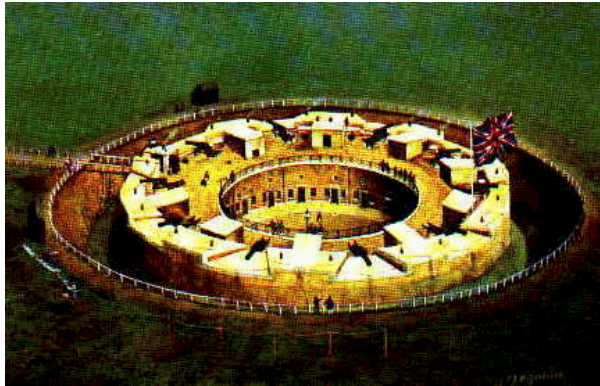


STATIC FORTIFICATION TO MEET THE THREAT OF INVASION 1798-1814

By Gareth Glover

The aim of this article is to describe the discussion that led to the building and the actual static fortifications built in the Napoleonic Wars, designed to prevent an invasion and manned by the Royal Artillery.



Harwich great 10-gun redoubt 1810

INTRODUCTION

IT is a constant source of amazement to me that the coasts of Britain were completely unprotected as late as 1800, despite the centuries of threatened and attempted invasions from France and Spain. There were some defences at the important ports of Plymouth, Portsmouth and in the Medway, but beyond this, reliance had been placed on a few Tudor fortifications at Deal, Walmer and Sandown and even Norman

defences such as Dover castle.

This situation had deteriorated since the days of Cromwell and The Civil War, when the public at large formed an innate sense of distrust of anything military. This was at least true as regards the Army, which was seen as a potentially repressive force in the hands of the King and Government. The Navy was largely seen as a protective force to repel outside threats and enjoyed some public favour. This led to outright opposition from the public and 'populist' members of Parliament to all defensive planning, any plans to construct permanent structures was to be obstructed and any such plans were eventually abandoned by successive Governments.

In 1779, a joint French and Spanish fleet had controlled the English Channel unchallenged for six weeks and an invasion could have been launched at any time with a good chance of success, as the defences were in total disarray. Indeed the Governor of Plymouth had indicated that his defences were so feeble that the French only had to land there to be masters of the dockyard 'in less than six hours'¹. Only the French Admiral's disbelief in his own situation saved the day.

Following this close escape, Prime Minister Pitt, attempted in 1785 to propose a budget for providing fortifications. Although backed by professional soldiers, the proposal was regarded by most with complete distrust. Forts were regarded as 'Seminaries for soldiers and Universities for Praetorian Guards'² and the Parliamentary debate was defeated on the Speaker's casting vote. The country would remain defenceless from without, to avoid the dangers of a dictatorship from within!

From 1797, the south coasts of England and the coast of Ireland were virtually under constant threat of invasion from the armies of France and these fears did not entirely disappear until after the second defeat of Napoleon Bonaparte in 1815. In 1805 the French invasion fleet numbered in excess of 1500 craft of various sizes, it would need six tides; i.e., three days to sail with all these craft. The Battle of Trafalgar is incorrectly stated as marking the end of the invasion threat from Napoleon and his armies, nothing could be further from the truth. Trafalgar simply damaged Napoleon's ability to protect the invasion flotilla with men of war to prevent disruption from the British Navy. However, plans were still extant in 1809/10 to invade in calm or light winds. These would be favourable to the overwhelming numbers of craft of the invasion flotilla fitted with oars as well as sails, whilst the British ships were becalmed or struggling against contrary light winds. Napoleon never recoiled from large losses to achieve the ultimate goal, he was fully aware that such an attempt was certainly fraught with dangers. Napoleon amassed up to 160,000 troops and thousands of small craft in the rivers of Northern France and Holland. It cannot seriously be doubted that if the right occasion had presented itself, then Napoleon would have attacked, he was always the great gambler. These fears slowly but perceptibly, changed public attitudes towards the protection of Britain and the army in particular, fear of Napoleon and 'children devouring soldiery'³ outweighed their old fears of the military.

Finally proposals to defend the shores would be listened to and occasionally acted upon.

DEFENCES

Now that the defence of the Realm could be considered openly, including in the newspapers, (which Napoleon read avidly), what was the best way of organising the defences?

The scares of 1797-8 and 1800-01 led to very little positive action. It did lead to some field fortifications being raised, but more importantly, it caused the Commander in Chief, The Duke of York, and his Staff to study all the problems of defending Britain and preparing a list of actions needed. A major augmentation of the Army and its Reserves such as the Militia and Volunteers was implemented quickly, as this came completely under the Duke of York's remit.

Defensive structures however were a different proposition, the Duke of York could order temporary 'field works' to be completed, but authority for permanent structures was under the control of the Master General of the Ordnance, Lord Chatham, who also provided the cannon and artillery men for these defences. This inevitably led to delays and clashes between the two departments. Decisions were passed back and fore between interminable committees and effectively little was achieved. Lord Chatham was never one to be rushed into anything and peace in 1802 put all discussion on hold, as the threat was temporarily removed, nothing changes!

In 1803 with the renewed outbreak of hostilities, the exhaustion of Napoleon's enemies in Europe meant that the threat of invasion was now very real and at last the Government gal-

vanised itself into some action. London as always was seen as the target for Napoleon and all defensive plans were made with the protection of the Capital as the primary aim. A large permanent fortification was built on Shooter's Hill to protect the approaches to London from the South. To the North of London an armed camp was set up at Brentwood and a plan to flood the valley of the Lea was devised.

Works were quickly built at Plymouth and Portsmouth to protect the great dockyards, with outworks built on the commanding hills overlooking the harbours. Lines of defence were also built to protect Chatham dockyard and Milford Haven (the connecting port with Ireland). Dover was already being developed with monumental works and it was felt to be well protected. After the work was carried out at Dover, Dumouriez, the veteran French General then in exile in England pronounced Dover 'Unassailable'. It was obvious however, that Napoleon fought war in a new way, he would not let his army become bogged down for months trying to take these fortified points, he would merely screen them to avoid them being used for raids on his army's communications and drive on for the prize. The British army that would face this invasion was largely formed of Reserve and Volunteer units, few expected them to seriously challenge the battle hardened French army in the field. It became obvious that defensive plans needed to be implemented that prevented Napoleon's army landing easily and disrupt his free movement.

THE DEFENCE PLAN

THE plans to thwart the invasion were multi-tiered.

Firstly the Navy, supported by a flotilla of small coastal vessels, hired and armed by the Government, were to attack the flotilla before it could land. However, it could not be expected to completely halt the invasion. Secondly, batteries were to be placed along the shore at vulnerable landing points to destroy the landing vessels. During this period, a 'scorched earth' policy was to be carried out, driving the civilian population out of Kent and Sussex to deprive the French of supplies. The Army would be held in reserve to counter attack once the exact point of invasion was clear. If forced to retire, the army was not to retreat toward London, it was designed to fall back on the large works at Dover. This would force Napoleon to decide whether to deal with this threat first or proceed toward London leaving a large enemy force in his rear. To counter an attack to the East of London led to an armed encampment being built at Dunmow in Essex to act as a 'Dover' in the North. Great earthworks were to be raised by the population of London as a final defence. It was calculated that they could be thrown up within three days using the civilian population and that the French army could not reach there before that time.

The plans were weak in many areas, the Navy's ability to quickly concentrate sufficient forces to seriously hamper the invasion were much doubted, even by some of the Admiralty.⁴ The shore batteries would be quick and cheap to construct, however most were simply

surveyed, palisades, guns and wooden planking deposited on site, but actual construction was to be left until the enemy was landing and to be constructed by the soldiers with the enemy in sight! This was another cost cutting measure, the farmers were paid rent for the land used for the batteries, but if the land was still available for agricultural usage until the battery was constructed, then no rent needed to be paid! It was also well known that new earth works offered little protection to the batteries as the strength of such earthen slopes⁵ comes with time as the earth becomes compact. The batteries also had no cover from attack from the flanks and rear and were therefore very vulnerable once any French forces actually managed to land ashore. The 'scorched earth' policy was abandoned very rapidly under the opposition of the army held in reserve. How they argued, could they rapidly move on any invasion force if the roads were completely clogged with farm carts and cattle trying to vacate the area? The French army was also very expert at living off the land and would not find it hard to live in the 'Garden of England' for a week on route to London. Finally, the defences of London would take a number of days to complete even if the entire male population helped, the earthworks would again be new and weak and it was computed that the defences would require a garrison of 180,000 men to man fully!

Many could see the flaws in the plans and looked for alternatives. Defending beaches with open batteries had recently been shown to be inadequate to resist a determined assault. Sir Ralph Abercromby's troops had successfully landed at Aboukir Bay in Egypt against 15 cannon and 1600 French troops in good defensive positions. Something more permanent and more difficult to overcome was required.

TOWERS



Two Martello towers near Hythe

It was argued that to have any chance of defeating the French invasion, then they must be defeated in the few days before the landings were complete. Disruption of the following waves of reinforcements was vital to avoid the possibility of the French overwhelming the army held in reserve. As early as 1798 a Major Thomas Reynolds suggested 'Simple towers of Brickwork' but was ignored. This suggestion was not one of original thought, it followed from previous experience.

The idea of constructing towers to defend coasts was not new, such towers had been used throughout the Mediterranean as watch towers to warn of attacks by Corsairs and Turks for centuries.

Indeed, narrow stone towers had been built in Jersey and Guernsey from 1778 for fear of attack from their French neighbours. The Governor of Jersey proposed 30 towers, these were started in 1779 and twenty were complete by 1794, it was 1801 before the thirty were complete. These towers were pierced for small arms, which English experts felt weakened the walls.

On Guernsey, twenty towers were built from 1783, these were very narrow with walls only four feet thick. In 1787, a team of Royal Engineers reported on these Guernsey towers, they criticised their size and strength, indeed they never had guns mounted on them as too weak, they were simply used to form local garrisons of troops. Lieutenant Colonel Robert Morse and Lieutenant Colonel Abraham D'Aubert made the report, they were later to be two of the three man team that were called upon to advise on the sites and design of towers for the South coast of England in 1803.

In 1794, Lord Hood took his fleet to Corsica to help General Paoli (a hero of the youthful Napoleon) and his Corsicans, regain independence from their French oppressors. Hood needed to use San Fiorenzo Bay as an anchorage for the fleet, but the bay was controlled by a tower with three cannon. HMS Fortitude of seventy four guns and HMS Juno of thirty two guns sailed forth to destroy the tower. Eventually, the two ships limped away having suffered severe structural damage, six dead and sixty wounded. The army under Sir David Dundas and Lieutenant General Sir John Moore, had to formerly besiege the tower. A battery of four guns fired from a range of 150 yards for two days before it finally surrendered and the garrison of only thirty eight men captured.

Everyone was deeply impressed by the resistance of the tower and it's defenders. This incident led to the idea that towers with a few guns could repel great warships with numerous guns. The tower was found to have walls of brick fifteen feet thick, very detailed drawings were taken of it and even a wooden model was constructed and sent to England for consideration. The tower was demolished in 1796 when the army was forced to evacuate Corsica. It is no surprise to learn that Major Reynolds was in Corsica. Within a few years of Lord Hood's clash with the Mortella tower, two towers were built in South Africa around Simonstown, the Governor, Vice Admiral Elphinstone had been at Corsica. A few were also built at Halifax in Nova Scotia.

In 1798, fifteen towers were built on Minorca when the British occupied the island and in 1804 three small towers were built on Guernsey, these were much more on the design of the archetypal Martello tower that was soon to be developed for the shores of England.

In Ireland in 1794, an attempted landing by a force of 18,000 Frenchmen led by General Hoche, failed only because their Commander's ship had been separated in a gale and nobody was prepared to launch the invasion in his absence. In 1798 a small French force did land and caused panic for three weeks, before being defeated. This led to a large Martello building programme, numbers are uncertain but up to 74 were built, mainly around Dublin and Bantry Bay. These were rapidly built under the orders of the Duke of York who passed the works as 'field works', therefore avoiding involving the Ordnance.

By 1803, the Commanding Engineer Officer of the Southern District, Brigadier General William Twiss, had received a report from his subordinate, Captain W. H. Ford of the Royal Engineers. Ford recommended a chain of towers be built along the South coast at short intervals. The towers were to be square and carry a gun on a flat roof. Ford listed the merits of the towers, they were long lasting, quick and easy to build, cheap, relatively maintenance free, easily 'mothballed' when invasion crises waned and allowed a small garrison to hold out against a lengthy siege. Twiss passed the idea on and eventually, having taken months to stir any interest, the Duke of York grasped the idea for a limited number of sites. Originally towers were planned to be built alongside open batteries as a support and final rallying point during any invasion. The original recommendation was for 2 near Eastbourne, 3 near Hythe and a 6th at Folkestone.

However, during 1804, Brigadier General Twiss examined the South coast of England for sites for Martello towers (probably an Anglified version of Mortella) . The Duke of York wrote eagerly to Lord Chatham. In view, he wrote, of 'the peculiar description of Armament with which this coast is threatened- composed of a multiplicity of small vessels . . . it is highly probable the disembarkation of an enemy will be undertaken for a considerable series of time after the arrival of the leading vessels upon the coast'. Hence 'the possession of the Sea Batteries [was] an object of the greatest moment' towers would be 'perhaps, the least expensive of all permanent works.'

A Royal Military Canal was also discussed by the army at this time, which was effectively a wet ditch or moat, thirty feet wide from Shornecliffe to Rye, effectively cutting off Romney Marsh from the land, later extended to Hastings. Station houses were set every quarter of a mile on the land ward side, linked by a military road, with a planned 6 pdr gun for each station house, which were never supplied. The plans included opening all the sluices along the coast and flooding much of the marsh areas to impede the French. This evaded discussion by the Board of Ordnance as the Duke of York classed the canal as a fieldwork and it was rapidly completed. However, it soon became clear that if the great rivers of Europe could not delay Napoleon's armies, the canal would not either, it was abandoned as a military construction very soon after completion as a 'white elephant', and the canal was stocked with Tench!

The scheme for tower building lurched forward very slowly, they were deemed as forts and required agreement by the Ordnance Board as permanent structures. A Committee was set up of Twiss, Morse and D'aubert, all favourable to the towers although no design was set. Twiss recommended up to 81 towers covering all the danger points with a 500 to 600 yard spacing. Discussions continued about the number of sites, their locations, the shape of the towers and the armament required in each tower. Square towers with four cannon were considered, but were five times as expensive as the round tower option. Delays seemed interminable, despite the invasion threat and building did not even start on the first tower until the Spring of 1805.

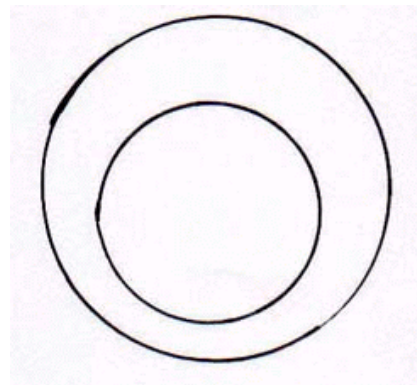
By the summer of 1806, six towers were complete, it was two years more before the South coast chain was completed, numbered 1- 73 (no. 74 was completed in 1810) the numbers starting at the eastern end. These were bolstered with two great eleven gun towers at Eastbourne and Dymchurch.

Immediately on completion of these, a chain of 29 towers were started on the East coast from Clacton to Aldeburgh in Suffolk, (lettered from the South A to Z and then AA to CC). This later chain was built to slightly different specifications and armaments following experiences in the Southern chain. As with the Southern chain two great ten gun towers were built at Harwich and opposite at Landguard point.

Two were built in the Orkneys in 1812 to defend against attacks from the American navy.

Each tower was 33ft high, built of solid brick. Each South coast tower required 500,000 bricks (about the number required for thirty 4 bedroomed houses), 700,000 for the East coast towers. Ten million 'Superior London' bricks were ordered from Adam & Robertson of Old Bond Street. Not all the bricks came from London, many yellow grey London bricks were shipped along the coast but the number required was enormous and many locally produced red bricks are evident in many towers. A hot lime mix (lime, ash and tallow) was used as a mortar and when set, was as hard as iron. This was used after tests at a firing range, where cannon balls continuously bounced off the trial structure. The towers did suffer from damp, therefore an outer screed of cement was lain over the bricks to reduce the problem. A central pillar of brick, five feet thick, supported the roof and floors on great oak joists radiating from it. Each tower cost approximately £2500 in 1805 and despite the threat of invasion, work was frequently disrupted by striking brick layers demanding higher pay!

The towers had a single doorway on the land ward face, 20 feet above the ground (higher than a man on another's shoulders could reach). The door was reached by a removable ladder. The ground floor was for the magazine and stores. In the magazine and store space, light was provided by a lantern placed in a glass compartment so as to avoid naked flames. The door from the magazine and hinges were coppered to avoid any possibility of sparks. Some towers had cellars to stow fuses, or wells, otherwise water was stored in a slate lined tank, possibly filled by rain water off the roof. These cellars probably caused the myth that the towers were connected by tunnels. A ladder was dropped into the magazine as required for access.



Plan showing elliptical plan with greatest depth of brickwork to seaward

The first floor quarters were designed for twenty four artillerymen, the central pillar was designed with racking to hold up to 27 muskets. There was a small room for an Officer and a small store for the Quartermaster Sergeant's supplies. The Officer's room and main

garrison room had a single window and a fireplace each. The flue for the chimney was built into the walls and was topped by a small chimney on the roof. The floor of thick timber was supported by corbels on the inner surface of the walls and a lip on the central brick tower. The boards were held with wooden pegs in case iron nails caused sparks off the men's boots.

The first floor had a staircase built into the wall, up to the gun platform on the roof. The support for the roof was produced by brick vaulting radiating from the massive central pillar. This shape was produced by laying bricks over a wooden 'former' until the mortar set hard, then was removed. The roof was covered in lead and a parapet was built 6 foot high and six foot thick to protect the gun and crew, the domed roof was bomb proof. The South coast towers were armed with a single 24-pdr cannon mounted on a single centrally pivoted mounting, (often an old cannon facing skywards and built into the brickwork, allowing 360 degree arcs of fire. The East coast towers were designed for a 24-pdr cannon and two carronades or howitzers and the roof space pattern was in the form of a three leafed clover. The chimneys would be knocked down when attacked, to avoid obstructing the gun's arc of fire. Recesses in the parapet were designed to hold the cannonballs and avoid restricting the guns movement, a fender was provided to stop them rolling out. The guns were traversed using block and tackle and aimed with the aid of a graduated marker on the inner face of the parapet. Ammunition was sent up from the magazine after each firing, and passed through a small slide or hinged door to allow no possibility of 'flash back' which could to set off an explosion in the magazine. An East coast tower was designed to hold 100 round-shot for the 24-pdr, 20 case shot, 40 case shot for the howitzers, 280 shells, 80 hand grenades and a half ton of gunpowder.

The towers had a slight inward slope by decreasing the thickness of the walls from 8ft at the base to 6ft at the top and therefore took on their traditional 'inverted flower pot' look. The South coast towers were smaller with two windows, on opposite sides, each 90 degrees from the seaward face. The larger east coast towers had four windows each set 60 degrees off the door, therefore only having a 120 degree of solid brick face to seaward and two internal staircases to enhance movement. Some towers in both chains were moated but there seems to be no pattern to the decision to dig a moat or not, moated towers had drawbridges which would be burned when under attack. The base was 13 foot thick to seaward, 6 feet to the sides and 5 feet to the rear, this was achieved by the towers being slightly ovoid in shape, with the inner compartment circular, but off centred (see diagrams). The South coast towers were 48 foot round, the East coast 55 feet round. In 1860, an experimental firing of Victorian, rifled Armstrong guns (100- and 80-pdrs), against an old Martello tower, required fifty strikes on target to demolish it!

The Southern towers were armed with a smooth bore 24-pdr cannon, measuring 10 feet in length and 6160 pounds in weight. With a maximum elevation of 7 degrees a solid shot could be propelled 2150 yards. The 24-pdr could also use case shot against packed infantry in boats or forming up on the shore, they could either use heavy case containing 84 six-ounce balls, or light case using 232 two-ounce balls. One round of light case, had the killing

power of more than one hundred infantry. The eastern towers were given additional armament in the guise of two howitzers. A 5 1/2 inch howitzer could fire shells at shipping or case containing 100 two-ounce balls at landing infantry. Firing rates of one shot every two minutes could be maintained for long periods. The towers were impregnable to troops without siege guns.

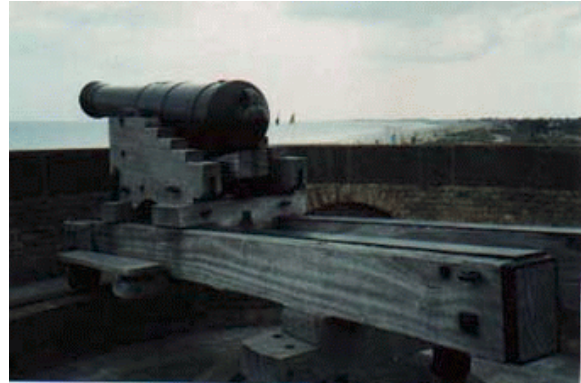
To gain an idea of the chain's strength, Pevensey bay was an excellent example, a ship lying in the bay was within the sights of no less than fifteen towers!

Soon after building, the towers became to be seen as expensive 'white elephants' as they never fired a shot in anger. Typical of the British, because they weren't tried, they were a waste of money! However the confidence in home defence that was engendered by these fortifications led to

more troops being allowed from home duties to increase the forces in Spain with Wellington. Wellington can therefore have the last word, 'There may be different opinions on the value of these towers as a defence. My opinion is in their favour. At all events, if they were nothing else, each of them is an excellent defensive Guard house.....'.

Today a number of the towers survive. Many originally lying near the water's edge have disappeared through erosion of the coast, but out of the 74 southern towers 26 still stand and on the East coast 17 out of 29 survive. It has to be said however, that their condition varies considerably, few are maintained in good condition, one has been rebuilt as original and now forms a museum, a few have been converted into homes. One of the great towers at Harwich has been fully restored.

The majority lie disregarded and slowly decaying, surely a sad end for such wonderful constructions.



24-pdr cannon on central pivot



Martello showing window and doorway

Notes:

1. Quoted in H Butterfield, *George III, Lord North and the People*, London 1949
2. *Parliamentary Debates XXV*
3. A popular myth used to frighten unruly children. However the more gullible elements of the population started believing their own stories!
4. Including Lord Hood
5. One reason for the Surrender of Yorktown in the American War of Independence was that the defensive earthworks were new. General Cornwallis reported ,‘Our fresh earthen works do not resist their powerful artillery’, four days later the Army surrendered. If they had stood for one week longer aid would have arrived and a very different outcome to the war may have occurred.

References:

Martello Towers Sheila Sutcliffe 1972

Britain at Bay Richard Glover 1973

Martello Towers Peter Cooksley (*Military Modelling Magazine* Oct 1988)