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## The Fortification of the Firth of Forth 1880–1977

‘The most powerful naval fortress in the British Empire’

Gordon J Barclay and Ron Morris

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Gordon J Barclay and Ron Morris

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The title of our book is taken from an article titled ‘The Islands of the Forth in War’, published in *Chambers’s Journal* in 1922, by General George K Scott-Moncrieff (1855–1924). He had been Director, Fortifications & Works, War Office, from 1911 to 1918, after a distinguished career as a Royal Engineer, serving in Afghanistan, at the relief of Peking in the Boxer Rebellion, and on the North West Frontier. The director was responsible for the construction and maintenance of the fortifications we describe in our book. The full quotation is:

Yet in 1916 the Forth became the most powerful naval fortress – most powerful whether measured by armament, by garrison, or by any other standard – in the British Empire, and probably, therefore, in the World.<sup>1</sup>

Shortly before this, at the time of his retirement in 1918, he had written for an official readership a history of coast defence in the previous 60 years,<sup>2</sup> in which he wrote:

The Forth is now a first class naval fortress equal to, if not of greater importance than Portsmouth, Plymouth, the Medway or any of those abroad.

1 Scott-Moncrieff 1922: 498.

2 WO 32/5528 1918.

Dedicated to  
Lord Herbert of Lea  
Secretary at War, 1845–6 and 1852–4  
Secretary of State for War, 1859–61

Between 1922 and 1995, when it was stolen, an impressive bronze plaque was affixed to the rock of Inchkeith at NT 2927 8280. It read:

IN REMEMBRANCE OF SIDNEY,  
FIRST LORD HERBERT OF LEA  
BORN 1810, DIED 1861.  
TWICE SECRETARY OF STATE FOR WAR

Who was the first member of Government to perceive the necessity of protecting the shores of the Firth of Forth from the inroads of hostile cruisers & for this purpose took steps for the fortification of the island of Inchkeith. He was the steadfast supporter of Florence Nightingale and the friend of the soldiers of the British Army.

This memorial is erected by the Trustees of Robert Mackay Smith, Merchant, Leith, in accordance with the provisions of his will.



*Frontispiece*

The Herbert of Lea commemorative plaque before its theft in 1995 (© Ron Morris)

In the continued absence of the plaque, let this volume now be his memorial.  
And to Dr Douglas Grant and Bruce Stenhouse, who were the first to wish to write the history of these defences.

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# LIST OF ABBREVIATIONS AND KEY TERMS

Below are some key terms and abbreviations used in the text. Where not defined, the reader is directed to a specific page for an explanation.

- AA** Anti-aircraft.
- A/B** Anti-boat, usually describing a type of *boom*.
- AP** Armour-piercing shell.
- A/S** Anti-submarine.
- ASDIC** The British name ('ASD' stands for 'Anti-submarine Division') for an active sound detection system for submarines, developed during the First World War, but reaching its full effectiveness in the Second. An ASDIC device transmits a pulse of sound and then listens for its reflection. The devices use a range of beam formations and listening devices to determine the range and bearing of an underwater object.
- A/T** Anti-torpedo, usually used to describe a type of net to stop torpedoes.
- BC** Battery Commander.
- BCP** Battery Control or, later, Command Post.
- BL** Breech-loading.
- block-ship** Ship to be sunk in the approach channel or entrance of an enemy port or dock.
- boom** A physical barrier at the water surface to prevent the passage of a vessel, usually a motor torpedo boat. Comprising either heavy baulks of timber or a heavy cable supported at the surface, in the Second World War with heavy sharp spikes to penetrate the hull.
- boom-smasher** An enemy ship intended to smash an anti-boat boom, to allow other ships, especially smaller torpedo craft, to swarm through to attack the vessels in the *inner waters*.
- BOP** Battery Observation Post.
- CASL** Coast Artillery Searchlight. The Second World War term for a *DEL*.
- CB** Counter Bombardment: the role of a 9.2-inch or 6-inch battery intended to fight large enemy ships standing off the coast and bombarding targets from long ranges.
- CD** Close Defence: the role of usually a 6-inch gun to fire at short range at destroyers, block-ships or boom-smashers. Also used to mean the defences of the locality of a battery.
- CE** Chief Engineer.
- CMB** Coastal motor boat.
- Coastguard/Coast Guard** We use the term 'Coastguard' throughout, although the service was for many years known as the Coast Guard. Until 1923, the Coastguard was under Admiralty control, and its men were part of the Royal Naval Reserve. In the First World War, many coastguards served at sea.
- CP** Central Pedestal. Type of gun mount introduced in 1894 and in use until 1956. The gun rotates on a pedestal fixed firmly to a holdfast (usually comprising a series of vertically set threaded rods) fixed into the concrete base of its emplacement.
- CRA** Commander, Royal Artillery. The senior RA officer in a particular formation, such as Scottish Command.
- CRE** Commanding, Royal Engineers. The senior RE officer in a particular formation, such as Scottish Command.
- CRH** Calibre Radius Head. The radius of a circle with the curve of the shell's nose on its circumference, expressed in terms of the shell's calibre. The longer and more pointed (and hence streamlined) the shell's nose, the higher the CRH. The 9.2-inch shells in use until 1930 were 2crh; those issued after, 6crh.
- DEL** Defence Electric Light. A light for illuminating a target for guns, either illuminating a fixed area, or moveable. Power was supplied by an engine room.
- DEMS** Defensively Equipped Merchant Ship. A merchant ship in the Second World War armed with surplus naval guns, notably 4-inch QF. DEMS ratings manned the coast defence guns at Methil in the Second World War.

**dolphin** A group of linked posts set firmly into the seabed and protruding above the water, in the Forth acting as an obstruction, or to support a suspended net or boom.

**DPF** Depression Position Finder *see* page 32.

**DRF** Depression Range Finder *see* page 32.

**EC mine** Electro-contact mine. A mine set off by contact from a vessel. The mines could, however, be switched to 'safe' from a control station.

**EDO (or XDO)** Extended Defence Officer: the naval officer in charge of the purely maritime defences of a port, such as patrol vessels, anti-submarine booms.

**ELD** Electric Light Director; a post on a battery from which the DELs/CASLs were directed, often in the same building as the Battery Command Post.

**Examination Battery** One or more batteries of guns in a port, designed to cover the Examination Area (*see Examination Service*), so that any ship found to be a threat to the port could be threatened with or subjected to gunfire.

**Examination Officer** Naval officer in charge of the *Examination Service* of a port.

**Examination Service** The Examination Service was to identify and establish the character of all ships which did not have a private signal (that is, smaller naval vessels and merchantmen) once they had been allowed through the anti-submarine defences into an area that lay beneath the guns of the *Examination Battery*.

**FC** Fire Commander. The officer in charge of directing the fire of a group of batteries covering a particular area of water.

**FCP** Fire Command Post, where the *Fire Commander* was based.

**fighting light** A term in use in the earlier years of coast artillery searchlights to apply to searchlights that could be turned to follow a target.

**fortress** In coast defence, the defended area of a port: the Forth was a fortress.

**FRB** Fort Record Book.

**GGC** Gun Group Commander. The relatively junior officer who would command a group of guns in a battery, usually two. The GGC could command a pair of light guns under a Fire Commander, without an intervening Battery Commander.

**GOC** General Officer Commanding. The most senior Army officer in a locale, in this case in *Scottish Command*.

**GL** Gun Layer. Second senior NCO responsible for a gun's crew.

**HE** High-explosive shell.

**holdfast** A ring of vertically set threaded bolts set usually in a circle in a base of concrete, onto which the pedestal or other mounting of a coast defence or anti-aircraft gun, or a Second World War anti-aircraft projector would be bolted. The diameter of the circle and the number and size of bolts varied considerably.

**HP mounting** 'Hydro-pneumatic'. Abbreviation most often found in lists of armaments, describing Elswick HP 'disappearing' mountings.

**hurdle** An alternative obstruction to *dolphins* to stop the penetration of an anchorage by boats, submarines or torpedoes, usually made of steel rails ('heavy hurdle') or scaffolding tubes ('light hurdle'); the latter often used to support anti-torpedo net. They were made in two sizes, to block channels 4 fathoms (7.3m) or 8 fathoms (14.6m) deep.

**hydrophone** A passive listening device developed in the First World War to detect the sound of (mainly submerged) vessels. Lines of hydrophones could be used to determine the approximate direction of the target vessel.

**inner waters** Areas of water within the defences of a port.

**LMG** Light Machine Gun.

**MTB** Motor torpedo boat. A light, fast boat carrying a small number of torpedoes and light guns, designed to attack shipping.

**naval anchorage** Harbours used by the fleet in peace or war. Their selection is mainly dependent on current strategic requirements. For example, Scapa Flow.

**PF** Position Finder *see* page 32.

**PFC** Position Finding Cell. Specially designed structure to house a *Position Finder*.

**pile dolphin** *See dolphin*.

**precautionary period** A period before any formal declaration of war, when tensions between states might be high, and small-scale, pre-emptive armed action by a potential enemy might have to be guarded against.

**private signal** Secret means of identification for the larger vessels of the Royal Navy and allies at British defended ports. (*See Special Signal*.)

**PWSS** Port War Signal Station.

**QF** Quick-firing. Generally lighter guns with rapidly operating breeches, and its ammunition – shell and cartridge – as one piece. The 4.7-inch gun did not have single-piece ammunition.

**quick-return lift** A lift designed to carry shells and possibly cartridges from the magazine to the emplacement floor above. The flat lift platform would be released in such a way that it could be allowed to drop back to the magazine level,

rather than have to be taken down more slowly, under power. This would make it available more quickly to lift the next shell.

**RA** Royal Artillery.

**RE** Royal Engineers.

**RG** Royal Garrison Artillery. Part of the Royal Artillery. Mainly volunteer force formed in 1899 to man the coast defences and also the Army's heaviest siege and field artillery.

**RML** Rifled Muzzle-loader. The final type of muzzle-loading guns, superseded by breech-loading guns.

**Scottish Command** Britain was broken up into a number of military districts in 1793. Scottish Command was established in 1905. The term was used to refer both to the area and to the command structure.

**silent cabinet** A soundproof or at least quiet room, hut or ship's cabin, designed for use by personnel using wireless, hydrophone or other equipment requiring quiet and/or concentration.

**SMO** Selected Military Officer: Army officer to whom information concerning the movements of all vessels approaching or manoeuvring near a fortress is communicated by the Port War Signal Station. Usually the Commander of the Fire Command nearest the enemy.

**special signal** Distinguishing signal given by *Examining Officer* to incoming vessels not in possession of the *private signal* – usually minor Naval or merchant vessels.

**TF** Territorial Forces, formerly the Volunteers and Yeomanry, later the Territorial Army, nowadays the Army Reserve. Britain's volunteer military reserve.

**trot** A group of large buoys secured together to provide buoyancy to a boom or A/T or A/S net.

**WSS** War Signal Station. An observation post manned by Naval or Coastguard personnel to observe and report on the movement of shipping.

**W/T** Wireless Transmission/Transmitter.