The Friends of Mount Edgcumbe Country Park

A brief history of local batteries

By

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Registered Charity
No. 295261

Batteries Included - Part 1

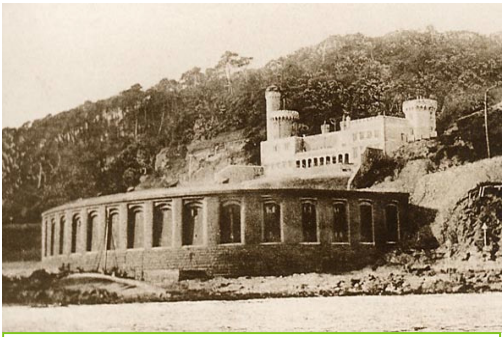
Brian Rayden

Introduction

I am no historian but I was privileged to give a talk about Picklecombe Battery to the Rame History Group in March 2012. This is an updated version of that presentation with additions for The Garden Battery (in Mount Edgcumbe Country Park). The whole purpose of the battery was to house *guns* so the central themes of my original presentation were illustrated explanations of how cannon work, with a light-hearted demonstration, and of the artillery developments in the 18th century that made the cannon intended for the battery obsolete before it was even completed. Unfortunately, the lack of space (or provision for the demo) prevents the full presentation here.

'Fort Picklecombe' is a misnomer as it was not really a *fort*: it was not capable of prolonged all-round defence (nor was it a *fortress*, a fortified city).

So as to appreciate why the batteries were proposed in 1844 one should view them in the context of the increasing importance of Plymouth Dock (Devonport Dockyard), the political events of the times, the Western defences of the Sound and also the rapid military and naval developments during the period.



Picklecombe Battery (about 1870)

Plymouth Dock

Before the advent of the railways in the 18th century the sea and the rivers were by far the most important means of communication for both people and goods and the rivers gave access deep inland. The river Tamar and its tributaries were no exception with quays all along them in places that are now unused and forgotten. The Saxons realised this so they ensured control of the Tamar by taking both

Garden Battery

sides of the river in the 8th century so that half of the Rame peninsula remained part of Devon until Cornwall took it back in 1844.

At first called just 'Dock', the Royal Navy dockyard grew in importance from its inception in 1690 until 'Plymouth Dock' became a town in its own right. In 1796 the town, with 20,000 persons, had a larger population than Plymouth or Exeter. By Royal proclamation the town became *Devonport* on 1st January 1825, elected its first MP in 1832 and received a charter of incorporation for Queen Victoria on 13th October 1837. On 21st July 1914 the three towns of Devonport, Stonehouse and Plymouth were united - hence *Union* street which joined them. During the First World war the dockyard employed 20,000 workers. I recommend Chris Robinson's book, *A History of Devonport,* for a very detailed history.

During the 18th and 19th centuries the dockyard became of increasing strategic importance to the Royal Navy so that its defence was a national priority. The two main concerns were:

1. That enemy ships would enter the Hamoaze to attack the dockyard directly. The Dutch attack on the Medway in 1667 was the worst defeat in the history of the Royal Navy and has 'haunted' it ever since. Together with the batteries on Bovisand and Staddon heights, on the breakwater fort and on Drake's Island, Picklecombe Battery dominated the entrances to the Sound, inside the breakwater that had just been completed about 2,000 yards away in 1841, while The Garden battery guarded the entrance to the Hamoaze.
2. That enemy troops would capture Maker

Heights, to the East of The Church of St. Mary & St. Julian, from where they could bombard the dockyard, about 2,000 yards away, at will. Pickle Combe (the valley) provided an ideal route for troops to march from the beach to occupy the heights unobserved; also a cart track from Picklecombe joins the Earl's Drive providing a viable route for taking even large artillery pieces, such as siege guns, to the heights where the church tower would make an ideal artillery observation post. A battery at Picklecombe Point would deny the use of that convenient invasion route and, together with other fortifications, deter the use of others beaches nearby.

Naval Dockyard from Maker

Western Defences of the Sound

The original Elizabethan earthwork at Picklecombe Point probably dates from 1545 but was replaced by Sir Richard Grenville's "new bulworke of six pairs of ordnance" in readiness for the Spanish Armada in 1588; there was still an earthwork there in 1755. In 1779 a Franco-Spanish fleet anchored in Cawsand Bay: although the fleet withdrew, militia were stationed at Maker Heights. In accordance with a report in 1779 by Lieutenant Colonel M Dixon RE, the militia built five earthwork redoubts on

The Head of Pickle Combe

Cart Track from Picklecombe to Maker Church

Maker Heights (1779- 1782). Later redoubts four and five were strengthened with stone revetments and a sixth redoubt was built at Empacombe in 1807. On 23rd October *1844* The Committee on the Harbour Defences of Plymouth recommended the building of Picklecombe Battery with 42 granite casemates in two tiers with iron shields, designed to house 21 68-pounder and 21 110-pounder smooth-bore muzzle-loaded cannon (SBML). The Garden Battery (in Mount Edgcumbe Park) was to be a similar construction but with only one tier of seven casemates. The Committee also planned other defences all along the coast intended to prevent enemy forces occupying Maker Heights: these included Hawkins, Raleigh, Frobisher, Grenville, Amhurst, Cawsand fort, Pier Cellars, Penlee Point, Polhawn, Tregonhawke and Tregantle.

Political Events

Invasion by the French was a major strategic concern throughout the Napoleonic wars (1779 - 1815). Although the threat receded with Napoleon Bonaparte's invasion of Russia in 1811/12, it remained for decades afterwards. Although France, now under Napoleon III, was an ally in the Crimean war of 1854 -1858, it was still considered a rival and potential aggressor until gradually, especially after the Franco-Prussian war of 1870/71, Germany became the main potential threat. The possibility of a German attack or invasion continued throughout the First and Second World Wars until 1945, although the threat receded again after the German invasion of Russia in 1941.

Next Time: Picklecombe Barracks; Picklecombe Battery and The Garden Battery.

Batteries Included - part 2

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Picklecombe Barracks

Known misleadingly as the "Officers' Mess", the limestone barracks with surrounding ditch and drawbridges was started in 1844 and completed in 1848. This is said to be the only significant War Department building designed by Naval architects: that was because the Earl of Mount Edgcumbe didn't want an ugly barracks on his land. It is a mock castle with crenellations built in limestone with one round and one hexagonal tower after Warwick castle. The narrower but higher round staircase tower attached to the round Western tower is now truncated. The Western end, including the towers, were for the Master Gunner; then a Royal Observer Corps post in the Second World War.

Originally there was a surrounding ditch with drawbridges. Although intended to be a battery with three 32-pounder and three 56-pounder guns en barbette (firing over a wall) on the gun-platform in front of it, it was soon superseded by the granite battery below it so the guns were probably never mounted. Some say that the gun-platform was on a lower level but a contemporary sketch showing 6 crenels on the upper platform suggests to me that they were for the 6 guns: in a crenellation the crenels are the 'cut-outs' through which the guns could fire, the upward protruding parts are merlons. I think the existing sentry box just inside the Western arch contained a winch for operating a drawbridge and there was another at the rear, Northern, side. The Western tower contained two jail cells; the centre a hospital; the Eastern tower the officers' quarters.

Picklecombe Battery

Following the 1844 committee, the battery was proposed by Major WFD Jervois (later Sir William, GCMG, CB) in 1858, and recommended by the Royal Commission of 1860. It was intended to consist of 42 granite casemates in two tiers arranged in a roughly horseshoe shape designed so that each pair of guns – 21 68-pounder SBML (smooth-bore muzzle-loading) in the upper tier and 21 110-pounder SBML in the lower - would bear in turn on ships passing between the battery and the breakwater. The original design included an additional 16 guns on the roof and the magazines behind it with accommodation for 300 men. Hubbard & Co started building to a design by Major Porter at an estimated cost of £79,845 in 1861/2. During construction it was 'remodelled' in 1864 to remove the magazines to the basement (to avoid 'plunging' fire); the guns on the roof dispensed with and accommodation was for 200 men. It was completed, including the iron shields, in 1871/2. The buildings behind the casemates contained the latrines, ablutions, cook-house, and various stores.

The shields were each made of three 5" steel plates with 5" of brick or concrete between; mantlets of thick ropes were hung behind the shields to protect the crews from splinters. It was armed between 1872 and 1956 but not with the guns it was designed for. In 1872 it had 4 7", 14 9" and 18 10" guns – all Rifled Muzzled Loaders (RML) with the 7" on the flanks. This is one of only two multi-tier casemated batteries built in this country, the other being Garrison Point in Sheerness.

Picklecombe Battery with 'The Officers Mess' in the foreground

The Garden battery

Was completed in April 1863 (although marked "VR 1862") apart from the iron shields which were installed in 1869. It was built on the site of Mount Edgcumbe Battery, an Elizabethan saluting battery which was replaced by a new Earl's Battery on the roof: originally with 21 French cannon – now reduced to 3. Although very similar to Picklecombe Battery the magazines

were retained to the rear and it had no barracks. In 1882 it had 7 68-pounder SBML, replaced by 6 9" RML then 4 12-pounder QF and two Electric Fighting Lights. The guns and lights were removed in 1927 and the MoD gave up the battery in 1946.

One of the remaining garden battery cannons

Military and Naval Developments

In 1815, at the end of the Napoleonic wars and for decades afterwards, artillery was still basically crude smooth-bore muzzle-loading cannon (SBML) firing solid shot (cannon balls).

Touch hole

For hundreds of years, since before the siege of Constantinople in 1453 cannon had consisted of simple metal tubes like this sealed at one end, with a small 'touch hole' in the sealed end. Notice the trunnions (or grudgeons) on each side of the barrel for mounting the 'tube' on wheels.

Firing a cannon

The artillerymen would ram a cloth sack of gunpowder into the muzzle; ram a cannon ball after it; pierce the bag with a spike through the touch hole, then pour some fine gunpowder into the touch-hole. The gunner would 'lay' the gun (aiming it at the enemy) by hammering spikes in the ground to move the 'trail', then light the gunpowder at the touch hole with a portfire – later with a friction primer - bang! The ball would fly out, fairly inaccurately, in the direction of the enemy and the gun would recoil.

The next shot was much more difficult because gunners would have to return the gun to its position; douse the embers with water, then (wearing a leather thumb stool) put a thumb over the touch- hole to avoid a premature explosion caused by a rush of air through it when ramming in the new gunpowder charge. Many men had a rammer through the belly and many lost their thumbs! Then the gunner would have to re-lay the gun.

68 pounder

The largest guns at Waterloo (1815) were Napoleon's 12 pounders but during the 20th Century guns became much larger.

The larger the guns, such as those in shore batteries, the slower they were to load and the less able they were to traverse, if at all. So when Picklecombe Battery was designed in 1844, 21 pairs of cannon, in a semicircular battery, would have been needed to fire perhaps one or two shots in turn each at a passing ship.

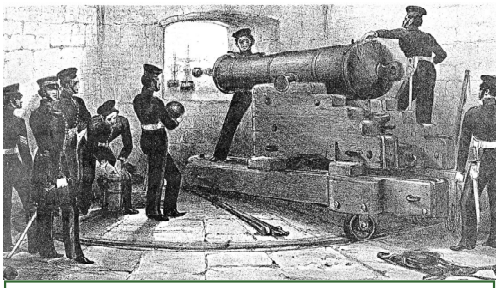
Although it looks rather different, it is really just a larger sealed tube just like the old cannon. I think the ones intended for Picklecombe battery would have relied on a sloping floor and ropes as can be seen at Tregantle Fort.

Before it was completed a series of improvements transformed gun design.

Next time: Why Picklecombe Battery was obsolete before it was even armed.

Batteries Included - Part 3

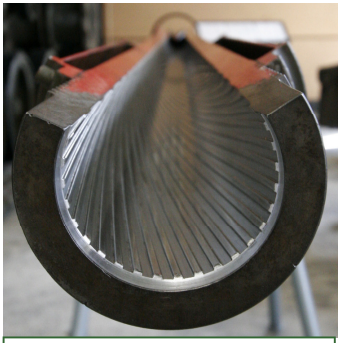
Brian Rayden



68 pounder in a casemate (c 1845)

When people ask me what guns were installed at Picklecombe and Garden batteries I have to reply, "It depends: *when*?" The 100-year period between the batteries being planned and being de-commissioned in 1956 saw enormous changes from the age of the horse, through the age of steam, to the petrol/diesel engine, the jet engine and even radar: so it is not surprising that the guns changed too. In the last part I wrote that I would explain why the 68 and 110-pounder smooth-bore rifled muzzle-loading cannon (SBML) that were intended originally for Picklecombe and Garden batteries were obsolete even in the first 20 years or so before the batteries were ready for them, so that more modern 9" & 10" rifled muzzle-loading cannon (RML) were used instead.

A series of improvements transformed gun design and made the batteries obsolete before they were even armed.

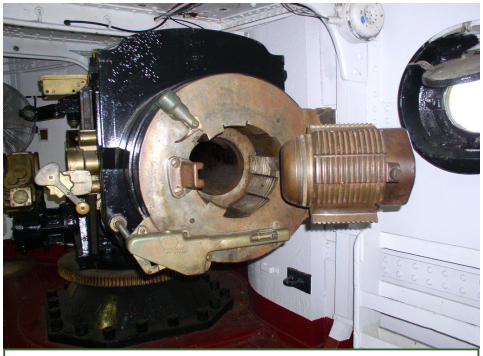


Rifling on a 105mm tank gun

1 Rifling

Rifled muzzle-loaders (RML) were more accurate and powerful than smooth bore muzzle-loaders (SBML) (see above).

2 Breach Loading



Breach Loading

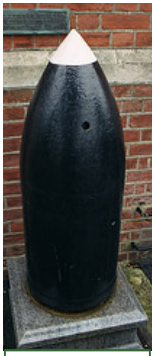
Rifled breach-loading (RBL) guns replaced muzzle loaders; they were very much quicker to load and fire, although these were unreliable at first so the British reverted to RML, including at Picklecombe (see above).

3. Spherical Case Shot (Hollow shot)

Exploding shells replaced solid shot and plunging fire became feasible (hence the removal of the magazines to the basement at Picklecombe).

Solid and hollow shot

The Palliser shell (see opposite) was a solid shot (with a small hollow made in casting); the hole is for fixing an eye-bolt for use in handling. Palliser shells would have been used at Picklecombe battery for plunging fire through the decks of ships trying to passing in front of the breakwater. The modern fixed shell (see opposite) combined the shell and a brass case for the propellant into one piece. The Shrapnel shell (See picture of cordite shell opposite).



Palliser Shell

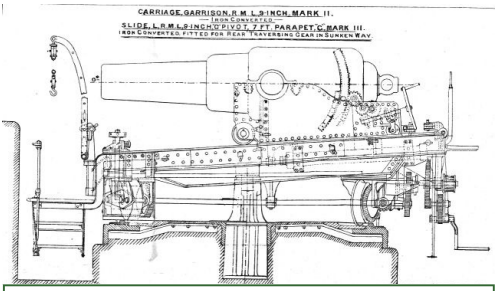
Modern Fixed Shell

Shell loaded with shot and cordite

Later improvements included:

1. Shock absorbers of increasing complexity (later hydraulic recuperators) returned gun barrels to the firing position so they didn't have to be re-laid (aimed); together with ammunition feeds this enabled quick-firing (QF) guns (BL) to be capable of firing more than 10 rounds a minute: eventually one twin QF could have replaced all 42 SBML. QF guns were used at Picklecombe throughout the First World War (1914 -1918) and Second World War (1939-45) and indeed until after the 2nd WW.
2. Guns were able to traverse progressively more rapidly and with increasing sophistication, so the need for rows of guns became unnecessary: one gun could fire several times instead of many guns firing once.

The guns installed in 1872 at Picklecombe Battery were 9" & 10" rifled muzzle loaders and the carriage would be similar to the diagram



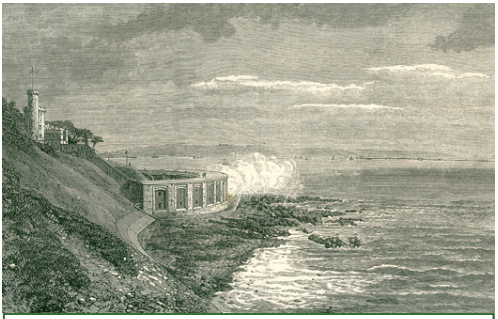
Typical Sliding carriage

above and picture below.

The guns were test-fired in 1872 (see below). The range to the breakwater fort is 2,150 yds and to the lighthouse is 1,500 yds. Three 10" RML and three 9" RML were fired.

9" RML on carriage

It took 1 minute and 45 sec to reload, by which time a ship within the breakwater would almost certainly have moved outside of the field of fire so that no more shots at it were possible.



Artillery Experiments at Picklecombe Fort

Batteries Included - Part 4

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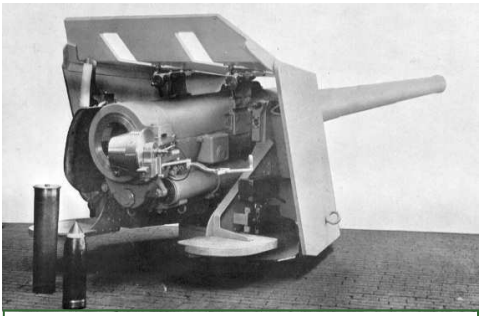
In the last edition I explained how the rapid development of artillery of the period resulted in the installation at Picklecombe of thirty-two 9" and 10" rifled muzzle-loaders (RML) by 1872 instead of the sixty- four 68 and 110 - pounder smooth-bore muzzle-loaders (SBML) originally planned in 1844: however, the proposed rifled breech-loaders (RBL) were not reliable enough by then.

The Garden battery was different from Picklecombe in that it had only seven casemates in one tier (compared with 42 in two tiers); the magazines were to the rear (Picklecombe's were located underneath); and also that it was armed initially with the originally planned seven 68-pounder SBML cannon.

The next 30 years brought further rapid development so that four 7", fourteen 9" and eighteen 10" RBL were installed at Picklecombe by 1885. The 10" guns doubled the range compared with the 110-pounders from 3,000 yards to 6,000 yards (the breakwater fort is 2,150 yd away, the lighthouse 1,500yd).

The Garden battery was armed with six (out of seven proposed) 9" RML in 1885.

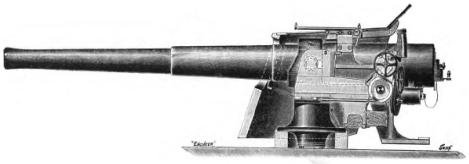


6" breech loading naval Elswick gun (1885)

Two 6" quick-firing (QF) guns were in place at Picklecombe in 1907 where, in various versions, they remained throughout the first and second world wars and indeed, until 1956. The QF guns increased the range to 12,000 yards and the rate of fire from about 1-2/minute to 5-10/minute.

The garden battery was armed with four 12-pounder QF guns in 1895 which was reduced to two in 1905.

During the first world war the batteries were manned by the Royal Garrison Artillery (TA); during the second world war by the Devonshire Heavy Regiment. In both wars Picklecombe was known as the Examination battery, probably after the practice of stopping and boarding ships at the entrance to the channels for Customs and quarantine.



6" QF Gun (1896)

During the second world war Picklecombe was also armed with two 40mm Bofors guns; two 2lb anti-tank guns; and six Defence Electric Lights (DEL). The DEL were similar to searchlights but their purpose was not anti-aircraft but to cover the entrance to the anti-submarine minefield near the breakwater. Several Depression Range Finder (DRF) stations were placed around Picklecombe at various times and a Commander's station together with a Royal Navy minefield control station built on the hillside behind Picklecombe barracks (to the NW beyond the current roadway). The Garden battery also had two DEL in the casemates.

Single Bofors Gun

After the war radars were installed at Picklecombe but didn't work due to the rough

Searchlight (DEL) Housing at Picklecombe

Picklecombe interior before conversion (1970s)

ride down the local lanes (presumably the old glass valves couldn't take it!)

guns were removed and the site sold by the WD/ MOD in 1956.

Picklecombe and the Garden Battery today

The Garden battery guns were removed in 1927 and the site given up in 1927; Picklecombe's

The garden battery is much the same today as it was originally. No attempt has been made to use the building for any other purpose unlike

The interior of the garden battery today

Picklecombe interior after conversion

Volunteers Needed

Commemorating World War 1

The Friends are submitting a bid to the Heritage Lottery Fund for funding to support Mount Edgcumbe in commemorating the First World War each year until 2018.

The intention is to use the funds to undertake research into life on the estate during that time and the impact of the war, particularly on the lives of estate workers and their families.

We want to bring the period to life for visitors through photographs, period costumes and craft workshops to demonstrate the skills essential to the running of the estate a century ago using the Barrow Centre as a focal point.

Volunteers will be needed in the spring. If you are interested in helping with this project please contact Val Horsley (Contact details on page 23).

Clouds over the Royal William Yard

A beautiful sky seen from the Cremyll Ferry early one morning.
According to Gavin Pretor-Pinney's book *The Cloudspotters Guide,* this formation is cirrocumulus stratiformis undulatus: otherwise known as 'mackerel sky'

'Mackerel sky, quick wet, quick dry'