‘Trial & Error’ - The Royal Navy and Mine Countermeasures 1904-1914

Introduction

This essay primarily deals with the practicalities of defensive minesweeping of hostile-laid electro-contact mines in home waters. Other defensive measures, such as patrolling, will also be discussed for their potential in countering of enemy minelaying. Mine-countermeasures as components in grand and minor strategy will be outlined, although mine-warfare was generally regarded as peripheral. Space does not allow for more than generalities on policy regarding foreign powers and international mercantile protection: being complex subjects in their own rights. But, mining and countermeasures were inextricably linked and therefore, some space must be devoted to Britain’s own mining activities.

There is no particular need to trace the early technical development of mines as weapons, or to dwell overly on the traditional attitude to these within the Royal Navy. However, during and following the Russo-Japanese War of 1904-5 there were re-appraisals in light of evolving mine-warfare. Therefore, regarding peacetime development this essay will concentrate on the ten years preceding the First World War, with earlier details mentioned only where necessary. (The modern understandings of the terms ‘mine’ and ‘torpedo’ are used, unless otherwise stated.)

As many of these events are not widely known, a relatively detailed framework for analysis is required. So, there is an element of necessary narration. It should also be noted that a vast proportion of the original documentation has not been retained for posterity. However, regarding pre-war trials, the volumes of the *Annual Report of the Torpedo School*[1] to some degree fill in pertinent detail.

Technical & Organisational Development 1904-14

A naval staff monograph, *History of British Minesweeping in the War*, maintained that there had been little interest in sweeping prior to 1907 ‘… it was looked upon more as a means of locating a lost torpedo than an essential factor in naval war’.[2] Judging from entries of lost Whitehead torpedoes within the Admiralty digests[3] this was not inaccurate. Even so, prior to 1904 not only had there been routine experimentation through the torpedo-schools, occasional sweeping and creeping exercises were also conducted in the Fleet.[4] Nevertheless, counter-mining was then the standard technique in mine clearance.

The efficacy of mines was graphically shown during the Russo-Japanese War, even without the benefit of the *Reports from Naval Attaches &c*, as issued by the Naval Intelligence Department.[5] Perhaps in relation to events in the Far East, in 1904 improvements were suggested by *Vernon* for both ‘rapidly laying and clearing mechanical minefields’ in twice annual Fleet-exercises.[6] Late 1904 saw ships’ cutters being used by the Mediterranean Fleet and again in 1905, using picket and steam-boats: experimenting with a service explosive sweep. Similarly, during 1905 the Atlantic Fleet tested a wire sweep.[7]

Missing from *Vernon*’s annual reports were details of experiments conducted in the Mediterranean, under Vice-Admiral Lord Charles Beresford, between 1905 and 1906. Additional to picket-boat creeping and sweeping were trials with tugs and destroyers preceding warships.[8]

The first forms of a new Rapid Explosive Sweep found temporary favour in 1906; resulting in numerous trials not only in ships’ boats but also in torpedo-boats

and at least one destroyer through to 1907; before withdrawal for re-design. In the Fleet trials with conventional wire sweeps and ships' boats (including pulling-boats) also continued: testing both equipment and working practices.[9]

In February 1908 there were the famous and generally successful sweeping experiments with two civilian trawlers at Portland, at the behest of Admiral Beresford: leading directly to more research with trawlers.[10] In March, searcher-sweeping serials were carried-out off Cromarty in fleet exercises. Three torpedo-gunboats and a destroyer used wire-sweeps, with picket-boats sweeping for the buoyed mines. During summer, in the Forth Estuary torpedo-gunboats swept ahead of units designated as heavy warships: with wire-sweeps and Rapid Explosive Sweeps. October brought high-speed wire-sweep trials for a pair of torpedo-gunboats, with further tests regarding the behaviour of the bight at high-speed and against a single live mine during November in the Solent.[11]

The reports of the Mining Committee of August and November 1908 came to far-reaching conclusions however. The abolition of counter-mining and the use of the Rapid Explosive Sweep were both recommended and accepted by the Admiralty. In their place was to be the fixed-wire sweep: also recommending standardised equipment according to type. Numbers were worked out, initially for converted torpedo-gunboats, as fleet-minesweepers and specifications for replacement vessels specifically designed for mine-sweeping. Separately, approval was given for the purchase of six trawlers for continued assessment and instruction: with the first tentative steps towards forming a trawler reserve.[12] (Fleet mine-sweepers were to precede the main body at sea; while the trawlers, being slower, were tasked purely to keep the defended naval ports' outer 'War Channels' free for warships movements. Picket-boats carried by battleships and 1st-class cruisers were to be utilised for clearing short channels when the others were not available.)

Activities were co-ordinated in 1909, through an officer in the new post of Inspecting Captain of Minesweeping (I.C.M.S.).* Four steam-trawlers had been bought and ten torpedo-gunboats were converted into fleet-minesweepers. Five of the latter were employed at Portland for five weeks, largely studying the behaviour of the sweep at speed. Depth of sweep and kite exercises, channel buoying and others, were also carried out.[13]

By the end of 1910 trawler ownership stood at six; an apparent willingness had been received from the principal civilian owners; and there was approval for the formation of the Royal Naval Reserve (Trawler Section). Annual courses, for officers of the retired and emergency lists assigned to unit-command of minesweepers, had begun. Approval to employ petty-officers of the Royal Fleet Reserve (R.F.R.) in trawlers had also been given. Seemingly extended trials on torpedo-boats established 'best' methods and the fleets continued their picket-boat exercises.[14]

In 1910 converted torpedo-gunboats stood at twelve (although four had been retained for fishery protection) and were involved in more complex evolutions. By the summer multiple pairs were being employed, working on such problems as the desired numbers of pairs; whether to drag mines away or not; the practicalities of buoying; and speeds and station-keeping of the heavy units following. In October the question of whether the pairs should operate on a broad front, or in the wake of a lead pair, in an area of known danger (signified by using devices that caused Holmes' lights to surface from 'detonated' mines) was tackled. The risk to sweepers was also addressed then. The results were regarded as not un-encouraging, although far higher numbers were seen to be necessary and a better type of vessel re-emphasised. (The gun-boats were old, *relatively* slow, thought not to be able to cope in bad weather or on the high-seas and had excessive draughts.)[15]

* In totality the organisation was far more complicated and was subject to periodic changes

After extended deliberations, the decision was finally taken *not to build bespoke fleet-sweepers* in January 1911. Instead trials by the destroyers *Crusader* and *Maori* as possible replacements were sanctioned.[16] Accordingly, sweeping experiments as a pair were made through to May.[17]

During the Fleet exercises of summer 1911 three pairs of torpedo-gunboats were employed, sweeping a channel where sixty (dummy) mines had been sown in a channel with a thirty degree bend in it. (There had been an earlier unreliable trial offshore, in March 1910. In this the tide caused the awaiting mines to incline too far or drift away.[18]) This too proved problematical and recommendations followed.[19]

I.C.M.S. reported '… further considerable progress...' for 1911. A 'considerable' number of trawlers from 'various' ports had been put on Admiralty listing; with training of the first fishermen of the R.N.R.(T) also taking place during the summer, at Aberdeen, Grimsby, Hull, Fleetwood and Milford Haven; utilising two torpedo-gunboats and the six naval trawlers.[20]

A scheme for using dredger-hoppers (originally only at Portsmouth) had been approved for sweeping at naval ports, along with torpedo-boats and a miscellany. This was planned merely in the early days of conflict before the arrival of trawler-sweepers. On relief, the torpedo-boats were to take up their own sweeping duties within the ports. This and much more was covered in the first minesweeping handbook issued to the Fleet during this year.[21]

Also, bow mine-catchers had been tested on two torpedo-gunboats, seemingly effective in 'fine weather up to 12 knots', although less so in moderate conditions. Consequently, a strengthened version was to be fitted to one, with the eventual intention of issue to the rest of the fleet-sweepers. And, as multifarious gear for sweeping came into service, stores were laid in at home and abroad: all reported annually.[22]

Night-sweeping signalling exercises were carried out by the fleet-sweepers and separately by picket-boats. On the China station there was a successfully conducted picket-boat serial in bad weather, rough sea and heavy swell, seemingly vindicating the procedures in force. However, back in home waters turbine-driven torpedo-boats proved difficult in handling.[23]

In spring 1912 another pair of destroyers, *Rother* and *Ure*, were detailed-off for more experimental work, which were employed '…frequently on the measured mile'.[24] June saw another full-scale fleet-sweeping exercise, in open water off Torbay: without apparent mishap. Further night work standardised signalling procedures, but clearing channels at night was deemed not to be practicable, due to mines adrift on the surface. Some effort had already been made on the problem of floating mines, but sustained experimentation was carried out in this year by *Grafton*. Well-aimed rifle fire from 30 to 60 feet above the water line was found to be the optimum and more effective than maxim-gunfire (six-pounders earlier having been discarded). Training of the trawler reserve continued and the six naval-trawlers proved that they could sweep in open water in bad weather.[25]

I.C.M.S.' report on the trawler reserve generally showed continued progress. Training of fishermen continued. A reduced but 'more practical' course for the ex-R.N. unit commanders had been developed, which included drawing gear from the dockyard, sweeping dummy mines in units and rifle target practice on floating mines. Around 95 crews had been enrolled and trained up to then. However, there was '… still a disinclination shown by deck hands to join, as compared with the higher ranks and ratings'. Additionally, the first design of bow-catcher for trawlers had proved unsatisfactory, but another was 'under consideration'.[26]

Trials with *Rother* and *Ure* were abandoned in February 1913, due to the perceived shortage of destroyers as patrolling craft. That said, the torpedo-gunboats

continued to carry on their practice and experiments. With one division of six fleet-sweepers working together, control was becoming an issue, with suggestions including utilising light-cruisers for this role. In increasingly sophisticated exercises, at Lamlash in June the 2nd Battle Squadron was to 'gain experience in withdrawing fleet sweepers when they have encountered mines, and stationing them again ahead of the fleet on another course'. And, anticipating deep-water mining, tests were then conducted. Handling proved to be substantially different to that experienced in shallow-waters and it was assessed that live mines caught in deep water would *probably* detonate, destroying the sweeps.[27]

Prior to the outbreak of war in 1914, from viewing the Admiralty digest and the *Annual Report of the Torpedo School*, experimental sweeping activities seem generally to have fallen off, with concentration on bow-catcher design.[28] However, elsewhere there were other considerations, such as a proposal of a test mobilisation of the R.N.R.(T) for that summer.[29]

Other Issues 1904-14

Prior to 1907 the concept of the threat of mines was simply absent from both the Royal Navy's War Orders and Standing Orders (for foreign stations). Indeed this lapse remained in the case of the latter orders, although sweeping was practiced and stores maintained.[30] However, it cannot be said that mines remained un-discussed. They were dealt with variously, internally and externally periodically (by elements of the Committee of Imperial Defence (C.I.D.) from late 1904 through to 1911).[31]

Within the pronouncements of the Ballard Committee of 1906-7, was the recognition of the *possibility* of mining as an important factor in future naval warfare.[32] By the time the 1908 War Plans were issued offensive mining was accepted. Regarding potential operations against the Weser and Elbe, minesweeping-trawlers were to enter German defensive minefields, clear and buoy a channel, ready for the battle fleet to enter in safety. Dated September 1908, there was an assumption that trawlers as minesweepers had been '… definitely decided upon…' along with arrangements for '… their acquisition and manning'.[33] With the operations against the German coast subsequently losing favour, the incompatibilities in the role envisioned for these operations and the actual role as developed for the R.N.R.(T) seems not to have become apparent (until 1915 in the Dardanelles where lessons were hard learned).

Primarily through Lord Roberts, a C.I.D. sub-committee debated the subject of large-scale enemy mining in places such as the Thames and Dover Straits in December 1907 and February 1908: as part of the wider issue of possible invasion. In these meetings the naval officers present; Admiral of the Fleet Sir John Fisher, as First Sea Lord; and Captain Edmond Slade, as Director of Naval Intelligence; were highly confident of dealing with any enemy-laid minefields.[34]

This seems to have signalled the end of discussion on the practical countering of enemy mines at a high level, as there are few further references (if any) within C.I.D. papers. In planning at a tactical level, mine-countermeasures were seemingly absent between 1909 and mid 1912.[35] However, from November 1912 onwards, the ever-changing war-plans routinely contained instructions to the Admiral of Patrols (A.O.P.) regarding trawlers and the Admiral Commanding Reserves (A.C.R.) in mustering the fleet-sweepers.[36]

The attempted limiting, if not the entire eradication of, the usage of electro-contact mines through international regulation is well known. The articles of the *Convention relative to the laying of Automatic Submarine Contact Mines,* as result of the Hague Convention of 1907, theoretically laid a frame-work for very limited use.

Nevertheless, further negotiations and imperfect ratification did not bode well for future compliance.

One consideration addressed in the 'conventions' was the '... laying of automatic mines off the Coast and ports of the enemy with the sole object of intercepting shipping' - Article Two.[37] While forbidden, some measures in regards to countering this eventuality were taken in Great Britain. The Mining Committee of 1908 had partly considered the matter of the defence of commercial ports.[38] From 1912 to 1914 conferences were held with some local harbour authorities, with a view to these civilian authorities carrying-out their own, separate, minesweeping operations. Specifics are lacking,[39] but the monograph on minesweeping states '... the result cannot be regarded as satisfactory'.[40]

By 1914 patrolling by a variety of local naval forces had become the standard defence against the ingress of enemy units: including minelayers.[41] And, in an era of great public concern (in some quarters at least) numerous schemes for inshore patrol had been forwarded to the Admiralty, mostly by concerned civilians. The report of the Motor Boat Reserve Committee of 1912, showed a modicum of interest, but only as an '… useful body of expert seamen available for special duties whenever required although not liable to penalty in case of refusal'.[42] Even so, by the summer of 1914 a Motor Boat Reserve of the Royal Naval Volunteer Reserve (R.N.V.R.) was taking shape, just in time for war.

Wartime Operations

Germany began the mining-war immediately after Germany's declaration of war with Britain on August 4th (as stated in the German official history)[43] with an intended daylight operation by *Hilfstreuminendampfer B*. Lately she had been *Nord-Deutsche-Lloyd's* fast mail-steamer *Königen Luise*. Her target, the King's Channel, was jointly naval and civilian. Apart from her own demise off Aldeburgh, at the hands of the 3rd Destroyer Flotilla on the 5th, her mines sank the light-cruiser *Amphion* on the 6th and far later in the month, two Danish merchantmen.[44]

By August 6th there were three suspect areas to investigate, off Aldeburgh, Flamborough Head and Usan (near Montrose). Immediately the organisational system failed. Based at Dover, Commodore Ballard as Admiral of Patrols was in overall-charge for trawler-sweeper operations in war, with Senior Naval Officers (S.N.O.s) of ports locally responsible.[45] He was also responsible for the temporary stationing of minesweeping-craft away from the defended naval ports: as required.[46] However, when legitimately ordered to act on these reports he made submissions to the Admiralty that local S.N.O.s should deal with their own areas. Continuing, he only had two trawlers on hand and if detailed to other duties, the Humber (important not only as a battlecruiser base but also as an oil-fuel depot) could not be swept. It was in this light that the decision to create the Lowestoft Flotilla was taken, based around the gunboat *Halycon* (responsible for a coastal channel between the South Goodwins and the Outer Dowsing).[47] In certain respects this is curious. The mining of commercial ports or coastal areas was regarded as a probable course of action for the Germans and clearly shown by an appreciation by the current D.N.I., Rear-Admiral Henry Oliver, dated *30th July 1914*.[48]

Large blocks around the suspect area off Aldeburgh (and briefly Flamborough Head and Usan) were ordered off-limits to heavy-draught warships: until swept by trawlers. On the 7th the vicinity of the German minelayer's sinking around Aldeburgh was prohibited to shipping, with the first coastal-route initiated. Additionally, on August 6th the Admiralty instructed the A.O.P. to re-deploy. '(I)nstead of keeping his

vessels concentrated in divisions to repel raids, he was to patrol the coast day and night to prevent a repetition of the recent enemy operation'.[49]

Accounts of progress differ and much information is missing. However, the minesweeping monograph maintained that at Aldeburgh by '... August 10th six trawlers had arrived from Dover and were sweeping on this shoreward channel'. By the end of the month the channel had been swept and buoyed.[50] However, it is far from clear at what point the decision was taken to leave the mines in place and by whom.

Holding back for various reasons,[51] the next German operation, using their only two fast-minelayers, was mounted, on August 25-26th. Under cover of darkness and in mist, *Albatross* laid a minefield off the Tyne (but five miles further to seaward than calculated). *Nautilus*, by contrast, laid her mines on position near the Humber.[52]

Telegrams and reports regarding the minesweeping efforts of August 27th off the Tyne impart the basic events. After news reached shore of the first shipping-casualties; at 07.45 Tynemouth's four trawlers, numbered 61, 62, 105 and 106 ventured out; meeting *Torpedo-boat Number 24* at 10.30. Work began immediately, but sometime during the afternoon-watch *H.M. Minesweeping Trawler Number 62* fouled her propeller, with *T.B. 24* standing-by. The other pair had moved off to the south in mist and whilst rigging-up, two mines exploded in the sweep and a third destroyed *H.M. Minesweeping Trawler Number 106* at 15.45. After picking-up survivors and sounding her siren, *105* rejoined the others. At 16.25, in company *61* blew-up. The torpedo-boat closed, rescued those in the water and repaired to harbour with all the still living. *105* towed *62* back. Five men had been killed, seven wounded.[53]

The diary of the commanding officer of the patrol-destroyer *Stour*, Lieutenant Basil Owen R.N., gives valuable insights into this day's events. Instead of bad luck and plucky behaviour, his version shows confusion and ignorance. *Stour* along with *Kale* had sailed to relieve another division and while looking for *Eden* '…. blundered into T.B.s 22 and 24 with four minesweeping trawlers….' Later, 'I intercepted a W/T to KALE from Captain D ordering us to close the TBs and mine trawlers and assist them to clear the minefield!!!'. Witnessing the detonations immediately prior to *106*'s destruction, Owen's opinion on their capability of assistance was merely in finding mines by running onto them. It may be that this particular officer was more critical than most, but he obviously had severe reservations on the judgement of senior officers in his flotilla (and sanity of one).[54]

These events challenged the torpedo school's accepted wisdom that '... the discovery of mines is the important matter; once discovered they may be avoided and destroyed at leisure'.[55] Efforts to rapidly define the limits of the Humber minefield were to inflict further casualties. In spite of the lack of training, or even trials, multiple-suggestions of using drift-nets in mine-finding (not only from naval officers but also the vessels' owners) were acted on.[56] (Due to a shortage of trawlers, the drifters subsequently used off the Humber, had already been searching the 'danger-area' off Aldeburgh.[57])

Under orders from *Halycon*, the minesweeping torpedo-gunboat *Speedy* sailed on August 31st with ten steam-drifters: initially shooting their nets on September 1st. Nets were similarly deployed the following morning. At the centre, but behind the nets *Eyrie* struck a mine, carrying-away her stern and sinking in three minutes. Compatriots sent their boats off and picked up survivors. Immediately after the first detonation, another mine exploded in the next boat's nets. Even so, that part of the minefield was still buoyed.

The next day *Speedy* was in company with three drifters. Intending to sweep under the previously-shot nets, the gunboat held one end of the sweep-wire, with

Lindsell holding the other. *Wishful* and *Achievable* were providing extra power by towing *Lindsell*. At 11.00 and after an hour's toil *Lindsell* struck a mine aft, suffering similarly to *Eyrie*. The gunboat sent away her lifeboats for survivors. At 11.15 *Speedy* too was mined, losing most of her after-end. Inevitably, fifty minutes later she too slipped-away: but not before a disciplined abandonment. While the behaviour of some was complimented on, a number of the drifters anchored about four miles away refused to close when ordered: merely launching their pulling-boats. Five skippers were censured. Apart from the material losses, twelve men were killed, and at least three injured (two badly). Had the weather been worse, the casualty-rate may well have been far higher. The minesweeping-gunboat *Spanker* in the vicinity, ferried the wounded to Grimsby. Her wireless failed, due to blast.[58]

As of August 31st patrolling was *again* re-organised, with destroyers being assigned ten-mile stretches of the increasing 'War Channel' and organisation for the Auxiliary Patrol initiated; east coast navigation lights were extinguished as of September 7th; and Rear-Admiral Edward Charlton took up a new post of Admiral East Coast Minesweeping (A.M.S.) in mid-September. Naval opinion held that the minelayers must have been merchant ships or fishing-craft and September saw the first wide-ranging infringements. Among these British merchantmen were banned from trading across the North Sea, fishing areas were prescribed and on October 1st, the east coast ports were closed to foreign fishing-craft. Cruiser patrols were also mounted at Dogger Bank.[59]

Apart from merchantmen and fishing-craft casualties,[60] which were not inconsiderable and two more large areas designated as off-limits, there were additional naval consequences. The Humber was abandoned as a battlecruiser base, with *Invincible* and *New Zealand* inadvertently passing about two miles from *Nautilus*' mines.[61]

The findings by the A.M.S. in *Speedy*'s Court of Enquiry are interesting. Drawing twelve feet and with ships' companies of 94 these gunboats were deemed unsuitable for clearing minefields (as were men-o-war and torpedo-craft). Trawlers drawing 15 to 17 feet and drifters 13 feet were also not ideal, but had small crews. Proposed were paddle-steamers, which only drew 7 feet 6 inches and two of these craft were already in the process of conversion.[62] Incidentally, published accounts are reticent in specifically naming the author of the idea of using paddlers. However, far from the admiral as is hinted, it may have been a lieutenant late of *Speedy*.[63]

While some mines were judged to have been adrift, others were thought to have been tethered and about three feet from the surface. Attention was drawn to the state of the tide at the time of *Speedy*'s loss: about half-an-hour to low-tide. Orders by then proclaimed '… clearing minefields should not be pursued within two to three hours of low water'. Channels were, however, to be swept regardless of the tide's cycle.[64]

Admittedly Admiral Charlton was new to minesweeping, but both draught and state of tide had been seen as important in sweeping for some time and various peacetime trials had been conducted. Saliently, within the *Instructions for Mine Sweeping*, as issued in January 1914, is a section titled 'Effect of Tide on the Depth of Mines'.[65] Surely the R.N. officers onboard the gunboats would have been aware of this?

Anyway, while regular sweeping operations in these fields were suspended, there were other probes. On September 19th air observation of the Humber field at low tide was conducted, but proved impractical in identifying mines.[66] Also, in October the drifter *Lily* was lost trying to locate the boundaries of the Tyne field: with seven men killed. She was part of a group chartered by the Board of Agriculture and

Fisheries, under the auspices of the Board of Trade, but under the command of a sub-lieutenant R.N.R.[67]

Two minesweeping-trawlers were also lost during October. Confusion over the positioning of British mines laid as cover for the Ostende and Zeebrugge landings,[68] led to the Admiralty ordering two groups of minesweepers on the Kentish-coast, to West Hinder. By the time of their recall, *Princess* and *Drumoak* had disappeared with 21 men: presumed mined.[69]

Meanwhile, a large-scale German battlecruiser raid had been planned for late September, but postponed. Through to mid October, related and independent mining enterprises were also variously begun, including the disruption of the Forth by *Nautilus* and *Kolberg*. In these, all but one turned back.[70]

Consequently, the disguised auxiliary-cruiser (*Hilfskreuzer*) *Berlin* made for the Clyde, but finding the North Channel heavily patrolled laid her mines off Tory Island, County Antrim on the night of October 22-23rd. Total civilian casualties were not excessive (although two were in areas previously swept),[71] but the loss of the brand-new battleship *Audacious* was severe. Also, Lough Swilly was no longer regarded as a safe anchorage for the Grand Fleet and it returned to Scapa Flow.

This field created serious problems for the minesweeping-forces. Concentrated on the east coast, only four minesweeping-trawlers were at Milford, Pembrokeshire, which were immediately dispatched to Lough Swilly: for delineating the field and sweeping a coastal passage. Lowestoft's numbers were reduced by twelve: sent as two groups to Milford and Larne in order to keep Saint George's and North Channels clear. The trawlers at Scapa Flow and Cromarty were ordered to sweep out to thirty miles. And, with important elements of the Grand Fleet at Lough Swilly, the two fleet-sweepers there (*Leda* and *Circe*) were temporarily reinforced by three more from Scapa (*Seagull*, *Skipjack* and *Speedwell*): to facilitate capital ships leaving the area.[72]

The newly-arrived 'Kaphreda' minesweeping-trawlers were soon ordered to Scapa however: replaced by untrained trawlers and drifters. With no naval support, or even gear, they nevertheless made sweeps using their nets: finding nothing. Subsequently the 'Kaphreda' group was re-ordered to Northern Ireland, but this was marred by significant disciplinary problems and consequently, did not even sail until November 25th. The field was not entirely cleared until August 1915. This may have been partly down to caution, but heavy swells and extended poor weather are also known to have frequently interfered with operations.[73]

The complexities of enforcing the blockade; countering possible raids and invasion; as well as submarines and minelayers; continued to tax the minds of the R.N.'s policy makers. Fishing was prohibited on Scotland's west coast, the Orkneys and Shetlands after *Berlin*'s activities. And, draconian measures were announced on November 3rd. In spite of neutral protests, the entire North Sea was declared a 'military area', with all mercantile traffic subject to strict routing by the British authorities. (The British declared mined-area between Kent and Belgium, as of early October, had already effectively funnelled traffic into the Dover Straits.)[74]

Exactly coinciding with this was another German raid: primarily a mining operation against commercial traffic off Lowestoft. The attempted bombardment of Yarmouth was merely cover. The locality in which the light-cruiser *Stralsund* strew her mines was distinctly problematical to the British. Smith's Knoll was the northern entry-exit point for this part of the War Channel, bounding the northern point of the first 'danger' area. This need not have been too pressing though. It had only become dangerous in reality after the British had laid mines in the Northeast and Northwest corners: hoping to catch the enemy out. Recently, in bad weather, British patrols had to contend with British mines adrift.[75]

An attempt to clear Smith's Knoll Channel was immediately made, *H.M. Minesweeping Trawler Number 361* was lost on November 6th and operations were suspended. *H.M. Submarine D5* had been destroyed; civilian losses also mounted (almost exclusively fishing-craft and foreign merchantmen); mines detonated through stormy weather; and this section was written off. The danger area was extended and the War Channel lengthened.[76]

The above-mentioned trawler minesweeper's instantaneous destruction was in part due to the weather. A new form of bow-gear (named after its inventor Ellison) had been available and was being fitted to over two-dozen craft, but on this day had not been rigged due to the wind and sea. Ironically, there was a higher loss of life through this apparatus. In spite of Captain Ellison's assertion '… that the whole thing can be triced up by two men in two minutes, and there is nothing to carry away in rough weather' eight deckhands were required, rather than the normal four. Eight men were killed, but remarkably six were saved.[77]

The East coast battlecruiser raid of December 16th also contained a mining element. Between Scarborough and Filey the light-cruiser *Kolberg* laid one-hundred mines, mostly within the coastal route but some as far out as seven miles: a heavy sea precluded precise positioning.[78]

Unlike the earlier East coast minefields, *Kolberg*'s could not be deemed 'defensive'. This, incidentally, was a mind-set within the Admiralty that is worthy of comment. Having discarded defensive-mining as an option in 1903,[79] early in the war naval policy-makers began to regard the German-laid fields as 'defensive'. It was not the actual limited number of mines themselves, but the large areas blocked-off on Admiralty charts as dangerous.[80] This had unfortunate consequences. It interfered with naval movements (as in the case of Warrender's forces on December 16th); did not interfere with German movements; and as these areas were generally bereft of mines, fishermen in particular took no notice and suffered accordingly when they *did* encounter mines. Additionally, foreign merchantmen, which were not being given detailed information, had correspondingly high losses.[81]

Anyway, in mid December the northern limit of the confidential War Channel then ended at Flamborough Head; with a publicly announced route from Farn Island across the North Sea to Lindesnaes Lighthouse[82] (as of November 3rd); and an inshore coastal route between these two points was in force. This new field, therefore, required clearing after reports of multiple mercantile sinkings.

In one respect the naval authorities had luck on their side regarding this episode. When a trawler unit got into serious difficulties on December 19th, not only were there two fleet-minesweeping-gunboats in the vicinity to render assistance (*Jason* and *Gossamer*) plus the hybrid *Skipjack*, but also the first of the paddle-steamer sweepers, *Brighton Queen*. The fleet-sweepers had been in transit from Lowestoft to Scapa, when tasked to make one single sweep from Flamborough Head to Hartlepool further to seaward and this just happened to coincide. While the gunboats had by then learned of the hazards of working at low-tide, these reservist trawlers obviously had not and having dislodged almost twenty mines, they were forced to anchor among them: using small-arms when those adrift floated nearby. With her shallow-draught *Brighton Queen* was of particular help on this occasion. Unfortunately, two trawler-sweepers were still destroyed and a third damaged, with the usual loss of life.[83]

The fleet-sweepers passed on and the remainder was joined by another three paddlers and an assortment of fishing-craft (some for patrolling). By the evening of December 23rd a channel eight cables wide had been cleared to Filey Brig and on the 24th, under pressure from commercial sources, the coastal route from Newcastle to Flamborough Head was once again opened.[84] In terrible weather, there were

significant casualties on Christmas Day: mostly civilian but also one patrol trawler.[85] That was the high-point of sinkings though. (To naval losses must be added one patrol trawler sunk and an armed-yacht damaged, both transiting on December 20th.)

In spite of the trawlers' gaff on December 19th, they must have performed well in the days leading to Christmas: especially in such heavy seas and atrocious weather. Efforts on December 25th were especially courageous.[86] And, this day's casualties cannot be attributed to the minesweepers. The S.N.O., Commander Richard Walters R.N., had signalled *very specific* details of safe routes to the Admiralty.[87] Depressingly, civilian losses were considerable and continued into 1915.[88]

In August 1914 there had only been *five* minesweeping-gunboats available for the Fleet: with a sixth coming from fishery protection.[89] As has been seen, these were frequently re-deployed, either temporarily, or permanently, on other duties. There is also reason to believe that the fleet-sweepers only protected battleships in their North Sea travails.[90] Nonetheless, according to 'Taffrail' they were exceedingly heavily used. Ancient and uncomfortable, their relatively small steaming-radius occasionally forced the stowage of coal on the upper-deck: a hazardous practice in winter.[91] The long-term unsuitability of these had been discussed at length pre-war, but it was not until late December 1914 that the decision was finally taken to build specially-designed craft: sloops.[92] As a stopgap eight fast mail-steamers were requisitioned from the Merchant Service: crewed mostly by those of all the naval reserves and merchant-mariners under 'T' forms.[93]

Secondly, the peacetime planned use of the hired-trawlers at the main naval concentrations left few for 'detachable' use[94] and immediately proved to be completely insufficient. With large scale expansion of minesweeping-trawler use came problems. The standard appreciation is of the R.N. organisation taking this into its stride, with fishing communities cheerfully and patriotically complying. Few administrative documents appear to have survived. Nevertheless, backed by press reporting, official snippets point to a different reality.

It may well have been that the ports' Mobilising Officers and Registrars got the already trained trawlers away to sea within a few days of the outbreak of war: as claimed.[95] However, the R.N.R.(T) had never practiced mobilisation. In fact, there was not even this proviso in their terms of agreement with boat-owners. This was submitted by the I.C.M.S. in February 1914 as a 'weakness'. After deliberation, the Director of the Mobilisation Department hinted towards a very limited exercise for the 1915-16 financial year.[96]

Since supply had not been meeting demand, with the blessing of the Fourth Sea Lord, during August the I.C.M.S. had raised the charter-money from 12 to 18 per cent (per registered ton, less depreciation of four per cent per annum of the original cost *as estimated by the Admiralty*). Not only was this extra cost vetoed by the Treasury (even after allowed by the Board of Arbitration); but having worked-out the true remuneration at the higher rate, owners were discontented and made submissions through the Board of Agriculture and Fisheries. As early as August 10th fishing-boats were requisitioned rather than hired and the rates imposed, although there were regional differences (as S.N.O.s also acquired local craft). After the controls were introduced, some representations were made to the Admiralty by owners requesting their craft be taken up. Fishing communities suffered increasing financial hardship, especially after fishing was largely banned in the North Sea during December.[97]

Apprehension contributed to a lessening of efficiency, as clearly shown after *Lindsell* and *Speedy*'s loss. This may have interfered with recruitment (as well as record fish prices for those who took the risk).[98] Not only had mariners to deal with actual dangers, societal paranoia was widespread. Already with a recent generation of

'invasion-scare' literature, Admiralty pronouncements of 'Hunnish' behaviour by unseen minelayers only confirmed deeply seated fears.[99] Accordingly, people believed this and wound-up by some elements of the press, there was a massive outpouring of spurious reports of mines and minelayers.[100] Considerable time and energy was thereby wasted by sweepers and patrol craft in investigation.[101] In the gathering storms from October onwards, many *real* mines German and increasingly British ones (after beginning defensive mining) came adrift though and had to be destroyed by gunfire.[102]

There is also anecdotal evidence of logistical problems resulting in shortages of sweep-gear.[103] And, there was a public admission of an inability to issue winter clothing to the R.N.R.(T).[104]

The manning of the expanded sweeping service must have been a major cause for concern.[105] It has been seen that completely untrained, or partially-trained, units performed badly. Of course, these incidents were in a minority and a great deal of routine sweeping allowed for adequate training (in light of subsequent performance). However, the cultures of retired R.N. officers; merchant officers of the R.N.R.; keen amateurs of the R.N.V.R.; fishermen; pensioner senior-rates of the R.F.R.; and boy-scout signallers; were so diverse as to affect performance.[106] Initially there were severe disciplinary problems.[107] Also, if it was not for the goodwill of organisations, such as the Imperial Merchant Service Guild, the Scouting movement and the R.N.V.R., then a great many secondary but essential roles could just not have been carried out.[108]

For all the pre-war practice, picket-boat sweeping was only carried out in the Cameroons during September 1914. Official versions are contradictory. However, primary sources, though fragmentary, prove mines *were* in evidence. Picket-boats from *Cumberland*, *Challenger* and *Dwarf* swept channels; sank mines by gunfire; and *Dwarf* foiled a ramming attempt by a launch with extemporized mines.[109]

Also, the dredger-hoppers are known to have worked well enough early on.[110] Frustratingly, I have been unable to discover whether sweeping was carried out by torpedo-boats and the like on foreign stations after war broke out.

Patrolling as an anti-mining policy cannot be deemed to have been particularly successful. In spite of long-term intelligence showing that '….(p)ractially all German war vessels from battle-ships to destroyers carry or are fitted to carry limited number of mines'[111] there was a tendency to believe (in the absence of interception of minelayers) that civilian vessels generally and fishing-craft especially, were responsible. In light of this intelligence (that also knew of auxiliary-minelayers), it was not unreasonable to expect converted-merchantmen to carry-out this role. However, using fishing-craft as minelayers was less realistic. Of course this was not totally out of the question, since a fair proportion of mining during the Russo-Japanese War had been executed by small-craft.[112] But, trials had been conducted by the R.N. on four German carbonit-mines in 1913. This type was regarded as '… unhandy, and standing over 6 ft high on its rails, its securing in a seaway would require careful attention'[113] that would make fishing-craft only suitable for limited mining operations. The I.C.M.S. regarded fishing-craft as inherently unsuitable,[114] but the opinion of the A.O.P. and some officers of the Naval War Staff held sway during most of this period. Nevertheless, patrolling was an essential element in localised command of the sea.

Detailed analysis of British defensive mining (partially as an anti-mining policy) in this period cannot reasonably be undertaken. Excepting the Dover-Straits and sundry east-coast minefields, which were sown for different reasons, the new controlled-minefields were not commissioned until November 1914 and only limited

work had been carried out by December. All the same it can be seen that old equipment and pensioner-miners (with experience prior to 1903) were utilised and the early results were crude.[115]

Pre-war attitudes & wartime experience

There is an appearance in the torpedo-school's annual reports and surviving exercise reports, not only of much activity, but also of steady progress. This is especially so in 1912 and 1913 where remarks by flag-officers (taking command of exercises) were consistent, in that they advocated constant practice that resulted in great improvements: both in fleet-sweepers and in picket-boats. Narratives on the R.N.R.(T) also showed year-on-year advances: as did those on independent trials in vessels such as destroyers and torpedo-boats. That is not to say that weaknesses were not realised. For instance, no apparent consensus had evolved as how to effectively temporarily buoy channels for capital ships in the wake of fleet-sweepers, or even how to control these sweepers themselves. Even so, the general tenor appears to have been of confidence. Closer study of these activities is, therefore, necessary.

Independent trials formed an important strand of evolution and outwardly seem to have been detailed and varied. However, often these were singular, with no repeats for comparison. For instance, the total practical experience against genuinely live weapons relied purely on two minesweeping gunboats for one hour twenty minutes.[116] (In testing the German carbonit mines, no sweeping-trials were conducted.[117])

Even when a series of trials was settled on, these were not necessarily to the exclusion of normal activities. The navigators' logs of *Crusader* and *Maori* in 1911 are instructive. Working days were short (even when gear was not lost these only totalled four hours or so); working weeks were short (three to four days); with large gaps in the three month period (taken-up with everything from chipping paint, through ceremonials, to gunnery exercises).[118] *Rother* and *Ure*'s logs for 1912 and 1913 were similar. Additionally, their high-speed runs were obviously punishing on sweep-gear, frequently requiring average periods of three days for the acquisition and re-fitting of replacements. And, only one single serial appears to have been carried out against mines (and dummies at that).[119] Of course, logs would not show meetings held aboard, before and after serials, or, officers 'talking shop' ashore. Nevertheless, the opinion expressed in 1913's torpedo-school annual report that these latter experiments '… were successful as far as they were carried out' begs challenge.[120]

Fleet-sweeping exercises were another major strand of peacetime development. At first sight, these too have the appearance of thought out progression. It is, however, important to point out that these formed small elements of major fleet-exercises: which only occurred on average three times per year. Even when a reasonable period was blocked-off for fleet-sweeping serials, this was not necessarily fully taken up, as in March 1910. On days one and two units were led out; day three they were led in; day four there was a better performance, out and in; and on the back of this the fifth day's practice was cancelled.[121]

A distinct lack of realism can also be identified. Until mid 1910 only once had (dummy) mines actually been laid in the path of major units and even this had not been effective (due to strong tides).[122] In rectifying this weakness in June 1911 sixty mines had been sown in a channel with a thirty-degree bend.

> '... All three sweeps parted in succession at the bend in the channel, leaving the sea ahead of the battle fleet strewn with floating mines. By great care in manoeuvring, these were avoided, except for one struck by INDOMITABLE

and the fleet passed on over the unswept portion of the minefield...'.[123]

One conclusion drawn by the torpedo-school was strange, in that it was maintained that in future channels used by these units should not have bends '... of more than two points'![124] For all the reports generated the time-span was short. *Indomitable*'s ship's log noted that at 10.00 she '… (p)assed through minefield with sweepers ahead' and ten minutes later '(b)umped one mine'.[125] This was not a one off by any means. On a more successful occasion, *Orion*'s log noted that June 1912's practice consisted of one forenoon following the gunboats. They weighed and proceeded from 08.30 onwards, negotiated the 'minefield', made a large loop and had returned to harbour through the 'swept-channel' by 11.20.[126]

Hardly any original correspondence survives regarding the growth of the R.N.R.(T),[127] but even then there are signs of stress. A lieutenant on the emergency-list after attending 1911's two-week minesweeping course, wrote that it was a 'comparative' waste of time and it seems he was not alone in this view. However, on the file front-cover was the following:-

> 'The writer appears to think that sweeping can be learned in a day or two and forgets that the course has been arranged by Officers who are experts in the matter and know much more about the question than he does'.[128]

Coming from an officer on the staff of *Vernon* this is intriguing, considering that the very first paragraph of their *Instructions for Minesweeping* contained the assertion that sweep-gear could be '… efficiently handled by seamen after a few hours' practice'.[129] Other correspondence showed that the shore-bound organisation also suffered from problems. Among these were shortages of R.N. officers for mobilisation duties, retired officers not having knowledge of ports assigned and coastguard officers and senior rates not being available to assist.[130]

And, there were the cases where evidence existed from peacetime trials of relevant lessons not learned. Particularly pertinent were the joint needs for very accurate navigation and knowledge of the effect of local tidal conditions.[131]

One element bound all aspects together however: budgetary considerations. Typical of this was the indecision over the construction of specialist fleet-sweepers. In part this stemmed from a reticence to build what were regarded as purely defensive craft,[132] but the cost implication was both implicit and explicit. Plainly stated, in the 1908 Mining Committee's reports that specialist vessels were required,[133] in December 1909 the decision was apparently put-off by Fisher until June 1910 (in time for the estimates of 1911-12).[134] Although killed off at this stage,[135] under Admiral of the Fleet Sir Arthur Knyvet Wilson R.N. the question resurfaced and it was in this light that 1911's destroyer-trials were ordered. It should be pointed out that even before their commencement the decision against specialist craft had already been taken, by Wilson.[136]

Cost-cutting was also blatant in exercises. For instance, it was not until mid-1910 that real capital ships were used in fleet-sweeping serials. Previously torpedo-gunboats or trawlers had 'stood-in' as battle-fleets.[137] And, even when 'mines' *were* laid, all too frequently they were old mine-cases left over from the days of defensive mining. Additionally, cheap sinkers and/or below-standard mooring-ropes were often used. Modern service-mines, at £60 each, were judged expensive and utilised sparingly.[138] This is just as apparent at the opposite end of the scale, with picket-boat practice. Not only were casks used occasionally; earlier in the period 'mines' were buoyed to ensure recovery;[139] and experiments were even '… made to find out if the

wooden reel supplied for stowing Pattern 600 Electric cable could be used for sweeping from picket boats'.[140]

And, at a time when one battleship cost approximately £1,700,000 merely in building,[141] the Admiralty was decidedly lukewarm to Admiral Beresford's famous submission of 1907, regarding the hire of fishing-craft for trials. At £135 for two trawlers for a fortnight, they were £5 cheaper than drifters.[142] Perhaps the lack of experiments with drifters was due to costs regarded as prohibitive. (There are also classic hallmarks of the Fisher-Beresford feud in this correspondence.)

The atmosphere at the top was also significant. Fisher's concentration on capital-ship building, to the detriment of other elements is well known: as are his many antipathies. It appears to have been his presence at the C.I.D. meetings of 1907-8 that ended debate in high places regarding mine-countermeasures: peripheral although this was to the question in hand. Fisher's allusions to the 'deepest' of 'secrets' regarding a defence against mines on 12th December 1907 can be seen as keeping the two outsiders, Lord Roberts and Colonel Repington, in their place.[143] The admiral's further comments in the last two related meetings are particularly disingenuous though. Without Roberts or Repington in attendance, on 20th February 1908 (before Captain Sturdee's report on the first trawler-trials was in, the first fleet-gunboat trials had begun, or even the fixed-wire sweep adopted) Fisher was adamant of the absolute effectiveness of sweeping to Sir John French.[144] On 26th March he also waxed lyrical to Herbert Asquith of torpedo-boats, trawlers and tugs going forth to routinely sweep home ports and major-channels (even before the Mining Committee gave it's interim report and well before the limited formation of the R.N.R. Trawler Section).[145]

It is unlikely that mine-countermeasures figured highly in governmental circles. Indeed this would be rightly seen as a concern purely for the Admiralty. Nevertheless, without access to other opinion Fisher's remarks probably inspired considerable confidence of naval capabilities. A past torpedo officer of note,[146] by this time Fisher himself, seems to have had but passing interest in mines.[147] Minesweeping, however, cannot be regarded as having been 'secret' as the admiral maintained. It was neither a recent development, as it figured in R.N. deliberations as early as 1874, nor was it secret.[148] This *Preliminary Report of the Admiralty Torpedo Committee* (dealing with all forms of underwater warfare and in which Fisher was involved) was an attempt to learn from publicly-known activities of the American Civil War. Anyway, accounts of the Russo-Japanese War should still have been relatively fresh in people's minds.

From early in his career, Fisher did not favour contact-mines due to their uncontrollability and restrictions they placed on movement.[149] He was also of the opinion that mines could be easily dealt with.[150] (Fisher's endorsement of the submarine as potential replacement to defensive mining in 1903, courtesy of Captain Reginald Bacon, can be seen as an allied concept and indicative of Fisher's interest in developing technology. Even so, careful reading of Bacon's paper shows his analysis as inherently flawed.[151])

While Fisher's relief as First Sea Lord, Admiral Wilson, was a long term comrade, unsurprisingly, his attitudes differed. It was not until his term of office that major fleet-sweeping exercises took on an air of reality. For instance, it was Wilson's instruction that resulted in the use of Holmes' lights to indicate struck mines: rather than just guessing.[152] Fundamentally, the scale and frequency of these serials increased significantly from 1910 and it is not unlikely that with more time, some of the outstanding problems would have been dealt with. (This is intriguing, inasmuch as Wilson's period as professional head of the R.N. is normally regarded as lacklustre.)

There were real peacetime failures though and these can be explained. Firstly, there was the minuscule physical size of the Minesweeping Service itself, something the ardour of the torpedo-officers of *Vernon* could hardly alter. And, secondly, specialists apart, sweepers were not popular appointments either, in a socially conscious navy based around capital ships and patronage.

Without going too far down the line of the psychologist Norman Dixon,[153] the often sanguine appraisals of serials can be seen in terms of serving the system. Whether results were distorted (or unduly favourable interpretations formed) for reasons of personal aggrandisement, or not, cannot be ascertained from the evidence available. If this *was* the case, in part at least, it is just as likely that there was also a 'culture of optimism'. Subject to slender budgets, progress was still genuinely being made and it may have been thought by the officers concerned that time would allow them to resolve the outstanding problems. That there were oversights, as in the inclination tests, can be put down to human frailty.

Another potential weakness can be identified in that development was almost entirely in-service. Minesweeping was undoubtedly practical seamanship. Answers to problems were often found in adding a shackle here, or splicing an eye in there. Symptomatically, results were named after the officers concerned: such as the Ogilvy otterboard and Ellison bow-catcher. And, whilst mines remained relatively crude weapons this sufficed. However, the input of trained engineers and scientists may just have been prudent.

Tentative Conclusions

Far more work needs putting into this subject before definite conclusions can be drawn. For instance, long-term study into the appointments and drafting of the torpedo-schools and mine-warfare vessels is needed to determine whether skill remained within the sweeping and laying services, or was dissipated within the Fleet in general. With this in mind analysis remains possible.

In 1904 the Royal Navy would have been utterly incapable of withstanding an enemy mining assault. Ten years later, it was in a far better position, yet potentially fatal weaknesses still remained.

Putting in place of the embryonic R.N.R.(T) was of the greatest importance allowing for massive expansion, because most of the organisation was already in existence. Without this it would simply not have been possible to create large numbers of fishing-craft sweepers rapidly - assuming that they were realised as being the answer. The original scheme as envisioned merely for the defence of naval ports and the pre-war attempted offloading of civil-port defence show these R.N. tactics as inherently introverted though. The War Channels again, were primarily for the safety of R.N. warships. The not unknown insipid state of naval tactical planning and climate of strategic thought within the R.N. is evident here, in that the protection of mercantile traffic was fundamental to Britain's survival, but far down the list of priorities.

Remaining with grand strategy, even with Captain Ottley's 1905 paper *Submarine Automatic Mines,*[154] they were not given due consideration. True, it was accepted that mines made close-blockade eminently more dangerous, but because sweeping was perceived to be a simple matter by officers such as Fisher, this was accepted as fact: in spite of a growing body of evidence to the contrary from fleet-exercises. With this in mind and the emphasis on fleet-sweeping, the failure to build capable vessels in protection of the navy's own capital ships, or even convert the minimum number of other craft in the interim, was lamentable. As in other spheres, the starving of funds was not only short-sighted: it was potentially lethal. Even

although these manufacturing costings are not entirely comparable, *Audacious* cost at least £2,000,000 in construction,[155] the mine which sank her £200.[156] And, it has been seen that some of the fleet-sweepers did not even spend much time in protection of capital ships anyway. In essence, the threat from enemy minelayers (and submarines) remained overwhelmingly ignored and this hindered British wartime action significantly.

Sweeping from not only picket-boats, but also others such as destroyers, may well have '… given seamanlike training to young officers,'[157] but was overwhelmingly an irrelevance. Concerted efforts in other areas may well have been far more beneficial.

So, the R.N.'s pre-war planning into mine-countermeasures can be seen as having been partly effective, but lacking in *many* respects. As all too often, the British managed somehow to muddle through and by the time the Germans deployed U-boat minelayers in 1915 the coastal sweeping-service was proficient. Rather than fleet-sweeping with sloops, the subsequent invention of the paravane proved to be the way forward for individual ship protection too. Had the Germans' mining been more efficient, the events of 1914 could well have been far grimmer for the Royal Navy and Great Britain.

© Len Barnett, 2001
(amended slightly in
2014 & 2015)

Bibliography

Published

Admiral Sir Reginald Bacon: *The Dover Patrol* volume I (London: Hutchinson, undated)

Geoffrey Bennett: *CHARLIE B: A Biography of ADMIRAL LORD BERESFORD OF METEMMEH AND CURRAGHMORE G.C.B., G.C.V.O., LL.D., D.C.L.* (London: Peter Dawnay, 1968)

Lord Charles Beresford: *The Memoirs of Admiral Lord Charles Beresford* (London: Methuen, 1914) volume II

Frank C. Bowen: *History of the Royal Naval Reserve* (London: The Corporation of London, 1926)

Admiral Sir Edward E Bradford: *Life of Admiral of the Fleet Sir Arthur Knyvet Wilson, Bart, V.C., G.C.B., O.M., G.C.V.O.* (London: John Murray, 1923)

E. Keble Chatterton: *The Auxiliary Patrol* (London: Sidgwick & Jackson, 1923)

Sir Julian S. Corbett: *History of the Great War: Naval Operations* (London: Longmans Green, 1920) volume I

F.J. Dittmar & J.J. Colledge: *British Warships 1914-1919* (London: Ian Allan, 1972)

Captain J.S. Cowie C.B.E. R.N.: *Mines, Minelayers & Minelaying* (Oxford: OUP, 1949)

Norman Dixon: *On the Psychology of Military Incompetence* (London: Pimlico, 1994)

D. Groos: *Der Krieg zur See 1914-1918: Der Krieg in der Nordsee* (Berlin: Ernst Siegfried Mittler und Sohn, 1920) band I

Paul G. Halpern: *A Naval History of World War I* (London: UCL, 1994)

Holger H. Herwig: *The Luxury Fleet: The Imperial German Navy 1888-1918* (London: George Allen & Unwin, 1980)

Archibald Hurd: *The Merchant Navy* (London: John Murray, 1921) volume I

Samuel Hynes: *The Edwardian Turn of Mind* (London: Princeton University Press, 1968)

Paul M. Kennedy (Ed): *The War Plans of the Great Powers, 1880-1914* (London: Allen & Unwin, 1979)

J. Lennox Kerr & Wilfred Granville: *The R.N.V.R.: A Record of Achievement* (London: George Harrap, 1957)

Ruddock F. Mackay: *Fisher of Kilverstone* (Oxford: Clarendon Press, 1973)

Arthur J. Marder: *From the Dreadnought to Scapa Flow: The Road to War 1909-1914* (Oxford: OUP, 1961) volume I

Arthur J. Marder: *From the Dreadnought to Scapa Flow: The War Years to the Eve of Jutland 1914-1916* (Oxford: OUP, 1965) volume II

Brigadier-General F.J. Moberly: *The Official History of the War: Military Operations: Togoland and the Cameroons* (London: HMSO, 1931)

Donald M. Schurman: *The Education of a Navy: The development of British Naval Strategic Thought, 1867-1914* (London: Cassel, 1965)

Donald M. Schurman: *Julian S Corbett, 1854-1922: Historian of British Maritime Policy from Drake to Jellicoe* (London: Royal Historical Society, 1981)

Cdr. Murray F. Sueter: *The Evolution of the Submarine, Boat, Mine and Torpedo from the 16th Century to the Present Time* (Portsmouth: Griffin, 1907)

Jon Tetsuro Sumida: *In Defence of Naval Supremacy: Finance, Technology, and British Naval Policy 1889-1914* (Cambridge: University Press, 1993)

Captain Taprell-Dorling: *Swept Channels: Being an Account of the Work of the Minesweepers in the Great War* (London: Hodder & Stoughton, 1935)

E.L. Woodward: *Great Britain and the German Navy* (London: Frank Cass, 1964)

Unpublished

In order to simplify the footnotes, most naval monographs were given TNA (originally PRO) references. Copies of most of these, however, can also be found at the National Maritime Museum, Admiralty Library and Naval Historical Branch. Others, are only held by one source, or alternatively, different versions are held elsewhere.

Training & Naval Staff Duties: *Naval Staff Monographs: Home Waters from the Outbreak of War to 27th August 1914* volume X (1924) – ADM 186/619

Training & Naval Staff Duties: *Naval Staff Monographs: Home Waters September - October 1914* volume XI (1924) – ADM 186/620

Training & Naval Staff Duties: *Naval Staff Monographs: Home Waters November 1914 – January 1915* volume XII (1925) – ADM 186/621

Naval Staff: *Naval Operations in the Cameroons 1914* (1919) – ADM 186/592 (N.B. This is also to be found within NSM volume II as monograph V)

Training & Naval Staff Duties: *History of British Minesweeping in the War* (1920) – ADM 186/604

Captain Lockhart Leith C.M.G., D.S.O., R.N.: *History of British Minefields 1914-1918* (undated naval staff monograph) – National Maritime Museum, Greenwich

Naval Intelligence Department: *The Russo-Japanese War – Reports from Naval Attaches &c.* (1907) – Within ADM 231/50 (N.B. The full version of four volumes plus two technical volumes can be found at the Admiralty Library)

Naval Expedition to the Cameroons 1914-1915 (unpublished and undated) – Imperial War Museum: K78/796

[1] The National Archives: Public Record Office: General class ADM 189
[2] TNA: PRO: ADM 186/604 p.3
[3] TNA: PRO: General class ADM 12, Table of Head and Section 59-8 for appropriate years
[4] Example Imperial War Museum: Midshipman's Journal, B.W.L. Owen, *Russell* 16th July 1903
[5] TNA: PRO: ADM 231/50, NID reports 1907-8 (abridged form)
[6] TNA: PRO: ADM 189/24 p.82
[7] TNA: PRO: ADM 189/24 pp.83-88; & ADM 189/25 p.47 and pp.53-57
[8] TNA: PRO: ADM 116/900B - Conclusions formed by Beresford 13th August1906
[9] TNA: PRO: ADM 189/26 pp.51-62; & ADM 189/27, pp.51-71
[10] TNA: PRO: ADM 1/7981 - D306
[11] TNA: PRO: ADM 189/28 pp.49-85
[12] TNA: PRO: ADM 1/7994 & ADM 1/7995
[13] TNA: PRO: ADM 189/29 pp.53-64
[14] TNA: PRO: ADM 189/30 pp.107-111 and pp.115-134
[15] TNA: PRO: ADM 1/8042 - X1549
[16] Ibid. - Minuted comments approximately 18th Oct – 1st December 1909 and memo 9th June 1910
[17] TNA: PRO: ADM 53/19112-19117; and ADM 53/23545-23550
[18] TNA: PRO: ADM 1/8042 - X1549 Report Captain Greatorex to Rear-Admiral 1BS-HF 23rd March 1910
[19] TNA: PRO: ADM 189/31 p.77
[20] Ibid. p.8.
[21] Ibid. p.81; and ADM 1/8065
[22] TNA: PRO: ADM 189/31 p.82
[23] Ibid. pp.82-85
[24] TNA: PRO: ADM 12/1503
[25] TNA: PRO: ADM 189/32 p.52 and pp.56-57
[26] TNA: PRO: ADM 189/33 p.77 and p.86
[27] Ibid. p.78 and pp.81-85
[28] TNA: PRO: ADM 189/34, pp.59-60; and ADM 12/1528
[29] TNA: PRO: ADM 1/8375/105
[30] TNA: PRO: ADM 116/900B; and ADM 1/8325 - S328
[31] TNA: PRO: CAB 2/1 - Minutes 58th to 110th meetings. Also CAB 3/1, CAB 3/2, CAB 16/3A & CAB 6/9A
[32] TNA: PRO: ADM 116/1043B p.47
[33] Ibid. pp.709-711 and p.720
[34] TNA: PRO: CAB 16/3A pp.69-73, p.81, pp.86-87, pp.172-173 and pp.231-233
[35] TNA: PRO: ADM 116/1043B until 1911; and ADM 1/8275 for 1912
[36] TNA: PRO: ADM 116/3412; and ADM 137/3893
[37] National Maritime Museum: Capt. Lockhart Leith: *History of British Minefields 1914-18* (Naval staff monograph, undated) pp.9-12
[38] TNA: PRO: ADM 1/7995 pp.2-3
[39] TNA: PRO: ADM 12/1516 - Digest entries, none that apparently survive (in ADM 1)
[40] TNA: PRO: ADM 186/604 p.6
[41] TNA: PRO: ADM 186/619 pp.6-8 and pp.12-15.
[42] TNA: PRO: ADM 1/8372/77 - Precis 'Coastal Reserves &c'
[43] D. Groos: *Der Krieg zur See 1914-1918: Der Krieg in der Nordsee* (Berlin: Ernst Siegfried Mittler und Sohn, 1920) band I s.65
[44] TNA: PRO: ADM 186/619 pp.48-53
[45] TNA: PRO: ADM 186/604 p.7.
[46] TNA: PRO: ADM 1/8376/111 - M12321 2nd July 1914
[47] TNA: PRO: ADM 186/619 p.53
[48] TNA: PRO: ADM 137/1002 pp.16-17
[49] TNA: PRO: ADM 186/619 pp.53-54
[50] TNA: PRO: ADM 186/604 p.9
[51] TNA: PRO: ADM 186/619 p.48 and p.100
[52] Ibid. pp.100-103
[53] TNA: PRO: ADM 137/1002 pp.265-273
[54] IWM: Memoirs of Cdr. B.W.L. Owen RN
[55] TNA: PRO: ADM 189/27 p.55
[56] TNA: PRO: ADM 137/970 pp.25-26; and ADM 137/971 pp.438-449
[57] TNA: PRO: ADM 137/970 p.443
[58] TNA: PRO: ADM 137/1002 pp.360-366; and ADM 137/3108 pp.369-410

[59] TNA: PRO: ADM 186/620 pp.23-28
[60] Guildhall Library: *Lloyd's War Losses 1914-18* (unpublished) pp.2-5 and p.242
[61] TNA: PRO: ADM 186/619 pp.103-106
[62] TNA: PRO: ADM 137/3108 pp.411-412
[63] IWM: PP/MCR/310 - Memoirs of Sir Basil Kemble-Cook pp.177-181
[64] TNA: PRO: ADM 137/3108 p.412
[65] Admiralty Library: As part of *Paravanes, Submarines and Minesweepers etc 1914-1918*
[66] TNA: PRO: ADM 186/604 p.11
[67] TNA: PRO: ADM 137/1003 pp.191-203
[68] TNA: PRO: ADM 137/843 - Orders to Captain-in-Charge-Minelaying
[69] TNA: PRO: ADM 186/620 pp.76-77; and ADM 137/1003 pp.132-139
[70] TNA: PRO: ADM 186/620 pp.60-65 and pp.124-125
[71] TNA: PRO: ADM 137/2810 - Telegrams indicate, apart from the steamship *Manchester Commerce* that a large sailing-ship *may* have been mined in October 1914. For later casualties see ADM 186/620 p.134
[72] TNA: PRO: ADM 186/620 pp.133-134
[73] TNA: PRO: ADM 186/621 p.88; and ADM 137/3113
[74] TNA: PRO: ADM 186/621 pp.1-2, pp.18-24 and p.87
[75] Ibid. pp.2-5 and pp.7-8
[76] Ibid., pp.15-16; and for civilian losses, see GL: *Lloyd's War Losses*, pp.5-6
[77] TNA: PRO: ADM 137/1004 pp.37-42; and ADM 137/4172 - Letter Ellison to Admiralty 17th September 1914
[78] TNA: PRO: ADM 186/621 p.111
[79] NMM: Lockhart Leith: *British Minefield* p.7
[80] TNA: PRO: ADM 186/621 p.88
[81] For Warrender's movements Ibid. pp.112-114 and p.121. For civilian casualties, see Board of Trade Enquiry returns ADM 137/1002, 1003 and 1004. Also, see, voluminous press-reports: national, local and shipping
[82] GL: *Lloyd's Weekly Index* 5th November 1914 p.7
[83] TNA: PRO: ADM 186/621 pp.124-126; and ADM 186/604 pp.14-15
[84] TNA: PRO: ADM 186/621 p.127; and ADM 137/2809 - Telegrams
[85] GL: *Lloyd's War Losses* p.6. Losses were, however, higher. Apart from a missing British steamer later deemed mined, careful private research has *definitely* uncovered another unidentified sinking: with two totally independent eye-witness accounts.
[86] GL: *London Gazette* 19th February 1915 pp.1719-1720
[87] TNA: PRO: ADM 137/2809 - Telegram Walters to Admiralty 23rd December 1914
[88] GL: *Lloyd's War Losses* pp.6-7 and p.242
[89] TNA: PRO: ADM 186/604 p.8
[90] IWM: Diary of Revd. T.W.L. Caspersz, *Antrim*, entry and diagram 15th August 1914.
[91] Captain Taprell-Dorling: *Swept Channels: Being an Account of the Work of the Minesweepers in the Great War* (London, Hodder & Stoughton, 1935) pp.41-43 and p.46
[92] TNA: PRO: ADM 1/7995 pp.3-4, Appendix II and minority report by Captain de Brock; ADM 1/8042 - X1549 - Report by Greatorex 28th August 1909 and minuted comments; ADM 1/8042 – X1549 18th November 1910 report and minuted comments; and ADM 1/8407/492
[93] TNA: PRO: ADM 186/604 pp.12-13
[94] Ibid. p.8
[95] TNA: PRO: ADM 137/976 deals with 'hiring' of small craft, but the files retained can only have been examples. Also, TNA: PRO: ADM 137/51-54 contains 'Home Waters' telegrams for this early period. However, no real conclusions can be drawn from these bodies of documents.
N.B. For the *Instructions for guidance of Local Mobilising Officer*, see ADM 131/68 pp.92-115
[96] TNA: PRO: ADM 1/8375/105
[97] TNA: PRO: ADM 137/970 pp.47-79
[98] National Newspaper Library : Analysis of local press after Yarmouth raid. Specifically *Yarmouth & East Norfolk Standard North Walsham Post* 13th November 1914.
[99] Regarding literature Samuel Hynes: *The Edwardian Turn of Mind* (Princeton: University Press, 1968) pp.22-53. For RN opinions, see TNA: PRO: ADM 186/619 pp.105-107
[100] Examples TNA: PRO: ADM 137/984 p.38 and GL: *Shipping Gazette Weekly Summary* 11th September 1914 p.577 (various items also dealing with financial matters as in footnote 95).
[101] Example Taprell-Dorling: *Swept Channels* pp.73-74
[102] Examples TNA: PRO: ADM 137/2810 - Bi-weekly mining statement 28th-31st October 1914; and ADM 137/1004 pp.543-573
[103] Taprell-Dorling: *Swept Channel* pp.71-72

[104] GL: 'Appeal for Winter Clothing' in *Shipping Gazette Weekly Summary* 2nd October 1914 p.627
[105] For the scale of its expansion, see TNA: PRO ADM 1/8420/126 – Minute - Admiral Commanding Reserves, N.R. 5138, dated 12th May 1915
[106] Taprell-Dorling: *Swept Channels* pp.60-77; and IWM: Memoirs of (Hon.) Lt/Cdr. Charles Evans RNVR (unpublished and undated)
[107] Example: TNA: PRO: ADM 1/8407/477
N.B. Outwith the period of this study, Admiralty files show that disciplinary problems certainly remained in 1915 and into 1916. Just how serious these really were is debatable
[108] Examples: IMSG GL: *Shipping Gazette Weekly Summary* 9th October 1914; Scouting TNA: PRO: MT23 314/T8464/14; and RNVR IWM: Memoirs of Lt/Cdr. Evans
[109] TNA: PRO: ADM 53/37518; ADM 53/40444; & ADM 137/3893 pp.36-43 - translation of a letter from an unnamed German reserve officer regarding the *Dwarf* ramming-incident (not all details tally)
[110] TNA: PRO: ADM 1/8392/291
[111] TNA: PRO: ADM 137/1002 p.16 for 1914 appraisal. Also see ADM 116/942, enclosure within CinC Channel Fleet - file 834/045 11th April 1908 for an earlier appreciation
[112] TNA: PRO: ADM 231/50 - NID reports 1907-8
[113] TNA: PRO: ADM 189/33 p.73
[114] TNA: PRO: ADM 186/619 p.107
[115] NMM: Lockhart Leith: *British Minefields* p.55 and pp.337-338
[116] TNA: PRO: ADM 53/26500; and ADM 53/18654B 10th November 1908. Also see ADM 186/604 p.4.
[117] TNA: PRO: ADM 189/33 pp.72-74
[118] TNA: PRO: ADM 53/19112-19117; and ADM 53/23545-23547
[119] TNA: PRO: ADM 53/25776-25779; and ADM 53/31405-31408
[120] TNA: PRO: ADM 189/33 p.77
[121] TNA: PRO: ADM 1/8042 - X1549 - Sturdee's report 24th March 1910
[122] Ibid. - Greatorex's report 23rd March 1910
[123] TNA: PRO: ADM 189/31 p.77
[124] Ibid.
[125] TNA: PRO: ADM 53/2221 2nd June 1911
[126] TNA: PRO: ADM 53/24312 13th June 1912
[127] In researching aspects of minesweeping operations at the Dardanelles during spring 1915 I found *some* additional material on these aspects, within Privy Council and Treasury records!
[128] TNA: PRO: ADM 1/8209 - A1654/1911 - file 10th May 1911
[129] TNA: PRO: ADM 1/8065 - G18631/1909
[130] TNA: PRO: ADM 1/8209 - A1654/1911 - file 25th April 1912
[131] TNA: PRO: ADM 186/604 p.5
[132] Example TNA: PRO: ADM 1/7995 - minority report by de Brock 20th November1908
[133] TNA: PRO: ADM 1/7995 Appendix II
[134] TNA: PRO: ADM 1/8042 - minuted comments Controller 30th November and First Sea Lord 1st December 1909
[135] Ibid. - memo 9th June 1910
[136] Ibid. - minuted comments "Mining Exercises" 18th November 1910
[137] Ibid. - letter Greatorex to Flag Officer 3rd and 4th Divisions Home Fleet 18th January 1910
[138] Examples TNA: PRO: ADM 189/33 p.75 and pp.80-84; and ADM 189/31 p.73
[139] Examples TNA: PRO: ADM 189/30 pp.128-30; and ADM 189/25 p.49
[140] TNA: PRO: ADM 189/30 p.126
[141] Jon Tetsuro Sumida: *In Defence of Naval Supremacy: Finance, Technology, and British Naval Policy 1889-1914* (London: Routledge, 1993) Table 16
[142] TNA: PRO: ADM 1/7981 - D306 correspondence
[143] TNA: PRO: CAB 16/3A pp.69-70, pp.72-73, p.81 and pp.86-87
[144] Ibid. pp.172-173
[145] Ibid. pp.231-233
[146] In this case I use the term 'torpedo' to encompass mines as well as locomotive and other types of torpedoes
[147] Ruddock F. Mackay: *Fisher of Kilverstone* (Oxford: Clarendon Press, 1973) pp.376-378
[148] TNA: PRO: ADM 116/158 pp.10-11
[149] Mackay: *Fisher* p.49, p.60, pp.115-116, p.118 and p.130
[150] Ibid. p.118
[151] TNA: PRO: ADM 1/7725. Also, Mackay: *Fisher* pp.297-300
[152] TNA: PRO: ADM 1/8042 - Wilson minute 9th June 1910 and file "Moray Firth Exercises" 13th July

1910
[153] Norman Dixon: *On the Psychology of Military Incompetence* (London: Pimlico, 1994)
[154] TNA: PRO: ADM 116/866B
[155] Sumida: *Naval Supremacy* Table 16
[156] TNA: PRO: ADM 189/33 p.75
[157] TNA: PRO: ADM 186/604 p.6