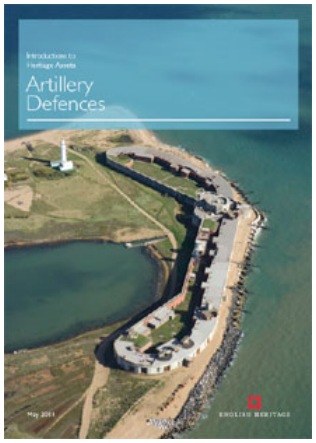
Historic England

Artillery Defences



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Introductions to
Heritage Assets

Artillery Defences

May 2011

ENGLISH HERITAGE

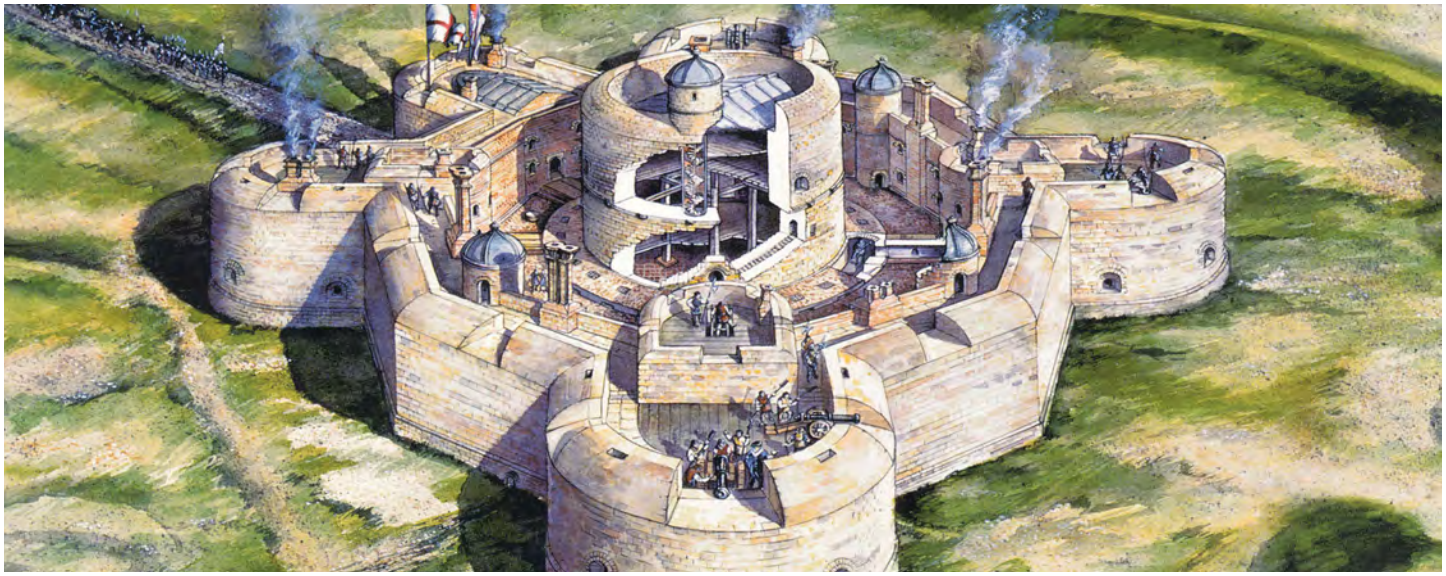

Fig. 1. Reconstruction drawing of Camber Castle, East Sussex, built 1539-40. At its centre is an earlier gun tower (1512-14).

INTRODUCTION

Artillery defences are fortifications built to mount and resist the effects of gunpowder artillery. They comprise many different types of structures, including forts, batteries, towers, redoubts, defensive lines, Martello towers, 1860s Royal Commission fortifications, and many smaller works. Most were built to meet external threats to the nation state, which is reflected in their coastal location. This type of fortification is also found in earthwork form, and is described in a separate document, Medieval and Later Fieldworks.

From the late 14th century gunpowder artillery and small arms began to appear on the battlefield, leading to profound changes in military tactics, architecture, and some would argue in the demise of medieval feudal society. To accommodate the new gunpowder weapons inverted keyhole-shaped cannon ports started to appear in fortifications, and from the late 15th century the first purpose-built artillery defences emerge. By the 16th century, to support the widespread adoption of this new military technology new forms of fortification initially based on circular bastions appeared. This was quickly replaced by a system based on the continental *trace italienne* (Italian lines), which was characterised by low walls, often backed by an earthen rampart, with large platforms for mounting artillery, and projecting bastions designed to protect the outer walls.

At the beginning of the 19th century, the construction of circular Martello towers with an upper gun platform represented a break with earlier traditions. They also marked the origins of the modern concept of defence in depth, with associated 'stop lines', fieldworks, redoubts, and a communication system.

After Napoleon's defeat at Waterloo in 1815, the military threat from France receded, although periodic invasion scares through the middle decades of the century continued to prompt renewed interest in coastal defences. In the 1860s, after the report by the Royal Commission on the Defences of the United Kingdom, a comprehensive scheme of new fortification construction took place.

From at least the Renaissance, the study of the profession of arms, including the architecture of fortifications, was seen as an essential part of a gentleman's education, and Henry VIII himself was closely involved in the design of many fortifications. From the late 18th century, an increasing scientific approach was brought to the study and teaching of fortification theory, and with it the emergence of a corps of professional engineering officers. The history of fortification was taught alongside modern practice, a topic also pursued by growing numbers of antiquarians. Britain maintained her coastal defences until the mid-1950s, and from that date a number have passed into the care of various heritage bodies. The history of fortifications remains a popular subject, and in addition to continuing interest in architecture and armaments, more emphasis might be given to their social history and wider influences on their surroundings.

The latest studies of artillery defences are usually reported on in the journal of the Society for Post-Medieval Archaeology and *Fort,* the journal of the Fortress Study Group.

Fig. 2. Yarmouth Castle, Isle of Wight. Elements of this castle represent one of the earliest examples of angle bastion defence in England. The interior was filled in the 1560s to create a large gun platform.

Fig. 3. Berwick-on-Tweed, Northumberland, showing part of the Elizabethan ramparts with their classic arrowhead shaped artillery bastions.

DESCRIPTION AND CHRONOLOGY

Provision for gunpowder weapons began to appear in fortifications from the late 14th century, often simply comprising an inverted keyhole-shaped cannon port in towers and gatehouses. Permanent artillery defences come to the fore in the 16th century, a period when England and Wales was clearly recognisable as a single kingdom, and most were built to meet external threats to the nation state.

In the 1530s, after Henry VIII's break with the Roman Catholic church, there was an immediate danger that England might be attacked by the continental powers. To advert this threat, from 1539, Henry VIII embarked on an ambitious scheme of coastal defence around the south and east coasts, colloquially referred to as the 'Device'. The majority of new artillery defences were placed in coastal locations, to defend naval dockyards or to protect sections of coastlines that might provide a foothold for an invasion force. These forts were primarily designed to engage shipping and were based on northern European principles, with concentric plans, low thick walls and D-shaped bastions, and with ordnance mounted at various levels (Figure 1). One of the drawbacks of this design was that it allowed for 'dead areas' on the walls that were incapable of defence by crossfire.

In continental Europe, by the 16th century to overcome this shortcoming a new system of fortification, the *trace italienne* (Italian line) had evolved to mount artillery and counter the effects of shot and shell (Figure 2). The main characteristics of this system were low wide walls, or ramparts, to absorb shot and projecting from them four-sided angled bastions to protect the walls, with platforms or roofs for positioning artillery. In plan, this gave rise to the classic star-shaped fortification. Further refinements might include outer ditches and detached casemates or batteries, known as ravelins. This design dominated the form of large fortifications until the late 18th century.

Major fortifications based on this system were built in Elizabethan England (1558-1603) at Berwick-on-Tweed, Northumberland (Figure 3), and to protect the naval dockyard at Portsmouth, Hampshire; elsewhere there were smaller works (Figure 4). In England, this system was widely used during the Civil War (1642-1651). Most fortifications built at this date were temporary earth and timber fieldworks and are covered by a separate document, Medieval and Later Fieldworks. After 1660, and the restoration of Charles II, a dominant figure in the design of English fortifications was the Dutch fortress engineer Bernard de Gomme, although ironically during this period the Dutch were seen as the main threat. Amongst his most notable works were the fortifications around Gosport, Portsmouth (both in Hampshire), Plymouth (Devon), Sheerness (Kent), and Tilbury Fort (Essex) (Figure 5).

After this period of intense activity, in the early 18th century despite war with France, there was little new major fortification construction. Notable exceptions include Blockhouse Fort, Gosport (Hampshire) and Landguard Fort (Suffolk). From the end of the 18th century until the defeat of Napoleon at the Battle of Waterloo in 1815, Britain's security was threatened by Revolutionary and later Napoleonic France. Initially, to defend the vulnerable south and east coasts a system of emergency coastal batteries was constructed. This period also saw the construction of the last true bastioned forts at Fort Monckton, Gosport, and Fort Cumberland, Hampshire (Figure 6).

Bastioned forts are relatively unusual in England, but where they do occur, they may enclose barracks, magazines, a governor's house, chapel, and storehouses. In addition to the larger forts, artillery defences also include smaller works with ramparts revetted in brick or stone. To strengthen the permanent forts, self-contained batteries might also be built. These became particularly important in the late 19th century as quick firing guns were installed to counter the threats from fast moving torpedo boats. Other forms of artillery defences include blockhouses, continuous bastioned lines to defend towns and dockyards, redoubts, towers, interior lines and entrenched camps.

Fig. 4. Carisbrooke Castle, Isle of Wight. A Samuel and Nathaniel Buck print of 1733, showing part of the new bastioned defences erected between 1597 and 1601 to protect the island against possible Spanish attack.

Fig. 5. Tilbury Fort, Essex, designed by the Dutch engineer Bernard de Gomme and completed in 1684 is one of the finest examples of an angled bastion fortification in England.

From 1805, seventy-four sturdy brick Martello towers (Figure 7), spaced at approximately 500m intervals, were built around the south and east coasts, some supported by earlier batteries. A handful of large redoubts were also built, and around key dockyards, such as Chatham, further defences were constructed. New forts included ones built to a modified bastion system designed to provide concentrated battery fire, in places combined with towers. By the middle of the 19th century, new theories of fortification evolved, such as those proposed by the French engineer Montalembert, who emphasised the importance of overwhelmingly firepower for defence. This was reflected in tiered and casemated gun positions, exemplified by the construction of the four-tiered Fort Albert to protect the Solent.

From the 1860s, prompted by a periodic French invasion scare, the government built a series of so-called Royal Commission Forts and other works, sometimes known as Palmerston's Follies (Figures 8 and 9). They appeared at a time of rapid evolution in military technology, including steam-powered, ironclad warships, rifled artillery, new chemical smokeless propellants and high explosives. Other emerging civil technologies, such as, concrete construction, electricity, the telegraph and telephone were to have profound effects military architecture and the control of coastal defence guns.

DEVELOPMENT OF THE ASSET TYPE AS REVEALED BY INVESTIGATION

The overall development of post-medieval artillery defences is well understood, and Andrew Saunders has provided the most comprehensive recent summary in *Fortress Britain* (1989). There are also many accounts of individual fortifications and descriptions of local defence systems. Some of the best studies combine analytical field survey, architectural investigation, documentary research, and historic photographic searches. Aerial photography has also been valuable in understanding the disposition of fortifications in relation to their local landscape.

The State, represented by the Crown, built most permanent artillery defences and they are extremely well documented through written records and plans preserved in the National Archives and other repositories. Many of these were used to compile the six volume *History of the King's Works* series that provides a detailed introduction to fortification works of this date.

Archaeological studies of artillery defences, including architectural investigations, have a significant contribution to make in elucidating the often complex patterns of remodelling that many fortifications underwent. Although, many permanent fortifications survive, archaeological prospecting through aerial photography and geophysics has a role in locating lost works. Lidar, light detection and ranging, survey also has much to offer in allowing fortifications to be understood against their topographic setting, and when combined with Geographical Information Systems may reveal a deeper understanding of their fields of fire and blind spots. Archaeological excavation is also important in revealing lost fortifications, such as the citadel at Hull. Through the recovery of artefacts, excavation has the potential to improve our understanding of their chronologies and of the social history of fortifications, including changing living conditions, and the social and economic relationships with their localities. This may be supplemented by environmental sampling to understand the health of the garrisons and the contemporary ecology. The value of this work will be greatly increased if it can be linked to documentary sources.

ASSOCIATIONS

The vast majority of English permanent artillery defences are coastal and have direct geographical associations with the places they were designed to defend, such as, river mouths, harbours, naval dockyards, and more rarely towns. Most fortifications were part of wider defence lines and may be associated with local fortifications, or more extensive systems. These may include other permanent works, outlying batteries, or an earthwork component.

Fig. 6. Fort Cumberland, Hampshire, 1795-1812, was the last fully bastioned fort to be built in England. This picture shows one of the bastions with casemates, in which guns were placed to defend the ditch and adjacent wall.

Fig. 7. Bawdsey, Suffolk, one of the Martello towers built between 1808 and 1812 to deter a French invasion along the East Coast.

The early 19th century system of defences built to counter Revolutionary and Napoleonic France was particularly sophisticated, embracing existing works, new forts, Martello towers, fieldworks, the Royal Military Canal on Romney Marsh (Sussex), a semaphore signalling system, and a supply depot and refuge for the royal family at Weedon Bec, Northamptonshire.

Many artillery defences have chronological associations; they may overlie or incorporate earlier works, and their fabric may reflect later modifications until the mid 1950s when coastal defences were finally abandoned. By the late 19th century, new technology was both posing a threat to existing fortifications, and opening up new possibilities for their defence illustrated by associations with electric searchlights, Brennan torpedo tubes, mine stations, telegraphic and telephone systems. Artillery defences are linked to wider communication networks by military roads, and to a lesser extent jetties and railway lines. These connect them to other military features such as barracks, hospitals, magazines, stores, and to the wider civilian world.

Many artillery defences also have clear historical associations with events, evolving military technology and architecture. But, they also represent a human story of the individuals who designed or commanded them, and of the far greater number of men, women, and children of the fort garrisons who made lives within their walls.

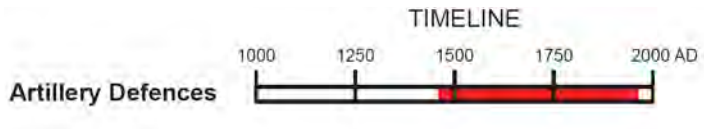

Fig. 8. Hurst Castle, Hampshire. In the 1860s, to protect the western entrance to the Solent and Portsmouth dockyard Henry VIII's fort was encased by two granite faced wing batteries, its guns housed in casemates with iron shields.

Fig. 9. The Needles, Isle of Wight. An 1860s open battery with 9-inch muzzle loading guns.

FURTHER READING

There is a vast body of published material on post-medieval artillery fortifications, ranging from contemporary treatises to modern works of synthesis. Most artillery fortifications were constructed on behalf of the Crown and the historical sources to these works are discussed in the six volume *History of the King's Works* series (principal editor Howard Colvin), and in particular the later volumes. The most comprehensive study of British artillery fortifications, from the later medieval period to the 20th century, is by Andrew Saunders, *Fortress Britain* (1989). His book *Fortress Builder: Bernard de Gomme Charles II's Military Engineer* (2004) presents a more detailed account of 17th-century fortifications. Quentin Hughes gives a wider geographic and chronological account of the subject in *Military Architecture the Art of Defence from the Earliest Times to the Atlantic Wall* (1991). Bernard Lowry gives a more concise description of the topic in *Fortifications from the Tudors to the Cold War* (2006). The development of medieval warfare and the effect of the introduction of gunpowder is usefully summarised by Kelly DeVries in *Medieval Military Technology* (1992). The report on the archaeological, structural and historical investigations at Camber Castle, Martin Biddle, *Henry VIII's Coastal Artillery Fort at Camber Castle, Rye, East Sussex* (2001), is one of the best examples of a multi-disciplinary archaeological study of a fortification. Peter Harrington has also written a number of more specialised books on English Civil War fortifications (1642-51) including *The Archaeology of the Civil War* (1992) and *English Civil War Fortifications 1642-51* (2003). Sir George Sydenham, *Fortification: Its Past Achievements, Recent Developments, and Future Progress* by provides a discussion of 19th-century developments (1907, reprinted 1989).

The Fortress Study Group is an international society concerned with the study of all aspects of military architecture, fortifications and their armaments, especially works constructed to mount and resist artillery. The group produces an annual journal, *Fort* and a newsletter, *Casemate* three times a year.

CREDITS

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Cover: Hurst Castle Hampshire, as Figure 8

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