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The Fortification of the Firth of Forth 1880–1977

'The most powerful naval fortress in the British Empire'

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ISBN: 978-1-908332-14-1 (hardback) • 978-1-908332-26-4 (PDF)

Barclay, G J, and Morris, R, 2019 *The Fortification of the Firth of Forth 1880–1977: 'The most powerful naval fortress in the British Empire'*. Edinburgh: Society of Antiquaries of Scotland.
https://doi.org/10.9750/9781908332264

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Chapter 4

THE GERMAN THREAT, 1903–14

'German is a thundering great nation,' he said; 'I wonder if we will ever fight her.'[1]

4.1 The defences at their greatest pre-war strength, 1903–5

In the first decade of the 20th century, there was renewed discussion of the defence of ports and the types and scales of attack to be countered. First, the conclusions of the joint Admiralty/War Office conference in 1900, already described, were revisited by the Committee of Imperial Defence in 1904; then, in 1905, the influential Owen Committee; and, finally, in discussions of the standard of defences (1909). Defence Schemes (like that for 1900, already described) were promulgated for the Forth in April 1903, November 1905 (with a revision in September 1907) and in 1909.

By 1905 virtually all the authorised replacements and upgrades of coast defence armaments in the Forth had been completed (Table 4). There were three Fire Commands in the Forth at this stage: 'North', at Kinghorn (covering the passage between Inchkeith and the mainland); 'South' on Inchkeith (covering the south channel); and 'Inner' at Carlingnose.

In the *Forth Defence Scheme* promulgated on 1 November 1905, the 'fortress to be defended' was bounded by a line drawn from Elie to North Berwick, classified as a 'Secondary Naval Base'. During the Precautionary Period, the risk to the Forth was from 'Minor raids made by a few daring men …', while in the 'War Period' the risk grew to include an attack by cruisers and torpedo boats, or an attack on Edinburgh or the batteries of the Forth by a landing party of up to about 2,000 men, supported by cruisers. The forces available to the Fortress Commander totalled 11,704 men, comprising 476 Yeomanry (volunteer cavalry), 1,286 artillerymen, 353 engineers and 9,589 infantry.[2]

Twelve hundred Royal Garrison Artillerymen (200 of whom were Regulars), 330 Royal Engineers (28 Regulars) and 19 volunteer Royal Submarine Miners would man the coast defences; with the abandonment of submarine mining, these 19 men were to assist the Royal Engineers (RE) Coast Battalion by manning the Defence Electric Lights (DELs). The batteries all had a complement of Regular gunners from No. 21 Company Royal Garrison Artillery, the larger batteries having contingents from locally based RGA volunteers (1st Edinburgh City at Inchkeith; 1st Fifeshire at Kinghorn and Carlingnose; 1st Midlothian at Dalmeny). Inchgarvie and Coastguard batteries had purely Regular complements. Whichever Regular battalion was currently garrisoning Edinburgh Castle was to provide guards for Inchkeith (56 men), Kinghorn (22) and Carlingnose (including the Forth Bridge – 89 men).[3]

A map bound into the *Defence Scheme* showed the various beaches considered to be vulnerable to enemy landings along the Fife, Lothian and Berwickshire coasts. Plans were also made to safeguard the batteries from land attack, plans of individual defences being kept on the Fort Record Books. These are described in the detailed battery descriptions below.[4]

4.2 General Owen's Committee and the weakening of the defences, 1905–9

The next important development in defence strategy marked the highest point of the 'Blue Water' school, when the fixed defences would fall to their lowest level prior to 1930. In December 1905, the report of General Owen's Committee on coast defence was published. The purpose of the committee had been to examine the defence needs for ports, consequent upon the decision of the Committee of Imperial Defence, promulgated on 1 March 1905, that submarine mining would no longer form part of the Empire's coast defences.[5]

The premises on which the report was based were that:

> The Admiralty must be the sole authority for advising as to what class of hostile ships may reasonably be expected to attempt to enter certain waters and whether the attempt to enter such waters would ever be made.

And that:

> It should be assumed throughout [the Committee's deliberations] that the maritime supremacy lies with us and that we are in a position to effectively frustrate any movements of the enemy's ships on a large scale within a brief period of their commencement.

As a consequence:

Table 4

The armament return for the Forth, dated 1 April 1905. The close defence MGs are excluded. The coast defence artillery reserve comprised '2 Heavy batteries, Royal Garrison Artillery (Volunteers); 8 x 4.7-inch Q.F. guns' on field carriages, held in the King's Park (at Holyrood in central Edinburgh). (CAB 18/19 1898–1910)

	Mounted	**Additions**
Inchkeith	1 x 9.2-inch BL Mk I on Mk I Hydro-Pneumatic (HP) (disappearing) mounting (southernmost 9.2-inch)	Still to be replaced by a 9.2-inch BL Mk X on Mk V barbette mounting
	2 x 9.2-inch BL Mk X on barbette Mk V mounting	
	4 x 6-inch BL Mk VII on Central Pedestal Mk II mounting (North and South Forts)	
	1 x 6-inch BL Mk VI on Mk IV HP (disappearing) mounting (West Fort)	Apart from the 9.2-inch gun, this was the last disappearing mounting in the Forth.
Kinghorn	1 x 9.2-inch BL Mk X on Mk V barbette mounting	
	2 x 6-inch BL Mk VII on CP Mk II	
	2 x 4.7-inch QF Mk IIIb on QF Mk III mounting	
Dalmeny	2 x 4.7-inch QF Mk IVb on QF Mk III	
Inchgarvie	2 x 12-pdr QF 12cwt on QF Mk I	
Carlingnose	2 x 6-inch BL Mk VII on CP Mk II	
Coastguard	2 x 12-pdr QF 12cwt on QF Mk I	

> A very moderate scale of defence would answer the threat of an attack by a lone cruiser attempting a rapid raid on a more isolated station. [into which category the Forth fell at this stage]

The committee recommended the removal of most 6-inch guns at 'A' and 'B' class ports and the removal of all 12-pdr QF guns, as the 4.7-inch QF had more shell power to tackle larger modern destroyers.

As a consequence, the Forth lost six Mk VII and one Mk VI 6-inch guns, two 4.7-inch QF guns from Kinghorn (which were felt to be too far downriver) and the four 12-pdrs from Coastguard and Inchgarvie. The Committee considered that, until Rosyth was completed as a first-class naval base, the existing 9.2-inch armament at Inchkeith and Kinghorn provided an adequate defence; it was recommended, however, that once the naval base was completed two further 9.2-inch guns should be added. The existing medium armament near the Forth Bridge was considered necessary to deal with unarmoured raiding cruisers by night but only the two 6-inch guns at Carlingnose and the two 4.7-inch QF guns at Dalmeny were recommended for retention.

The announcement of the Rosyth Naval Base in 1903 had not led to any increase in the defence of the Forth – all the guns had been emplaced, or work had begun, before then. Because of the Owen report, the defence of the river would now diminish. As will become clear later, the Owen Committee was quickly seen as having gone too far and the Navy as having overstated its capacity to defend the coasts. It was, as Dobinson has put it, the Beeching Report of coast defence.[6] Fortunately, in this case, at least in the Forth, the lines were not torn up.

The printed armament return of 1 April 1906 (which was the same as shown in Table 4) recorded the defences of the river at their pre-1914 peak, before the recommendations of the Owen Committee were implemented. The entire approved armament proposed over the first five or six years of the century was now in place, apart from the third Mk X 9.2-inch gun on Inchkeith, whose predecessor (the old Mk I 9.2-inch with a disappearing mounting) had already been removed to make way for it by the date of the list.

A classification of types of possible attack and principles of port defence had emerged from the Owen Committee and were re-presented in 1907 in a fuller and clearer form (Table 5). They reflected experience gained in the Russo-Japanese War, in which motor torpedo boats had been used and in which a naval anchorage had been subject to long-range bombardment (the Japanese had attacked Port Arthur twice, firing from

positions in which they could not in turn be fired against, at ranges of 13–14,000 yards (around 11,900–12,800m) and 17–18,000 yards (around 15,550–16,450m).[7] These principles would remain the basis of British planning for some time.

As it was still assumed that British naval forces would be adequate to prevent any movement of enemy ships on a large scale:

> Fixed defences at ports of the British Empire are not … required to provide complete protection against prolonged operations [but] should be sufficiently formidable to act as a powerful deterrent to attack by hostile warships …[8]

In July 1907, the CID discussed the risks of invasion by Germany which, since the previous discussions in 1902–3, had become the likely aggressor. The CID considered the possible timetable for the concentration, embarkation and transit of an invasion force, and the likely tonnages of shipping needed for a force of about 100,000 men. The committee noted the consequent need to be able to gather quickly adequate naval forces in the North Sea.[9]

In September 1907, a full revision of the *Scotland Coast Defence Scheme* was promulgated. The Forth had been reclassified as a 'defended commercial port' until the naval base might be established. Prior to 1907 the Forth had not been included in the list of ports liable to torpedo craft attack, but the increase in number and size of such vessels now necessitated a reconsideration as 'Rosyth becomes a more important objective for the enemy's attack'.[10] Coast defence troops were expected to have to face no more than 5,000 enemy raiding troops, and the scheme described three main defensive positions near the Forth: inland from Kinghorn; positions near the northern end of the Forth Bridge; and the Aberlady–Haddington line, covering Edinburgh.

The Forth was at risk during the Precautionary Period from boat-borne landing parties aiming to damage dock equipment, the DELs at Dalmeny and Carlingnose, or the Forth Bridge. Once war was declared, an attack by an armoured cruiser might be expected, or the capture of Inchkeith by a *coup de main*, or a raid on Edinburgh. Apart from the RE and RA troops in the batteries, 321 Imperial Yeomanry and 5,523 infantry would be available to defend the fortress.[11]

On 23 September 1907, the Admiralty wrote to the War Office in relation to the provision of coaling bases:

Table 5

Summary of the forms of attack, and appropriate defensive responses, set out by the Committee of Imperial Defence in 1907. (CAB 38/13/16 1907)

Type of Attack	**Type of Defence**
Class (A) Attack – by battleships, to be expected only on naval dockyards, from ranges between 10,000 and 18,000 yards.	Armour-piercing shells from a 9.2-inch Mk X gun were capable of penetrating Krupp cemented armour 6 inches in thickness up to 6,000 yards. As such attacks were only likely to be mounted in daylight, no fighting lights would be needed.
Class (B) Attack – by armoured cruisers, but it was considered improbable that such important ships would be risked in an attack on a defended port.	
Class (C) Attack – by unarmoured cruisers; as these vessels were less important, they might be risked in subsidiary enterprises.	Considerable shell power and rapid fire would be needed – the 6-inch Mk VII was the most suitable gun. Electric light would not be needed in all cases, but such batteries should be manned day and night.
Attempts to block the entrance channels to harbours by large vessels sent in darkness to be sunk in the fairway.	Mk VII 6-inch most suitable weapon. Blocking would only be attempted at night or in thick weather – therefore essential that electric lights be provided. Concentrated moveable beams.
Attacks by Boom-smashers – to clear the way for attack by torpedo boats.	
Attack by Torpedo Craft with a radius of action of *c* 300 miles. Fixed defences were to be erected at naval bases within this radius, to take account of flotillas evading British destroyers.	Booms protected by quick firing guns and electric lights. The 12-pdr QF gun so far deployed was now losing its effectiveness against larger, modern torpedo craft; the 4-inch QF gun, in spite of its lower rate of fire, was recommended. 6-inch guns could also be used. The necessary electric lights should be fixed beams, illuminating a definite area of water.
Boat attack – to seize or destroy shipping; reasonably probable where the value of ships or cargoes was sufficient to induce such an attack.	Best dealt with by moveable armament and machine-guns, acting in conjunction with infantry disposed in entrenched or concealed positions.

> … the defences in the neighbourhood of the Forth Bridge have recently been modified in consequence of the recommendations of General Owen's Committee. The four 12-pr guns at Inchgarvie and Coast Guard Batteries have been removed with the concurrence of the Admiralty on the ground that the Forth was not liable to attack by sea-going torpedo craft, and … considerable reductions have been approved in the medium armament of the outer defences at Inchkeith and Kinghorn.
>
> In order to meet the new conditions [the need to defend the Forth, and Rosyth, against torpedo-craft attack] it will be necessary to bring the inner defences back to about the same strength as that in which they were prior to the report of the Owen Committee; that is to say, the four 12-pr guns (QF) must be replaced, or preferably 4-inch guns mounted, and a further rearrangement of the existing electric lights, now used as fighting lights, will be required.[12]

Although the guns had been removed from the list of 'Approved Armament' of the Forth, they had been left in situ (Table 6). The armament returns for 1 April 1908 and 1 April 1909 recorded, respectively, that the 12-pdrs at Coastguard and Inchgarvie had been restored to the approved armament.[13]

In September 1909, the *Defence Scheme for the Scottish Defended Ports* was revised again.[13] The Forth was expected to be an anchorage for the fleet in war even before Rosyth was completed. The likely objects of an attack were:

- creation of panic;
- destruction of docks and shipping;
- destruction of the Forth Bridge;
- destruction of the works of defence and electric lights;
- attack upon warships at anchor;
- destruction of, or damage to, the works in progress at the naval base.

Detailed provision was once again made for the infantry defence of the fortress installations, the War Signal Stations at North Berwick, St Abb's Head, Elie and Fifeness, the radio station at Castlandhill, above Rosyth, and an entire battalion of the Royal Scots was to garrison Inchkeith.

The apotheosis of the Owen Committee came in 1909, when a joint committee of the Colonial Defence Committee and the Home Ports Defence Committee reconsidered the threats that developments in naval armament now posed. The current defences of the Empire at this date conformed to the Admiralty's previous assumption that 'we should be able to assert our superiority at sea over the naval forces of any combination of hostile Powers likely to be arrayed against us …'. By 1909, however, the United States, Germany and Japan had become first class naval powers and Britain was no longer able to ensure naval superiority in all places at the same time. It was therefore considered necessary that ports might have to defend themselves for longer periods before naval support could arrive.[15]

Table 6

The armament return for 1907. Most of the guns removed from the 'approved armament' by the Owen Committee are clearly still mounted, but presumably without crews or stores. The 5-inch, 6-pdr and 3-pdr guns on Inchkeith were those mounted in the Practice Battery recorded on the island at this time, for volunteer RGA training. The School of Gunnery moved from Leith to Broughty Ferry in 1909, and these practice guns then were removed. (CAB 18/19 1898–1910) (WO 78/5195 01 January 1916 – 31 December 1916)

Name	Mounted	Approved
INCHKEITH		
9.2-inch Mk X	3	3
6-inch Mk VII	4	0
5-inch BL Mk III	4	0
6-pdr Nordenfelt QF	2	0
3-pdr Hotchkiss QF	2	0
KINGHORN		
9.2-inch Mk X	1	1
6-inch Mk VII	2	0
4.7-inch QF	2	0
DALMENY		
4.7-inch QF	2	2
INCHGARVIE		
12-pdr QF	2	0
CARLINGNOSE		
6-inch Mk VII	2	2
COASTGUARD		
12-pdr QF	2	0
Total	***28***	***7***
Reserve		
King's Park		
15-pdrs	8	
4.7-inch		8

4.3 The anchorage east of the Forth Bridge, 1909–12

It was in 1908 that the Admiralty first expressed its desire that additional moorings, east of the Forth Bridge, be available in wartime. The Admiralty had originally informed the War Office that when it was necessary to anchor vessels east of the Forth Bridge, ships would employ their own anti-torpedo nets to protect each vessel individually, but this was no longer considered adequate.[16] In June 1909, 'the Admiralty were considering the advisability of erecting a line of booms

and obstructions on the line John Dea's Craig – Inchcolm – Hound Point to protect the anchorage east of the Forth Bridge …' The obstruction was to be formed by dumping spoil from the excavation of the dockyard basin at Rosyth on a line from Hound Point north-east along Drum Sands to end in a seaward dolphin (p xx). The matter was referred to the Home Ports Defence Committee.[17]

It was not until two years later, in August 1911, that the Home Ports Defence Committee reported back. The delay had been occasioned by the need to obtain detailed estimates for the various schemes of works that had been proposed; unfortunately, the preferred scheme was expensive (£130,000 in capital expenditure, and £18,000 annually thereafter) but could provide 'only a partial measure of security'. The Defence Scheme was designed to protect moorings for 24 battleships and six armoured cruisers in three lines; this number of moorings was eventually provided during the First World War.[18]

By 1911, the Whitehead Torpedo in use by the Royal Navy had a range of 8,000 yards (*c* 7,300m), and foreign navies were expected to match this in due course. In ports with a long, straight approach, like the Forth, it had become necessary to site guns far enough out to tackle torpedo craft before they could come within torpedo-launching range. It was considered impossible at that time to stretch an anti-torpedo net far enough east across the Forth.[19]

The report considered two variants ('C' and 'D') of the scheme originally discussed in 1909. Scheme 'C' comprised an obstruction of dumped material from Hound Point along the Drum Sands, with a battery built in a 'fort' at the seaward end, an anti-boat boom from the 'fort' to Inchcolm, QF gun batteries on Inchcolm, and a boom from Inchcolm to the Fife shore. Defence Electric Lights were to be installed as necessary. In total, there would be 18 QF guns and 14 DELs. The alternative scheme, 'D', was to consist of a chain of batteries on Inchcolm, Oxcars, Inchmickery and Cramond Island, covering an anti-boat boom, with accompanying electric lighting; in total there would be 30 4-inch QF guns and 19 DELs. It was only later realised that neither Inchmickery nor Oxcars could hold the number of guns originally planned for them.[20]

Neither option provided a complete defence. Scheme 'C' would still allow enemy torpedo craft to creep up under cover of dark and discharge torpedoes into the crowded anchorage before they would become vulnerable to fire from the new batteries; scheme 'D' could engage enemy boats much further east, but, as Oxcars rocks offered no prospect of supporting a battery, there would be a 2,500yd (*c* 2,300m) gap between the Inchcolm and Inchmickery guns. The building of piled obstructions was considered but dismissed as not cost-effective. The use of lights and guns on moored craft was considered, but dismissed as impractical.

In the end, because 'no practicable measures could make the anchorage east of the Forth Bridge secure', the Committee of Imperial Defence decided that 'a better plan would be to dredge extra accommodation for the fleet in an anchorage west of the bridge …'.[21]

The same 1911 Home Ports Defence Committee also considered the heavy guns of the defence, restating earlier recommendations that two further 9.2-inch guns were needed to strengthen the defences of the increasingly important naval station. (These two guns would later be mounted as the Braefoot Point Battery.) It is interesting to note, that even in 1911, the discussion of the defence of the estuary could still explicitly exclude consideration of the threat of attack by submarine, because their range and capability were still underestimated and the possibility of attacks by submarines on war vessels in harbours was considered 'remote owing to the hydrographical difficulties which prohibit their navigation below the surface on the approach to harbours'.[22]

In 1911, officers commanding and serving in coastal fortresses were issued with a manual for their work, *The Organization and Fighting of the Fixed Armament of a Coast Fortress or Defended Port (Provisional)*. In 65 pages, the reader was introduced to everything from the grand strategy that made coast defence necessary ('to free the Navy from the duty of protecting ports …') to ranging and firing the guns and operating the DELs.[23] The manual was superseded in 1914.

4.4 The run-up to war, 1912–July 1914

Further consideration was given to the Inner Defences of the Forth by the Home Ports Defence Committee in October and December 1912, although 'The exact extent of the naval anchorage, which it will be a function of the inner defences to protect against torpedo attack, has not yet been defined by the Admiralty …'. The risk uppermost in the mind of the Committee was, as before, that of an attack by torpedo craft on the anchorage above (west of) the bridge, the southern part of which was vulnerable to torpedoes launched from around Inchcolm.[24]

On 1 April 1912, the armament of the Inner Line comprised two 6-inch guns, two 4.7-inch QF guns and four 12-pdr QF guns (Table 7). Both Army and Navy agreed that the defences were not commensurate with the Forth's importance. The Inner Defences of the Forth were at this time, 'directed primarily against torpedo craft and other hostile vessels entering the navigable waters enclosed within the triangle Hound Point – Coastguard Battery – Dalmeny Battery'.[25]

The officer commanding Scottish Coast Defences, with the approval of Scottish Command, proposed remedies to the perceived deficiencies of the Inner Defences:

(a) Inchgarvie should be reconstructed to take four 4-inch QF guns;

(b) Inchgarvie should be provided with three 45° or 30° DELs;

Table 7

The mounted and Approved Armament of the Forth, 1 April 1912. Although Braefoot appears on the list as an approved alteration there was, in contrast to other approved changes, no information on the table about when it was expected to be completed. In fact, its construction was not even begun until 1914. The removal of 6-inch guns on the recommendation of the Owen Committee had left only the two at Carlingnose. The list for 1 April 1914 showed the same mounted armament. Information from National Archives files. (WO 33/3264; WO 33/593; CAB 13/1; WO 33/683)

Name	Mounted	Approved Alterations
Outer Line		
Inchkeith	3 x 9.2-inch Mk X	
Kinghorn	1 x 9.2-inch Mk X	
Inner Line		
Dalmeny	2 x 4.7inch QF	
	2 x Dispersed (fixed) lights	
Inchgarvie	2 x 12-pdr QF	
Carlingnose (examination battery)	2 x 6-inch Mk VII	
Coastguard	2 x 12-pdr QF	
	2 x Fighting (moveable) lights	
Braefort [*sic*] (Braefoot)		2 x 9.2-inch Mk X

(c) the existing lights at Dalmeny and Coastguard should be altered to fit with the new Inchgarvie lights;
(d) fixed-beam and moveable defence lights should be provided at Hound Point.

The General Officer Commanding (GOC) Scottish Command also personally proposed an additional battery at Hound Point.

The proposal for 4-inch QF guns on Inchgarvie did not meet with favour at that time,[26] but the Committee recommended mounting guns at Hound Point and Middle Point (the latter battery would eventually be sited at Downing Point, 315m to the east).[27] The annual return of 'Approved Armaments' of 1 April 1913 noted that the substitution of the Inchgarvie guns and the establishment of Hound Point was 'under consideration'.[28] Nothing was done immediately but 4-inch guns and new DELs were in place on Inchgarvie in December 1914, Hound Point was ready for action in November 1914, and funds for the Downing Point battery were allocated in September 1914. This planning committee work done in 1911–12 meant that by or shortly after the outbreak of war, the work on the Inner Defences was already under way, along with the 9.2-inch guns at Braefoot.

During August 1913 the threat posed by submarines to shipping in the Forth and to the Rosyth dockyard was finally demonstrated in a mock attack undertaken by a Royal Navy submarine. It travelled unmolested from Dundee into the Forth, past the defenders of Inchkeith and the look-outs on the battleships moored by the Forth Bridge, and reached Rosyth Dockyard itself.[29]

In September and November 1913, and again in May 1914, Admiral Lowry, commanding at Rosyth, pressed the view, with the support of the then Commander-in-Chief Home Fleet (Vice-Admiral Sir George Callaghan), that new defences be put in place for the anchorage below (east of) the bridge. We know the detail of what he proposed only from later references, but a key feature was the arming of a line of defences across the river at Inchcolm with 4-inch QF guns.[30]

Notes

1 Childers 1903: 40.
2 WO 33/381.
3 WO 33/381.
4 WO 33/381.
5 ADM 1/8879.
6 Dobinson 2000: 25.
7 CAB 38/13/16.
8 CAB 38/13/16.
9 CAB 38/13/27.

10 WO 33/444; CAB 38/19/53.
11 CAB 18/19; WO 78/5195.
12 CAB 13/1.
13 CAB 3/2.
14 WO 33/491; Ordnance Survey 1909 *War Office. Maps to Accompany the Scottish Coast Defence Scheme*.
15 CAB 13/1.
16 CAB 38/19/53.
17 CAB 13/1.
18 CAB 13/1; CAB 38/19/53; CAB 3/2.
19 CAB 38/19/53. A distance 8,000yds (*c* 7,300m) east of the Forth Bridge takes one to Inchmickery, where the estuary is *c* 8,000yds wide. As was demonstrated in the First World War, it was by no means impossible to obstruct the Forth at this point.
20 CAB 38/19/53.
21 CAB 13/1 (Mtg. 115).
22 CAB 38/19/53. WO 33/515.
23 WO 33/513.
24 CAB 13/1.
25 CAB 13/1.
26 CAB 12/1.
27 CAB 13/1.
28 WO 33/639.
29 *The Scotsman*, 26 August 1913.
30 ADM 137/1075; ADM 137/994. Admiral Sir Robert Swinburn Lowry was Commander-in-Chief Rosyth from July 1913 until 1916, and was the key officer from whom, or through whom, all the major defence initiatives would emerge in this period.

Submarine activity in the Forth, 1914–18

During the First World War U-boats varied greatly in size, radius of action and armament. The three classes that concern our story were U-, UB- and UC-boats. Almost all carried torpedoes and mounted deck guns. The U-boats were the largest types and eventually could travel great distances. The UB-boats were a smaller type that operated chiefly in the North Sea and the UC-boats were minelayers.[1]

At the beginning of the war Britain had considerably underestimated the operational range and capabilities of the U-boat and initial reports of sightings were treated with scepticism. When U-21 penetrated the Firth of Forth as far upriver as the Forth Bridge on the evening of 2 September 1914, sightings were disbelieved.[2] U-21 was one of two boats posted in a standing patrol off the Forth and, during the evening of 2 September 1914, it crept into the Firth.[3] There was as yet no boom defence in place and U-21 reached the Forth Bridge by about 10.30 p.m., where its periscope was sighted. The batteries of the Inner Defences opened fire and U-21 retreated. The battle cruiser HMS *Invincible*, which was in harbour at the time, sent out picket boats to hunt for the submarine without success.[4]

A submarine, probably U-21, was seen on the surface east of the May Island on two separate occasions on the afternoon of 4 September, but the crews of both trawlers and crewmen from a Royal Navy torpedo boat who were consulted assumed it was British.[5]

On the next day, U-21 was on the surface recharging its batteries when a look-out spotted smoke from the funnels of the light cruiser HMS *Pathfinder* on the horizon. The submarine dived. *Pathfinder* was followed by elements of the 8th Destroyer Flotilla, but at midday they parted company. The Commander of the U-21, Hersing, resolved to make an attack on the cruiser and at 3.43pm fired a single 50cm Type G torpedo at a range of *c* 2,000 yards (*c* 1,800m). Lookouts on board the cruiser spotted the torpedo heading towards the starboard bow but evasive action was too slow and it struck the ship beneath the bridge, setting off a more massive explosion in the forward magazine. Broken in two, *Pathfinder* sank within four minutes, taking all but 11 of her crew of 272 down with her. *Pathfinder* was the first ship to be sunk by a self-propelled torpedo fired by a submarine.[6] The failure by the British sailors to realise the importance of the sightings on 4 September was regretted at the Court of Inquiry as, had they been reported, it was probable the loss of the *Pathfinder* the next day could have been averted.[7] Despite the sinking of the *Pathfinder* only three days later, U-21's initial penetration of the Forth was not believed by British naval authorities until it was substantiated after the war.

On 23 September, U-22 and U-19 arrived off the May Island on a further mission but were spotted by the naval trawler *Defender*, and destroyers were sent out to search for them. U-22 had to hide overnight on the bottom of Largo Bay before travelling up the Firth the next day as far as Inchkeith. Having found no suitable target, she returned to Largo Bay for the night. On 25 September, U-19 fired a torpedo at HM Torpedo Boat 33 off the Bass Rock; the torpedo struck its target but failed to explode. That afternoon, the destroyer HMS *Vigilant* and three others were off the May Island when a torpedo was fired at her, but missed. Fifteen minutes later, the destroyer HMS *Stag* successfully evaded two torpedoes at long range. That night, the U-boats left the Firth. Reports of submarines and torpedoes continued for several days and one officer based at Granton commented, 'We had very little rest, day or night, in those days; everybody was seeing submarines. Ladies saw them from trains, children from the coast, and farmers from their farms.'[8]

Following another spate of supposed submarine sightings in mid-March 1915, the Admiralty censured the naval officers on the spot for 'want of resource, brains and energy', as they had not succeeded in destroying a U-boat. Admiral Lowry at Rosyth defended his officers, but the last word went to the authors of the Official History, who had access to captured enemy documents after the war and commented tartly:

> The real cause of the failure of the hunting forces in the Firth of Forth to destroy a submarine on this occasion was neither the want of resource, brains or energy imputed to the officers concerned in the Admiralty telegram, nor the difficulties detailed by Admiral Lowry, but the simple fact that, in spite of all appearances, which at the time seemed quite conclusive, there was no submarine in the neighbourhood.[9]

By mid-June 1915, the efforts of the Royal Navy destroyer and Auxiliary Patrols, along with the other defences of the Forth, although they had not destroyed a single U-boat, had been effective enough to make the Forth an unhealthy place for them.

The 15 UC Type I U-boats started laying mines in June 1915 along the coast of England and gradually extended their mining areas further north.[10] In April 1916, the improved Type II UC-boat minelayer appeared, which could travel further afield and carry 18 mines; submarine-laid mines began to turn up all the way up the east coast, and a mine from one of these boats may have accounted for the loss of HMS *Hampshire* on 5 June, north of Orkney.[11]

Submarines were very active off the Forth in the Jutland campaign, when Admiral Scheer planned, by raiding the north-east coast of England, to entice the Battle Cruiser Squadron out of the Forth into the teeth of waiting U-boats. Eight U-boats were to be stationed off the Forth, and U-72 and U-74 were sent to lay mines at the mouth of the estuary. Weather and sea conditions, engine trouble, other technical problems and the loss of one submarine by an accident hampered the U-boat flotilla. Attacks on the light cruisers HMS *Galatea* and HMS *Phaeton* were unsuccessful and, in the end, the scheme, of which so much had been hoped, failed.[12]

During 1918 Germany made a desperate bid to bottle up the Grand Fleet in the Firth of Forth by laying an extensive minefield well to seaward (and hence out of sight of land). Minelaying began in April and continued until October with a procession of U-boats sailing across the North Sea to lay their loads of mines in pre-arranged positions. Fortunately, the mines were discovered almost as quickly as they were laid, and were secretly swept up. Following the Armistice on 15 November 1918, the German Rear-Admiral Hugo Meurer sailed in the cruiser SMS *Königsberg* to meet Admiral Beatty at a rendezvous off the Firth of Forth. He arrived late with the apology that he had proceeded southward to avoid a German minefield, completely unaware that British minesweepers had cleared it away.[13]

U-21 survived the war and was due to be surrendered to the Royal Navy. While under escort from Kiel to Harwich, Hersing ordered the boat's valves to be opened and, despite British attempts to save her, U-21 was scuttled in the North Sea.[14]

Text Box Notes

1 Campbell 1928: 18–19.
2 Chatterton 1923: 18–19.
3 Massie 2004: 127.
4 Corbett and Newbolt 1920: 163; Chatterton 1923: 18–19.
5 WO 137/3106.
6 Chatterton 1923: 18–19; Massie 2004: 127; Lavery 2007: 236–7.
7 WO 137/3106.
8 Lavery 2007: 237.
9 Lavery 2007: 238–9.
10 Corbett and Newbolt 1920, vol 3: 55
11 Corbett and Newbolt 1920, vol 4: 20; Hurd 1921–9: 231, 260.
12 Tarrant 1995: 55–60; Massie 2004: 560–1.
13 Hurd 1921–9: 261.
14 Anonymous ND.