

TWENTIETH CENTURY BRITISH COAST DEFENCE GUNS

By Terry Gander

Introduction

‘A fort without guns is like a mouth without teeth’ is an apt description of many of the fortifications remaining in the United Kingdom and many parts of the old British Empire today. To fully understand what remains of these fortifications it is necessary to understand the weapons with which they were armed.

At the end of the nineteenth century the British coast defence fortifications were armed with a large variety of muzzle-loading and breech-loading guns, the latter with a comparatively slow rate of fire. In 1905 the Admiralty and the War Office set up a joint committee with instructions to ‘report what additions or alterations, are necessary to the existing fixed defences of all defended ports at home to suit modern conditions’. The committee was chaired by Major General J.F.Owen with four other members, two each from the Army and the Royal Navy. This committee was to have great influence on future policy concerning fixed defences in the United Kingdom and overseas and became known as the Owen Committee.

The Owen Committee took as the basis for its consideration the fact that in 1905 the ports of the United Kingdom might be subjected to three classes of naval attack. These were: Class A – Attack by Battleships; Class B – Attack by Armoured Cruisers; Class C – Attack by Unarmoured Cruisers, Torpedo Boats and Blockships. As a result the committee rationalised the types of armament it considered should be provided to defend the ports and harbours against each type of attack.

For defence against Class A and Class B attack the committee believed the new 9.2-in BL Mk X gun was effective and, therefore, adequate. For defence against Class C attack the requirement was for rapidity of fire combined with as great a weight of shell as could be provided. Initially the 6-in BL gun Mk VII and the 12-pdr QF gun were considered the most suitable but, subsequently, as destroyers became larger and more heavily armed, the 4.7-in QF gun was introduced and the small 6-pdr QF gun phased out.

In the years immediately before the outbreak of the Second World War the decision was taken to mount 15-in BL guns to defend the naval base at Singapore and, after Dunkirk, two similar guns were installed at Dover in a coast defence and counter-bombardment role together with six 8-in BL naval guns. The latter were mounted on a modern version of the old front-pivot mounting used for the earlier rifled muzzle-loading guns.

6-pounder Gun

When the 6-pounder gun first entered service with the Royal Navy during the mid 1880s there were two manufacturers, Hotchkiss and Nordenfeldt, with slight differences between the two. Both were intended to tackle close-in fast targets such as torpedo boats and both were also adopted for coastal defence for the same operational role. Gradually the Hotchkiss model came to predominate but after the end of the Great War the 6-pounder was largely replaced by the more powerful 12-pounder, other than as a practice or sub-calibre training weapon. However, a few remained operational after 1939 although they had gone by 1945.

The 6-pounder utilised a simple spring-based recoil system with the ordnance on a fixed pedestal mounting. Aiming was accomplished using a shoulder piece, the aimer simply shoving the barrel into position manually. Fixed one-piece ammunition was fired, the almost universal nature being high explosive.

6-pounder data	
Calibre	57 mm
Projectile weight	2.72 kg
Length of barrel	2,480 mm
Length of bore	2,280 mm (L/40)
Length of rifling	1,954 mm
Weight of gun	372 kg
Elevation	-20 to + 20°
Traverse	360°
Muzzle velocity	554 m/s
Max range	ca 6,860 m



A 6-pounder gun still on display at Tilbury Fort

Twin 6-pounder Guns

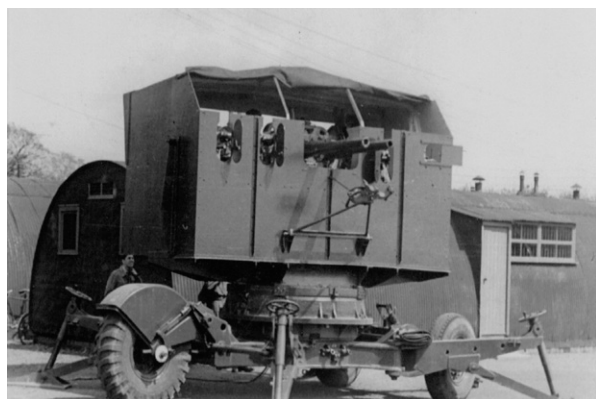
During the 1920s a specification was issued for a harbour defence gun with a higher rate of fire than the 12-pounder for firing against fast-travelling torpedo boats. After investigations it was decided to adopt a twin-gun mounting capable of a high rate of fire and the first prototypes were under test by 1928. Series production began in 1934 and the guns remained in service until 1956.

To achieve the required high rate of fire (at least 30 rds/min) the guns were provided with a revised firing system. The two aimers carried out their aiming duties continuously and did not actually fire the guns. That function was carried out by the loader who actuated a firing lever as soon as each round was fully loaded into the semi-automatic, vertically sliding breech mechanisms. With a trained crew fire rates could be as high as 40 rds/min from each barrel – some crews could manage better.

The two 6-pounder barrels were placed side-by-side on a fixed pedestal in a concrete emplacement that usually restricted the traversing arc, which could be up to a full 360° when unhindered. The guns were protected by a wide armoured box housing open to the rear to enhance ventilation during prolonged firing sequences.

As a measure of the firepower of the Twin 6-pounder a battery of them at the mouth of Valetta harbour sank five Italian torpedo boats and human torpedo attack vessels in less than two minutes on the night of 25/26th July 1941.

Twin 6-pounder data	
Calibre	57 mm
Projectile weight	2.85 kg
Length of barrel	2,786 mm
Length of bore	2,679 mm (L/47)
Length of rifling	2,197 mm
Weight of gun	480.8 kg
Elevation	-10 to +7.5°
Traverse	up to 360°
Muzzle velocity	719 m/s
Max range	ca 4,710 m



A Twin 6-pounder mounted on a trailer. These guns were issued to the Coast regiments of the Territorial Army when these units were re-formed after the end of the Second World War



A Twin 6-pounder at Fort Rodd Hill, Vancouver Island

12-pounder Gun

The 12-pounder coast defence gun entered service in 1894 and remained ‘on the books’ until 1956 when the British Army’s coast defence arm was stood down. This was not a bad service record for what was otherwise a technically unremarkable gun originally intended to supplement and eventually replace the 6-pounder in the close-in defence of harbours against motor torpedo boats.

Officially known as the Ordnance QF 12-pounder 12 cwt to differentiate it from its naval equivalents, the gun underwent few changes throughout its service career, although a spent case ejection system was not provided until just before WW2. Until then spent cases had to be removed manually with an extraction tool. The mounting remained a simple fixed pedestal with aiming being manual using a shoulder piece (some early models using geared laying mechanisms but these were later withdrawn). One mounting variant involved a high angle carriage that enabled aircraft targets to be engaged. A shield was an almost universal fixture.

The 12-pounder was manufactured in some numbers and was deployed almost everywhere the British Army and Royal Navy were based or operated.

12-pounder data	
Calibre	76.2 mm
Projectile weight	5.44 kg
Length of barrel	3,139 mm
Length of bore	3,048 mm (L/40)
Length of rifling	2,617 mm
Weight of gun	632.7 kg
Elevation	-15 to +20°
Traverse	360°
Muzzle velocity	688 m/s
Max range	ca 7,315 m



Looking rather forlorn without its usual shield, this 12-pounder gun is still in position at Fort Dunree, Ireland



12-pdr QF guns with shields at Rodney Practice Battery on Bere Island c.1937

4.7-inch Gun

As with most other coast defence guns the 4.7-inch had naval origins dating back to the 1880s, being adopted for land use during the 1890s. Eventually a whole raft of different marks and sub-types appeared but for coast artillery applications there were just four marks which differed mainly in construction and other details. There was also a Mark 5 with a slightly longer barrel. Most were deployed as general purpose defence weapons that were largely being phased out by the late 1930s, only to be brought back when WW2 began. After 1945 they were once again phased out so that when the Coast Defence arm was stood down in 1956 there were few still in service.

The 4.7-inch guns were pedestal mounted on five marks of mounting, most of which (again) differed only in detail. However, the Mark 3 pedestal mounting differed by being much taller than the rest as it was intended for emplacements with a high protective parapet, the gun being some two metres above the floor of the emplacement.

4.7-inch data	
Calibre	120 mm
Projectile weight	20.4 kg
Length of barrel	4,930 mm
Length of bore	4,800 mm (L/40)
Length of rifling	4,343 mm
Weight of gun	2,083 kg
Elevation	-10 to +20°
Traverse	up to 360°
Muzzle velocity	655 m/s
Max range	ca 10,790 m



4.7-in QF gun without its shield at the Fort Dunree Military Museum in Ireland



4.7-in QF gun mounted on a merchant vessel in WWI. The photo shows the low semi-circular shield fitted to these guns

6-inch Gun

6-inch guns were one of the stalwarts of British coast defence ever since the first marks appeared during the early 1880s on a variety of barbette and disappearing carriages, but when the Mark 7 appeared in 1898 it gradually replaced all the earlier models. Produced in greater numbers than any other of a bewildering array of 6-inch gun marks and sub-marks, the Mark 7 was deployed all around the world on four marks of pedestal mounting.

After 1939 the 6-inch Gun Mark 24 appeared which was basically a Mark 7 with updated construction methods and mounted on a Mark 5 or 6 mounting that permitted increased barrel elevation to provide a much enhanced range. Mark 24 batteries, such as those at Lydden Spout and Fan Bay, both near Dover, were often provided with radar fire control systems to enhance their long range effectiveness.

These two basic marks were, from time to time and especially after 1940, joined by many other marks of 6-inch gun and mounting, most of them of naval origin. This was especially true for the 1940-1944 Emergency Batteries. Most of those emergency measures had been withdrawn by 1945 but the Mark 7 and Mark 24 guns were retained until 1956, many of them remaining in position until well after then.

6-inch Gun data	
Calibre	152.4 mm
Projectile weight	46.25 kg
Length of barrel	7,092 mm
Length of bore	6,848 mm (L/44.9)
Length of rifling	5,963.5 mm
Weight of gun	ca 7,690 kg
Elevation	Mark 7, -10 to +20° Mark 24, -10 to +45°
Traverse	both Marks, up to 360°
Muzzle velocity	774 m/s
Max range	Mark 7, ca 12,800 m Mark 24, ca 22,400 m



A preserved 6-inch Mark 7 coast defence gun at Dunree Fort, Ireland



A 6-inch Mark 7 gun still in position on St Helena and showing the later WW2 period addition of a splinter shield

8-inch Gun

There were only six 8-inch gun deployed in the coast defence role during the 20th Century but they had an important part to play in the defences along the English Channel narrows after 1942. The guns involved were Mark 8** naval guns acquired by the Army in 1940 at a time when long range coast defence guns were in great demand. Originally intended as the main armament of County class cruisers, the guns were adopted complete with their naval mountings which meant they could have a dual purpose role by also acting as heavy anti-aircraft guns as their maximum elevation was +70°. All barrel and mounting movements were powered, as were the breech mechanism operations.

The guns were installed at two locations, Capel near Folkestone and Hougham, west of Dover. Both batteries were ready by 1942, their single-gun turret installations involving a frontal mounting pivot and a traversing arc to gain an optimum arc of fire. The two batteries operated under a single radar fire control that enabled the guns to successfully engage enemy shipping targets at extreme ranges of up to 26,700 m.

The two 8-inch batteries were stood down during 1952.

8-inch Gun data	
Calibre	203.2 mm
Projectile weight	116 kg
Length of barrel	10,492 mm
Length of bore	10,160 mm (L/50)
Length of rifling	8,796 mm
Weight of gun	17,527 kg
Elevation	-7 to +70°
Traverse	160°
Muzzle velocity	830 m/s
Max range	ca 26,700 m



*One of the gun installations for an 8-inch Mark 8** gun nearing completion at the Capel Battery near Folkestone during 1942*

9.2-inch Guns

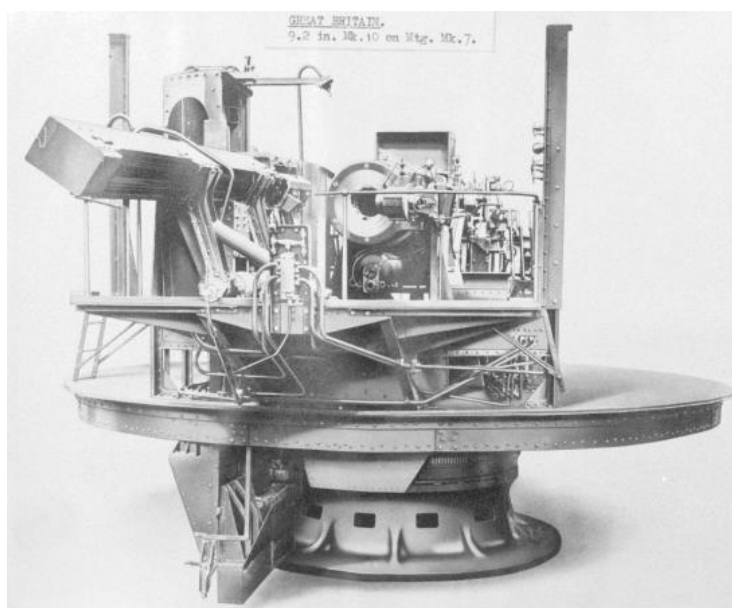
The 9.2-inch guns provided the mainstay of the British coastal defences located all around the world for over 50 years. The first were naval guns but by the 1890s they had appeared in land service on a wide variety of disappearing and railway mountings. As far as coastal defence was concerned there were just two main marks of gun, the Marks 9 and 10, the main difference between the two being the breech mechanisms. With time most Mark 9s were modified to Mark 10 standard.

The most common early form of carriage, the Mark 5, was intended to be emplaced behind low parapets with the gun mounted on a low pedestal carrying a turntable platform on which the gun was placed. Later mountings, from the Mark 6 onwards, allowed an increase in barrel elevation from +15° to +35° and a commensurate increase in the maximum possible range. (An earlier High Angle Carriage allowing an elevation of +45° was withdrawn in 1929.) The Mark 7 carriage introduced a powered rammer and hydraulic drives. A twin-gun Mark 8 was never built while the Mark 9 carriage was a simplified Mark 7.

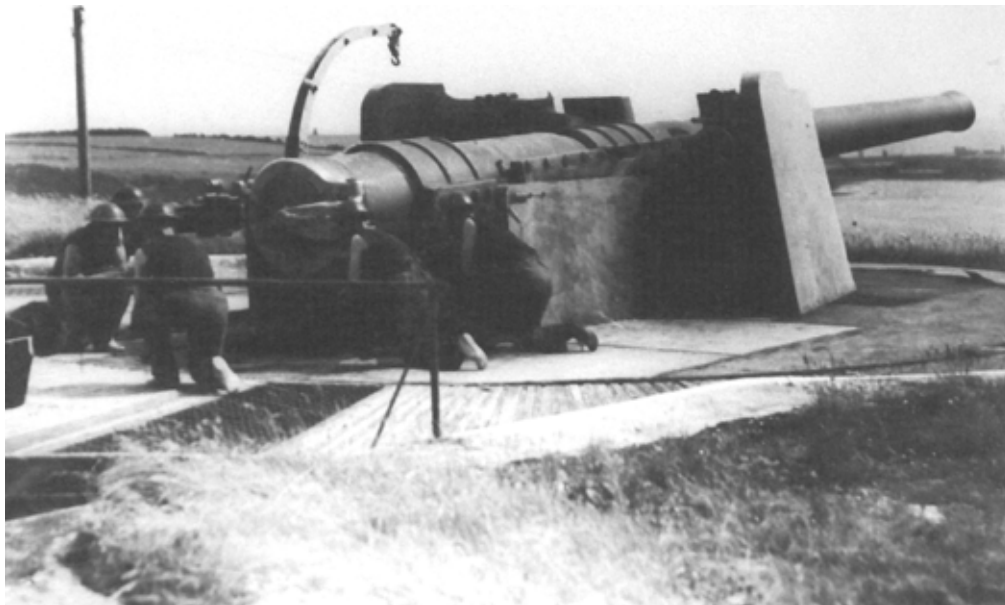
Over the years numerous types of 9.2-inch ammunition were developed but they fell into three main natures: high explosive (HE); armour-piercing capped (APC); and (during the early days) Shrapnel. Propelling charges were loaded in two 24.3 kg silk bags containing cordite.

When the Coast Artillery arm was stood down in 1956 the 9.2-inch gun was still the mainstay of British coast defences.

9.2-inch Gun Mark 10 data	
Calibre	234 mm
Projectile weight	APC, 172.4 kg
Length of barrel	11,236 mm
Length of bore	10,905 mm (L/46.7)
Length of rifling	8,986.5 mm
Weight of gun	28,450 kg
Elevation	-5 to +35°
Traverse	up to 360°
Muzzle velocity	823 m/s
Max range	ca 33,560 m



A text book illustration of a 9.2-inch Mark 10 gun on a Mark 7 mounting without the housing shield and clearly showing the power rammer and the overall complexity of the equipment



A 9.2-inch Mark 10 gun on a Mark 5 mounting showing the open nature and low barrel elevation mounting of the early period 9.2-inch gun installations



A fully enclosed and camouflaged 9.2-inch Mark 10 on a Mark 7 mounting at Robben Island Battery, off Cape Town, South Africa

15-inch Gun

The 15-inch gun was originally designed for naval use in 1915 but by the 1920s it came under consideration for the long range defence of the Singapore naval base. Formal adoption of the gun took place during 1936 and construction of the emplacements began soon after. Five guns were involved, three at the Johore Battery and two at the Buena Vista Battery. All the guns were provided with underground magazines, control rooms and power supplies. The guns were housed in large turret-type housings with all controls and services powered by either electricity or hydraulics. Both batteries were ready by the end of 1938.

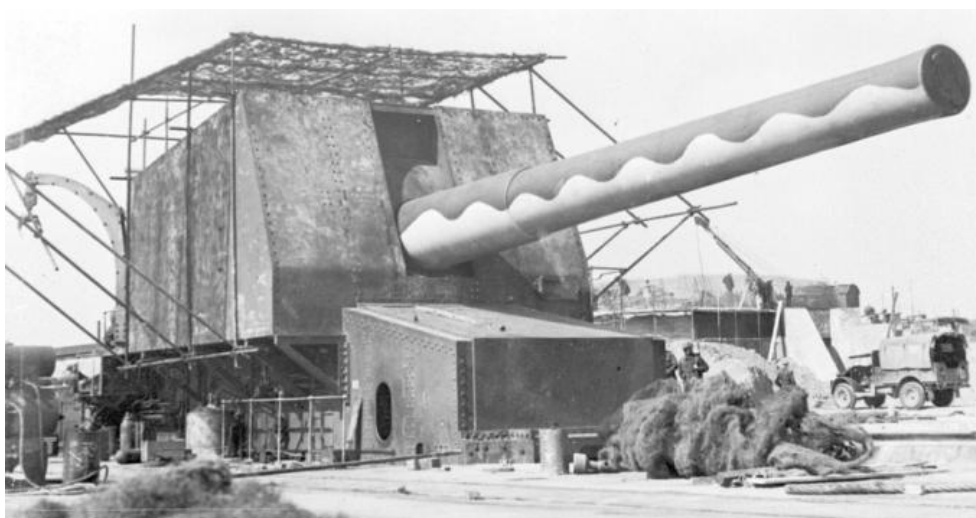
Naval armour-piercing capped (APC) ammunition was the only type involved. Propellant charges came in two forms, normal charge and super charge, the latter being developed for the Dover guns to allow them to fire into France.

As the Japanese invaded from the landward side of Singapore in late 1941 the 15-inch guns were unable to show their true colours and were disabled to prevent their subsequent use by the Japanese. However, the two guns (nicknamed 'Clem' and 'Jane') that were installed at the Wanstone Farm Battery

near Dover from 1942 onwards had a much more successful career. They were in more or less constant action, not only in the coast defence role against enemy shipping but also in the counter-battery role, firing against long range German batteries in the Pas de Calais. For the latter task the 15-inch guns often operated in conjunction with the two 14-inch guns emplaced above St Margaret's Bay. These 14-inch guns were manned by the Royal Marines and employed in the counter-battery role only, but together with the two 15-inch guns they made up the Dover 'Big Four'.

In both their roles the Dover 15-inch guns proved to be highly successful, being involved in the sinking of several German vessels, usually in conjunction with some of the Dover 9.2-inch batteries. After the war ended in 1945 the two guns were maintained in an operational state and were not removed until 1959.

15-inch Gun data	
Calibre	381 mm
Projectile weight	APC, 879 kg
Length of barrel	16,520 mm
Length of bore	16,150 mm (L/42.4)
Length of rifling	13,115 mm
Weight of gun	101,605 kg
Elevation	-2 to +45°
Traverse	240°
Muzzle velocity	normal, 731 m/s super, 817 m/s
Max range	normal, ca 33,740 m super, 38,405 m



A 15-in Mark 1 gun of the Wanstone Farm Battery near Dover in April 1942. This is the gun nicknamed 'Jane'