pp.153-5; Peacock, D.P.S., in Cunliffe, op.cit., 1975, pp.265-6. Few quernstones have been found at Portchester but all of them, except one, are of Greensand - ibid, pp.267-8.
52. Cunliffe, op.cit., 1975, pp.13, 37. Excavation to the North of the fort and outside the ditches has shown traces of ploughing of the 3rd-4th centuries. A considerable quantity of rubbish had been dumped on this land-surface during the Romano-British occupation of the fort - ibid, p.186.
53. Cunliffe, op.cit., 1975, p.38.
54. Cunliffe, op.cit., 1975, pp.10, 40-43, 46, 59-67, 195-7, 419-22, 425, 428-9; Johnson, S., "The Roman Forts of the Saxon Shore", 1976, p.131; Fulford, M., "The Distribution & Dating of New Forest Pottery", Britannia IV, 1973, pp.162-3; Cunliffe, op.cit., 1977a, p.6.
55. Panegyrici Latini, ed. Mynors, VIII (V); Johnson, op.cit., 1976, p.111.
56. Cunliffe, op.cit., 1975, pp.195-7, 271, 423.
57. Cunliffe, op.cit., 1975, pp.10, 41-51, 56, 59-68, 77-8, 195-7, 271, 423-5. The two attempts to restore order could be the result of an assertion of some form of control, possibly in the form of a military billet, ibid, pp.427-9; But see - Cunliffe, 1977a, p.6. A small quantity of Argonne ware, ca.A.D.320 ff. may have arrived here through trade or in the possessions of some individual(s), ibid, pp.278-9 & cf.pp.265-6; Johnson, op.cit., 1976, p.140.

58. Cunliffe, op.cit., 1975, pp.42-8, 51-7, 61, 194-7, 270-1, 425.
59. Cunliffe, op.cit., 1975, p.430; Johnson, op.cit., 1976, p.151; cf. Cunliffe, op.cit., 1977a, p.3.
60. Cunliffe, B., op.cit., 1968A, p.269.
61. Cunliffe, op.cit., 1975, pp.425, 431.
62. Antonine Itinerary, 478, I; Rivet, A.L.F., "The British Section of the Antonine Itinerary", *Britannia* I, 1970, p.50.
63. Cotton, M.A., & Gathercole, P.W., "Excavations at Clausentum, Southampton, 1951-1954", *B.A.R.*, 1958, p.4; Williams-Freeman, J.P., "An Introduction to Field Archaeology as illustrated by Hampshire", 1915, p.216 ff; Collingwood, R.G., & Richmond, I.A., "The Archaeology of Roman Britain", 1969, p.52, fig. 19a.
64. Cotton & Gathercole, op.cit., p.4; Camden, "Britannia", ed. Gough (1806), p.166. The river is tidal well above Bitterne, but it is just possible that there was a sea ford in the vicinity in Roman times. cf. Margary, I.D., op.cit., 1973, Routes 421, pp.92, 521; 42b, p.89; 423, p.94.
65. Cotton & Gathercole, op.cit., pp.91-6.
66. Branigan, K., op.cit., 1974, pp.50-56. See also p.244.
67. See p.256ff.
68. Cotton & Gathercole, op.cit., pp.8, 13-15, 33.
69. Roach Smith, C., in *The Antiquary*, vol. VII, 1883, pp.79-80.
70. Davies, J.S., "History of Southampton", 1883, pp. 2, 12.
71. Tylecote, R.F., "Metallurgy and Archaeology", 1962, Nos.64-5.
72. Tylecote, op.cit., pp.81-5; Cotton & Gathercole, op.cit., p.14.
73. Dale, W., in *Proc. Soc. Antiquaries*, vol. 31, 1918-19, 36 ff.
74. Tylecote, op.cit., No.21.
75. Tylecote, op.cit., p.88; Frere, S.S., "Britannia", 1967, p.284.
76. Cotton & Gathercole, op.cit., pp.14-15.
77. Cotton & Gathercole, op.cit., pp.8, 15 & fig. 8, 9, 10; *Proc. Hants. Field Club.*, vol.XV, 1943, p.108.
78. Cotton & Gathercole, op.cit., pp.35, 40-1, fig.10; *V.C.H., Hampshire*, Vol.I, 1900, p.330.
79. Cotton & Gathercole, op.cit., pp.15, 38-9, fig. 7, 8, 10; pl.IV a-b.
80. *Antiquaries Journal*, vol.XXVII, 1947, p.156; Cotton & Gathercole, op.cit., p.15.
81. Cotton & Gathercole, op.cit., pp.8-11, 19-21, PL.II a-b. See also p.259.
82. Cotton & Gathercole, op.cit., pp.8-11, 22-3.

83. Cotton & Gathercole, *op.cit.*, pp. 14, 23.
Waterman, D.M., "Excavations at Clausentum, 1937-8," *Antiquaries Jnl.*, vol. XXVII, 1947, p.160. While the milestones recovered from the town wall all belong to this period, they may have been shipped in with other building materials ca A.D. 365 ff.
84. Cotton & Gathercole, App.VIII; Collingwood & Richmond, *op.cit.*, p.218.
85. Cunliffe, *op.cit.*, 1977a, p.3; Johnson, S., *op.cit.*, 1976, p.62; Cotton & Gathercole, *op.cit.*, pp.8-11, 41-3; J.B.A.A., vol. XIII, 1857, p.210; Waterman, *op.cit.*, pp.153-6.
A section cut through the outer earthwork revealed a two-period bank, the second phase of which was assigned to the 4th century J.R.S., L, 1960, p.233.
86. J.B.A.A., vol. XIII, 1857, p.210; Waterman, *op.cit.*, p.157-161, fig.2; The derivation of material, re-used or otherwise, found in the late wall is discussed in the section dealing with the Isle of Wight (quarries) p.259ff.
87. Cunliffe, *op.cit.*, 1977a, p.6.
Much pottery from the South coast of Britain has been found in a 4th^{century} context at Alet (Saint Malo) indicating commercial imports, possibly through Clausentum, or early migration. Langouët, L., "The 4th century Gallo-Roman site at Alet (Saint Malo)", in Johnston, D.E. (ed), *op.cit.*, 1977, pp.38-45.
88. Cotton & Gathercole, *op.cit.*, pp.8-11, 27, 29, 34-37.
89. Steers, J.A., *op.cit.*, 1964, p.295.
90. Williams-Freeman, J.P., *op.cit.*, 1915, p.213, 217.
91. Margary, I.D., *op.cit.*, 1973, Route 423, p.95; Sanders, I. "Ancient Road from Purlieu to Lepe", *Proc. Hants. Field Club*, vol. X, pt. I, (1926-30), pp.35-39. The agger is not visible beyond Langley but a modern road and then a farm track follow the same alignment as ~~far~~ as Stone Farm. V.C.H., Hampshire, 1900, p.325.
92. Williams-Freeman, *op.cit.*, p.216.
93. Williams-Freeman, *op.cit.*, pp.220-1.
94. See p.258.
95. Margary, *op.cit.*, p.96.
96. See p. 258ff. Provision must be made, however, for the possibility that the road led to a salt-manufacturing site.
97. Sanders, *op.cit.*, p.39. The existence of these banks was confirmed by a walk over the site, although it is now much overgrown and is fronted by reedbeds.
98. Sanders, *op.cit.*, p.39. Some of the trees which now obscure the workings were estimated by Sanders to be at least 300-400 years old.
99. Williams-Freeman, *op.cit.*, p.216. A piece of "Binstead stone" was found by Sanders beside the lane at Stone Farm.
100. Williams-Freeman, *op.cit.*, p.216.
101. See remarks on London, Colchester and Fordwich, for example.

102. Suetonius, Vespasian, 4.
103. Branigan, K., *op.cit.*, 1974, pp.50-2.
104. Diodorus Siculus, V, 22, 1-4 and V, 38, 4-5. Pliny, *Nat.Hist.*, IV, 30, 104, quotes Timaeus: ".... a Britannia introrsum sex dierum navigatione abesse insulam Ictim in qua candidum plumbum proveniat". Diodorus, V, 21, 3, states that Belerium was said to lie four days' sailing from the mainland (= the continent?). Laing, L.R., "A Greek Tin-Trade with Cornwall?", *Cornish Archaeology*, vol. 7, 1968, pp.15-23; Villard, F., "La Céramique Grecque de Marseille", 1960, Pt. II, pp.143-158; Holmes, T. Rice, "Ancient Britain and the Invasions of Julius Caesar", (originally published in 1907) 1936 edition, pp.499-514.
105. Diodorus Siculus, V, 22, 1-4 (Loeb Edition).
106. Laing, *op.cit.*, pp.15-18, fig.14; Maxwell, I.S., "The Location of Ictis", *Jnl. of the Royal Institution of Cornwall, N.S.*, Vol.VI., pt. 4, 1972, pp.302-4; Nicholson, C., "A Descriptive Account of the Roman Villa at Brading, Isle of Wight, 1880, pp.5-13.
107. Reid, C., "The Island of Ictis", *Archaeologia*, LIX, 1905, pp.281-8. He argues against a ford between Stour and Gurnard Bay on the grounds that its bed would have been of clay or loose sand; a floor of limestone would have been more suitable for waggons. See also Connor, A.B., "Highways and Byways in Hampshire", 1908, p.3; Williams-Freeman, J.P., "Field Archaeology as illustrated by Hampshire", 1915, pp.213-221; Holmes, *op.cit.*, pp.499-514.
108. Laing, *op.cit.*, p.20.
109. Laing, *op.cit.*, p.20. Steers, J.A., *op.cit.*, 1964, pp.302-4 and 634-8, suggests that St. Michael's Mount may be identified as "Ictis", there being no reason to suppose that it was not an off-shore island at high tide, in the pre-Roman Iron Age. See also, Fox, A., "South-West England", 1964, pp.24, 140, 154; Maxwell, I.S., *op.cit.*, pp. 293-319.
110. See p.256.
111. Williams-Freeman, *op.cit.*, p.218. See also Nicholson, C., *op.cit.*; V.C.H., Hampshire, 1900, pp.317 and 325 (Gurnard Bay Villa - SZ 4795) Maxwell, *op.cit.*, p.304.
112. Carisbrooke (SZ 485882) - Smith, C.R., in *Collectanea Antiqua*, Vol.VI, 1868, p.121 ff; Norton, A.B., in *Britannia I*, 1970, p.300. This was a 3rd century aisled house, with later, possibly 4th century, alterations. While the villa at Newport (SZ 5088) has not been securely dated, that at ^{Corbey on} Arretton Down (SZ 5387), dates from the 1st-2nd ^{to 4th} century; Wilson, R.J.A., "Roman Remains in Britain", 1975, pp.87-88; V.C.H., Hampshire, 1900, p.313 ff; *Britannia VII*, 1976, pp. 364-366. The Rock villa (SZ 424841), built ca. A.D.275-300, was dilapidated by ca. A.D.400; *Britannia*, VII, 1976, pp.367-8.
113. Cleere, H.F., "Roman Domestic Ironwork, as illustrated by the Brading, Isle of Wight, villa", *Bulletin of the Institute of Archaeology*, London University, I, 1958, pp.55-74. The second boat-hook was in a fragmentary condition, but was identical to the other.

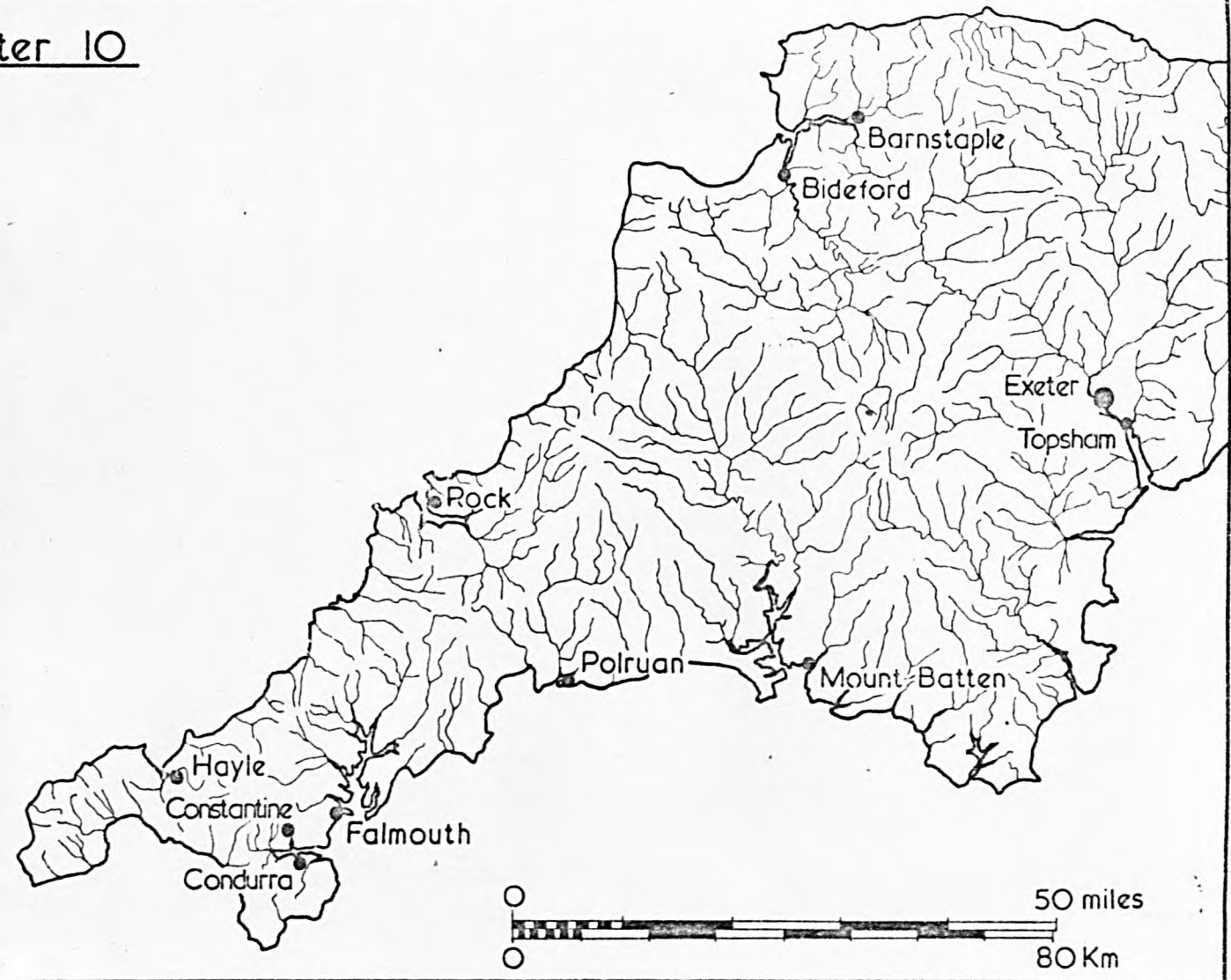
114. Rivet, A.L.F., "The Roman Villa in Britain", 1969, pp.54, 56, 68, 83-5, 91-4, 142-4; V.C.H., Hampshire, 1900, pp.313-6; Price, J.E. & Price, F.G.H., "A description of the remains of Roman buildings at Morton, near Prading, Isle of Wight", 1881; Cleere, H.F., op.cit.; Drewett, P.L., "The excavation of two round barrows, and associated fieldwork on Ashley Down, Isle of Wight, 1969", Proc. Hants. Field Club & Arch. Soc., vol.27, 1970 (1972) pp.35-36. Nicholson, op.cit., surmises on the existence of a wharf or quay on the River Yar at "Street End", South-East of the villa. The drowned valley of the Eastern Yar has been considerably modified by reclamation. Steers, op.cit., pp.301-2. Nicholson also refers to a "castrum exploratori" on the edge of the cliff at Bonchurch. The sea has been encroaching on this area over a prolonged period and rendered a mid-16th century fort unserviceable within 42 years of its being built - Jones, J.D., "The Building of a Fort at Sandown, Isle of Wight, 1632-56", Proc. Isle of Wight Nat. Hist. & Arch. Soc., vol.6, (3), 1968 (1969), pp.166-188. - at SZ 604843.
115. Steers, op.cit., p.263; Geological Survey, "Geological Map of Great Britain, Ed.II, Sheet II, 1957. (i8-11)
116. Cunliffe, B., op.cit., 1975, pp.17, 20, 29. Some of the blocks at Portchester appear to be water-worn but this could be the result of weathering; _____, op.cit., 1971-I, pp. 1-42. See also p.250.
117. Cunliffe, op.cit., 1975, p.20; Steers, op.cit., pp.297-9.
118. Much shingle was removed from the beach in this area in A.D.1904 during the building of the fort on Bembridge Down and this led to serious erosion of the cliffs, especially to the West of Wootton Creek. Steers, op.cit., pp.634-8.
119. Cotton, M.A., and Gathercole, P.W., op.cit., 1958, pp.8-11, 19-21, PL, II, a-b.; Haverfield, F., in Proc. Society of Antiquaries, London, vol.XIX, 1902, pp.56-9. Bembridge limestone has also been found lying on the beach near to the silted harbour at Lepe; Williams-Freeman, op.cit., pp.213, 215-6. See p.254.
120. Cotton and Gathercole, op.cit., Appendix II, Nos. 5 & 8, state that the stone is derived from a comminuted shell bed of Tertiary Limestone in Freshwater Bay, Isle of Wight. Sedgely, J.P., "Roman Milestones of Britain", University of Keele Thesis, 1965, Nos. 8 & 20, disagrees and says that the stone was probably quarried in the Binstead area; An alternative source of this stone is to be found at Creechbarrow, 2.5 miles (4 Km) West of Corfe Castle, Dorset, but Purbeck Stone outcrops nearby and, being of superior quality, would have been preferred. R.I.B., 97 & 2224.
121. R.I.B., 2227; Cotton & Gathercole, op.cit., App.II, No.6. Five other milestones bearing dedications from Severus (?) or Caracalla to Aurelian were found at Bitterne between ca. A.D.1799 and 1845; all have since been lost.
122. Cunliffe, op.cit., 1975, pp.20-1, 29-36.
123. Steers, op.cit., pp.298-9. The Wealden Beds emerge in Sandown Bay as strata of marls and clays with bands of sandstone & limestone. Lower Greensand also comes to shore in a very narrow outcrop in Compton Bay.
124. Steers, op.cit., p.299.

125. See note 116.
126. See above, p.250 ff..
127. Rigold, S.E., "Recent investigations into the earliest defences of Carisbrooke Castle, Isle of Wight", in Taylor, A.J.(Ed.), "Château Gaillard European Castle Studies, III: Conference at Battle, Sussex, 19th-24th September, 1966", 1969, pp.128-138; Johnson, S., "The Roman Forts of the Saxon Shore", 1976, p.141, fig. 76.
128. Cunliffe, B., "Hengistbury Head", 1978, pp.11-14.
129. *ibid*, Chapters 2 and 3, pp.38-81. Sherds of Dressel-Type IA amphorae, found on Green Island, Poole Harbour and in Weymouth Bay, may have arrived through coastal rather than overseas trade; *ibid*, p.67.
130. Steers, J.A., *op.cit.*, 1964, pp.286-9, 632-3. In the early 18th century parts of the South Haven Peninsula were prone to flooding at high water. There has been some erosion in Studland Bay and up to $\frac{1}{4}$ mile (402 m) of land appears to have been lost during the 18th century.
131. Smith, H.P., "The Occupation of the Hamworthy Peninsula in the Late Keltic and Romano-British Periods", *Proc. Dorset Nat. Hist. and Arch. Soc.*, vol. LII, 1930, pp.96-130; Webster, G., "The Roman Military Advance under Ostorius Scapula", *Archaeological Jnl.*, vol.115, 1958 (1959), pp. 49-98; _____, "The Military Situations in Britain between A.D. 43 and 71", *Britannia*, vol.I, 1970, pp.179-181. The pottery comprises:- samian of Tiberio-Claudian date, Terra Nigra, Terra Rubra, early flagons; amphorae and colour-coated rough-cast jars of Claudian date.
132. Murdock Mackenzie, "Survey of the South Coast of England from Blackwood Point on the Isle of Wight to St. Alban's Head", A.D.1785, British Museum, Maps Sec. I (20).
133. Smith, *op.cit.*, pp.96-130. Dished areas, in the natural gravel, which were interpreted by Smith as huts, may have been working areas. *R.C.H.M.*, Dorset, vol.II, Pt. 3, 1970, p.603; Jarvis, K. & Horsey, I., "Christchurch and Poole", *C.A.* No.58, vol.V, No.11, Sept. 1977, pp.343-346.
134. Smith, *op.cit.*, p.102; _____, "The Hamworthy Section of the Branch Roman Road from Badbury Rings to Poole Harbour", *Proc. Dorset Nat. Hist. and Arch. Soc.*, vol.LIV, 1932, pp.5-14. See also n. 129.
135. Webster, *op.cit.*, 1960 & 1970; Frere, S.S., "Britannia", 1967, p.74; Cunliffe, B.W., *op.cit.*, 1968-A, pp.255-6; Manning, W.H., "The Conquest of the West Country", in Branigan, K. & Fowler, P.J.(Ed.). "The Roman West Country", 1976, p.23; Branigan, K., "Vespasian and the South-West", *op.cit.*, 1974, pp.53-4; *Britannia*, V, 1974, pp.7, 455; III, 1972, p.346; II, 1971, p.281; *J.R.S.*, LIX, 1969, p.228; Webster, G., *op.cit.*, 1970, p.187.
136. Frere, *op.cit.*, 1967, p.50; *R.C.H.M.*, Dorset, vol.II, South-East, pt.iii, 1970, p.604.
137. *R.C.H.M.*, 1970, p.604; In this context the finding of an iron anchor, probably of the Conquest period, at Bulbury Hill-Fort is significant: *R.C.H.M.*, 1970, pp.492-3, at SY 929942.

138. Salt may also have been manufactured at Turlin Moor, in the northern part of the Hamworthy Peninsula, at SY 978916, R.C.H.M. 1970, p.604.
139. Smith, op.cit., 1932, p.13-14; Margary, I.D., op.cit., 1973, Route 4d, p.106.
140. Peacock, D.P.S., "The Black-Burnished Pottery Industry in Dorset", in Detsicas, A. (Ed.), "Current Research in Romano-British Coarse Pottery", C.B.A., Research Report, No.10, 1973, pp.63-5; Farrar, R.A.H., "The Techniques and Sources of Romano-British Black-Burnished Ware", in Detsicas, op.cit., pp.86-99.
141. R.C.H.M., 1970, pp.597-8; Farrar, op.cit., p.92.
142. R.C.H.M., 1970, pp.525-6, 592-3, 597-8; Peacock, op.cit., Farrar op.cit., pp.91-3; Britannia, VII, 1976, p.362; VIII, 1977, p.416.
143. Peacock, op.cit.; Gillam, J., "Sources of Pottery found on Northern Military Sites", in Detsicas, op.cit., p.54 ff.
144. Gillam, op.cit., pp.54-61.
145. Peacock, op.cit, *ibid*.
146. R.C.H.M., 1970, p.596-600, 602, 612. Stone quarried from Tyneham and Langton Matravers could have been shipped from small ports on the South coast of the Isle of Purbeck. Purbeck "marble" was used extensively at Dorchester & throughout the province, R.C.H.M., 1970, p.574.
147. SZ 01049002 - five sherds of 3rd-4th century date - R.C.H.M., 1970, p.604; SZ 00939165 - two coin hoards and Romano-British pottery of 3rd century date - Smith, op.cit., 1952, p.127.
148. R.C.H.M., 1970, p.614.
149. Steers, J.A, op.cit., 1964, pp.278-280.
150. R.C.H.M., 1970, p.614, at SY 66938128; J.R.S., XXVIII, 1938, p.194, An imitation 'as' of Claudius has been found nearby, at SY 66978142. A shale plaque, a samian dish and a grey ware bowl are said to have been found "at Radipole" in A.D.1869 - R.C.H.M., 1970, p.615; Proc. Dorset Nat. Hist. & Arch.Soc. XIII, 1892, pp.184-6. cf., n.129.
151. R.C.H.M., 1970, p.615; Proc. Dorset Nat.Hist. & Arch.Soc., vol.73, 1951, pp.96-7; 44, 1923, p.43. Other burials were encountered in this area in 1886 but were destroyed.
152. R.C.H.M., 1970, p.528; Margary, I.D., op.cit., 1973. Route 48, pp. 112-3. Alternatively, the line of the Roman road may be represented by that of the modern A 354, which also runs over Spa Hill.
153. R.C.H.M., 1970, p.615.
154. R.C.H.M., 1970, p.615, at SY 66338100. The sherds were found in a scatter in areas centred on SY 663809 and 664809; Proc. Dorset Nat. Hist. & Arch. Soc., vol.73, 1951, pp.95-6; Britannia, VI, 1975, p.277 ff.
155. R.C.H.M., 1970, p.615, Proc. Dorset Nat. Hist. & Arch.Soc., Vol.44, 1923, pp.41-3. The amphora was found at or near SY 67687906, while the coarse-ware bowl came from ca. SY 670805.

156. R.C.H.M., 1970, p.615. Traces of mosaic pavement(s) have been found on a South-facing slope, 200 yards (197 m) West of the sea at SY 67987839 and 67977837 and seem to indicate the presence of a villa. R.C.H.M. 1970, p.615.
157. Proc. Dorset Nat. Hist. & Arch. Soc., vol.44, 1923, p.31 ff; Branigan, K., op.cit., 1974, pp.52-4. See remarks on Fishbourne, Hamworthy and Exeter.
158. Frere, S.S., op.cit., 1967, pp.74-5, 79, 93; cf.Branigan, op.cit., p.52 ff.
159. R.C.H.M., 1970, pp.537, 560, 574, 571, 583-4. Purbeck "marble" was also used in some mosaic pavements, op.cit., p.564.
160. R.C.H.M., 1970, pp.537, 543.
161. R.C.H.M., 1970, pp.537, 557.
162. R.C.H.M., 1970, pp.537, 557, 567; Proc. Dorset Nat. Hist. & Arch. Soc., vol.31, 1910, p.29.
163. R.C.H.M., 1970, pp.604; J.R.S., 41, 1951, p.137; Proc. Dorset Nat. Hist. and Arch, Soc., vol.44, 1923, p.44.
164. R.C.H.M., 1970, p.605, at SY 675744.

Chapter 10



Chapter Ten

Exeter and South-West England

The city of Isca Dumnoniorum, Exeter, lay near to the eastern boundary of the Dumnonii. The terrain is mainly upland and includes, within its bounds, Bodmin Moor, Dartmoor, Exmoor and the Blackdown Hills. Much of the soil is poor. The area does not appear to have been densely populated except for the eastern lowlands, the South coast and the western peninsula. While Plymouth Sound, the estuary of the Fowey, Carrick Roads and the Helford River are the best of a short series of safe harbours on the South coast of the peninsula, St. Ives Bay and Padstow Harbour are the only two natural havens on the dangerous North coast between Land's End and Barnstaple Bay.

Exeter

SX 9292

The Roman city lay on a spur of land which overlooks the River Exe at what was once the lowest point at which it could be forded (2). 108
Before the construction of the Countess Weir in the 13th century, ships sailed the 10 miles (16 Km) to Exeter, aided, no doubt, by tides, and docked at quays which lay below the city walls (3). Hogenberg's Map of Exeter in A.D. 1587 shows three islands in the river on either side of the bridge, Exe Island, Bonhay and Shilhay. These islands were formed when the area was drained in the 12th century before which time there appears to have been a great marsh here over which tides flowed at high water. The river was then much wider than it is now and it was flanked by mud-flats and swamps (4). Below Exe Island and in front of the Customs House, red sandstone outcrops in a "hard", providing a good landing-place. This lies at a point at which there was a break in the cliffs which rose up behind riverside marshes for a considerable distance above and below the city (5). Easy access to the site of the Roman city, some 100 feet (30.5 m) above the river, could be gained by way of the valley of a tributary stream, the course of which is now marked by Combe Street and which once had its outflow near to the present quay (6).

The ascent to the city is steep but not impracticable.

The spur on which the Roman city lay, was surrounded by natural defences; it is flanked by the steep-sided Longbrook Valley to the North-West and the Shutebrook Valley to the South-East, while the neck of the spur is commanded by Rougemont, a natural volcanic bastion (7). Securely stratified evidence for an Iron Age occupation of Exeter has yet to be found but it has been suggested that a ridgeway followed the line of St. Sidwell's Street and High Street and that it led to a trading post on the tip of the spur (8).

Many Greek coins of the 3rd-1st centuries B.C., have been reported from Exeter some of which are definitely not ancient losses. Laing has studied the incidence and authenticity of these and other Greek coins found in southern England and concludes that only a small number of the coins are genuine Iron Age losses (9). Three bronze coins of Paestum and Velia, dating from the 3rd-2nd centuries B.C., found in excavations in Smythen Street in A.D. 1931, came from an unstratified context amid the ruins of a Roman building (10). A fragment of a painted Gaulish bowl, of the second half of the 1st century B.C., was found in the gravel surface of the forum which was laid down ca. A.D. 80 (11). These objects could have been introduced by traders or Roman soldiers in the 1st century A.D. and consequently they do not constitute secure evidence for Iron Age trading activity in this area (12).

The precise date of the arrival of the Legio II Augusta in the valley of the River Exe is not known but it may probably be assigned to ca. A.D. 46-47 (13). Excavations at South Gate in A.D. 1964 exposed a well-cut, V-shaped ditch of Claudian date which means to have formed part of the western defences of a 4-7 acre (1.6-2.8 Ha) auxiliary fort, most of which lay South of the later city wall (14). The proposed site of this fort is an area of level ground at the top of a steep slope from the river and it is adjacent to the Customs House 'hard' to which reference has already been made. Structures have yet to be found within the supposed area of this fort although three early Roman timber buildings, which were demolished

in early-Flavian times, have been encountered outside the South-East town wall in Quay Lane (SX 92339240). These may have lain within an annexe or the fort itself which may have co-existed with a vexillation fortress to the North-West (15).

Two ditches, probably part of the south-western defences of the legionary fortress have been located and also internal structures, including four barrack-blocks, timber granaries, a fabrica and a bath-house which is apparently Claudian in date. The barrack-blocks show at least three periods of construction, and the granary, four or five. A considerable quantity of Purbeck 'marble' was used for architectural details in the baths and this must have been brought in by sea as transport overland would have been more costly and less practicable (16).

The fortress was abandoned in the eighth decade of the 1st century when a cantonal capital was established. The legionary baths were converted into a basilica and, to the South-East, timber structures were demolished to make way for a piazza which was probably adjacent to public baths (17). Despite an ample local supply of building-stone, many timber-framed structures were erected from the late 1st to the early 3rd centuries, when more use was made of masonry, albeit mediocre in quality. Few tessellated or mosaic pavements have been found in the city; the absence of these luxuries may indicate that the inhabitants were relatively poor, but samian ware and glass were imported in some quantity (18). The settlement at Exeter was not affected by the events of A.D. 60-1 and occupation has been continuous up to the present day. Isca was served with roads from Ilchester and Dorchester (19). Detailed field-work has also revealed the presence of a road running West of the Exe to the River Teign at Teignbridge and thence to Totnes or Newton Abbot (20). Other Roman roads may have run West and North-West out of Isca, one running from Exeter to Crediton and thence to Redruth via North Tawton, Okehampton, and Launceston and a second from Crediton to Burrington Moor, probably aiming for Bideford or Barnstaple (21).

Earthwork defences, constructed after A.D.160 and enclosing an area of 92.6 acres (37 Ha), were refurbished sometime in the 3rd century, when a stone wall was added; Trap, a volcanic stone which outcrops on Rougemont, was used extensively in this wall and there was no need to bring building materials from more distant sources (22).

The forum and basilica were extensively altered in the early 4th century but by A.D.380 the palaestra of the baths was overgrown. Mediaeval levelling has removed most late-Roman strata and little else is known about the city in the 4th century. The coin series indicates a decline from the mid-4th century onwards and the latest coins from the city are issues of Magnum Maximus (23). By the early 5th century some buildings had been abandoned and at least one street covered by rubble but part of the city wall was rebuilt and sherds of late imported amphora have been found, implying trading activity in the 5th-6th centuries (24). The "Life of St. John the Almsgiver" refers to the voyage of an Alexandrian corn ship to Britain in the 6th century. The ship made contact with a πρίστεις τῆς πόλεως who arranged to exchange the corn for tin because of local famine. On the return voyage the tin was said to have been miraculously transmuted into silver (25). The πόλις to which the account refers may be Exeter but the city was far-removed from the tin-producing areas and the balance of probability favours a site, perhaps a stronghold, further West (26). The story does imply, however, a trading connection with the Mediterranean in the 6th century.

The evidence for a port at Exeter is therefore largely circumstantial. None of the installations usually associated with a port have been located and few imported commodities have come from the site. However, the location of the early fort, the fortress and the later city at the meeting-point of land and sea routes indicates that there was a port on the Exe, in the vicinity of the city. The site lies at or near the former head of tidal waters, and yet is far enough upstream from the sea to be safe from raids or storms. The 'hard' would have provided, at least initially, a place suitable for the landing of cargoes, while the break in the cliffs would have provided suitable access to the plateau above. Harbour installations may

have been erected down-stream from the hard behind the line of the present quay or in the area below the West Gate, providing the approach to the riverbank here was not encumbered by marshes or swamps. However, the erection of the mediaeval and modern quays may have removed all trace of harbour installations.

Topsham

SX 9688

109

A road from the South Gate of Isca Dumnoniorum appears to have linked the city with a settlement at Topsham on the estuary of the Exe (27).

Construction work on the site of a motorway bridge over the river, just North of Topsham Village, has revealed a number of features most of which appear to be part of a 1st century farmstead. Two rectangular timber buildings, dated A.D.50-55 to 70-75, were found, one of which was 52.5 feet (10.6 m) long by 14 feet (4.3 m) wide, comprising three rooms and a verandah. Other excavated features included lines and complexes of stake-and post-holes; occupation levels had been erased through cultivation. A surprising number of samian and other imported fine wares have come from the site as well as Durotrigan and other native forms. A V-shaped ditch, 4.6 feet (1.4 m) wide, found to the North of the settlement, may have marked its northern boundary in the 2nd century.

Occupation debris has been found a little over $\frac{1}{2}$ mile (0.8 Km) South-West of the motorway bridge site. No structures were encountered but pottery, coins, tiles, and bronze ornaments and implements indicate that the site was occupied from Claudian times through to the 4th century (29).

The small amount of Claudian material found at Topsham and the V-shaped ditch on the motorway bridge site seem to indicate a military origin for the settlement. It lay near to the head of the Exe estuary, a sheltered haven and it is possible that there was a supply base in the vicinity of Topsham Village during the campaign in the South-West (30). It has been suggested that the settlement may have become the port for Isca Dumnoniorum (31). Ships could, however, sail upstream as far as Exeter before the construction of the Countess Weir in the 13th century and there seems little reason to

doubt that the river was navigable up to that point in Roman times (32). It is conceivable, however, that the Exe may have been encumbered with marshes or shoals above Topsham in Roman times and the existence of an estuarine port cannot therefore be precluded.

Mount Batten.

SX 4952

The limestone promontory commonly known as Mount Batten rises above the eastern margins of Plymouth Sound and commands the approaches to Cattewater and the estuary of the River Plym. The Sound covers an area of 4,500 acres (1.800 Ha) much of which is naturally sheltered from South-West gales by Rame Head. Prior to the construction of Plymouth Breakwater, in A.D. 1812-1841, the eastern margins of the Sound were exposed to wave-fronts coming from the South-West. Cattewater offered shelter from such gales and Mount Batten, which overlooked it, became the site of an Iron Age trading community, a settlement which lay at the meeting-point of land routes from the metal-producing areas South-East of Bodmin Moor, and of cross-channel seaways (32). While rich cist burials, in a large Iron Age cemetery, which is probably attributable to the late 1st century B.C., underline the importance of the settlement, bronze bracelets of late Hallstatt or early Le Tene type, from Normandy or Brittany, and a fibula of Iberian type, recovered from a midden on the shore of the Sound, indicate cross-channel trade (33).

No occupation layers or structures attributable to the 1st century A.D. onwards have yet been found but Roman coin losses on Mount Batten and on the northern shore of The Sound indicate some form of settlement in the general area: the Mount Batten isthmus has thrown up a small series of coins ranging from Nero to Constans, and an isolated issue of Honorius (34); One coin each of Hadrian, Domitian, Magnentius and two of Carus have been found along the northern shore of the Sound, in the Stonehouse and Millbay areas and a hoard of several hundred coins of Postumus, Victorinus, Tetricus and Claudius II came to light in the parish of Compton Gifford in ca. A.D. 1890 (35). Burials, cremation and a dyke, found on the South Shore of Stonehouse Creek, indicate settlement in the vicinity (36).

Elsewhere, occupation debris and coins of Claudius, Trajan, Commodus, Probus & Constans have been reported from the area immediately East of Bickham Hill, above the East bank of the River Tamar, and some 1.75 miles (2.8 Km) North of Stonehouse (37).

Most of the coins found at Plymouth appear to be casual losses and give no clear picture of settlement patterns. Any surviving occupation levels on the northern shore of Plymouth Sound or on the margins of Cattewater and Hooe Lake must lie beneath the buildings and harbour installations of the modern naval base, an area which will not be open to excavation in the foreseeable future.

Polruan :-

SX 1251

Polruan lies on the eastern bank of the inlet of the sea into which flows the River Fowey, and opposite Fowey itself. It was suggested in 1905 that this might be the site of a Roman naval station but, the balance of probability is against that theory; There seems to be no evidence at all to support such a belief (38). Blocks of tin were found in Fowey Harbour in 1898, but these were, it seems, almost certainly post-Roman in date (39).

The 2 acre (0.8 Ha) Roman fort at Tregear, Nanstallon, probably constructed in the reign of Nero and occupied into early Flavian times, was well sited to control the crossing of the River Camel and the prehistoric trans-peninsular route from the Camel estuary that of the River Fowey (40). Supplies and reinforcements could have been brought in by way of the estuary and valley of the River Fowey or by that of the River Camel. Although the fort lies near to the line of the probable Roman road from Exeter to Launceston, shipment of supplies via either estuary would have been more efficient and have presented fewer problems than transport overland (41).

Falmouth

SW 8034

110

If, in Roman times, ships put into Carrick Roads then the only evidence for it is two coin hoards and an undated, uninscribed, ingot of tin.

One hoard of about 1000 coins, was found in 1865 at Budock, North of Falmouth; 631 of these coins were bought and catalogued, a series which

covered the period from Gallienus to Constantine I; it was suggested that burial took place between August and September, 306. (42). The other hoard was unearthed in 1747, at Malpas (= bad passage), which lies across the water from Falmouth, within the parish of St. Michael Penkevil. Some 20 lbs. (9 kgms) of coin - perhaps 4000-5000 specimens - were recovered, spanning the period from Severus Alexander to Carinus (A.D.283) (43).

The uninscribed ingot of tin, dredged up in 1812 in Carrick Roads, between St. Mawes (opposite Falmouth) and Pendinas, weighs 143.8 Kgs. and is H-shaped, a shape which has been likened to an astragalus - the term which Diodorus Siculus used to describe the form of the ingots of tin which the inhabitants of Belerion brought to the island of Ictis (44). Tylecote and Fox both assign it to the pre-Roman Iron Age, the former tentatively (45). Comparison of astragalus, the bone, with the shape of this ingot seems to cast some doubt upon the appropriateness of this description when it is applied to the Falmouth ingot (46). It must have been one of many ingots that were brought down by horse or wagon to be loaded into ships anchored in the deep estuary of the Fal, but its date remains uncertain and it does not constitute evidence for the use of this haven in the Roman period (47).

Constantine

SW 7329

Condurra

SW 7125

Condurra - alternatively known as Condurrow - lies on the South bank of the Helford River in the parish of St. Anthony in Meneage. It was suggested in 1905 that this might be the site of a Roman naval station, but the balance of probability is against this theory (48).

The evidence consists of a large hoard of coins found in 1735, "South of the road", of Constantine and his family, Constantinopolis and Urbs Roma.

Three other hoards of coin have been found near the Helford River. On a creek of the river, at Constantine, forty coins were found in the eighteenth century. This series began with Domitian (Cohen 125 to 127 - A.D.87.) and continued into the reign of Valens. Doubt was expressed whether coins covering such a date-range could derive from a single source,

but another hoard, found in 1817, at Chygarkie (in the parish of Mawgan in Meneage), probably of some 1,600 coins, represents a similar date-range - from Vespasian to Constantine II (49). Three coins, since lost, were found "in the church" at Constantine (50). A fourth hoard, of ten coins, (5 of Victorinus, 4 of Tetricus) has been found at Mawnan on the North side of the river (51). The circumstance in which these hoards were buried are a matter for speculation; they do not amount to evidence for a Roman port, or even for a trading post.

A so-called "double fort", at Merthen, Constantine, lies near to a tidal creek on the North shore of the Helford River and commands a fine view of the entrance to an estuary which offers shelter from the prevailing South-West winds. The 'double fort' comprises two enclosures, measuring about 300 feet (91 m) by 180 feet (54.9 m), which are set at right angles to each other. Each enclosure has rounded corners and is defended by a rampart and ditch. The forts lie on a prehistoric trackway which leads from the Helford River at Merthen to Rame, a tin-mining area (52). Harvey suggests that the forts may have been intended as a customs post supervising an outlet from the metal-producing area to the North (53). No Roman material has yet been reported from the site, and excavation alone can determine the function and date of the enclosures.

Hayle :-

SW 5637

The coastline from Land's End along North-West Cornwall comprises some 85 miles (137 km) of reefs, sands and rocky cliffs. It is a grim stretch of coast in favourable conditions but when gales blow from West round to North-East quarters it must have meant almost certain destruction to vessels under sail. St. Ives Bay and Padstow Harbour are the only havens on this coast, but both can be dangerous, the former when the winds blow from the North and East. (54).

Hayle lies off St. Ives Bay, on the East bank of the River Hayle. A hoard of coins was found in 1825, whilst removing the eastern cliff during the construction of a causeway leading from Hayle, south-eastward over the sands; it comprised some thousands of minims and a few "third brass" of Tetricus, Victorinus, Postumus, and others (55). This does not constitute

evidence for a Roman port or even local settlement. If shipping did put in to St. Ives Bay in Roman times, then it is likely that ^{lighters} would have been used to tranship cargoes.

Rock :-

SW 9377

Padstow Harbour, is the other natural haven which affords some shelter on the rugged coastline between Barnstaple Bay and Land 's End. The hamlet of Rock lies on the North shore of the Harbour, opposite the town of Padstow. Between Rock and the Church of St. Enodock, but nearer the latter and within the parish of St. Minver, considerable finds were made in the sandhills from 1848 onwards. Bronze coins of various dates were recovered, including issues of Gallienus, Constantine I, and Arcadius A.D. 377-408. Samian and other sherds were also found, together with many fragments of glass, glass beads, zoomorphic and pennanular fibulae, a lunula-shaped stud, bronze tweezers, a buckle, fragments of iron and a pink coral necklace. Abundant wood ash and fused trap-rock were found as well as some cremation and inhumation burials. The whole seems to testify to the presence here of a settlement, occupied, perhaps, throughout the whole Roman period; the pottery, glass and other artefacts have not, however, been accurately dated (56). Such a settlement may have participated in coastal trade but it is likely that the main marine interest would have been fishing, as at Meols on the Wirral.

W. Harrison, writing in 1586, referred to a "brasse pot full of Roman coine" found near Padstow. This description closely resembles a notice in Leland of a find at Tredine, from which Harrison's account may have been taken. The location of Tredine is uncertain, but it is possible that it may be equated with Dinas which lies South of Padstow (57).

The reports of antiquities found around Padstow Harbour are inadequate and obscure but they seem to imply settlement of some form here in the Roman period and it is reasonable to assume that the bay may have been of some importance as a haven or a place of refuge on an inhospitable coastline or a centre for coastal trade; the hinterland was thickly populated in the

Iron Age and is rich in minerals - especially tin and argentiferous lead.

The River Camel flows into Padstow Harbour and it was above the South Bank of this river that a 2 acre (0.8 Ha) fort was established at Tregear, Nanstallon, probably during the reign of Nero. It was occupied into early Flavian times and commanded the crossing-point of the River Camel as well as the prehistoric trans-peninsular route from Padstow to Fowey. Supplies could have been shipped to the estuary of the Camel and then transported up its valley as far as the fort, although the estuary of the River Fowey, giving access from the South coast, may have been preferred (58).

Barnstaple/Bideford

SS 52/53

A series of minor roads which run from Crediton in a north-westerly direction to Wembworthy follow an alignment which is particularly striking when compared with the normal behaviour of lanes in Devon and it has been suggested that they may represent the line of a Roman road from Exeter to the North West. At Wembworthy, the lanes form a new alignment which runs in a more northerly direction to Burrington where the line is lost (59). This second alignment may have continued over the high ground between the River Taw and the River Torridge to a settlement in the area of Bideford or Barnstaple. No Roman remains have yet been reported from this area and excavations, prior to extensive redevelopment at Bideford failed to reveal any traces of Roman occupation (60).

The large inlet formed by the estuaries of the Taw and the Torridge is the only sheltered anchorage on the cliff-lined stretch of coast between Padstow and Porlock, with the possible exception of the partially blocked haven at Bude. Extensive mud-flats and marshes have developed in the estuaries of the Taw and the Torridge, and Braunton Burrows and the alluvial area South of Appledore constitute the greatest development of sand dunes and ridges in Devon and Cornwall (61). Barnstaple Bay has never been subject to an adequate geological investigation and nothing is known about the configuration of the haven and the estuaries in Roman times.

Notes

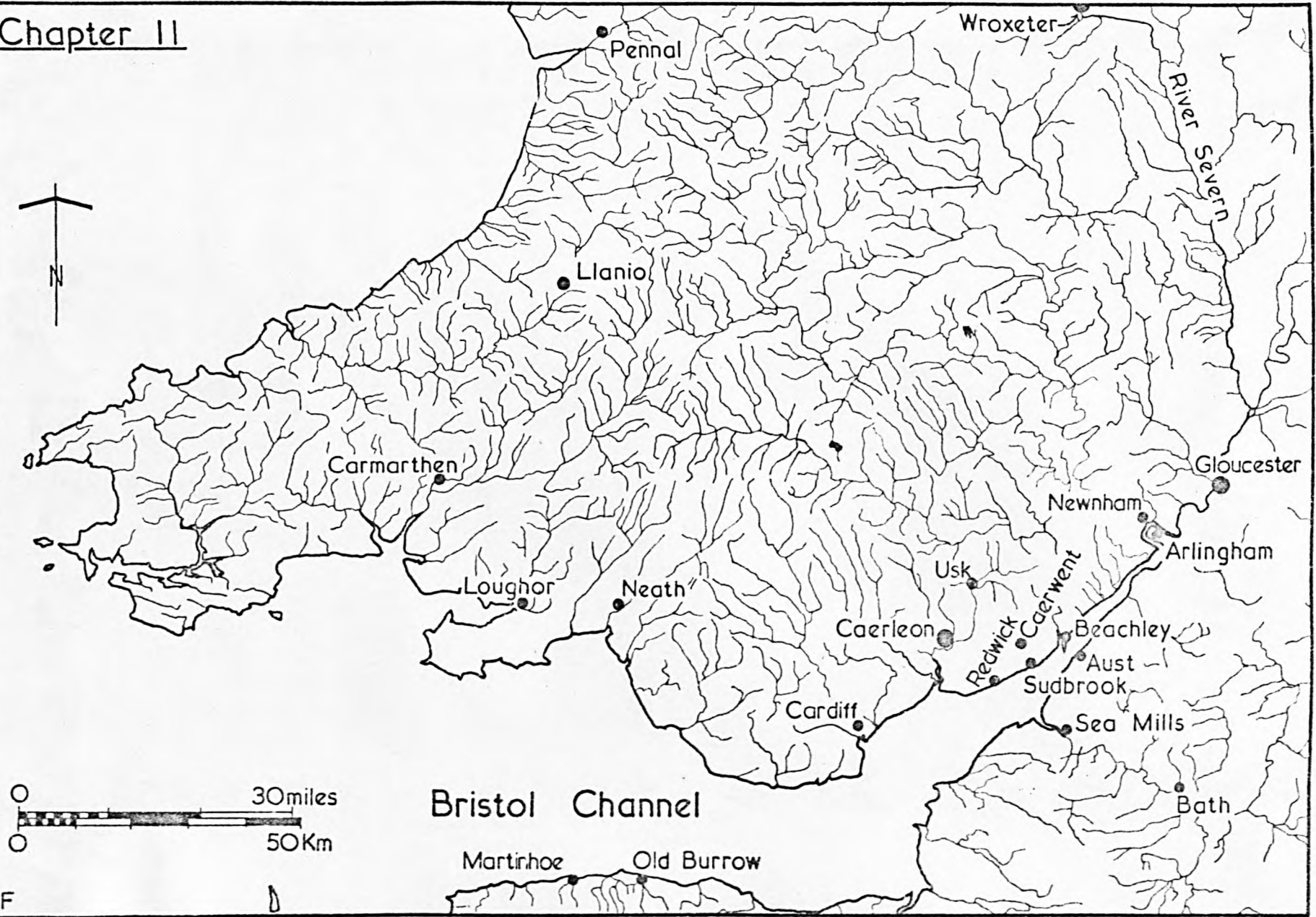
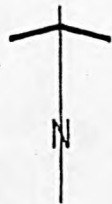
1. Fox, A., "Roman Exeter", 1952, pp.3-4, 15 ff; _____, "South West England", 1964, p.144; Cunliffe, B.W., "Iron Age Communities in Britain", 1975, pp.103-6.
2. Antonine Itinerary, 486, 17; Ravenna Cosmography, 16; Ptolemy, Geography, ii, 3, 30. Fox, A., op.cit., 1952, p. 1; _____, op.cit., 1964, p.141.
3. Fox, op.cit., 1952, p.1; Hoskins, W.G. "Two Thousand Years in Exeter", 1963, pp.5, 49-50.
The Courtenays - the Earls of Devon - owned the land West of the City Wall, including Exe Island. In developing industrial property on the island, they had already interfered with the navigation of the river by the early 14th century. They owned the manor of Topsham and stood to gain a large revenue if they could force all ships which were bound for Exeter to off-load at Topsham. Discrepancies exist in the traditional stories of the construction of the Countess Weir and the blockage of the 50 foot wide channel through it by Hugh de Courtenay in A.D. 1311. The River was blocked by the Courtenays and from then on the city and the Courtenays were at loggerheads. There followed a series of petitions from the city, which were of little avail, until an Act of Parliament of A.D. 1540, passed after the fall of the Courtenays, authorised the clearance of the river. Attempts to clear the river failed and a canal was cut in A.D. 1564-6. Hogenberg's Map of Exeter of A.D. 1587 shows the state of the river at that time with a "keye" of very limited length near to the site of the Customs House, Hoskins, op. cit., opp. p.56.
4. Hoskins, op.cit., pp.8. 24; Fox, op.cit., 1952, p.1. The swamp was valuable as a defence in Roman and Mediaeval times. It was drained by leats of which the oldest comes off the river near Head Weir and follows the line of the walls, for 0.5 mile (0.8 KM), before rejoining the river above the Customs House. This was certainly extant by the middle of the 12th century. Other leats were cut in the 12th century and the course of the river was consequently narrowed.
5. Hoskins, op.cit., p.5; Fox, op.cit., 1952, p.1. At Mount Dinham the cliff wall is 70 feet (21.3 m) high and behind the Quay, below Colleton Crescent, it rises to a height of about 50 feet (15.2 m). The cliff can also be seen at Cricklepit Mills.
6. This valley is now filled up. It was called La Comba in A.D.1250 - English Place-name Society, Devon, p.22.
7. Fox, op.cit., 1952, p. 1 ff.
8. Fox, A., "Roman Exeter, Origins and Early Development" in Wachter, J.S., (Ed.), "The Civitas Capitals of Roman Britain", 1966, pp.46-7 (= Fox 1966 a); Hoskins, op.cit., 1963, p.46; Fox, op.cit., 1952, pp.19, 80 ff. J.R.S., LII, 1962, p.184.
9. Laing, L.R., "A Greek Tin-Trade with Cornwall ?" Cornish Archaeology, vol. 7, 1968, pp.15-23; Maxwell, I.S., "The Location of Ictis", Jnl. of the Royal Institution of Cornwall, N.S., vol. VI, pt 4, 1972, p.302 ff.

10. Fox, op.cit., 1952, p.60; _____, op.cit., 1964, p.160; _____, op.cit., 1966a, p.46; Montgomery-Nielson, E., & Montague, E., "Exeter Excavations 1931", Proc. Devon Arch. Explor. Soc., vol. I, 1931, pp. 121-142; Gents. Mag. i, 1837, p.450; Milne, J.G., "Finds of Greek coins from the British Isles", 1948, pp.18-41; Haverfield, F., & MacDonal, G., "Greek Coins at Exeter", Num. Chron., S.4, vol.VII, 1907, pp. 145-155; Goodchild, R.F., "Roman Exeter", 1937, p.126,
11. Fox, op.cit., 1952, p.76, pl. X, D; _____, op.cit., 1966a, p.46.
12. Laing, op.cit., p.17.
13. Fox, op.cit., 1966a, pp.46-49; _____, "Excavations at the South Gate, Exeter, 1964-5," Proc. Devon Arch. Soc. vol.XXVI, 1968, pp.3-6; Bidwell, P.T., & Boon, G.C., "An antefix type of the Second Augustan Legion from Exeter", Britannia, VII, 1976, pp.278-280.
14. Fox, op.cit., 1968, pp.3-6, 13, 16; J.R.S., LV, 1965, p.217; LVI, 1966, p.213. Webster has suggested that the ditch may have been part of a military enclosure near the river rather than forming part of an auxiliary fort - Webster, G., "Fort and Town in Early Roman Britain", in Wachter (Ed.). op.cit., pp.41, 45, fn.62; Britannia, VII, 1976, p.360.
15. Fox, op.cit., 1952, p.61, fig. 7; Britannia, VI, 1975, p.276; A. Ex., 1974 (1975), p.40; Frere, S.S. & St. Joseph, J.K., "The Roman Fortress at Longthorpe", Britannia, V., 1974, p.7.
16. Britannia, III, 1972, p.344; IV, 1973, p.313; V, 1974, p.452; VI, 1975, p.276; VII, 1976, p.358 ff; VIII, 1977, p.415; A.X., 1971 (1972) p.55; 1972 (1973) pp.46-7; 1974 (1975) pp.40-1. Ditches - SX 918922; Granary - SX 91949267; barrack-blocks - 91939268; baths - SX 920926. The size, quality and date of the baths indicate that they are legionary. Finds from the Guildhall site included an approximately life-sized eagle in Purbeck "marble". For plans and photographs see:- Current Archaeology, No.39, 1973, vol. IV, No.4, pp.102-110.
17. Britannia, IV, 1973, p.313; Fox, op.cit., 1952, pp.3-4, 37, 101; _____ op.cit., 1966a, pp.49, 51; A. Ex., 1972 (1973), pp.46-7; 1974 (1975), p.40; Frere, S.S., "Britannia", 1967, pp.74-5; Wachter, J.S., "The Towns of Roman Britain", 1975, pp.328-331;
18. Wachter, op.cit., 1975, p.333; Britannia, IV, 1973, p.313; VI, 1975, p.276; Britannia, III, 1972, p.344; Fox, op.cit., 1952, pp.3-4, 61, 76; _____, op.cit., 1966a, p.49, fig. 9.
19. Margary, I.D., "Roman Roads in Britain", Rd.III, 1973, Routes 4f, pp.113-6; 49, pp.116-7; 5a, pp.123-4.
20. Margary, op.cit., Route 491, pp.117-120.
21. Margary, op.cit., Route 492 a & b, pp.120-3; 493, p.123, See p.289
22. Wachter, op.cit., 1975, pp.75, 331-2; A. Ex., 1974 (1975) p.41; Fox, op.cit., 1968, pp. 6-13; J.R.S., LII, 1962, p.184.
23. Wachter, op.cit., 1975, p.334; Frere, S.S., "The End of Towns in Roman Britain", in Wachter, (Ed.), op.cit., 1966, p.95; Britannia, VIII, 1977, p.415.

24. Mediaeval Archaeology, vol.III, p.89 ff; C.A., No.39, 1973, p.108 ff; Britannia, VII, 1976, p.358 ff.
25. Migne, Patrologia Graeca XCIII (1625): "Vita Sancti Ioannis Eleemosynarii", IX; Leontius' original text, (ed.), H. Gelzer, Leipzig 1893; Frere, op.cit., 1966, p.95 and p.20.
26. Frere, op.cit., 1966, p.95.
27. Margary, I.D., op.cit., 1973, Route 490, p.117.
28. Britannia, VI, 1975, p.276, at SX 957890; Jarvis, K. & Maxfield, V., "The excavation of a 1st century Roman farmstead and a Late Neolithic Settlement, Topsham, Devon", Proc. Devon Arch. Expl. Soc., Vol.XXXIII, 1975, pp.209-265.
29. Montague, L.A.D., in Proc. Devon Arch. Expl. Soc., vol.II, 1935, p.200 ff, 219; Morris, P., Montague, L.A.D., & Goodchild, R.G., in Proc. Devon Arch. Expl. Soc., vol.III, 1938, p.4 ff. 67-82; Shorter, A.H., in Proc. Devon Arch. Expl. Soc., vol.IV, pt.I, 1949, pp.20-3; J.R.S., 22, 1932, p.216; 27, 1937, p.250, 29, 1939, pp.218, 230.
30. Fox, A., op.cit., 1964, p.140; Webster, G., "The Military Situation in Britain between A.D.43 and 71", Britannia, I, 1970, p.185; Frere, S.S., "Britannia", 1967, p.87; Branigan, K., "Vespasian and the South-West", Proc. Dorset Nat. Hist. and Arch. Soc., vol.95, 1973 (1974), p.53.
31. Wachter, J.S., "The Towns of Roman Britain", 1975, p.334.
32. Cunliffe, B.W., op.cit., 1975, pp.147-8; Fox, A., op.cit., 1964, p.114.
33. Fox, op.cit., 1964, p.114; Cunliffe, op.cit., 1975, pp.106, 147, 293; Bate, C.S., "Some Romano-British Remains found near Plymouth", Trans. Devon Ass, Ser.iii, vol.L, 1864 (1866), p.123 ff; _____, "A British Cemetery near Plymouth", Archaeologia, vol.40, 1871, p.500 ff. Bate described several objects which may be attributable to the 1st-2nd century A.D. A coin of Ptolemy IV, found at SX 431552 on Torpoint need not necessarily be an ancient loss; Trans. Devon Ass., vol.LXXXV, 1953, p.171.
34. Worth, R.N., "Prehistoric Plymouth", Lecture to the Plymouth Institute, Nov.1931, p.12; Trans. Devon Ass., vol.XIX, 1887, p.6.
35. Single coins issued by Commodus & Probus and a group of fifty ranging from Nero to Constantine have been reported from the Devonport area but no specific find-spots were given. Ridyard, G.W., "Additional Notes on Roman Devon", Antiquaries Jnl., vol.XX, 1940, p.380; Trans. Devon Ass., vol.XIX, 1887, p.6; XX, 1888, p.42; XXI, 1889, p.83; XXII, 1890, p.48; XXIII, 1891, p.78 ff.
36. Trans. Devon Ass., vol.XXIII, 1891, pp.80-1.
37. Area centred on SX 4558; Trans. Devon Ass., vol.LXVII, 1935, pp.211-2; LXXXVI, 1954, p.277.
38. V.C.H., Cornwall, I, 1905, pp.475-6.
39. V.C.H., Cornwall, II, pt. v, 1924, p.35.

40. Fox, A., & Ravenhill, W.L.D., Interim Report on the Excavation of the Roman Fort at Tregear, Nanstallon, Cornish Archaeology, Vol.5, 1966, pp.28-30, = 1966b; Vol.6, 1967, pp.32-4; Vol.7, 1968, pp.40-2.
41. Margary, I.D., op.cit., 1973, Route 492a, pp.120-1.
42. V.C.H., Cornwall, 1924, p.32. The hoard was found at Pennance Farm, 400 yards (366 m) from Pennance Point. There was a puzzling absence of coins of Carausius and Allectus.
43. V.C.H., Cornwall, 1924, p.37.
44. Now in Truro Museum; Diodorus Siculus, V, XXII.
45. Tylecote, R.F., "Metallurgy in Archaeology", 1962, p.67; Fox, A., op.cit., 1964, pp.116-7; Gowland, W., "The Early Metallurgy of Copper, Tin and Iron in Europe", Archaeologia, LV, 1899, pp.267-322.
46. Cornwall, I.W., "Bones for the Archaeologist", 1956, Ch.2, figs.49, 50.
47. Diodorus Siculus, V, XXXVIII; Gowland, op.cit., pp.267-322. This particular shape may have been chosen to facilitate transport.
48. V.C.H., Cornwall, 1905, pp.475-6; 1924, p.34.
49. V.C.H., Cornwall, 1924, pp.34, 37.
50. Reports of the Royal Institute of Cornwall, vol.XXXV, 1853, p.13.
51. V.C.H., Cornwall, 1924, p.37.
52. Henderson, C., "A History of the Parish of Constantine", 1937, pp.14, 88.
53. Harvey, D., "The Double Fort at Merthen, Constantine", Cornish Archaeology, vol.9, 1970, pp.103-6.
54. Between 1823 and 1846, 131 vessels were lost on the 40 mile (64 Km) stretch of coast between Land's End and Trevoise Head - Parliamentary Papers 1859, x, pt. 1, p.331.
V.C.H., Cornwall, 1905, p.475 ff.
55. V.C.H., Cornwall, 1924, p.35.
Carne in the transaction of the Royal Geological Society of Cornwall, iii, 1828, p.136.
56. V.C.H., Cornwall, 1905, pp.36-7; 1924, p.6 and Fig.5, with references.
57. Harrison, W., "Description of Britaine", Ed.II, 1586, p.65.
Leland, Itinerary, Ed.III, (Hearne), iii, p.14.
58. Fox, A. & Ravenhill, W.L.D., op.cit., 1966b, 1966, pp.28-30; 1967, pp.32-4; 1968, pp.40-2.
59. Margary, I.D., op.cit., 1973, Route 493, p.123.
60. Current Archaeology, No.45, vol.LV, No.10, Dec.1974, pp.307-8.
61. Steers, J.A., "The Coastline of England and Wales", Ed.II, 1964, pp.214-8, 608-14 and fig.41.

Chapter II



Chapter ElevenThe Estuary of the River Severn and the Coasts of South and West Wales

The legionary fortress at Caerleon and forts at Cardiff, Neath, Loughor and presumably Carmarthen were situated at or near the head of tidal limits, while the early settlement at Sea Mills and the fortress, and later colonia, at Gloucester lay well upstream but within tidal reaches, probably to minimize the worst effects of the range of spring tides in the Bristol Channel and the Severn Estuary, which at Avonmouth is as great as 40.3 feet (12.3 m) rising to 47 feet (14.4 m) at equinoxes, the high velocity of surface currents, which on two tides per day vary between 6 and 12 m.p.h. (9.6 - 19.2 Km.p.h.), or the Severn Bore. Recent geophysical surveys along the eastern borders of the lower Severn Estuary have failed to produce any evidence to support the theory of a late-Roman marine transgression but have, rather, indicated that there has been a steady rise of sea-level in relation to that of the land of 1.5 feet (0.5 m), over the last two millenia. Extensive areas of mud-flats and salt marsh, considerable parts of which have been successively reclaimed, fringe the lower reaches of rivers, such as the Tywi, Llwchwr and Nedd, which flow into the Bristol Channel and the notably silt-laden waters of the estuaries of the Severn and the Avon, but although sediment deposition and marsh-formation must have been well advanced in Roman times, the configuration and exact nature of the shoreline is obscure (1). III

Sea Mills

ST 550759

The Roman settlement at Sea Mills lay a little under 4 miles (6.4 Km) from the mouth of the Avon, on a decided slope above the confluence of the river and its tributary, the Trym, the site of a small tidal harbour which would have been sheltered from the worst II2

effects of the Severn Bore. The tide-range is, however, still considerable at this point and 10-20 feet (3.05-6.10m) of estuarine mud are exposed at low water (2). Modern canalization and reclamation projects are thought to force mud further upstream than formerly, and considerable quantities of alluvium have been deposited in sheltered places such as the harbour (3). Nevertheless, the area of open water available at Sea Mills would have been severely restricted at low tide unless use was made of the Avon itself, in apparently marked contrast to the extensive anchorages available at Fishbourne, Fingringhoe and Hamworthy. A decisive factor in the choice of site might have been the position of the haven in relation to the physical geography of the hinterland which the harbour settlement was intended to serve, and the ease by which access could be gained into the interior; furthermore, access to a site nearer to the head of tidal limits, in the vicinity of the former confluence of the Frome and the Avon, may have been restricted by the marshes of St. Augustine (4). 113

Large quantities of 1st century A.D. material have been found at Sea Mills: of the 153 Roman coins recovered by Boon in 1945, 26 were Claudio-Neronian issues representing approximately 25% of the coins of that period that have been found in the immediate vicinity (5); fifteen items of military equipment have also been found and those for which the find-spots are known appear to have been recovered from the low ground adjacent to the confluence of the Trym and the Avon (6). In the area between the railway and Portway, Boon encountered a river-deposited layer of chert nodules which lay over the lower slopes in a sparse scatter and appear to have been washed out from a river terrace. Boon suggested that they represented the debris of an eroded Roman beach, but they do not appear to be derived from a securely stratified 1st century context (7). No structures of the mid-1st century A.D. have yet been located: towards the crest of the slope above the

Trym, the top-soil is very shallow and traces of such features may well have been erased or overlooked (8).

The presence of a fleet in the Bristol Channel before the subjugation of the Silures, is indicated by the occupation of the signal-stations on the North Devon coast at Old Burrow and Martinhoe and it has been reasonably suggested that this fleet may have operated out of a base at Sea Mills which may also have functioned as an early stores base serving forts on the line of the Foss Way (9). It is not known how long this base may have remained in use. The safest and most efficient means of supplying the campaigns in South Wales was by sea and a base at Sea Mills would have been strategically well-placed to meet this requirement prior to the establishment of the legionary fortress at Caerleon, ca. A.D.75 (10). Considerable quantities of samian and coarse wares have been found at Sea Mills, the bulk of which is Flavian in date, and several tiles and a brick, each bearing the stamp of the Legio II Augusta, may be the relics of a 2nd century military occupation (11). Two pigs of Mendip lead, dated by inscription to the reign of Antoninus Pius, were found in the River Frome near to Wade Street, Bristol, in A.D.1865 (at ST 60107439). The find-spot lies on or near to the line of the Roman road from Bath to Sea Mills and this may indicate that the harbour at Sea Mills was used as an outlet for products of the Mendip lead-manufacturing industry in the mid-2nd century if not before (12).

Timber-framed buildings and cobbled streets of the late 1st century are the earliest excavated structures at Sea Mills (13). Although the earliest recorded stone structures were erected towards the end of the 2nd century, most masonry structures are in fact 3rd-4th century in date (14). Little is known about the street plan of the settlement and defences have yet to be located (15).

Sea Mills, commonly regarded as the Abone of the Antonine Itinerary, may have been the eastern terminal of the Severn ferry, although Rivet

suggests that this may have put into Aust or Redwick, the journey to Sea Mills being completed overland (16). Sea Mills may also have been the port for Aquae Sulis, for the Marshes of St. Augustine at the confluence of the Frome and the Avon may have prevented sea-going ships from reaching Bath or Bitton in Roman times.

Aust

ST 567898

Ten miles North of Bristol, the alluvial flats which line the southern bank of the River Severn are broken by a low promontory which rises to a height of about 150 feet (45.7 m) above O.D. The promontory reaches the Severn as a sheer cliff face, some 130 feet (39.6 m) high, which extends for about 1 mile (1.6 Km) North-East of the motorway bridge. The top of this cliff, which is commonly known as Picnic Hill, commands extensive views in all directions, including the South coast of Monmouthshire as far as Redwick.

The crossing of the Severn from Aust to Beachley is the shortest in this part of the estuary and, prior to the construction of the motorway bridge, there was a ferry terminal at Aust for many centuries (17). A late 16th century chart of the estuary shows that the Severn between Aust and Beachley was free of sandbanks, except for the small island of Betesley (18). The place-name "Aust" is derived from the Latin "Augusta", strongly suggesting Roman occupation in the vicinity and, possibly, also a link with the Legio II Augusta (19).

Some bronze figures were found close to the foot of Aust Cliff in A.D.1900, all of which have since been lost except for one which resembles votive objects of the 4th-3rd centuries B.C., from Southern Spain. Although it was not derived from a stratified deposit, the Aust figure has been attributed to the Early Iron Age and may well have arrived in the Severn estuary as an import during the early La Tène period (20). Samian ware, coarse pottery and Roman coins, including

an issue of Claudius, have also been picked up from fallen debris at the foot of the cliff, or have been found in top-soil on Picnic Hill (21).

During construction work for the Severn Bridge approach and the motorway service area, occupation debris dating from pre-Flavian times to the mid-2nd century A.D. was encountered, including samian and coarse pottery, bones and fragments of iron. A U-shaped ditch, or pit, located near to the edge of the cliff, approximately 4 feet (1.22 m) wide and 4 feet deep and was found to be full of burnt clay and stones; no further investigation was possible. Erosion of the cliff by the Severn has been severe and much earth was removed during the construction work for the bridge approach, effectively erasing all trace of any other features that may have survived on this part of the hill.(22).

Although no ditches were observed during the construction work, it is conceivable that some of the occupation debris may be derived from a look-out station, similar to those at Martinhoe and Old Burrow on the North Devon coast (23). On the other hand, the late 16th century III chart shows a deep tidal inlet, just downstream from the cliff, called Chissetts Pille (24). This creek could have afforded some shelter from the Severn Bore for a Roman ferry terminal connecting with settlements at the head of spur roads at Beachley or Sudbrook, and the area where the lower slopes of Picnic Hill run down to the alluvial strand might well, therefore, repay investigation (25).

Gloucester

SO 8318

Colonia Nervia Glevi (or Glevensium) occupied the crest of a 114
low hill which rose some 50 feet (15.2 m) above the flood-plain of the Severn and commanded the lowest point at which the estuary could be forded or bridged. The site lay well above the lower reaches of the estuary which are encumbered with banks and shoals, and the dangerous

narrows through which the Severn Bore and swiftly-flowing currents sweep (26). The course of the river has been subject to considerable change and the two channels in which the Severn now runs, opposite Gloucester, bear little or no relation to the configuration of the estuary in Roman times (27). The river is tidal and navigable well above Gloucester and, before the construction of weirs, was plied by vessels of up to 80 tons (81.3 tonnes) burden at least as far as Shrewsbury, above Wroxeter. The river was not open to such craft at all times of the year: Telford, wishing to make it navigable in all seasons, unsuccessfully submitted plans, towards the end of the 18th century, for measures designed to enable vessels drawing up to 4 feet (1.22 m) of water to reach Coalbrookdale from Gloucester and Bristol (28). The site occupied by the colonia was, therefore, a nodal point in the land and water communications system of the South-West.

Timber structures associated with military finds, have been found on a gravel terrace near to what was once the East bank of the Severn, at Kingsholm, about 0.5 mile (0.8 Km) North of the site of the colonia, apparently constituting the earliest Roman occupation in the area (29). Late in the reign of Nero, or shortly afterwards, a small legionary earth-and-timber fortress was established at Gloucester, covering an area of a little over 43 acres (17.2 Ha), outside which developed an extensive vicus (30). The clay-timber buildings of the fortress were demolished, perhaps ca. A.D.87, to make way for structures built to a similar plan, and probably associated with work preparatory to the establishment of the colonia, ca. A.D.96-8, or soon after (31). Civilian occupation continued and developed in the vicus which, by the middle of the 2nd century, had expanded to cover an area two to three times larger than that of the colonia, parts of which, however, had apparently been temporarily abandoned by the end of the century. Remains of a monumental forum-basilica complex found within the enceinte, and

substantial structures including a colonnaded range, and a series of mosaics, outside the defences are indicative of a relatively prosperous community (32).

Excavations during construction work in 1937 revealed the foreshore of what may have been a former creek of the Severn, some 300 feet (91 m) North-West of the colonia wall (in the area bordered by Quay Street and Upper Quay Street). This creek lay off the main course of the river and would have afforded some protection from the spate of its swiftly-flowing waters and the Bore. Following the line of the former foreshore, a continuous line of "rough" oak piles, 4-5 inches (10.2-12.7 cm) square and spaced at 6 feet (1.83 m) intervals (centre to centre), was traced over a length of 100 feet (30.5 m); the piles were ranged at "varying depths". Neither hurdling nor planking was seen to be associated with the piles, which may, nevertheless, have acted as a reinforcing agent for the earthen bank of the creek or as the substructure of a landing stage, rather than the foundation posts for a timber-framed building. Sherds of pottery found in the vicinity of the piles, and above the waterline, were attributable to the 1st century A.D. (33).

The line of this creek must have run past the northern termination of a harbour wall or quay, encountered in the 19th century, which was found to run in a line not less than 150 feet (45.7 m) East of, and parallel to, the present bank of the Severn (34). This wall was constructed of massive blocks of stone "well squared and jointed", which were derived from the Forest of Dean. The masonry rested upon a large number of piles, about 20 feet (6.1 m) below ground level, perhaps a little more than 10 feet (3 m) above O.D. The feature appeared to represent a continuous waterfront, some 153 yards (140 m) in length, on the former East bank of the river. Style of construction indicated that the feature was Roman, although other dating evidence was lacking.

Another 19th century account tells of a second "massive" wall, which was said to have run, at a depth of 8.25 feet (2.5 m) below the low-water mark of the river and in a line parallel to the harbour wall described above, from a point West of the North end of the Prison to the site of the gasworks (35). Although, at the time of its discovery it was regarded as "certainly Roman", and a fibula was reported to have been found when part of the wall was demolished, there is insufficient corroborative evidence to attribute the wall to any specific period, although a 2nd century date is likely.

Occupation of the site ————— continued until at least the late 4th century, when the defensive wall was reinforced and bastions added. Little is known about the site after that time except that the forum was finally abandoned some time before the end of the 5th century, symptomatic, apparently, of a gradual decay which has been noted elsewhere, although at least some structures were occupied until A.D.577 (36).

Newnham
Arlingham

SO 695115

From Newnham, on the shore of the Severn estuary a little over 16 miles (25.75 Km) downstream from Gloucester, a series of short alignments following a low ridge between the River Severn and the Forest of Dean as far as Etloe, near Blakeney, probably mark the line of a Roman road to Caerleon. West of Etloe a single, 10 mile (16 Km) alignment marks the course of the road as far as Tidenham from where a spur may have connected with a ferry terminal at Beachley on the estuary of the River Wye (37).

There may have been a ferry between Newnham and the southern shore of the Severn estuary opposite Arlingham. A branch road cut off the Foss Way about 1 mile (1.6 Km) South of Eastern Gray and seems to have run in a north-westerly direction, past the Roman site at Frampton Court

and on towards the South bank of the Severn until it reached the tip of a long promontory formed by a loop of the meandering river (38). The behaviour of this road seems to point to the existence of a ferry here in Roman times, no doubt serving to connect iron-producing sites in the Forest of Dean with the road system to the South.

Beachley

ST 550942

The Roman road which has been traced from Newnham, towards Caerleon crossed the River Wye at Castleford, Chepstow, a short distance upstream from the present bridge (39). The place-name "Castleford" implies that the Wye could be crossed by means of a ford in the Middle Ages and unless this reach of the river was tidal it is unlikely that ships could have sailed far upstream, although it was used as a waterway in the 19th century.

Margary has suggested that a spur road left the Newnham-Caerleon road at Tidenham and made for a ferry terminal on the Wye Estuary at Beachley. Roman occupation debris has not been reported from the Beachley area and the identification of this road as Roman has not been proved. However, the Beachley-Aust crossing is the shortest in this part of the estuary and there was a ferry here for many centuries prior to the construction of the Severn Bridge (40).

Sudbrook

ST 505874

A lane which runs from Crick to the northern shore of the Severn Estuary at Sudbrook marks the line of a Roman spur road which once linked up with the coastal road to Caerwent and Caerleon (41). To the West of this spur road lies the valley of Caldicot Pill which was once the site of a tidal inlet. The whole of the valley around Caerwent was drained when the Severn Tunnel was cut, and when the railway embankment was constructed across the mouth of the inlet

the estuary of Caldicot Pill was reduced to a mere stream (42).

The railway embankment also closed the estuary of the now insignificant St. Pierre Pill, a little over 2 miles (3.2 Km) East of the spur road but, before the embankment was constructed, 70-ton (71.13 tonne) coal barges could sail 0.5 mile (0.8 Km) up this estuary as far as St. Pierre House (43). St. Pierre Pill was once called "Porth-is-coed" ("the harbour below the wood") and mediaeval grants of land refer to it and to the "Tarocus" (Caldicot Pill) as places where ships might be brought to land (44). The rocky headlands at Sudbrook would have commanded the outfalls of both these estuaries, either of which may have been the site of a Roman ferry terminal (45).

The headland at Sudbrook overlooks the Bristol Channel and was the site of an Iron Age settlement of the early 1st century B.C., occupation debris, associated with structures within an enclosure, indicating that the area was inhabited into the 3rd century (46)

The behaviour of the spur road indicates settlement in the area immediately East of Caldicot Pill and the ferry terminal probably lay at or near the head of tidal waters in the old estuary, thus avoiding the worst effects of the Severn Bore. Erosion has been severe along this stretch of the coast and if the terminal lay at or near to the mouth of the old estuary it may well have been washed away. Many Roman coins have been thrown up at Charston Rock and on the Caldicot foreshore, and samian ware has been found "at the New Passage". These may represent the washed-out debris of such a settlement although they could also have come from a wreck (47).

From Sudbury the ferry may have plied to the creek below Aust (the Old Passage), to Redwick (the New Passage), or to the Roman site at Sea Mills, on the River Avon (48). A late-16th century chart of the Severn Estuary shows two banks ("The Shutts" and "The English Stones") lying off Sudbury and the disposition of similar shoals in Roman times

may have determined the choice of passage (49). The site at Sea Mills lies some four miles (6.4 Km) up the River Avon and a less distant landfall may have been preferred (50).

Redwick

ST 4384

Roman sherds, and the sole of a leather-shoe of apparently Roman type, and a small fragment of "heavy cast sheet bronze" were found on the foreshore of the Severn Estuary, South of Magorpill Farm and some 100 yards (91 m) East of Cold Harbour Pill, in A.D.1950. The finds came from a restricted area below H.W.M.O.T.. Nash-Williams suggested at the time that they may have been derived from the washed-out occupation levels of a small 2nd century settlement, on the banks of the estuary (51). Although the find-spot lies opposite the mouth of the River Avon there is no reason to suppose that this, rather than Sudbrook, was the site of the Severn ferry terminal.

Caerleon
Usk.

ST 340906

115-6, 118

Isca, legionary fortress of the Legio II Augusta, lay within a wide loop formed by the River Usk and its tributary, the Afon Lwyd (52). The Usk is tidal for some distance above Caerleon and must have been navigable at least as far as the fortress in Roman times. Boon has suggested that the river was navigable for a further 12 miles (19.2 Km) as far as the 50 acre (20 Ha) Neronian base at Usk, which superseded a 10 acre (4 Ha) Claudian fort (53). There is, however, no evidence for a port at Usk, and in the early 19th century, commodities manufactured there had to be transported by land as far as a river-port at Newbridge-on-Usk, almost half-way to Caerleon. Although it is just possible that the Usk was navigable for vessels of very shallow draught as far as the Neronian base, it is unlikely that it could ever have been supplied by water (54). Stores and reinforcements may, therefore, have been brought

in from a supplies-depot off the Bristol Channel to a river-port further downstream, with which Flavian timber structures of military type, up to 131 feet (40 m) long and 33 feet (10 m) wide, which have been located outside the South-West corner of the legionary fortress at Caerleon, may possibly have been associated (55).

About A.D.74-5, an earth-and-timber legionary fortress, covering some 50 acres (20 Ha), was established at Caerleon, a fortress which occupied a site of prime strategic importance in the communications system of South Wales (56). It was at Caerleon that the navigable waters of the Usk were crossed by the Roman arterial road which linked coastal sites as far West as Carmarthen with the Severn ferry, and Sea Mills. From Isca, another road struck northwards up the valley cut by the Usk, as far as Burrium (Usk town). There the road bifurcated, one section continuing up the valley to Brecon, en route for the West coast, while another branch ran north-eastwards to Monmouth, connecting with the North-South road which ultimately led to Chester (57). 117

The legionary fortress may not have been fully garrisoned in the 1st century; occupation seems to have varied in intensity from one part of the enceinte to another and there are indications that some structures were erected later than others (58). Stone was used in building-construction well before the turn of the 1st century.

In the first quarter of the 2nd century, possibly ca. A.D.120, a revetment wall was added to the front of the clay rampart, while a series of small internal turrets was erected at the rear, and the gateways rebuilt in stone. About A.D.140-150, the barracks in Prysog Fields were reconstructed in stone, part, apparently, of a programme of gradual replacement of existing timber structures (59). The fortress may only have been lightly garrisoned between ca. A.D.122-140, when a substantial proportion of the Second Legion probably saw service on the Tyne-Solway frontier; there was, apparently, some considerable

delay before the amphitheatre, which was engulfed by a disastrous fire in the late 1st-early 2nd century, could be restored. Timber buildings of a small civilian extramural settlement were also consumed in this conflagration (60). A deposit of carbonized grain of Mediterranean type was found in 1958, in the debris of a timber hut dated to ca.A.D.80-130 which lay 164 yards (150 m) South-West of the fortress. While it is possible that this grain was imported by an individual in an attempt to improve the quality of beer, it may have arrived on site as part of a shipment of grain intended to boost inadequate local supplies (61).

While occupation seems to have intensified in the Antonine Period, at least in parts of the fortress, the garrison may have been below strength towards the end of the 2nd century and an extensive programme of renovation and reconstruction was carried out in the first quarter of the 3rd century, particularly after A.D.211 (62).

116, 119

In the 3rd century, the North bank of the River Usk lay some 735 feet (228 m) within the present wide-swinging loop, and was probably lined with a series of wharves, served by a southward extension of the via principalis. At the terminus of this road, the remains of a massive quay set into the river-bank have been located; it ran in a direction approximately 25° South of East, and was traced over a length of 50 feet (15.2 m) (63). A timber stage, supported by oak posts, spaced at regular intervals of 4 feet (1.22 m), had been built in advance of a 5 feet (1.52 m)-thick revetment wall. The piles ran in two parallel rows, approximately 7.5 feet (2.28 m) apart, the inner of which had been set against the revetment wall. The piles were secured laterally by horizontal ties and were braced by transverse struts, each fixed at an angle of 45° (64). The South-West corner of the feature was protected by a groin of 1 inch (2.5 cm) planking.

The revetment wall was originally built not long after A.D.205, but was extended in the late 3rd century, when the hard-standing to the

rear was remetalled with debris containing a high proportion of smashed fragments of grey-green slate, derived from the Prescelly Mountains of Dyfed. Prescelly slate was evidently not used as a building-material in the fortress and this deposit probably arrived on site as ballast in ships engaged in the transport of men and/or supplies rather than in trade with the South-West (65). Boon estimated that at high water there would be sufficient depth of water alongside the quay to accommodate vessels of up to 5.5 feet (1.67 m) draught (66).

After the relatively intense occupation of Isca in the Severan period, the fortress remained in use, although on an apparently reduced scale, until the end of the 3rd century when, early in the reign of Carausius, the legion was withdrawn; several important buildings were systematically dismantled and parts of the site were levelled. Traces of limited, sporadic occupation in the 4th century have been encountered but there is no reason to suppose that this reflects a continuing military presence (67).

Cardiff

ST 181766

Excavations in the South-East corner of Cardiff Castle have exposed the remains of Neronian-Flavian timber-framed structures of military type, rubbish pits and, slightly later in date, a W-shaped double ditch. In the interval between this and the late military occupation of the site, a build-up of humus 7.9 - 11.8 inches (20 - 30 cm) deep may represent agricultural activity, while elsewhere there is evidence for iron-working in the 2nd and possibly early 3rd century (68).

Late in the 3rd century or early in the 4th century a fort of the Saxon Shore type was constructed, the building scheme of which had apparently been altered in the initial stages. The result was an almost square enceinte some 641 feet (195 m) long by 602 feet (183 m) wide, enclosing an area of 8.8 acres (3.75 Ha).

The fort wall, which is on average some 10 feet (3.05 m) thick, comprised a core of rubble concrete faced with stone blocks. The angles of the fort were sharply turned and the sites of eleven, out of possibly eighteen, semi-octagonal projecting bastions have been located. An earth bank ran behind the fort wall, the up-cast material, presumably, of a defensive ditch. Two single-arched gateways flanked by guard towers were placed centrally in the North and South sides of the fort, from which metalled roads ran into the enclosure to link with others running East and West (69).

The fort lies about 40 feet (12.2 m) above O.D., on the East bank of the River Taff, at the head of tidal limits and in the centre of a plain formed by the estuaries of the Taff, Ely and Rhymney. It resembles the forts of Saxon Shore type at Richborough and Portchester and probably served as the base for a flotilla patrolling the sea-lanes off this stretch of coast. The channels through which the Taff, Ely and Rhymney now flow have been embanked and canalized, and the former shores of the old estuaries and behind them any surviving remains of harbour installations, lie buried beneath modern Cardiff (70).

The establishment of the late fort seems to coincide with the withdrawal of the Legio II Augusta from Caerleon and the dismantling of several of its important buildings, ca. A.D.290 or before (71). Caernarvon, Forden Gaer and Leinwardine were certainly held during the 4th century and there seems no reason to doubt that Cardiff was also, but at what date it was finally abandoned is not known (72).

From Cardiff, the Roman coastal road to Neath and the West has been traced to Longland, near Bridgend, apparently heading for a "lost" fort on the Ewenny River, a short distance South of Bridgend (area centred on SS 90457815), possibly the Bomium of the Antonine Itinerary (73).

Neath

SS 748977

The fort at Neath lies on a low plateau which rises some 30 feet (9.1 m) above the West bank of the Afon Nedd at the point at which it was crossed by the East-West coastal road from Caerleon, and at what would have been the head of tidal limits in Roman times (74). The key to the siting of the fort may, however, lie in the valley which the river has cut, which penetrates far into the hills to the North-East. There was a short initial occupation of the site in the Flavian period followed by the construction of the fort, possibly A.D.74-78 (75). The ditch, rampart and intervallum road have been located and seem to have enclosed an area of about 5.8 acres (2.4 Ha). Little is known of the interior of the fort but slots for timber buildings and traces of a wall have been encountered (76).

There is some evidence for a break in the occupation of the site and subsequent rebuilding in the 2nd century, when a stone rampart-wall, gates and angle tower were constructed and an external V-shaped ditch cut. However, the re-occupation of the site did not last much beyond A.D.130 and it appears to have been abandoned throughout the 3rd and 4th centuries (77). If, however, Neath is to be identified as the Nidum of the Antonine Itinerary there must have been at least a posting station or civilian settlement in the vicinity (78).

There is no reason to doubt that the fort at Neath was supplied by sea. However, all trace of harbour installations may have been removed when the railway, which runs immediately East of the fort, was built and the Tennant Canal which lies beyond it, was cut.

Loughor

SS 564979

Excavations at the mediaeval earthwork castle at Loughor have shown that it was constructed in the eastern corner of a Roman fort, the defences of which have been sectioned in three places and were found to

enclose an area of just over 5 acres (2 Ha). The enceinte lies on a decided slope on the crest of a gravel spur which rises some 50 feet (15.2 m) above the East bank of the estuary of the Afon Llŵchwr. The spur is opposed by a similar promontory on the West bank, Yspitty, effectively reducing the width of the estuary to some 275 yards (251.6 m). This was the lowest point at which the river could be forded at low water and was also the site of the mediaeval ferry into Dyfed (79). Below this crossing-point, the lower estuary widens out into an extensive tract of salt-marsh and sand-banks, much of which is protected from the prevailing South-West winds by the gravel spur and sand dunes of Whiteford Burrows. The deep-water channel cut by the Afon Llŵchwr winds through this salt-marsh and flows between the opposing promontories at Loughor and Yspitty, providing a sheltered deep-water anchorage below the site of the fort (80). The river is tidal here and as far as Hendy, some 3.5 miles (5.6 Km) upstream where it was probably crossed by the Roman road from Caerleon to the West (81). From this point, the river-valley penetrates far into the foothills of Black Mountain to the North-East and the fort at Loughor was, therefore, strategically well situated to give access to the interior.

The first phase of the fort is represented by a clay-turf rampart and defensive ditch which were constructed ca. A.D.75. Occupation seems to have been continuous until ca. A.D.120-130; a stone revetment wall and at least one corner turret were added to the rampart perhaps ca. A.D.110 and a new ditch excavated (82). Traces of six timber buildings, pits and occupation debris, apparently of two phases were encountered behind the rampart near to the northern corner of the fort and the remains of what has been tentatively interpreted as a granary were found on what was estimated to have been the line of the South-West defences. At a higher level within the South-West defences, floors of concrete, footings for a stone wall and painted plaster may represent

the debris of a bath-house (83). There appears to have been a break in the occupation of the site ca. A.D.120-130 until possibly the early 3rd century at which time a Phase III ditch was cut. The fort seems to have been finally abandoned sometime in the early 4th century (84).

The southern corner of the fort and the south-western defences were probably destroyed when the Swansea-Llanelli railway line was constructed in the mid-19th century by which time the western angle had already been swept away by the river. All trace of harbour installations must, therefore, have been removed unless they lay to the South of the railway, in the vicinity of the mouth of the now-silted estuary of the Afon Lliw; numerous fragments of Roman pottery have been found in the Afon Lliw Marshes and part of a quern-stone has been found on the shore (85).

Carmarthen

SN 416214

The site of Moridunum Demetarum lies above the West bank of the Afon Tywi some 8 miles (12.8 Km) above the extensive saltings, sandbanks and sea-marsh of the outlet into Carmarthen Bay. The town lay at or near the head of tidal limits in Roman times and commanded the lowest crossing-point of the river, an important strategic position apparently reflected in its name (86).

Access deep into central Wales was gained by way of the Tywi Valley, a route followed by the Roman road from Carmarthen to Llandovery (87).

In the 14th century wool was shipped from Carmarthen to Bristol and Flanders, and in Elizabethan times there was a customs house here. Speed's map, dated A.D.1610, shows ships on the Tywi by a stone-lined quay just downstream from the bridge, and trade with Bristol flourished until the middle of the 19th century (88).

Traces of Flavian occupation have been found in the vicinity of St. Peter's Church, Carmarthen and a U-shaped ditch, some 5 feet (1.52 m) wide by 5 feet deep, which produced Flavian wares was encountered during restricted excavations in the grounds of the Royal Ivy Bush Hotel in 1968. The ditch lies on the southern edge of a relatively level platform, in the area crossed by King Street and Spilman Street, and may, with features including ditches and palisade trenches encountered during the recent Church Street excavations, have been part of an early military site, presumably an auxiliary fort (89). It must have been from the vicus of such a fort that the later town, the cantonal capital of the Demetae, developed (90). The earliest metalling of an East-West street, presumably the decumanus of the new town, seems to have been laid down towards the end of the 2nd century, to the South of which lay five large, residential structures (91). The coin series associated with one of buildings runs to ca. A.D.320 but a larger house was subsequently built on the same site, a short time after A.D.351-3. To the North of the road lay smaller buildings, associated with industry or trade (92).

The town was defended initially by a clay/turf rampart and V-shaped ditch, for which a late 2nd century date has been suggested. The ditch was subsequently filled in to make way for a stone revetment wall up to which the rampart was extended, making a total width of 58 feet (17.6 m). A ground survey of the line of these defences suggests that they enclosed an area of 33 acres (13.2 Ha) (93). The presence of a fleet in the Bristol Channel ca. A.D.367 is implied by the dedication on a late mosaic at Lydney; the walled town at Carmarthen was certainly occupied at this time and would have made an ideal base from which a detachment of the fleet could patrol the sea-lanes to the South (94).

Of the known forts linked by the main North-South road which ran between the West coast of Wales and the mountainous uplands, only that at Pennal on the Afon Dyfi lay adjacent to what would have been navigable water in Roman times, although "lost" sites may have existed on the Afon Mawddach, North-West of Brithdir, and off Tremadoc Bay, South of Pen Llystyn. Although the recently-discovered 7 acre (2.8 Ha) Flavian-Hadrianic fort, and annexe, at Penllwyn set on the slopes of a ridge at a height of approximately 200 feet (61 m) above O.D. and dominating the crossing-point of the Afon Rheidol, lay some 4.5 miles (7.2 Km) from Cardigan Bay, the stations at Trawscoed on the Ystwyth and Llanio on the Teifi lay 7 and 10.5 miles (11.2 and 16.8 Km), respectively, from the sea as the crow flies (95).

Pennal

SH 705001

122-3

The earthwork defences of an auxiliary fort, some 451 x 412 feet (137 x 125m) inside the ramparts, straddle the crest of a low ridge which thrusts southwards into a wide angle of marshland through which the Afon Dyfi and a tributary stream, the Afon Pennal, flow towards their confluence, some 500 yards (457 m) South of the fort (96).

Enormous quantities of alluvial material have been deposited in the upper estuary of the Dyfi in the lee of an extensive storm-beach (97). Although there must once have been a wide expanse of estuarine water to the South of the fort, marsh-formation was probably well-advanced at the time of the conquest; the configuration of the Roman shoreline is, therefore, obscured. The channel of the Dyfi has wandered erratically among the marshes and it is possible that all trace of the Roman waterfront has been washed away. The fort now lies just below the head of tidal limits.

The Roman road, the Sarn Helen, linking Llanio and Carmarthen in the South with Tomen-y-Mur and Caernarvon in the North, appears to have

crossed the Dyfi estuary at Llugwy, about 0.5 mile (0.8 Km) upstream, and East of, Pennal, where it may have been met by a road from Caersws over the mountains (98). A "hard way" of pitched pebbles and other stones, 10 - 12 yards (9.1 - 10.9 m) wide, has been traced, over a length of 200 yards (183 m), from the presumed site of the South gate of the fort southwards, in the direction of the marshes. If this metalling is Roman, and not mediaeval, in date, it was probably intended to facilitate access to a waterfront (99).

Structural remains have been encountered in the past on the slopes between fort and river including, as described in Gibson's edition of Camden's "Britannia", the "foundations of many houses", and "a small fort which may supposed to have been built of bricks for that they find there plenty of them". It is possible that the "small fort" was, in fact, the remains of a bath-house, as a hypocaust and tiled flues are said to have been encountered during excavations in A.D.1865 (100). The other foundations, however, have not been securely dated and may be part of a mediaeval estuarine settlement.

Notes

1. Murray, J.W. & Hawkins, A.B., "Sediment transport in the Severn Estuary during the past 8000-9000 years", *Jnl. Geological Soc.*, London, Vol.132, 1976, pp.385-398; *A.W.*, No.15, 1975, p.48 ff. (occupation levels at Rumney Great Wharf, Cardiff, ST 240780); Hawkins, A.B., "Sea Level changes around South-West England", in Blackman, D.J. (ed.), "Marine Archaeology", 1973, pp.67-88; Cunliffe, B.W., "The Somerset Levels in the Roman Period", in Thomas, C. (ed.), "Rural Settlement in Roman Britain", C.B.A. Research Report No.7, 1966, pp.68-73; Steers, J.A., "The Coastline of England and Wales", Ed.II, 1964, pp.166-204.
2. The extent of the tide-range may have been one of the reasons why the small creeks at Pill and Ham Green were not developed (ST.525760 and ST.537761). Romano-British sherds of the 2nd century onwards were found at Lodway (ST 51927591), some 500 yards (457 m) South-West of the Avon, in A.D.1962. Information from North Somerset Archaeological Research Group, via Ordnance Survey.
3. Steers, op.cit., 1964, *ibid.* Until the early 19th century the River Avon and its tributary, the River Frome, were tidal at Bristol but in A.D.1809, three miles (4.8 Km) of the river were converted into the Floating Harbour by means of dams and locks. Owen, D.J., "The Ports of the United Kingdom", Ed.II, 1948, p.133. Bristol was the chief port in the West of England from the 12th century onwards and in the 13th century the River Frome was diverted into a new Channel which was cut through St. Augustine's Marsh. Carus-Wilson, E.M., "Mediaeval Merchant Ventures", Ed.II, 1967, pp.14-28.
4. Margary, I.D., "Roman Roads in Britain", Ed.III, 1973, Route 54, pp.138-9: Sea Mills - Bath; Route 541, pp.140-1: Sea Mills - Gloucester; Route 545, p.140: Gatcombe - Abbots Leigh (opposite Sea Mills); Route 5c (Foss Way), pp.141-3. For the route of the Bath-Sea Mills road, see A.Ex., 1972 (1973), p.53. Roman coins, sherds, tiles and bricks have been found near to the promontory fort at Clifton (area centred on ST 56587331), and at Redland to the North East: M.O.W., "Ancient Monuments in England and Wales", 1954, p.32; *Proc. Clifton Arch. Soc.*, Vol.V, 1900-3, pp.8-24; information from Ordnance Survey index. See also, note 3.
5. Boon, G.C., "The Roman Site at Sea Mills, 1945-6", *Trans. Bristol and Gloucester Arch. Soc.*, Vol.LXVI, 1945, pp.268-9; _____, "A Claudian Origin for Sea Mills", *Trans. Bristol & Gloucester Arch. Soc.*, Vol.LXVIII, 1949, pp.184-8; Reece, R., "A Short Survey of Roman Coins found on Fourteen Sites in Britain", *Britannia*, Vol.III, 1972, pp.269-276, Table 1; Todd, M., "The Vici of Western England", in Branigan, K., & Fowler, P.J. (Ed.), "The Roman West Country", 1976, p.103.
6. Webster, G., "The Roman Military Advance under Ostorius Scapula", *Archaeological Jnl.* Vol.CXV, 1958 (1960), pp.49-98; Todd, op.cit., 1976, p.103. A small nielloed bronze of legionary type may be significant in that it closely resembles pendants found at Novaesium;

- Branigan, K., "Vespasian and the South-West", *Proc. Dorset Nat. Hist. & Arch. Soc.*, Vol.95, 1973 (1974), p.55.
7. Boon, *op.cit.*, 1945, pp.258-9.
 8. Todd, *op.cit.*, 1976, p.103; Boon, *op.cit.*, 1945, pp.258-9; A shallow-ditched enclosure of late Iron Age or early Roman date has been encountered at ST 558137, in the grounds of Nazareth House, East of the known settlement A.Ex., 1972 (1973), p.52.
 9. Nash-Williams, V.E., "The Roman Frontier in Wales", Ed.II (by Jarrett, M.G.) 1969, p.7; Jarrett, M.G., "Early Roman Campaigns in Wales", *Archaeological Jnl.*, Vol.CXXI, 1964 (1965), pp.23-39; Fox, A., "Roman Exeter", in Wachter, J.S., (ed.), "The Civitas Capitals of Roman Britain", 1966, p.47; Fox, A. & Ravenhill, W.L.D., "Early Outposts on the North Devon Coast, Old Burrow and Martinhoe", *Proc. Devon Arch. Expl. Soc.*, Vol.24, 1963-7, pp.3-39; Frere, "Britannia", 1967, p.87; Branigan, *op.cit.*, 1974, p.55a; Todd, *op.cit.*, p.103.
 10. Boon, G.C., "Isca, the Roman Legionary Fortress at Caerleon, Mon", 1972, pp.18-24.
 11. Boon, *op.cit.*, 1945, pp.262, 266, 294; *op.cit.* 1949, p.184. See also *Trans. Bristol & Gloucester Arch. Soc.*, Vol.LXI, 1939, p.202; LXV, 1944, p.195; LXXI, 1954, p.70; A.Ex., 1972 (1973), p.53.
 12. Tylecote, R.F., "Metallurgy in Archaeology", 1962, Nos.18-19; Margary, *op.cit.*, 1973, Route 54, pp.138-9.
 13. *J.R.S.*, Vol.LVI, 1966, p.212.
 14. Todd, *op.cit.*, 1976, p.104; A.Ex., 1972 (1973), p.53. There is some evidence that part of the settlement was destroyed by a fire sometime in the reign of Hadrian. Boon, *op.cit.*, 1945, p.264.
 15. *J.R.S.*, Vol.LVI, 1966, p.212; Todd, *op.cit.*, 1976, p.104; Boon, *op.cit.*, 1945, p.260. The coin series extends from Claudius to Honorius, Boon, *op.cit.*, 1946, pp.277 ff, 286.
 16. Antonine Itinerary 486. 1.; Rivet, A.L.F., "The British Section of the Antonine Itinerary", *Britannia*, Vol.I, 1970, pp.58-61.
 17. Solly, T.W.J., "Roman Remains from the Severn Bridge Approach at Aust", *Trans. Bristol & Gloucester Arch. Soc.*, Vol.LXXXV, 1967, p.36 ff.
 18. A Chart of the Bristol Channel and River Severn from Cardiff to Gloucester - drawn in the late 16th century. British Museum, Cotton MS. Aug. I, ii. 17.
 19. Ekwall, E., "Oxford Dictionary of Place-Names", Ed.IV, 1960, s.v. It was called "Augusta", ca. A.D.1105 and is referred to as

- "aet Austan", in A.D.794. Attempts have been made to link Aust with the Traiectus of the Antonine Itinerary, 485.8-486.7; Rivet, op.cit., 1970, pp.58-60.
20. Solly, op.cit., 1967, p.38; Trans. Bristol & Gloucester Arch. Soc., Vol.XXIII, 1905, p.323; Jnl. Royal Society of Antiquaries of Ireland, Vol.LXVIII, 1938, p.51 ff; British Museum, Guide to Early Iron Age Antiquities, Ed.II, 1925, p.148, fig.173; Cunliffe, B.W., "Iron Age Communities in Britain", 1975, p.147.
 21. Trans. Bristol & Gloucester Arch. Soc., Vol.XXIII, 1905, p.323; LXVI, 1948, p.255-7. A samian base was also found on a farm track near to the old ferry, Solly, op.cit., 1967, p.36 ff.
 22. Solly, op.cit., 1967, p.36, fig.1-4.
 23. Fox & Ravenhill, op.cit., pp.3-39.
 24. See note 18.
 25. Margary, op.cit., 1973, Routes 60a & 60aa, pp.323-4.
 26. Fullbrook-Leggatt, L.E.W.O. "Glevum", Trans. Bristol & Gloucestershire Arch. Soc., Vol.LV, 1933, pp.56-7; Margary, op.cit., 1973, Routes 41c, p.134 ff; 541, pp.140-1; 61, p.327 ff. C.I.L. vi, 3346.
 27. Fullbrook-Leggatt, op.cit., 1933, ibid.
 28. V.C.H., Shropshire, Vol.I, pp.425-6.
 29. Hurst, H., "Excavations at Gloucester, Third Interim Report: Kingsholm, 1966-1975", Antiquaries Jnl., Vol.LV, 1975, pt.II, pp.267-285; _____, "Gloucester (Glevum): A Colonia in the West Country", in Branigan & Fowler, op.cit., 1976, p.65.
 30. Hurst, op.cit., 1976, pp.65-6, 69; Hassall, M. & Rhodes, J., "Excavations at the New Market Hall, Gloucester, 1967", Trans. Bristol & Gloucester Arch. Soc., Vol.XCIII, 1975, pp.15-100.
 31. Hurst, op.cit., 1976, pp.66-7, 69, 71-3; Fullbrook-Leggatt, op.cit., 1933, pp.65-72. Hassall & Rhodes suggest a possible short abandonment from A.D.67 to 69/70 and that the establishment of the colonia is unlikely to have been as late as A.D.96-8; op.cit., pp.31-2.
 32. Hurst, op.cit., 1976, p.73 ff; Fullbrook-Leggatt, op.cit., 1933, p.95 ff; _____, (=1968a) "Roman Gloucester (Glevum)", 1968, p.56 ff; _____, (=1968b), "Glevum", Trans. Bristol & Gloucester Arch. Soc., Vol.LXXXVI, 1968, pp.5-15; Hassall & Rhodes, op.cit., 1975, p.32.
 33. Knowles, W.H., "Notes : Roman Research Committee, Gloucester", Trans. Bristol & Gloucestershire Arch. Soc., Vol.LIX, 1937, pp.337-8; _____, "Roman Research Committee : Report on finds during 1938-9..." Trans. Bristol & Gloucestershire Arch. Soc., Vol.LX, 1938, pp.165-8; Green, C., "Glevum and the Second Legion", J.R.S., Vol.XXXII, 1942, pp.47-9; cf. Abbott, R., "Excavations at the Shire Hall Site, Gloucester, 1965", Trans. Bristol &

- Gloucester Arch. Soc., Vol.LXXXVI, 1968, pp.95-101, esp. p.100 ff
(? extramural development).
34. Gents. Mag., ("Roman Antiquities at Gloucester") N.S., Vol.XXVI, 1846, p.517; Clarke, J., "The Architectural History of Gloucester", 1850; _____, "The Diggings at Gloucester", Gents. Mag., N.S., Vol.XLI, 1854, pp.486-7; Fullbrook-Leggatt, op.cit., 1933, pp.94-5; _____, 1968a, p.57; _____, 1968b, p.12.
 35. Bellows, J., Proc. Cotteswold Naturalists' Field Club, Vol.VI, 1877, p.179; Fullbrook-Leggatt, op.cit., 1933, plan.
 36. Hurst, op.cit., 1976, pp.79-80; Hassall & Rhodes, op.cit., 1975, pp.15-32.
 37. Margary, op.cit., 1973, Route 60a, pp.323-4. Margary dismisses the suggestion that this road may have begun at Gloucester on the grounds that the proposed line involves unnecessary deviations; it runs too close to the Severn and would have been prone to flooding.
 38. Margary, op.cit., 1973, Route 543, pp.144-5.
 39. Margary, op.cit., 1973, Route 60a, pp.323-4.
 40. Margary, op.cit., 1973, Route 60aa, p.324. See also, Aust, p.298
 41. Margary, op.cit., 1973, Routes 60a & 60aa, pp.323-4.
 42. "A Chart of the Bristol Channel and the River Severn from Cardiff to Gloucester", late 16th century. British Museum, Cotton, M.S., Aug. I. ii, 17.
Wood, J.G., "The Ancient Harbours of Gwent Iscoed or South Monmouthshire and the Roman Passage thence", Trans. Woolhope N.F.C., 1902-4 (1905), pp.191-2.
 43. Wood, op.cit., 1905, p.191.
 44. Wood, op.cit., 1905, pp.192-5.
 45. Wood refers to an unsubstantiated local tradition that ships could once sail up Caldicot Pill as far as the site of the Roman town at Caerwent. Roman material, possibly deriving from Caerwent, was used in the construction of Chepstow Castle and shipment of this material by way of the Severn Estuary and the River Wye would have presented fewer problems than transport overland, providing that Caldicot Pill was navigable as far as Caerwent. See also Johnson, S., "The Roman Forts of the Saxon Shore", 1976, p.136.
 46. Nash-Williams, V.E., "The Early Iron Age Coastal Camp at Sudbrook, Portskewett, Monmouthshire", Arch. Camb., Vol.91, 1936, pp.129-131; _____, "An Early Iron Age Coastal Camp at Sudbrook, near the Severn Tunnel, Monmouthshire", Arch. Camb., Vol.94, 1939, pp.42-57; A.W., No.16, 1976, p.36; No.17, 1977, p.35 ff.
 47. Lee, J.E., "The Delineation of Roman Antiquities found at Caerleon", 1845, p.10; Archaeologia, Vol.II, 1773, p.2. Traces of a square, ditched enclosure, possibly of villa-type, have been observed at ST 483874, above the West bank of Caldicot Pill; J.R.S., Vol.43, 1953, p.95.

48. See remarks on Sea Mills and Aust, *Supra*.
49. Steers, *op.cit.*, 1964, p.201 ff; See also, note 42.
50. Rivet, *op.cit.*, 1970, pp.58-60.
51. Nash-Williams, V.E. (1951a), "Current Work in Welsh Archaeology", *B.B.C.S.*, Vol.14, pt.3, 1951, pp.254-255.
52. Antonine Itinerary 484.4; 484.10; 485.8.
53. Boon, *op.cit.*, 1972, pp.17, 20 ff; *J.R.S.* LVI, 1966, p.198; LVIII, 1968, pp.200-1; LIX, 1969, p.177; *Britannia*, I, 1970, p.273; II, 1971, p.246; III, 1972, p.302; IV, 1973, p.272; V, 1974, pp.401-2; VI, 1975, pp.223-4; VII, 1976, pp.298-9; *A.W.*, 1975, p.49 ff; Manning, W.H., "Usk, Roman Legionary Fortress", *C.A.*, No.62, Vol.VI, No.3, June 1978, pp.71-7; Boon, G.C., "Remarks on Roman Usk", *The Monmouthshire Antiquary*, Vol.I, - 1964, pp.28-33, at SO379007. Civilian occupation of the site post-dates the fortress and continues from the 2nd to the 4th century.
54. Information from W.H. Manning.
55. Boon, *op.cit.*, 1972, pp.20-2, 31-2; Nash-Williams, *op.cit.*, (rev. by M.G. Jarrett), 1969, p.29 ff.
56. Boon, *op.cit.*, 1972, pp.13-14, 23-31.
57. Margary, *op.cit.*, 1973, Routes 60a & b, pp.323-5; 612b, pp.330-1; 62a, pp.333-4. See also remarks on Beachley and Newnham, *supra*.
58. Boon, *op.cit.*, 1972, pp.33-5.
59. Boon, *op.cit.*, 1972, pp.37-8, 40 ff, 116 ff.
60. Boon, *op.cit.*, 1972, pp.16, 45-6.
61. Boon, *op.cit.*, 1972, p.20; Helbaek, H. in *New Phytologist*, Vol. LXIII, No.II, 1964, pp.158-164.
62. Boon, *op.cit.*, 1972, pp.45-59.
63. Boon, *op.cit.*, 1972, p.52; *J.R.S.*, Vol.LIV, 1964, p.152 ff.
64. *J.R.S.*, LIV, 1964, pl. XI, 1.
65. Boon, *op.cit.*, 1972, p.52.
66. *J.R.S.*, LIV, 1964, p.153.
67. Boon, *op.cit.*, 1972, pp.49-51, 61-69; *Britannia*, Vol.I, 1970, p.272-3; *A.W.*, No.9, 1969, p.20.
68. *A.W.*, No.14, 1974, p.43; 15, 1975, p.44; 16, 1976, p.33; 17, 1977, pp.33-4; *Britannia*, Vol.VI, 1975, pp.222-3; VII, 1976, p.298; Wheeler, R.E.M., "Roman Cardiff : Supplementary Notes", *Antiquaries Jnl.*, Vol.2, 1922, pp.361-370.

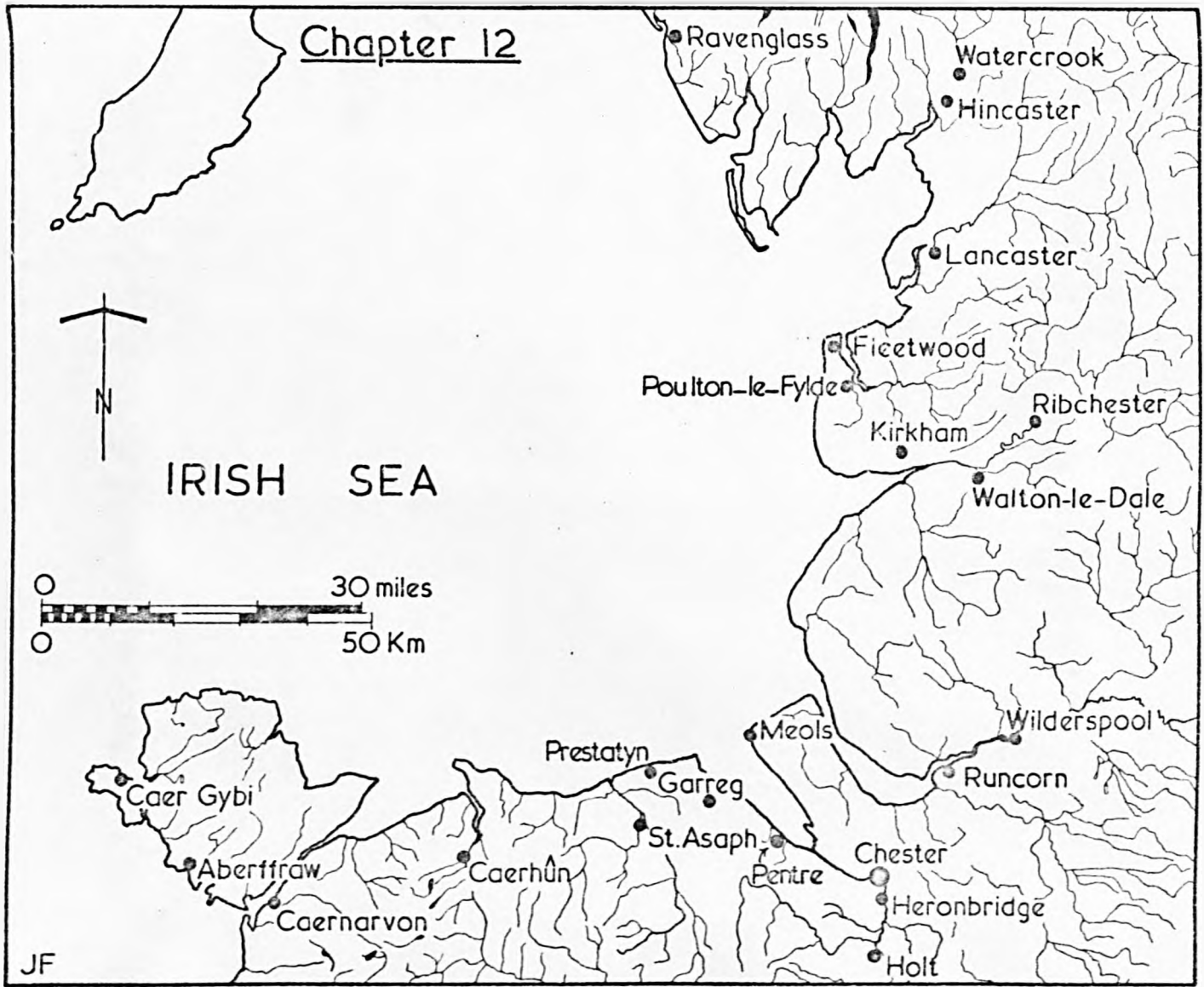
69. A.W., No.15, 1975, p.45; 17, 1977, p.34; J.R.S., Vol.LI, 1961, p.159; Britannia, Vol.VI, 1975, pp.222-3; Wheeler, op.cit., 1922, *ibid* & fig.2; Ward, J., "Cardiff Castle : its Roman Origin", *Archaeologia*, Vol.57, 1901, pp.335-352, fig.3; _____, "Roman Cardiff", *Arch. Camb.*, Vol.63, 1908, pp.29-64; _____, "Roman Cardiff II", *Arch. Camb.*, Vol.68, 1913, pp.159-164; Nash-Williams, op.cit. (rev. by M.G. Jarrett), 1969, p.70; R.C.A.M., Glamorgan, Vol.I, pt.II, 1976, pp.90-93. In the South East corner of the fort a late 3rd-4th century pit had been cut through a gravelled area. Traces of late ephemeral structures were also observed in this area.
70. Johnson, op.cit., 1976, pp.136-7; Jones, G.D.B., "Fieldwork and Air Photography in Carmarthenshire", *The Carmarthen Antiquary*, Vol.VII, 1971, pp.3-40.
A Chart of the Severn Estuary from Cardiff to Gloucester, of late 16th century date, shows two tidal inlets at Cardiff - Rumneys pille and a second, un-named creek further West, presumably the lower estuary of the Taff.
71. Boon, op.cit., 1972, pp.62-7.
72. Nash-Williams, op.cit., 1969, p.73. The dedication on a late mosaic in the Temple of Nodens at Lydney, seems to have referred to the donor, T. Flavius Senilis, as "PR REL"; this has been restored as PR(AEPOSITVS) REL (IQVATIONI CLASSIS), implying a naval presence in the Bristol Channel, ca. A.D.367. Webster, G., "The Roman Imperial Army", 1969, p.158 and n.4.
73. R.C.A.M., 1976, pp.121-2; Rivet, op.cit., 1970, pp.55-7; Margary, op.cit., 1973, Route 60c, p.325 ff.; Rivet, op.cit., 1970, pp.55-7; Antonine Itinerary 482.9 - 484.9.
74. Margary, op.cit., 1973, Routes 60c & 60d, pp.325-7. The exact line of the road westward from the river-crossing to Pontardulais is not known.
Tides now flow up to Aberdulais, some 2 miles (3.2 Km) upstream from Neath, largely due to modern canalization and embanking projects. In the early 19th century the estuary was navigable to vessels of 200 tons (203 tonnes) as far as Neath. Nash-Williams, V.E., "The Roman Frontier in Wales", 1954, p.91, n.6; _____, 1969, p.98. In the Elizabethan times there was a customs house at Neath; Davies, M., "Wales in Maps", 1951, p.67.
75. Webster, G., "The Military Situations in Britain between A.D.43 and 71", *Britannia*, Vol.I, 1970, p.192, suggests that this initial occupation is to be linked with the campaigns of Veranius. The few pre-Flavian sherds to have come from the site were, however, associated with Flavian material. Nash-Williams, op.cit., 1969, p.99 and n.3; _____ (1951b), "The Roman Station at Neath, Further Discoveries", *B.B.C.S.*, Vol.XIV, 1950-1, p.77.
76. Nash-Williams, op.cit., 1951b, pp.76-77; op.cit., 1969, p.99; J.R.S., Vol.XLV, 1955, p.121; XLIX, 1959, p.102; R.C.A.M., 1976, pp.88-90.
77. Nash-Williams, op.cit., 1951b, pp.76; 77 ff; _____, 1969, p.100; R.C.A.M., 1976, *ibid*, fig.50.

78. Antonine Itinerary, 482.9 - 484.9; Rivet, *op.cit.*, 1970, pp.56-7; Nash-Williams, *op.cit.*, 1969, p.100. A milestone, inscribed to Diocletian, was found in A.D.1892, some 1.5 miles (2.4 Km) South of the fort, at Melin Crythan.
79. Ling, R., & Ling, L.A., "Excavations at Loughor, Glamorgan: The North-East and South-East Angles of the Roman Fort", *Arch. Camb.*, Vol.122, 1973 (1974), pp.99-146; *A.W.*, No.10, 1970, p.18; No.11, 1971, p.19; *Britannia*, I, 1970, p.272; II, 1971, pp.245-6; III, 1972, p.300.
80. Steers, *op.cit.*, 1964, pp.166, 176; Murdock Mackenzie (Jnr.) A survey of the Bristol Channel from Lundy Island to Watchet and Worms Head, A.D.1771, Admiralty Hydrographic Department, 640 13K; A Chart of Burry Roads and the Loughor Estuary from a survey by Joseph Dessiou, published A.D.1824, British Museum Maps 6345(1); Ling & Ling, *op.cit.*, p.104. Loughor was an active port in the 18th and 19th centuries; river navigation and port facilities were improved in the 18th century to meet the demands of the developing coal and chemical industries.
81. Margary, *op.cit.*, 1973, Route 60d, pp.326-7. Despite the discovery of the fort at Loughor, Rivet places the Leucarum of the Antonine Itinerary at Hendy. Rivet, *op.cit.*, 1970, p.56 & n.65; Antonine Itinerary, 482.9 - 484.9.
82. Ling & Ling, *op.cit.*, pp.100, 103, 106-109; ¹¹⁶⁻⁷*Britannia*, Vol.II, 1971, pp.245-6; *A.W.*, No.10, 1970 (1971), p.18; cf. *R.C.A.M.*, 1976, p.88.
83. Ling & Ling, *op.cit.*, p.115 ff; *Britannia*, Vol.III, 1972, p.300; *A.W.*, No.11, 1971 (1972), p.19; No.13, 1973 (1974), pp.39-40 at SS 564981 & SS 56289796.
84. Ling & Ling, *op.cit.*, pp.109-110, 116-7; *Britannia*, Vol.I, 1970, p.272.
85. Ling & Ling, *op.cit.*, p.103. *A.W.*, No.12, 1972 (1973), p.26; No.13, 1973 (1974), p.40, in the area centred on SS 564980. Two cremations have also been found in a small hummock which overlooks the salt-marshes some 800 feet (244 m) South-East of the castle. *A.W.*, No.9, 1969 (1970), p.19, at SS 56579777 & SS 56589776.
86. Jackson, K., "Romano-British Names in the Antonine Itinerary", in Rivet, *op.cit.*, 1970, p.77; Antonine Itinerary, 482.9 - 484.9; Ptolemy, *Geography*, II, 3, 12, 4 (Ed. Müller): Μαρίδουρον.
87. Margary, *op.cit.*, 1973, Route 623, pp.339-40; cf. Route 69d, p.357. (Llanio-Carmarthen) and Route 60d, pp.326-7 (Neath-Carmarthen).
88. Carus-Wilson, *op.cit.*, 1967, p.7; Davies, M., *op.cit.*, 1951, p.61; Perkins, A., "Some Maps of Wales and in particular of the Counties of Pembrokeshire, Cardiganshire and Carmarthenshire", the *Carmarthenshire Antiquary*, Vol.VI, 1970, p.69. Perkins refers to quays, presumably of mediaeval or modern date, encountered in the excavation for the new town centre development.

89. Jones, G.D.B., "Excavations at Carmarthen, 1968", *The Carmarthenshire Antiquary*, Vol.V, 1969, pp.2-5; _____, "Excavations at Carmarthen, 1969", *The Carmarthenshire Antiquary*, Vol.VI, 1970, pp.4-14, Fig.1; *A.W.*, No.8, 1968, p.15; No.9, 1969, p.18; No.16, 1976, pp.31-2; *Britannia*, Vol.VIII, 1977, p.360; Nash-Williams, *op.cit.*, 1969, p.74; St. Joseph, J.K., "Air Reconnaissance in Britain", 1958-60, *J.R.S.*, Vol.LI, 1961, pp.119-135.
90. Traces of timbered and half-timbered structures on a different alignment to the streets and buildings of the later town were observed on the Priory Street Car Park Site, in 1968; these and the remains of a timber-strip building of the early 2nd century may represent a civilian expansion from such a vicus. Jones, *op.cit.*, 1969, p.4; 1970, p.7 & Fig.2; *Britannia*, Vol.I, 1970, p.270; *A.W.*, No.8, 1968, p.15; No.9, 1969, p.18.
91. Jones, *op.cit.*, 1970, p.7; *Britannia*, Vol.I, 1970, p.270. Jones tentatively suggests that this is part of the street-grid appropriate to the new cantonal capital. Wachter, however, maintains that the earlier alignment of streets and structures may in fact represent the initial foundation of the town and civitas. Wachter, J.S., "The Towns of Roman Britain", 1975, pp.390-1. See also, note 90.
92. Jones, *op.cit.*, 1970, pp.7, 13, & Fig.2; *A.W.*, No.9, 1969, p.18; No.16, 1976, p.32. Jones tentatively links this late occupation with the *Caer Fyrddin* of the *Mabinogion*. Everyman Edition, rev.1974, p.85.
93. Jones, *op.cit.*, 1969, pp.2-5; 1970, pp.4, 7, 14 & Fig.1; *A.W.*, No.8, 1968, pp.14-15; No.9, 1969, p.18; No.16, 1976, pp.31-2; No.17, 1977, p.32; *J.R.S.*, Vol.LIX, 1969, p.198; *Britannia*, Vol.I, 1970, p.270; VIII, 1977, p.360. The remains of an amphitheatre have been excavated 150 yards (137.2 m) East of the estimated position of the East Gate. *J.R.S.*, LIX, 1969, p.200; *Britannia*, II, 1971, pp.243-4 & Fig.2; *A.W.*, No.10, 1970, pp.16-7.
94. Jones, *op.cit.*, 1971, pp.3-24; Johnson, *op.cit.*, 1976, p.136.
95. J.K. St. Joseph, "Air Reconnaissance in Roman Britain, 1973-76", *J.R.S.*, Vol.LXVII, 1977, pp.153-4 & fig.16; *A.W.*, No.17, 1977, p.31; No.16, 1976, p.31; Margary, *op.cit.*, 1973, Route 69, pp.353-357; Nash-Williams, *op.cit.*, 1969, s.v..
96. St. Joseph, *op.cit.*, 1977, p.151; *Britannia*, Vol.VII, 1976, p.296; Nash-Williams, *op.cit.*, 1969, pp.104-6; Irvine, H.C., "Note on the Roman Station at Pennal, Merionethshire", *B.B.C.S.*, Vol.XVII, 1956-8, pp.124-131, with map; the banks on the edge of the marshland to the North and South of the fort, which Irvine tentatively identifies as part of a marching-camp, may well be mediaeval in date.
97. Irvine, *ibid*; Steers, *op.cit.*, 1964, pp.143-8, 533-4. The North bank of the Dyfi was thickly covered with marsh vegetation when the site was visited and no features were observed on the ground; dredging and drainage operations have not, apparently thrown up any Roman material.

98. Margary, *op.cit.*, 1973, Route 69, a-d, pp.353-7, and Routes 642 & 643, pp.345-6; cf. Nash-Williams, *op.cit.*, 1969, pp.104-5; *Britannia*, Vol.VII, 1976, p.296; St. Joseph, *op.cit.*, 1977, p.151 ff.
99. Nash-Williams, *op.cit.*, 1954, p.39.
100. Camden, W., "*Britannia*", (ed. by Gibson) ii, p.778; Haverfield, F., "*Military Aspects of Roman Wales*", *Trans. Soc. of Cymmrodorion*, 1908-9 (1910) p.98; Nash-Williams, *op.cit.*, 1969, p.106.

Chapter 12



JF

Chapter TwelveChester and the coasts of North Wales and Lancashire,from the Seiont to the Kent.

The results of a recent geophysical survey of the coasts of North Wales and Lancashire in general and those of South-West Lancashire and the Fylde in particular, indicate that there has been gradual elevation of land levels since the late Roman period in the region and that, between the Mersey and the Lune, there has been a steady drop of sea-level in relation to that of the coast of some 5.27 feet (1.6 m). From ca. A.D.43 up to ca. A.D.378, however, sea-level rose by approximately 2.3 feet (0.7 m), from 15.4 - 17.7 feet (4.7 - 5.4 m) above O.D. at springs, in comparison to 12.4 feet (3.8 m) above O.D., the present mean high water mark - springs, at St. Annes-on-the-Sea; this rise in sea-level appears to have been gradual, there being no evidence to support the theory of a late-Roman marine transgression (1).

Caernarvon

SH 485625

123

Approximately 300 yards (274 m) East of the tidal estuary of the Afon Seiont, the remains of an auxiliary fort, the Segontium of the Antonine Itinerary, straddle the summit of a rounded hill, which rises to a height of 150 feet (45.7 m) above O.D., the northern slopes of which descend towards a low rocky promontory, now occupied by the mediaeval castle and walled town of Caernarvon (2). The fort, which was presumably established ca. A.D.78, lay at a strategically important meeting-point of land and sea routes, commanding the Menai Straits and the ferry-crossing to the Isle of Anglesey (3).

The fort was initially defended by means of a timber palisade, clay rampart and two W-shaped ditches. A stone revetment was added to the rampart possibly in the late 3rd or early 4th century, and timber

structures within the 5.6 acre (2.27 Ha) enceinte rebuilt in stone, probably Red Cheshire Sandstone, from Chester. The 3rd century garrison, the Cohors I Sunicorum, may have been transferred ca. A.D.293 although the fort was held until well into the 4th century in the third quarter of which, presumably not long before final abandonment, the defensive ditches were re-cut and the North-East gate substantially rebuilt (4).

Traces of the timber structures of an extensive, early vicus have been encountered on the slopes below the fort, while 300 yards North-West of the enceinte a double palisade fronting a rock-cut ditch, exposed during rescue excavations, may represent the defences of an annexe or ordnance depot, occupied ca. A.D.80-130; the ditch had been re-cut ca. A.D.100-120, reducing the area of the enclosure. Within the defences, features noted included a roadway, a tile-kiln, wells and parts of timber buildings, some of which showed evidence of two phases of construction. Almost equidistant from this enclosure and the fort, and on the edge of a 100 feet (30.5 m) precipice above the East bank of the Seiont, lay a second almost rectangular enclosure, possibly a large stores-compound, which is now known as Hen Walliau. The walls, which were constructed in the late 2nd century, were some 6 feet (1.82 m) thick, survive to a height of 16 feet (4.88 m) above modern ground level and enclose an area approximately 230 feet (70.1 m) long by about 165 feet (50.3 m) wide; the West wall has been destroyed. A 10 feet (3.05 m) wide entrance in the South wall displays no defensive features, although the walls closely resemble those of the fort in the manner of their construction. Occupation of the enclosure continued up to the end of the 4th century, if not beyond (5).

124-5

No harbour installations of the Roman period have been found at Caernarvon and any remains of the Roman waterfront must lie behind the early 19th century masonry quayside.

Aberffraw

SH 354689

An apparently Roman fort, sited beneath the township of Aberffraw on a low hill overlooking the partly-silted estuary of the Afon Ffraw may, along with a "lost" site in the vicinity of Beaumaris, have been a terminal for a ferry operating out of Caernarvon to the Isle of Anglesey. The Phase I defences, which comprised an earth rampart fronted by a Punic ditch, underwent a further phase of reconstruction during which the ditch was re-cut; the ditch was re-cut again, and a crudely-built clay and rubble rampart and stone revetment wall, in all some 4m (13.1 feet) wide, constructed, possibly in the Dark Ages. Of the very few finds recovered from excavations on the site, some are probably Roman.

The palace at Aberffraw, referred to for its harbour and as a place for royal feasting in the Mabinogion, was regarded as ^{the} chief seat of Owain Gwynedd, Llywelyn the Great, and Llywelyn the Last in the late 12th - late 13th century, though such buildings as still stood in A.D. 1317 were then robbed of building-material needed for repair work across the Menai Strait, at Caernarvon Castle (6).

Caer Gybi

SH 247826

126

The Roman fort at Caer Gybi, Holyhead, was built on a low cliff which overlooks a well-protected harbour, now called the Inner Harbour. It is sheltered from the prevailing winds of North-West Anglesey and affords a safe anchorage on a coast which is in this neighbourhood characterized by cliffs, small islands and stacks, such as North Stack and South Stack (7). Some sandy bays are to be found in these parts, such as Tre-arddur and Rhosneigr, but these would not have provided the sheltered environment necessary for the establishment of a port, however small it may be. The harbour below Caer Gybi is sheltered from the West by Holyhead Mountain, from the North by Salt Island and from

the East by that part of Anglesey which runs North to Carmel Head. Its suitability as a port site is shown by the fact that it is now the site of a thriving ferry terminal.

127

The fort, built on a 16 feet (4.88 m) high cliff which runs along the western reaches of Holyhead harbour, covers an area of 0.8 acres (0.32 Ha), although it is thought that the curtain walls may have run over the escarpment and down to the former Low Water Mark of tides; the West wall of the fort is 448 feet (75.7 m) long, while those on the North and South are 133 feet (48 m) and 156 feet (41 m) respectively, to the points at which they disappear over the cliff (8). The walls still stand to a height of over 12 feet (3.66 m) in places, and traces of the rampart walk and parapet may still be seen. The stone used to construct these defences was quarried from nearby cliffs. Round towers of only 16 feet (4.88 m) diameter were built at the North-West and South-West corners and at the point where the North and South Walls cross the cliff. The stump of a wall can be seen emerging from the lower part of the North-East tower and running towards the shore-line below the cliff; the tower, however, although Roman at its base, was largely rebuilt in mediaeval times and it is just possible that this wall may not be Roman (9). There are no other examples of three-sided Roman forts in Britain and it is conceivable that a former East wall once existed but fell over the cliff (10).

128

The land between the base of the cliff and the modern shore-line is now occupied by the cemetery of the Church of Saint Gybi, a road and railway installations. If the modern quay beyond the railway lines was built out into deep water, then it is just possible that remains of the Roman waterfront may have survived beneath the road and the railway sidings (11).

The cliff-face was trimmed smooth when the churchyard was extended in the early 19th century, to which work the revetting and the relieving

arch probably belong. It has been suggested that a relieving arch in the revetment wall of the cliff may mask a Roman route down to the beach, but there is no evidence for this being the case. No dating material has been recovered from the site and future excavation of the ground within the walls is most unlikely as it is occupied by the Church and Churchyard of St. Gybi. An analogous style of construction is found in the late 3rd-4th century fort at Cardiff; enclosures of this type are usually regarded as post-Diocletianic in date, and Caer Gybi may well have been part of the reorganization of Britain under Theodosius (12).

Caerhûn

SH 775704

129

The Roman fort of Kanovium, Caerhûn, lies on the West bank of the Afon Conwy, 4 miles (6.4 Km) South of its outlet into Conwy Bay (13). The fort occupies the crest of a rounded hill which rises 50-60 feet (15.2-18.3 m) above the valley-floor. To the East, towards the river, the high water mark of which now lies some 265 yards (242 m) from the East fort wall, the ground at first falls sharply but then levels out past the site of an extramural bath-house, now 115 yards (104.7 m) from the Conwy (14). The fort lay 0.75 mile (1.2 Km) South and upstream of the point where the road from Chester to Caernarvon crossed the Conwy. Just West of this crossing-point, at or near Tyn y groes, a branch-road appears to have cut off southwards to pass close by 131

Kanovium (15). Although the Conwy is fordable at low water below Caerhûn, it has been estimated that it was navigable for vessels of up to 100 tons (101.6 tonnes) displacement, at least as far as the fort, and a riverside dock and jetty, which lie 370 yards (338.5 m) North-East of the fort wall, were used to offload sandstone and bricks from river-boats when Caerhûn Hall was rebuilt in the late 19th century (16). The fort occupied, therefore, a position of some strategic importance to the communications system of North Wales, although the key to the siting of

the fort may lie less in the river as a waterway, than in the valley which it has cut, which gives access southwards into the Cambrian Mountains.

The earth and timber defences of the Flavian fort, which has been attributed to Agricola, enclosed a roughly square-shaped area of 4.86 acres (1.97 Ha). Sometime during the 2nd century, probably in the Antonine period, by which time silt had virtually filled the inner defensive ditch, the fort was briefly re-occupied; a stone revetment wall was added to the front of the rampart and the ditch-system was re-cut (17).

The apparently-unfinished defences of a small, 0.5 acre (0.2 Ha) annexe, ran up against the eastern half of the southern defences. A stratum of mixed clay containing 1st century coins was apparently the product of deliberate levelling in the area South of the fort in the 2nd century, at which time the adjacent 1st century road was remodelled. Traces of an extensive vicus to the North of the fort were noted during aerial reconnaissance in 1976; of the roads which led from the North, South and West gates of the fort, that which ran northwards was lined with strip-buildings for a distance of 300 yards (274 m) as far as SH 77787068 where the roadway crossed a stream. Other structures of some complexity were observed on the slopes between the fort and the Conwy, including the bath-house. Although there is no structural evidence for a continuance of civilian occupation after the apparent abandonment of the fort, late pottery and coins indicate an intensification of occupation, or re-occupation, of the site in the late 3rd century (18).

Two milestones, the one Hadrianic and the other Severan (A.D.198-209), have been found at Rhiwiau-uchaf Farm, nearly 7 miles (11.2 Km) West of Caerhŷn. The stone is thought to have been quarried at Cefn-y-Fedw, Llangollen. Sedgely suggested that while it is possible that the milestones were completed at the quarry and transported along some

unlocated road to the North Wales coast road, it is more likely that the crude milestones were transported, perhaps by way of the Dee, to Chester, there to be inscribed and finished before being forwarded by land or, more likely, sea to Caerhûn (19).

130

Some 370 yards (338.5 m) North-East of the fort, a sunken channel, 270 feet (82.35 m) long and 30 feet (9.15 m) wide, leads in from the river. Although it is now choked with silt, this channel was in the last century used as a dock for river-boats bringing building-materials to Caerhûn. Along the South side of the channel runs a raised platform, a "jetty", 225 feet (68.62 m) long and 40 feet (12.2 m) wide, which stands to a height of 3-5 feet (0.91-1.52 m) above the floor of the channel and which projects 25 feet (7.62 m) into the river. Trial excavation in 1929 encountered 10 inches (25.4 cm) of coarse gravel containing broken slates and fragments of modern bricks below a stratum of humus. These strata appeared to be associated with a revetment wall of irregular quarried stones and slate, faced with very large boulders with wide interstices. The coarse gravel spread and revetment sealed an earlier wall, 38 inches (1.15 m) thick, the inside face of which was a "neat construction" of small boulders packed in clay. Behind this early wall, a 14 inch (35.6 cm) deep spread of soft, fine river gravel, in the lower half of which brushwood had been incorporated, overlay a 2-3 inch (5.08-7.62 cm) layer of hard green clay, containing a few small stones, which in turn rested on an 18 inch (45.72 cm) stratum of soft yellow clay, small stones and pebbles. At the base of this "core", a foundation of large boulders had been set on the "natural" mud bottom. Although there was apparently no substantiating evidence, Reynolds tentatively suggested that the primary wall and core was of Roman work (20). The South revetment of the "jetty", now a field wall, is of modern construction.

Leading onto this presumed jetty from the West is a causeway, about 45 feet (13.7 m) long and 16 feet (4.88 m) wide, towards which runs a

sunken way, some 10 feet (3.05 m) in width. This too, was examined in 1929. A layer of boulders, 16 inches (40.6 cm) deep, lay immediately below the modern ground surface, and may represent the bed of a 19th century trolley-line by which sandstone was drawn up from the dock to Caerhŷn Hall or, more likely, the remains of a metalled way used in connection with brickworks across the river. Below the boulders lay an 8 inch (20.3 cm) deep spread of gravel, the remains, Reynolds surmised, of a Roman road which once gave access to the waterfront (21).

Although there is no certain proof that the "dock" and "jetty" are of Roman work, it is likely that installations designed to ease the handling of supplies would have been constructed subsequent to the primary development of the site.

Rhuddlan/St. Asaph

SJ 0377

Although little evidence of Roman occupation has been found in the areas bordering the Rivers Elwy and Clwyd between St. Asaph and Rhuddlan, it is almost certain that a Roman fort once controlled them. "Iter XI" of the Antonine Itinerary mentions Varis as being xvii m.p. from Conovio (Caerhŷn) and xxxii m.p. from Deva, on the road which ran Caernarvon to Chester (22). If Margary's route 6a, via Eaton Hall, is followed there is an apparent discrepancy in the mileage of +3 m.p., the result, it has been suggested, of the substitution of 'x' for 'v' in 'xxxii' which would then read 'xxvii'; this still, however, leaves a discrepancy of -2 m.p. (23). If on the other hand Margary's route 66a by way of Lache is adopted as the one referred to in "Iter XI" then the distance to Deva would be 29.0 English miles as opposed to the 31.5 English miles of route 6a. As xxxii m.p. are approximately 29.5 miles there would seem to be no worthwhile discrepancy in the mileages given in "Iter XI" and Varis could be safely located in the area immediately South of St. Asaph (24).

No evidence for Roman occupation has yet been found at St. Asaph, except for some Roman coins (25). Some evidence for Roman occupation has, however, been found some two miles downstream on the River Clwyd at Rhuddlan.

In excavations in the area South and East of the Edwardian Castle, in 1969-71, several sherds datable to the 2nd-3rd centuries were found (Sites A and E). In one place - Site M - "a thick buried soil containing Roman pottery" was "covered by a blow of clean sand, into which ditches, probably also of Roman date, had been cut". A possible focus for a settlement in this immediate area could be Twt Hill (26). 132

There was no indication of a military presence, but Rhuddlan occupies a good defensive position. The area in which the Roman material was found lies on the East bank of the River Clwyd, near to a ford, at the head of tidal limits and just below the limit of navigable waters. Furthermore, there are good views to the West and ready access into the hinterland by way of the river valley. The site has the advantage of being situated on a low cliff well above the flood-plain of the river, an important point as North Wales rivers are liable to heavy flood spate because of the short distance which they travel from the mountains: both the Clwyd and the Elwy are embanked as far as St. Asaph (27). If a Roman fort was built in this area, or a little way upstream, but below the confluence of the Elwy and the Clwyd, it could have been provisioned by sea and still have commanded the road to Segontium. Furthermore, in conjunction with forts at Prestatyn and Caerhŷn it would have been in a position to exercise supervision over the mining and allied industrial activities on the stretch of coast between The Great Orme and Halkyn Mountain (28). The evidence for Roman occupation at St. Asaph and Rhuddlan is slight, but although the presence of a fort in this area is possible, the material found in the excavations at Rhuddlan may be derived from a civilian settlement. 133

Prestatyn

SJ 061819

Bordering the lower estuary of the Afon Clwyd, between Abergele and Prestatyn, extensive tracts of marine warp, represented by low-lying reclaimed land, occupy what was probably in Roman times a wide expanse of navigable water. On or near its eastern edge, between Prestatyn and the village of Meliden, lay a fort, recognised during aerial reconnaissance, the defensive ditches and clay rampart of which have been confirmed by excavation, on the North and West sides. A road seems to have run south-eastwards from the fort and was apparently fronted by the structures of a civil settlement (29). Until the chronology of this fort and the nature of the occupation at Rhuddlan have been established, their strategic relationship, if any, remains obscure.

Garreg, Holywell

SJ 135780

134

Garreg, otherwise known as "The Rock", is the summit of a large hill, near Whitford Garn, Holywell, a vantage point from which there are fine panoramic views of Snowdonia, Penmaenmawr, the Llandudno promontory and part of Anglesey in the West, and the estuaries of the Dee and the Mersey, and the coast of Lancashire to the North. On the hill stands a tower which Pennant and Ely claimed to be a Roman pharos.

The structure is about 25 feet (7.62 m) high, circular in plan, 12.5 feet (3.81 m) in diameter internally, with limestone and mortar walls 4 feet 4 inches (1.31 m) thick. The interior and exterior faces now diminish upwards in a form of stepped construction, each step being horizontal and about 6 inches (15 cm) deep. The whole structure was substantially "restored" in A.D.1897, since which time the condition of the fabric has deteriorated (30).

Pennant, who visited North Wales between February 1778 and March 1781, states that entry to the ground floor was gained through two doorways, facing North and South. There is now no trace of the northern doorway and the southern entrance has been heavily restored. Pennant went on to describe two "squared funnels" each of which rose "like a chimney" above both doors and which emerged on the outside of the structure about half way up; all trace of these too has since been obliterated (31). The first floor, now 8 feet (2.44 m) above ground level, was furnished with two windows both of which look out northwards, over the Dee Estuary, the top storey being crowned with modern battlements, below which three of the eight small, square openings which Pennant described are visible today.

Although the structure was heavily restored, much stone has since fallen away but no Roman material is visible in the parts of the fabric thus exposed. The site has apparently never been scientifically excavated, but although it lies within 1.5 miles (2.4 Km) of the Roman road which runs between Chester and St. Asaph, there is nothing to suggest that it is either Roman or a pharos (32). A chart of Liverpool Bay, dated A.D.1764, shows a tower to the South-East of Mostyn, called "Whitford Mill", which may be identified with that on Garreg. An earlier chart, compiled by Greenville Collins in A.D.1681-1689, does not note this significant sea-mark probably indicating that it had not then been built. If this was the case, then the tower is neither a Roman Pharos nor a mediaeval retreat but simply a mill, a folly, or even late 17th - early 18th century military work (33).

Pentre Ffwrndan

SJ 255723

Pentre, on the southern shore of the alluvium-choked lower estuary of the River Dee, may have had a military origin, if occupation

began in Flavian times as pottery finds seem to indicate. The site, which lies about a mile (1.6 Km) East of the town of Flint, lay adjacent to the point at which a small stream from Halkyn Mountain enters the Dee through what may have been a small tidal creek in Roman times. Excavations in 1932-4 exposed the remains of a residential (?) structure built towards the end of the 1st century A.D. or possibly ca. A.D.130. Further North, towards the Dee, the 1923-4 excavations encountered walling, "flagged" areas, pits and the remains of eight furnaces, two at least of which were in use up to the middle of the 2nd century (34). In the area immediately to the North-West, a timber and clay courtyard building, excavated in 1976, had been erected ca. A.D.120. It had been gradually refurbished in stone, and a bath-house added, from ca. A.D.140 onwards and may, O'Leary has suggested, have been the residence of a military official associated with a lead-producing industry based on Halkyn Mountain. Parts of the building were demolished soon after the beginning of the 3rd century, after which time it was used as a lead-processing workshop for a short period prior to final abandonment (35).

Heronbridge

SJ 411638

136

The Roman settlement at Heronbridge lies some 2 miles (3.2 Km) South of the legionary fortress at Chester, at a point where the courses of the River Dee and Watling Street converge and run in close proximity. The buildings of the settlement lie some 50 feet (15.2 m) above the West bank of the river and are grouped alongside the Roman road. This close proximity of river and road presumably influenced the choice of this site, for the structures rest on a heavy subsoil of boulder clay, which must have made life uncomfortable in times of heavy rain (36). It has been suggested that the reason was that the lower reaches of the Dee, between Heronbridge and Chester, were rocky and shallow and therefore

were unsuitable for navigation; on the other hand, the river from Heronbridge as far as the works depot at Holt, some 10 miles (16 Km) upstream, was navigable and may have been used to convey commodities manufactured there, probably from ca. A.D.100 to perhaps a little after A.D.140 and in the early and possibly mid 3rd century, down to Heronbridge. Hence Heronbridge has come to be regarded as a staging post on the way to Deva, a small river-port where tiles and pottery would have been transferred from barges to carts for the final 1.5 miles (2.2 Km) journey to the fortress (37). The dams and weirs which have been built across the Dee at Chester from the 11th century onwards prevent tides from flowing any further upstream, and it is just possible that river-barges could have sailed direct to Chester from Holt providing there were no shallows in the river; in Roman times the commodities manufactured at Holt would certainly have benefitted from a minimum of loading, unloading or jolting in carts (38).

The earliest occupation of the Heronbridge site dates from ca. A.D.90 to 130-140. Remains of timber-framed, structures have often been too fragmentary for their plans to be recovered, although some have been interpreted as strip-buildings. Some 'industrial' activity is indicated, including metal-working and corn-drying (39).

Shortly after ca. A.D.130, strip-buildings and some lean-to sheds were erected on the site, some of which were reconstructions in stone of Period I timber structures; the strip-buildings were over 100 feet (30.5 m) long and 30-40 feet (9.1-12.2 m) wide. They appear to be sited in groups of three or four on an East-West alignment, presumably fronting westwards onto Watling Street and have been identified as store-houses. Occupation of these structures seems to have continued at least until the end of the 2nd century. Before A.D.130-140, a stream ran from West to East, across the site, into the Dee. This was apparently used as a convenient means of draining the area to the North, where small

gullies or drainage channels have been located. These were filled in ca. A.D.130 and the natural hollow or gully in which the stream ran was artificially deepened and revetted with masonry to form what has been interpreted as a dock (40).

137

The South part of the hollow was filled with a massive platform of roughly hewn sandstone blocks, of one build with which was a wall of squared stones. Excavation in this area was not taken down to natural and the lowest levels of the feature were not reached; a U - or a V - shaped bed was assumed. The platform and wall were interpreted as a quayside, providing access to the 'dock'. The North side of this 'dock' coincided more closely with the limits of the natural hollow. A foundation trench, some 3 feet (0.91 m) wide, had been cut a little to North of the edge of the channel, and had been subsequently filled with sandstone rubble on which at least one course of dressed sandstone blocks had been laid. Clay and large stones had then been packed behind the 'wall' and the area levelled with 'rubbish' over which lay sandstone rubble which extended for 30 feet (9.1 m) to the North. This was roughly equivalent to the sandstone platform on the South side of the 'dock'. Although the relationship between the wall and the sandstone rubble could not be ascertained owing to disturbance, the excavators were satisfied that they were contemporary. The 'dock' was 23 feet (6.9 m) wide between these walls. A series of six steps had been cut into the northern half of the stream bed, and must have substantially reduced the capacity of the 'dock' (41).

In order to use this 'dock', it would have been necessary to lift river craft at least 20 feet (6.1 m) up from the waters of the Dee, an unnecessary labour; the Dee is not liable to rapid flood spates as is the River Conwy and it was probably not dangerous except in times of abnormally heavy rainfall. There is no apparent reason, therefore, why use may not have been made of wharves or quays on the bank of the river

itself. In times of heavy rain the run-off from the area West of the road must have been considerable, and the waters of the stream may then have been liable to overflow and flood buildings on either side. The 'steps' in the northern half of the stream bed may, therefore, represent an attempt to deepen the channel, perhaps because silting had reduced its effectiveness as a drain, and the "dockside" walls as the remains of two separate buildings on the banks of the stream or simply as revetments to the areas adjacent to it.

Chester

SJ 405664

138-9

The legionary fortress of Deva lay on a sloping sandstone plateau which rises some 50-100 feet (15.2-30.5 m) above a bend in the Dee. There the river cuts through a low ridge of sandstone which marks the head of the 10-mile (16 Km) long estuary which leads out into Liverpool Bay (42). The Dee was tidal and navigable up as far as Chester and the stretch of water below the fortress once formed a secure and sheltered anchorage. At Chester, the river was sufficiently narrow to be bridged and yet shallow enough to be fordable, at least at low tide. The site which would have been strategically important, particularly before the completion of the road system, as a base for the transshipment of supplies and reinforcements, became a nodal point in the Roman military dispositions of central and northern Wales and in the communications system of the North-West (43).

Pre-Flavian cremation burials, found in the Deanery Field, may indicate that a military post was set up in the vicinity, before the establishment of the legionary fortress, which could possibly have taken the form of a naval supplies base which would have been needed as early as A.D.59-60 for the expedition against Anglesey. There is, however, no structural evidence for such a base at Chester, and Carrington has suggested that, as typical pre-Flavian objects peculiar

to the years before A.D.69 have yet to be found, the burials may, therefore, have accumulated during the initial phases of construction work on the fortress, before the retentura was extended (44).

139

The timber fortress, which occupied an area of 59.8 acres (24.3 Ha), seems to have been completed ca. A.D.80 (45). Lead pigs, dated by inscription to A.D.74 and bearing the legend 'DECEANGL', indicating speedy exploitation of the Flintshire Lead mines, may have been intended for use in construction work on the fortress. While one of the pigs was discovered some 1.5 miles (2.2 Km) East of the fortress, the other was found on the Roodeye in A.D.1886, some 50 yards (45.7 m) from the present channel of the Dee and at a depth of 20 feet (6.1 m) below ground level, amid a mass of oak piles and Roman pottery and coins including issues of Vespasian and Titus. The piles may represent the remains of an early wharf, possibly contemporary with the construction phase of the fortress (46).

An undated inscription from Chester refers to a shipwreck:-

]opt [i] onis ad spem |ordinis c(enturia) Lucili|
 Ingenui, qui|naufragio perit|
 - S(itus) E(st). (47)

Although the date and place of the incident are not given, some connection with naval or commercial activity in the western seas is implied (48).

Except for the large interior baths and the exercise-hall, the first buildings of the fortress were of timber construction (49). A timber-framed structure of the late 1st century lay to the West of the turf rampart and ditch of the early fortress, and on the South side of the *via principalis*. It was rebuilt in stone in the early 2nd century and may have been a warehouse, or stabling for horses or draught animals used to transfer supplies from ship to stores. Additional rooms were added in the middle of the 2nd century, but it had gone out of use by

ca. A.D.200 (50).

Within the ramparts, rebuilding in stone, on a similar plan to the "timber" fortress, began in the opening years of the 2nd century, although on the Northgate Brewery Site much of the area remained open after demolition ca. A.D.120 until barracks were built in the mid-2nd century. Three granaries in the praetentura close by the porta principalis dextra, which were constructed probably in the reign of Trajan, were re-roofed ca. A.D.250 and dismantled towards the end of the 3rd century; they would have been conveniently situated to be supplied from the harbour area outside the West gate (51).

Some structures known to have been situated between the fortress and the river may represent civilian commercial activity which may have extended to Ireland, as it did in the Middle Ages (52).

138-9

The course of the River Dee as it flows to the West of the fortress has changed considerably since Roman times. The 14th century Water Tower originally projected out into the river but by A.D.1662 the mooring rings at its foot were redundant as no vessel could approach because of silting in the channel (53). Continuous deposition of alluvium has forced the Dee westwards, away from the mediaeval city walls, thus forming the flat expanse of the Roodee (54).

In the Middle Ages the Weir at Dee Mills prevented vessels from passing upstream. This may have been the head of navigable water in Roman times as it is thought that there may have been rocky shallows in the reaches between the fortress and the riverside settlement at Heronbridge (55).

There is evidence that building materials were shipped from Chester to North Wales in Roman times. Tiles of the Legio XX. V.V., have been found at Prestatyn, Caerhŷn & Hope, and also at Wilderspool & Carlisle. At Caer Gai, legionary sculpture was executed in stone derived from Chester and Cheshire sandstone was used in the construction of the fort

at Caernarvon (56). Traffic in the opposite direction is indicated by the use of Welsh slate in tombstones and dedication slabs at Chester. Two instances of the use of marble, including Purbeck "marble", may indicate coastal communication with the South Coast, although this stone may have arrived as ballast in ships carrying black-burnished ware - 1 from potteries in the Wareham-Poole Harbour area. Severn Valley ware, imported to Chester from apparently the end of the 1st century through to possibly the mid-4th century, may have been transported overland from potteries in the northern part of the Severn Valley for shipment to the Antonine Wall from the mid-2nd century onwards, while wares found in earlier 2nd century contexts possibly arrived on site through occasional calls made by craft plying the West coast route to Hadrian's Wall from the Bristol Channel, with the products of production-centres in the southern part of the Severn Valley (57). The port would presumably have been primarily military in character, although civilian commercial activity associated with the vicus to the East of the fortress, and implied by a tombstone bearing the Greek names Callimorphus and Thesaeus, is to be expected (58).

The harbour lay outside the West gate, the porta principalis dextra, the road from which lies to the South of the modern street at the Watergate, and continued, no doubt, to the waterfront. Lead piping, dated by inscription to A.D.79 and presumably part of the water supply of the "timber" fortress, has, however, been found some 75 feet (22.88 m) North of Eastgate Street; it had probably been laid along-side an early street which ran much further North than its 2nd century successor. Each of these two roadways would probably have led down to a pier or landing-place but all trace of structures in the area behind the waterfront may well have been erased when the land adjacent to the modern road was lowered in A.D.1845 (59). Sewerage excavations in A.D.1874 exposed the

remains of a "pier formed of oaken piles blackened with age" amid silt, on the Roodeye outside the Watergate. No datable remains were associated with it, but large quantities of Roman tiles and pottery and other debris have been found, dumped in the immediate vicinity. If this debris was deposited in the Roman period then there may be grounds for suspecting that this pile-structure might be a Roman wharf or pier. The dating evidence is, however, quite unsatisfactory and in the absence of detailed accounts or drawings no further conclusion can be drawn, except that such a harbour installation would be expected at or near this place (60).

At the foot of the bank on which the city wall stands and opposite the end of Blackfriars (fig.139), there may be seen the remains of a substantial wall which survived to a height of 9 feet (2.74 m) and is attached to groin walls at right angles. It appears to have been constructed as a revetment against the bank and excavation has shown that it extends to a depth of 15 feet (4.57 m), below ground level. It must have been built at a time when the estuary was open, for Shrubsole records that some of the stones were undercut, as though by the action of sand and water. Shrubsole regarded the structure as being a retaining wall but it is now commonly regarded as a quay wall. The wall has been tentatively identified as a Roman work because of the style of its construction and the manner in which the blocks were cut; there is no mortar between the blocks except for modern insertions in two courses at ground level; the stones are of immense size, being held together by weight, and there is no trace of any concrete backing (61).

Just beyond the southern end of the quay wall a small inlet ran in from the river towards the South-West angle of the fortress. The wall may, therefore, have fulfilled a dual function: as a quay and as a protection against water erosion at the point at which the inlet meets the river. Sewer excavations in A.D.1874 uncovered the mouth of this

inlet, which was found to be 119 yards (108.33 m) wide, although it is not clear whether this figure is referring to the actual channel or to its flood plain. The bed of the inlet was found at a depth of 25 feet (7.62 m) below ground level above which lay a stratum of peat covered with silt, which in turn was covered with a mix of post-Roman rubbish and broken Roman tiles. Shrubsole considered that a branch of the river had run from a point close to the Dee Mills to this spot, implying that the Castle Rock was originally an island in the Dee. Watkin describes a deep depression in the field between the City Wall and the Castle Barracks, and suggests that it marked the line of the creek; he also notes some subsidence in the mediaeval walls as they cross over this area (62). From ca. A.D.1846-1886, a drain ran along this line and cut through the mediaeval walls to discharge into the Roodee, which, a resident of Chester informed Watkin, was in A.D.1817 a wide open sewer or water-course. This statement was corroborated by a second resident who added that the water-course passed close to the "large stones" on the Roodee. This course is shown in Parry's Guide to Chester, dated A.D.1843. Certainly a wide inlet did exist here in mediaeval times and there is no reason to doubt that such an inlet should have existed in Roman times. Although Mason's survey of the Chester landscape appears to preclude the existence of a former arm of the Dee at this point, the name, Little Roodee, applied to the area just South of the Castle Rock, may well imply that Shrubsole was correct in his hypothesis, although the place-name could also be referring to water meadows in the vicinity (63).

It has been suggested that the occupation of Deva drew to a close with the disaster of A.D.368-369. The courtyard found on the Market Hall Site was repaved in the early 4th century and subsequently patched and changes were made to the Elliptical Building, possibly under Theodosius. While excavations in 1973-4 revealed timber structures which were erected in the middle of the 4th century, ca. A.D.360, the coin series from Chester diminishes sharply after Valens and Gratian; Deva

is not mentioned in the Notitia and may, therefore, have been abandoned by the turn of the 4th century (64).

Meols

SJ 230906

There have been considerable changes in the topography of the northern coast of the Wirral since Roman times. Hume correlated the evidence of maps of the 16th and 17th centuries and was able to show that the coastline then lay much further to seaward. It has been suggested that the Roman settlement lay about a mile to the North-West of the present coast-line. The majority of the Roman remains from the parish of Great Meols come from the shore, in an area about 2.5 miles (4 Km) East of the North-West angle of the peninsula. Occupation levels of the Roman period appear to have "outcropped" here but they were not securely stratified. Settlement, from pre-Roman to Elizabethan times, has followed a westward drift along this stretch of coast due, apparently to the effects of erosion and inundation. Remains of the Saxon period have been found half a mile to the West of those of the Roman period (65).

Three land surfaces have been exposed by erosion at Dove point, separated by strata of silt, the silt presumably reflecting inundations. The "sandwich" was sealed by dunes until it was again exposed in the 19th century. The large number of Roman finds, which are mainly metallic, have been found on the beach and seem to have come from the middle land surface. This would seem to indicate that the settlement met its end by the action of those very waters from which it may have gathered some of its livelihood (66).

By the mid-19th century, about 3,000 objects had been collected from the beach, most of which came from the area just East of Dove Point, and included large quantities of Roman material but very few non-metallic artifacts; about 70 fibulae (69 of bronze: 1 of silver) form a series

running from the mid-1st to the early-3rd centuries A.D., some early types of which may indicate contact with Rome, probably by way of trade, in the early stages of the conquest (67). Of coins from this area, 86 are Roman, constituting a fairly even and continuous series starting with Claudius and running up to Magnus Maximus. The coins and the fibulae reflect an apparently continuous occupation of a site in this area from the mid-1st to the late 4th centuries. Three coins of the Iron Age have been found; two were of bronze and one, of gold, bore a male head of Greek type. If three Greek drachmai are not modern or late-Roman losses, then they may indicate pre-Roman or other early trading contact (68).

Other finds include bronze and bone pins (one at least is Roman), and spindle-whorls two of which are of terracotta and apparently Roman. Small bells, keys, knives, spoons, rings and numerous iron implements have been found but few of them are definitely Roman. Large numbers of bronze and iron fish-hooks and leaden net-sinkers have been washed out but none are certainly Roman and many could be mediaeval. Nevertheless, fishing is an obvious activity for any settlement thus situated (69).

Non-metallic objects are conspicuous by their absence and artifacts of lighter materials may have been carried further out to sea than those of metal. Watkin listed some small fragments of samian and "Upchurch" ware plus a piece of Roman glass, and finds of pottery have been recorded on Hilbre Island which lies off the West coast of the Wirral. Ordnance Survey records list 23 Romano-British sherds from the area centred on SJ 18418798 on the island and these may be those recorded by Newstead as being of 3rd to 4th century in date (70).

Occupation levels with clay floors have also been noted, raised above the old land surface by margins varying from a few inches to 2 feet (0.61 m). There were traces of walls of wattle-and-daub construction with timber uprights which apparently stood on stone bases, two of which

had holes cut into their upper surface to admit uprights. Watkin thought that these were probably Roman in date because their character, he claimed, was too "rude" for them to be late mediaeval (71). Although the evidence is indeed scanty and unreliable, the sheer weight of finds, and the alignment of the Roman road from Chester, indicates that there was a settlement in the Meols area in Roman times, the nature or character of which is obscure.

It would appear that at one time, probably in the Roman period or before, there existed near to the North-West corner of the Wirral a large and sheltered anchorage. Protection on the West may have been afforded by a series of rocks of which the island of Hilbre once formed a part. To the North lay an extensive series of sandbanks and to the East a high sandy spit, Dove Point, since washed away, which was fast disappearing when Hume wrote about Ancient Meols in 1863 (72). The area of water thus protected was called the Hoyle Lake, which seems to have persisted until the 17th century, but is now entirely silted up. A survey, conducted in 1687 by Grenville Collins showed that Horse Channel, off Hoyle Lake, was half a mile wide and at low water had a depth of 15 feet (4.57 m) at its western, and 30 feet (9.1 m) at its eastern ends. Now it is 350 feet (106.2 m) wide and is dry at each end at low water. Most Roman remains are found almost opposite the eastern end of the channel, where the water is at its deepest. This channel provided a sheltered anchorage in the 17th century (73). The high spit, which once projected into the sea here would have given a full view of a long stretch of the coast hereabouts and would have been suitable as the site of a look-out post over the estuaries of the River Dee+the River Mersey before the conquest of the North Wales coast, or as part of a late coastal defensive system. Although some sort of military installation may well have been sited near to Meols, the evidence of the small finds suggest rather that there may have been a fishing community or salt-manufacturing

site in the vicinity, participating perhaps in casual coastal trade. Watkin thought that a small sea-port existed here from the beginning of the Roman occupation, but the material evidence does not support his claim and it is difficult to see why there should have been a port here when the River Dee was navigable up to the legionary fortress at Chester (74). If Meols was a fishing community, there would have been little need for wharves or jetties, for lighters or fishing boats could have been moored in the Hoyle Lake or drawn up onto the shore.

Runcorn

SJ 5582

The broad estuary of the River Mersey, which below its confluence with the River Weaver was probably fringed by extensive tracts of tidal flats and marshland in Roman times, narrows opposite the site of Halton Castle, in the outskirts of Runcorn (75). The Norman castle, which lay approximately midway between the southern bank of the Mersey and the presumed line of the Roman road from Chester to the industrial settlement at Wilderspool, apparently occupied an unspecified corner of a Roman fort, according to a description of the site in A.D.1699. The defences, which were said to be visible, if somewhat imperfect and obscure, seemed to describe the shape of a parallelogram enclosing an area of almost 40 acres (16 Ha). Although no remains of the station were visible in his day, Watkin suggested that there may have been a small port on the river at this point (76). The exact nature of the Roman occupation of the site, if any, has yet to be established, and a 2.2 acre (0.88 Ha) pentagonal enclosure on lower ground at Halton Brow, approximately half a mile (0.8 Km) North-West of the castle, may well have been agricultural in character, the few sherds recovered during the 1967 excavations, being attributable to the late 3rd century (77).

Of twenty pigs of lead, said to have been found at Halton "upon the very sea shore", apparently when digging for marl in the 16th century, but

since lost, some bore the inscription : "IMP. DOMIT. AVG. GER" with "DE. CEANGL" on the side, and others: "IMP. VESP.VII. T. IMP. V. COSS", dating them to ca. A.D.84-96 and A.D.76, respectively (78). While it is just conceivable that the pigs had been collected and transported to this point in the Middle Ages, destined perhaps for construction work at Vale Royal Abbey, it is more likely that they represent the cargo of a wreck of the Roman period, possibly a vessel which had been blown off-course during a storm while en route to Chester from a port serving the lead-producing areas of North Wales, or whilst putting out of the Dee Estuary into Liverpool Bay on a heading for the North; the craft may even have been plying the Mersey up to the industrial settlement at Wilderspool. Alternatively, it has been suggested that the pigs may have been transported overland from Chester for shipment presumably from a port at this point, an outlet perhaps, Tylecote surmised, for the Flint and Shropshire mining areas. Although there are some indications that the products of potteries in the northern part of the Severn Valley may have been transported to Chester for shipment to the North, there appears to be no reason why such a weighty commodity as lead should have been transported an apparently unnecessary distance overland, a comparatively uneconomic and inconvenient arrangement, when port facilities were to hand at Chester (79).

Wilderspool

SJ 615865

Approximately 8 miles (10.4 Km) upstream from Runcorn, and at or near what would probably have been the head of tidal limits at the turn of the 1st century A.D., the Roman road from Chester met that from Northwich and sites further South at one of the few points at which the otherwise marshy valley of the river could be conveniently forded. From this crossing-point, the arterial road apparently constructed in late

Flavian - Trajanic times as part of a policy of shortening the lines of communication in this area of the North-West, struck northwards across the extensive tracts of low-lying marshland on the Lancashire Plain, for the crossing-point of the River Ribble at Walton-le-Dale, and Lancaster beyond (80).

On the South bank of the Mersey, adjacent to the crossing-point, and apparently extending southwards along the line of the road to Northwich, an industrial settlement, the site of which is cut by the Manchester Ship canal, seems to have developed in the wake of construction work on the new road to the North. Extensive excavation in 1966-69 in the area between the Ship Canal and the old channel of the Mersey, now part of Wilderspool, failed to produce any evidence for a military phase, an apparent disaffirmation of the results of May's excavations of 1885-1905. A main road ran immediately behind the 9 feet (2.74 m) -wide rampart-like feature encountered by May, and the earliest excavated structures reported from the site in the last twelve years are timber-framed buildings of industrial character attributable to ca. A.D.100 (81).

The workshops, sheds, hearths, furnaces and other features associated with iron smelting and smithing and other metal-working activities, and possibly also glass manufacture, which have been encountered by May and subsequent excavators, are attributable to the 2nd century, the period of greatest activity being mainly Antonine. This broadly corresponds with the principal phase of pottery manufacture at Stockton Heath, the mortaria, and possibly other wares, attributed to which were distributed over a wide area of Cheshire and Lancashire, and northwards into Cumbria and the western sector of Hadrian's Wall. It is possible, however, that some of the potters attested at Wilderspool subsequently set up in production at centres further North (82).

Although the river-crossing must have remained important during the 3rd century, there was apparently a virtual end to intensive occupation

of the sites at Wilderspool and Stockton Heath by the reign of Severus. Three coins of Constantine I, and pottery datable to the early-mid 3rd to the early 4th century, need imply only a very low level of occupation in the area, although the pottery sequence associated with agricultural and minor industrial activity encountered some 900 m (983 yds) to the North-East extended from the early 2nd until well into the 4th century (83).

At Wilderspool, the former channel of the Mersey has almost certainly cut well into the northern edge of the site, probably sweeping away the remains of any riverside installations which otherwise may have survived in that area, while to the West, excavation work for the Manchester Ship Canal must have obliterated virtually all trace of waterfront structures further downstream.

Walton-le-Dale

SD 5528

Prior to extensive land reclamation in the early 19th century, the estuary of the River Ribble, which is still bordered in its lower reaches by vast areas of tidal flats, salt-marsh and land which lies below the high water mark of spring tides, extended as far inland as the port of Preston, three miles (4.8 Km) upstream from which, at Walton-le-Dale, the apparently late Flavian-Trajanic road from Wilderspool crossed the river en route for Lancaster (84). Set on a low-lying spur of land, part of a small alluvial plain, at the confluence of the Ribble and its tributary the Darwen, the site is bordered on three sides by river-channels and lies well below the head of tidal limits, that of the Ribble being a little under 3 miles (4.8 Km) further upstream, and there is now approximately 5 feet (1.52 m) of water up to Walton-le-Dale at high water, springs. Geophysical surveys of the coasts of South-West Lancashire and the Fylde have shown that, while there appears to have been a steady rise of sea-level in relation to that of the land of approximately 2.3 feet (0.7 m) ca. A.D.43-378, there has been a

gradual lowering of "relative" sea-level of some 5.27 feet (1.6 m) between the 4th and the 20th centuries (85). Although this would appear to indicate that the head of tidal limits would have lain further upstream in the Roman period, the effect of reclamation and embankment projects has been to progressively restrict the flood-plain of the river, increasing accretion in places and forcing tides further upstream, and it is possible, therefore, that the site at Walton-le-Dale may well have lain only a short way below the head of tidal water. The extent to which the Ribble was navigable in Roman times is uncertain, but it would not have been possible, even with this apparent added depth of water, for sea-going vessels to negotiate the 12 miles (19.2 Km) or more of meandering channel up to the fort and vicus at Ribchester, a little under 8 miles (12.8 Km) away to the North-East as the crow flies, without the aid of locks, as the river bed at that point lies some 65 feet (19.82 m) above 20th century mean sea level (86).

Although in 1634-5, Preston was more important than Liverpool as a port, the Ribble being navigable as far as Preston Marsh for vessels of 40 tons (40.64 tonnes) in 1691, the channel was little frequented, and then by small craft, in 1760 when it was charted by Murdock Mackenzie, who commented that no directions would have been sufficient to enable a stranger to navigate it. The channels in the lower estuary are still subject to constant change, the discharge of water is variable and the surface current velocity high during the eight hours run of the ebb current, averaging 7.72 m.p.h. (12.4 Km.p.h.), and rising to 9.09 m.p.h. (14.62 Km.p.h.), at Preston in 1927. An additional hazard was the Ribble Bore which, before improvements were made within the last hundred years, ran up the higher reaches of the estuary at a height of over 3 feet (0.91 m) and a speed of 8 m.p.h. (12.8 Km.p.h.) (87).

Like Wilderspool, settlement seems to have developed at Walton-le-Dale in the wake of construction work on the road across the Lancashire Plain

towards the turn of the 1st century A.D. The site, which has been eroded both by the Ribble and particularly the Darwen a loop of which cut north-eastwards across The Flats almost as far as Flats Mill in A.D.1738, has produced evidence which seems to indicate that occupation was not confined to the area delimited by these two rivers but may have continued westwards (Site II) on the opposite bank of a 80-90 feet (24.4-27.4 m) wide former channel of the Darwen which appears to have run parallel to, but a little over 30 feet (9.1 m), North-East of its present course (88). Excavations by Pickering in the 1950's, on and adjacent to the line of the "rampire" described by Hardwick in 1855, (Site I) encountered the remains of six timber-framed buildings (in two phases separated by a fire and followed by demolition) of the 2nd century but no evidence of a military occupation of the site; other timber-framed structures further West (Site II), which he tentatively identified as elements of a fort because of the quality of the materials used and style of construction, fit no known military pattern. No structures attributable to the 3rd century have been encountered although the few sherds of pottery associated with later levels indicate continuing, perhaps low-scale, occupation of the site (89).

Kirkham

SD 4331

From Ribchester a road ran westwards for 15 miles (24 Km) to Kirkham on the Fylde where, at Mill Hill (alternatively Carr Hill) on the eastern outskirts of the town, coins, pottery (including Flavian samian ware), objects of metal (notably the bronze umbo of a shield), stone ruins and foundations, and tile or brick "pavements" have been found over the last two and a half centuries. Unpublished excavations in the 1950's encountered the rampart, wall-foundation trench and double ditch system of an outlier fort of the Flavian period. The outer ditch

had been subsequently back-filled and the inner re-cut to a width of 30 feet (9.1 m), in the secondary silt of which lay sandstone blocks from the thoroughly robbed revetment wall of the rampart. Of the few stratified finds, the majority are attributable to the first half of the 2nd century, when an extensive vicus appears to have developed (90).

The fort now lies 3 miles (4.8 Km) from the North bank of the Ribble Estuary below Freckleton, to the East of which a tract of marshland, now reclaimed, has developed in advance of the Roman shoreline. Although the Ribble and the Wyre to the North were both difficult to enter in the days of sailing ships, a small port developed on the tidal reaches of the latter river at Poulton-le-Fylde, which by the middle of the 18th century was a customs port with a great range of overseas trade. Cargoes were also unloaded on the opposing shore at Wardleys (North-West of Hambleton), the place at which the flax merchants of Kirkham had large warehouses in the 18th century (91). The fort at Kirkham may similarly have been supplied through a port on the Wyre, for a Roman road which ran in a generally north-westerly direction from the enceinte has been traced as far as Puddle House Farm, Hardhorn (area centred on SD 356363) at which point it appears to have been heading on an alignment which would have taken it to a creek on the shore of the Wyre Estuary at Skippool, the site in 1741 of a warehouse used by merchants of nearby Poulton-le-Fylde to store goods shipped in from Barbados (92). The road may, however, have continued on a slightly different alignment past Poulton-le-Fylde, skirting the formerly extensive tidal flats and salt-marshes of the lower estuary, to head for a natural harbour, which was artificially improved in 1835, at Fleetwood. It has even been suggested that the agger may have continued up to several miles further North to a haven, since lost to the sea, off Rossall Point, a "few miles" from which, in the region of King Scar Buoy, two slightly curving "walls", one of which was approximately half a mile (0.8 Km) long,

have been seen protruding from the edge of a sandbank at times of extreme low water. The apparently sheer "walls", each of which disappeared into the sea at its seaward end, enclosed a large horseshoe-shaped basin of water 4.5 m (14.7 feet) deep but although the stones and shingle which covered the North "wall" were excavated, no man-made artifact or structure was found, indicating that it is almost certainly a natural feature. It has been suggested that the "walls" represent the remains of a natural harbour drowned through post-Roman subsidence (93). Recent geophysical surveys of the coasts of South-West Lancashire and the Fylde carried out by Tooley have, however, shown that in this general area there has been a slow elevation of the land since the late Roman period, thus excluding the possibility of anything other than local subsidence and there must, therefore, be some considerable doubt as to whether this submerged "haven", visible only at extreme low water, could ever have been the Σεραγγίων λιμὴν of Ptolemy's "Geography" (94). Whether the portus may be identified with the lower estuary of the Wyre, which prior to the 19th century was considerably wider than now between Fleetwood and Poulton-le-Fylde, must remain a matter for conjecture, at least until more precise data, about the course of the Roman road, the lower Wyre estuary and the extensive area of sandbanks and deeps to the North, are available.

Lancaster

SD 474620

For some 6 miles (9.6 Km) above its mouth into the Irish Sea, the lower estuary of the River Lune is bordered by tidal flats and salt marsh, until about half a mile (0.8 Km) below the Carlisle (railway) Bridge the flood-plain of the river narrows between the lower slopes of two hills, that to the South rising to a height of 125 feet (38.1 m) above O.D.. The crest of this prominent hill, occupied by a series of Roman military installations up to the 4th century, a mediaeval priory, and now by the Church of St. Mary and Lancaster Castle, overlooks what would have been the

lowest convenient crossing-point of the Lune in the late 1st century when an auxiliary fort was built across the summit, possibly during the governorship of Agricola (95).

A programme of extensive excavation of the hill-top site has recently shown that the timber structures, turf rampart and double ditch system of this early fort were refurbished before a stone revetment wall was added to the front of the rampart, and the enceinte enlarged, in the early 2nd century, apparently in the reign of Trajan. A ford below the early fort, possibly Scaleford which was removed in A.D.1824, may have been impassable for days when the river was in spate, and was almost certainly replaced by a bridge, possibly about the turn of the 1st century when the new, more direct, route across the Lancashire Plain from the Mersey crossing at Wilderspool seems to have been developed (96).

The stone-built fort, itself subsequently destroyed and refurbished, probably housed the ala Augusta Gallorum Proculeiana in the 2nd century before A.D.188, and certainly the ala Gallorum Sebosiana in the 3rd century. By ca. A.D.330, a bath-house, part possibly of a substantial courtyard building further North, was demolished to make way for a 11.5 feet- (3.40 m) thick wall, commonly known as the Wery Wall, part of a defensive installation of the Saxon Shore type. Pottery and coin finds indicate that occupation of the site continued up to ca. A.D.400 (97).

Although vessels of up to 1000 tons (1016 tonnes) can sail on the flood tide as far as New Quay, about 0.75 mile (1.2 Km) below Castle Hill, the river was navigable only as far as Lancaster in the last century. Timing of the run from the Lune Deeps up to the city was critical, especially in the days of sail, not only because of the relatively high surface current velocity, which on one occasion in 1967 was measured at 11.5 m.p.h. (18.4 Km.p.h.), but also because of a bar at the mouth of the river over which there were only a few feet of water as late as two hours before high tide, a problem which was accentuated when putting out to sea on an ebb tide in

the face of a prevailing south-westerly wind. It is not known to what extent, if any, a bar such as this may have affected shipping in the 1st-4th centuries, the substantially higher sea-level of that period perhaps rendering it less of an obstacle, if it indeed existed, than in the 17th-19th centuries. It does not necessarily follow, therefore, that a harbour lower down the Lune at Glasson, some 2 miles (3.2 Km) from the outlet into the Irish Sea, would have been preferred by vessels of the fleet, as suggested by Leather, its name, furthermore, having no etymological relationship with Classis (98). There seems little reason to doubt that a harbour near the foot of Castle Hill at, or a short way below, the head of tidal limits and navigable water would have been preferred by merchantmen and ships of the fleet alike, including a Numerus Barcariorum, attested on an inscription found at Halton-on-Lune some 3 miles (2.4 Km) above Lancaster, in the 4th century, its shallow-draught craft possibly being used to good effect against sea-borne incursors in the shallow waters of Morecambe Bay, rather than as lighters (99).

Any harbour installations that may have lined the South bank of the Lune at the foot of the gentler eastern slopes of Castle Hill, up which a road is known to have run past vicus structures to the East gate of the 2nd century fort, may well have been eroded by a southward meander of the river, or erased in the last century during construction work for the railway line; any waterfront structures to have survived must lie a short distance further South, beneath the streets and buildings of mediaeval and modern Lancaster (100).

Hincaster

SD 512854

During motorway construction work, samian and coarse wares attributable to the 1st-2nd centuries A.D debris possibly derived from a small military site, have been found at Hincaster, the name of which is

thought to mean "Ceaster of the wild birds" (alternatively, "... of the monks"). The site lies about 2 miles (3.2 Km) North of Milnthorpe, the port for Kendal possibly as early as the 14th century, and certainly in the 16th-18th centuries. There are indications that the waters of Morecambe Bay have receded some considerable distance since Roman times, when Hincaster may have lain at or near the head of the navigable waters of the River Kent, a little over 4 miles (6.4 Km) downstream from the fort at Watercrock (101).

NOTES

1. Tooley, M.J., "Sea-Level Changes During the Last 9000 Years in North-West England", *Geographical Jnl.*, Vol.140, 1974, pp.18-42.
2. Antonine Itinerary, 482.5; Nash-Williams, V.E., "The Roman Frontier in Wales", Ed.II, (rev. by M.G. Jarrett), 1969, pp.59-64.
3. Boon, G.C., "Segontium, Fifty Years On : 1", *Arch. Camb.*, Vol.CXXIV, 1976, pp.52-67; Nash-Williams, *op.cit.*, 1969, *ibid*; R.C.A.M., Caernarvonshire, Vol.II, Central 1960, pp.115-164; Margary, I.D., "Roman Roads in Britain", Ed.III, 1973. Route 67c, p.350 & Route 68, pp.151-3; *The Mabinogion*, pp.83-5; Tacitus, *Agricola*, 18. See also, *Aberffraw*, *infra*.
4. Boon, G.C., "Segontium, Fifty Years On : 2, The Coins", *Arch. Camb.*, Vol.CXXV, 1977, pp.40-79; Casey, P.J., "Excavations outside the North-East Gate of Segontium, 1971", *Arch. Camb.*, Vol. CXXIII, 1975, pp.54-77; Nash-Williams, *op.cit.*, 1969, *ibid*; R.C.A.M., 1960, *ibid*; R.I.B., 430; A.W., No.16, 1976, p.30; No.15, 1975, pp.42-3; No.11, 1971, p.16; *Britannia*, Vol.VIII, 1977, pp.357-8; VII, 1976, p.292. A tile bearing the stamp of the Legio XX Valeria Victrix has also been found at Caernarvon.
5. Nash-Williams, *op.cit.*, 1969, p.63 ff; A.W., No.17, 1977, pp.29-30; *Britannia*, Vol.VIII, 1977, p.358; J.R.S., Vol.LIII, 1963, p.125; XLIII, 1953, p.104.
6. R.C.A.M., Anglesey, 1937, pp.xxxi, xxxvi-xxxviii, lxxv, lxxxviii, clxxii-clxxxiii (The Menai Ferries), 1-2; *Britannia*, Vol.V, 1974, p.397; C.A., No.50, Vol.V, No.3, Dec.1975, pp.84-85; *The Mabinogion* (trans. G. & T. Jones, 1975 edtn.), p.26.
7. Steers, J.A., "The Coastline of England and Wales", Ed.II, 1964, pp.120-1.
8. Nash-Williams, *op.cit.*, 1969, pp.135-7; Richmond, I.A., "Roman Wales", in Foster, I.L., & Daniel, G., (Ed.), "Prehistoric & Early Wales", 1965, p.170.
9. Griffiths, W.E., "Excavations at Caer Gybi, Holyhead, 1952", *Arch. Camb.*, Vol.CIII, 1954, pp.113-6.
10. Schleiermacher, W., "Befestigte Schiffsländer Valentinians", *Germania*, Vol.26, 1942, p.13; Mocsy, A., "Die Spätromische Schiffsländer in Contra Florentiam", *Folia Archaeologica*, X, 1958, pp.89-104; Johnson, S., "The Roman Forts of the Saxon Shore", 1976, pp.135-6; Continental examples of this type of fort are usually interpreted as fortified landing bases in hostile territory; Livens, R., "Litus Hibernicum", *Actes du IX^e Congrès International D'Etudes Sur Les Frontières Romaines*, 1972, pp.1-7.
11. cf. Tatton-Brown, T., *London Archaeol.*, Vol.2, No.7, 1974, p.155; _____, *Trans. London and Middlesex Arch. Soc.*, Vol.25, 1974, pp.117-219.

12. Nash-Williams, op.cit., 1969, pp.27-8, 70-3, 137; Johnson, op.cit., 1976, pp.135-6.
13. Antonine Itinerary 482.6; Ravenna Cosmography 428.15; R.I.B.2265. Late 1st, and 3rd-4th century pottery has been found at Castell Deganwy at the mouth of the Conway, although no traces of Roman occupation levels have been encountered; J.R.S., Vol.LIV, 1964, p.152.
14. Nash-Williams, op.cit., 1969, p.56 ff; R.C.A.M., Caernarvonshire, Vol.I : The East, 1956, p.34; Haverfield, F., "Military Aspects of Roman Wales", Trans. Soc. Cymmrodorion, 1908-9 (1910), pp.53-188; Reynolds, P.K.B., "Excavations on the Site of the Roman Fort of Kanovium, at Caerhûn, Caernarvonshire", 1938, passim.
15. Margary, op.cit., 1973, Route 67 b-c, pp.349-51; Route 69a, pp.353-4.
16. Nash-Williams, op.cit., p.56; Reynolds, P.K.B., "Excavations on the site of the Roman Fort at Caerhûn : Fourth Interim Report", Arch. Camb., Vol.85, 1930, pp.100-1.
17. Livens, R.G., "The Defences of Kanovium : a Reassessment", Trans. Caernarvonshire Hist. Soc., Vol.35, 1974, pp.7-13; Nash-Williams, op.cit., p.56 ff; Simpson, G., "Caerleon and the Roman Forts in Wales in the Second Century - part I", Arch. Camb., Vol.III, 1962, pp.103-166; Reynolds, op.cit., 1938, passim; _____, 1930, pp.76-83; _____, "Caerhûn, Caernarvonshire", B.B.C.S., Vol.4, 1926-9, pp.96-7; _____, "Roman Fort at Caerhûn (Kanovium)", B.B.C.S., Vol.3, - 1925, pp.240-1; Gardner, W., "The Roman Fort at Caerhûn, County Carnarvon", Arch. Camb., Vol.80, 1925, pp.307-341.
18. J.K. St. Joseph, "Aerial Reconnaissance in Roman Britain, 1973-76", J.R.S., Vol.LXVII, 1977, p.151 and Pl.XV, 1; A.W., No.15, 1975, p.42; Nash-Williams, op.cit., 1969, pp.56, 59; R.C.A.M., 1956, p.34; Reynolds, op.cit., 1930, pp.84-98.
19. R.I.B., 2265, 2266; Sedgely, J.P., "The Roman Milestones of Britain: their petrography and probable origins", M.Sc. Thesis for Keele University, 1969, Nos.51-2.
20. R.C.A.M., 1956, p.34; Reynolds, op.cit., 1930, pp.100-1.
21. St. Joseph, op.cit., 1977, Pl.XV, 1; R.C.A.M., 1956, ibid; Reynolds, op.cit., 1930, ibid.
22. Antonine Itinerary, 482.5 - 482.8.
23. Margary, op.cit., 1973, pp.348-349; Rivet, A.L.F., "The British Section of the Antonine Itinerary", Britannia, Vol.I, 1970, pp.54-55.
24. ibid, 348-349. Excavations East of Rhualt have confirmed the line of the road (information from M. Bevan-Evans and P. Hayes cited by Margary - to be published in Flints. H.S. Proc.).
25. Davies, E., "Prehistoric and Roman Remains of Flintshire", 1949, p.332, and Flints H.S., Pubns., xv, 1954-55, p.150; Hemp, W.J., "The Site of Varae", Antiquaries Jnl., Vol.3, 1923, pp.69-70 (partly-destroyed earthworks).

26. Miles, H., "Excavations at Rhuddlan, 1969-71 : Interim Report", Flintshire Historical Society Publications, 1971-2, Vol.25, pp.1-8.
27. Most of the land to the West of these rivers, as far inland as the outskirts of St. Asaph, is low-lying and would have been liable to flooding in Roman times.
28. See below, note 34.
29. Britannia, Vol.VIII, 1977, p.358 ff. & fig.3; V, 1974, p.398; Arch. Camb., Vol.XCII, 1937, p.208; XCIII, 1938, p.175; Steers, op.cit., 1964, pp.114-115.
30. Talfourd Ely, "A Roman Lighthouse", Archaeological Jnl., Vol.60, 1903, pp.247-255; Pennant, "History of the parishes of Whiteford and Holywell", 1778-1781, pp.111-113.
An inscription over the South, and only, doorway records its restoration in A.D.1897. All the 19th century timberwork which Ely described has now disappeared and some of the stonework has fallen.
31. Pennant, op.cit., 1781, ibid.
32. Margary, op.cit., 1973. Route 67aa, pp.348-9.
33. John Eyes, "Chart of Liverpool Bay", A.D.1764. This shows the tower as a truncated cone, minus sails. Other mills shown on this chart are given sails; it may, therefore, be inferred that Whitford Mill was not then in use. Eyes' chart is a revised edition of one which he issued in A.D.1736, British Museum, Maps, 7d 2. Greenville Collins, "Chart of the Rivers Dee and Mersey", A.D.1681-9, Admiralty, Hydrographic Department, B 892. Talfourd Ely, op.cit., 1903, p.251 ff; Wheeler, R.E.M., "The Roman Lighthouses at Dover", Archaeological Jnl., Vol.LXXXVI, 1929, p.46, n.1.
34. Webster, G., "The Lead-Mining Industry in North Wales in Roman Times", Flintshire Historical Society, Vol.XIII, 1952-3, p.5-17; Petch, J.A., "Excavations at Pentre Ffwrndan, near Flint in 1932, 1933 & 1934", Arch. Camb., Vol.91, 1936, pp.74-83; Atkinson, D., & Taylor, M.V., "Flint Excavation Report", Flintshire Hist. Soc., Vol.X, 1924, pp.5-23; _____, "Second Flint Excavation Report", Flintshire Hist. Soc., Vol.XI, 1925, pp.5-28.
35. Britannia, Vol.VIII, 1977, p.358; A.W., No.17, 1977, p.32; No.16, 1976, p.32.
36. Margary, op.cit., 1973, Route 6a, pp.296-7; Thompson, F.H., "Roman Cheshire", 1965, pp.15, 61.
37. Thompson, op.cit., pp.13-15, 53-9, 61; Carrington, P., (1977a), "Severn Valley Ware and its place in the Roman Pottery Supply at Chester : a preliminary assessment", in Dore, J. & Greene, K. (ed.), "Roman Pottery Studies in Britain and Beyond", B.A.R. Supplementary Series 30, 1977, pp.147-155.
38. Bu ' Lock, J.D., "Pre-Conquest Cheshire, 383-1066", 1972, pp.62-4; Hewitt, H.J., "Cheshire Under the Three Edwards", 1967, pp.39-40, 80.

39. Thompson, op.cit., pp.61-5; Hartley, B.R., & Kaine, K.F., "Heronbridge Excavations: II, Roman Dock & Buildings", C.A.J., Vol.XLI, 1964, pp.15-37, Fig.5.
40. Hartley and Kaine, op.cit., 1964, p.17 ff. & Fig.4, 5 & 7; Thompson, op.cit., pp.61-5.
41. Hartley and Kaine, op.cit., 1964, p.19 ff, PL. I c; the lower levels in the southern half of the "dock" were not excavated.
42. Nash-Williams, V.E., "The Roman Frontier in Wales", 1954, p.12; Antonine Itinerary, 469.2; 482.5-8.
43. Thompson, op.cit., 1965, pp.10, 20-3; Nash-Williams, op.cit., 1969 (D.F. Petch), pp.34-5; Bu'Lock, J.D., "Pre-Conquest Cheshire, 383-1066", 1972, pp.62-4; Margary, op.cit., 1973, Routes 6a, p.296; 670, p.299; 7a, p.300; 701, p.304; 66a, p.346; 67a & 67aa, p.348.
44. Carrington, P. (1977b), "The Planning and Date of the Roman Legionary Fortress at Chester", C.A.J., Vol.60, 1977, p.38; Nash-Williams, op.cit., 1969, pp.7, 35; Stevens, C.E., "Notes on Roman Chester", C.A.J., Vol.35, 1942, p.50; Watkin, W.T., "Roman Cheshire", 1886, p.87; cf. Webster, G., "The Military Situations in Britain between A.D.43 and 71", *Britannia*, Vol.I, 1970, pp.192-3; Webster, G., & Richmond, I.A., "Excavations in Goss Street, Chester, 1948-9", C.A.J., Vol.38, 1950, p.18; Tacitus, *Annals*, XIV, 29.
45. Carrington, op.cit., 1977b, pp.35-8; *Britannia*, Vol.VII, 1976, p.320; Nash-Williams, op.cit., 1969, p.35-6; Richmond, I.A., & Wright, R.P., "Catalogue of Roman Inscribed and Sculptured Stones in the Grosvenor Museum, Chester", 1955, nos. 14 & 199; R.I.B., 463. It has been suggested that the comparatively large area within the defences may have been used to house a detachment of the fleet. Collingwood, R.G. & Richmond, I.A., "The Archaeology of Roman Britain", 1969, p.20; but against this, see Carrington, op.cit., 1977b, p.35 ff.
46. Richmond & Wright, op.cit., 1955, nos.196-7; Nash-Williams, op.cit., 1969, p.35; Watkin, W.T., in *Archaeological Jnl.*, Vol.XLIV, 1887, p.124; _____, op.cit., 1886, p.163; Shrubsole, G.W., in C.A.J. Ser.2, Vol.I, 1887, p.83.
47. Richmond & Wright, op.cit., 1955, no.92, pl.XXVI; Starr, C.G., "The Roman Imperial Navy", 1941, p.165 and fn; R.I.B., 544.
48. In this context it is interesting to note that the first attested legionary garrison, the Legio II Adiutrix, was recruited from the marines of the Ravenna Fleet in the Civil War of A.D.69. It was previously stationed at Nijmegen on the Rhine and ca. A.D.86, was recalled from Britain to serve on the Danube.
49. Carrington, op.cit., 1977b, p.36; Nash-Williams, op.cit., 1969, pp.36-7; Petch, D.F., & Thompson, F.H., "Excavations in Commonhall Street, Chester, 1954-1956", C.A.J., Vol.46, 1959, p.37; *Britannia*, Vol.III, 1972, p.313; V, 1974, p.418 ff; VI, 1975, pp.241-2 & fig.7; VIII, 1977, p.387.

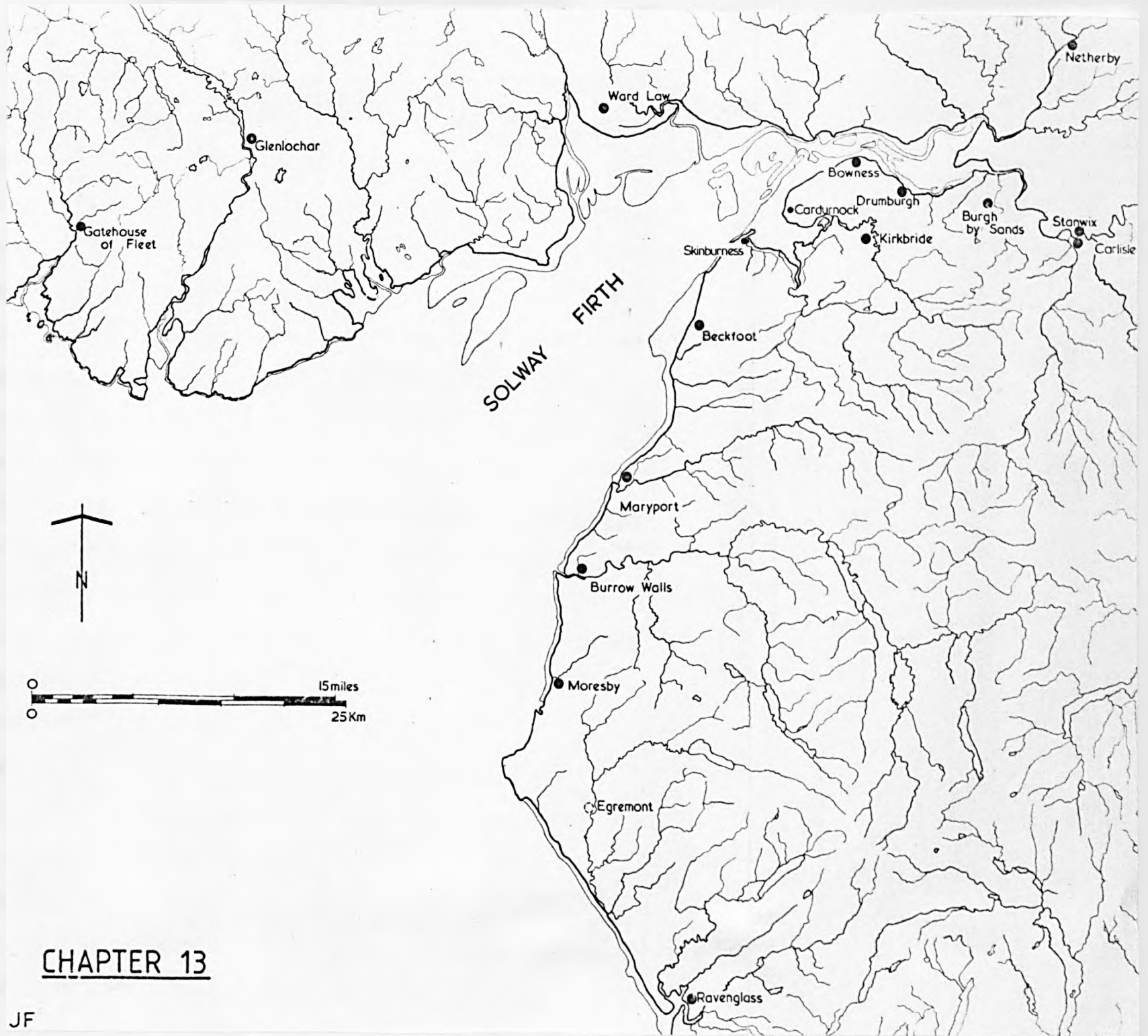
50. Kelly, D.B., "Excavations at Watergate House, Chester, 1959", C.A.J., Vol.52, 1965, pp.1-21; Thompson, op.cit., 1965, p.47; J.R.S., Vol.LIX, 1969, p.210.
51. Newstead, R., "Excavations at Chester, 1939", C.A.J., Vol.34, 1939, p.6; Thompson, op.cit., 1965, p.37; Nash-Williams, op.cit., 1969, p.38 ff; Britannia, Vol.VII, 1976, p.320; VIII, 1977, p.387.
52. Ó Ríordáin, S.P., in Proc. Roy. Irish Acad., 51C, 1947. The vicus outside the eastern defences dates from Flavian-Trajanic times through to the late 3rd-early 4th centuries, with a break in occupation ca. A.D.197. Thompson, op.cit., 1965, p.45 ff; Whitwell, J.B., & McNamee, S.M., "Excavations at 46-50, Foregate Street, Chester, 1961", C.A.J., Vol.51, 1964, pp.1-19.
53. Hewitt, H.J., "Cheshire under the Three Edwards", 1967, p.87; A royal petition presented in A.D.1445, stated that no merchantmen could approach within 12 miles (19.2 Km) of the port because of silting in the river. Fuller, T., "The History of the 'Worthies' of England", ed. by J. Fuller, 1662; Hollar, "Map of the City of Chester", mid-17th century. The ancient channels of the Dee are not shown on modern maps and charts of the estuary in the 16th & 17th centuries are of doubtful accuracy. cf. Mason, D., "Chester - the evolution and adaptation of its landscape", C.A.J., Vol.59, 1976, pp.14-23.
54. Thompson, op.cit., 1965, p.47. The names "Roodee" and "Little Roodee" imply that there were islands or water meadows in the immediate vicinity in Saxon times. It is just possible, therefore, that there were banks or islands in the Dee at this point, in Roman times. A lease granted to Thomas Lynialla, a merchant, in A.D.1587, permitted him to embank land from the Dee and to exact a toll from every boat entering the revived port. It was from this embanking project that the dyke which confines the Dee to its present channel, originated. Watkin, op.cit., 1886, p.86; Hemingway, J., "History of Cheshire", Vol.I, 1831, p.359.
55. Thompson, op.cit., 1965, pp.13-15, 53-9, 61. See also, Heronbridge, p.337 ff.
56. Nash-Williams, op.cit., 1954, p.8, fn. 1 & 2; R.I.B., 458, 464-5, 510, 573; Sedgely, op.cit., 1969, pp.14 ff.
57. R.I.B., 463; Carrington, op.cit., 1977a, pp.153-5; See also Hamworthy, p.262.
58. R.I.B., 558, Nash-Williams, op.cit., 1969, pp.40-41; Thompson, op.cit., 1965, pp.45-6; Whitwell & McNamee, op.cit., 1964, p.1-19; Newstead, op.cit., 1939, pp.7, 65, 105.
59. Watkin, op.cit., 1886, p.93; Thompson, op.cit., 1965, pp.29-30.
60. Watkin, op.cit., 1886, p.114, based on information from G.W. Shrubsole.
61. Shrubsole, op.cit., 1887, a paper to Chester Arch. Soc. given in 1884-5; Watkin, op.cit., 1886, p.101; Thompson, op.cit., 1965, pp.41, 47 & Plate 31; Nash-Williams, op.cit., 1969, p.41.

62. Watkin, op.cit., 1886, p.102; Shrubsole, G.W., in the Chester Courant, 28-iii-1877; cf. Britannia, Vol.VIII, 1977, p.387 (courtyard building found at SJ 405658) and Mason, op.cit., 1976, pp.14-19 & Fig.10.
63. Parry, "Guide to the City of Chester", 1843, cited by Watkin, op.cit., 1886, p.102 ff; Mason, op.cit., 1976, ibid.
64. Nash-Williams, op.cit., 1969, p.42; J.R.S., LIX, 1969, p.210; Eames, J.V.H., Lecture to Liverpool University Arch. Soc., 1968; Britannia, III, 1972, p.313; VI, 1975, pp.240-2; Thompson, op.cit., p.45.
65. Hume, A., "Ancient Meols", 1863, p.391; Steers, op.cit., 1964, pp.104-11; Thompson, op.cit., 1965, p.97-8.
66. Thompson, op.cit., 1965, p.98.
67. Thompson, op.cit., 1965, p.98 ff; Watkin, op.cit., 1886, pp.277-8. Collections in the Grosvenor Museum, Chester.
68. Thompson, op.cit., 1965, p.97; Watkin, op.cit., 1886, p.281.
69. Thompson, op.cit., 1965, p.99; Watkin, op.cit., 1886, p.280.
70. Thompson, op.cit., 1965, p.102; Watkin, op.cit., 1886, p.280 ff.
71. Thompson, op.cit., 1965, p.99; Watkin, op.cit., 1886, ibid.
72. Hume, op.cit., 1863, p.391.
73. Greenville Collins, "Great Britain Coasting Pilot", Ed.I, 1693 - River Dee or Chester Water, Admiralty Hydrographic Department, B.892; cf. Eyes, J., A Chart of Liverpool Bay, 1764, British Museum, Maps 7d 2; Watkin, op.cit., p.274-5.
74. Watkin, op.cit., 1886, ibid.
75. Steers, op.cit., 1964, pp.104-111.
76. Watkin, op.cit., 1886, pp.294-6 (citing Foote Gower, 1699, Addl. MSS. B.M., 11,338, Fo 77); Thompson, op.cit., 1965, pp.101, 106; Margary, op.cit., 1973, Route 701, pp.304-5.
77. Thompson, op.cit., 1965, p.102; Jones, G.D.B., "The Romans in the North-West", Northern History, Vol.III, 1968, pp.24-5.
78. Camden, "Britannia", Ed.III, 1590, p.488; Watkin, op.cit., 1886, pp.294-6; Gowland, W., "The Early Metallurgy of Silver and Lead, Part 1, Lead", Archaeologia, Vol.LVII, 1901, pp.384 and 402 (Table III, Nos. 30-49); Tylecote, R.F., "Metallurgy in Archaeology", 1962, p.87 and Table 34.
79. Tylecote, op.cit., 1962, p.87; Thompson, op.cit., 1965, p.102; Carrington, op.cit., 1977a, pp.153-5.

80. Watkin, *op.cit.*, 1886, p.260; May, T., "Warrington's Roman Remains", 1904, pp.1-3; Thompson, *op.cit.*, 1965, pp.67, 70; Jones, *op.cit.*, 1968, pp.11-17; _____, "Roman Lancashire", *Archaeological Jnl.*, Vol.CXXVII, 1971, p.242 ff; _____, & Grealey, S. (ed.), "Roman Manchester", 1974, pp.3, 6; Margary, *op.cit.*, 1973, Route 70a, p.302 ff, and Routes 70b & c, pp.367-369.
81. Watkin, *op.cit.*, 1886, pp.260-263; May, *op.cit.*, 1904, pp.4-16; Thompson, *op.cit.*, 1965, pp.67-70 & Fig.17; Jones, *op.cit.*, 1968, pp.11, 15-16; 1971, pp.240-1, Plate XXXVI A & Fig.4; 1974, p.6; *J.R.S.*, Vol.LVII, 1967, p.179; LVIII, 1968, p.182 & Fig.10; *Britannia*, Vol.I, 1970, p.281; cf *ibid.* Vol.VI, 1975, p.240 and Vol.VIII, 1977, p.385 (site centred on SJ 617868, approximately 900 m (983 yards) North-East of the known industrial settlement). The area of May's excavations lies about 41 feet (12.5 m) above O.D.
82. Watkin, *op.cit.*, 1886, pp.261-273; May, *op.cit.*, 1904, pp.15-78; Thompson, *op.cit.*, 1965, pp.72-80; Jones, *op.cit.*, 1968, p.16; 1974, *ibid*; Hartley, K.F. & Webster, P.V., "The Romano-British Pottery Kilns near Wilderspool", *Archaeological Jnl.*, Vol.130, 1973 (1974), pp.77-103.
83. Jones, *op.cit.*, 1968, pp.16, 24; 1974, *ibid*; Webster, P.V., "The Later Roman Occupation at Wilderspool", *C.A.J.*, Vol.58, 1975, pp.91-2 (cf. Thompson, *op.cit.*, 1965, p.81); *J.R.S.*, Vol.LVII, 1967, p.179; *Britannia*, Vol.VI, 1975, p.240; VIII, 1977, p.385.
84. Steers, *op.cit.*, 1964, pp.97-100; Margary, *op.cit.*, 1973, Route 70 b-d, pp.367-9, 375-6; Jones, *op.cit.*, 1968, pp.16-17; _____, *op.cit.*, 1974, pp.6-8.
85. Barron, J., "A History of Ribble Navigation from Preston to the Sea", 1938, pp.5-6, 26; Pickering, E.E., "Roman Walton-le-Dale", *Trans. Historic Soc. of Lancashire & Cheshire*, Vol.109, 1957, (1958), p.5 ff; Tooley, M.J., *op.cit.*, 1974, p.34 ff.
86. Barron, *op.cit.*, 1938, pp.6-7.
The Douglas, which is tidal for 5 miles (8 Km) above Kirkham, was made navigable to Wigan, possibly the Coccium of the Antonine Itinerary, between 1720 and 1742; Antonine Itinerary, 481.1 - 482.4; Rivet, *op.cit.*, pp.53-4; Jones, *op.cit.*, 1974, pp.6-8.
For Ribchester, and particularly the unsubstantiated reports of Roman anchors, moorings and ships nails said to have been found at Anchor Hill, see :- Watkin, W.T., "Roman Lancashire", 1883, pp.125-163; Hopkinson, J.H., "The Roman Fort at Ribchester", Ed.III (D. Atkinson), 1928, *passim*; Edwards, B.J.N., "Ribchester", 1972, *passim* and *Britannia*, Vol.I, 1970 - , s.v.
87. Barron, *op.cit.*, 1938, pp.12, 32-5, 46-7.
88. Pickering, *op.cit.*, 1958, pp.22-5.
89. Hardwick, C., "On the Roman remains recently discovered at Walton-le-Dale, near Preston", *Trans. Historic Soc. of Lancashire & Cheshire*, Vol.8, 1856, pp.127-140; Watkin, *op.cit.*, 1883, pp.202-5, with plan; Pickering, *op.cit.*, 1958, pp.7-23; Jones, *op.cit.*, 1968, p.16; _____, *op.cit.*, 1974, p.8.

90. Fishwick, H., "The History of the Parish of Kirkham in the County of Lancaster", Chetham Soc., Vol.92, 1874, pp.2-6; Watkin, op.cit., 1883, pp.71-3, 205-9; Harrison, W., "An Archaeological Survey of Lancashire", 1896, p.14; Sutherland, C.H.V., "Three Roman Coin Hoards", Num. Chron., Ser.5, Vol.16, 1936, pp.316-320; J.R.S., Vol.L, 1960, p.215; Jones, op.cit., 1971, pp.237, 241-2; _____, op.cit., 1974, p.5; Margary, op.cit., 1973, Route 703, pp.374-5.
91. Steers, op.cit., 1964, p.97 ff; Schofield, M.M., "The Slave-Trade from Lancashire & Cheshire Ports outside Liverpool, c.1750-c.1790", Trans. Historic Soc. of Lancashire & Cheshire, Vol.126, 1977, pp.30-72; Singleton, F.J., "The Flax Merchants of Kirkham", ibid, pp.73-108. See also, Walton-le-Dale (Ribble Navigation), supra.
92. Watkin, op.cit., 1883, pp.74-76; Margary, op.cit., 1973, p.375; Schofield, op.cit., 1977, p.43 ff.
93. Watkin, op.cit., 1883, pp.76-8; Ashton, W., "The Evolution of a Coastline", 1920, pp.72-79; Barron, op.cit., 1938, p.6; Owen, D.J., "The Origin and Development of the Ports of the United Kingdom", Ed.II, 1948, p.218; Steers, op.cit., 1964, pp.94-7; Plummer, J.C., "The Search for 'Portus Setantiorum'", L.A.B., Vol.2, No.2, May 1976, pp.40-41; _____, "Land Erosion and the Portus Setantiorum", L.A.B., Vol.2, No.4, Sept. 1976, p.77 ff; Singleton, F.J., "Geomorphology and the Portus Setantiorum", L.A.B., Vol.2, No.3, July 1976, p.61.
94. Ptolemy, "Geographia" (ed. Muller, 1888), LIB.II, CAP.III, 2; William Yates : Map of Lancashire, 1786; Steers, op.cit., 1964 ibid.
95. Watkin, op.cit., 1883, pp.164-192; Jones, op.cit., 1974, p.5; Potter, T., "Recent Work in the North-West", C.A., No.53, Vol.V, No.6, July 1976, pp.186-7.
96. Owen, op.cit., 1948, pp.215-6; Richmond, I.A., "Excavations on the site of the Roman fort at Lancaster, 1950", Trans. Historic Soc. of Lancashire & Cheshire, Vol.105, 1953 (1954), pp.1-23, with plan; Jones, op.cit., 1971, p.240 & Fig.3; 1974, pp.5-8; Leather, G.M., "Roman Lancaster", 1972, pp.L27/1-L72/14; Margary, op.cit., 1973, Routes 70d & 704, pp.375-7; 705, p.382; Potter, op.cit., 1976, ibid; Britannia, Vol.II, 1971, p.254; III, 1972, p.312; V, 1974, p.418; VI, 1975, p.239; VII, 1976, p.319; R.I.B.604.
97. Watkin, op.cit., 1883, pp.167-9, 191-2; Jones, op.cit., 1971, p.240; Leather, op.cit., 1972, ibid; Livens, op.cit., 1972, p.4 ff.; Shotter, D.C.A., "Numeri Barcariorum : a note on R.I.B.601", Britannia, Vol.IV, 1973, p.208 & footnotes 13 & 14; Potter, op.cit., 1976, ibid; Johnson, op.cit., 1976, p.134 ff.; J.R.S., Vol.XLIX, 1959, p.106 ff.; Britannia, Vol.II, 1971-, as above, n.96; R.I.B.605-606; C.I.L., vii, 1233.
98. Watkin, op.cit., 1883, p.165; Jarvis, R.C., "The Appointment of Ports in Cumberland & Westmorland & Lancashire-North-of-the-Sands", C.W.², Vol.47, 1947, pp.128-165; Owen, op.cit., 1948, ibid; Ekwall, E., "English Place-Names", Ed.IV, 1960, s.v.; Leather, op.cit., 1972, p.N72/1 ff.; Tooley, op.cit., 1974, pp.34-42.
99. Shotter, op.cit., 1973, pp.206-9; R.I.B., 601.

100. Watkin, op.cit., 1883, p.171; Jones, op.cit., 1974, p.5; White, A.J., "Excavations at No.1, Penny Street, Lancaster, 1975", *Contrebis*, Vol.3, No.1, 1975, Art IV, p.30 ff.; *Britannia*, Vol.VI, 1975, p.239; VII, 1976, p.319.
101. McIntyre, W.T., "The Port of Milnthorpe", *C.W.*², Vol.36, 1936, pp.34-60; Jarvis, op.cit., 1947, pp.128-165; Ekwall, op.cit., 1960, s.v.; Steers, op.cit., 1964, pp.84-93; *Britannia*, Vol.V, 1974, p.412; Potter, T.W., "Excavations at the Roman Fort of Watercreek, 1974 : an Interim Report", *C.W.*², Vol.76, 1976, pp.6-66; _____, "Excavations at the Roman Fort of Watercreek, 1975 : a Second Interim Report", *C.W.*², Vol.77, 1977, pp.49-52, with references.



Chapter ThirteenThe Coast of Cumbria and the Solway Firth

Often severe accretion and local erosion make it difficult to establish the exact relationship of many sites on this stretch of coast with the Roman shoreline. The tidal streams, channels and shoals of the Solway Firth in particular have been subject to constant change and vast amounts of marine warp and river silt have been deposited in areas of comparatively slack water by residual bottom currents which have been shown to trend eastwards along the Scottish shore, originating from a point West of Burrow Head. Over 2 miles (3.2 Km) of land have been accreted in many places in the upper reaches of the Solway, and deep-water channels which were once navigable to sea-going vessels as far as Carlisle, had become dangerous and impracticable by A.D.1729; ports at Rockliffe, Sandsfield and Bowness, appointed as places for new quays in A.D.1769, were in turn superseded by Port Carlisle which was itself replaced by a new port on the Cumbrian coast at Silloth in A.D.1858. A comparison of the results of a geophysical survey of the coasts of South-West Lancashire and the Fylde with the pattern of land elevation, exemplified by the so-called Neolithic raised beaches around Moricambe Bay and the Cumbrian coast from Silloth to Workington, and the warp-flats of the Solway, indicate that mean high water, at spring tides, would have been at least 3 feet (0.91 m) higher in the mid-1st century A.D., and 5.25 feet (1.60 m) in the second half of the 4th century, although precise data are not as yet available (1).

Ravenglass

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141

A 4-acre (1.6 Ha) auxiliary fort stands on a low, 50 foot (15.2 m) bluff, which dominates the modern harbour formed by the joint outlet of three rivers, the Irt, Mite and Esk. The western rampart and intervallum road have fallen over the cliff and a railway cuts through the fort enclosure, the rest of which lies under Walls Plantation (2).

An irregularly cut military-type ditch, 9.8 feet (3 m) wide and 11.4 feet (3.5 m) deep, and a palisade trench, neither of which were closely dated, had fallen into disuse "several decades" before the turf and timber fort was built in the reign of Hadrian. Coin and pottery finds indicate occupation from this time through to the end of the 4th century with periods of apparent abandonment in the middle of the 2nd and first half of the 3rd centuries; only one fragment of pottery possibly attributable to the 1st century has yet been reported. Two 4th century barrack blocks had been rebuilt as "simple wooden rectangular structures" approximately 23 feet (7 m) in width in the latter part of the century. Outside the fort lie the remains of a bath-house, commonly known as Walls Castle, and traces have been noted of an unusually extensive vicus, possibly reflecting the importance of the harbour which, Richmond suggested, may have been an important port at which supplies, particularly bulky cargoes, were unloaded for transport overland to forts in the hinterland. A well-constructed road led from the fort up Eskdale and, dominated by the auxiliary fort of Mediobogdum, passed over the Hardknott and Wrynose Passes down, through Langdale, to a fort at Ambleside; that this may have been regarded as an important route is implied if Ravenglass is the Clanoventa of the Antonine Itinerary (3).

Although Ravenglass, of all the harbours of Cumberland, was the only "creek" to be granted a licence to load and unload cargoes "at the fair of St. James' tide", under a commission of A.D.1577, very little is known about the harbour and the early courses of the Irt, Mite and Esk and,

therefore, the exact relationship of the 2nd century fort to the three rivers is obscure. Steers has suggested that within the last three hundred years, the Irt may have emptied into the Irish Sea through a separate outlet opposite Kokoarra Island before being deflected southwards by Drigg Spit, that is if Speed's map of A.D.1676 which shows only a short sand and shingle spit is reliable. Evidence of flint- and iron-working, and occupation debris from pre-Roman times through to probably the late 4th century A.D., has been noted at seven places (Fig. 41, A-G) along the line of the spit, from its base opposite Drigg as far South as the dunes opposite Rabbit Cat How, a fraction under one mile (1.6 Km) North of Drigg Point. At three of these sites (E-G), two chipping floors, a 1st century A.D. clay hearth and windbreak (?), and occupation debris apparently of the late 4th century were encountered. That these sites, all of which bar one lie above 25 feet (7.6 m) O.D., have survived at all indicates that parts at least of Drigg Spit have been in existence for a much longer period than was hitherto imagined, implying that in Roman times the River Irt almost certainly emptied into the sea opposite Ravenglass and not Kokoarra Island. A comparison of Speed's map of 1676, Lawson's Chart of 1823 and the latest revision by the Ordnance Survey, shows that since the 17th century the spit has grown steadily southwards and eastwards, diminishing the area of the anchorage and reducing the breadth of the outlet of the three rivers (4).

Eskmeals Spit, behind which the River Esk flows northwards to join the Mite and the Irt, may not have extended so far to the North in Roman times as it now does, although whether it ran westwards as it seems to have done in the 17th century is open to debate; the three rivers may even have flowed southwards behind Eskmeals Spit, through Newbiggin and Monk Moors, to an outlet North of Skelda Hill, near the base of the spit (5).

A short distance South of Skelda Hill, and some 5 miles (8 Km) South of Ravenglass, lies Selker Bay where, related Hutchinson,

"..... the neighbouring people say, at about a mile distant from the shore, in calm weather, they can perceive the remains of several vessels or gallies, which tradition says ... were sunk and left there, on some great invasion of the northern parts of this island, by the Romans".

If these "gallies" ever did exist, other than in sailors' yarns, the timbers could have belonged to a ship of a later period, perhaps an Armada wreck, rather than a Roman vessel (6).

The survival of occupation sites in the dunes West of Eskmeals Station, which have yielded evidence of pre-Roman flint-working, and iron-smelting apparently associated with Roman pottery, lends little or no support to either hypothesis (7); whether the three rivers flowed into the Irish Sea opposite Ravenglass as they now do, or ran southwards towards an outlet near what is now the base of Eskmeals Spit, it is reasonably certain that a wide sweep of estuarine waters, sheltered from North and north-westerly wave-fronts by a sand and shingle spit, possibly an abbreviated Drigg Spit, would have provided an excellent anchorage for supply vessels and coasters at all states of the tide. The harbour, however, may not have been safe in all weathers or winds as, one stormy night in the 18th century, a great buoy broke loose from its anchorage in a particularly violent tide and, having caused "no end of trouble" ended up high and dry in the street at Ravenglass (8).

The fort at Ravenglass may also have been linked by road with Luguvalium (Carlisle) by way of Derwentio (Papcastle); the agger of this road has been traced as far South as Lamplugh, apparently heading for a "lost" fort on the River Ehen in the vicinity of Egremont, the purpose of which would presumably have been to keep watch on the fells above Ennerdale to the East. The estuary of the Ehen, now deflected southwards for about two miles (3.2 Km) by a narrow shingle and dune

spit, may have been a small, but sheltered, haven in Roman times, but too little is known about the early course of the river, and of the nature and location of any settlement in the area, for the site of the harbour to be located with any degree of accuracy (9).

While the coast to the North of St. Bees Head opposes the Galloway shore of the Solway Firth, the coastline to the South of these magnificent cliffs faces south-south-westward, away from Scotland and out into the Irish Sea. This led Collingwood and Birley to conclude that the fort at Ravenglass (and, ipso facto, any fort on the Ehen) was not part of the coastal defensive system associated with Hadrian's Wall. The Ravenglass fort, indeed, apparently faced inland as though to command the hinterland in general, and Eskdale in particular, as well as guarding the anchorage (10). Northwards from St Bees Head, probably the furthest point South that raiders in shallow-draught craft could reach, the coast of Galloway is visible on a fine day. From the fort at Moresby the coast of Kirkcudbrightshire, from Abbey Head to Southernness Point, is only 20 miles (32 Km) away, while Kirkcudbright Bay (which gives access to the fort at Glenlochcar by way of the valley of the River Dee) and Wigtown Bay (off which lies Fleet Bay and the fortlet near Gatehouse of Fleet) are but a further five, and twelve miles (respectively) across the waters of the Firth (8.0 & 19.3 Km). If, therefore, St. Bees Head was the western terminus of the coastal defences associated with the Wall, then the fort at Moresby is likely to have been strategically important as the last fort in the system (11).

Moresby

(NX 982208)

The fort lies on a flat hill-top a little over 100 feet (30.5 m) O.D. and immediately East of a steep escarpment between the foot of which and H.W.M.O.T. runs the road and railway which serve the old port of Parton. Built by men of the Legio XX shortly after A.D.128 for a

cohors quingenaria equitata, the 3.6 acre (1.44 Ha) fort was probably added, along with the fort at Beckfoot, to the initial system of coastal defences based on Maryport, as part of a major modification of the scheme (12). Little is known of the internal lay-out of the fort; there has been considerable disturbance and what structures that were located in the excavations of 1860 were never published. The size and importance of the vicus which lay to the South of the fort is not known; a cemetery appears to have occupied a restricted area between the eastern defences of the station and the valley of Lowca Beck (13). The fort may have been garrisoned towards the end of the 2nd century and a short series of coins indicate that it was occupied in the 4th century, possibly as part of a reconstruction under Constantius or Theodosius (14).

Approximately 1.5 miles (2.4 Km) North of the fort the coastline consists of rock and clay bluffs, some 100 feet (30.5 m) above O.D., which double in height as they run southwards to a point about half a mile (0.8 Km) from the fort, near the defunct Harrington Colliery, where the clay of the Lowca Cliffs, on which must once have stood a signal station, has been subject to severe erosion (15). These cliffs would have dominated the fort, obscuring the view to the North. To the East, beyond the valley of Lowca Beck, the ground rises to cut off any sight of the hinterland, and to the South, after a slight descent, the land also rises, to a height of a little over 500 feet (152 m) O.D., cutting off the prospect except for the heights of St Bees Head. The fort did, however, command wide views across the Solway Firth and faced North-West, indicating that the main task of its garrison was to watch the sea for raiders from Galloway.

Immediately North of the fort, runs the steep-sided valley of Lowca Beck (now partly filled on its northern slopes with spoil from the tip of Harrington Colliery), at the mouth of which lay a small harbour-

before it was obliterated by the railway. Hutchinson, in 1794, noted the position of the fort,

"close upon the brink of the sea banks; commanding a large tract of shore" and remarked on the "many creeks now frequented by small craft" (16).

The creek at the mouth of Lowca Beck, which Jarrett and Ashmore consider "just might have been navigable for shallow-draught vessels" in Roman times, was once the harbour for the village of Parton and was designated as a "creek" under a commission of 1577 A.D. Only Ravenglass, of all the harbours of Cumberland, had a licence to unload vessels, but some ships also traded in season from Parton, and from nearby Whitehaven, to and from Liverpool and Chester with herring, salt and cattle. Despite the spectacular rise of Whitehaven as a port in the 17th century, coals were also shipped from Moresby (= Parton) and when, in the latter part of that century, it was proposed to improve the harbour and increase traffic by constructing a pier South of Moresby Beck (= Lowca Beck ?) on the shelving foreshore, "composed of nothing but rocks and sand", it was to make Parton Harbour into "as safe and good a Harbour as any about these Coastes"(17). Despite the present rock outcrops on the foreshore to the South of the mouth of Lowca Beck, which may well have been covered with sand or a safe depth of water in the Roman period, given the considerably higher level of the sea in relation to that of the land at that time, it may have been the availability of a sheltered creek that influenced the siting of the fort. All trace of any harbour works has almost certainly been removed if not by the severe erosion which has been prevalent in the area, then by industrial activities from the 17th century onwards (18).

The fort at Moresby would have been connected by road with the forts at Burrow Walls and Maryport to the North; a road has been traced through Maryport as far South as Workington and may have joined a road from Papcastle near the village of Distington, some 2.75 miles (4.6 Km)

North-East of Moresby (19).

Burrow Walls, Workington

NY 0030

In the late 18th century, when the estuary of the River Derwent was navigable to ships of 400 tons (406.4 tonnes) burden, the harbour of the industrial town of Workington was regarded as one of the safest on the coast of Cumberland where, according to Hutchinson, vessels could lie secure from winds of every quarter; the only problem was a sand bar at the entrance to the harbour which had proved troublesome in time past (20). It is reasonably certain that before the 12th-13th century, the Derwent, which now follows a comparatively direct course towards the Irish Sea, was deflected sharply northwards by a sand and shingle spit, formed by northerly drift, and passed close by the site of the Roman fort and Norman castle at Burrow Walls, which now lies upwards of a mile (1.6 Km) from both the sea and the river (21). The former channel, now represented by a belt of sand, river silt and marshland which stretches from North Side on the Derwent at least as far North as St. Helen's Colliery, is bisected longitudinally by the main line of the railway, to the West of which much of the low-lying land has been reclaimed for industrial development; this low-lying ground is bordered on the West by a line of raised-beach material, sand, shingle and warp, which seems to represent the remains of the old spit. To the East, between the railway and the base of an ancient cliff, the line of which is obscured by the embankments of a branch-line, lie Siddick Marshes, much of which lie under 20 feet (6.1 m) O.D. and from which in the 19th century a dug-out boat or canoe is said to have been recovered. At Burrow Walls, a substantial part, perhaps half, of a fort of Hadrianic type has been lost over the cliffs through erosion, probably by this former loop of the Derwent (22).

The gently sloping ground on which the fort was built lies a little over 50 feet (15.2 m) above O.D.; the view to the North and East was broken by land which rises a further 50-150 feet (15.2-45.2 m) above O.D., while to the South the ground slopes gently down to the Derwent. Excavations, following up aerial photography, in 1955 established the line of the surviving defences, which measured 292 feet (89 m) North-South by an estimated 400-450 feet (122-137 m) East-West, enclosing an area of approximately 2.75 acres (1.1 Ha). Like Moresby and Beckfoot, the fort had faced seaward and may have been a Hadrianic addition to the primary system of coastal defence; little stratigraphy had survived, however, because of thorough stone-robbing and repeated ploughing, and a Hadrianic date, although likely, could not be firmly established (23). Many years before the 4th century birch trees had taken root in the partly silted defensive ditches, the consequence of abandonment ca. A.D.158 if not before, and when a 15-foot (4.57 m) wide third defensive ditch, part of a smaller fort, was cut in the 4th century, it lay within the line of the curtain wall which must have by then been in a state of some dilapidation, if it had not already been demolished. Although pottery indicates that the enceinte was occupied well into the fourth quarter of the 4th century, the precise character of that occupation has not been established; that the fort was built to help combat 4th century incursions is certain but the exact role of the anchorage which it dominated with regard to seaborne patrols is uncertain (24).

Maryport

NY 0337

142

The gently sloping ground on which the fort Alauna was built early in the reign of the Emperor Hadrian, forms the brow of a headland which is bordered to the South and East by the valley of the River Ellen and the alluvium-filled trough of Barney Gill, while a line of eroded

cliffs, punctuated by 19th century quarries, which rise some 150 feet (45.7 m) above sea-level, forms the western and seaward boundary of the site. These cliffs extend from Mote Hill on the North bank of the estuary of the Ellen, the southern limit of the industrial seaport town of Maryport, as far North as the golf course at Bank End, the dune-blocked mouth of Barney Gill. A second alluvium-filled trough of interdrumlin character, which now runs in a south-south-westerly direction from a point in the Ellen Valley immediately East of Maryport town to meet the coast at Flimby, may also have been a former outlet of the river, which became choked with material accreted by northerly drift; this drift has formed the sand and shingle spit which now deflects the Ellen northwards, and from which two wet docks and two tidal basins were excavated in the 19th century (25). A century earlier, Stukeley, noting the "magnificent prospect of the Scotch coast of Galway, and of the great sea between the two kingdoms", commented that the "old channel" of the Ellen, where it had hitherto run northward past its 18th century outlet, "under the cliff, till it came under the castle", was still visible, although "a large quantity of marsh and high ground between it and the castle" had been washed away by the sea. The vast quantity of debris, encountered in 1880 at the foot of the cliff, in a line approximately 115 yards (104.7 m) long and in one place 15 feet (4.57 m) deep, may not necessarily represent clearance after demolition in the fort area as Robinson suggested, but rather the remains of structures which had fallen over the edge at a time when erosion was active (26).

Although pottery and coins of apparently pre-Hadrianic date have been reported from Maryport, possibly debris associated with a Flavian or Trajanic installation - the harbour may well have been Agricola's base if his fifth campaign involved the crossing of the Solway into South-West Scotland - the 1966 excavations on the cliff-top site encountered no evidence to indicate that the fort was other than Hadrianic in foundation,

built probably ca. A.D.122-125. The relationship of the fort to the milefortlets and towers to North and South demonstrates that it was primary and not, like Moresby and Beckfoot, secondary to the system, and indicates that it probably served as sector headquarters as well as commanding traffic on the Solway; raiders in shallow-draught craft would have had to work North against the strong southerly set on the Scottish side of the Firth to avoid the danger of being swept out into the Irish sea, a course which would have brought them close inshore off Maryport : a harbour in the estuary of the Ellen may, therefore, have been regarded as strategically ideal as a base for naval patrols and, furthermore, lay at the point of the shortest convenient landfall for operations into South-West Scotland, a little over 11 miles (17.7 Km) away to the North-West (27).

The earth and timber defences of the fort, which were refurbished at least twice, including the addition of a stone wall to the rampart, between ca. A.D.170 and 244, enclosed an area of approximately 4.7 acres (1.9 Ha). Although it was large enough to house a military cohort, as it may have done from the first half of the 3rd century onwards, the series of altars found on the site of the pre-3rd century parade-ground to the North of the fort, indicate that the garrison was, at least in four instances, quingenary : Cohors I Hispanorum, prior to its transfer into Scotland, probably ca. A.D.139-142; Cohors I Delmatarum, attested at Maryport in the reign of Antoninus Pius, probably during the first occupation of the Antonine Wall; Cohors I Baetasiorum C.R., possibly A.D.158-208 or 211-225, and a cohors quingenaria equitata, mentioned on a lost inscription, and possibly the garrison in the late-2nd to early-3rd centuries, perhaps during the reoccupation of the Antonine Wall (28). Too little is known of the internal plan of the fort to indicate what use was made of this extra space; Jarrett has suggested that navigation of the Solway to the North of Maryport was probably no easier in Roman

times than it is nowadays, because of constantly shifting shoals and channels, and that the surplus space may, therefore, have been used for the granaries of a major port engaged in the transshipment of supplies, particularly bulk cargoes, for garrisons in the hinterland and in the western sector of Hadrian's Wall (29). Geophysical studies in the North-West have indicated that "relative" sea-level rose steadily in the Roman period from approximately three to possibly six feet (0.91 - 1.83 m) above the present, and that residual bottom currents in the Solway have swept vast quantities of marine warp into the Firth. Before Bowness, Sandsfield and Rockliffe were appointed as places for quays in A.D.1769, vessels engaged in foreign trade had discharged their cargoes at wharves on the South bank of the River Eden, at Carlisle, which had been laid out and appointed as a "port" in 1564-1565 when it seems to have taken over from Chester as the "head port" for the coast of Cumberland North of the Duddon. There is, therefore, no reason to doubt that sea-going vessels could have sailed up to Carlisle in Roman times, indicating that a supply base at Maryport may have been intended to serve the coastal sector of the defensive system and garrisons in the hinterland, rather than the western sector of the mural frontier, and, like South Shields, may only have become pre-eminent in the context of campaigns to the North or as a staging-point for supplies to forts in western Scotland and the western terminus of the Antonine frontier (30).

The 1966 excavations in the North-East angle of the fort exposed the remains of two barrack blocks beneath the footings of a pair of rectangular stone-built structures, not closely dated but possibly erected A.D.238-244, part of which may have been stabling and the rest storage. Pottery and coins indicated continuous occupation of the site from ca. A.D.122 up to the close of the 4th century; the last re-surfacing of the intervallum road sealed pottery attributable to ca. A.D.360 (31).

When the parade-ground was moved South of the fort in the 3rd century, its site was soon utilized for the numerous strip-buildings of a considerable vicus which, in the 3rd and 4th centuries was apparently one of the most prosperous of such settlements in the frontier zone, perhaps reflecting the importance of the harbour to coastal traffic; there is insufficient evidence to establish whether the earthwork noted by Bailey was a defensive enclosure for the vicus or a post-Roman feature. No finds have been reported from the slopes between the fort and the Ellen, even during building-work, from the 19th century onwards, in the town, but traces of structures have been noted in fields East of the fort during aerial reconnaissance (32). From the North-East gate of the fort, a road ran through the vicus and across the valley of Barney Gill, striking the shore West of Crosscanonby, to link Alauna with the milefortlets and towers to the North, and the fort at Beckfoot. While roads ran inland to North-East and South-East to connect with forts at Old Carlisle and Papcastle, the course of the coast road to Burrow Walls and Moresby has been established over a distance of 120 yards (97 m), between the South-East gate and the Ellen, beneath Camp Road. A line of four wooden posts, aligned up and down stream and approximately 15 inches (38.1 cm) square, were seen by Bailey in the bed of the Ellen in 1923; they lay on the line of the coast road and were taken to be the remains of the substructure of a bridge (33).

During observation of trench-excavation for gas and sewers at Glasson, on the South bank of the Ellen at various times between 1886 and 1923, Bailey noted the foundations of a massive wall some 80 yards (73 m) West of the presumed bridging-point :

"... This wall ran southwards for 80 yards, and was then joined by a similar wall at right angles, also about 80 yards long. This second wall was found in Gilmour Street, behind Ellenborough Place. One wall had also evidently been prolonged for some 250 yards on the opposite or right bank of the river as far as the western foot of Mote Hill" (34).

These walls he identified with the "ruines and broken walls" which were to be seen "as far as Elne Mouth" (i.e. from Workington to Maryport) when Camden made his northern tour of 1599. The area apparently enclosed by the walls, by the Ellen to the North and the road which ran from the bridge to the East, beyond which were no remains seen by Bailey, is approximately 125 yards (113.8 m) square, or about 3 acres (1.2 Ha). Within the enclosure, in 1886, Bailey saw :-

"... a splendid cobble pavement, 2 feet 6 inches to 3 feet" (=0.76 - 0.91 m) "below the surface, extending the whole length of Gilmour Street (120 yards)" (=97 m) "and for 80 yards in Roper Street,"

as well as in Mandle Street and (a "similar pavement") near the West end of Ellenborough Place; no structures were noted. The features are not certainly Roman in date but, as Bailey stressed, the area was not built over until 1870, 122 years after Maryport was founded, and, therefore, the pavement must be ancient. Bailey tentatively concluded that the walls were connected with docks used by Hadrian's fleet but, although the features probably had some functional association with the waterfront, it is more likely that they belong to a later time, possibly the 3rd or 4th centuries, and represent the remains of a shore fort controlling the harbour or even, as Jarrett has suggested, a fortified beaching point similar to those found on the Rhine and the Danube (35). The terrace on which the remains were found, which is now occupied by terraced housing, a small industrial estate and the disused railway yards of the docks, lies a little over 25 feet (7.6 m) above sea-level; there has been large-scale civil engineering and industrial

activity in the immediate area over the last hundred years which may well have obliterated any surviving features. No full assessment is possible without further excavation, opportunities for which are likely to be few, unless Roman strata in limited areas of disused ground between the houses and Solway Estate have survived.

Beckfoot

NY 0848

Some 8 miles (12.9 Km) North-North-East of Maryport, the Roman coast road passed through a 2.5 acre (1.0 Ha) fort generally identified as the Bibra of the Ravenna Cosmography, the only attested garrison of which is the Cohors II Pannoniorum (36). Excavations in 1879-1880 established the outline of the defences which formed an irregular quadrilateral measuring 405 feet (123.5 m) East-West by 267 to 283 feet (81.4 - 86.3 m) North-South. On the western side of the enceinte, Robinson encountered a solid block of masonry, 7 feet (2.13 m) wide by 11 feet (3.35 m) long comprising five courses of dressed stone on cobble foundations, which he interpreted as the base of a pharos but which Collingwood regarded as the base for a ballistarium (37). A virtually complete plan of the interior of the fort has been obtained through aerial photography; nearly all the barrack-blocks lay in the retentura, while the praetentura was apparently reserved for stabling and/or storehouses, and an extra granary. Coin and pottery sequences were consistent with occupation from the reign of the Emperor Hadrian through to the 4th century with, as Robinson established, probably three structural phases. The fort occupies the site of Tower 14b and, like Moresby and Burrow Walls, was apparently secondary to the system of defences of which Alauna, Maryport, seems to have been sector headquarters. Like Moresby, Burrow Walls and Maryport, the fort at Beckfoot faced seawards, and it commanded extensive views across the 7.5 miles (12 Km) wide Solway Firth to the shores of Dumfriesshire, the estuary of the

River Nith and the fortlet at Ward Law (38).

The fort stood on the brow of a low ridge which runs parallel to the shore at this point. Thirty yards (27.5 m) to the West the present coast road follows the western edge of a dune-fronted raised beach which has been eroded to form a low sea-cliff beyond which the Beckfoot Flats, possibly one of the few permanent features of this stretch of coast according to Jarrett, separate the sand and shingle foreshore from open water (39). Shallow valleys of streams to the North and East of the fort may have formed broad swampy depressions in Roman times. Further North, and a little way South of the 19th century port of Silloth, the "fine anchorage of St. Catherine's Hole", as Robinson described it, may have provided access for vessels bringing supplies to this sector of the defensive system if the waters off Beckfoot were too encumbered with shallows, although craft anchored in either place would have been exposed to winds from all quarters, for which reason supplies may have been delivered in shallow-bottomed boats, probably operating out of Maryport, which could be beached on an ebb tide (40).

Pottery finds in dunes to the North of the fort indicate occupation, perhaps native-style settlement attracted by the station as demonstrated in recent aerial surveys by Higham and Jones. Cremation and inhumation burials, associated with pottery attributable to the second half of the 2nd to the 4th centuries, exposed in the eroded face of the low sea-cliffs approximately 1000 feet (305 m) South of the fort, may represent part of the cemetery of Milefortlet 15 rather than that of the fort itself (41).

Kirkbride

NY 231573

Although the character and precise function of the site have yet to be determined, the remains of an apparently large fort of the Flavian period, the defences of which are thought to have enclosed an area of

approximately 5.7 acres (2.3 Ha), have been encountered during extensive excavations, backed up by aerial reconnaissance, on the crest of a boulder clay ridge at Kirkbride, overlooking the warp-filled valley of the River Wampool (42). A substantial roadway and timber-framed structures, including workshops, on apparently differing alignments indicative of more than one phase of construction, were found to be associated with coarse wares attributable to the period A.D.80-120 and samian provisionally datable to A.D.80-110, the very few sherds of B.B.1 to be recovered from the site being derived from unstratified contexts (43). This may reflect a period of disuse up to the reign of Hadrian when Kirkbride, presumably now part of the system of frontier control, was apparently linked by road with shore forts at Beckfoot 5.5 miles (8.8 Km) to the South-West and Drumburgh 2.75 miles (4.4 Km) to the North-East. Coin and pottery sequences indicate that occupation of the site continued until at least the closing years of the 3rd century, although the nature of that occupation has yet to be established (44).

Bellhouse and Jarrett have variously suggested that Kirkbride may have been the western terminal fort of the Stanegate system, and possibly the main supply base for West Cumbria, at least by A.D.90. There is, however, no reason to doubt that the Solway Firth and the River Eden were navigable at least as far as Carlisle in Roman times, and the fort at Kirkbride may, like that at Kirkham in Lancashire, have been an outlier to the system. Therefore, until more precise data are available, the question as to whether this was a fort which was supplied by sea as opposed to a port and supply base for the western sector, must remain unresolved (45).

The low-lying tidal channel through which the River Wampool meanders its way towards the extensive sand-flats and salt-marshes of Moricambe Bay, has been subject to constant change and it is now much

narrower than it was in the late 18th century, when Hutchinson remarked on the dangerous swell, which no bridge had withstood for long, which was set up when incoming tides fetched up against fresh-water floods (46). The acreage and depth of the waters of Moricambe Bay itself have also progressively diminished due to the elevation of the land in this region and also to the deposition of marine warp which has been swept into sheltered areas of the bay by residual bottom currents which have been shown to trend eastwards along the Scottish coast into the Solway system. While a tongue of marshland has developed between the mouths of the Wampool and the Waver in comparatively recent times, and 260 acres (104 Ha) of alluvium were accreted West of the latter, at Skinburness Marsh, between 1860 and 1900, approximately 95 acres (38 Ha) of land further West were lost to erosion. This erosion appears to have been caused by a swirl set up by tides, which is related to changes in the constantly-shifting channels of the Solway Firth and the River Waver. Similar conditions may have prevailed when the sea-port town of Skinburness was destroyed in the early 14th century if, that is, its anchorage lay to the South of the constantly-growing Grune Point; an anchorage on the seaward side of the Point would have lain in an area of shallow water on an exposed shore and a site in the lee of the spit, if available, would have been preferred (47). Although the balance of probability favours the existence of Moricambe Bay ca. A.D.1300 and, ipso facto, in Roman times when sea-level relative to that of the land would have been at least 3.0-5.3 feet (0.9-1.6 m) higher than it is now, the question must remain unresolved until precise data, perhaps obtainable from a geophysical survey of the area, is available (48).

The distribution pattern of native-style settlements revealed during aerial reconnaissance of this area of the low-lying Solway Flats, indicates that the great majority of sites were grouped on the crests of ridges, spurs or small "land islands", above 50 feet (15.2 m) O.D.,

presumably to avoid water-logged ground, but this could equally well have taken the form of a moss, or a salt-marsh fringing a tidal bay. Perhaps an indication of the conditions prevailing in the late 1st to early 2nd centuries lies in the exceptionally large size of the Phase I Hadrianic fortlet at Cardurnock, to which that on the opposing shore at Skinburness may have corresponded. The Cardurnock fortlet may have owed its size not so much to the remoteness of the promontory on which it stands but rather to the fact that it overlooked the entrance to a bay, Moricambe, a natural terminus for the sector of the linear defensive system recently shown to have extended westwards from Bowness towards the tip of the Anthorn Peninsula (49).

Bowness-on-Solway

NY 223627

143

Four miles (6.4 Km) North of Kirkbride, the extensive tracts of low-lying marsh and pasture, much of which was formerly moss, which border the southern shore of the Solway Firth are broken by a boulder clay knoll which rises to a height of approximately 60 feet (18.3 m) above O.D. This prominent ridge reaches the Solway as a scarp some 33-40 feet (10.0-12.2 m) high, over which the northern defences of the Hadrianic fort, Maia, have fallen (50). Excavations in 1930 and 1973 established the position of the West gate and the line of the turf and clay rampart on the South and West sides of the fort which, it is estimated, covered an area of 7 acres (2.8 Ha), being second only in size to that at Stanwix, at 9.32 acres (3.73 Ha), on the line of the Wall (51). Like the forts on the Cumbrian coast from Moresby to Beckfoot, Maia, erected presumably on the site of Milecastle 80, apparently faced westward as though to command the Solway across to the mouth of the River Annan in general, and a ford known as Bowness Wath (alternatively Stonywath), the lowest point at which the Solway could be crossed on foot at low water,

in particular. The ford, styled vadum Anandiae in A.D.1335, was similarly supervised in the 14th and 15th centuries by a fortification, since lost, known as Bowness Tower the function of which was to guard against raiders from across the Solway as did Drumburgh Castle, a little under 3 miles (4.8 Km) further East, at the southern terminus of the Sandwath (52).

The intervallum road of the Roman fort was remetalled and timber structures, including barracks, were rebuilt, possibly late in the reign of Hadrian, and a 4.6 feet (1.4 m) wide wall of rubble and clay faced with sandstone blocks, set into the front of the rampart. Although barracks, recently excavated in the North-East part of the enceinte, were finally demolished, after two phases of reconstruction, towards the end of the 2nd century, structures in the area to the rear of the western defences, were rebuilt in the first half of the 3rd century. Traces of structures have also been noted in fields South of the defences, the site of an apparently large and relatively prosperous vicus which, like the fort, was evidently occupied well into the second half of the 4th century (53).

Although now no deep-water channel runs up to Bowness-on-Solway when the tide has ebbed, as it does rapidly above this point in the firth, the channels of the Solway are subject to constant change and erosion has formerly been severe. Hutchinson noted that there had been a harbour here, which was by A.D.1797 "choked up". Bowness, however, had been appointed as one of three new places licensed for a quay in A.D.1769, vessels having been "suffered" to unload there since the turn of the century because of silting in the Eden below Carlisle. This quay apparently lay at "Bowness East Marsh", in the area South-East of Knock Cross, presumably Port Carlisle, and over a mile (1.6 Km) South-East of Bowness itself. If this harbour was that referred to by Hutchinson less than thirty years later, then rapid silting, possibly

due to a change in the channels of the Solway, is apparently indicated. Of the other two quays licensed in A.D.1769, that at Sandsfield, the site of which lies near the outfall of Powburgh Beck into the Eden below Burgh by Sands, suffered a serious set-back during a storm in A.D.1796 and, significantly, was replaced by Port Carlisle which was itself superseded by Silloth ca. A.D.1858. It is most improbable that the harbour described by Hutchinson in A.D.1797 is one and the same as the harbour at "Bowness East Marsh" or Port Carlisle, unless there had been rapid silting and subsequent scouring in that area, and Hutchinson's "choked up" harbour may well have lain immediately adjacent to the township of Bowness itself. Maia may, therefore, have been supplied through a small harbour below the fort, since silted up or, like the northern defences, lost to the sea, though whether there was ever a supply base here is doubtful as it lies even now only 1.5 miles (2.4 Km) from the opposing Scottish shore (54).

Drumburgh

NY 266598

Three miles (4.8 Km) South-East of Bowness-on-Solway and an equal distance North-East of Kirkbride with which it was linked by road, a fort which has been identified, perhaps incorrectly, as the Congavata of the Notitia Dignitatum, occupied the crest of a prominent bluff which rises to a height of approximately 70 feet (21.3 m) O.D. above the alluvium-choked Solway Firth to the North and low-lying pasture and marsh to East and West, much of which was formerly moss (55). An earth and timber addition to the Turf Wall system, the fort commanded extensive views to East, West and North and was in a position to supervise the Sandwath (alternatively, Dornock Wath), the second lowest ford on the Solway, for which purpose Drumburgh Castle, a fortified manor house, was also built in the early 14th century. The clay ramparts of the Hadrianic fort, measuring 270 feet (82.3 m) North-South and 316 feet (95.9 m) East-West,

enclosed an area of under 2 acres (0.8 Ha), and although little is known of the arrangement of internal timber structures, the position of the West and South gateways indicates that this was an exception to the norm (56).

A stone-built fort of unknown size, was subsequently constructed within the enceinte, its North-West angle being bonded into the Intermediate Stone Wall, with which it was presumably contemporary, although an exact date has yet to be established. The plan of this fort was also unusual in that a granary had been built right into the North-West corner.

Various features and finds have been encountered in the area South of the fort, presumably the site of an extramural settlement, but its exact character and chronological relationship to the fort have yet to be established. Pottery finds indicate that occupation of the site continued well into the second half of the 4th century (57).

West of Drumburgh, the 25-foot (7.6 m) contour recedes and then advances around an area of low-lying marsh and reclaimed land which fronts onto a shallow, alluvium-filled bay, the site perhaps of a small but sheltered harbour in Roman times, through which the fort may have been supplied. In 1947, during an examination of the foreshore near to the North-East corner of Field 1659 several "squared blocks of red sandstone with Roman tooling" were found. The blocks were thought to be derived from the Dumfriesshire Beds across the Solway, but until the material of which the later fort and Intermediate Wall were built has been subjected to petrological analysis it is not possible to estimate to what extent, if any, a harbour here may have been used to import such stone in the 2nd century A.D. (58).

Burgh by Sands

NY 329591

In 1922, a three-day trial excavation in what is now an extension to the churchyard of Burgh by Sands established the line of the eastern

rampart and the position of the porta principalis dextra of a fort which projected North of the Wall, and has been identified as the Aballava of the Notitia Dignitatum. The rubble and mortar core of a 6-7 feet (1.83-2.13 m) thick revetment to the rampart was encountered in three places as well as the clay floors and ruined walls of what were interpreted as stone-built barrack-blocks to the rear. Although only this eastern rampart was located, it was estimated that the defences had enclosed an area of 4.5-5.0 acres (1.8-2.0 Ha), measuring 520 feet (158 m) North-South and 410 feet (125 m) East-West. A small quantity of 2nd-4th century pottery and a coin of the 4th century, recovered during Collingwood's excavations, indicated that, as at Drumburgh and Bowness, occupation had continued well into the 4th century (59).

Artifacts and features, including debris probably derived from a bath-house, have been reported from the area immediately outside the eastern defences and South of the line of the Military Way, and traces of what appears to have been a cemetery have been found further South (60).

Under Hadrian, the fort probably housed a cohors quingenaria equitata, including at some time the ala I Tungrorum, and in the 3rd century the cohors I Nervana Germanorum milliaria equitata, a cuneus Frisionum Aballavensium, and subsequently the numerus Maurorum Aurelianorum, the garrison attested in the Notitia Dignitatum (61). The function of these various units would have been to keep watch over the waters of the Solway Firth and the southern terminal of two important fords, the Sandwath (alternatively, Durnock Wath) and the Peat Wath. Although the view to the North was broken by a slight rise in the crest of the 65 feet (19.8 m) O.D. ridge on which the fort was built, the site commanded extensive views over what is now Burgh Marsh to the North-West and the lower estuary of the River Eden to the North-East, as

presumably did the mediaeval castle of Sir Hugh de Morville which stood a little over 220 yards (0.20 Km) East of the Roman enceinte and the Border church, which was itself furnished with a pele-tower in the early 14th century (62).

Silt, swept down by the Eden and the Esk, and marine warp, borne eastwards by residual bottom currents in the Solway, have been deposited in vast amounts in the lower estuaries of the rivers and the upper reaches of the firth, notably North and North-East of Burgh by Sands, over 2 miles (3.2 Km) of land being accreted in many places. The old port of Sandsfield, which lay at the southern terminus of the Sandwath and may have been a supplies port for campaigns into Scotland in the 14th century, lay a little over 1.5 miles (2.4 Km) almost due North of Burgh by Sands, near the outfall of Powburgh Brook into the Eden. Although it was appointed as one of three ports for Carlisle in A.D.1769, it suffered a serious set-back during storms some 27 years later and was superseded by Port Carlisle, itself in turn abandoned due to silting, changing channels and shifting shoals. Although the configuration of the Roman shoreline has yet to be established, the Hadrianic fort, which now lies 1.5 miles (2.4 Km) from H.W.M.O.T., would almost certainly have lain much nearer to navigable water in the 2nd century, especially in view of the greater height of sea-level relative to that of land which prevailed at that time. The fort may, therefore, have been provisioned through a harbour a short distance below the fort, perhaps to the West, where the 25-foot (7.6 m) contour describes the outline of an arm of Burgh Marsh, now reclaimed, which could just possibly have been a small creek in Roman times (63).

Carlisle

NY 4056

Stanwix

NY 4057

The mediaeval and modern city of Carlisle is set on a low hill of red sandstone and boulder clay which rises to two summits, now occupied by the Castle and the Cathedral, which lie approximately 75 feet (22.8 m) above O.D.. In 1892, during excavations at Tullie House on the North side of Cathedral Hill, a massive timber structure, some 40 feet (12.2 m) in width, was traced over a length of 220 feet (67 m), the remains apparently of the rampart of a turf and timber fort of the Flavian period (64). Little is known of the interior of this fort, but of two pre-Hadrianic occupation levels, including timber structures, which were encountered 56 feet (17 m) South of the edge of the rampart in 1954-56, the earliest was Flavian, possibly Agricolan, in date. To the North of the fort lay the rectangular timber buildings and wattle-fenced working-yards of an industrial area, possibly a supply depot, which was occupied from ca. A.D.75-100/122 (65). The fort, which lay at what appears to have been the western terminus of the Stanegate, commanded the lowest point at which the River Eden could be bridged and was linked by road with the legionary fortresses at York and Chester, a place, therefore, of considerable strategic importance in the communications system of the North-West. Structures on the Tullie House Site had been demolished ca. A.D.100, when a very heavy timber feature associated with a thick spread of gravel was constructed, part possibly of a Trajanic reorganization of the fort. Consequent to the decision to build a new fort on the line of the Wall, on the North bank of the Eden at Stanwix, in A.D.122-, the Cathedral Hill site was replanned as part of a civil settlement which developed into a town, *Lvgvvalivm*, of some 70 acres (28 Ha), the walls of which, walked by St. Cuthbert in A.D.685, presumably enclosed an area corresponding approximately to that of the mediaeval city (66). Very little is known

about the layout and buildings of this town, although architectural and sculptural fragments and a series of inscriptions imply that it was a relatively prosperous community, possibly the Civitas Carvetiorum of an inscription seen by Camden at Old Penrith. Pottery and coin finds indicate that occupation of the site continued well into the closing years of the 4th century, and the description of a visit made by St. Cuthbert in A.D.685 implies that it was then still a thriving community (67).

The Roman and mediaeval towns were bounded on the East and South by two rivers, the Petteril and the Caldew, the latter coursing north-westwards a short way from the more precipitous south-western slopes of Castle Hill and Cathedral Hill, through what is now Bitts Park but which was in the first half of the 18th century a broad tract of marshland cut longitudinally by three channels of the river. The Caldew now runs into the River Eden a little over 600 yards (549 m) downstream from the present bridge, which was built in A.D.1815. Approximately 100 yards (91 m) above the confluence, the broad alluvial flood-plain of the Eden was crossed by the Hadrianic Wall bridge, stone-work from which was dredged up in 1951 when the gravel bed of the river was being deepened by 6 feet (1.83 m) mid-stream and by 2.5 feet (0.76 m) by the banks, indicating that the position of the channel in this reach has changed little since the 2nd century A.D.. A little over 440 yards (400 m) further upstream, the flood-plain narrows until at the foot of Stanwix Bank it is bordered by firm ground, the point at which the river would have been spanned by a road bridge which, it has been estimated, may have lain some 60 yards (54.9 m) West, and downstream, of its mediaeval successor, affording a comparatively direct route out of the town. At this point the present channel of the Eden, formed as the result of a breach in the banks of an acute meander in A.D.1571, lies to the North of its mediaeval predecessor which was still open in A.D.1752 but which

became choked with silt subsequent to construction work on the present bridge (68). Although the river is now tidal only up to a point some 6 miles (9.6 Km) below Carlisle, the Roman town may well have lain at or near the head of tidal limits, given the extent to which sea-level has fallen in this region, and the vast amounts of marine warp and riverine silt that have choked the upper reaches of the Solway and the lower estuary of the Eden, since the 4th century A.D..

Carlisle had been laid out and appointed as a "port" in 1564-65, including a place called Raven Banke "on the South side of the River Edden to five hundred yards in length down the Rivulett called Raven Banke Lake lying near to a great grey stone on the point of Raven Banke aforesaid", an open space which was "assigned and appointed" to be the "place key or wharf" for vessels engaged in foreign trade (69). By A.D.1729, however, it had become dangerous for vessels to sail so far up the Eden, on account of silting, changing channels and alterations in the tidal streams, and ships were "suffered" to put in at Bowness, Sandsfield, and Rockcliffe, all of which were appointed as "quays" in A.D.1769, the last-mentioned lying on the North bank of the Eden, approximately 7 miles (11.2 Km) below Carlisle, at a point which was accessible, at spring tides, to ships of 80 tons (81.29 tonnes) burden in A.D.1794 (70).

Opportunities to excavate on the estimated line of the pre-16th century South bank of the Eden at Carlisle are likely to be rare, as any riverside installations which may have escaped erosion by the formerly acute southward meander of the river, must now lie beneath the fields and gardens of Bitts Park or the recently-constructed dual-carriageway further South.

Riverine erosion has almost certainly also removed virtually all trace of any harbour installations which may once have lined the North bank of the Eden at or near the foot of Stanwix Bank, on the crest of

which lay a 9.32 acre (3.73 Ha) fort, founded in A.D.122-ca.126, which was the largest and most important stronghold on the line of the Wall. A stone-built fort, which may have been preceded by a slightly smaller one of earth and timber laid out on a different alignment, housed the ala Augusta Petriana bis torquata C.R. in the 3rd century. This unit, which may also have been stationed here in the 2nd century, possibly from the reign of Hadrian onwards, was the largest attested cavalry force and the senior command of the frontier zone. Although the remains of a large granary, barracks and stabling were encountered during excavations in the 1930's, little is known about the interior of the fort or, indeed, of its vicus which lay to the South-East (71). Roman material, including brooches, mountings for cavalry uniform and harness and various other pieces of bronze-work, was found near the foot of the escarpment, in King's Meadow in 1930, the washed-out debris, it seemed, of a founder's workshop, part of what must have been an important and prosperous extramural settlement. Petriana, or Uxellodunum as it may alternatively have been called, would almost certainly have been linked by road with the Hadrianic outpost fort on the East bank of the River Esk at Netherby, approximately 11 miles (17.6 Km) due North (72).

Netherby

NY 3971

Although the fort, Castra Exploratorum, was occupied up to the reign of the Emperor Gratian, if not later, its 3rd century garrison being the cohors I Aelia Hispanorum equitata, virtually nothing is known about the size, orientation, buildings (except for a bath-house discovered in A.D.1732), or even exact position of the enceinte, the site having been obliterated in the 18th century when a mansion was built and the environs extensively landscaped. The fort commanded possibly the lowest point at which the Esk could conveniently be crossed, the valley of which would have been obstructed by vast expanses of moss to the South-West.

Leland, in the first half of the 16th century, commented that at Netherby, "Men alyve have sene Rynges and Staples yn the Walles, as yt had bene Stayes or Holdes for Shyppes", although "... the Ruines be now a iiii Myles at the lest from the flowyng Water of Sulway Sandes". Although his supposition can only be proved by geophysical survey or by excavation, possibly in the area of the old plantation North-West of the mansion, the fort may well have lain at or near the head of navigable water as, since the 4th century, vast amounts of silt have been deposited in the lower estuaries of the Esk and the Sark, up to 2 miles (3.2 Km) of land being accreted in places (73).

South-West Scotland

Ward Law

NY 0266

An earth and timber fort, 7.5 acres (3 Ha) in area, lay near the southern tip of a prominent ridge overlooking the outlets of the River Nith and the Lochar Water to West and East, and commanding extensive views across the Solway Firth to the coast of Cumbria. Linked presumably by way of the ridge with the cavalry fort at Carzield, which lay approximately 10 miles (16 Km) to the North, the outpost at Ward Law may have been served by a sheltered harbour near Old Caerlaverock, in an area now occupied by marshland. Although the Nith was navigable up to Dumfries in the first half of the 16th century, it is not known to what extent it was viable to sea-going vessels in the Roman period (74).

Glenlochar

NX 7364

Sited at the lowest point at which the otherwise marsh-fringed flood-plain of the River Dee could conveniently be crossed, a 8.3 acre (3.4 Ha) late-Flavian fort, established in the outskirts of an Agricolan installation, was refurbished for two Antonine occupations. The base lies on the East bank of the river, about 7.5 miles (12 Km) upstream from Tongland, the highest known point to which sea-going vessels could sail in the late-17th to 19th centuries (75).

Gatehouse of Fleet

NX 5957

Noted during aerial reconnaissance and confirmed by excavation in the early 1960's, an earth and timber fortlet of the Flavian period, approximately 0.76 acre (0.3 Ha) in area, lay about half a mile (0.8 Km) North of Gatehouse of Fleet. Fleet Bay was relatively unimportant as a haven until the lower reaches of the estuary of the Water of Fleet were improved in 1760-90, when a port is thought to have been established at Boat Green (NX 598560); above this point rapids limited navigation to all but the smallest of craft until the channel was straightened and deepened in 1825. While the outpost would almost certainly have been supplied by sea in Roman times, the site of the harbour, presumably well below the rapids, has yet to be established (76).

Notes

1. Perkins, E.J., Williams, B.R.H. & Bailey, M., "Some Preliminary Notes on the Bottom Currents of the Solway Firth and the North-East Irish Sea", T.D.G.N.H.A.S., Ser.3, Vol.XLI, 1961, pp.45-51; Steers, J.A., "The Coastline of England and Wales", Ed.II, 1964, pp.73-80; Tooley, M.J., "Sea-Level Changes during the last 9000 years in North-West England", Geographical Jnl., Vol.140, 1974, pp.18-42. See also, n.54, infra.
2. Birley, E., "The Roman Fort at Ravenglass", C.W.², Vol.58, 1958, pp.14-30.
3. Collingwood, R.G., "Roman Ravenglass", C.W.², Vol.28, 1928, pp.353-366; Birley, op.cit., 1958, pp.21, 23-29; Britannia, Vol.VIII, 1977, p.378; Rivet, A.L.F., "The British Section of the Antonine Itinerary", Britannia, I, 1970, pp.54, 65 & fn.94. Jackson suggests that the name reflects the position of the fort "The Venta on the Bank" or "Shore"; Jackson, K., "Romano-British Names in the Antonine Itinerary", in Rivet, op.cit., Appendix II, p.70; Antonine Itinerary, 481.1. The Notitia Dignitatum, Occ., xl, 52, gives the name as Glannibanta, and the Ravenna Cosmography, 115, as Cantiventi.
Margary, I.D., "Roman Roads in Britain", Ed.III, 1973, Route 740, pp.389-392; Richmond, I.A., "The Roman Road from Ambleside to Ravenglass", C.W.², Vol.49, 1949, pp.15-31.
Two Kilns, part of a tilery, have been found at Park House, Muncaster, 3 miles (4.8 Km) North-East of the fort; J.R.S., Vol.XXXVII, 1947, p.169; LI, 1961, p.164. Sherds at the entrance to the Stoke-hole of Kiln A were dated to A.D.120-160.
4. Steers, op.cit., 1964, pp.81-3, 577; Cherry, J., "Flint-chipping sites at Drigg", C.W.², Vol.65, 1965, pp.66-87; Cherry, J. & Cherry, P.J., "An Iron Bloomery at Drigg", C.W.², Vol.68, 1968, pp.27-30; Britannia, V, 1974, p.412; Jarvis, R.C., "The Appointment of Ports in Cumberland and Westmorland and Lancashire-North-of-the Sands", C.W.², Vol.47, 1947, pp.128-165.
5. Steers, op.cit., pp.81-4.
6. Hutchinson, W., "The History and Antiquities of Cumberland", 1797, Vol.i, p.561.
7. Fair, M.C., "A Sandhill Site at Eskmeals", C.W.², Vol.36, 1936, pp.20-3; Cherry, J., "Eskmeals sand-dunes occupation sites, phase II - Iron Manufacture", C.W.², Vol.66, 1966, p.46.
8. Rev. Caesar Caine, "The Port of Ravenglass", C.W.², Vol.22, 1922, pp.101-7.
9. Margary, op.cit., Route 75, pp.395-6; Birley, E., "Research on Hadrian's Wall", 1961, p.127; Ferguson, R.S., "An Attempt at a Survey of Roman Cumberland & Westmorland", C.W.², Vol.3 (1876-7), 1878, p.72 ("Roman stones" noted in masonry of the Castle); Steers, op.cit., pp.80-84. See also, note 12.

10. Collingwood, R.G., "Roman Signal Stations on the Cumberland Coast", *C.W.*², vol.xxix, 1929, pp.138-165, esp. p.161; Birley, op.cit., 1961, p.226; Birley, op.cit., 1958, pp.25 & 29.
11. Birley, op.cit., 1961, pp.224-6; Breeze, D.J. & Dobson, B., "Hadrian's Wall", 1976, p.42.
12. If the name of the fort was Gabrosentum and not Tunnocelum the base for the Cohors I Aelia Classica, there may have been an undiscovered fort somewhere South of St. Bees Head ("Ocelum" = headland); Breeze & Dobson, op.cit., pp.271-8; Bellhouse, R.L., "The Problem of Burrow Walls", *C.W.*², Vol.66, 1966, pp.42-5; cf. Hind, J.G.F., "Agricola's Fleet and Portus Trucculensis", *Britannia*, V, 1974, pp.286-7; Collingwood, op.cit., 1929; Birley, E., "The Roman Fort at Moresby", *C.W.*², Vol.xlviii, 1948, pp.42-72, (esp. pp.50, 52-61, 65 & 68; there is no reason to suppose a pre-Hadrianic occupation at present); Birley, op.cit., 1961, pp.224-6; Breeze & Dobson, op.cit., pp.47-8 & 71. See also, n.18.
13. Birley, op.cit., 1948, pp.48-50, who refers to Wilkinson, G., in Jefferson, S., "Additions and Corrections (Allerdale Ward)", 1842, pp.447-8. Excavations in the area immediately North of the fort, in 1951, found no trace of external buildings; Swinbank, B., "A Trial excavation at Moresby", *C.W.*², Vol.51, 1951, pp.176-7.
14. Birley, op.cit., 1948, pp.50 & 61; Breeze & Dobson, op.cit., p.207; Potter, T., "The Biglands Milefortlet and the Cumberland Coast Defences", *Britannia*, Vol.viii, 1977, pp.149-183.
15. Birley, op.cit., 1948, pp.42, 67; Steers, op.cit., pp.78-80.
16. Hutchinson, op.cit., 1797, Vol.II, pp.90-93.
17. Jarvis, op.cit., 1947, pp.128-165, who cites Acts Privy Council, n.s. vii, 1558-1570, 258 and also *CAL. TREAS. Bks.*, v, 1676-1679, ii, 1262-3; Jarrett, M.G., & Ashmore, B., "Maryport and the Solway" in Jarrett, M.G., "Maryport, Cumbria : A Roman Fort and its Garrison", *CW.*, Extra Series, vol.xxii, 1976, p.85, who point out that the creek is on a lee shore for South-West winds.
18. Birley, op.cit., 1948, esp. pp.43 & 72; cf. Hind, op.cit., 1974, pp.285-288.
19. Margary, op.cit., 1973, Route 750, p.397 & Route 752, p.398.
20. Hutchinson, op.cit., 1797, p.137 ff.
21. Bellhouse, R.L., "The Roman Fort at Burrow Walls, near Workington", *C.W.*², Vol.55, 1955, pp.30-45; Steers, op.cit., p.78. In the late 13th century, lessees of the fisheries who had complained that a diversion of the river had proved prejudicial to their interests, were given a new grant "as the place they had formerly held had been washed away. Cf. Collingwood, op.cit., 1929, p.158.
22. Bellhouse, op.cit., 1955, *ibid*; Dickinson, W., "Burrow Walls, near Workington", *C.W.*, Vol.5, (1879-1880), 1881, pp.22-4.

23. The two defensive ditches were 16 feet (4.88 m) and 18 feet (5.49 m) wide, within which a line of clay-cobble foundations, 8-10 feet (2.44-3.05 m) wide, was uncovered, but no trace of the masonry of the fort wall; Birley, op.cit., 1961, pp.223-4; Bellhouse, op.cit., 1955 and 1966, *ibid*; Breeze & Dobson, op.cit., 1976, pp.47 & 126.
24. Birley, op.cit., 1961, *ibid* & p.267; Bellhouse, op.cit., 1955 & 1966, *ibid*. Gillam and Bellhouse have suggested that if Burrow Walls was abandoned from A.D.158 until the 4th century it may not have figured in *Notitia Dignitatum* and the *Ravenna Cosmography*, in which case Gabrosentum may be Moresby; cf. Hind, op.cit., 1974, pp.286-7. See also, n.12.
25. Jarrett, op.cit., 1976, p.83 ff; Steers, op.cit., pp.77-8; Bellhouse, op.cit., 1955, fn.12; Owen, D.J., "The Origin and Development of the Ports of the United Kingdom", Ed.II, 1948, p.211; Robinson, J., (1881a), "Notes on the Excavations near the Roman Camp, Maryport, during the year 1880", C.W., Vol.5 (1879-1880), 1881, pp.237-257.
26. Robinson, op.cit., 1881a, *ibid*; Stukeley, "Iter Boreale", 1776, pp.49-51.
27. Jarrett, op.cit., 1976, pp.27-35, 83-88; J.R.S., Vol.LVII, 1967, p.172; Bellhouse, R.L., "Roman Sites on the Cumberland Coast, 1968-9", C.W.², Vol.70, 1970, pp.9-47, esp. p.40 ff; Reed, N., "The Fifth Year of Agricola's Campaigns", *Britannia*, II, 1971, pp.143-8; Jarrett, M.G., "The pre-Hadrianic occupation of Roman Maryport", C.W.², Vol.58, 1958, pp.63-7; Collingwood, R.G., (=1936a), "The Roman Fort and Settlement at Maryport", C.W.², Vol.36, 1936, p.94 ff; Tacitus, "Agricola", 24.1. But see, Breeze & Dobson, op.cit., 1976, p.126.
28. Jarrett, op.cit., 1976, pp.18-35. For an alternative interpretation of the evidence from inscriptions, see Davies, R.W., "Cohors I Hispanorum and the Garrisons of Maryport", C.W.², Vol.LXXVII, 1977, pp.7-16.
29. Jarrett, op.cit., 1976, pp.83-8.
30. Tooley, op.cit., 1974, *ibid*; Steers, op.cit., 1964, p.77 ff; Perkins, Williams & Bailey, op.cit., 1961, *ibid*; Birley, op.cit., 1961, p.222-3; Jarvis, op.cit., 1947, pp.128-165.
31. Jarrett, op.cit., 1976, pp.19, 32-3, 42-75; pottery found at Maryport includes :- Nene Valley ware, Oxfordshire mortaria, Black-Burnished Ware - category 1, many sherds of "Rhenish ware & lamps probably of Rhineland origin, and a few sherds of South Gaulish samian ware.
32. Jarrett, op.cit., 1976, pp.5-6, 88; Birley, op.cit., 1961, p.223; Collingwood, op.cit., 1936a, *ibid*.
33. Margary, op.cit., 1973, Routes 750, p.397, 754, p.398 ff and 751, p.397 ff; Collingwood, op.cit., 1936a, *ibid*; Bailey, J.B., "Further Notes on Roman Roads at Maryport and on the Netherhall Collection", C.W.², Vol.26, 1926, pp.415-422; _____, "Maryport and the Tenth Iter, with further notes on Roman Antiquities", C.W.², Vol.23, 1923, pp.147-148, 150 ff.

34. Bailey, op.cit., 1923, p.146.
35. Jarrett, op.cit., 1976, p.8; Collingwood, op.cit., 1936a, *ibid*; Bailey, op.cit., 1926, p.415 ff, 1923, p.146 ff; Hutchinson, op.cit., 1797, p.270 ff; Schleiermacher, W., "Befestigte Schiffsländer Valentinians", *Germania*, Vol.26, 1942, p.13; Mocsy, A., "Die Spätromische Schiffsländer in Contra Florentiam", *Folia Archaeologica*, X, 1958, pp.89-104; Livens, R., "Litus Hibernicum", in *Actes du IX^e Congrès International D'Etudes Sur Les Frontières Romaines*, 1972, pp.1-7, See also, discussion of the enceinte at Caer Gybi, Holyhead, p.
36. Breeze & Dobson, op.cit., 1976, pp.272, 275; Margary, op.cit., 1973, Route 750, p.397; Ravenna Cosmography, 119; R.I.B. No.880.
37. Collingwood, R.G., (=1936b), "The Roman Fort at Beckfoot", *C.W.*², Vol.36, 1936, pp.76-84; Robinson, J., (=1881b), "The Roman Camp near Beckfoot (Mowbray), Cumberland", *C.W.*¹, Vol.5, 1879-1880 (1881), pp.136-148.
38. Breeze & Dobson, op.cit., 1976, p.47; Birley, op.cit., 1961, pp.214-6; St. Joseph, J.K., "Air Reconnaissance in North Britain", *J.R.S.*, Vol.41, 1951, p.56, pl.IVB; Collingwood, op.cit., 1936b, *ibid*; Robinson, op.cit., 1881b, *ibid*.
39. Jarrett, op.cit., 1976, pp.83-5; Steers, op.cit., 1964, pp.74-77.
40. Bellhouse, R.L., "Moricambe in Roman times and Roman sites on the Cumberland Coast", *C.W.*², Vol.62, 1962, pp.56-72; Collingwood, op.cit., 1936b, *ibid*; Robinson, op.cit., 1881b, *ibid*.
41. Higham, N.J. & Jones, G.D.B., (1976a), "Frontier, Forts and Farmers : Cumbrian Aerial Survey 1974-5", *Archaeological Jnl.*, Vol.132, 1976, pp.16-53; Hogg, R., "Beckfoot Fort, Cemetery Site", *C.W.*², Vol.62, 1962, pp.323-4; Bellhouse, R.L. & Moffat, I., "Further Roman finds in the Beckfoot Cemetery Site", *C.W.*², Vol.58, 1958, pp.57-62; Hogg, R., "A Roman Cemetery Site at Beckfoot, Cumberland", *C.W.*², Vol.49, 1949, pp.32-58; Duff, H., a note in "Proceedings", *C.W.*², Vol.21, 1921, pp.270-1.
42. Hutchinson, op.cit., 1797, Vol.II, p.482; Whellan, H., "The History and Topography of the Counties of Cumberland and Westmorland", 1860, p.248; Collingwood, W.G., "An Inventory of the Ancient Monuments of Cumberland", *C.W.*², Vol.23, 1923, p.235.
Excavations, 1961-
Birley, E. & Bellhouse, R.L., "The Roman Site at Kirkbride, Cumberland", *C.W.*², Vol.63, 1963, pp.126-139; *J.R.S.*, Vol.LIII, 1963, p.128; Bellhouse, R.L. & Richardson, G.G.S., "The Roman Site at Kirkbride, Cumberland", *C.W.*², Vol.75, 1975, pp.58-78, 89; *Britannia*, Vol.VIII, 1977, p.377.
43. Birley & Bellhouse, op.cit., 1963, *ibid*; Bellhouse & Richardson, op.cit., 1975, pp.59-90; *Britannia*, Vol.III, 1972, p.308; IV, 1973, p.277; VIII, 1977, p.377.
44. Simpson, F.G. & Richmond, I.A., Report of the Cumberland Excavations Committee for 1947-9, *C.W.*², Vol.52, 1952, pp.41-5 (ford (?) across Wampool at NY 23905795, possibly a natural "hard"); Birley & Bellhouse,

- op.cit., 1963, *ibid*; *Britannia*, Vol.I, 1970, p.277; Margary, op.cit., 1973, Route 869, p.452; Bellhouse & Richardson, op.cit., 1975, p.89.
45. Bellhouse, op.cit., 1969, pp.54-101; Jarrett, op.cit., 1976, p.88; Breeze & Dobson, op.cit., 1976, p.24; cf. Hind, op.cit., 1974, pp.286-7.
 46. Hutchinson, op.cit., 1797, p.482.
 47. Neilson, G., "Annals of the Solway until A.D.1307", 1896 (reprinted 1974) pp.58-60, 70-73; Perkins, et al., op.cit., 1961, pp.45-51; Bellhouse, R.L., op.cit., 1962, pp.56-72; Steers, op.cit., 1964, pp.73-6.
 48. Steers, op.cit., 1964, pp.76-7; Bellhouse, op.cit., 1970, pp.40-42; Tooley, op.cit., 1974, pp.34-42.
 49. Simpson, F.G. & Hodgson, K.S. et al., "The Coastal Milefortlet at Cardurnock", *C.W.*², Vol.47, 1947, pp.78-128; Bellhouse, R.L., "Roman Sites on the Cumberland Coast, 1954", *C.W.*², Vol.54, 1954, pp.28-55; Higham & Jones, op.cit., 1976a, pp.20-22, 27-34 & fig.3; Jones, G.D.B., (1976b), "The Western Extension of Hadrian's Wall : Bowness to Cardurnock", *Britannia*, Vol.VII, 1976, pp.236-243; Potter., op.cit., 1977, pp.149-183.
 50. Birley, E., "Three Notes on Roman Cumberland, Bewcastle, Bowness-on-Solway, Petrianae", *C.W.*², Vol.31, 1931, pp.137-147; _____, op.cit., 1961, pp.211-3; Potter, T.W., "Excavations at Bowness-on-Solway, 1973", *C.W.*², Vol.75, 1975, pp.29-33.
 51. Birley, op.cit., 1931, *ibid*; _____, op.cit., 1961, pp.212-3; Collingwood, Bruce, J., "Handbook to the Roman Wall", Ed.XII (revised by I.A. Richmond) 1965, p.209; *J.R.S.*, Vol.LIX, 1969, p.205; *Britannia*, Vol.V, p.410; Potter, op.cit., 1975, pp.33-36. Inscriptions attest that the garrison was a cohors milliaria equitata, the apparent extra space possibly being used for storehouses.
 52. Hutchinson, op.cit., 1797, Vol.II, p.485; Neilson, op.cit., 1896, pp.16-18; McIntyre, W.T., "The Fords of the Solway", *C.W.*², Vol.39, 1939, pp.163-167; Birley, op.cit., 1961, pp.213-4; Collingwood Bruce/Richmond, op.cit., 1965, p.209; Potter, op.cit., 1975, pp.55-6.
 53. Birley, op.cit., 1931, *ibid*; _____, op.cit., 1961, pp.213-4; Daniels, C.M., "Excavations at Bowness-on-Solway, 1955", *C.W.*², Vol.60, 1960, pp.13-19; Collingwood Bruce/Richmond, op.cit., 1965, pp.209-11; *Britannia*, Vol.V, 1974, p.410; VIII, 1977, p.376; Potter, op.cit., 1975, pp.32-3, 35-50, 56; *R.I.B.*, 2059-2061.
 54. Hutchinson, op.cit., 1797, Vol.II, p.485; McIntyre, W.T., "The Old Port of Sandsfield", *C.W.*², Vol.43, 1943, pp.71-81; Jarvis, op.cit., 1947, pp.128-165; Birley, op.cit., 1961, p.211; Bellhouse, op.cit., 1969, pp.54-101; Jarrett, op.cit., 1976, pp.83-4.
 55. Simpson & Richmond, op.cit., 1952, p.41-5; Birley, op.cit., 1961, pp.210, 213; Collingwood Bruce/Richmond, op.cit., 1965, p.203; *Britannia*, Vol.I, 1970, p.277; Margary, op.cit., 1973, Routes 86d & 869, pp.451-2; Breeze & Dobson, op.cit., 1976, pp.246, 273-5.

56. Horsley, J., "Britannia Romana", 1732, p.157; Haverfield, F., in Report of the Cumberland Excavation Committee for 1899, I-"Drumburgh", C.W., Vol.16, 1900, pp.80-92; McIntyre, W.T., "Drumburgh Castle", C.W.², Vol.29, 1929, p.205 ff; _____, op.cit., 1939, pp.161-7; Simpson & Richmond, op.cit., 1952, I-"The Roman Fort at Drumburgh", pp.9-14; Birley, op.cit., 1961, p.210; Bellhouse, op.cit., 1969, p.76 ff.
57. Haverfield, op.cit., 1900, *ibid*; Simpson & Richmond, op.cit., 1952, *ibid*; Birley, op.cit., 1961, pp.210-211; Collingwood Bruce/Richmond, op.cit., 1965, pp.203-4; Britannia, Vol.VII, 1976, p.311.
58. Hutchinson, op.cit., 1797, Vol.II, p.487; Simpson & Richmond, op.cit., 1952, p.14; Bellhouse, op.cit., 1969, p.76 ff.
59. Haverfield, F., "The Roman Station at Burgh by Sands", C.W.², Vol.4, 1904, pp.239-249 (Roman levels erased); Collingwood, R.G., "Explorations at the Roman Fort of Burgh-by-Sands", C.W.², Vol.23, 1923, pp.1-12; Breeze & Dobson, op.cit., 1976, pp.272-5, 277-8; R.I.B. 883; Notitia Dignitatum, Occ., xl, 47.
60. Horsley, op.cit., 1732, p.156; Birley, op.cit., 1961, p.209; Collingwood Bruce/Richmond, op.cit., 1965, p.201.
61. Birley, op.cit., 1961, p.208; Breeze & Dobson, op.cit., 1976, p.246; R.I.B. 883, 2041-2.
62. Horsley, op.cit., 1732, *ibid*; McIntyre, op.cit., 1939, pp.152-170, Collingwood Bruce/Richmond, op.cit., 1965, pp.199-201.
63. Hutchinson, op.cit., 1797, Vol.II, pp.485-7; Neilson, op.cit., 1896, pp.13-25, 34; McIntyre, op.cit., 1943, pp.71-81; Jarvis, op.cit., 1947, pp.128-165; cf. Higham & Jones, op.cit., 1976, Features S162, S166, S168, S171, p.33 and fig.3 (probable site nuclei on lower slopes North of fort, recognised during aerial reconnaissance).
64. Ferguson, R.S., "On a Massive Timber Platform of early date uncovered at Carlisle ...", C.W., Vol.12, 1893, pp.344-364; Shaw, R.C., "Romano-British Carlisle : its Structural Remains", C.W.², Vol.24, 1924, pp.95-109; Hogg, R., et al., "Excavations in Carlisle, 1953", C.W.², Vol.55, 1955, pp.59-107; cf. Birley, op.cit., 1961, pp.136-7, for foundation under Petilius Cerialis, ca. A.D.71.
65. Hogg, R. et al., "Excavations at Tullie House, Carlisle, 1954-56", C.W.², Vol.64, 1964, pp.14-62; Britannia, Vol.V, 1974, pp.410-11; VII, 1976, pp.310-11; VIII, 1977, p.376.
66. Hogg, op.cit., 1955, *ibid*; 1964, *ibid*; Birley, op.cit., 1961, pp.136-7; Margary, op.cit., 1973, Routes 85 a/b, pp.445-7; 75, pp.395-6; 7e, p.392; Charlesworth, D., "Carlisle Excavations", C.W.², Vol.74, 1974, pp.211-2; Wachter, J., "The Towns of Roman Britain", 1975, p.406; Breeze & Dobson, op.cit., 1976, pp.20, 24-5; J.R.S., Vol.LI, 1961, p.163; Britannia, Vol.V, 1974, p.411; Antonine Itinerary, 467.2; Notitia Dignitatum, Occ.xl.46.

67. Shaw, *op.cit.*, 1924, *ibid*; Hogg, *op.cit.*, 1964, *ibid*; Wachter, *op.cit.*, 1975, p.407ff; Breeze & Dobson, *op.cit.*, 1976, pp.194, 206, 230-1; Phillips, E.J., "A Workshop of Roman Sculptors at Carlisle", *Britannia*, Vol.VII, 1976, pp.101-8; *R.I.B.*, 943-964, cf. 2283 & 933.
68. "Ciuitas Carliolen", temp. Queen Elizabeth I, B.M., Cotton MS., Aug. vol.i.12; Survey of Carlisle executed for Lord Dartmouth, A.D.1684-5; George Smith, "A Map of the Soccage Lands at Carlisle", executed for the Duke of Portland, 1752; Ferguson, R.S., "The Royal Charters of Carlisle", *Cumberland & Westmorland Archaeological & Antiquarian Soc., Extra Series, Vol.X*, 1894, Appendix II, pp.286-294, illustrating the afore-mentioned maps; Hutchinson, *op.cit.*, 1797, Vol.II, p.577; Hodgson, T.H., "Extracts from Acts of the Privy Council relating to Cumberland & Westmorland, 1558 to 1568, being the first ten years of the reign of Elizabeth", *C.W.*², Vol.3, 1903, pp.126-149, esp.133-5; Hogg, R., "The historic crossings of the River Eden at Stanwix, and their associated road systems", *C.W.*², Vol.52, 1952, pp.131-159; Collingwood Bruce/Richmond, *op.cit.*, 1965, p.196.
69. Jarvis, *op.cit.*, 1947, pp.128-165.
70. Hutchinson, *op.cit.*, 1797, Vol.II, p.526 (footnote by J. Reed); McIntyre, *op.cit.*, 1943, pp.71-81; Jarvis, *op.cit.*, 1947, *ibid*.
71. J.R.S., Vol.XXXI, 1941, p.129 ff; Birley, *op.cit.*, 1961, pp.206-7; Collingwood Bruce/Richmond, *op.cit.*, 1965, pp.193-4; Breeze & Dobson, *op.cit.*, 1976, pp.47-8, 76, 140, 245.
72. Collingwood, R.G., "Roman Objects from Stanwix", *C.W.*², Vol.31, 1931, pp.69-80; Birley, *op.cit.*, 1961, pp.206, 266 ff; Breeze & Dobson, *op.cit.*, 1976, pp.272-5, 278; Margary, *op.cit.*, 1973, Routes 7f and 868, pp.455-461; *R.I.B.*, 2025; *Notitia Dignitatum*, Occ.xl,45.
73. Hearne, T. (ed.), "The Itinerary of John Leland the antiquary . . .", 1769, vii, 56; Neilson, *op.cit.*, 1896, pp.13-25; McIntyre, W.T., "Solway Moss", *C.W.*², Vol.41, 1941, pp.1-14; _____, *op.cit.*, 1943, pp.71-81; Birley, E., "The Roman fort at Netherby", *C.W.*², Vol.53, 1953, pp.6-39; _____, *op.cit.*, 1961, pp.229-230; Collingwood Bruce/Richmond, *op.cit.*, 1965, pp.25, 215; Breeze & Dobson, *op.cit.*, 1976, pp.43, 137, 140, 247-8; *Antonine Itinerary*, 467.1; *R.I.B.*, 966-984.
74. Birley, E. & Richmond, I.A., "The Roman Fort at Carzield", *T.D.G.N.H.A.S.*, Ser.3, Vol. XXII, 1942, pp. 156-163; St.Joseph, J.K., "The Roads to Nithsdale", in Miller, S.N.,(ed.), "The Roman Occupation of South-Western Scotland", 1952, pp. 44-56; _____, "Three Nithsdale Sites, 1: Ward Law, Caerlaverock", in Miller (ed.), *ibid*, pp.117-123; Hartley, B.R., "The Roman Occupation of Scotland: the evidence of samian ware", *Britannia*, Vol.III, 1972, pp.36-42; Graham, A., & Truckell, A.E., "Old Harbours in the Solway Firth", *T.D.G.N.H.A.S.*, Ser.3, Vol.LII, 1976-77, pp. 109-142, esp. p.123ff..

75. Richmond, I.A. & St. Joseph, J.K., "The Roman Fort at Glenlochar, Kirkcudbrightshire", T.D.G.N.H.A.S., Ser.3, Vol.XXX, 1953, pp.1-16; St. Joseph, J.K., "Air Reconnaissance in Britain, 1961-64", J.R.S., Vol. LV, 1965, pp.78-9; Graham & Truckell, op.cit., 1977, p. 110ff. & 140ff.; Macfarlane, W., "Geographical Collections Relating to Scotland", edited by A. Mitchell & J.T. Clark, 1906-08, Vol.ii, p.109.
76. Tucker, in "Early Travellers in Scotland", 1655 (edited by P.H. Brown, 1891), p.180; Clarke, J., "Upper Nithsdale and Westwards in Roman times", T.D.G.N.H.A.S., Ser.3, Vol. XXX, 1953, pp.112-4; J.R.S., Vol LI, 1961, p.161; LII, 1962, p.164; Hartley, op. cit., 1972, p.11; Graham & Truckell, op.cit., 1977, p. 126ff.; cf. Henig, M., "Three Roman Intaglios from South-Western Scotland", T.D.G.N.H.A.S., Ser.3, Vol. XLVI, 1969, pp.100-109.

Abbreviations

A.Ex.	Archaeological Excavations
Arch. Aeliana	Archaeologia Aeliana
Arch. Camb.	Archaeologia Cambrensis
Arch. Cant.	Archaeologia Cantiana
A.W.	Archaeology in Wales
B.A.R.	British Archaeological Reports
B.B.C.S.	Bulletin of the Board of Celtic Studies of the University of Wales
B.M.	British Museum
C.A.	Current Archaeology
C.A.J.	Journal of the Chester Archaeological Society
C.B.A.	Council for British Archaeology
C.I.L.	Corpus Inscriptionum Latinarum
C.W. ¹⁻²	Transactions of the Cumberland and Westmorland Archaeological and Antiquarian Society, Series 1 & 2.
Gents. Mag.	The Gentleman's Magazine
J.B.A.A.	Journal of the British Archaeological Association
J.R.S.	Journal of Roman Studies
K.A.R.	Kent Archaeological Review
L.A.B.	Lancashire Archaeological Bulletin
London Archaeol.	The London Archaeologist
Num. Chron.	Numismatic Chronicle
Proc. Dorset N.H.A.S.	Proceedings of the Dorset Natural History and Antiquarian Society
Proc. Hants, F.C.	Papers & Proceedings of the Hampshire Field Club and Archaeological Society
P.S.A.L.	Proceedings of the Society of Antiquaries of London
P.S.A.S.	Proceedings of the Society of Antiquaries of Scotland
R.A.F.	Royal Air Force

- R.C.A.M. The Royal Commission on the ancient and historical monuments ... in Wales and Monmouthshire
- R.C.H.M. The Royal Commission on historical monuments (England)
- R.G.S. Royal Geographical Society
- R.I.B. R.G. Collingwood & R.P. Wright, "The Roman Inscriptions of Britain", Vol.I.
- T.D.A. Transactions of the Devon Association
- T.D.G.N.H.A.S. Transactions of the Dumfriesshire & Galloway Natural History & Antiquarian Society
- Trans. Soc. Cymmrodorion Transactions of the Cymmrodorion Society
- V.C.H. Victoria History of the Counties of England

BIBLIOGRAPHY

- Abbott, R., "Excavations at the Shire Hall Site, Gloucester, 1965",
Trans. Bristol & Gloucester Arch. Soc., Vol.LXXXVI,
1968, pp.95-101.
- Addyman, P.V., "The Archaeology of York, Second Interim Report",
London, 1976.
- Admiralty Navigation Manual - Vol.I, 1938.
- Allen, D.F., "The Belgic Dynasties of Britain and their coins",
Archaeologia, Vol.XC., 1944, pp.1-46.
- Allen, D.F., "The Origins of Coinage in Britain : a Reappraisal",
in Frere, S.S., (Ed.) "Problems of the Iron Age in
Southern Britain", London, 1961, pp.97-308.
- Ammianus Marcellinus, (Ed.), V. Gardthausen, (1874), Teubner.
- Amos, E.G.J. and Wheeler, R.E.M., "The Saxon-Shore Fortress at Dover",
Archaeological Jnl., Vol.86, 1929, pp.47-58.
- Anon., "A Chart of the River Tyne from Newcastle to the Sea",
ca. A.D.1570, British Museum, Cotton M.S., Aug.I,ii.5.
- Anon., A Chart of the Bristol Channel and River Severn from Cardiff
to Gloucester - drawn in the late 16th century,
British Museum, Cotton M.S., Aug.I,ii.17.
- Anon., "Chart of the Isle of Thanet and the Wantsum Channel", temp.
Elizabeth I, British Museum, Cotton M.S., Augt.I,i.54.
- Anon., "Sketch of the Island of Selsey in the County of Sussex, 1672".
- Antiquity, Vols.XIII, 1939; XXXV, 1961.
- Antonine Itinerary: "Itinerarium Provinciarum Antonini Augusti" in
"Itineraria Romana", Vol.I, ed. Cuntz, O., Leipzig, 1929.
- Archaeologia, Vols.II, 1773; XXIII, 1831; LXXII, 1921.
- A. A. Arnold, "The Earliest Rochester Bridge - Was it built by the Romans?"
Archaeologia Cantiana, Vol.XXXV, 1921, pp.127-143.
- Arnold, B., "The Gallo-Roman boat from the Bay of Bevaix, Lake Neuchâtel,
Switzerland" Int. Jnl. Nautical Archaeology, Vol.4, No.I,
1975, pp.123-6.
- Artis, E.T., "The Durobrivae of Antoninus", 1828.
- Ashton, W., "The Evolution of the Coast Line : Barrow to Aberystwyth &
the Isle of Man", Southport, 1920.
- Atkinson, D., & Taylor, M.V., "Flint Excavations Report", Flintshire
Hist. Soc., Vol.X., 1924, pp.5-23.

- Atkinson, D., & Taylor, M.V., "Second Flint Excavation Report", Flintshire Hist. Soc., Vol.XI, 1925, pp.5-28.
- Atkinson, D., "Caistor Excavations - 1929", Norfolk Archaeology, XXIV, 1931, pp.93-139.
- Ausonius, "Parentalia"; "Mosella", Monumenta Germaniae Historica (Auctores Antiquissimi), V.
- Bailey, J.B., "Maryport and the Tenth Iter, with further notes Roman Antiquities", C.W.², Vol.23, 1923, pp.142-153.
- Bailey, J.B., "Further Notes on Roman Roads at Maryport and on the Netherhall Collection", C.W.², Vol.26, 1926, pp.415-422.
- Baines, J.M., "Hastings and the Romans", Sussex Notes and Queries, Vol.XI, 1946-7, pp.35-38.
- Baker, F.T., "Ten Seasons' Digging, 1945-1954", Lincoln Archaeological Research Committee, Lincoln, 1955.
- Baker, F.T., "The Iron Age Salt Industry in Lincolnshire", Reports and Papers of the Lincolnshire Architectural and Archaeological Society, N.S., VIII, 1960, p.25 ff.
- Ballard, A., "The Sussex Coast Line", Sussex Archaeological Collections, Vol.LIII, 1910, pp.5-25.
- Barron, J., "A History of Ribble Navigation from Preston to the Sea", Preston, 1938.
- Barton, P., "Low Worsall : The Shipping and Trade of an Eighteenth-century Port on the River Tees", Mariner's Mirror, Vol.55, No.I, January 1969, p.57 ff.
- Batcheller, "Picture of Dover", 8th Ed., 1862.
- Bate, C.S., "Some Romano-British Remains found near Plymouth", Trans. Devon Ass., Ser.III, Vol.L, 1864 (1866), p.123 ff.
- Bate, C.S., "A British Cemetery near Plymouth", Archaeologia, Vol.40, 1871, p.500 ff.
- Bede, "Historia Ecclesiastica", Ed. Plummer, 1896.
- Bellhouse, R.L., "Roman Sites on the Cumberland Coast, 1954", C.W.², Vol.54, 1954, pp.28-55.
- Bellhouse, R.L., "The Roman Fort at Burrow Walls, near Workington", C.W.², Vol.55, 1955, pp.30-45.
- Bellhouse, R.L. & Moffat, I., "Further Roman finds in the Beckfoot Cemetery Site", C.W.², Vol.58, 1958, pp.57-62.
- Bellhouse, R.L., "Moricambe in Roman times and Roman sites on the Cumberland Coast", C.W.², Vol.62, 1962, pp.56-72.

- Bellhouse, R.L., "The Problem of Burrow Walls", C.W.², Vol.66, 1966, pp.42-45.
- Bellhouse, R.L., "Roman Sites on the Cumberland Coast, 1966-7", C.W.², Vol.69, 1969, pp.54-101.
- Bellhouse, R.L., "Roman Sites on the Cumberland Coast, 1968-9", C.W.², Vol.70, 1970, pp.9-47.
- Bellhouse, R.L. & Richardson, G.G.S., "The Roman Site at Kirkbride, Cumberland", C.W.², Vol.75, 1975, pp.58-90.
- Bellows, J., Proceedings of the Cotteswold Naturalists' Field Club, VI, 1877, p.179.
- Benson, G., "York", I, 1911.
- Bernard de Montfauçon, "L' Antiquité expliquée et représentée en figures", tom. suppl., IV, 1757.
- Biddle, M., Hudson, D. & Heighway, C., "The Future of London's Past", Rescue Publication, No.4, Worcester, 1973.
- Bidwell, P.T. & Boon, G.C., "An antefix type of the Second Augustan Legion from Exeter", Britannia, VII, 1976, pp.278-280.
- Birley, E., "Three Notes on Roman Cumberland : Bewcastle, Bowness-on-Solway, Petrianae", C.W.², Vol.31, 1931, pp.137-147.
- Birley, E., "Three New Inscriptions : II. "A Record of the Classis Britannica?" Archaeologia Aeliana. Ser.4, Vol.10, 1933, pp.104-8.
- Birley, E., "The Roman Fort at Moresby", C.W.², Vol.48, 1948, pp.42-72.
- Birley, E., "The Roman Fort at Netherby", C.W.², Vol.53, 1953, pp.6-39.
- Birley, E., in Archaeological Jnl., Vol.CXI, 1954 (1955), p.209 ff.
- Birley, E., "The Roman Fort at Watercrock", C.W.², Vol.57, 1957, pp.13-17.
- Birley, E., "The Roman Fort at Ravenglass", C.W.², Vol.58, 1958, pp.14-30.
- Birley, E., "Research on Hadrian's Wall", Kendal, 1961.
- Birley, E., & Bellhouse, R.L., "The Roman Site at Kirkbridge, Cumberland", C.W.², Vol.63, 1963, pp.126-139.
- Blackman, D.J., (Ed.), "Marine Archaeology", Proc. of the 23rd Symposium of the Colston Research Society - 1971, London, 1973; _____, "Evidence of Sea Level Change in Ancient Harbours and Coastal Installations", *ibid.*, pp.115-140.
- Blair, R., "Roman leaden seals", Archaeologia Aeliana, N.S. (2), Vol.8, 1880, pp.57-9.

- Bonnard, L., *La Navigation Interieur de la Gaule a l' époque romaine* Paris 1913.
- Boon, G.C., "The Roman Site at Sea Mills, 1945-6", *Trans. Bristol and Gloucester Arch. Soc.*, Vol.LXVI, 1945, pp.258-295.
- Boon, G.C., "Remarks on Roman Usk", *The Monmouthshire Antiquary*, Vol.I, 1961-4, pp.28-33.
- Boon, G.C., Report in *J.R.S.* 54, 1964, pp.152-3.
- Boon, G.C., "Isca : The Roman Legionary Fortress at Caerleon, Mon.", Cardiff, 1972.
- Boon, G.C., "Segontium, Fifty Years On : I" *Arch. Camb.*, Vol.CXXIV, 1975 (1976), pp.52-67.
- Boon, G.C., "A Greco-Roman Anchor-Stock from North Wales", *Antiquaries Jnl.*, Vol.LVII, pt.i, 1977, pp.10-30.
- Borough, William, "A Chart of the South East of England from London to Shoreham", A.D.1596. *British Museum, Cotton M.S.*, Aug.I,i.17.
- Boys, W., "Collection for an History of Sandwich", 1792, Canterbury, 1892.
- Branigan, K., "Vespasian and the South-West", *Proc. Dorset N.H.A.S.*, Vol.95, 1973 (1974), pp.50-56.
- Branigan, K. & Fowler, P.J., (Ed.). "The Roman West Country", Newton Abbot, 1976.
- Breeze, D.J., & Dobson, B., "The Development of the Mural Frontier in Britain from Hadrian to Caracalla", *P.S.A.S.*, Vol.102, 1969-70, pp.109-121.
- Breeze, D.J., & Dobson, B., "Hadrian's Wall : Some Problems", *Britannia* Vol.III, 1972, pp.182-208.
- Breeze, D.J., & Dobson, B., "Hadrian's Wall", London, 1976.
- Britannia*, Vol.I, 1970.
- British Association, *Dover Handbook*, 1899, p.25.
- British Museum, "Guide to Early Iron Age Antiquities", Ed.II, London, 1925.
- British Museum, "Guide to the Antiquities of Roman Britain", London, 1958.
- Brodribb, G., "Stamped Tiles of the 'Classis Britannica'", *Sussex Archaeological Collections*, Vol.107, 1969, pp.102-125.
- Brown, F.E., "Cosa, I : History and Topography", *Memoirs of the American Academy in Rome*, 20, 1951, p.95-8.
- Brown, P.D.C., "The Church at Richborough", *Britannia* Vol.II, 1971, pp.225-31.

- Bruce, J. Collingwood, "Excavations at South Shields", *Archaeologia*, Vol.46, 1880, pp.163-170.
- Bruce, J. Collingwood, "Recent Discoveries on the Lawe", *Arch. Aeliana*, N.S. (2), Vol.10, 1885, p.225 ff.
- Bruce, J. Collingwood, "Handbook to the Roman Wall", Edn.XII, revised by I.A. Richmond, Newcastle-upon-Tyne, 1965 (1966).
- Bulmer, W., "The provisioning of Roman forts - a re-appraisal of ration storage", *Arch. Aeliana*, Ser.4, Vol.XLVII, 1969, pp.7-14.
- Bu'Lock, J.D., Vol.III of a History of Cheshire, "Pre-Conquest Cheshire, 383-1066", Chester, 1972.
- Lord Burleigh, "Chart of the River Humber & Coast to Scarborough", ca. 1579, Royal MS. 18D III, (62).
- Bushe-Fox, J.P., First Report on the Excavation of the Roman Fort at Richborough, Kent. Reports of the Research Committee of the Society of Antiquaries of London, No.VI, Oxford, 1926.
- Bushe-Fox, J.P., "Second Report on the Excavation of the Roman Fort at Richborough, Kent", Reports of the Research Committee of the Society of Antiquaries of London, No.VII, Oxford, 1928.
- Bushe-Fox, J.P., (1932a), Third Report on the Excavations of the Roman Fort at Richborough, Kent. Reports of the Research Committee of the Society of Antiquaries of London, No.X, Oxford, 1932.
- Bushe-Fox, J.P., (1932b), "Some Notes on Roman Coast Defences", *J.R.S.*, Vol.XXII, 1932, pp.69-71.
- Bushe-Fox, J.P., Fourth Report on the Excavations of the Roman Fort at Richborough, Kent. Reports of the Research Committee of the Society of Antiquaries of London, No.XVI, Oxford, 1949.
- Butler, R.M., (Ed.), "Soldier & Civilian in Roman Yorkshire", 1971.
- Caesar, "De Bello Gallico", Ed., A. Klotz, 1952, (Teubner); Trans. J.F. Mitchell, Penguin Classics, 1967.
- Caine, C., "The Port of Ravensglass", *C.W.*², Vol.22, 1922, pp.101-7.
- Camden, W., "Britannia", Ed. VI, 1607; trans. by Gough, R., Ed.II, 1806.
- Caplan, C., "To Neptune and to Oceanus", *Arch. Aeliana*, Ser.V, Vol.IV, 1976, pp.171-6.
- Carne, Transactions of the Royal Geological Society of Cornwall, III, 1828, p.136.
- Carrington, P., "The Planning and Date of the Roman Legionary Fortress at Chester", *Jnl. Chester Archaeol. Soc.*, Vol.60, 1977, pp.35-42.

- Carson, R.A.G., "The Roman Coin Finds at Choseley", *Norfolk Archaeology* 30, (1949-52), pp.353-7.
- Carus Wilson, E.M., "Mediaeval Merchant Venturers", Ed.II, London, 1967.
- Casey, P.J., "Excavations outside the North-East gate of Segontium, 1971", *Arch. Camb.*, Vol.CXXIII, 1974 (1975), pp.54-77.
- Cassius Dio Cocceianus, *Roman History*, ed. with parallel translation, E. Cary, Loeb Library, 1914-1927.
- Casson, L., "Harbour and River Boats of Ancient Rome", *J.R.S.*, LV, 1965, pp.31-39.
- Casson, L., "Ships and Seamanship in the Ancient World", Princeton, New Jersey, 1971.
- Chapman, H., & Johnson, T., "Excavations at Aldgate and Bush Lane House in the City of London, 1972", *Trans. London and Middlesex Arch. Soc.*, Vol.24, 1973, pp.1-73.
- Charlesworth, D., "Carlisle Excavations", *C.W.*², Vol.74, 1974, pp.211-2.
- Cherry, J., "Flint-chipping sites at Drigg", *C.W.*², Vol.65, 1965, pp.66-87.
- Cherry, J., "Eskmeals sand-dunes occupation sites, phase II - Iron Manufacture", *C.W.*², Vol.66, 1966, p.46.
- Cherry, J. & Cherry, P.J., "An Iron Bloomery at Drigg", *C.W.*², Vol.68, 1968, pp.27-30.
- Christison, D., "Account of the Excavation of the Roman Station of Camelon, near Falkirk, Stirlingshire", *P.S.A.S.*, Ser.3, Vol.XI, 1901, pp.329-417.
- Clark, J.G.D., "Excavations on the Cambridgeshire Car Dyke, 1947", *Antiquaries' Jnl.*, Vol.29, 1949, pp.145-63.
- Clarke, J., "The Architectural History of Gloucester", Gloucester: 1850.
- Clarke, J., "The Diggings at Gloucester", *Gentlemen's Magazine*, N.S., 6-7, 41, 1854, 486-7.
- Clarke, J., "Upper Nithsdale & Westwards in Roman Times", *T.D.G.N.H.A.S.*, Ser.3, Vol.XXX, 1953, pp.111-120.
- Clarke, R.R., "East Anglia", London, 1960.
- Clayton, P.A., in *Arch. Cant.*, Vol.LXXII, 1958, p.208.
- Cleere, H.F., "Roman Domestic Ironwork as illustrated by the Brading, Isle of Wight, villa"; *Bulletin of the Institute of Archaeology*, London University, I, 1958, pp.55-74.
- Cleere, H., "The Roman Iron Industry of the Weald and its Connexions with the Classis Britannica". *Archaeological Jnl.*, Vol.131, 1975, pp.171-199.

- Cleere, H., "The Classis Britannica", in Johnston, D.E. (ed.),
"The Saxon Shore", C.B.A. Research Report No.18,
1977, pp.16-19.
- Clowes, T., Roman Antiquities found at Caister, Norfolk.
Gentlemen's Magazine, N.S., 1837, 518-21.
- Codrington, T., "Roman Roads in Britain", 1903, revised 1918.
- de Coetlogon Williams, P.F., "Roman Harbours". International Jnl.
Nautical Archaeology & Underwater Exploration,
Vol.V, No.I, 1976, pp.73-79.
- Colchester Museum Reports, 1913, 1918, 1922, 1933, 1944, 1948, 1950, 1954.
- Collingwood, R.G., "Explorations at the Roman Fort of Burgh-by-Sands",
C.W.², Vol.23, 1923, pp.1-12.
- Collingwood, R.G., in Antiquaries Jnl., Vol.4, 1924, pp.154-5.
- Collingwood, R.G., "Roman Ravenglass", C.W.², Vol.28, 1928, pp.353-366.
- Collingwood, R.G., "Roman Signal Stations on the Cumberland Coast",
C.W.², Vol.29, 1929, pp.138-165.
- Collingwood, R.G., "Roman Objects from Stanwix", C.W.², Vol.31, 1931,
pp.69-80.
- Collingwood, R.G., (1936a), "The Roman Fort and Settlement at Maryport",
C.W.², Vol.36, 1936, pp.85-99.
- Collingwood, R.G., (1936b), "The Roman Fort at Beckfoot", C.W.²,
Vol.36, 1936, pp.76-84.
- Collingwood, R.G., & Myres, J.N.L., "Roman Britain and the English
Settlements", Ed.II, London, 1937.
- Collingwood, R.G., & Wright, R.P., "The Roman Inscriptions of Britain",
Vol.I, Inscriptions on Stone, (R.I.B.), London, 1965.
- Collingwood, R.G., & Richmond, I.A., "The Archaeology of Roman Britain",
revised edition, London, 1969.
- Collingwood, W.G., "An Inventory of the Ancient Monuments of Cumberland",
C.W.², Vol.23, 1923, pp.206-276.
- Collins, Greenville, "A Chart of the approaches to Harwich - Woodbridge
and Handsfordwater, with the sands from Nazeland to
Horsely Bay", A.D.1686, Admiralty Hydrographic
Department, B882.
- Collins, Greenville, "Chart of the Rivers Dee and Mersey", A.D.1681-9,
Admiralty Hydrographic Department, B.892.
- Colyer, C., "Lincoln", C.A.No.26, Vol.III, No.3, May 1971, pp.67-71.
- Colyer, C., "Lincoln: the archaeology of an historic city", Lincoln, 1975.

- Connor, A.B., "Highways and Byways in Hampshire", 1908.
- Corder, P., "The defences of the Roman fort at Malton", 1930.
- Corder, P., "Excavations at the Roman Fort at Brough-on-Humber", I, 1934.
- Corder, P., "Excavations at the Roman Fort at Brough, East Yorkshire", II, 1935.
- Corder, P., & Richmond, I.A., "Petuaria", J.B.A.A., 53, VII, 1942, p.5 ff.
- Corder, P. & Romans, T., "Excavations at the Roman Town at Brough, East Yorkshire", III, 1936; *ibid*, IV, 1937; *ibid*, V, 1938.
- Corder, P., "Miscellaneous small objects from the Roman fort at Malton", *Antiquaries Jnl.*, Vol.48, 1948, pp.173-177.
- Cornwall, I.W., "Bones for the Archaeologist", 1956.
- Cotton, M.A. & Gathercole, P.W., "Excavations at Clausentum, Southampton, 1951-1954", (Min. of Works, Archaeological Reports No.2), London, 1958.
- Crouch, K., "The Archaeology of Staines and the Excavations at Elmsleigh House", *Trans. London and Middlesex Arch. Soc.*, Vol.27, 1976, pp.71-134.
- Crummy, P., "Colchester : recent excavation and research", Colchester Excavation Committee, 1974.
- Crummy, P., "Not only a matter of time - a survey outlining the archaeology of the Colchester district", Colchester, 1975.
- Crummy, P., "Colchester : the Roman Fortress and the Development of the Colonia", *Britannia*, Vol.VIII, 1977, pp.65-105.
- Cunliffe, B.W., "Excavations at Fishbourne, 1961", *Antiquaries Jnl.*, Vol.XLII, pt.1, 1962, pp.15-23.
- Cunliffe, B.W., "Excavations at Fishbourne, 1962", *Antiquaries Jnl.*, Vol.XLIII, pt.I, 1963, pp.1-14.
- Cunliffe, B.W., "Excavations at Fishbourne, 1963", *Antiquaries Jnl.*, Vol.XLIV, pt.I, 1964, pp.1-8.
- Cunliffe, B.W., "Excavations at Fishbourne, 1964", *Antiquaries Jnl.*, Vol.XLV, pt.I, 1965, pp.1-11.
- Cunliffe, B.W., "Excavations at Fishbourne, 1965", *Antiquaries Jnl.*, Vol.XLVI, pt.I, 1966, pp.25-38.
- Cunliffe, B., "Excavations at Fishbourne, 1967", Seventh and Final Preliminary Report, *Antiquaries Jnl.*, Vol.XLVIII, 1968, pp.32-40.

- Cunliffe, B.W., "Fishbourne, the Roman Palace and its History", London, 1968.
- Cunliffe, B.W., (Ed.), "Fifth Report on the Excavations of the Roman Fort at Richborough, Kent", Reports of the Research Committee of the Society of Antiquaries of London, No.XXIII, Oxford, 1968.
- Cunliffe, B., "Excavations at Fishbourne 1961-1969", Vol.I : The Site. Reports of the Research Committee of the Society of Antiquaries of London, No.XXVI, Leeds, 1971.
- Cunliffe, B., "Excavations at Fishbourne 1961-1969", Vol.II : The Finds, Reports of the Research Committee of the Society of Antiquaries of London, No.XXVII, Leeds, 1971.
- Cunliffe, B. (Ed.), "Excavations at Portchester Castle, Vol.I : Roman", Reports of the Research Committee of the Society of Antiquaries of London, No.XXXII, London, 1975.
- Cunliffe, B.W., "Iron Age Communities in Britain", 1975.
- Cunliffe, B., 1977a, "The Saxon Shore - some problems and misconceptions", in Johnston, D.E. (ed.), "The Saxon Shore", C.B.A., Research Report No.18, 1977, pp.1-6.
- Cunliffe, B., 1977b, "Lympe - a preparatory comment", in Johnston, D.E. (ed.), *ibid*, pp.29-30.
- Cunliffe, B., 1978, "Hengistbury Head", London, 1978.
- Dale, W., in P.S.A.L., Vol.31, 1918-19, p.36 ff.
- Dallas, M.F., & Yorke, R.A., Underwater Surveys of North Africa, Jugoslavia & Italy, Underwater Association Report 1968, pp.21-34.
- Daniels, C.M., "Excavations at Bowness on Solway, 1955", C.W.², Vol.60, 1960, pp.13-19.
- Dannell, G.B., "The Potter Indixivixvs", in Detsicas, A. (Ed.), "Current Research in Romano-British Coarse Pottery", 1973, pp.139-142.
- Davies, J.S., "History of Southampton", 1883.
- Davies, M., "Wales in Maps", 1951.
- Davies, R.W., "Cohors I Hispanorum & the Garrisons of Maryport", C.W.², Vol.77, 1977, pp.7-16.
- Dawson, G.J., "Roads, bridges and origin of Roman London", Surrey Archaeological Collections, Vol.71, 1977, pp.43-55.
- de Brisay, K., Colchester Arch. Group, Bulletin, XV, 1972, p.23 ff; XVI, 1973, p.19 ff.

- Desmaretz, J.P., "Chart of Harwich Harbour", A.D.1732, Admiralty Hydrographic Dept., L3314, 5c.
- Dessiou, J., "A Chart of Burry Roads and the Loughor Estuary", published A.D.1824, British Museum Maps 6345 (1).
- Detsicas, A. (Ed.), "Current Research in Romano-British Coarse Pottery", C.B.A. Research Report, No.10, 1973.
- Dickinson, W., "Burrow Walls, near Workington", C.W.², Vol.5, 1879-1880 (1881), pp.22-4.
- Diodorus Siculus, History, ed. with parallel translation, C.H. Oldfather, Loeb Library, 1933-54.
- "Discovery & Excavation in Scotland", C.B.A., 1960-.
- Dixon, F., "Geology of Sussex", Ed.I, 1850; Ed.II, 1878.
- Dore, J.N., "Excavations at South Shields, 1975", Arch. Aeliana, Ser.V, Vol.IV, 1976, pp.185-6.
- Dore, J. and Greene, K. (ed.), "Roman Pottery Studies in Britain and Beyond", B.A.R. Supplementary Series No.30, Oxford, 1977.
- Dowker, G., "Excavations at Richborough in 1887", Arch. Cant., Vol.XVIII, 1889, pp.6-14.
- Drewett, P.L., "The excavation of two round barrows, and associated fieldwork on Ashley Down, Isle of Wight, 1969", Proc. Hants. Field Club & Arch. Soc., Vol.27, 1970 (1972), pp.33-56.
- Drury, P.J., "Chelmsford", C.A., No.41, Vol.IV, No.6, Nov.1973, pp.170-3.
- Drury, P.J., "Chelmsford", in Rodwell, W.J. and Rowley, R.T. (Ed.) "The 'Small Towns' of Roman Britain", B.A.R., No.15, Oxford, 1975, pp.159-173.
- Duckham, B.F., "The Yorkshire Ouse", 1967.
- Dudley, H., "Early Days in North-West Lincolnshire", 1949.
- Duff, H., A Note in "Proceedings", C.W.², Vol.21, 1921, pp.270-1.
- Dunnett, B.R.K., "Excavations on North Hill, Colchester - 1965", Archaeological Jnl. CXXIII, 1966 (1967), pp.27-61.
- Dunnett, B.R.K., Trans. Essex Archaeological Society, Ser.3, Vol.2, 1968, pp.137-142.
- Dunnett, B.R.K., "Colchester", C.A., No.26, Vol.III, No.3, pp.62-6, May, 1971.
- Dunnett, B.R.K., "The Excavation of the Roman Theatre at Gosbecks", Britannia, Vol.II, 1971, pp.27-47.

- Dunnett, B.R.K., "Excavations in Colchester, 1964-1968", Trans. Essex Archaeological Society, Ser.3, Vol.3, pt.1, 1971, pp.1-130.
- Dunnett, R., "The Trinovantes", London, 1975.
- Dunning, G.C., "Two Fires of Roman London", Antiquaries Jnl., Vol.XXV, 1945, pp.45-77.
- Dymond, D.P., "Roman Bridges on Dere Street, County Durham", Archaeological Jnl., Vol.CXVIII, 1963, pp.136-164.
- Edwards, B.J.N., "Ribchester", London, 1972.
- Edwards, D.A. & Green, C.J.S., "The Saxon Shore fort and settlement at Brancaster, Norfolk", in Johnston, D.E. (ed), "The Saxon Shore", C.B.A. Research Report No.18, 1977, pp.21-29.
- Edwards, Talbot, (Attrib.), "A Plan of Portsmouth", dated A.D.1716. Bodleian Library, Gough Maps, Hampshire 12.
- Ekwall, E., "Oxford Dictionary of Place-Names", Ed.IV, Oxford, 1960.
- Ellison, J.E., Norfolk Archaeology, Vol.34, 1966, p.60.
- Elsted, W.P. and Beldam, J., Archaeological Jnl., Vol.13, 1836, pp.101-2.
- Ely, Talfourd, "A Roman Lighthouse", Archaeological Jnl., Vol.LX, 1903, pp.247-255.
- Eutropius, Breviarum, ed. F. Rühl, 1887 (Teubner).
- Evans, J., "Archaeological Horizons in the North Kent Marshes", Arch. Cant. LXVI, 1953, p.122 ff.
- Eyes, John, "Chart of Liverpool Bay", A.D.1764, British Museum, Maps, 7d 2.
- Fair, M.C., "A Sandhill Site at Eskmeals", C.W.², Vol.36, 1936, pp.20-23.
- Farrar, R.A.H., "The Techniques and Sources of Romano-British Black-Burnished Ware", in Detsicas, A., "Current Research in Romano-British Coarse Pottery", 1973, pp.67-103.
- Ferguson, R.S., "An Attempt at a Survey of Roman Cumberland & Westmorland", C.W., Vol.3, 1876-7 (1878), pp.64-94.
- Ferguson, R.S., "On the Remains of a Stockade recently found in Carlisle", C.W., Vol.3, 1878, pp.134-140.
- Ferguson, R.S., & Hetherington, C., "On the Remains of a Roman Stockade recently found in Carlisle, continued", C.W.¹, Vol.4, 1880, pp.91-5.
- Ferguson, R.S., "On a Massive Timber Platform of early date uncovered at Carlisle ...", C.W., Vol.12, 1893, pp.344-364.

- Ferguson, R.S., "The Royal Charters of Carlisle", Cumberland & Westmorland Archaeological & Antiquarian Society, Extra Series, Vol.X, 1894, Carlisle.
- Fishwick, D., "Templum Divo Claudio Constitutum", Britannia, Vol.III, 1972, pp.164-181.
- Fishwick, H., "The History of the Parish of Kirkham in the County of Lancaster", Manchester, 1874.
- Flemming, N.C., Czartoryska, N.M.G., and Hunter, P.M., "Archaeological Evidence for Eustatic and Tectonic Components of Relative Sea-Level Change in the South Aegean", in Blackman, D.J. (Ed.), "Marine Archaeology", 1973, pp.1-66.
- Fletcher, J.M., Tapper, M.C. and Walker, F.S., "Dendrochronology - a reference curve for slow grown oaks - A.D.1230 to 1546", Archaeometry, Vol.16, pt.1, Feb.1974, pp.31-40.
- Foster, I. L1., & Daniel, G. (Ed.), "Prehistoric & Early Wales", London, 1965.
- Fox, A., "Roman Exeter", University College of South-West England, History of Exeter Research Group, Monograph VIII, Manchester, 1952.
- Fox, A., "South-West England", London, 1964.
- Fox, A., "Roman Exeter, Origins and Early Development", in Wachter, J.S., (Ed.), "The Civitas Capitals of Roman Britain", 1966, pp.46-51.(=1966a)
- Fox, A., & Ravenhill, W.L.D., "Early Outposts on the North Devon Coast, Old Burrow and Martinhoe", Proc. Devon Arch. Expl. Soc., Vol.24, 1963-7, pp.3-39.
- Fox, A., "Excavations at the South Gate, Exeter, 1964-5", Proc. Devon Arch. Soc., Vol.26, 1968, pp.1-20.
- Fox, A. & Ravenhill, W.L.D., Interim Reports on the Excavation of the Roman Fort at Tregear, Nanstallon, Cornish Archaeology, Vol.5, 1966, pp.28-30 (=1966b); Vol.VI, 1967, pp.32-4; Vol.VII, 1968, pp.40-2.
- Fox, G.E., "The Roman Coast Fortresses of Kent", Archaeological Jnl., Vol.LIIII, (Ser.2., Vol.III) 1896, p.366.
- Francis, A.G., Essex Naturalist, XXIII, 1932, p.151 ff.
- Francis, E.H. et al., "The Geology of the Stirling District", Memoirs of the Geological Survey of Great Britain, Edinburgh, 1970.
- Frere, S.S., (Ed.), "Problems of the Iron Age in Southern Britain", London, 1961.
- Frere, S.S., "The End of Towns in Roman Britain", in Wachter, J.S. (Ed.), "The Civitas Capitals of Roman Britain", 1966, pp.87-100.

- Frere, S.S., "Britannia", London, 1967.
- Frere, S.S., "The Forum and Baths at Caistor-by-Norwich", *Britannia* Vol.II, 1971, pp.1-26.
- Frere, S.S., & St. Joseph, J.K., "The Roman Fortress at Longthorpe", *Britannia*, Vol.V, 1974, pp.1-129.
- Frost, H., "Under the Mediterranean", London, 1963.
- Frost, H., "Tyre", *International Jnl. Nautical Archaeology & Underwater Exploration*, Vol.2 : 1, 1973, p.75 ff.
- Fryer, J., "The Harbour Installations of Roman Britain", in Blackman, D.J., (Ed.), "Marine Archaeology", *Colston Papers*, Vol.23, 1973, pp.261-275.
- Fulford, M., "A Fourth-Century Colour-Coated Fabric and its Types in South-East England", *Sussex Archaeological Collections*, Vol.III, 1973, pp.41-44.
- Fulford, M., "The Distribution and Dating of the New Forest Pottery", *Britannia*, Vol.IV, 1973, pp.160-178.
- Fulford, M. and Bird, J., "Imported pottery from Germany in late Roman Britain", *Britannia*, Vol.VI, 1975, pp.171-181.
- Fulford, M., "Pottery and Britain's Foreign Trade in the Later Roman Period", in Peacock, D.P.S. (ed.), "Pottery and Early Commerce", 1977, pp.35-84.
- Fullbrook-Leggatt, L.E.W.O., "Glevum", *Trans. Bristol & Gloucestershire Arch. Soc.*, Vol.LV, 1933, pp.55-104.
- Fullbrook-Leggatt, L.E.W.O., "Anglo-Saxon & Mediaeval Gloucester", Gloucester, 1952.
- Fullbrook-Leggatt, L.E.W.O., "Glevum", *Trans. Bristol & Gloucestershire Arch. Soc.*, Vol.LXXXVI, 1967 (1968), pp.5-15.
- Fullbrook-Leggatt, L.E.W.O., "Roman Gloucester (Glevum)", Stroud, 1968.
- Fuller, T., "The History of the 'Worthies' of England", ed. by J. Fuller, 1662.
- Gardner, W., "The Roman Fort at Caerhŷn, County Carnarvon", *Arch. Camb.*, Vol.80, 1925, pp.307-341.
- Gillam, J., "Sources of Pottery found on Northern Military Sites", in Detsicas, A., "Current Research in Romano-British Coarse Pottery", 1973, pp.53-62.
- Goodburn, R., "Lead Sealing from Old Winteringham, Lincolnshire", *Britannia*, Vol.V, 1974, pp.377-9.
- Goodchild, R.F., "Roman Exeter", 1937.

- Gowland, W., "The Early Metallurgy of Copper, Tin and Iron in Europe", *Archaeologia*, Vol.LV, 1899, pp.267-322.
- Gowland, W., "The Early Metallurgy of Lead & Silver: pt.I", *Archaeologia* Vol.LVII, 1901, pp.359-422.
- Graham, A., "Archaeological Notes on some Harbours in Eastern Scotland", *P.S.A.S.*, Vol.101, 1968-9, pp.200-285.
- Graham, A., & Truckell, A.E., "Old Harbours in the Solway Firth", *T.D.G.N.H.A.S.*, Ser.3, Vol.52, 1976-7, pp.109-142.
- Green, C., "Glevum and the Second Legion", *J.R.S.*, XXXII, 1942, pp.39-52.
- Green, C., "East Anglian Coastline Levels since Roman Times", *Antiquity* 35, 1951, p.21 ff.
- Green, C., Correspondence in : "The Times", 2-February-1952.
- Green, C., in *J.R.S.*, XLII, 1952, p.96.
- Green, C., Correspondence in : "The Times", 23-August-1954.
- Green, C. & Hutchinson, J.N., "Archaeological Evidence" in: Lambert, J.M., et al., "The Making of the Broads", *R.G.S. Research Series*, No.3, Part III, 1960, pp.113-46.
- Green, E., "The Roman Channel Fleet", *J.B.A.A.*, N.S., 12, 1906, pp.105-118.
- Grenier, A., "Manuel d'archéologie Gallo-Romaine", II, Paris, 1934.
- Griffiths, W.E., "Excavations at Caer Gybi, Holyhead, 1952", *Arch. Camb.*, Vol.103, 1954, pp.113-6.
- Grimes, W.F., "The Excavation of Roman and Mediaeval London", London : 1968.
- Guildhall Museum, "Archaeological Finds in the City of London, 1961", *Trans. London and Middlesex Arch. Soc.*, Vol.21, Pt.1, 1963, pp.70-77.
- Guildhall Museum, "Archaeological Finds in the City of London, 1966-8", *Trans. London & Middlesex Arch. Soc.*, Vol.22, Pt.III, 1969, pp.1-26.
- Gulliver, F.P., "Dungeness Foreland", *Geographical Jnl.*, Vol.IX, 1887, p.536 ff.
- Hafemann, D., "Die Niveauveränderungen an den Küsten Kretas seit dem Altertum", *AbhdlAkad Mainz, math.-nat.K1.* 1965, No.12, 609-688.
- Hague, D.B., "Lighthouses", in Blackman, D.J., "Marine Archaeology", 1973, pp.293-316.
- Hague, D.B., "Lighthouses ; their architecture, history and archaeology", 1975.

- Hall, R.A., & Kenward, H.K., "Biological evidence for the usage of Roman riverside warehouses at York", *Britannia*, Vol.VII, 1976, pp.274-6.
- Hall, T.Y., "Map of the Great Northern Coalfield", 1854.
- Hallam, S.J., "The Romano-British Salt Industry in South Lincolnshire", *Reports and Papers of the Lincolnshire Architectural & Archaeological Society*, N.S., VIII, 1960, p.35 ff.
- Hallam, S.J., "Settlement round the Wash", in Phillips, C.W. (Ed.), "The Fenland in Roman Times", *R.G.S. Research Series*, No.5, 1970, pp.22-113.
- Halley, Edmond, "Survey of the English Channel", 1700, Navigation Room, National Maritime Museum, Greenwich.
- Hancock, N.J., (Ed.) "Report of the expedition to Plemmyrion, Sicily (under-Water)". *Bull Oxford University Exploration Club*, Vol.17, No.3, 1969.
- Harbottle, B., "Excavation & Survey in Newcastle-upon-Tyne : 1972-3", *Arch. Aeliana*, Ser.5, Vol.II, 1974, pp.57-89.
- Hardman and Stebbing, "Stonar and the Wantsum Channel", *Arch. Cant.* LIIIV, 1941, p.44.
- Hardwick, C., "On the Roman Remains discovered at Walton-le-Dale, near Preston", *Trans. Historic Soc. of Lancashire & Cheshire*, Vol.VIII, 1856, pp.127-140.
- Harrison, A.C., in *Archaeologia Cantiana*, Vol.LXXXIII, 1968 (1969), p.259.
- Harrison, A.C., Flight, C., & Tester, P.J., "The Roman and Mediaeval Defences of Rochester, in the light of recent excavations", *Arch. Cant.*, Vol.LXXXIII, 1968 (1969), pp.55-104.
- Harrison, A.C., "Excavations in Rochester", *Arch. Cant.*, LXXXV, 1970 (1971), pp.95-112.
- Harrison, A.C., "Rochester - East Gate - 1969", *Arch. Cant.*, LXXXVII, 1972 (1973), pp.121-157.
- Harrison, J.W.H., "A Survey of the Lower Tees Marshes" *Transactions of the Natural History Society of Northumberland, Durham and Newcastle-on-Tyne*, Vol.5, 1918-21, p.89 ff.
- Harrison, M., "Trig Lane", *C.A.*, No.49, Vol.V, No.2, Sept.1975, pp.57-9.
- Harrison, W., "Descriptions of Britaine", Ed.II, 1586.
- Harrison, W., "An Archaeological Survey of Lancashire", London, 1896.

- Harrod, H., "Notice of Excavations made at Burgh Castle, Suffolk, in the years 1850 and 1855", *Norfolk Archaeology*, Vol.V, 1859, p.156 ff.
- Hartley, B.R., & Kaine, K.F., "Heronbridge Excavations - Roman Dock & Buildings", *C.A.J., N.S.*, Vol.XLI, 1954, pp.15-37.
- Hartley, B.R., "The Dating of the Cambridgeshire Car Dyke", in Phillips, C.W., (Ed.), "The Fenland in Roman Times", 1970, p.126 ff.
- Hartley, B.R., "The Roman Occupations of Scotland : The Evidence of Samian Ware", *Britannia*, Vol.III, 1972, pp.1-55.
- Hartley, K.F., & Webster, P.V., "The Romano-British Pottery Kilns near Wilderspool", *Archaeological Jnl.*, Vol.130, 1973 (1974), pp.77-103.
- Harvey, D., "The Double Fort at Merthen, Constantine", *Cornish Archaeology*, Vol.9, 1970, pp.103-6.
- Hassall, M.W.C., "Roman Soldiers in Roman London", in Strong, D.E., (Ed.), "Archaeological Theory and Practice", 1973, pp.231-7.
- Hassall, M. & Rhodes, J., "Excavations at the New Market Hall, Gloucester, 1967", *Trans. Bristol & Gloucester Arch. Soc.*, Vol.XCIII, 1975, pp.15-100.
- Hassall, M.W.C., "The historical background and military units of the Saxon Shore", in Johnston, D.E., "The Saxon Shore", *C.B.A. Research Report No.18*, 1977, pp.7-10.
- Hasted, "History of Kent", III, 1790.
- Haverfield, F., in the Report of the Cumberland Excavation Committee for 1899, *C.W.*¹, Vol.16, 1900, pp.80-99.
- Haverfield, F., in *P.S.A.L.*, Vol.XIX, 1902, pp.56-9.
- Haverfield, F., "The Roman Station at Burgh-by-Sands", *C.W.*², Vol.4, 1904, pp.239-249.
- Haverfield, F., & MacDonald, G., "Greek Coins at Exeter", *Num.Chron.*, S. 4, Vol.VII, 1907, pp.145-155.
- Haverfield, F., "Military Aspects of Roman Wales", *Trans. Soc. Cymmrodorion*, 1908-9 (1910), pp.53-188.
- Hawkes, C.F.C., and Hull, M.R., "Camulodunum". Reports of the Research Committee of the Society of Antiquaries of London, No.XIV, Oxford, 1947.
- Hawkes, S.C., "The Physical Geography of Richborough", in Cunliffe, B.W., (Ed.), "Fifth Report on the Excavations of the Roman Fort at Richborough, Kent", 1968, pp.224-230.
- Hawkins, A.B., "Sea Level Changes around South-West England", in Blackman, D.J., (Ed.), "Marine Archaeology", 1973, pp.67-88.

- Hebditch, M., "Excavations on the South side of the Temple precinct at Colchester", *Trans. Essex Arch. Soc.*, Ser.3, Vol.III, pt.1, 1971, p.115 ff.
- Hemingway, J., "History of Cheshire", Vol.I, 1831.
- Hemp, W.J., "The Site of Varae", *Antiquaries Jnl.*, Vol.3, 1923, pp.69-70.
- Henderson, C., "A History of the Parish of Constantine", 1937, Truro.
- Henig, M., "Three Roman Intaglios from South-Western Scotland", *T.D.G.N.H.A.S.*, Ser.3, Vol.XLVI, 1969, pp.100-109.
- Herodian, *ab excessu divi Marci libri VIII*, ed. K. Stavenhagen, 1922 (Teubner).
- Heron-Allen, E., "Selsey Bill, Historic and Prehistoric", Selsey, 1911.
- Hewitt, H.J., Volume V of a History of Cheshire, "Cheshire under the Three Edwards", Chester, 1967.
- Higham, N.J. & Jones, G.D.B., "Frontier, Forts and Farmers : Cumbrian Aerial Survey, 1974-5", *Archaeological Jnl.*, Vol.132, 1976, pp.16-53.
- Hill, C., "The Roman Riverside Wall in the City", *London Archaeol.*, Vol.2, No.10, 1975, pp.260-1.
- Hill, C., "The London Riverside Wall", *C.A.*, No.57, Vol.V, No.10, July 1977, pp.308-310.
- Hind, J.G.F., "Agricola's Fleet and Portus Trucculensis", *Britannia*, Vol.V, 1974, pp.285-288.
- Hobley, B. and Schofield, J., et al., "Excavations in the City of London :First Interim Report, 1974-5", *Antiquaries Jnl.*, Vol.LVII, pt.1, 1977, pp.31-66.
- Hodges, H., "Technology in the Ancient World", London, 1970.
- Hodgson, T.H., "Extracts from Acts of the Privy Council relating to Cumberland & Westmorland, 1558-1568", *C.W.*², Vol.3, 1903, pp.126-149.
- Hogg, R., "A Roman Cemetery Site at Beckfoot, Cumberland", *C.W.*², Vol.49, 1949, pp.32-58.
- Hogg, R., "The historic crossings of the River Eden, at Stanwix, and their associated road systems", *C.W.*², Vol.52, 1952, pp.131-159.
- Hogg, R., et al., "Excavations in Carlisle, 1953", *C.W.*², Vol.55, 1955, pp.59-107.
- Hogg, R., "Beckfoot Fort, Cemetery Site", *C.W.*², Vol.62, 1962, pp.323-4.
- Hogg, R. et al., "Excavations at Tullie House, Carlisle, 1954-56", *C.W.*², Vol.64, 1964, pp.14-62.

- Hollar, "Map of the City of Chester", Mid-17th century.
- Holmes, T. Rice, "Ancient Britain and the Invasions of Julius Caesar", Oxford, 1907.
- Honeybourne, M.B., "The Pre-Norman Bridge of London", in Hollaender, A.E.J., & Kellaway, W., (Ed.), "Studies in London History presented to Philip Edmund Jones", 1969, pp.17-39.
- Hopkinson, J.H., "The Roman Fort at Ribchester", Ed.III (by D. Atkinson), Manchester, 1928.
- Horsley, J., "Britannia Romana", 1733, republished 1974 - Newcastle-upon-Tyne.
- Hoskins, W.G., "Two Thousand Years in Exeter", 1963.
- Hoskins, W.G., "The Making of the English Landscape", London, 1967.
- Hughes, B.C., "The History of Harwich Harbour", 1939.
- Hull, M.R., "Roman Colchester", Oxford, 1958.
- Hull, M.R., in V.C.H. Essex, III, "Roman Essex", 1963, pp.52-5.
- Hull, M.R., "The Roman potters' Kilns of Colchester", Reports of the Research Committee of the Society of Antiquaries of London, No.21, Oxford, 1963.
- Hull Museum Publications, 212, 237.
- Hume, A., "Ancient Meols", 1863.
- Hurst, H., "Excavations at Gloucester - Third Interim Report : Kingsholm, 1966-75", Antiquaries Jnl., Vol.LV, 1975, pt.II, pp.267-285.
- Hurst, H., "Gloucester (Glevum) : A 'Colonia' in the West Country", in Branigan, K., & Fowler, P.J. (Ed.), "The Roman West Country", 1976, pp.63-80.
- Hutchinson, W., "The History and Antiquities of Cumberland", 1797.
- International Journal of Nautical Archaeology and Underwater Exploration. Vol.1, 1972 -
- Irvine, H.C., "Note on the Roman Station at Pennal, Merionethshire", B.B.C.S., Vol.17, 1956-8, pp.124-131.
- Itinéraires Ligures - 13. Forum Iulii (Fréjus).
- Jackson, K., "Romano-British Names in the Antonine Itinerary", in Rivet, A.L.F., "The British Section of the Antonine Itinerary", Britannia, Vol.I, 1970, pp.68-82.
- Jarrett, M.G., "The pre-Hadrianic occupation of Roman Maryport", C.W.², Vol.58, 1958, pp.63-7.

- Jarrett, M.G., "Early Roman Campaigns in Wales", *Archaeological Jnl.*, Vol.CXXI, 1964 (1965), pp.23-39.
- Jarrett, M.G., "The Garrison of Maryport & The Roman Army in Britain", in Jarrett, M.G., & Dobson, B. (Ed.), "Britain & Rome", (Essays presented to Eric Birley), Kendal, 1966, pp.27-40.
- Jarrett, M.G., "Maryport, Cumbria : A Roman Fort and its Garrison", *Cumberland & Westmorland Arch. & Antiq. Soc.*, Extra Series, Vol.XXII, Kendal, 1976.
- Jarvis, K. & Maxfield, V., "The Excavation of a 1st century Roman farmstead and a Late Neolithic settlement, Topsham, Devon", *Proc. Devon Arch. Soc.*, Vol.33, 1975, pp.209-265.
- Jarvis, K. & Horsey, I., "Christchurch and Poole", *C.A. No.58*, Vol.V, No.11, Sept. 1977, pp.343-346.
- Jarvis, R.C., "The Appointment of Ports in Cumberland & Westmorland & Lancashire-North-of-the-Sands", *C.W.*, Vol.47, 1947, pp.128-165.
- Jefferson, S., "Allerdale Ward - Additions & Corrections", 1842, (G. Wilkinson, pp.447-8 on Moresby).
- Jenkins, F., "Recent Excavation in the Canterbury District: Sturry". *Arch. Cant.*, 62, 1949, 145-6.
- Jenkins, F., Report in *J.R.S.*, XXXIX, pp.111-112, 1949.
- Jenkins, F., *Archaeological News Letter*, I, No.12, April 1949, p.3.
- Jenkins, F., in *Arch. Cant.*, Vol.LXIV, 1951, p.68 ff.
- Jenkins, F., "The Post-Roman Submergence of the land surface at Canterbury, Kent", *Archaeological News Letter*, I, 1954, p.34 ff.
- Jenkins, F., "Kantium in Roman Times", *Canterbury Arch. Soc.*, Occasional Papers, No.5, Canterbury, 1966, pp.3-25.
- Jenkins, F., "Roman Gaulish Figurines found in London", In "Hommages à Marcel Renard III", *Coll. Latomus*, 103, 1969, pp.312-327.
- Jessup, R.F., "Reculver", *Antiquity* X, 1936, p.188 ff.
- Johnson, J.S., "The Date of the Construction of the Saxon Shore Fort at Richborough", *Britannia*, Vol.I, 1970, pp.240-248.
- Johnson, S., "The Roman Forts of the Saxon Shore", London, 1976.
- Johnson, S., "The Late Roman defences and the Limes", in Johnston, D.E. (ed.), "The Saxon Shore", *C.B.A. Research Report No.18*, 1977, pp.63-69.
- Johnston, D., "Mosaics", *C.A.*, No.29, Vol.III, No.6, Nov.1971, p.160 ff.
- Johnston, D.E., (Ed.), "The Saxon Shore", *C.B.A. Research Report No.18*, London, 1977.

- Jones, A.H.M., "The Later Roman Empire", Oxford, 1964.
- Jones, G.D.B., "The Romans in the North-West", Northern History, Vol.III, 1968, pp.1-26.
- Jones, G.D.B., "Excavations at Carmarthen, 1968", The Carmarthenshire Antiquary, Vol.V, 1969, pp.2-5.
- Jones, G.D.B., "Excavations at Carmarthen, 1969", The Carmarthenshire Antiquary, Vol.VI, 1970, pp.4-14.
- Jones, G.D.B., "Roman Lancashire", Archaeological Jnl., Vol.CXXVII, 1970 (1971), pp.237-245; "Ribchester Roman Fort", *ibid*, pp.277-279.
- Jones, G.D.B., "Fieldwork & Air Photography in Carmarthenshire", The Carmarthenshire Antiquary, Vol.VII, 1971, pp.3-40.
- Jones, G.D.B., and Grealey, S. (Editor), "Roman Manchester", Manchester, 1974.
- Jones, G.D.B., "The Western Extension of Hadrian's Wall : Bowness to Cardurnock", Britannia, Vol.VII, 1976, pp.236-243.
- Jones, J.D., "The Building of a Fort at Sandown, Isle of Wight, 1632-36". Proc. Isle of Wight Nat. Hist. & Arch. Soc., Vol.6, (3), 1968 (1969), pp.166-188.
- Journal of the Royal Society of Antiquaries of Ireland, Vol.LXVIII, 1938.
- Juvenal "Saturnae".
- Kapitän, G., "A Roman 3rd century shipwreck at Cape Ognina, (Siracusa, Sicily)", International Jnl. Nautical Archaeology & Underwater Exploration, Vol.3, No.1, 1974, (Notes & News).
- Kelly, D.B., "Excavations at Watergate House, Chester, 1959", C.A.J., Vol.52, 1965, pp.1-21.
- Kirby "Suffolk Traveller", Ed.1, (1735); Ed.II, (1754).
- Kirk, J.R., "A Roman jet pendant from Strood, near Rochester", Archaeologia Cantiana, Vol.69, 1955, pp.217-9.
- Kitson-Clark, H., "Gazeteer of Roman East Yorkshire".
- Knight, letter dated 18.xi.1722 in Minute Book of Society of Antiquaries of London, i, 71, 2.
- Knocker, E., "On the Antiquities of Dover, delivered before the Dover Museum and Philosophical Institution", Nov.24th, 1857, pp.16-19.
- Knocker, E., "An account of the Grand Court of Shepway", 1862.
- Knowles, A.K., "The Roman Settlement at Brampton, Norfolk : Interim Report", Britannia, Vol.VIII, 1977, pp.209-221.

- Knowles, W.H., Notes: Roman Research Committee, Gloucester, Trans. Bristol & Gloucestershire Arch. Soc., Vol.59, 1938, pp.337-8.
- Knowles, W.H., Roman Research Committee : Report on finds during 1938-9, Trans. Bristol & Gloucestershire Arch. Soc., 60, 1939, pp.165-8.
- Laing, L.R., "A Greek Tin-Trade with Cornwall?", Cornish Archaeology, Vol.7, 1968, pp.15-23.
- Lambarde, "Perambulation of Kent", Ed.2., 1596, p.158; 1701, p.163.
- Lambert, F., "Some recent excavations in London", Archaeologia, Vol.LXXI, 1921, pp.62-72.
- Lambert, J.M. et al., "The Making of the Broads", R.G.S. Research Series : No.3, 1960.
- Langouët, L., "The 4th century Gallo-Roman site at Alet (Saint-Malo)", in Johnston, D.E. (ed.), "The Saxon Shore", C.B.A. Research Report, No.18, 1977, pp.38-45.
- Leather, G.M., "Roman Lancaster", Lancaster, 1973.
- Lee, J.E., "The Delineations of Roman Antiquities found at Caerleon ...", 1845.
- Lee, Richard, (attrib to), "Chart of Orwell Haven", A.D.1533-4, British Museum, Cotton, MS., Aug.I,i,56.
- Lehmann - Hartleben K., "Die antiken Hafenanlagen des Mittlemeers", Klio Beiheft, XIV, 1923.
- Leland, J., (Ed. Hearne, T.), "The Itinerary of John Leland the antiquary, published from the original manuscript in the Bodleian Library", 1710-1769. (other editions :- L. Toulmin Smith, 1909; Centaur Press, 1964).
- Lemmon, C.M. and Hill, J.D., Sussex Archaeological Collections, Vol.CIV, 1966, pp.86-102.
- Lethbridge, T.C., Fell, C.I. et al., "Report on a recently discovered Dug-Out Canoe from Peterborough", Proc. Prehistoric Society, Vol.17, 1951, pp.229-233.
- Levi, A. & M., "Itineraria Picta : Contributo allo studio della Tabula Peutingeriana", Rome 1967 (reviewed by Rivet, A.L.F., in J.R.S., Vol.LX, 1970, pp.242-3.
- Lewin, T., "On the Position of the Portus Lemanis of the Romans", Archaeologia, Vol.XL, 1866, pp.361-374.
- Lewin, T., "The Castra of the Littus Saxonicum", Archaeologia, Vol.41, pt.II, 1867, pp.421-452.
- Lewis, J.D., "Cosa - an early Roman Harbour", in Blackman, D.J., (Ed.), "Marine Archaeology", 1973, pp.233-260.

- Lezine, A., "Architecture romaine d'Afrique", 1962.
- Ling, R., & Ling, L.A., "Excavations at Loughor, Glamorgan: the North-East and South-East Angles of the Roman Fort", Arch. Camb., Vol.122, 1973 (1974), pp.99-146.
- Little, J. & Davidson, D., "Locra", International Jnl. Nautical Archaeology & Underwater Exploration, Vol.1 : 2, 1972, pp.200-1.
- Livens, R., "Litus Hibernicum", in Actes du IX^e Congrès International D'Études Sur Les Frontières Romaines, 1972, pp.1-7.
- Livens, R.G., "The Defences of Kanovium : a Reassessment", Trans. Caernarvonshire Hist. Soc., Vol.35, 1974, pp.7-13.
- Liversidge, J., "Furniture and Interior Decoration", in Rivet, A.L.F. (Ed.), "The Roman Villa in Britain", 1969, pp.127-172.
- Livett, Proceedings of the Society of Antiquaries, Ser.2. XXVII., 1914-1915, pp.263-264.
- Lucan, "Pharsalia".
- Lynam, E., "British Maps & Map Makers", 1944.
- Lynam, E., "The Map Maker's Art", 1953.
- The Mabinogion, trans. by Jones, G., & Jones, T., Everyman's Library, revised edition, 1974.
- Macfarlane, W., "Geographical Collections relating to Scotland", ed. by Mitchell, A. & Clark, J.T., Edinburgh, 1906-8.
- Mackenzie, Murdock, (Jnr.) "A survey of the Bristol Channel from Lundy Island to Watchet and Worms Head", A.D.1771. Admiralty Hydrographic Department, 640 13K.
- Mackenzie, Murdock, "Survey of the South Coast of England from Blackwood point on the Isle of Wight to St. Alban's Head", A.D.1785, British Museum, Maps Sec. I (20).
- Maitland, W.. "The History and Antiquities of Scotland", London, 1757.
- Manning, W.H., "The Conquest of the West Country", in Branigan, K., and Fowler, P.J. (Ed.), "The Roman West Country", 1976, pp.15-41.
- Manning, W.H., "Usk, Roman Legionary Fortress", C.A., No.62, Vol.VI, No.3, June 1978, pp.71-77.
- Margary, I.D., "Roman Roads near Durobrivae", Antiquaries Journal, Vol.XV, 1935, pp.116-7.
- Margary, I.D., "Roman Communications between Kent and the East Sussex Ironworks", Sussex Archaeological Collections, Vol.86, 1947, p.22 ff.
- Margary, I.D., "Roman Roads in Britain", London, Ed.II, 1967; Ed.III, 1973.

- Marinatos, Sp., "Anaskaphai Nirou Khani Kritis -", Praktika, 1926, pp.141-7.
- Marsden, P., "A Boat of the Roman Period discovered on the site of New Guy's House, Bermondsey, 1958", Trans. London and Middlesex Arch. Soc., Vol.21 : 2, 1965, pp.118-131.
- Marsden, P.R.V., "The Riverside Defensive Wall of Roman London", Trans. London & Middlesex Arch. Soc., Vol.21, 1967, pp.149-156.
- Marsden, P., "Archaeological Finds in the City of London, 1963-4", Trans. London & Middlesex Arch. Soc., Vol.21, 1967, pp.189-221.
- Marsden, P., "A Roman ship from Blackfriars", London, 1967.
- Marsden, P.R.V., "Archaeological Finds in the City of London, 1966-9", Trans. London and Middlesex Arch. Soc., Vol.22, 1970, pp.1-9.
- Marsden, P., "The County Hall Ship, London", International Jnl. of Nautical Archaeology and Underwater Exploration, Vol.3, No.1, 1974, pp.55-65.
- Marsden, P., "The Excavation of a Roman Palace Site in London", Trans. London & Middlesex Arch. Soc., Vol.26, 1975, pp.1-102.
- Marsden, P., "A Boat of the Roman period found at Bruges, Belgium, in 1899, and related types", International Jnl. of Nautical Archaeology and Underwater Exploration, Vol.5, pt.1, 1976, pp.23-55.
- Martin, D., Hastings Area Archaeological Papers, 2, 1973.
- Maxwell, I.S., "The Location of Ictis", Jnl. Royal Institution of Cornwall, N.S., Vol.VI, pt.4, 1972, p.302 ff.
- May, T., "Warrington's Roman Remains", Warrington, 1904.
- McCann, A.M. & Lewis, J.D., "The Ancient Port of Cosa", Archaeology, Vol.23 : 2, 1970, pp.200-11.
- McCann, A.M., "Cosa" - International Jnl. Nautical Archaeology & Underwater Exploration, 1 : 2, 1972, p.200.
- McDonald, B., in Ribble Archaeology, No.3, Autumn, 1971.
- McIntyre, W.T., "The Port of Milnthorpe", C.W.², Vol.36, 1936, pp.34-60.
- McIntyre, W.T., "The Fords of the Solway", C.W.², Vol.39, 1939, pp.152-170.
- McIntyre, W.T., "Solway Moss", C.W.², Vol.41, 1941, pp.1-14.
- McIntyre, W.T., "The old port of Sandsfield", C.W.², Vol.43, 1943, pp.71-81.
- Meiggs, R., "Roman Ostia", Ed.II, Oxford, 1973.

- Merrifield, R., "Coins from the Bed of the Walbrook and their significance", *Antiquaries Jnl.*, Vol.XLIII, 1962, pp.38-52.
- Merrifield, R., "The Roman City of London", London, 1965.
- Merrifield, R., "Roman London", London, 1969.
- Merrifield, R., "Roman London Bridge : further observations on its site", *London Archaeol.*, Vol.1, 1970, pp.186-7.
- Merrifield, R., & Sheldon, H., "Roman London Bridge: a view from both banks", *London Archaeol.*, Vol.2, 1974, pp.183-191.
- Merrifield, R., "The Archaeology of the London Area: current knowledge and problems", *London and Middlesex Arch. Soc.*, Special Paper 1, London, 1976.
- Mertens, J., "Oudenburg and the northern sector of the continental Litus Saxonicum", in Johnston, D.E. (ed.), "The Saxon Shore", C.B.A. Research Report No.18, 1977, pp.51-62.
- Miles, H., "Excavations at Rhuddlan, 1969-71 : Interim Report", *Flintshire Historical Society Publications*, Vol.25, 1971-2, pp.1-8.
- Miller, S.N., "The Roman Fort at Old Kilpatrick", Glasgow, 1928.
- Miller, S.N. (ed.), "The Roman Occupation of S.W. Scotland", Glasgow University Publications, No.LXXXIII, Glasgow, 1952.
- Millett, M., "The Native Towns of Roman Britain", *C.A.*, No.52, Vol.V, No.5, May, 1976, pp.136-7.
- Millett, M., "A trench across Upper Thames Street : Roman riverside wall discovered", *London Archaeol.*, Vol.2, No.9, 1974, pp.232-3.
- Milne, J.G., "Finds of Greek coins from the British Isles", Oxford, 1948.
- Ministry of Public Buildings & Works (M.O.W.) "Ancient Monuments in England and Wales", 1954.
- Ministry of Public Buildings & Works (M.O.W.) "Guide to Burgh Castle", 1967.
- Mitchell, H., "Early Traditions of Bosham", *Sussex Archaeological Collections*, Vol.XVIII, 1866, pp.1-9.
- Mocsy, A., "Die Spätromische Schiffslände in Contra Florentiam", *Folia Archaeologica*, X, 1958, pp.89-104.
- Montague, L.A.D., in *Proc. Devon Arch. Expl. Soc.* Vol.II, 1935, p.200 ff.
- Montgomery - Nielson, E., & Montague, E., "Exeter Excavations - 1931", *Proc. Devon Arch. Explor. Soc.*, Vol.I, 1931, pp.121-142.

- E. St. F. Moore, in *P.S.A.L.*, Ser.2, Vol.XI, 1885, pp.12-14.
- Morgan, R., "Tree-ring dating of the London Waterfronts", *London Archaeol.*, Vol.3, No.2, Spring 1977, pp.40-45.
- Morris, A.J., "The Saxon Shore Fort at Burgh Castle", *Proc. Suffolk Institute of Archaeology*, Vol.XXIV, 1947 (1948), pp.100-120.
- Morris, A.J., & Hawkes, C.F.C., "The Fort of the Saxon Shore at Burgh Castle, Suffolk", *Archaeological Jnl.*, Vol.CVI, 1949 (1950), pp.66-9.
- Morris, J.A., "Roman Bridge at Wroxeter", *Trans. Shropshire Arch. and Nat. Hist. Soc.*, Vol.XI, pt.ii, 1927-8, p.304 ff.
- Morris, P., Montague, L.A.D., & Goodchild, R.G., in *Proc. Devon Arch. Expl. Soc.*, Vol.III, 1938, p.4 ff, 67-82.
- Murray, J.W. & Hawkins, A.B., "Sediment transport in the Severn Estuary during the past 8000-9000 years", *Jnl. Geological Soc. of London*, Vol.132, 1976, pp.385-398.
- Musgrave, "Antiquitates Britanno-Belgicae", 1719, p.96.
- Nash-Williams, V.E., "The Early Iron Age Coastal Camp at Sudbrook, Portskewett, Monmouthshire", *Arch. Camb.*, Vol.91, 1936, pp.129-131.
- Nash-Williams, V.E., "An Early Iron Age Coastal Camp of Sudbrook, near the Severn Tunnel, Monmouthshire", *Arch. Camb.*, Vol.94, 1939, pp.42-57.
- Nash-Williams, V.E., "The Roman Legionary Fortress at Caerleon, Monmouthshire", Cardiff : 1940.
- Nash-Williams, V.E., "Current Work in Welsh Archaeology", *B.B.C.S.*, Vol.12, pt.3, (1946-8), pp.56-78.
- Nash-Williams, V.E., "The Roman Station at Neath, Further Discoveries", *B.B.C.S.*, Vol.XIV, (1950-1), p.77.
_____, "Current Work in Welsh Archaeology", *ibid*, pp.249-255.
- Nash-Williams, V.E., "The Roman Frontier in Wales", Ed. I, Cardiff, 1954; Ed.II (revised by M.G. Jarrett), Cardiff, 1969.
- Neilson, G., "Annals of the Solway until A.D.1307" 1899, republished 1974, Beckermest, Cumbria.
- Newmann, L.F., and Walworth, G., in *Journal of Ecology*, Vol.7, 1919, p.204 ff.
- Newstead, R., "Excavations at Chester, 1939", *C.A.J.*, Vol.34, 1939, p.6.
- Nicholson, C., "A Descriptive Account of the Roman Villa at Brading, Isle of Wight", 1880.

- Notitia Dignitatum, "Notitia Dignitatum Omnium tam Civilium quam Militarium, in Partibus Orientis, in Partibus Occidentis", ed. Seeck, O., 1876.
- H.M. Ordnance Survey, "A Map of Roman Britain", Ed.III, Chessington, 1956;
 "Geological Map of Great Britain-Sheet 2",
 Ed.2, Chessington, 1957;
 "A Map of Southern Britain in the Iron Age",
 Chessington, 1962.
- Ó Ríordáin, S.P., in Proc. Roy. Irish Acad., 51C, 1947.
- Orosius, "Historiarum adversus paganos", Ed. C. Zangemeister, 1889
 (Teubner).
- Osborne, P.J. "Insect Fauna from the Roman Harbour", in Cunliffe, B.W.,
 "Excavations at Fishbourne 1961-1969", Vol.II :
 The Finds, 1971, pp.393-6.
- Owen, D.J., "The Origin and Development of the Ports of the United
 Kingdom", Ed.II, 1948.
- Paget, R.F., "The Ancient Ports of Cumae", J.R.S., LVIII, 1968,
 pp.152-169.
- Panegyrici Latini, ed. W. Baehrens, 1911 (Teubner).
- Parnell, G., "Excavations at the Tower of London, 1976-7", London
 Archaeol., Vol.3, No.4, Autumn, 1977, pp.97-99.
- Parry, "Guide to the City of Chester", 1843.
- Pauly-Wissowa-Kroll, Realencyclopädie der Klassischen Altertumswissenschaft,
 1916-
- Payne, G., in P.S.A.L., Ser.2, Vol.VI, 1874, p.152.
- Payne, G., in Arch. Cant., Vol.15, 1883, p.318.
- Payne, G., "Roman leaden coffin and other interments discovered near
 Sittingbourne, Kent", Arch. Cant., Vol.16, 1886,
 pp.8-11.
- Peacock, D.P.S., "Whetstones", in Cunliffe, B., "Excavations at
 Fishbourne 1961-9", Vol.II, 1971, pp.153-5.
- Peacock, D.P.S., "The Black-Burnished Pottery Industry in Dorset", in
 Detsikas, A. (Ed.), "Current Research in Romano-
 British Coarse Pottery", 1973, pp.63-5.
- Peacock, D.P.S., (ed.), "Pottery and Early Commerce", London, 1977.
- Peacock, D.P.S., "Bricks of the Classis Britannica", Britannia, Vol.VIII,
 1977, pp.235-248.
- Pennant, "History of the parishes of Whiteford and Holywell",
 1778-1781, pp.111-113.
- Perkins, A., "Some Maps of Wales and in particular of the Counties of
 Pembrokeshire, Cardiganshire and Carmarthenshire",
 The Carmarthenshire Antiquary, Vol.VI, 1970, p.69.

- Perkins, E.J., Williams, B.R.H., & Bailey, M., "Some Preliminary Notes on the Bottom Currents of the Solway Firth & North Irish Sea", T.D.G.N.H.A.S., Ser.3, Vol.XLI, 1961, pp.45-51.
- Petch, D.F., & Thompson, F.H., "Excavations in Commonhall Street, Chester, 1954-1956", C.A.J., Vol.46, 1959, p.37.
- Petch, J.A., "Excavations at Pentre Ffwrndan, near Flint, in 1932, 1933 & 1934", Arch. Camb., Vol.91, 1936, pp.74-83.
- Peutinger Table - ed. Miller, K., "Die Peutingersche Tafel", 1916 (reprinted Stuttgart 1962).
- Phillips, C.W., "The Roman Ferry across the Wash", Antiquity, Vol.VI, 1932, pp.342-8.
- Phillips, C.W., "The Present State of Archaeology in Lincolnshire", Pt.II, Archaeological Jnl., Vol.XCI, 1934 (1935), pp.97-187.
- Phillips, C.W., (Ed.) "The Fenland in Roman Times", R.G.S. Research Report No.5, 1970.
- Phillips, E.J., "Gravestone of M. Favonius Facilis at Colchester", Britannia, Vol.VI, 1975, pp.102-5.
- Phillips, E.J., "A Workshop of Roman Sculptors at Carlisle", Britannia, Vol.VII, 1976, pp.101-108.
- Philp, B., in Arch. Cant., Vol.LXXI, 1957, p.173 & Vol.LXXII, 1958, p.165 ff.
- Philp, B., "The Roman Fort at Reculver", West Wickham, 1969.
- Philp, B., "The London Forum", C.A. No.19, Vol.II, No.8, March 1970, pp.219-22.
- Philp, B., "Dover", in Johnston, D.E. (ed.), "The Saxon Shore", C.B.A., Research Report, No.18, 1977, pp.20-1.
- Philp, B., "The Forum of Roman London : Excavations of 1968-9", Britannia, Vol.VIII, 1977, pp.1-64.
- Pickering, E.E., "Roman Walton-le-Dale 1947-1957", Trans. Historic Soc. of Lancashire and Cheshire, Vol.CIX, 1957, pp.1-46.
- Piggott, J., "Othona", in Notes and Queries, Ser.4, Vol.IV, 1869, pp.317-8.
- Piggott, J., Trans. Essex Arch. Soc. Vol.V, 1873, p.323.
- Pliny the Elder, "Naturalis Historia", ed. with parallel translation, H. Rackham, Loeb Library, 1938-56.
- Plummer, J.C., "The Search for 'Portus Setantiorum'", L.A.B., Vol.2, No.2, May 1976, pp.40-41.

- Plummer, J.C., "Land Erosion and the Portus Setantiorum", L.A.B., Vol.2, No.4, Sept. 1976, pp.77-78.
- Plutarch, "De Defectu Oraculorum", Ch.XVIII, = Moralia, 410, 38.
- Poidebard, A., "Un grand port disparu : Tyr. Recherches aériennes et sous-marines 1934-1936", Paris 1939.
- Poidebard, A. & Lauffrey, J., "Sidon. Aménagements antiques du port de Saida. Études aériennes, au sol et sous-marines 1946-1950", Beirut, 1951.
- Potter, T.W., "Excavations at Bowness-on-Solway, 1973", C.W.², Vol.75, 1975, pp.29-57.
- Potter, T.W., "Recent Work in the North West", Current Archaeology, No.53, Vol.V, No.6, July 1976, pp.182-187.
- Potter, T.W., "Excavations at Watercrock, 1974: an interim report", C.W.², Vol.76, 1976, pp.6-66.
- Potter, T.W., "Excavations at Watercrock, 1975: a second interim report", C.W.², Vol.77, 1977, pp.49-52.
- Potter, T.W., "The Biglands Milefortlet, Cumberland & the Cumberland Coast Defences", Britannia, Vol.VIII, 1977, pp.149-183.
- Prevost, W.A.J., "The turnpike and custom port at Alisonbank", C.W.², Vol.73, 1973, pp.282-298.
- Price, J.E., "Reminiscences of the Steelyard formerly in Upper Thames Street", Trans. London & Middlesex Arch. Soc., Vol.III, 1870, pp.67-78.
- Price, J.E., & Price, F.G.H., "A description of the remains of Roman buildings at Morton, near Brading, Isle of Wight", 1881.
- Proc. Clifton Arch. Soc., Vol.V, 1900-3, pp.8-24.
- Pryor, F., "Fengate", C.A., No.46, Vol.IV, No.11, Jan. 1975, pp.332-8.
- Ptolemy, Geography, ed. Müller, Paris, 1883.
- Canon Puckle, "Vestiges of Roman Dover", Arch. Cant., Vol.XX, 1893, p.128 ff.
- Rae, A., & Rae, V., "The Roman Fort at Cramond, Edinburgh: Excavations, 1954-66", Britannia, Vol.V, 1974, pp.163-224.
- Rahz, P.A., "Dover Stembrook & St. Martin-le-Grand, 1956", Arch. Cant., Vol.72, p.111-37, 1958.
- Raven, J.J., "Othona and the Count of the Saxon Shore", Trans. Essex Arch. Soc., N.S., Vol.6, 1898, pp.291-7.

- Ravenna Cosmography, in Richmond, I.A. & Crawford, O.G.S., "The British Sections of the Ravenna Cosmography", *Archaeologia*, Vol.XCIII, 1949, pp.1-50.
- Redman, J.B., "The East Coast between the Thames and the Wash", *Minutes of the Proceedings of the Institution of Civil Engineers*, Vol.23, 1863-4.
- Reece, R., "A Short Survey of Roman Coins found on Fourteen Sites in Britain", *Britannia*, Vol.III, 1972, pp.269-276.
- Reed, N., "The Fifth Year of Agricola's Campaigns", *Britannia*, Vol.II, 1971, pp.143-8.
- Reid, C., "The Island of Ictis", *Archaeologia*, LIX, 1905, pp.281-8.
- Reports of the Royal Institute of Cornwall, Vol.XXXV, 1853, p.13.
- Reynolds, P.K. Bailie, "Roman Fort at Caerhûn (Kanovium)", *B.B.C.S.*, Vol.III, - 1925, pp.240-1.
- Reynolds, P.K. Bailie, "Caerhûn, Caernarvonshire", *B.B.C.S.*, Vol.IV, 1926-9, pp.96-7.
- Reynolds, P.K. Bailie, "Excavations on the site of the Roman Fort at Caerhûn: Fourth Interim Report", *Arch. Camb.*, Vol.85, 1930, pp.74-102.
- Reynolds, P.K. Bailie, "Excavations on the site of the Roman Fort of Kanovium, at Caerhûn, Caernarvonshire", *Cardiff*, 1938.
- Richardson, K.M., "Excavations in Hungate, York", *Archaeological Jnl.*, Vol.CXVI, 1961, pp.51-6.
- Richmond, I.A., "The Roman Fort at South Shields", *Arch. Aeliana*, Ser.4, Vol.XI, 1934, p.84.
- Richmond, I.A., "The Roman City of Lincoln", *Archaeological Jnl.*, Vol.CIII, 1946 (1947), pp.26-56.
- Richmond, I.A., "The Roman Road from Ambleside to Ravenglass", *C.W.*², Vol.49, 1949, pp.15-31.
- Richmond, I.A., "Excavations on the Site of the Roman fort at Lancaster", *Trans. Historic Soc. of Lancashire & Cheshire*, Vol.CV, 1953, pp.1-23.
- Richmond, I.A. & St. Joseph, J.K., "The Roman Fort at Glenlochar, Kirkcudbrightshire", *T.D.G.N.H.A.S.*, Ser.3, Vol.XXX, 1953, pp.1-16.
- Richmond, I.A. & Wright, R.P., "Catalogue of Roman Inscribed and Sculptured Stones in the Grosvenor Museum, Chester", *Chester*, 1955.
- Richmond, I.A., "Roman Britain 1910-1960", *J.R.S.*, Vol.L, 1960, pp.173-191.

- Richmond, I.A., "Roman Wales", in Foster, I Ll., & Daniel, G., (Ed.), "Prehistoric & Early Wales", 1965, p.151 ff.
- Richmond, I.A. (ed.), "Handbook to the Roman Wall", edn.xii, Newcastle-upon-Tyne, 1966.
- Richmond, I.A., "Roman Gloucestershire", Antiquaries Jnl., Vol.XLVI, 1966, pp.177-181.
- Richmond, I.A., "Industry in Roman Britain", in Wachter, J.S. (Ed.), "The Civitas Capitals of Roman Britain", 1966, pp.76-86.
- Richmond, I.A., "The Plans of Roman Villas in Britain", in Rivet, A.L.F. (Ed.), "The Roman Villa in Britain", 1969, pp.49-70.
- Ridyard, G.W., "Additional Notes on Roman Devon", Antiquaries Jnl., Vol.XX, 1940, p.380.
- Rigold, S.E., in J.B.A.A., Vol.XXIV, 1961, p.55 ff.
- Rigold, S.E., "Recent investigations into the earliest defences of Carisbrooke Castle, Isle of Wight", in Taylor, A.J. (Ed.), "Château Gaillard European Castle Studies, III. Conference at Battle Sussex, 19th-24th September 1966", 1969, pp.128-138.
- Rigold, S.E., "The Roman Haven at Dover", Archaeological Jnl., Vol.CXXVI, 1969 (1970), pp.78-100.
- Rigold, S.E., "Roman Folkestone Reconsidered", Arch. Cant., Vol.87, 1973, pp.31-41.
- Riley, D.N., "The End of Ermine Street at the South Shore of the Humber", Britannia, Vol.V, 1974, pp.375-7.
- Riley, W.E., "Ship of the Roman Period discovered on the site of the New County Hall", Ed.II, 1912.
- Rivet, A.L.F., "Town and Country in Roman Britain", Ed.II, London, 1964.
- Rivet, A.L.F. (Ed.), "The Roman Villa in Britain", London, 1969.
- Rivet, A.L.F., "The British Section of the Antonine Itinerary", with an appendix on the place names by Kenneth Jackson, Britannia, Vol.I, 1970, pp.34-82.
- Robertson, A.S., "The Antonine Wall. A Handbook to the Roman Wall between Forth and Clyde and a Guide to the surviving remains", Glasgow, 1963.
- Robertson, A.S., "Roman Coins Found in Scotland, 1951-60", P.S.A.S., Vol.XCIV, 1963, pp.133-183.
- Robertson, A.S., "Roman Finds from non-Roman Sites in Scotland", Britannia, Vol.I, 1970, pp.198-226.
- Robertson, A.S., "Roman Coins Found in Scotland, 1961-70", P.S.A.S., Vol.CIII, 1970-1, pp.113-168.

- Robertson, A.S., "Birrens (Blatobulgium)", Edinburgh, 1975.
- Robinson, A.H.W., "Marine Cartography in Britain", Leicester, 1962.
- Robinson, J., (1881a), "Notes on the Excavations near the Roman Camp, Maryport, during the year 1880", C.W., Vol.5, 1879-1880, (1881), pp.237-257.
- Robinson, J., (1881b), "The Roman Camp near Beckfoot (Mowbray), Cumberland", C.W., Vol.5, 1879-1880 (1881), pp.136-148.
- Rodwell, W.J., "Milestones Civic Territories and the Antonine Itinerary", Britannia, Vol.VI, 1975, pp.76-101.
- Rodwell, W.J., & Rowley, R.T., (Ed.), "The 'Small Towns' of Roman Britain", B.A.R., 1975.
- Royal Commission on Ancient & Historical Monuments, Wales & Monmouth. (R.C.A.M.) "An Inventory of the Ancient Monuments in Caernarvonshire", Vol.I: The East, London, 1956; Vol.II: Central, 1960; Glamorgan, Vol.I, pt.II, Cardiff, 1976.
- Royal Commission on Historical Monuments (England) (R.C.H.M.):
 _____, London, Vol.III, "Roman London", London, 1928.
 _____, City of York, Vol.I, "Eburacum: Roman York" London, 1962.
 _____, "Peterborough New Town: A Survey of the antiquities in the areas of development", London, 1969.
 _____, Dorset, Vol.II, South-East, pt.iii, London, 1970.
- Salway, P., "The Roman Fenland", in Phillips, C.W. (Ed.), "The Fenland in Roman Times", 1970, pp.1-24.
- Salzmann, L.F., "Excavations on the site of the Roman Fortress at Pevensey, 1907-8", Archaeological Jnl., Vol.LXV, 1908, pp.125-135.
- Salzmann, L.F., "Report on recent excavations on the site of the Roman Fort at Pevensey, Sussex, P.S.A.L., Ser.2, Vol.XXII, 1908, pp.151-3.
- Sanders, I., "Ancient Road from Purlieu to Lepe", Proc. Hants. Field Club, Vol.X, pt.I, (1926-30), pp.35-39.
- Schaaf, L., "Excavations at 175-7, Borough High Street, Southwark", London Archaeol., Vol.3, No.1, 1976, pp.3-7.
- Schleiermacher, W., "Befestigte Schiffsländen Valentinians", Germania, Vol.26, 1942, pp.191-5.
- Schofield, J., "Seal House", C.A., No.49, Vol.V, No.2, Sept. 1975, pp.54-7.
- Schofield, J. and Miller, L., "New Fresh Wharf : 1, The Roman Waterfront", London Archaeol. Vol.2, No.15, 1976, pp.390-5.

- Schofield, J., in *London Archaeol.*, Vol.2, No.14, 1976, p.370.
- Schofield, J., "Seal House", *London Archaeol.*, Vol.2, No.15, 1976, p.401.
- Schofield, M.M., "The Slave-Trade from Lancashire & Cheshire Ports outside Liverpool, c.1750-c.1790", *Trans. Historic. Soc. of Lancs. & Chesh.*, Vol.126, 1977, pp.30-72.
- Scriptores Historiae Augustae*, ed. with parallel translation, D. Magie, Loeb Library, 1921-32.
- Sedgely, J.P., "The Roman Milestones of Britain: their petrography and probable origins", M. Sc. thesis for the University of Keele, 1969.
- Seillier, Cl. & J.-Y. Gosselin. "Nouvelles Estampilles de la Flotte de Bretagne en provenance de Boulogne-Sur-Mer," *Revue de Nord*, Vol.51, 1969, pp.363-372.
- Seillier, Cl., "Boulogne and coastal defences in the 4th and 5th centuries", in Johnston, D.E. (ed.), "The Saxon Shore", C.B.A. Research Report No.18, 1977, pp.35-38.
- Shaw, R.C., "Romano-British Carlisle; its Structural Remains", *C.W.*², Vol.24, 1924, pp.95-109.
- Sheldon, H., "Recent Developments in the Archaeology of Greater London", *Jnl. of the Royal Society of Arts*, Vol.CXXIV, No.5240, July 1976, pp.411-425.
- Sheppard, "The Lost Towns of the Yorkshire Coast", 1912, pp.42-3.
- Shorter, A.H., in *Proc. Devon Arch. Expl. Soc.*, Vol.IV, pt.1, 1949, pp.20-3.
- Shotter, D.C.A., "Numeri Barcariorum: a note on R.I.B., 601", *Britannia*, Vol.IV, 1973, pp.206-9.
- Shotter, D.C.A., "Finds of Roman Coins in Lancashire", *L.A.B.*, Vol.2, No.4, Sept. 1976, pp.72-74.
- Shrubsole, G.W., in "The Chester Courant", 28 - III - 1877.
- Shrubsole, G.W., "The Traffic between Deva & the Coast of North Wales in Roman Times". *Chester Archaeological & Historic Society Journal*, N.S.I, 1887, 76-96.
- Sibbald, R., "Historical Inquiries concerning the Roman Monuments & Antiquities in the North-Part of Britain called Scotland", Edinburgh, 1707.
- Simmons, B.B., "The Lincolnshire Car Dyke", Car Dyke Research Group, December, 1975.
- Simpson, F.G., Hodgson, K.S. et al., "The Coastal Milefortlet at Cardurnock", *C.W.*², Vol.47, 1947, pp.78-127.

- Simpson, F.G. & Richmond, I.A., "The Roman Fort at Drumburgh", *C.W.*², 52, 1952, pp.9-40.
- Simpson, G., "Caerleon & the Roman Forts in Wales in the Second Century - part I", *Arch. Camb.*, Vol.III, 1962, pp.103-166.
- Sinclair, J., "The Statistical Account of Scotland drawn up from the communications of the ministers of the different parishes", Edinburgh, 1791-1799.
- Singleton, F.J., "Geomorphology and the Portus Setantiorum", *L.A.B.*, Vol.2, No.3, July 1976, p.61.
- Singleton, F.J., "The Flax Merchants of Kirkham", *Trans. Historic Soc., Lancs. & Cheshire*, Vol.126, 1977, pp.73-108.
- Sissons, J.B., "The Evolution of Scotland's Scenery", Edinburgh & London, 1967.
- Skelton, R.A., "Decorative Printed Maps of the 15th to the 18th Century", 1952.
- Smiles. "Lives of the Engineers", 1874.
- Smith, C.R., *Archaeological Jnl.*, Vol.I, 1845, p.113.
- Smith, C.R., "Roman sepulchral remains found at Strood (Kent)", *Collectanea Antiqua*, I, 1848, pp.17-32.
- Smith, C.R., "The Antiquities of Richborough, Reculver and Lymne", London, 1850.
- Smith, C.R., "Antiquarian Excavations on the site of the Roman Station at Lymne, in Kent", *Collectanea Antiqua*, Vol.II, 1852, Appendix I, p.1 ff.
- Smith, C.R., "Report on the Excavations made on the site of the Roman Castrum at Lymne, in Kent, in 1850", London, 1852.
- Smith, C.R., in *Collectanea Antiqua*, Vol.III, ca.1854, pp.197-8.
- Smith, C.R., in *Collectanea Antiqua*, Vol.VI, 1868, p.121 ff.
- Smith, C., "The Antiquary's Note-Book: Notes on Clausentum; now Bittern Manor", *The Antiquary*, 7, 1883, pp.79-80.
- Smith, C.R., "Roman Embanking and Sanitary Precautions", *J.B.A.A.*, Vol.40, 1884, pp.185-9.
- Smith, C.R., "The Roman Castrum at Lymne", *Arch. Cant.*, Vol.XVIII, 1889, p.41 ff.
- Smith, D., "A Palmyrene Sculptor at South Shields?", *Arch. Aeliana*, Ser.4, Vol.37, 1959, pp.203-210.
- Smith, D.J., "The Mosaic Pavements", in Rivet, A.L.F., (Ed.) "The Roman Villa in Britain", 1969, pp.71-126.

- Smith, H.P., "The Occupation of the Hamworthy Peninsula in the Late Keltic & Romano-British Periods", Proc. Dorset Nat. Hist. and Arch. Soc., Vol.LIII, 1930, pp.96-130.
- Smith, H.P., "The Hamworthy Section of the Branch Roman Road from Badbury Rings to Poole Harbour", Proc. Dorset Nat. Hist. & Arch. Soc., Vol.LIV, 1932, pp.5-14.
- Solinus, "Collectanea Rerum Memorabilium", ed. Mommsen, 1895.
- Solly, T.W.J., "Roman Remains from the Severn Bridge Approach at Aust", Trans. Bristol & Gloucester Arch. Soc., Vol.LXXXV, 1967, p.36 ff.
- Spain, G.R.B., "An Altar dedicated to Jupiter found at Newcastle-upon-Tyne". Arch. Aeliana, Ser.4, Vol.X, p.109.
- Spelman, H., "Icenia", Written ca. A.D.1600 but not published until A.D.1698.
- Spurrell, F.C.J., "Early Sites and Embankments on the Margins of the Thames Estuary", Archaeological Jnl., XLII, 1885, p.274-291.
- Starr, C.G., "The Roman Imperial Navy", Ed.I, 1941; Ed.II, Cambridge 1960.
- Stead, I.M., "Excavations at Winterton Roman Villa and other Roman sites, in North Lincolnshire, 1958-1967", D.O.E. Archaeological Reports No.9, London, 1976.
- Steer, K.A., "Arthur's O'on : A Lost Shrine of Roman Britain", Archaeological Jnl., Vol.CXV, 1958 (1960), pp.99-109.
- Steers, J.A., "The Coastline of England and Wales", Ed.II, Cambridge, 1964.
- Stevens, C.E., "Gildas and the civitates of Britain", English Historical Review, LIII, 1937, p.193 ff.
- Stevens, C.E., "The British Section of the Notitia Dignitatum", Archaeological Jnl., Vol.97, 1940 (1941), pp.125-154.
- Stevens, C.E., "Notes on Roman Chester", C.A.J., Vol.35, 1942, p.50.
- Stevens Cox, J., "The Roman Town at Ilchester", Archaeological Jnl., Vol.107, 1950, pp.94-5.
- St. Joseph, J.K., "The Roman Fort at Brancaster", Antiquaries Jnl., Vol.XVI, 1936, pp.444-460.
- St. Joseph, J.K., "The Roman Fort at Dodderhill, Droitwich", Trans. Birmingham Arch. Soc., Vol.LXII, 1938, pp.27-31.
- St. Joseph, J.K., "Air Reconnaissance of North Britain", J.R.S., Vol.XLI, 1951, pp.52-65.
- St. Joseph, J.K., "Air Reconnaissance in Britain - 1958-1960", J.R.S., Vol.LI, 1961, pp.119-135.

- St. Joseph, J.K., "Air Reconnaissance in Britain, 1961-1964",
J.R.S., Vol.LV, 1965, pp.74-89.
- St. Joseph, J.K., "The Towns of Roman Britain - the Contribution of
Aerial Reconnaissance", in Wachter, J.S. (Ed.), "The
Civitas Capitals of Roman Britain", 1966, pp.21-30.
- St. Joseph, J.K., "Air Reconnaissance in Britain, 1965-1968",
J.R.S., Vol.LIX, 1969, pp.104-128.
- St. Joseph, J.K., "Air Reconnaissance in Roman Britain, 1973-76",
J.R.S., Vol.LXVII, 1977, pp.125-161.
- Strabo., "Geography", ed. with parallel translation, H.L. Jones,
Loeb Library, 1917-1932.
- Stukeley, W., "Itinerarium Curiosum", 1776.
- Suetonius, "De Vita Caesarum", ed. with parallel translation,
J.C. Rolfe, Loeb Library, 1914.
- Surtees, "History and Antiquities of County Durham", Vol.III, 1823.
- Sutherland, C.H.V., "Three Roman Coin Hoards", Num. Chron, Ser.5,
Vol.16, 1936, pp.316-20.
- Swinbank, B., "A Trial Excavation at Moresby", C.W.², Vol.51, 1951,
pp.176-7.
- Swinerton, H.H., "The Post - Glacial Deposits of the Lincolnshire
Coast", Quarterly Journal of the Geological Society,
Vol.87, 1931, p.360 ff.
- Swinerton, H.H., "The Prehistoric pottery sites of the Lincolnshire
Coast", Antiquaries Journal, Vol.12, 1932, p.239 ff.
- Swinerton, H.H., "The Physical History of East Lincolnshire",
Trans. Lincolnshire Nat. Union, 1936.
- Tacitus Annales, "Annales ab Excessu Divi Augusti" ed. C.D. Fisher,
O.U.P., 1906; trans. M. Grant, Penguin Classics, 1956.
- Tacitus, "Agricola" and "Germania" in Opera Minora, ed. H. Furneaux
and J.G.C. Anderson, O.U.P., 1938; trans. H. Mattingly
("Tacitus on Britain & Germany"), Penguin Classics, 1948.
- Tatton-Brown, T., in London Archaeol., Vol.2, 1973, Nos. 7 & 8.
- Tatton-Brown, T., "Excavations at the Custom House Site, City of London,
1973", Trans. London and Middlesex Arch. Soc.,
Vol.25, 1974, pp.117-219.
- Tatton-Brown, T., "Rescue Excavations on the old Custom House Site,
Part 2 :- Roman", London Archaeol., Vol.2, No.7, 1974,
pp.155-9.
- Tatton-Brown, T., "Roman London : Some current problems", London
Archaeol., Vol.2, No.8, 1974, pp.194-5.

- Taylor, J. du P., (Ed.), "Marine Archaeology", London, 1965.
- Taylor, M.V., "The Roman Fort in the Parish of Bradwell - juxta - Mare", Trans. Essex Arch. Soc., N.S., Vol.17, 1920, pp.198-202.
- Taylor, S., "The History and Antiquities of Harwich and Dovercourt", 1730.
- Testaguzza, O., "Portus : Illustrazione dei porti di Claudio e Traiano e della citta, di porti a Fiumicino", Rome, 1970.
- Tester, P.J., in Arch. Cant., Vol.LXXXIII, 1968, p.75 ff.
- Theodosian Code, ed., Mommsen, T., Berlin 1905.
- Thomas, C. (Ed.), "Rural Settlement in Roman Britain", Council for British Archaeology Research Report 7, London: 1966;
_____, "The Character and Origins of Roman Dumnonia", *ibid*, pp.74-98.
- Thompson, F.H., "The Roman Aqueduct at Lincoln", Archaeological Jnl., Vol.CXI, 1954 (1955), pp.106-128.
- Thompson, F.H., Report in J.R.S., 45, 1955, p.131.
- Thompson, F.H., Volume II of a History of Cheshire, "Roman Cheshire", Chester, 1965.
- Thompson, F.H., & Whitwell, J.B., "The Gates of Roman Lincoln", Archaeologia, Vol.104, 1973, p.144 ff.
- Todd, M., "The Coritani", London, 1973.
- Todd, M., "Roman Lincolnshire, 1946-74", Archaeological Jnl., Vol.131, 1974 (1975), pp.278-9.
- Todd, M., "The Vici of Western England", in Branigan, K., and Fowler, P.J., (Ed.), "The Roman West Country", 1976, pp.99-119.
- Tooley, M.J., "Sea-Level Changes during the last 9000 years in North-West England", Geographical Jnl., Vol.140, 1974, pp.18-42.
- Toynbee, J.M.C., "Art in Roman Britain", Ed.II, 1963, London.
- Transactions of the Bristol & Gloucestershire Archaeological Society, Vols. XXIII, 1905; LV, 1933; LIX, 1937; LX, 1938; LXI, 1939; LXV, 1944; LXVI, 1948; LXXI, 1954.
- Trans. Historic Society of Lancashire & Cheshire, Vol.CIX, 1958, p.1 ff.
- Trollope, E.A., "Sleaford & The Wapentakes of Flaxwell & Aswardhurn", 1872.
- Tucker, -, in "Early Travellers in Scotland", 1655, ed. by Brown, P.H., 1891.
- Tylecote, R.F., "Metallurgy in Archaeology", London, 1962.
- Vaillant, V. - J., "L'estampille ronde de la Flotte de Bretagne", Revue Archéologique, Ser.3, Vol.12, 1888, pp.367-371.

- Victoria County Histories of England (V.C.H.):— Cornwall, Vol.I (1905) and Vol.II, pt.V (1924); Durham, Vol.II (1907) and Vol.III (1928); Essex, Vol.III (1963); Hampshire, Vol.I, 1900; Huntingdonshire, Vol.I, 1926; Kent, Vol.III, 1932; London, Vol.I, 1909; Middlesex, Vol.III (1962); Norfolk, Vol.I (1901); Shropshire, Vol.I (1908); Suffolk, Vol.I (1911); Sussex, Vol.III (1935), Vol.IV (1953) and Vol.IX (1937).
- Villard, F., "La Céramique Grecque de Marseille", 1960, Pt.II, pp.143-158.
- Vincent, J.E., "The Story of the Thames", 1909.
- "Vita Johannis Eleemosynarii, patriarchae Alexandriae", Analecta Bollandiana, XLV, 1927, 19-73; Migne, "Patrologia Graeca", XCIII, ix, 1625; Leontius' original text edited by H. Gelzer, Leipzig, 1893.
- Vitruvius, Books on Architecture, trans. M.H. Morgan (1914), republished 1960, New York.
- Wacher, J.S., (Ed.), "The Civitas Capitals of Roman Britain", Leicester, 1966.
- Wacher, J.S., "Excavations at Brough-on-Humber, 1958-61", Reports of the Research Committee of the Society of Antiquaries, London, No.XXV, London, 1969.
- Wacher, J.S., "The Towns of Roman Britain", London, 1975.
- Wallace, H., "Selsey and Chichester Harbour", Committee for Nautical Archaeology, Newsletter, 3, 1969, pp.18-21.
- Walters, H.B., "Catalogue of the Roman pottery in the Colchester and Essex Museum", 1930.
- Walton, K., "A Geographer's View of the Sea", Scottish Geographical Magazine, Vol.90, No.1, April 1974, pp.4-13.
- Ward, E.M., "The Evolution of the Hastings Coastline", Geographical Jnl., Vol.56, 1920, p.107 ff.
- Ward, G., "The Little Brooks of Old Winchelsea", Sussex Archaeological Collections, Vol.75, 1934, p.192 ff.
- Ward, J., "Cardiff Castle : its Roman Origin", Archaeologia, Vol.57, 1901, pp.335-352.
- Ward, J., "Roman Cardiff", Arch. Camb., Vol.LXIII, 1908, pp.29-64.
- Ward, J., "Roman Cardiff II", Arch. Camb., Vol.LXVIII, 1913, pp.159-164.
- Ward, J.H., "The British Section of the Notitia Dignitatum : an Alternative Interpretation", Britannia, Vol.IV, 1973, pp.253-263.
- Warner, J.L., "Notices of the original structure of the Roman fortifications at Brancaster, Norfolk", Proc. Arch. Institute - Norwich - 1847 (1851), pp.9-16.

- Waterman, D.M., "Excavations at Clausentum, 1937-38", *Antiquaries Jnl.*, Vol.XXVII, 1947, p.160.
- Watkin, W.T., "Roman Lancashire", Liverpool, 1883.
- Watkin, W.T., "Roman Cheshire", Liverpool, 1886, reprinted with an introduction by D. Petch, Wakefield, 1974.
- Watkin, W.T., in *Archaeological Jnl.*, Vol.XLIV, 1887, p.124.
- Webster, G., & Richmond, I.A., "Excavations in Goss Street, Chester, 1948-9", *C.A.J.*, Vol.38, 1950, p.18.
- Webster, G., "The Lead-Mining Industry in North Wales in Roman Times", *Flintshire Historical Society*, Vol.XIII, 1952-3, pp.5-17.
- Webster, G., "The Roman Military Advance under Ostorius Scapula", *Archaeological Jnl.*, Vol.CXV, 1958 (1959), pp.49-98.
- Webster, G., "Fort and Town in Early Roman Britain", in Wachter, J.S., (Ed.), "The Civitas Capitals of Roman Britain", 1966, pp.31-45.
- Webster, G., "The Roman Imperial Army", London, 1969.
- Webster, G., "The Military Situations in Britain between A.D.43 and 71", *Britannia*, Vol.I, 1970, pp.179-197.
- Webster, P.V., "Severn Valley Ware on Hadrian's Wall", *Arch. Aeliana*, Vol.L, 1972, pp.191-203.
- Webster, P.V., "The later Roman occupation at Wilderspool", *C.A.J.*, Vol.58, 1975, pp.91-2.
- Webster, P.V., "Severn Valley Ware on the Antonine Frontier", in Dore, J. & Greene, K., "Roman Pottery Studies", B.A.R. Supplementary Series No.30, 1977, pp.163-174.
- Wheeler, R.E.M., "Roman Cardiff: Supplementary Notes", *Antiquaries Jnl.*, Vol.2, 1922, pp.361-370.
- Wheeler, R.E.M., "The Roman Lighthouses at Dover", *Archaeological Jnl.*, LXXXVI, 1929, pp.26-46.
- Whellan, W., "The History & Topography of the Counties of Cumberland & Westmorland", Pontefract, 1860.
- White, D.A., "Litus Saxonium : The British Saxon Shore in Scholarship and History", Wisconsin : 1961.
- White, G.M., "Prehistoric Remains from Selsey Hill", *Antiquaries Jnl.*, Vol.XIV, pt.I, 1934, pp.40-52.
- White, W., *Cambridge Antiquarian Comm.*, Vol.IV, 1880, pp.423-6.
- Whitwell, J.B., & McNamee, S.M., "Excavations at 46-50, Foregate Street, Chester, 1961", *C.A.J.*, Vol.51, 1964, pp.1-19.

- Whitwell, J.B., *History of Lincolnshire, Vol.II, "Roman Lincolnshire"*, Lincoln, 1970.
- Wild, J.P., "A 4th Century potter's workshop and Kilns at Stibbington, Peterborough", in Detsicas, A. (Ed.), "Current Research in Romano-British Coarse Pottery", 1973, pp.135-8.
- Willcox, G.H., "Problems and possible conclusions related to the history and archaeology of the Thames in the London Region", *Trans. London & Middlesex Arch. Soc.*, Vol.26, 1975, pp.285-292.
- Willett, E.H., "Ancient British Coins of Sussex", *Sussex Archaeological Collections*, Vol.29, 1879, pp.72-113.
- Willett, E.H., "Ancient British Coins of Sussex", *Sussex Archaeological Collections*, Vol.30, 1880, pp.1-30.
- Williams, J.H., "Roman Building Materials in the South-West", *Trans. Bristol & Gloucester Arch. Soc.*, Vol.90, 1971, pp.95-119.
- Williams, J.H., "Roman Building-Materials in South East England", *Britannia*, Vol.II, 1971, pp.166-195.
- Williams - Freeman, J.P., "An Introduction to Field Archaeology as illustrated by Hampshire", 1915.
- Wilson, R.A., "Roman Remains in Britain", London, 1975.
- Winbolt, S.E., "Roman Folkestone", 1925.
- Wood, J.G., "The Ancient Harbours of Gwent Iscoed or South Monmouthshire and the Roman Passage thence", *Trans. Woolhope, N.F.C.*, 1902-4 (1905), pp.191-7.
- Woods, P.J., "Types of Late Belgic and Early Romano-British Pottery Kilns in the Nene Valley", *Britannia*, Vol.V, 1974, pp.262-81.
- Wooler, E., "The Roman Fort at Piercebridge, County Durham", 1917.
- Worth, R.N., "Prehistoric Plymouth", *Lecture to the Plymouth Institute*, Nov. 1931, p.12.
- Wright, E.V., & Wright, C.W., "Prehistoric Boats from North Ferriby, East Yorkshire", *Proc. Prehistoric Society*, Vol.XIII, 1947, p.114 ff.
- Wright, R.P., "Carpow & Caracalla", *Britannia*, Vol.V, 1974, pp.289-292.
- Yates, William, *Map of Lancashire*, 1786.
- Yorke, R.A., and Davidson, D.P., "Roman Harbours of Algeria", *Maghreb Project*, 1968.
- Yorke, R.A., and Little, J.H., "Offshore survey at Carthage, Tunisia, 1973", *International Jnl. Nautical Archaeology & Underwater Exploration*, Vol.4, No.1, 1975, pp.85-101.
- Yorkshire Archaeological Journal*, Vol.XXXI, 1934, p.385.