

PENDENNIS CASTLE

THE DISCOVERY CENTRE AND LATER DEFENCES

NOTES FOR TEACHERS

These notes are intended to help teachers plan their use of the resources in the Discovery Centre and the later defences at Pendennis Castle.

BACKGROUND HISTORY - THE LATER DEFENCES AT PENDENNIS

For over four hundred years, Pendennis Castle has played a vital role as part of a network of coast defences. Ever since the sixteenth century, Pendennis and its neighbouring sites have been regularly updated at times of national danger and as the weapons of war grew and evolved.

Henry VIII built the circular stone castle in 1545 as part of a scheme of armed fortresses, which he needed to protect his kingdom against invasion. Pendennis and St Mawes were necessary to deter French and Spanish warships sailing into the sheltered waters of the Fal Estuary. In the late sixteenth century, the earth ramparts were reinforced to counter the threat of the Spanish at the time of the Armada. These reinforcements then proved their value for the Royalists during the English Civil War.

The next development came in the early nineteenth century with threat of a French invasion. Half Moon Battery was created together with its twin at St Anthony's Head to turn fire power away from the estuary channel and out to the wider sea.

The late nineteenth century saw the greatest developments as Pendennis responded to the new capabilities of military technology and the possibility of an enemy invasion. In the 1890s Pendennis was re-armed and a permanent garrison of professional soldiers was installed to operate the new guns of the fortress with volunteers continuing to provide a supporting role. Disappearing guns, which rose above a protective pit to fire and then subsided below the line of fire, were installed at Half Moon Battery and at One Gun Battery. At the same time, smaller guns around the fort were strengthened and improved as rapid fire weapons were introduced to bolster the harbour defences. New ammunition stores were constructed to stock explosive shells. A war shelter close to the guns was constructed so that the batteries could be quickly operated should the need arise. Advances in communications meant that telegraph and telephone links were installed to connect Pendennis with the wider defence network both locally and at Plymouth. Electric searchlights came into use and provided assistance to the gun batteries.

From the mid 1880s onwards, an electric minefield, one of the first in the world was remotely controlled from the castle to deter high speed motor torpedo boats. All these preparations were designed to defend Britain against an enemy invasion initially expected to be launched from France.

The turn of the century brought a change in perspective in that the Falmouth defences were needed to form an armed presence protecting shipping routes rather than a barrier against invasion. This brought a

number of changes to Pendennis both in military technology and in personnel. By 1910 the disappearing guns had finally disappeared for the last time to be replaced by much more powerful and compact guns with a range of up to 12 miles. The electric minefield had been overhauled and improved and was now under Admiralty control. Pendennis came to be known as a location for military training, a role which intensified following the introduction of conscription in 1915. After the end of the First World War, the garrison was largely abandoned and Pendennis became better known for its beautiful location rather than as an armed fortress.

With the outbreak of the Second World War in 1939, the new threat was the long range bomber. Anti-aircraft guns backed by the new breakthrough in radar technology were urgently put in place, often arriving straight from the factory. Pendennis was further strengthened to guard against an invasion and against action from enemy ships. Radio and telephone networks enabled the gun batteries to communicate instantly and the Fortress Commander commanded a huge range of fire power across the whole of Cornwall. However, U boats remained difficult to detect and little protection was offered against airborne forces so Falmouth suffered extensive bombing raids in the early years of the war. In the ammunition stores, explosives were much safer to handle than the highly volatile shells of the Victorian period. The depression range finder was still in use but this was now used alongside radar detection which could identify enemy vessels moving by night or in fog and their changing position could be calculated and predicted by mechanical computers.

Life for the Allied forces at Pendennis followed similar routines to those of the Victorian garrisons and basic and specialist training took place alongside the permanent duties of the garrison. The Home Guard also provided round the clock support for the castle defences. Women served alongside men in the three services and together with civilians trained in secret war communications functions and administration. When America entered the war after 1941, a large number of GIs came to Pendennis prior to the D-day invasion.

As the war progressed, the strategic value of Pendennis Castle initially reduced as aircraft and later guided missiles proved more effective against U boats and enemy warships. Eventually, after the war, the huge guns were removed for scrap and Pendennis was finally de-commissioned for the last time in 1956.

THE DISCOVERY CENTRE

The Discovery Centre contains displays with a military theme covering a number of periods, which will enable pupils to compare one phase of history at Pendennis with another. The displays are themed to follow three main stages of defence. **Enemy Sighted** is about seeking out and identifying all potential enemies at sea or in the air. **Signal Sent** looks at communicating information about the enemy to the gun crews and **Command Fire** considers the most effective means to destroy the enemy. The displays are designed to allow a >hands-on= approach using replica models, which give pupils the opportunity of handling objects relevant to the particular period of history.

The first display shows how the Falmouth defences have built up over the last 400 years, the enemy threats to the harbour, the range of fire and the minefield link. This is presented on a circular table with maps and images and a timeline which runs around the perimeter giving the key events at each period.

Enemy sighted - how were threats identified?

The Human Eye - during the sixteenth century lookouts had to rely on their eyes. In good conditions, a large warship could be seen at a distance of ten miles.

The Telescope - telescopes first became widely available in the seventeenth century. At Pendennis the naval telescope was used for almost three hundred years to identify enemy ships. The main lookout tower was situated where One Gun Battery now stands.

Binoculars - binoculars were perfected in the nineteenth century. They are much shorter in length than a telescope of the same magnification power - and because they have two eyepieces, give the effect of 3D vision. At Pendennis, binoculars were used by the castle lookout and Second World War artillery observers in the Battery Observation Post, as well as by gun crews and anti-aircraft teams to check accuracy of fire.

Radar - **RA**dio **D**etection **A**nd **R**anging was one of the greatest breakthroughs of coast defence. At first it could detect aircraft approaching by radio waves, but could not identify friend or foe. By 1941, this problem was solved and at Pendennis radar was used to locate and track enemy ships and submarines. Enemy vessels could be spotted by day or night at a far greater distance than even the best binoculars.

Activities

- # Visitors will be able to look through the telescope to spot and identify different types of flag being flown by various vessels.
- # Using binoculars, visitors can try to spot aircraft and distinguish whether it is >one of ours or one of theirs=.
- # A replica radar screen will track the movement of ships off the Cornish coast. Visitors can study the radar screen patterns to discover what the radar scan reveals.

Communication - the chain of command

Once the enemy is sighted, defence forces must be alerted quickly. Throughout its history Pendennis was part of a wider local and national defence network. This panel provides an explanation of the different forms of communication at Pendennis through the ages ranging from fire beacons, flags, semaphore, heliographs, telegraph, lamp signals, telephone and radio.

Activity

- # Visitors can consider how long it would take to send a message by fire beacons to alert Sir Francis Drake that the Armada had been sighted.

Signal Sent

This part of the Discovery Centre looks at how messages were communicated.

Flags - signalling flags were first widely used by Arab horsemen during the Crusades of the twelfth century and invading European armies quickly adopted them. From Tudor times, a ship's flags would show the nationality of a passing vessel and often whether anyone of importance, such as a King or

Duke, was on board. By Admiral Nelson's time, naval flags were capable of passing complex orders to warships on the move. The display considers **land semaphore** which used semaphore towers to pass on military information across the country and **naval semaphore** which used flags to communicate from ships.

Radio telegraphy - after the successful introduction of ship-to-ship radio communications international maritime organisations began to use radio telegraphy as well as lamp signals and flags. From 1908 to 1997 the most famous distress signal was the morse code SOS - the international cry for help from ships in trouble. Satellite guidance and computerised positioning systems have now superseded radio for marine safety.

Lamp Signals - as electric lamps replaced oil and paraffin, morse code based lamp signals were used more and more for marine communications.

Telephone - the invention of the telephone in the 1880s revolutionised communications. During both World Wars a telephone exchange at Pendennis linked the castle to the wider Fortress Falmouth area, speeding up communications between the gun batteries guarding the harbour.

Radio Telephony - at Pendennis, radio was used to check shipping movements - and once war was declared it was used extensively to coordinate action between air and naval forces.

Activity

Visitors can send and decode messages using both semaphore flags and morse code.

Command Fire

Once the enemy has been sighted, action is needed to counter any threat. For over four hundred years the guns at Pendennis were regularly replaced by ever more effective weapons to increase fire power against enemy attack.

From foundry to battery - most of the early guns at Pendennis were cast in London and would have been delivered to Cornwall both by road and sea. The sheer size and weight of the largest guns made their transportation difficult and limited their military use.

Displays in this section consider the type of fire used from the cannon ball which relied on sheer weight and heat for impact to the shell which was developed at the end of the eighteenth century and was able to penetrate metal. The section covers the history of the guns at Pendennis and the rapid advances in technology. Visitors will be able to see the mechanical elements, from smooth barrel to rifle barrel, muzzle loading to breech loading and the firing sequence from simple interactives and audio visual programmes. Transporting of guns, ammunition and solving the recoil problem is also shown.

EDUCATIONAL APPROACHES

Pupils need to be set tasks which are well focused so that they can extract the appropriate level of information from the displays.

The resources can be used most effectively with small groups focusing on a particular activity

supervised by an adult who can lead pupils' investigations.

- # Activity sheets will help engage pupils more fully in a visual environment and will provide a clear focus for their investigations, allow different groups to work in different areas, link more directly with follow-up work and encourage pupils to develop imaginative ways of communicating and presenting their knowledge back at school. Activity sheets should involve setting pupils a problem-solving task or putting them in a role which can be based around one particular display or themed throughout the exhibition.

Life as a soldier

- # The activities in the Discovery Centre provide an excellent stimulus for creative writing. Ask pupils to imagine what life must have been like for one of the soldiers stationed at Pendennis at a particular time.
- # Use pictures and captions to make a storyboard about an aspect of military life ie what happened when the Castle was on full alert.
- # Identify the different jobs that soldiers would have done at the Castle
- # Get pupils to choose five objects to represent a soldier's life at the castle. They can then either photograph or sketch them. Back at school they can then explain their choice to other pupils in a presentation.
- # Using the information available, plan a training session for recruits on an aspect of military life at Pendennis during the twentieth century.
- # Compare army life between two different centuries. Look at changes in weaponry, clothing, sleeping arrangements, recreation, medical care, subsistence and discipline.
- # Devise a chart to record and compare the facilities at different parts of the site. Look at the provision of shelter, living space, heat light, water and sanitation.
- # Compare the uniforms worn by soldiers over the main periods in Pendennis' history. How do they differ?

The buildings

- # How were the buildings and spaces used at the site during different times in the castle's history? Which areas would have been used the most? Why?
- # Get pupils to complete a piece of writing about the castle using certain words ie battery, bastion, rampart, magazine, barracks, watchtower, casemate.
- # What advantages and disadvantages might there be of accommodating troops in the barracks compared to billeting them in local homes?
- # Which threats led to expansion and development of the castle's defences?
- # Use a plan of the site to match the different pieces of equipment in the Discovery Centre to parts of the castle.
- # Ask pupils to draw the shapes of the different defensive elements they encounter. Pupils could then be asked to sketch the different shapes and put them into an agreed order describing their strengths and weaknesses.

The castle today

- # What would Second World War soldiers think about the present use of the castle? This could

be used as part of an oral history project on the castle in the Second World War. Pupils could ask local people who have memories of this time.

- # Is the current level of interpretation at the site appropriate - how could it be improved or be more relevant to local history?
- # Consider the impact of tourism and how it is managed at the site.
- # Design a board game using a grid superimposed over a plan of the site and its defences. Use coordinates to move across the site from one military feature to another. Use sketches taken on site to design the graphics for the board.
- # Use recycled materials or textiles to create a collage or frieze to illustrate the history of Pendennis over the last one hundred years.

PRACTICALITIES

The Discovery Centre has limited space and is therefore only suitable for small groups with at least one adult per group. It is open to the public at all times so in peak periods access may be restricted. You will need to plan how your use of the Discovery Centre fits in with your work during the visit.

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