

Chapter 1

Round I: 1898 - The First Naval Law

General Briefing for round I

The state of the nations

After a series of diplomatic encounters and small wars orchestrated by Bismarck, Germany beat France in a decisive war in 1871, and exacted reparations; in that year, Germany became a single, federal nation under a constitution written by Bismarck. There are three separate branches of government. The Presidency is held by the German Emperor (a job reserved for the King of Prussia). The Emperor has personal control of the armed forces. The Chancellor has responsibility for foreign policy, and appoints ministers with the Emperor's consent. The Bundesrat represents the German princes. The Reichstag is elected. The Emperor can appoint or dismiss a chancellor; the Reichstag must approve, but cannot initiate legislation, nor can it appoint or dismiss ministers; the Emperor (with the approval of the Bundesrat) can dissolve the Reichstag. The Reichstag approves the budget.

In 1890, Wilhelm II — a great believer in personal rule by the Emperor, described as “not quite sane” by some observers and “like a balloon. If you do not hold fast to the string, you never know where he will be off to” by Bismarck — dismissed Bismarck (who also believed in personal rule, but by himself) as Chancellor and replaced him with a more malleable candidate. By the time of our game, Germany is growing very fast (see the graphs, which encapsulate the only figures I have). There are two popular visions of how Germany can grow further: either it must expand overseas by establishing colonies, which will provide raw material for German industry, or it must use its wealth to improve social conditions at home. Most politically influential Germans favour the former point of view, which is strongly advocated by the Emperor, who believes that Germany must either become a world power or stagnate. Conservative Germans — who hold the vast majority of political power — also believe that expanding German territory by establishing colonies will also solve social problems (by giving the dissatisfied and the unemployed something to do, far away from Germany).

Britain controls a vast empire, using a powerful navy and a small and very experienced professional army. The empire includes Canada, Australia, India (including what is now Pakistan), Ceylon (now Sri Lanka), South Africa, Egypt, much of east and west coasts of Africa, and various groups of islands. Trade was a major factor in establishing this empire, but colonies have been established for a variety of reasons. Colonies provide raw material and markets for UK-based production; they absorb surplus labour; and the larger colonies maintain armies and

Britain put its foreign policy through a rapid and dramatic reorientation after 1900. However, this was less the product of the new circumstances in Europe, and more a response to an accumulation of older and more global pressures. Until the middle years of the nineteenth century Britain led the world in industrial production; free trade guaranteed access to world markets

because no other country could manufacture so much so cheaply. But from then on other countries—particularly the United States and Germany—began to catch up: in 1870 Britain commanded 32 per cent of the world's manufacturing capacity, but by 1910 it had only 14.7 percent, behind both Germany (15.9 per cent) and the United States (35.3 per cent).¹⁶ London remained the hub of the world's banking, insurance, and shipping markets until 1914, and Britain's invisible exports therefore helped mask its relative industrial decline. Nonetheless, it followed that for some the doctrinaire commitment to free trade—appropriate to the days of easy industrial supremacy—became an increasing, if self-imposed, burden. Given British opposition to protection, formal empire, the direct control of territory, with its guaranteed markets made more economic sense in 1900 than it had in 1850. However, the empire itself was enormously expensive, particularly in relation to the costs of its defence. The colonial ambitions of the other, now industrialized, European powers meant that the yardsticks by which the forces had to be judged were not simply—if they ever had been—the technological and military margin sufficient to defeat Zulus or Pathans. Seapower was the primary means by which free trade had been sustained, and by which both the home country and the colonies guarded against external attack. But what had been a source of stability before the industrialization of the continental powers became a well-spring for insecurity thereafter. Other nations transformed their financial administration and their banking systems, and proved willing to contract debts to fund naval programmes. The introduction of the iron-clad, steam-powered battleship in 1860, and the decision in 1889 that the Royal Navy should be maintained at sufficient strength to be at least equal to the next two ranking naval powers assumed that Britain's maritime rivals would restrain themselves. They did not, and Britain's defence spending soared. In 1884 British naval expenditure was £10.7 million; by 1899—in a period of relatively constant prices—it was £24.1 million (and it was to double again by 1914). Britain's total expenditure on the navy in the seven-year period 1897 to 1904 was 78 per cent higher than in the previous septennium.¹⁷ Britain had perforce to adopt policies which eased the fiscal burdens of naval and imperial responsibility. The *Great War*, which

Figure 1.1: *The growth of Germany, and the threat represented to Britain, as described by Strachan, The First World War, p12-13.*

navies of their own, which are likely to be available to the UK in time of war. A further benefit of the colonies is that they supply coaling stations and naval bases for the British navy (see map 1.2), which exceeds any two existing navies in size.

The relationship between Britain and two Boer republics (Transvaal Republic and the Orange Free State) has been a source of diplomatic tension between Britain and Germany for some time. On the occasion of the Jameson raid — an ill-judged attempt in late 1895 by a rabble of volunteers to overthrow the government of the Transvaal Republic by force, encouraged and supported by the Prime Minister of the Cape Colony, Cecil Rhodes and perhaps by the Colonial Secretary, Joseph Chamberlain — the Kaiser wished to support the Transvaal Republic but could find no mechanism to do so. The Kaiser envisaged a land war with Britain in South Africa, but was advised by the Admiralty it was unlikely that Britain would engage on those terms. There is no prospect of Germany being able to land troops in or near the Boer republics or the Cape Colony if the British navy opposes the project. Instead, the Kaiser sent a public telegram to the President of the Transvaal Republic, Paul Kruger, which was widely criticized in Britain and caused a diplomatic fuss between Germany and Britain.

The German navy minister, Admiral Tirpitz, believed that a sustained program of shipbuilding was required. Ostensibly, his strategy was to produce a fleet-in-being, a force of necessity smaller than the British navy, but sufficient that the British navy would face a reasonable probability of unacceptable losses in an encounter. A fleet-in-being might make it too costly for the British to challenge German expansion overseas. This policy would also strengthen the shipyards — which would have orders for ships over a period of seven years — and provide jobs.

A canned naval history from 1793 to 1897

The ideal of the British Navy in 1897 was to be like the navy of the Napoleonic war, perhaps accepting some changes in technology (a qualification not acceptable to all officers). In the Napoleonic war, the navy occupied an essential, though essentially negative, role. Their role was determined by this fact: the cheapest way to move large or heavy objects long distances is, and has always been, by sea (until recently, this was also the fastest way). Once Napoleon had been defeated, there was no major naval battle, but the activities of the British navy were still conditioned by this fact. The British navy had three major functions:

Trade protection and destruction: Over the period the navy ensured that British trade at sea could continue, and made trade at sea difficult and expensive for the enemy (as usual, the French, but with occasional participation by the Dutch and the Spanish). A glance at the map shows the significance of a navy for Britain, which stands between northern Europe and the Atlantic and within easy reach of the Bay of Biscay. A British navy that controls the Mediterranean can disrupt all seaborne trade for Europe. Over the period 1793-1815, France destroyed a body of British shipping, resulting in a rise in Marine Insurance rates. This had significant economic consequences as much of the British economy rested on seaborne trade. The Admiralty responded by instituting a system of convoy, covered by acts of Parliament in 1793, 1798 and 1803, which resulted in large groups of merchant vessels being escorted by the navy and reduced trading losses. Britain was able to prevent seaborne trade by Napoleonic Europe, and to grow economically. An attempted boycott of goods that had passed through Britain by Napoleonic Europe failed; the types of goods were too many, the goods were too attractive, the customs too willing to take bribes and the coastline too long to make boycott possible. Once the Napoleonic wars were over, British policy moved increasingly toward free

trade; the navy constructed charts, suppressed piracy, attempted to suppress the slave trade and imposed a convenient trading regime on China.

Preventing movement of forces by sea: Over this period, the British navy was able either to confine other navies to port by blockade (from 1803-1805, the British fleet was continuously at sea outside the major ports of Europe, ready to offer battle to anything that attempted to leave a port), to destroy fleets encountered out of port, or to attack ports themselves. The major battles, all British victories, include “the Glorious First of June”, in 1794 (seven French ships of the line destroyed), St. Vincent in 1797 (four enemy ships captured), Camperdown in 1797 (11 Dutch warships taken as prizes), the battle of the Nile in 1798 (Napoleon’s attempt to take Egypt smashed, with only two of 13 French ships of the line escaping) and Trafalgar in 1805 (sinking or seizure of 18 ships of a combined French-Spanish fleet).

Taking and defending colonial possessions: Because the British navy could either prevent other fleets taking to sea or punish those that did, it could take — or help the British army to take — overseas colonial possessions of the French and Dutch empires. This it did. Britain returned many after the peace of Amiens in 1802, and, when that treaty collapsed the following year, recaptured them again and added more. By 1814 even Napoleon realised that, if peace were to be concluded in Europe, the British were sufficiently strong to hold all captured overseas colonies that they wished to. The list of captured territories includes the Cape, Surinam, Minorca (of great strategic import and taken in 1800 — see the map of the Mediterranean), Malta (ditto, 1800, ditto), Mauritius, Java, a host of possessions in the West and East Indies and the Carribean; British hold on India was strengthened during this period. By the end of the Napoleonic war, Britain held a huge trading empire enlarged at the expense of France and Holland. Britain developed an established habit of sending naval forces to discourage unwanted or support desirable activities; for example, shelling Algiers in 1816 (and again 1824) to obtain a deal from the Dey suppressing Barbary corsairs; preventing European involvement in Latin American revolutions in the 1820’s by strengthening the Atlantic fleet; smashing the Turkish fleet in 1827 (at Navarino) and thereby contributing to Greek independence; protecting Garibaldi’s crossing of the straits of Messina in 1860.

The limits of sea power

Battleships were the quickest and cheapest way to move around large guns. This meant that any city or force reasonably close to the sea or a large river was vulnerable to whoever controlled the sea, in effect the British for most of this period. However, ships can’t go on land. As a result, the British could not have a major direct effect on the land war in Europe. The British army was always small and professional (i.e. consisted of people whose job was soldiering, rather than conscripts — “professional” in the sense of competent is a different matter entirely); it moved by the navy to attack particular spots close to sea, but could not engage in a sustained land war across Europe. During the Napoleonic wars, this constrained British strategy to economic measures — destroy continental fleets and seaborne trade and take their colonies and use the resulting growth in the economy, (banking and credit particularly) to subsidize allied powers on the continent — and to taking such opportunities as offered themselves by land. These constraints continued through the century; for example, there wasn’t much that the British could do about the Prussian invasion of France in 1870, because there wasn’t much German seaborne trade to attack. Similarly, the war in 1854 between Britain and France on one side and Russia on the other was confined to the Crimea because the Crimea was on the sea — making

it about the only piece of Russia easily accessible to the allies and Sevastopol a threatening naval base.

By the end of the 19'th century, Germany was the dominant land power in Europe. Germany had no significant sea power by 1898. You should notice (map 4.1) that Germany faces significant obstacles as a sea power. The German coast is a long way from the open sea, so that a German fleet could get trapped against the coast of Denmark and destroyed, or might be bottled in by a fleet that was strong enough to control the North sea. The Kiel canal eased German access to the open sea.

Available naval weapons

Useful facts about armor and ordnance

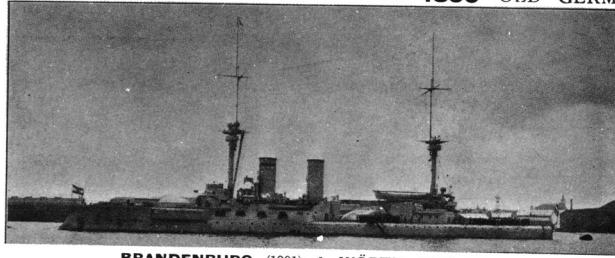
Torpedoes, mines and submarines were beginning to appear by the end of the 19'th century. In 1864, two ships participating in the US civil war were sunk by spar torpedoes — essentially, charges on a long stick in the bows of a small boat that rammed the target under the direction of very brave sailors. It was recognised that quite small charges detonating underwater could sink very large ships, but delivering and detonating these charges was difficult. By the mid 1860's Whitehead had invented a mechanism that would allow an autonomous submarine torpedo (carrying a charge on its nose) to keep depth and direction for a short range. By the early 1870's the British and French navies were acquiring this technology (Whitehead made good money selling non-exclusive rights to all comers). It is hard to be certain of the range and speed of the torpedoes available at this time. Fair — somewhat kind to Whitehead — working figures are 1000 yards and 26 knots. Torpedoes were to be launched from a special type of boat — a torpedo boat — very small, fast and lightly armored. By 1889, a new (and still experimental) ship type, the torpedo boat destroyer, had appeared; this type was small, fast and armed with torpedoes and quick firing guns and intended to destroy torpedo boats. The submarine provided an alternative launching platform for torpedoes, with experimental submarines in the British and French navies by 1887.

An alternative mechanism was the mine, a container of explosive moored underwater and detonated when a ship is close. The difficulty was the detonation mechanism; in 1876 the Harz horn detonator, a reliable contact detonator, was invented. Mines represent the only meaningful anti-submarine weapon in 1898, though submarines are pretty dangerous to their crews still.

Gunnery: Generally, bigger guns are capable of being dangerous at longer ranges, but guns must be aimed and fired accurately to have any significance. In this, most navies, including the British, were deficient, and practice firing was conducted infrequently, on a glassy sea, and at a range of 1000-1500 yards. Each gun was laid and fired independently, and firing generated huge clouds of smoke (particularly around the guns and gunlayers). In 1898, most naval professionals would expect fighting between capital ships to be conducted at very short ranges. A good rule of thumb is that a shell can penetrate armour whose thickness is the same as the diameter of the shell.

Submarine types: You may order submarines, at 2 million marks each. They take a year to build, but are known to be somewhat unreliable and dangerous to their crews still. The available type can make seven knots on the surface and five and a half submerged; they are armed with three torpedo tubes. They can submerge to 100 feet. I have no figures for range on the surface and submerged, but you should assume that these boats are capable only of coastal operations. It is very clear that the technology is improving fast.

1890 OLD GERM.

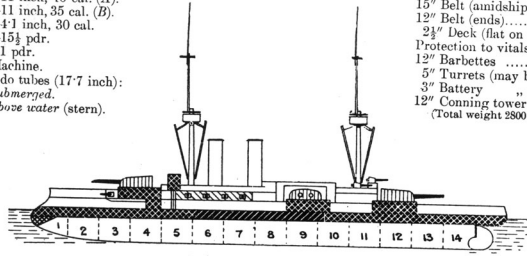


BRANDENBURG (1891) & WÖRTH (1892).

Length (waterline), 354½ feet. Beam, 64 feet. Maximum draught, 26 feet. Length over all, 380½ feet. Displacement, 10,060 tons. Complement, 568.

Guns—(old models):
 4—11 inch, 40 cal. (A).
 2—11 inch, 35 cal. (B).
 8—4½ inch, 30 cal.
 8—15½ pdr.
 12—1 pdr.
 4 Machine.
 Torpedo tubes (17.7 inch):
 2 submerged.
 1 above water (stern).

Armour (compound):
 15" Belt (amidships) ... aa
 12" Belt (ends) a
 2½" Deck (flat on belt)
 Protection to vitals is... aa
 12" Barbettes a
 5" Turrets (may be less) d
 3" Battery " e
 12" Conning tower a
 (Total weight 2800 tons).

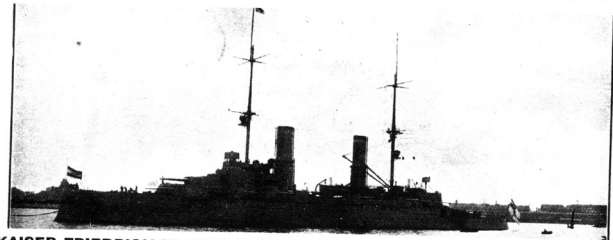


Ahead:
2—11 in.

Broadside: 4—11 in., 2—11 in., 4—4½ in.

Astern:
2—11 in.

Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: 12 cylindrical, return flame. Designed H.P. forced 10,000=17 kts. Coal: normal 600 tons; maximum 1050 tons.
 Gunnery Notes.—Loading positions, big guns: end on. Big guns manoeuvred: hydraulic and hand gear. Continuous firing slow, but they have special arrangements for firing a few rounds quickly.



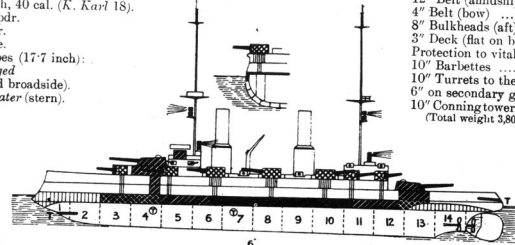
KAISER FRIEDRICH III. (1896), K. WILHELM II. (1897), K. BARBAROSSA (1900), K. WILHELM DER GROSSE (1899), K. KARL DER GROSSE (1899).
 Displacement, (reconstructed) 10,700 tons. Complement, 658.
 Length (waterline), 384 feet. Beam, 65½ feet. Maximum draught, 27 feet.

Guns—(M. '95):

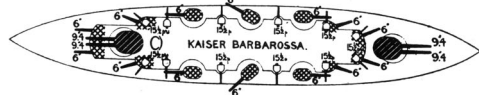
4—9.4 inch, 40 cal. (A).
 14—6 inch, 40 cal. (K. Karl 18).
 12—15½ pdr.
 12—1 pdr.
 8 Machine.
 Torpedo tubes (17.7 inch):
 5 submerged
 (bow and broadside).
 1 above water (stern).

Armour (Krupp):

12" Belt (amidships) ... aaa
 4" Belt (bow) d
 8" Bulkheads (aft) aa
 3" Deck (flat on belt) ...
 Protection to vitals is... aaa
 10" Barbettes aa
 10" Turrets to these ... aa
 6" on secondary guns... b
 10" Conning tower (N.C.) aa
 (Total weight 3,800 tons).



Ahead:
2—9.4 in.
6—6 in.



Astern:
2—9.4 in.
6—6 in.

Machinery: 3 sets vertical 3 cylinder triple expansion. 3 screws. Boilers: 8 cylindrical, 4 Schultz; (in K. Karl der Grosse and K. Barbarossa 6). Designed H.P. 14,000=18 knots. Coal: normal 650 tons; maximum 1,050 tons; also 200 tons liquid fuel (double bottom).

Name	Builder	Machinery	Laid down	Completed	Refit	Trials	Boilers	Best recent speed
K. Friedrich III.	Wilhelmsh'vn	...	1895	1898	1908			
K. Wilhelm II.	Wilhelmsh'vn	...	1896	1900	1908			
K. W. der Grosse	Krupp	...	1898	1901	1908			
K. Karl der Grosse	Blohm & Voss	...	1898	1901	1907	7360=15.5	13,940=18	
K. Barbarossa	Schichau	...	1898	1901	1907			17.5

Figure 1.2: Available battleships, at 20 million marks each (p. 110 of Janes Fighting ships of world war I). The battleship is intended as a floating gun platform; it can be used to subdue land forces near sea, or to attack other battleships. Battleships take 3 years to build.

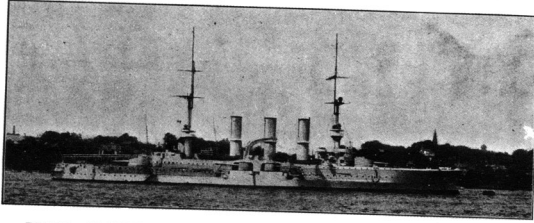
German tasks for round I

Germany's overall goal is to become a world power, capable of backing its diplomacy with convincing threats of force under most circumstances.

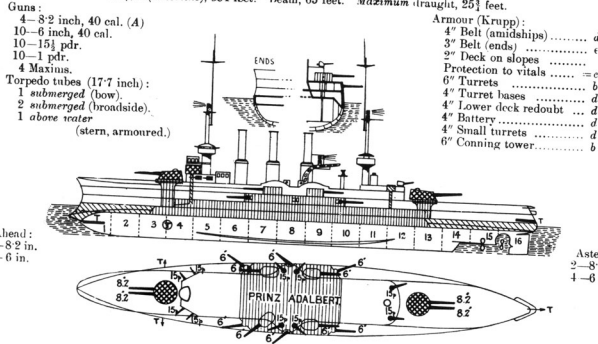
You are to prepare a first naval law. You must choose how you will spend 58 million marks a year, for seven years, to produce a naval force that can act as a fleet in being. You should do this with a naval strategy in mind. You should keep in mind that the British navy has, in the past, acted preemptively to destroy fleets that it felt to be a threat, so you should think about what vessels are going to be ready when.

You have three big shipyards. At any time, each can be building one a total of 20 million marks worth of ship (i.e. one battleship, one cruiser, 40 minelayers, etc.). Once building has started on a ship, it must be completed. If you start three battleships, you can't build anything else until they are finished.

1900 GERMAN ARMOURD CRUISERS. 1899



PRINZ ADALBERT (June, 1901) & FRIEDRICH KARL (June, 1902).
Displacement, 9050 tons. Complement, 557.
Length (waterline), 394 feet. Beam, 65 feet. Maximum draught, 25½ feet.



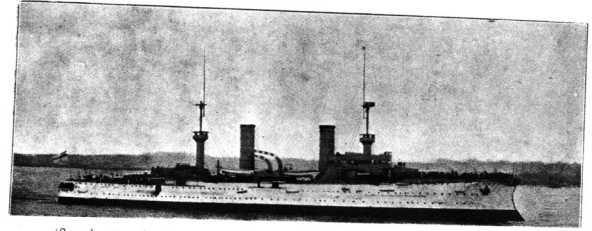
Machinery: 3 sets 4 cylinder vertical inverted triple expansion. 3 screws. Boilers: P. A., 14 Dürr; F. K. (1908) Schulz-Thornycroft. Designed H.P. 18500=21 kts. Coal: normal 750 tons; maz. 1500 tons. Oil: 200 tons.

Name	Builder	Machinery	Laid down	Completed	Refit	Trials	Boilers	Best recent speed
P. Adalbert	Kiel Y. Höhn & Voss		Apr., '00	Oct., '02	1908	17,600=20½	Dürr	21
F. Karl			Aug., '01	Oct., '03		17,700=20½		21

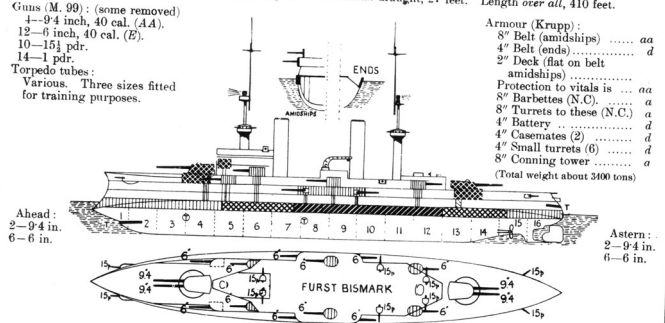
Note—Friedrich Karl sunk by mine in Baltic 26 November 1914. Prinz Adalbert torpedoed by British submarine 23 November 1915.

1896 GERMAN ARMOURD CRUISER.

1896 GERMAN ARMOURD CRUISER.



(Seagoing torpedo school ship) FÜRST BISMARCK (1897). (Reconstructing).
Displacement, 10,700 tons (Sheathed). Complement, 529.
Length (waterline), 399 feet. Beam, 65½ feet. Maximum draught, 27 feet. Length over all, 410 feet.



Machinery: 3 sets vertical triple expansion. 3 screws. Boilers: 8 Schulz Thornycroft and 8 cylindrical. Designed H.P. 13,600=19 kts. Coal: normal 1000 tons; maximum 1200 tons.

Figure 1.3: Available cruisers, at 20 million marks each (p. 112 of *Janes Fighting ships of world war I*). Cruisers are intended to fight with other cruisers, to scout, and to engage in commerce raiding. A cruiser may carry as much armament as, or somewhat less than, a battleship, but is much more lightly armored and consequently faster. Cruisers take 3 years to build.

British tasks for round I

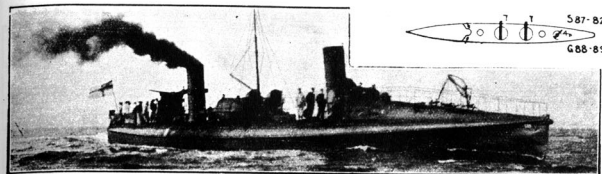
Germany plans to spend 58 million marks a year on its navy over the next seven years. The details of what it plans to build are uncertain. Germany has three big shipyards. At any time, each can be building one a total of 20 million marks worth of ship (i.e. one battleship, one cruiser, 40 minelayers, etc.). Once building has started on a ship, it must be completed (i.e. if they start three battleships, they can't build anything else until they are finished).

In the Mediterranean, France is beginning to build torpedo boats as an explicit threat to British battleships. You are to determine (a) the threats that Germany is likely to pose (b) whether blockade is still a viable naval strategy in the Mediterranean and in the North sea, using the table of available ships as a guide.

GERMAN WARSHIPS

OLD GERMAN TORPEDO BOATS (*Kleine Torpedoboote*).

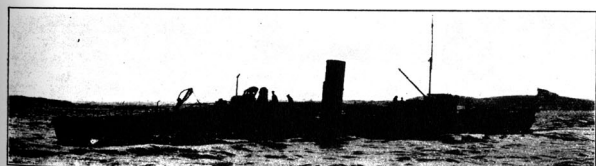
Above-water tubes probably removed. Now used as Minesweepers, Tenders, &c.



2 *Krupp-Germania*, **T 89** and **T 88** (1897-8). 1-4 pdr., 2-17 $\frac{1}{2}$ inch tubes.



6 *Schiebau*: **T 87-T 82** (1898). 1-4 pdr., 3-17 $\frac{1}{2}$ inch tubes (1 bow submerged, 2 deck).



5 *Schiebau*: **T 81-74**² (1893-4); Armed as *T 87-T 82* above.
* Less *T 78* War Loss.

Motor Launches.

49 boats: **F...-F...** (built 1917-18). 23 tons. About 55 feet long.

Total Number uncertain: **UZ 1-50** (built 1916-17). About 60 tons. Length, 85 feet. Speed, 15 kts.
Note.—*UZ* = *Unterseeboote-Zerstorer* (Submarine Destroyer). All *UZ* and *F* boats fitted as Anti-Submarine craft and Minesweepers.



T 42 (1887). Appearance after being re-boilered and re-engined.
16 *Schiebau*: **T 73-69, T 63-59, T 55, T 53, T 49, T 45, T 42** (1889-1897). 1-4 pdr., 3-17 $\frac{1}{2}$ inch tubes (1 bow submerged, 2 deck).
War Losses: *T 45, 46, 47, 50, 51, 52, 53, 56, 58, 58, 61, 65, 66, 68.*

2nd & 3rd CLASS.

Like *T 81* 71 but shorter and with big funnel.

22 *old boats*: **T 40-33, T 31-27, T 25, T 24, T 21-20, T 16, T 15-13, T 11, T 3** (1885-1889). 85 tons. Speed: 17 kts. (probably much less now). Armament: 1-4 pdr., 3 torpedo tubes (2 deck and 1 submerged bow). Guns and tubes may have been removed from some. Complement, 16.
Appearance: Similar to *T 81-74* opposite, but much shorter in length.
Notes.—*T 36, 35, 31-27* and *25* converted to Mine sweepers, tubes being removed; some (or all) of the other boats may also have been altered for this service. *T 25* War Loss.

ALBATROSS after naval action of 1,715; foremast partly shot away.
(Was *Mining School Ship* before the war.)

ALBATROSS (October, 1907). 2200 tons. Complement, 197. Length, 295 feet. Beam, 42 $\frac{1}{2}$ feet. Maximum draught, about 13 feet. Armament: 8-34 inch (15 pdr.), 35 cal. Boilers: Schulz-Thorncroft. Designed H.P. 6000=20 kts. Coal, 450 tons. Carries 600 mines.

Note.—Was fished and driven ashore near Osterarm Lighthouse, Gotland Island (Baltic), by Russian Cruisers on July 1st, 1913. Above illustration shows her being towed to internment at Viborg. Released from internment by Sweden in 1918.

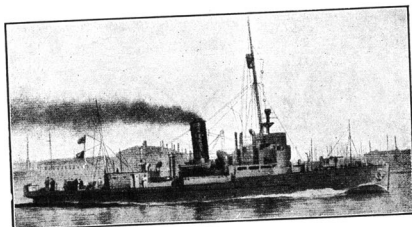
Figure 1.4: Available torpedo-boats, at 1/2 million marks each (p. 121 of *Janes Fighting ships of world war I*). Torpedo-boats initiate torpedo attacks. These boats take a six months to build.

GERMAN WARSHIPS

SMALL GERMAN MINE LAYERS AND SWEEPERS.

F.M. 1-36 (Built 1917-18.) 175 tons. About $139\frac{1}{2} \times 19\frac{1}{2} \times 4\frac{1}{2}$ feet. Guns: 1-3.4 inch 22 pdr. I.H.P. 600=13.5 kts. Coal, 33 tons. Fitted to carry mines.

Notes.—Shallow draught sweepers. Proved of little worth owing to inadequate fuel supply and dangerous instability.



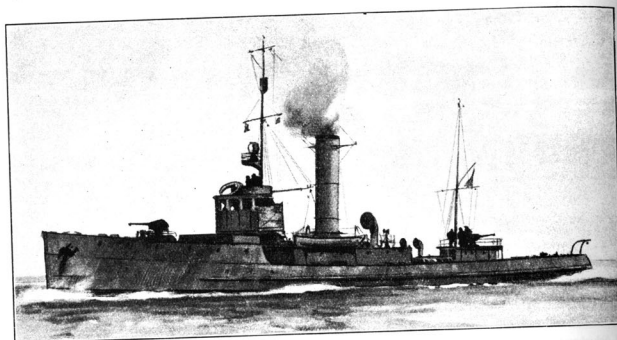
M 28-30, M 32-35, M 37, M 38, M 42-46, M 48, M 50-54, M 57-62, M 65, M 66, M 68-82, M 84-90, M 93-94, M 96-122, M 125, M 129, M 137, M 138. (Built 1915-18.) About 480 tons. About $192 \times 24 \times 8\frac{1}{2}$ feet. Guns: see next column. I.H.P. 1600=17 kts. 2 screws. Coal: 150 tons and 12 tons oil. Complement 40. Can carry 30 mines.

War Losses: M 31, M 36, M 39, M 40, M 41, M 47, M 49, M 55, M 56, M 63, M 64, M 67, M 83, M 91, M 92, M 95.

Not finished?—M 123, M 124, 126-128, 130-136.

M 19, M 20, M 21, M 25. (Built 1915.) About 400 tons. About $164 \times 20 \times 9$ feet. Guns: see below. I.H.P. 1500=16 kts. Complement, 40. Can carry 30 mines.

War Losses: M 22, M 23, M 24, M 26, M 27.



M 1-5, M 7, M 8, M 10, M 13, M 17, M 18. (Built 1915.) About 350 tons. About $106 \times 23 \times 9$ feet. Guns: see below. I.H.P. 1500=16 kts. Complement, 40. Carry 30 mines.

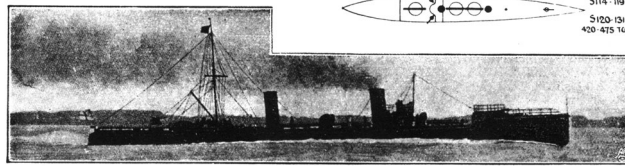
War Losses: M 6, M 9, M 11, M 12, M 14, M 15, M 16.

Armaments for all "M" Types.

(a) 3-4.1 inch, or (b) 2-4.1 inch, or (c) 1-4.1 inch, or (d) 2-3.4 inch, 22 pdr. Also 2 machine.

Figure 1.5: Available minelayers, minesweepers and torpedo-boats, at 1/2 million marks each (p. 121, 122 of *Janes Fighting ships of world war I*). Torpedo-boats initiate torpedo attacks; minelayers lay mines; minesweepers remove enemy mines. These boats take a six months to build.

1901-1898.



6 *Krupp-Germania*: **T 113-108** (1901-2). 400 tons. Armament: 3-4 pdr., 2 machine. 3-17.7 inch tubes. H.P. 6000 = 26 kts. Coal: about 110 tons. Complement, 56.
Appearance Notes.—Much the same as *T 111-111* class, but shorter fore-castle, no raised steam pipe to forefunnel, mainmast rather more aft.

Plan as given above for *T 111-108* boats, but only *one* tube midway between funnels, the third tube being *abft* mainmast.

6 *Schichau*: **T 107-102** (1900-01). As *T 111-108* above, but coal 95 tons and H.P. 5100 = 26 kts. *T 107* useless.
Appearance Notes.—Long 6' x 6', funnels and mainmast set well towards stern. Big after funnel.



No Photo available.

See Silhouettes: Also Appearance Notes below.

8 *Schichau*: **T 98-91*** (1899-1900). 400 tons. Armament: 3-4 pdr., 2 M.G. 3-17.7 inch tubes (probably removed from majority). H.P. 5400 = 26 kts. Coal: 95 tons.

2 *Schichau*: **T 101, T 99.** As above boats, but tubes removed and perhaps guns. Both were Submarine Tenders before war.

Appearance Notes.—Much as *T 111-111* boats on this page, but have *large and tall* funnels. Single and fairly large ventilator midway between funnels; a similar ventilator before and at foot of mainmast. *High* sterns.

* *T 97* bears name **Sleipner**.

War losses: *T 100, T 90* and *Taku* of separate Single class.

Figure 1.6: Available torpedo-boat destroyers, at 1.5 million marks each (p. 119 of *Janes Fighting ships of world war I*). Destroyers take a year to build.

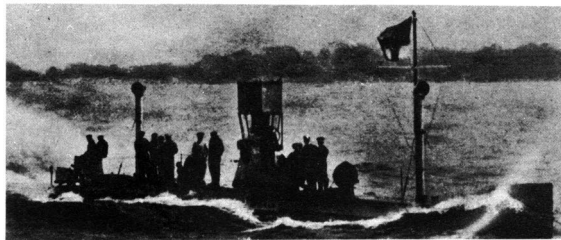
Chapter 2

Round II: 1906

Historical developments

Tirpitz requested funds for 19 battleships, to be completed by 1905; one flagship, two reserve ships and two squadrons of eight battleships. The Reichstag passed the first naval law after some politicking by the German navy staff in 1898.

Type: Coastal Submarines (1+1+2+4)
Class: "U1", "U2", "U3", "U5"
Displacement, tons: U1, 238/283; U2 341/430; U3-4 421/510; U5-8 506/636
Dimensions, feet: Varying from U1 139 x 12.3 x 10.5 to U5 188 x 18.3 x 11.3
Torpedo armament: U1 1 x 18in (bow). Remainder 4 x 18in (2 bow, 2 stern)
Guns: 1 x 37mm in U3 and U5 classes. (1 x 4pdr added in U6 and U8 in 1915)
Main machinery: 2 heavy oil engines of (U1) 400bhp, (U2 and U3) 600bhp, (U5) 900bhp; 2 main motors, (U1) 400bhp, (U2) 630bhp, (U3 and U5-8) 1,040bhp; 2 shafts
Speed: knots: Surfaced U1 - 10.8, U2 13.2; U3 11.8; U5-8 13.4; Dived 9-10 knots
Complement: 22 (29 in U5 class)
Dates: 1906-1911
Notes: Germaniawerft Kiel: U1, U5-8; Danzig DY: U2, U3, 4
Although three "Karp" class were ordered in Germany by Russia in 1904, U1 completed in December 1906, was the first U boat built for the German navy. From the start double hulls and twin screws were incorporated. The Germans very sensibly abjured the petrol engine and used Körting heavy oil engines. These, although they emitted clouds of exhaust and sparks through an upper deck exhaust, were much safer than the contemporary engines in British submarines. By 1908 suitable diesels had been evolved, to be used from the U19 class onwards.
The incorporation of stern torpedo tubes in these early submarines gave the Commanding Officers an advantage not achieved in the RN until the "D" class of 1910.
Note: torpedo tube diameters listed as 18in and 20in in earlier classes. Technically these were 17.7in and 19.7in respectively.



U1 (Drüppel)

Figure 2.1: Available submarine types, at 1/2 million marks each (p. 124 of Janes Fighting ships of world war I). Submarines take two years to build.

In 1898, British sea power was again asserted to compel the French to come to a satisfactory deal over the Fashoda crisis. A small contingent of French soldiers walked 3500 miles across a significant fraction of Africa to claim a fort on the Nile, Fashoda, for France (the trip took them two years; they arrived in 1898). Shortly after, Lord Kitchener arrived from Egypt with a large force embarked on gunboats and barges. A primary goal of British policy in Africa at the time was to establish a railway line from the Cape to Cairo; this goal required the control of the Nile valley. Similarly, a primary goal of French policy was to evict the British from Egypt. The British asserted that Fashoda — and all surrounding territory — had passed by right to the Egyptian government, which they controlled; the French claimed that by possession and by valor, Fashoda was theirs. Britain demanded France drop all claims, and prepared for war. France was forced to back down, because the French force at Fashoda was very small — British observers claimed the French knew that their expedition was being rescued by the British expedition — and the British navy could deny the seas to France. By doing so, Britain could then take French colonies at its convenience, and perhaps land armies on French soil.

In 1902, Britain concluded a three year long imperial war with the Transvaal Republic and the Orange Free State (the Boer war), which was provoked by the government of the Cape colony, started with a series of embarrassing British defeats and culminated in an unsatisfying victory, obtained by brutal methods which are controversial in Britain. European public opinion was generally opposed to this war, Germany's particularly so, but nothing could be done because the British fleet secured routes to South Africa. British cruisers stopped and searched three German mail steamers in 1900, leading to widespread anger in Germany and the passage of the second navy law, increasing the future German battle fleet from nineteen battleships to thirty eight (two flagships, four squadrons of eight ships and four ships in reserve). The building program would start in 1901 and end in 1917.

The first navy law lead Britain to see Germany as an increasing threat at sea. By 1902, the British were seriously concerned, seeing the design of the German battleships as fitting them for the North Sea and nothing else; the British government started ordering more battleships, too. Britain started exploring a reduction in naval commitments away from home waters. A treaty between Britain and Japan was signed in 1902, allowing some ships from the *** fleet to be brought home; in 1904, an *entente* (masquerading as a treaty on various colonial matters) was reached with France, allowing the Mediterranean fleet to be reduced.

The extraordinary John Fisher became First Sea Lord, and appointed a design committee to confirm his beliefs about an appropriate battleship; the design was for a fast ship, with all 12in guns (see figure 2.2) — the Dreadnought. The design was built, and launched in 1906, to a huge controversy. From Fisher's perspective, two major attractions of this new weapon were

- **All 12 in guns** meant that shells could do huge damage at very great range. Furthermore, estimates of range could be adjusted by observing the fall of shot (this doesn't work if the guns are of different calibre). Finally, if centralised firing was used, each salvo would be very destructive.
- **The Kiel canal** was too narrow to take a ship of this size, meaning that it would have to be widened — at the cost of about 12 such ships — for the Germans to use a fleet of Dreadnought type ships

A main point of the controversy was that Dreadnought made all other British capital ships obsolete, and so should not have been built. I neither understand the objection nor follow

much less than 12000 yards from the guns which discharged them". By October came a report on an action in August, claiming that

Firing begins to look possible at 20, 000 metres, reasonable at 14, 000 metres; close range may be counted at setting in at about 10, 000 meters, and at 5, 000 metres ships might as well be alongside each other.

Furthermore, a shell fired from 18,000 metres away fell short by 218 yards — and these shells were big; a 12 inch shell nearly disabled the Japanese flagship at 13000 yards and two such shells forced a Russian ship to sheer out of the line.

Mines and torpedoes: The Russo-Japanese war had implications for the mine and the torpedo as weapons, too. A surprise torpedo attack against anchored ships in perfect conditions produced some, easily repaired, damage. A second attack in a snowstorm failed completely. Very few torpedoes fired at moving ships struck (Miller gives 2%). However, the range and speed of torpedoes had increased by 1906; it was possible to run a torpedo at 33.5 knots for 2000 yards and some payoff between speed and range was possible (i.e. longer range, but slower). Mines were proven to be dangerous, but indiscriminate. A Russian flagship ran into a mine and sank within two minutes (some thought this might have been a Russian mine).

Ship types have changed, too. The type that had developed the most was the submarine, with many variants being built and developed between 1897 and 1906 and a considerable drop in price. U2 — from figure 2.1 — is now available. The other available type is the Dreadnought, summarised in figure 2.2.

German tasks for round II

Germany's overall goal remains to become a world power, capable of backing its diplomacy with convincing threats of force under most circumstances.

You are to determine how Germany should react to the building of Dreadnought. Some 20% of the funds allocated by the second naval law have been spent, but you can expect the Reichstag to be willing to allocate more money for a sensible plan for a German fleet.

If you wish to build Dreadnoughts, you will have to widen the Kiel canal, at the cost of 12 ships. Your shipbuilding capacity has increased slightly — you can build four battleships simultaneously. The likelihood of the Reichstag allocating money for your new plans depends on how well you make a case covering (a) the need for and (b) the strategic value of the envisaged fleet.

British tasks for round II

Germany's overall goal remains to become a world power, capable of backing its diplomacy with convincing threats of force under most circumstances. Germany's diplomacy through the recent Morocco crisis was thuggish, and the second naval law is directly aimed at British naval superiority. The British policy toward Germany is now one of containment, and requires that, if necessary, Germany can be denied ship-borne trade (which will eventually starve its population).

You are to determine what future shipbuilding will allow Britain to retain control of the North Sea. In particular, should Britain build more Dreadnoughts, and why? or should Britain develop some other naval strategy.

Chapter 3

Round III: 1914

Historical developments

Britain built more Dreadnoughts, and a lively naval arms race developed; Germany widened the Kiel canal, and built Dreadnoughts too. A new ship type, the battle-cruiser (which carried the same armament as a Dreadnought, much less armour, and was faster) was developed by the British; the value of this type remains controversial. By 1909, the torpedo could make 7000 yards at 31 knots.

Germany had a naval staff — a group of officers whose main duties are planning — but the British naval establishment resisted having a naval staff until shortly before the war. British naval training emphasized immediate and exact obedience of direct orders, as opposed to initiative or even professional competence. Officers who attempted to exercise a capacity for independent thought or action before they reached flag rank were discouraged (and were unlikely to make admiral). War plans were the personal responsibility of admirals in charge of specific fleets, and tended to be kept in the head of the admiral concerned.

Some — but not all — of this was a holdover from times when naval forces were considerably easier to command. Wooden sailing ships firing relatively short range guns do not need complex war plans. However, at the start of the 19'th century, communication between the Admiralty and the commander on the spot (and between that commander and his forces) was sufficiently difficult that initiative was quite often valued. By the end of the 19'th century, the Admiralty could meddle and quite often did. While war became more complicated and the Admiralty's workload grew, the workload was still handled with 18'th century methods. By the start of the war a naval staff had been forced on the Admiralty, but it was small, relatively poorly trained and completely inexperienced. We shall see several consequences of this phenomenon: the first is that the British had no particular idea of what to do with the Navy when the war started.

Figure 3.1 shows the forces available to Britain and to Germany in 1914 (from Halpern).

German tasks for round III

What should be the naval strategy of the war that has just been declared? how should we implement this strategy? (a) with the disposition of force chosen in rounds I and I

	British	German		Grand Fleet	High Sea Fleet
Predreadnoughts	40	22		21	13
Coast-defense ships	NA	8		8	8
Armored cruisers	34	7		4	3
Protected cruisers	52	17		NA	1
Scout cruisers	15	NA	Dreadnoughts	11	7
Light cruisers ^a	20	16	Predreadnoughts	42	90
Destroyers	221	90	Battle cruisers		
Torpedo boats	109	115	Armored cruisers		
Submarines	73	31	Light cruisers		
			Destroyers		

Figure 3.1: On the **left**, a table showing the total ships available to Britain and Germany in 1914. On the **right**, a realistic estimate of the number of ships that the fleet in each side could actually use. From Halpern, *A Naval History of World War I*, p.8 and p.9. The table omits the submarine forces available to each nation. Halpern gives Germany *** submarines and Britain **** submarines.

British tasks for round III

What should be the naval strategy of the war that has just been declared? how should we implement this strategy? (a) with the disposition of force chosen in rounds I and II (b) with the actual disposition of force.

Chapter 4

Round IV: The battle of Jutland

Historical background

Britain adopted a strategy of blockade against Germany. It was not practical to engage in close blockade (you should have already figured out why), and so the main form of the blockade was to prevent shipborne commerce in and out of Germany. An important part of this blockade was to prevent German traffic in and out of the North Sea. The main British strategic necessity in the North Sea was to avoid a major naval defeat — German forces in the region being significantly weaker — and to avoid excessive attrition. A naval victory would be pleasing, but was not worth risk.

German forces adopted a strategy of hit-and-run within the North Sea, shelling coastal towns and attacking British commerce. The hope was that Britain would respond with relatively light forces, which could be destroyed; sufficient attrition would mean that Britain would be unable to engage German forces with its reduced fleet. There were a variety of small engagements. The main battle fleet was a long way from the action, at Scapa Flow, as a result of a panic about submarines and mines and the absence of properly defended naval bases at the start of the war (another effect of the absence of a British naval staff). This meant that there was little hope of the Grand Fleet (the British) catching the High Seas Fleet (the Germans) at sea and forcing an action, without significant forewarning that it was at sea.

See the attached notes for a description of the result. I have provided some maps.

German tasks for round IV

What should be learned from the Battle of Jutland? What should Germany's future naval strategy be? Are there technologies that need developing? Should we refine our training, or our tactics? You need not limit yourself to information available to protagonists.

British tasks for round IV

What should be learned from the Battle of Jutland? What should Britain's future naval strategy be? Are there technologies that need developing? Should we refine our training, or our tactics? You need not limit yourself to information available to protagonists.

Historical sources and notes

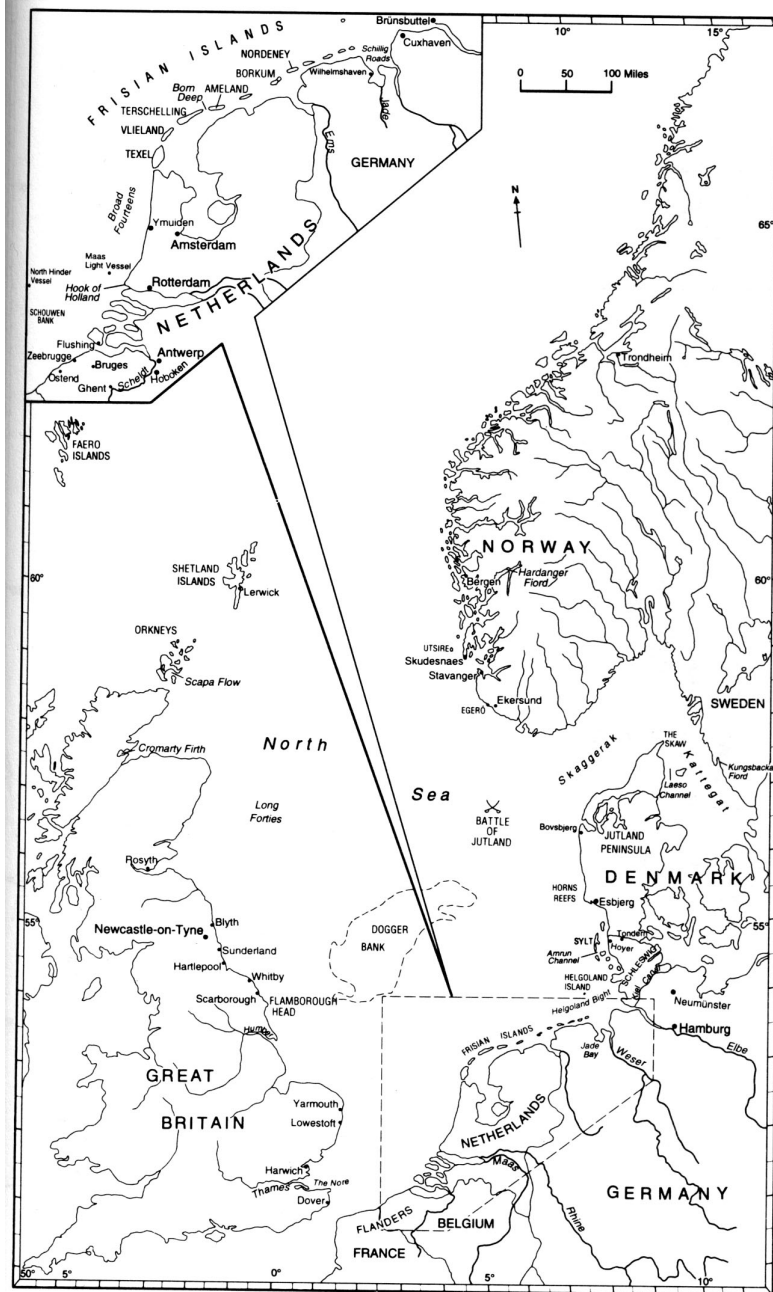
I've tried to be accurate about prices and capacity of equipment described in this handout, but some figures — mainly for the cost of equipment and how long it takes to produce — are guesses.

I recommend several excellent sources, from which I have worked in preparing these notes.

- *A Naval History of World War I*, Paul Halpern, The Naval Institute Press, 1994.
- *The First World War*, John Keegan, Knopf, 1999.
- *The First World War, Volume I: To Arms*, Hew Strachan, Oxford University Press, 2002.
- *Naval Battles of the First World War*, Geoffrey Bennett, Penguin, copyright 1968, republished 2001.
- *Dreadnought*, Robert K. Massie, Ballantine reprint, 1992
- *Janes' Fighting Ships of World War I*,

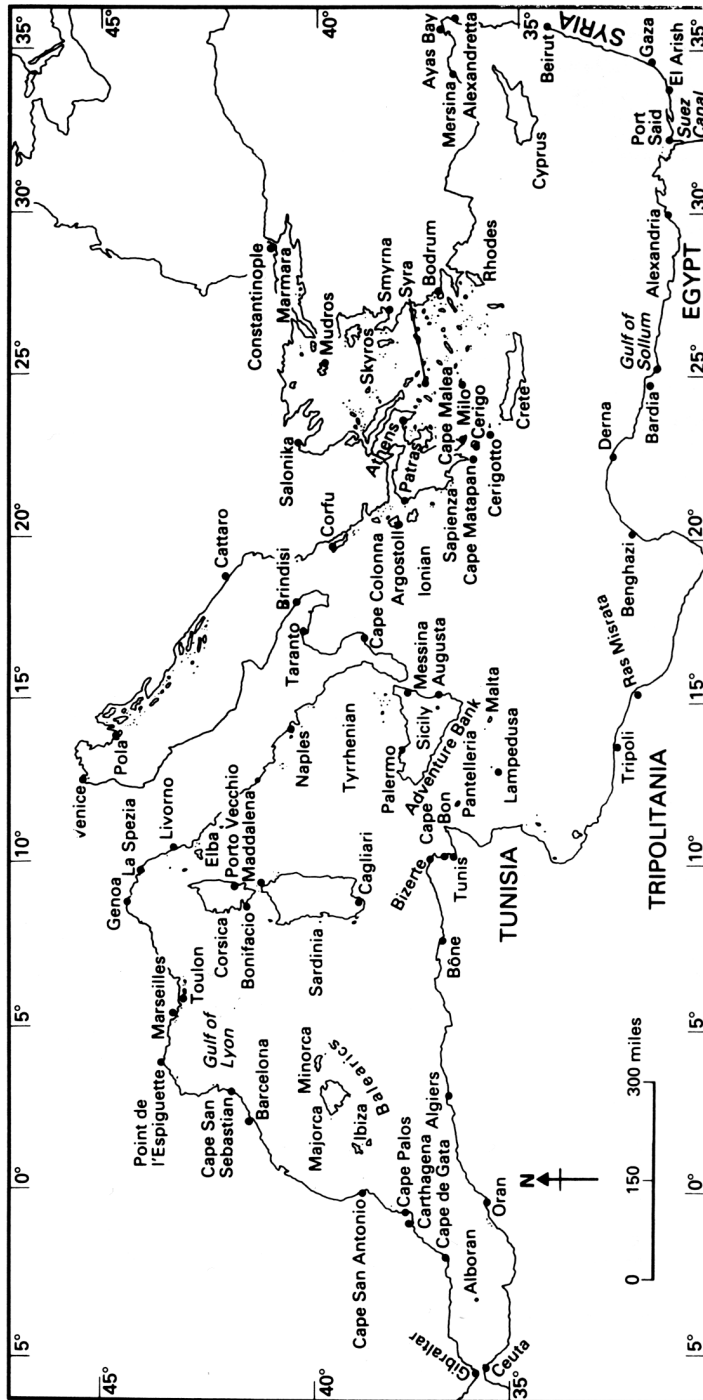
Conway's All the World's Fighting Ships, 1906-1921, is supposed to be good but hard to find: I haven't seen it.

MAPS



1. THE NORTH SEA

Figure 4.1: *The North Sea, from Halpern, A Naval History of World War I*



3. THE MEDITERRANEAN

Figure 4.2: *The Mediterranean*, from Halpern, *A Naval History of World War I*

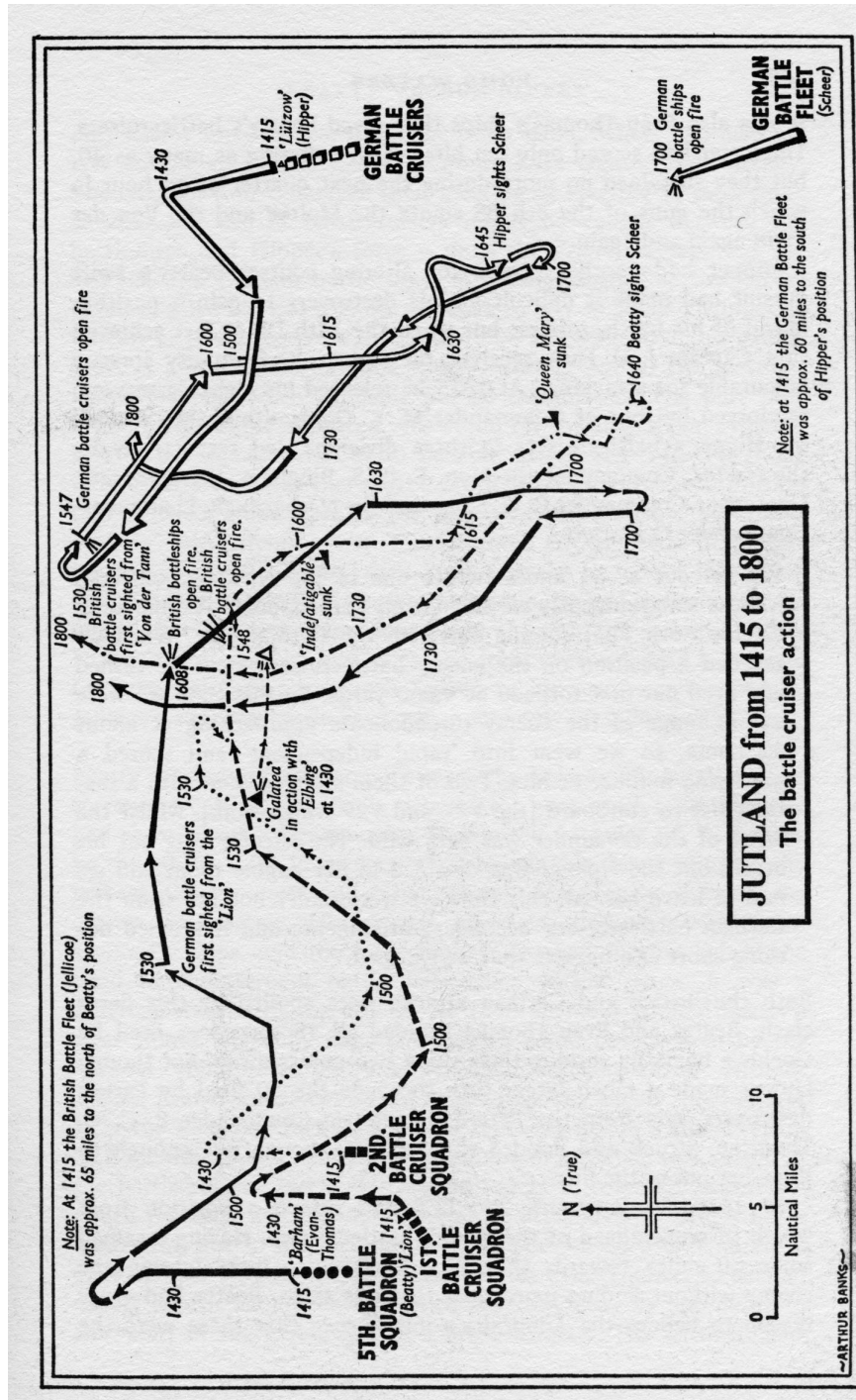


Figure 4.3: *The battle-cruiser action at Jutland, from Naval Battles of the First World War, Geoffrey Bennett*

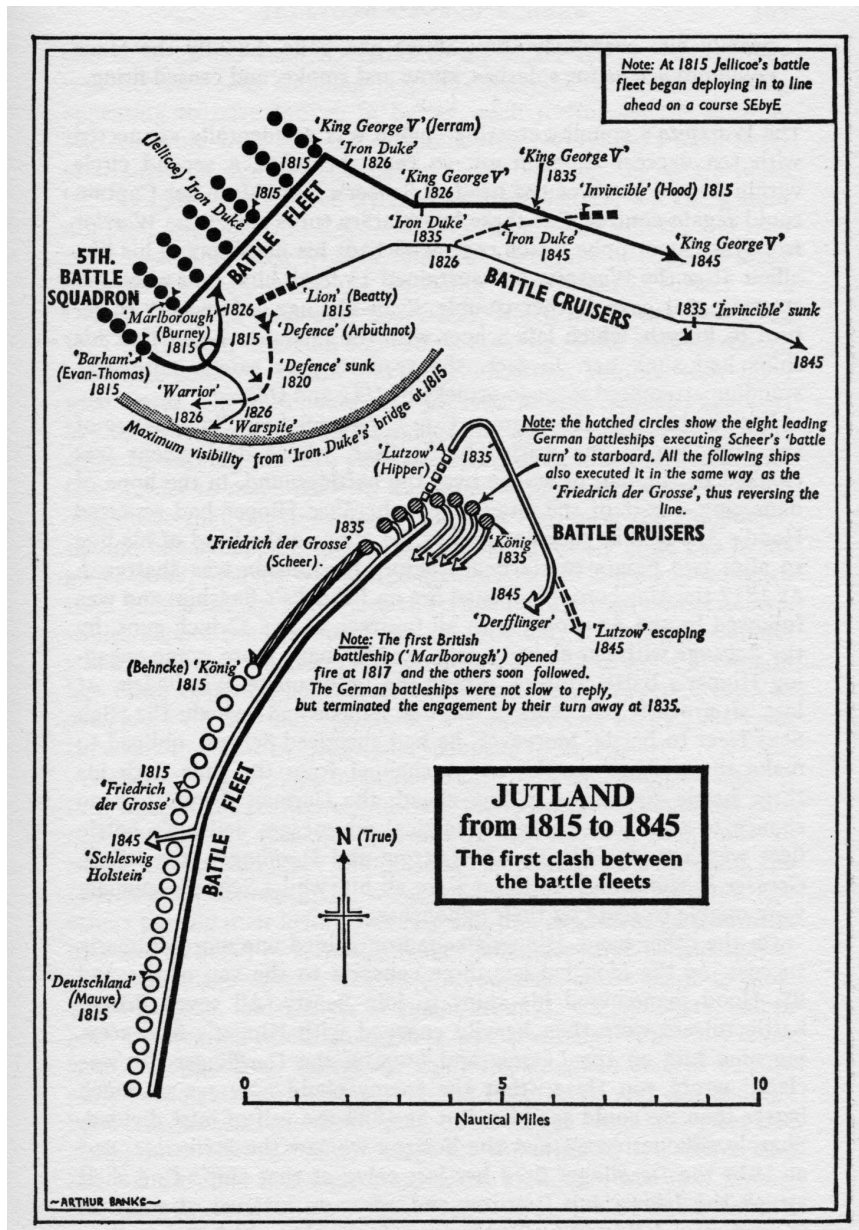


Figure 4.4: The first battle-fleet action at Jutland, from *Naval Battles of the First World War*, Geoffrey Bennett

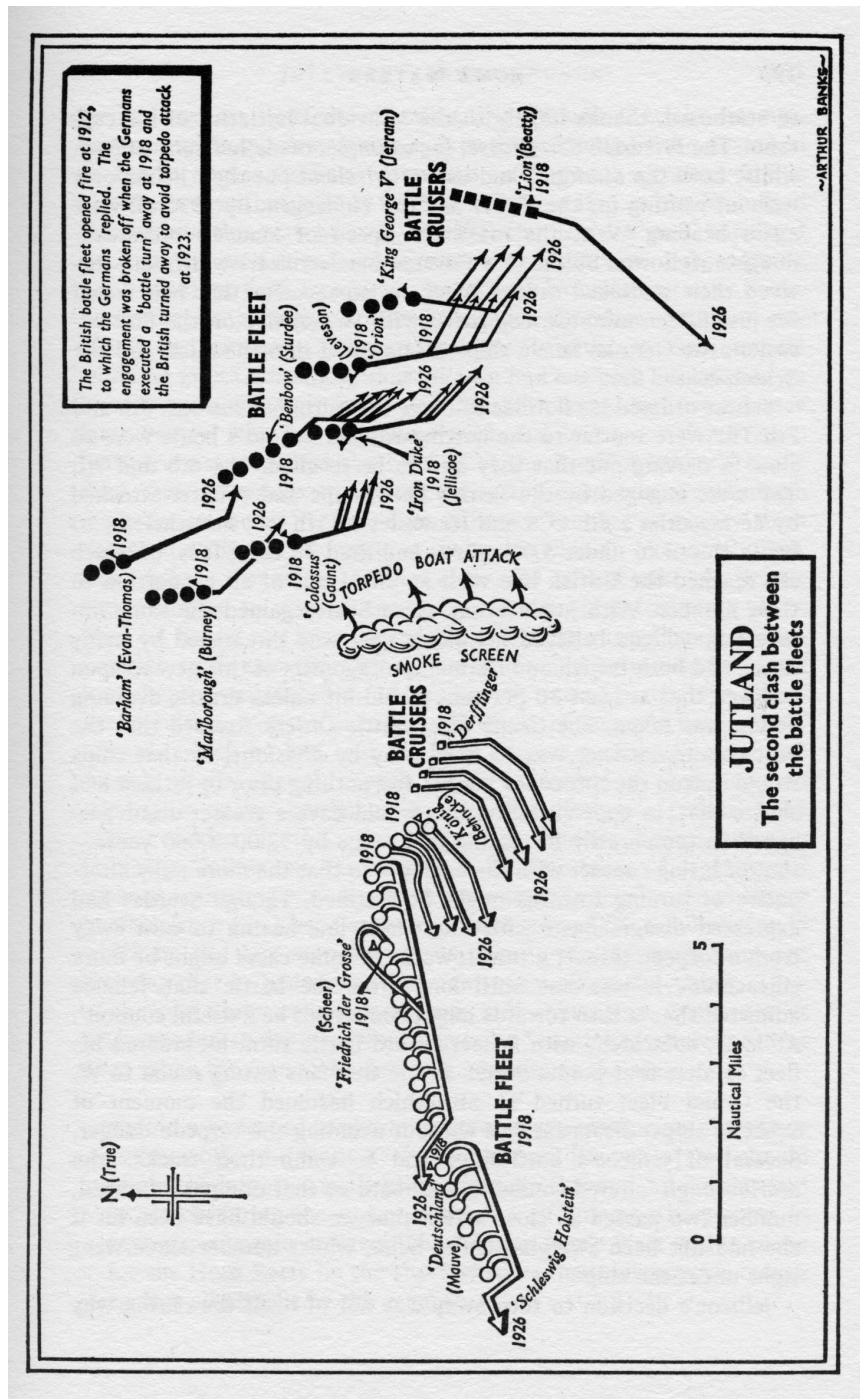


Figure 4.5: *The second battle-fleet action at Jutland, from Naval Battles of the First World War, Geoffrey Bennett*

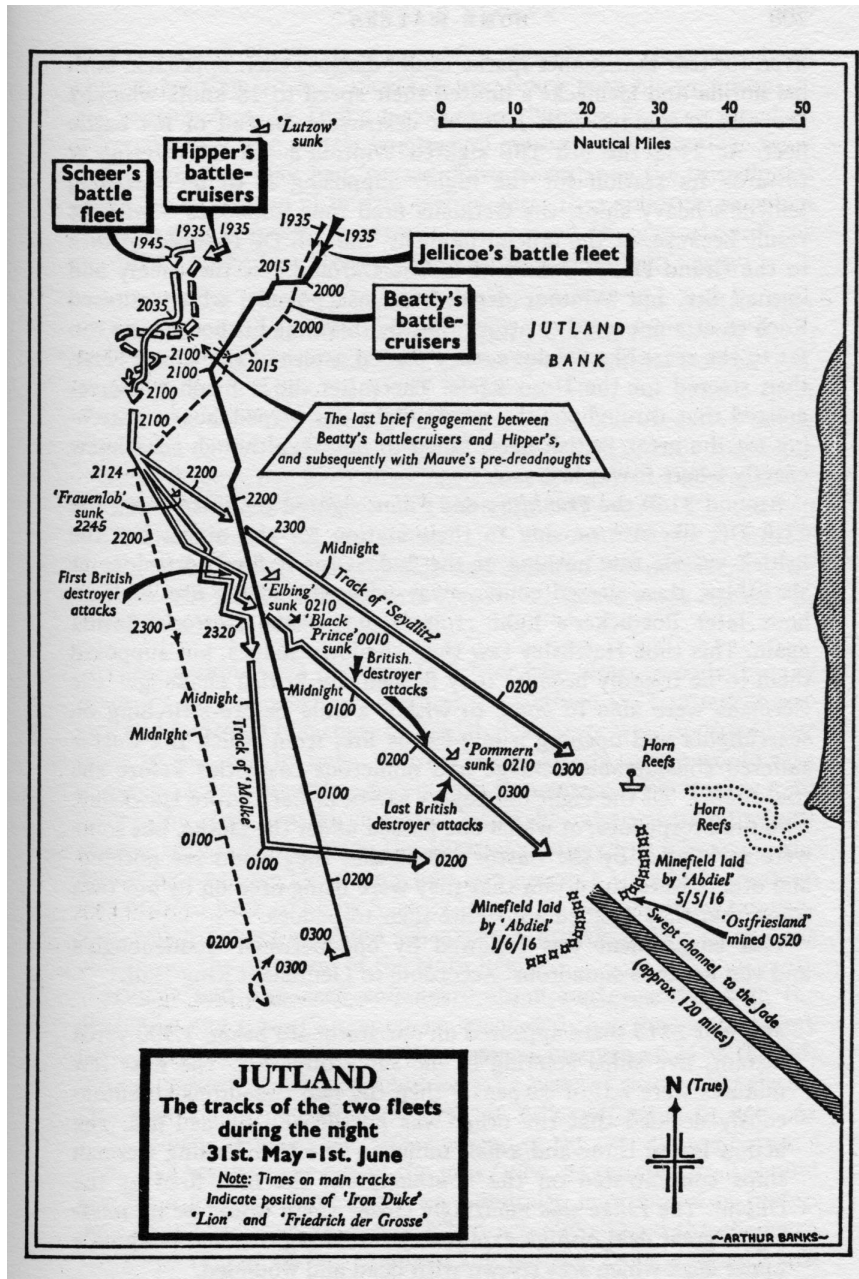


Figure 4.6: *The night actions at Jutland, from Naval Battles of the First World War, Geoffrey Bennett*

eeding to sea and damaged her engines attempting to get free. She had to be taken of service. The *Greif*, the former German-Australian liner's *Gulben* (4,962 tons), sailed the Elbe on 27 February, but British wireless intelligence had been aware of a r's departure, patrols were deployed off the Norwegian coast, and when the *Greif* e wireless silence her position was established by direction-finding stations. On the the *Greif* was intercepted by the armed merchant cruisers *Alcantara* (16,034 tons) and s (15,620 tons). The raider attempted to pass as a Norwegian ship and lured the *Alcantara* close enough before opening fire to inflict mortal damage. The *Greif* was also badly aged, and the *Ardes*, joined by the light cruiser *Comus*, completed her destruction.⁶⁴

The *Möwe*'s average monthly bag on a two-month cruise of more than 24,800 of shipping was substantial but small in the context of the submarine war. The nan naval leaders obviously regarded the submarine as the most potent weapon ist merchant shipping, but in their eyes the diplomatic restrictions hobbled them, xcheer refused to operate under prize rules in the north. On 30 April he received the r's approval for the cessation of the submarine war on commerce. The submarines e High Sea Fleet were now employed for military purposes until the political and ary situation demanded the resumption of the campaign against trade. Scheer ded to use the submarines in conjunction with operations by the High Sea Fleet, and set in motion the train of events that led to the Battle of Jutland.⁶⁵

THE BATTLE OF JUTLAND

Shortly after he assumed command of the High Sea Fleet, Vice Admiral Scheer and iaff, notably Captains Adolf von Trotha and Magnus von Levetzow, produced a ram in early February that bore the title "Principles Covering the Conduct of the il Campaign in the North Sea." The objective was to implement a more aggressive active strategy for the fleet. The Germans recognized that the existing ratio of gth prohibited them from seeking a decisive battle with the British, and their gy would have to be such as to prevent this decisive battle being forced on them. rtheless, by exercising systematic and constant pressure, the Germans would pt to force the British to abandon their waiting attitude and send out some of their s, thereby giving the Germans favorable chances for attacking. This pressure would erted by the submarine war against commerce, mining, attacks on trade between ritish Isles and Scandinavia, aerial warfare, and intensive sweeps by the High Sea s. This would include airship raids on England in conjunction with destroyer ps. Finally, the Germans would exert still greater pressure by bombarding coastal s, again with the object of inducing the British to take countermeasures that would the Germans the opportunity to engage under favorable conditions. At first glance nigh sound like more of the same methods employed earlier in the war, but Scheer uick to point out the earlier sweeps had been undertaken with either inferior forces or r circumstances in which the main fleet could not intervene in time to be of any use.⁶⁶

The first German action came on the night of 10 February when a strong German destroyer flotilla sank the sloop *Arabis*, which, together with the newly formed Tenth Minesweeping Flotilla, had been sweeping one of the war channels kept clear for the fleet east of the Dogger Bank. Jellicoe and Beatty, along with Tyrwhitt and the Harwich Force, were ordered out, but had no chance to engage. Unfortunately on returning to Harwich, Tyrwhitt's flagship, the cruiser *Arcturusa*, was mined and sunk in a new field laid by one of the submarines of the Flanders Flotilla.⁶⁷

On 5–6 March, Scheer carried out the first of what he termed the High Sea Fleet's "greater enterprises," bringing the fleet to the latitude 53° 30' (approximately that of Terschelling), the farthest south it would come during the war. The sweep was made in conjunction with a zeppelin raid on Hull and Immingham, while submarines from the Flanders Flotilla were stationed off the British coast. Scheer hoped to intercept British patrols. The Grand Fleet and Harwich Force were out again, but there was never any chance of an encounter. The British were able to recall their patrols in time once Scheer broke wireless silence, thereby indicating he was at sea. The Germans, in turn, apparently intercepted the British recall signal and Scheer turned for home.⁶⁸

The main British strategy remained unchanged. Jellicoe told the first lord: "The Grand Fleet can never have any other objective than the High Sea Fleet, and until the High Sea Fleet emerges from its defenses I regret to say that I do not see that any offensive against it is possible." Minor offensives were possible, notably seaplane attacks against zeppelin bases in Schleswig. The offensive means were feeble, consisting of the seaplane carrier *Vindex*, a former Isle of Man Steam Packet Company vessel that had been converted to carry five seaplanes in a hangar aft, with a launching platform for two aircraft with fixed undercarriages forward.⁶⁹ After two abortive attempts the British launched a raid on 25 March directed against the presumed zeppelin station at Hoyer on the Schleswig coast. The Harwich Force escorted the *Vindex* to well inside the Vyl light vessel south of Horn Reefs, while Beatty and the battle cruisers were out in support. Despite constant snow squalls, the *Vindex* managed to launch five seaplanes. Unfortunately, they found no zeppelins at Hoyer. One aircraft did locate zeppelin sheds farther inland at Tondern, but ice jammed her bomb racks and she could not release them. Only two aircraft returned; the other three had been forced by engine trouble to land in German territory. While searching for the missing aircraft, Tyrwhitt's destroyers clashed with two German patrol trawlers, which were sunk, but the British force was now subjected to air raids. Unfortunately, the destroyer *Medusa* was rammed by the destroyer *Laverock*, and despite efforts to tow her home in bad weather, she eventually had to be abandoned. The Admiralty, on intelligence that the High Sea Fleet was putting to sea, ordered Tyrwhitt to withdraw at once. Scheer, however, unsure of British intentions, kept the big ships back and contented himself with sending out strong cruiser and destroyer forces. He lost one destroyer, *S.22*, to a mine. During the stormy night the Harwich Force, steaming in close order and without lights, had another brush with German forces, and the light cruiser *Cleopatra* rammed and sank the German destroyer *G.194*, only to be rammed in turn by the cruiser *Undaunted*. The latter was badly damaged

could not steam faster than 6 knots. The Germans intercepted the wireless message during the accident, and Scheer ordered the High Sea Fleet out toward the British position, whereas the Admiralty ordered the Grand Fleet to concentrate east of the Longies—the area of the North Sea approximately 100 miles east of Aberdeen. But the German cruisers reported the weather too rough for an engagement, and Scheer turned to port. Once again there was no clash between the major fleets.⁷⁰

It is not surprising that after these experiences Jellicoe concluded that air raid mining activities could not be used as a means of drawing the High Sea Fleet to sea and must be treated as definitely minor operations. Jellicoe was apparently worried that there was a feeling at the Admiralty that might lead them to push him into a more active role. The Admiralty, despite the lack of results, still gave air raids heavy support and ordered him to plan another in the belief it would force the German fleet out. Jellicoe agreed, for to draw the Germans out the raid would have to take place in daylight, so the British force would be reported as approaching. If the German heavy ships led to come out, they would not be clear of their minefields and in a position where British could engage them until 4:00 P.M. As Jellicoe told Beatty, "This is no time to a fight in these waters." It would mean the British hanging around "in a bad locality" and burning fuel, especially from destroyers. The British could not wait for the following because by then the destroyers would be out of fuel and the light cruisers running. Jellicoe opposed engaging the High Sea Fleet close to the German minefields and German submarine and torpedo-boat bases. He concluded: "Patience is the virtue we exercise." The British would have to wait until the Germans gave them a chance in a favorable position.⁷¹ Beatty agreed: "Your arguments re the fuel question are unanswerable and measure the situation absolutely. We cannot amble about the North Sea for three days and at the end be in a condition in which we can produce our whole force to fight to the finish the most decisive battle of the war: to think it is possible is very too foolish and tends towards losing the battle before we begin." Beatty believed when the Great Day comes it will be when the enemy takes the initiative,⁷² and until they ought to investigate the North Sea with minesweepers to ascertain what waters are safe, so that when the Germans did take the initiative they could judge where they engage them.⁷³ The exchange between Jellicoe and Beatty is interesting, for Jellicoe pointed out one of the major British problems at the Battle of Jutland when the main contact between the fleets did indeed take place late in the day with only limited time before the onset of darkness.

Would the fleets ever meet? It seemed not. On 20 April British cruisers sailed for into the Kattegat to operate against German trade and divert German attention from the Russians relaid minefields that had been displaced by winter ice. The move was countered by intelligence on the 21st that the High Sea Fleet was preparing for sea; the 1st Fleet and Battle Cruiser Fleet were ordered to sea. The next morning the Admiralty found that the High Sea Fleet was returning to port but that there was a chance to intercept the German battle cruisers near Horn Reef. Beatty, followed by Jellicoe, led the force to the scene, but unfortunately for the British, a dense fog developed during the

night and the battle cruisers *Australia* and *New Zealand* collided. Later that night three of Jellicoe's destroyers were also in collision, and a neutral merchantman collided with the dreadnought *Neptunus*. Frustrated by the fog, the British canceled the operation and returned to refuel.

Scheer gave the British another chance with a "tip and run" raid by the German battle cruisers, supported by the High Sea Fleet, against Lowestoft on 24–25 April. The operation was to coincide with the Easter Sunday Irish rebellion in Ireland. The Admiralty, as usual, knew the Germans were at sea but did not at first know their objective. The Grand Fleet and Battle Cruiser Fleet were ordered to sea, but their southward journey was slowed by heavy seas. Tyrwhitt's Harwich Force, 3 light cruisers and 18 destroyers, were also approaching from the south, but Tyrwhitt had been weakened by having to detach 12 destroyers to cover the laying of new minefields and a mine and mine-net barrage off the Flanders coast.

The operation began badly for the Germans when the *Seydlitz*, flagship of Rear Admiral Boedicker—commanding the German reconnaissance forces in the temporary absence of the ill Rear Admiral Hipper—struck a mine near Norderney and had to return to port with 1,400 tons of water in the ship. Boedicker transferred his flag to the *Lützow*, and the four remaining German battle cruisers and six light cruisers encountered the much weaker Harwich Force at about 3:50 A.M. on the morning of the 25th. Scheer and the High Sea Fleet remained off Terschelling, roughly 70 miles away. Tyrwhitt turned south and tried to draw the Germans after him. Boedicker refused to be drawn, and the battle cruisers proceeded to bombard first Lowestoft and then Yarmouth. Tyrwhitt consequently returned to the north and engaged the Germans in an action in which his flagship, the light cruiser *Conquest*, was hit by five 12-inch shells and badly damaged. Boedicker apparently lacked the killer instinct and refrained from attempting to cut off and destroy the weaker British force. Instead, the German battle cruisers turned for home, and Scheer also turned for home when Boedicker was about 50 miles from him.

The Grand Fleet without its destroyers, which could not keep up in the rough seas, and the Battle Cruiser Fleet did not even come close to intercepting the Germans. None of the British submarines on defensive patrol—nor another group sent with the destroyer *Melampus* to form a patrol line in the middle of the southern North Sea after the Germans were reported at sea—were ever in a position to attack. The Germans sank two armed trawlers, *E.22* was torpedoed by *UB.18* in the North Sea, and another of Tyrwhitt's cruisers, the *Penelope*, was damaged by a torpedo during the pursuit. The Germans also destroyed about two hundred houses at Lowestoft; they did far less damage at Yarmouth. The Admiralty were worried about the vulnerability of the east coast and the seeming inability of the Grand Fleet based at Scapa Flow or the Battle Cruiser Fleet at Rosyth to prevent the raids or successfully intercept the Germans on their return. They decided to permanently detach the Third Battle Squadron, the *Dreadnought* (currently refitting) and the seven surviving *King Edward VII*-class battleships to the Swin, the northern channel of the Thames estuary. They were joined by the Third Cruiser Squadron (*Devonshire*-class armored cruisers). The great majority of the submarines

nerly at Rosyth were shifted to Yarmouth.⁷³

The apparent weakening of the Grand Fleet was less serious than it might appear. Although the *King Edwards*—nicknamed the “wobbly eight” for their crabwise movement when steaming at full speed—were among the newest of the predreadnoughts, there were about three knots slower than the remainder of the Grand Fleet and their deployment posed considerable tactical problems for Jellicoe. As for the *Devonshire* class, the experience of Jutland soon demonstrated that the armored cruisers were obsolete, their employment in a modern battle almost suicidal.

The move of the Third Battle Squadron was also the preliminary to a major strategic decision. On 12 May the First Sea Lord Admiral Jackson met Jellicoe and Beatty in conference at Rosyth where the decision was made to shift the Grand Fleet eastward from Scapa to the Firth of Forth as soon as an anchorage below the Forth Bridge could be made secure against submarines. Although the project had priority, the plans were not completed before 1917, and it was not until April 1918 that the Grand Fleet moved to its new base.⁷⁴

The British quickly followed up the Lowestoft raid with another seaplane raid, designed to lure Scheer out of his bases. On 4 May the seaplane carriers *Vindex* and *Engadine*, escorted by the First Light Cruiser Squadron and sixteen destroyers of the First Flotilla, moved to a position off Sylt to launch a raid against the zeppelin sheds at Tondern. The raid was only of secondary importance; the High Sea Fleet was the major active element. The preceding night the British had laid minefields off the outer ends of the man-swept channels, and submarines had been stationed off Terschelling bank and the Horns Reef area. Jellicoe and Beatty were both at sea with their forces. The air raid, like the earlier ones, a failure. Only three of the eleven seaplanes launched managed to get off. The remaining eight damaged their propellers in the rough sea and had to be ditched in again. The three that took off had little luck. One promptly hit the mast of a destroyer and crashed, the second had to turn back with engine trouble, and the third, which bombed Tondern, missed the zeppelin shed. The Germans launched two zeppelins to search for the force; one, *L.7*, found it only to be shot down. Jellicoe waited in vain for more than six hours without the High Sea Fleet coming out, and, with some concern over the fuel situation, finally turned for home. The High Sea Fleet did sortie in the day, but the British were gone. Once again there was no encounter.⁷⁵

It is against this background of raid and counter-raid with both sides baiting and luring that the High Sea Fleet away from its coast and Scheer to catch an unattended portion of the Grand Fleet—that the great naval battle of the war occurred on 31 May. At the end of May, Jellicoe decided to send two light cruiser squadrons around the Skaw into the Kattegat on 2 June to sweep as far south as the Great Oyster Sound. There would be a battle squadron in the Skaggerak in support, and Jellicoe and Beatty would be to the northwest with all their forces ready to intervene if necessary. The High Sea Fleet moved north out of the Bight. British submarines would also be off the coast. The German submarine force, and the minelayer *Abdiel* would extend the minefields laid on 3–4 May. The seaplane carrier *Engadine*, escorted by a light cruiser

squadron and destroyers, would be off Horns Reef to watch for zeppelins.

Scheer had his own plans for a bombardment of Sunderland by cruisers in order to draw out British forces. This time the High Sea Fleet would be to the south of Dogger Bank, and eighteen U-boats (three of them large minelayers) made available by the cessation of the war on commerce would be concentrated off the British naval bases. The submarines would inflict losses on Beatty's forces, which Scheer expected to hurry out in pursuit of Hipper's battle cruisers. Hipper would then lead the surviving British battle cruisers to the High Sea Fleet and destruction. The plan presupposed extensive reconnaissance by zeppelins to ensure that Jellicoe and the Grand Fleet would not be at sea. Scheer was forced to postpone his operation until the end of May because of condenser troubles in the battleships of his Third Squadron—the newest dreadnoughts—and until repairs on the *Seydlitz* were completed. He then found weather conditions unfavorable for zeppelin reconnaissance, and the endurance of the U-boats deployed off the British ports set limits on the time within which the operation could be carried out. Scheer therefore altered his plans and dropped the bombardment of Sunderland in favor of a sweep against British patrols and merchant shipping outside and inside the Skaggerak. The German cruisers were ordered to deliberately show themselves off the Norwegian coast so that they might be reported and draw the British.⁷⁶

Hipper and his battle cruisers sailed from the Jade at 1 A.M. on the 31st, and Scheer and the main portion of the High Sea Fleet sailed from the Jade and the Elbe shortly afterward. The British were already at sea. Room 40 had been able to warn the Admiralty that the Germans were preparing to put to sea, and at 5:40 on the afternoon of 30 May, the Admiralty ordered Jellicoe, who along with Beatty had already been alerted, to concentrate in the Long Forties. By 10:30 the Grand Fleet had sailed from Scapa Flow and the Moray Firth, and Beatty sailed from the Firth of Forth at 11:00. Jellicoe (in the *Iron Duke*) had a total of 24 dreadnoughts, 3 battle cruisers (Rear Admiral Hood's Third Battle Cruiser Squadron), 12 light cruisers, 8 armored cruisers, 5 flotilla leaders, 46 destroyers, and a minelayer. Beatty (in the *Lion*) had a total of 6 battle cruisers (the *Lion*, *Princess Royal*, *Queen Mary*, *Tiger*, *New Zealand*, and *Indefatigable*), 4 dreadnoughts, 14 light cruisers, 27 destroyers, and the seaplane carrier *Engadine*. Beatty's 4 dreadnoughts (the *Barham*, *Valiant*, *Warspite*, and *Malaya*) were the powerful (15-inch guns) and fast *Queen Elizabeth* class of Vice Admiral Evan-Thomas's Fifth Battle Squadron, which had been temporarily attached to Rosyth to compensate for the absence of Hood's Third Battle Cruiser Squadron which was carrying out gunnery exercises at Scapa.

On the German side, Hipper (in the *Lützow*) had the First Scouting Group (5 battle cruisers), the Second Scouting Group (4 light cruisers), and 30 destroyers led by the light cruiser *Regensburg*. Scheer (in the *Friedrich der Grosse*) was approximately 50 miles astern with a total of 16 dreadnoughts, 6 predreadnoughts of the *Deutschland* class, 5 light cruisers, and 31 destroyers led by the light cruiser *Rostock*. Scheer had included the *Deutschlands* of the Second Squadron largely for sentimental reasons: it was his old squadron, and its commander, Rear Admiral Mauve, made an “eloquent intercession” not to be left behind. One senses it was probably against Scheer's better judgment, for they

older, slower, and less well armed or protected than the other German capital ships. The total of the combined forces showed a clear British predominance: 28 to 16 (plus 6 predreadnoughts); battle cruisers, 9 to 5; armored cruisers, light cruisers, 26 to 11; and destroyers, 78 to 61. The approximately 250 ships led made this by far the biggest naval battle of the First World War, and as mines played no role and aircraft only a minimal one, it was essentially a one-on-one combat between surface ships. Jutland is likely to remain, therefore, the encounter between surface ships of modern times.

The work of Room 40 had given the British a priceless advantage in enabling them to get to sea even before what was assumed to be a German raiding force. However, this advantage was diminished by a series of mistakes by the Admiralty in actually retreating and disseminating the precious information. Part of the problem stemmed from the fact that the officers of the Admiralty's Operations Division tended to distrust the "amateurs" of Room 40 and confided in them as little as possible. Admiral Oliver, chief of staff, ran what has been described as "a one man show" and zealously kept Room 40's information in his own hands. Consequently, Captain Thomas Jackson, chief of the Operations Division, entered Room 40 just before noon on the 31st and learned where the directional finding stations placed the German call sign "DK," which normally the call sign of the flagship. He did not explain why he wanted this information and was told, correctly, that the location was Wilhelmshaven. On the basis of this information, Oliver sent a signal to Jellicoe at 12:30 P.M. that the German flagship was in the Jade. A few hours later, Jellicoe encountered the entire High Sea Fleet. What happened?

The Germans made a practice of transferring the commander in chief's call sign to a wireless station on shore whenever the flagship put to sea. The flagship then took the call sign. The object was obviously to conceal the fact that the fleet was at sea, and to prevent the Germans from transferring not only Scheer's usual call sign but also his wireless operator, so that the British would not detect any difference in the actual call sign or "touch" with which the signal was sent. The Germans were still not aware of the code was compromised and that their messages could be read; the move was probably to frustrate the British direction-finding stations. The men of Room 40 were of the German practice, and if Captain Jackson had only said *why* he wanted the information about call sign "DK," they could have provided a correct evaluation. The code had important consequences, for Jellicoe assumed he had plenty of time and could afford an economical speed in order to conserve fuel. He also wasted time examining the High Sea Fleet. Had he arrived at the rendezvous with Beatty with an extra hour or two more, the Germans might have suffered far heavier losses than they escaped with. However, the error made Jellicoe very suspicious of further intelligence from the Admiralty, and this affected his decisions later in the battle.⁷⁷ Oliver, who was not certain of the identity of the older German battleships were with Scheer, also held Tyrwhitt's Force in the south in case the older German ships attempted to raid the Thames estuary and block the French channel ports.⁷⁸

Jellicoe ordered Beatty to reach a position (latitude 56°40'N, longitude 5°E) approximately 69 miles south-southeast of his own estimated position at 2:00 P.M. on the 31st, which was 240 miles from Scapa. If he had no intelligence of the enemy, Beatty was to turn north for the rendezvous with Jellicoe, and their combined forces would steam toward Horns Reef. Beatty, whose forces were converging on the Germans at a right angle, turned north as planned at 2:15, still unaware Hipper was only about 45 miles to the east, with perhaps 16 miles between the nearest cruisers of their respective screens. Beatty's dispositions were considered by some to be faulty in that he stationed the powerful dreadnoughts of the Fifth Battle Squadron 5 miles from his forces where they could not provide close support in the early stages of a battle. He may have done so out of an ardent desire that his battle cruisers, and not the Fifth Battle Squadron from the Grand Fleet, should be the ones to bag Hipper to make up for the lost opportunity at Dogger Bank the year before. The dominant idea was that the Germans must not be allowed to escape again.⁷⁹

The actual contact between the forces was almost accidental, although the British and Germans were on converging courses and contact eventually would have been made, but probably much later and closer to Jellicoe. At approximately 2:00 P.M. the cruiser *Elbing* of Hipper's screen spotted a small Danish steamer, the *N.J. Fjord*, and sent two destroyers to investigate. The steamer had stopped and was blowing off steam when she was spotted by the light cruiser *Galatea* of Beatty's screen. The *Galatea* and *Phaeton* also closed to investigate, spotted and reported the Germans, and at 2:28 opened fire. Two of Beatty's light cruiser squadrons steered toward the *Galatea*, although Beatty himself appears to have waited twelve minutes before altering course to the southeast and increasing speed in order to cut off the enemy from returning to the Bight. Unfortunately, Evan-Thomas missed the flag signal to alter course and did not turn until after it was repeated by searchlight, which should have been used together with the signal flags in the first place. The result was that a 10-mile gap opened between Beatty and the Fifth Battle Squadron, which did not come into action until twenty minutes after Beatty joined battle. The consequences of this were costly.

The *Lion* spotted Hipper's force at 3:30 at a distance of about 14 miles. Beatty immediately altered course to the east to cut them off from the Bight and increased to full speed. He had, of course, no idea the entire High Sea Fleet was at sea. The seaplane carrier *Engadine* managed to launch one of her four aircraft at 3:08, but low clouds kept the aircraft at an altitude where vision was limited, and when sighting reports were sent by the pilot to the *Engadine*, the seaplane carrier failed in her attempt to relay the information by searchlight. The sea became too rough to launch other aircraft, and a burst petrol pipe finally forced the sole plane aloft to land at 3:47. The *Engadine* lacked the speed to keep up with battle cruisers and dropped out of the action, thereby ending the very limited role aircraft played in the battle. Nevertheless it was the first time ship-borne aircraft had participated in a fleet action. Jellicoe might have had the seaplane carrier *Campania* with him, but the converted Cunard liner for some reason had never received the signal to sail from Scapa, and when the error was discovered she was two hours behind the fleet.

Jellicoe, perhaps erroneously, believed she lacked the speed to catch up, and, worried over the submarine danger to the unescorted ship, ordered her back to port.

Hipper on sighting Beatty's force had immediately altered course 16 points to starboard, that is 180°, in order to draw the British to Scheer's High Sea Fleet. This phase of the battle is accordingly usually known as "the run to the south." The British and Germans opened fire almost simultaneously at 3:48, both sides overestimating the range, which was probably approximately 16,000 yards. At this moment Evan-Thomas was about 7½ miles from the *Lion*, too far to play any role in the action. Jellicoe in the *Iron Duke* was about 53 miles from the *Lion*, and the van of the High Sea Fleet was about 46 miles from Hipper's flagship *Lützow*.

The Germans corrected their initial error in estimating the range more quickly than the British, and they were assisted by an error in fire distribution on the British side. There were six British ships to five German, and Beatty had intended for each of the British to engage their opposite number with the two lead ships, the *Lion* and *Princess Royal*, concentrating on the *Lützow*, the leading German ship. Unfortunately, the *Queen Mary*, the third British ship, fired on the *Seydlitz*, the third German ship, leaving the second German ship *Derfflinger* undisturbed for approximately ten minutes. The *Tiger* (which also had missed the distribution signal) and *New Zealand* concentrated on the *Moltke* while the two rearmost ships, the *Indefatigable* and *Von der Tann*, engaged each other. In the controversy following Jutland, much was often made of this error in fire distribution. However, a recent close analysis of the battle by John Campbell points out that it has probably been overrated, for the first German ships to hit were the *Lützow* and *Moltke*, the two ships that were receiving concentrated fire, and the *Derfflinger*'s initial shooting was not effective. This may have been due in part to the fact that in concentration of fire it was difficult to distinguish between the splashes of each ship's shot, and the results were correspondingly less effective than imagined.⁸⁰

All accounts agree that in this first phase of the battle German gunnery was both faster and more accurate. The conditions of light and visibility favored the Germans, although it has also been pointed out they were not always bad for the British. The British ships, darker in color, tended to be silhouetted against the western sky, while the German ships, lighter gray in color, were less visible against the overcast sky to the east. Moreover, the wind was from the west, carrying smoke between the British and the Germans and hampering gunnery. At 4:00 the *Lion*'s "Q" turret (midships) was hit by the *Lützow* and put out of action. Everyone in the gunhouse was killed, and it was fortunate that the order to flood the "Q" magazine was given, because less than a half-hour later, possibly when the *Lion* had altered course sufficiently to create a strong draft, a smoldering fire in the gunhouse spread to the working chamber below the turret and ignited the charges there. There was a tremendous explosion with flames shooting as high as the mastsheads, and had the magazine not already been flooded, the entire ship might have been destroyed.⁸¹

The *Indefatigable* was not so lucky. At 4:02 she was hit by at least four 11-inch shells in two salvos fired by the *Von der Tann* and blew up and sank after a magazine

explosion with a loss of 1,017 officers and men. A German destroyer picked up only two survivors a few hours later. The loss was partially offset by the fact that Evan-Thomas's squadron had by now been able to draw close enough for his flagship *Barham* to open fire on the *Von der Tann* at 4:08, and within a few minutes all four of his battleships were firing. The gunnery of the Fifth Battle Squadron was more effective than that of the battle cruisers, owing to, among other factors, their being fitted with much better range finders. Nevertheless the British suffered their most serious loss at 4:26 when the *Queen Mary*, after being hit within a few minutes by two or three 12-inch shells from the *Derfflinger*, blew up and sank with a loss of 1,266 officers and men. There were twenty survivors. Beatty coolly remarked to his flag captain: "There is something wrong with our bloody ships today." With the Fifth Battle Squadron in action, it was actually Hipper who was feeling the pressure. Both commanders ordered flotilla attacks, and at about 4:30 a fierce destroyer action took place for 10–15 minutes. The Germans and British each lost two destroyers, the *Nestor* and *Nomad* on the British side, *V.27* and *V.29* on the German. The British fired 19 to 20 torpedoes of which only two hit. The *Petard* hit *V.29*, and either the *Petard* or *Turbulent* hit the *Seydlitz*. The *Seydlitz* was not seriously damaged; her torpedo bulkhead held and she took on only a slight list and was able to maintain full speed. None of the British ships were hit by German torpedoes.

The situation was radically transformed by the arrival of Scheer and the High Sea Fleet, which Commodore Goodenough commanding the Second Light Cruiser Squadron reported to both Jellicoe and Beatty by wireless from his flagship *Southampton* at 4:38. Beatty, after closing Goodenough and sighting the High Sea Fleet himself, turned 16 points to starboard (180°) and began to draw the Germans after him and toward Jellicoe. Once again there was faulty signaling. Evan-Thomas failed to see the signal made by flags to turn, and when it was repeated at 4:48 as the Fifth Battle Squadron drew abreast of the *Lion*, it called for a turn in succession rather than together, and to starboard rather than to port. The result was to open a gap of 3 miles between Evan-Thomas and Beatty and to bring the Fifth Battle Squadron into considerable danger from the Third Squadron of the High Sea Fleet (the *König*, *Grosser Kurfürst*, *Markgraf*, *Kronprinz*, *Kaiser*, *Prinzregent Luitpold*, and *Kaiserin*) as Scheer had ordered his fleet to turn by divisions toward the British. Evan-Thomas engaged the van of the High Sea Fleet but escaped without serious damage, and "the run to the South" was over.

The situation was now reversed, with Beatty drawing Scheer and Hipper toward Jellicoe in the second phase of the battle, not surprisingly known as "the run to the north." The British at first continued to be plagued by poor visibility, but after about 5:40, the light tended to favor them and dazzle the German gunners. Visibility, though, was really a complicated factor, changing frequently for different ships, and, as Campbell points out, for the British "it was seldom good and frequently poor." On the German side, the conditions often might have been difficult, but on the few occasions they could see their targets clearly, "their shooting was as dangerous as ever."⁸² The British achieved far better results in "the run to the north" between 4:54 and 6:15. Hipper's First Scouting Group was badly battered, particularly the *Lützow*, *Derfflinger*, and *Seydlitz*, and lost a

deal of its fighting value. All of the *Von der Tann*'s heavy guns were at least temporarily disabled. German ships, though, were well protected, and German ammunition more stable than that of the British. The ships did not blow up and were exceedingly difficult to sink.

The Germans ran into more trouble. At 4:05 Jellicoe had ordered Rear Admiral 1 with the Third Battle Cruiser Squadron—the *Invincible*, *Inflexible*, *Indomitable*, two cruisers, and four destroyers—to reinforce Beatty. The estimates of Beatty's ion were incorrect, and Hood was too far to the east. The light cruiser *Chester* on 1's starboard beam turned to investigate gun flashes to the southwest and at 5:36 ran Rear Admiral Boedicker's Second Scouting Group (light cruisers *Frankfurt*, *Pillau*, 8, and *Wiesbaden*), which had been screening Hipper. The *Chester* had a harrowing and was hit seventeen times before she could fall back on Hood. Boedicker's ers, in pursuit, met Hood's battle cruisers, and the *Wiesbaden* was disabled before could get away. The appearance of Hood's battle cruisers convinced Hipper, still engaged with Beatty, that he had encountered the British battle fleet, and he fell on Scheer, reforming in front of the German battleships. Hipper had been preparing nch a destroyer attack against Beatty. The attack was diverted to Hood but was not ive, although the British destroyer *Siarck* was disabled and later sank.

The major and probably most important effect of the intervention by Hood's Battle Cruiser Squadron was to screen the approach of Jellicoe from the Germans. had the effect of moving the lead German squadron, the Third Squadron of Rear ral Behncke, more toward the east. There were some Germans who thought this ve, for if Behncke had carried on to the north he might have surprised Jellicoe while ter was deploying, and might have even "crossed the T" of the British.⁸³

Jellicoe and his three battle squadrons (two divisions each) were rapidly aching the scene. The Grand Fleet was in its cruising formation of divisions in line t, that is, six parallel columns, each column composed of four dreadnoughts in line . There were approximately 5 miles between the far right and left columns. Jellicoe not effectively fight in this formation, for he would only be able to use a fraction heavy guns because of ships masking one another. The Grand Fleet would have loy for battle, on either its port or starboard column, depending on the estimated on from which the enemy would appear. The deployment of the 24 dreadnoughts ingle line ahead was no easy matter and would require a full 15 to 20 minutes. The m for Jellicoe was that from 4:45 to 6:00 he had received no reports from Beatty on ation of the enemy. Beatty has been greatly criticized for this. Moreover, thanks rs in dead reckoning and estimating position in the reports Jellicoe did receive, was actually much farther to the west—on Jellicoe's starboard bow rather than —and the Germans about to appear much sooner than he had anticipated. By 6:00 could see the *Lion*, and at 6:15 he ordered a deployment on the port division, that e east. This had the disadvantage of deploying the British battle fleet farther from 'ancing Germans but placed Jellicoe in the tactically advantageous position of ng the T" of the advancing Germans. This meant he could employ the great

majority of his heavy guns whereas the Germans could only employ a fraction of their own. There have been voluminous discussions of this decision, and the great majority of opinion—but certainly not all—has concluded Jellicoe made the correct decision.⁸⁴

Beatty, once in contact, steamed across the British fleet to take his prescribed position at the head of the line. This had the unfortunate effect of hampering British gunnery as well as obscuring vision with the battle cruisers' smoke. It also caused Jellicoe to reduce speed to let him get clear, thereby delaying the deployment. Evan-Thomas realized he did not have enough speed to follow with the Fifth Battle Squadron and therefore took position at the rear of the British line. In doing so the *Warspite*'s helm jammed, and she made two complete circles in the face of the advancing Germans. She came under the concentrated fire of the German dreadnoughts and was hit thirteen times by heavy shells, but suffered no vital damage. The *Warspite* regained control for a time, but the helm later jammed again, and Evan-Thomas subsequently ordered her to return to port.

While the *Warspite* was having her narrow escape, Rear Admiral Robert Arbuthnot led the old armored cruisers *Defence* and *Warrior* of the First Cruiser Squadron across Beatty's bows to engage the light cruisers of the Second Scouting Group. Arbuthnot, a stern disciplinarian and physical-fitness fanatic, had been one of the characters of the Royal Navy, and there were some who were not really surprised at his brave action and subsequent fate. The two obsolete armored cruisers suddenly came in close contact with the advancing German battle cruisers and dreadnoughts and were smothered by the fire from large-caliber guns. Arbuthnot's flagship *Defence* blew up and sank with all hands at 6:20. The diversion caused by the *Warspite*'s mishap probably permitted the badly damaged *Warrior* to limp away. She was later taken in tow by the *Engadine*, but sank the following morning.

At approximately 6:20 Hood's Third Battle Cruiser Squadron opened fire on Hipper's advancing battle cruisers. Hood turned to a parallel course and the British ships made excellent shooting. Hood's flagship *Invincible* was particularly effective. The *Lützow* was hit repeatedly and suffered the damage that eventually proved lethal. Nevertheless the fatal flaw in British battle cruisers revealed itself for a third time that day. At 6:32 a heavy shell hit the *Invincible*'s "Q" turret and blew the turret roof off. The flash that followed shot down to the magazines, and the ship blew up, splitting in two parts. The bow and stern remained visible above the water for a long time, and a photograph of them is one of the most frequently reproduced images of the battle. There were only six survivors; 1,026 officers and men, including Hood, were lost. Hood was a particularly able and respected officer, and his role in the battle had been effective. Had he lived, he probably would have attained the highest rank.

The Grand Fleet's deployment was not completed until about 6:40, but the *Marlborough*, flagship of the rear division, opened fire at 6:17. Firing did not become general until 6:30, and visibility was not good, with targets appearing and disappearing in the haze. Campbell estimates that of Jellicoe's 24 dreadnoughts only 12 (perhaps only 10) fired on German battleships at this time, and the four dreadnoughts of Vice Admiral Jerram's First Division at the head of the British line did not fire a single shot.⁸⁵ Still, Hipper's

cruisers and the dreadnoughts of the Third Squadron, particularly the *König*, which received 8 hits, were undergoing a heavy pounding, and the doomed *Wiesbaden* lay helpless in the lines, a target for many of the British ships. The irony is that there were so many firing at her that spotting was inaccurate and she did not suffer any fatal damage.

Scheer was in a desperate situation and escaped from it by the maneuver known as *Gefechtskehrtwendung*, which can be translated as the "battle-about-turn." At 6:33 he made the signal "Turn together 16 points to starboard and form single line ahead opposite direction." The German Third Destroyer Flotilla delivered a torpedo salvo—which was not pressed home—and made a smoke screen to cover the maneuver. The line, aided by mist and a wind from the southwest that blew smoke toward the British line, was successful and competed by 6:45. The Germans disappeared to the west. At 6:57 the *Marlborough* was hit by a torpedo, probably fired by the *Wiesbaden*, though listing was able to steam at 16 knots for the remainder of daylight.

Jellicoe did not at first realize that the Germans had turned away, and those British Fleet captains who might have observed the maneuver did not, with that singular lack of initiative that plagued the British in the battle, report it to him. When covered the Germans were gone, he did not pursue closely, but instead, steaming at 16 knots, 4 knots below maximum speed, ordered the fleet with its divisions in echelon to a course that would cut across the line of retreat to the German bases, and then to a more southerly course when he assumed he had steamed far enough to the west to achieve this purpose. Jellicoe's failure to pursue the Germans closely is another more controversial aspect of the Battle of Jutland that was and remains hotly debated. He was, of course, aware of his immense responsibility and the frequently cited remark that he was the one man who could lose the war in an afternoon. Jellicoe's policy embodied in the Grand Fleet Battle Orders, in which there was a general chase, and Jellicoe did what he had always said he was going to do by not, however, ordering his divisional commanders to pursue independently, is well known to have lost a great opportunity.⁸⁶

Scheer gave Jellicoe another chance when he blundered back into the arms of the British line at 6:55, signaling for another 180° turn. He tended to be vague about his reasons for doing so, implying it was too early to assume night cruising order, that the British line had not yet formed, and that he wanted to cut off his retreat, that he wanted to rise and shock his opponents, and that he wanted to render assistance to the British line. None of this is terribly convincing. Professor Marder suggests, although he thinks it cannot be proven, that Scheer was attempting to slip astern and to the north of the British fleet in order to escape home via the Skagerrak. He misjudged Jellicoe's intentions.⁸⁷ Perhaps Scheer betrayed the truth to Holtzendorff in an unguarded moment after dinner admitted, "My idea? I had no idea. . . . The thing just happened—as I said when she got a baby."⁸⁸

At about 7:10 the two rearmost British divisions sighted and opened fire on the British line, and by 7:15 the firing extended all along the British line at ranges varying

between 11,000 and 14,000 yards. Once again the Germans ships in the van, notably the battle cruisers of the First Scouting Group and the *Königs* of the Fifth Division, Third Squadron, received heavy punishment during the few minutes the British were able to see them. The Germans, for their part, could see little of the British ships save gun flashes. Scheer was in a desperate position, and at 7:13 signaled the battle cruisers to make what in effect was a suicidal charge. His signal *Schlachtkreuzer ran an den Feind, voll einsetzen* has been translated as "Battle cruisers at the enemy, give them everything." The battle cruisers at that moment were actually commanded by Captain Hartog of the *Derfflinger*, for Hipper and his staff had been compelled to abandon the badly damaged *Lützow* shortly before 7:00 and were trapped for two hours in the destroyer G.39 before they could transfer to the *Moltke*. Hipper later described how he could never forget those hours in the little ship amidst the tremendous shell splashes of the battle while he tried to keep up with the big ships.⁸⁹ At 7:14 Scheer ordered the battle cruisers to engage the British van, thereby altering the orders for the "death ride" to a turn to the south. At 7:15 Scheer ordered his destroyer flotillas to attack and make smoke, and at about 7:17 or 7:18 signaled another "about-turn to starboard." The ships of the Third Squadron were close together and under heavy fire, and the maneuver was carried out under difficult conditions.

Jellicoe countered the German destroyer attack with his own destroyers and Fourth Light Cruiser Squadron and, most important of all, turned away with the battle fleet. This once again was in accordance with his stated intentions and the Grand Fleet Battle Orders. The turnaway permitted Scheer to escape for the second time that day. The Germans had been badly pounded, for in this phase of the battle, from 7:00 to 7:45, the British had scored 37 hits with large-caliber guns, including 14 on the *Derfflinger* and 5 each on the *Grosser Kurfürst* and the doomed *Lützow*. The Germans had managed only two hits on the *Colossus*.

There was still an estimated hour and a half of daylight remaining, and the turnaway at this moment when the British were beginning to pay back the Germans for the losses earlier in the day horrified many. It is perhaps the most controversial aspect of the battle, the crux of the division between Jellicoe and Beatty supporters after the war. Jellicoe's justification was that by turning away, the German torpedoes reached the British line running at a much slower speed and were easier to avoid. A turn toward the torpedo attack meant encountering torpedoes when they were running at their maximum speed. None of the German torpedoes hit. There was also the danger that the British, had they turned toward the torpedoes, might have encountered successive torpedo attacks from another quarter, and these would have been difficult if not impossible to avoid. Jellicoe after the loss of the *Audacious* in 1914 was conscious of the vulnerability of British capital ships to underwater damage. The counterargument to this was that however valid the reasons for turning away, Jellicoe forfeited the chance of a decisive victory in order to avoid losses. Would not some British loss have been justified if it meant sinking a substantial portion of the High Sea Fleet? The argument will no doubt continue as long as historians write about the battle of Jutland.⁹⁰

There was no further contact between the main battle fleets, although just before 05:00 Beatty clashed with the First Scouting Group and part of the High Sea Fleet. The British scored 8 large-caliber hits, 5 on the battered *Sevdilitz*, compared to one German 11-inch shell that hit the *Prinzess Royal*. The British might have been able to achieve more had they been closely supported by at least some of the battle squadrons—Jerram's Second Squadron had been closest—yet another controversy over lost opportunity.⁹¹

Jellicoe was still positioned between Scheer and the German bases, and he had to resume the battle at daylight. He was and always had been determined to avoid a night engagement. As he wrote shortly after the battle, "Nothing would make me fight at night with heavy ships in these days of T.B.D.'s [destroyers] and long range torpedoes. I might well lose the fleet. It would be far too fluky an affair."⁹² The problem was not merely torpedoes, however. The Grand Fleet was not trained in night fighting, and German equipment and technique were clearly superior. German searchlights were far more powerful than British, and they had iris shutters so the light could be kept ready and burning behind the ships. The Germans had made their searchlights an integral part of their gunnery system with searchlights following the lookout's binoculars. Admiral Hezlet wrote: "There is little doubt that had the two battle fleets engaged at night at Jutland the British would have invariably hit with their first salvo before the British had fired a shot. At point-blank ranges at which the ships would have sighted each other the effect would have been devastating."⁹³

Jellicoe set course to cover the so-called Ems route between the minefields and the Dogger Bank, which he assumed Scheer would attempt to return to his base. He elected to return via the Horns Reef and Amrun Channel close to the Jutland and Dogger Bank coast, which Jellicoe had left uncovered. The Second German Destroyer Squadron returned via the Skaw, which, had there been a resumption of the battle, would have deprived Scheer of 10 of his best destroyers and 57 remaining torpedoes. The two German destroyers actually steered converging courses, but Scheer was able to pass astern of the German destroyers. There were a series of short, sharp night encounters—Marder describes seven encounters—between the British flotillas and the High Sea Fleet as it passed astern in which the British lost: the armored cruiser *Black Prince*; the flotilla leader *Tipperary*; and the destroyers *Sparrowhawk* (rammed by the cruiser *Contest* and destroyer *Broke* and subsequently scuttled), *Fortune*, *Turbulent*, and *Ardent*. The British destroyer *Spitfire* was damaged with the German dreadnought *Nassau* and suffered the blast of two 11-inch guns at maximum depression, which wrecked her bridge. Miraculously, she survived to the Tyne.

The Germans did not escape unscathed, losing the predreadnought *Pommern*, the battlecruiser *Blücher*, and the battlecruiser *Goeben*, which was damaged by British destroyers; the destroyers *Frauenlob*, *Elbing* (rammed by the dreadnought *Posen* and subsequently scuttled), and *Rostock* (disabled by a torpedo hit and scuttled while under tow the next day); the battlecruiser *Derfflinger* (disabled by a torpedo hit and scuttled); and the destroyer *V4* (possibly due to a mine). The effort to tow the crippled and sinking *Lützow* was abandoned.

during the night, her crew was taken off, and at 1:45 A.M. she was torpedoed by a German destroyer. The *Lützow* was the most powerful ship lost during the battle.

The night encounters produced a series of gun flashes in an easterly direction astern of the British fleet but, with that curious lack of initiative that continued to plague the British, the fact that heavy ships were apparently crossing to the east was never reported to Jellicoe. He would still not have sought a night engagement, but he would have had a positive indication that Scheer was making for Horns Reef and acted accordingly. Captain Roskill suggests that fatigue and the cumulative effect of the day's strain and concussion from the blast of heavy guns and enemy shell fire may also have played a role in numbing and dulling the reactions of the senior officers of the Grand Fleet.⁹⁴ He also finds the lack of initiative of senior officers understandable because of the whole system of training junior officers, which persisted up until the Second World War. It was: "based on unquestioning discipline and absolute subordination to authority. More gold braid, we were taught, necessarily meant more wisdom; and any signs of originality were frowned on if not actively suppressed."⁹⁵

The most tragic blunder, however, was once again due to the Admiralty. Room 40 had intercepted a signal from a German destroyer giving the position and course of the rearmost battleship of the German fleet. This was passed on to Jellicoe and received by him at 10:23. The position was obviously wrong, possibly due to an error in navigation on the part of the Germans, but it may well have induced Jellicoe, who had been told the High Sea Fleet was still in the Jade earlier in the day, to dismiss subsequent reports from the Admiralty. He therefore seems to have paid no attention to a later signal sent at 10:41 that reported the German fleet had been ordered home and gave a course and speed clearly indicating Scheer was heading for the Horns Reef channel. Room 40 reported incontrovertible evidence of this a few minutes later when they discovered Scheer had asked for a zeppelin reconnaissance of Horns Reef. Unfortunately, the Operations Division of the Admiralty *did not* pass on this information to Jellicoe, who did not learn of its existence until years after the war. Had Jellicoe received the information, it would have been possible for him to have taken up a position to resume the battle at daybreak against a very battered Scheer and possibly achieve another "Glorious First of June."⁹⁶ The following morning, once it became apparent Scheer had passed Horns Reef and was in the swept channel, Jellicoe could do nothing more and returned to port. The next night, at 9:45 on 2 June, he reported that the Grand Fleet was refueled and ready for sea at four hours' notice.

The first Admiralty communique concerning the battle was sparse, and after listing losses created the impression of a distinct defeat leading to a great public outcry. The later reports after more was learned of German losses did much to offset this impression and erred in the opposite direction by overestimating German losses. The actual losses were as follows:

	British	German
Battle cruisers	<i>Queen Mary</i>	<i>Lützow</i>
	<i>Indefatigable</i>	
	<i>Invincible</i>	

British	German
Predreadnoughts	<i>Pommern</i>
Armored cruisers	
Light cruisers	<i>Wiesbaden, Frauenlob</i> <i>Elbing, Rostock</i>
Flotilla leaders	<i>V.27, V.29, V.48,</i> <i>S.35, V.4</i>
Destroyers	
	German
	2,551
	507
	NA
	3,058 ⁹⁷

in terms of casualties this translated into:

British	German
6,094	2,551
674	507
177	NA
6,945	3,058 ⁹⁷

On the basis of these matériel losses the Germans very quickly claimed a victory. Kaiser visited Wilhelmshaven on 5 June and addressed the crew of the *Friedrich der Grosse* with what Admiral Müller considered “exaggerated epithets,” declaring: “The Kaiser has been broken,” and Scheer was promoted to the equivalent rank of admiral. The kaiser wanted the battle to be called the “North Sea Battle of June First” in honor of the “Glorious First of June”—Admiral Howe’s victory over the French in 1759. The navy had a difficult time getting him to accept what he considered the “official” name “Battle of the Skagerrak,” but henceforth the battle was known by that name and celebrated as a victory. This view is reflected together with the idea that the battle represented a vindication of Tirpitz’s shipbuilding policy in the German history.⁹⁸

The battle left a feeling of disappointment on the British side. It was not another war. There was and would remain a sense of missed opportunity. The division of Jellicoe and Beatty supporters would be a very real one, although both men, at least initially, tried to tone down the controversy. Nevertheless, as late as the Second World War, Churchill canceled plans to name two new battleships *Jellicoe* and *Beatty* in honor of the less controversial *Anson* and *Howe*.⁹⁹ The battle would be refought repeatedly in the interwar period and eventually the detailed studies and track charts—corrected and corrected—can in themselves become misleading. Shortly after the battle, Jellicoe wrote to Beatty, “I never felt so ‘out of it’ as at the meeting [between their respective commands] I could not make out the situation a bit.”¹⁰⁰ It is well to remember the commonsense of John Campbell: “Endless speculation is possible as to what might have happened at Jutland if Jellicoe and Scheer, or their subordinate commanders, had acted

differently, but for much of the battle lack of visibility had a more dominant influence than any of the Admirals.”¹⁰¹

There was certainly not the same controversy on the German side regarding Scheer’s tactical handling of the fleet. The German controversies seemed centered more on the strategic employment of the fleet or submarines, not the battle itself. The senior German officers seemed to close ranks around Scheer, although his chief of staff Trotha privately admitted, somewhat jokingly, that if an admiral had gotten himself in such a situation at maneuvers or in a war game as Scheer did at Jutland, he never would have been entrusted with another command again.¹⁰²

There is no doubt the Germans inflicted the heavier matériel losses. Their own ships were exceedingly tough. The *Seydlitz* was drawing so much water forward that she grounded off Horns Reef and later in the Amrun Channel, and it was only with great difficulty that salvage ships managed to get her into port on 2 June. Her repairs were not completed until 16 September. The *König* was also drawing too much water to get over Amrun bank until 9:30 A.M. on 1 June. She remained in dockyard hands until 21 July. The repairs on the *Derfflinger* were not completed until 15 October. The Germans suffered another casualty before reaching port when the *Ostfriesland* was mined in a field laid by the British, for the eight damaged ships of the Grand Fleet represented a much smaller proportion of its strength than the ten damaged capital ships of the High Sea Fleet. Immediately after the battle, the British could still send 24 capital ships against the 10 of the Germans. The damaged British ships were also repaired more quickly. For example, the *Warspite* rejoined the fleet on 22 July, and the *Lion* underwent successive short periods of repair, although it was not until 23 September that “Q” turret was replaced.

The British undertook a thorough investigation into the battle, and although there is no space to enter into details, the Grand Fleet that emerged was a much more formidable instrument. There have been voluminous discussions on the deficiencies of British ships, particularly the battle cruisers. There was little that could be done aside from some strengthening of armor plating at vulnerable points, but the true problem resided more in British powder than in inadequate protection. John Campbell states flatly: “The real cause of the disasters was that the precautions for preventing flash of ignited propellant reaching a magazine were not matched to the behavior of British charges, though if the British ships had German charges it is very unlikely that they would have blown up. This was not, however, clear at the time.”¹⁰³

The problem was compounded by the unsafe nature of the British cordite quarter charges—the four bags of propellant that made a full charge—which had a gunpowder igniter at each end. The igniters were unprotected and twice as many as needed, presumably to spare the crew concern over which way to load the charges. The German system, in contrast, used only two charges, the front one protected in a light metal container consumed in the blast and the rear charge in a brass container ejected after firing. There is also evidence that the British in the understandable desire to increase the rate of fire had departed from safe handling practices by stacking charges at the

...OF HOISTS, keeping magazine doors open in action and even removing flash-tight scuttles that had originally been fitted.

There has also been considerable discussion on the inadequate performance of British shells, which broke up on striking armor at an oblique angle and which detonated from a concussion explosion in the Lyddite burster before penetrating very far into the plate.¹⁰⁴ British armor also was inferior to German armor, and like the shells suffered from inadequate inspection and testing with too much discretion apparently left to armaments firms. Even after the war, the British found rust-coated armor salvaged from scuttled German ships at Scapa Flow remarkably resistant to new 14-inch shells.¹⁰⁵

A brief word should be added about fire control. The British undoubtedly paid a severe penalty for the failure to adopt before the war the system devised by Arthur Hungerford Pollen. The alternate system the Admiralty adopted, the Dreyer Table, was not able to cope with the high change of range rates experienced in the battle. Ironically, the ill-fated *Queen Mary* had Pollen's Argo Clock Mark IV and before her destruction her shooting had been the best of the battle cruisers. The Pollen system would undoubtedly have enabled the British battle cruisers to hit before they were hit in return, thus offsetting their deficiencies in armor protection and unstable propellant.¹⁰⁶

The Battle of Jutland was fought and refought in the war games of navies throughout the world in the period between the two world wars. One can become lost in the fascinating tactical and technical details. But what of strategy? One can state unequivocally that Jutland was a strategic defeat for the Germans. It changed nothing, and the pithy comment attributed to a journalist that the German fleet had assaulted its ailer and was back in jail was essentially true. Scheer had been lucky to escape, and British superiority in capital ships—with the exception of battle cruisers—was larger than ever. Certainly a great British tactical victory involving the destruction of a substantial portion of the High Sea Fleet would have freed many British resources, particularly the large number of destroyers that had to remain tied to the Grand Fleet and might have received alternate employment in the protection of trade and the antisubmarine campaign. But as to the strategic picture, the route to the open seas remained as closed to the Germans as ever. The blockade was still in force.

Scheer, perhaps unwittingly, delivered the true verdict on the strategic results of Jutland. In a report to the kaiser on 4 July 1916, he spoke of the success due to eagerness of attack, efficient leadership through subordinates, and admirable deeds of crews. He aimed that the battle had proven that the enlargement of the fleet and the development of the different types of ships had been guided by the right strategic and tactical ideas. Then went on to the main point of his argument:

With a favourable succession of operations the enemy may be made to suffer severely, although there can be no doubt that even the most successful result from a high sea battle will not compel England to make peace. The disadvantages of our geographical situation as compared with that of the Island Empire and the enemy's vast matériel superiority cannot be coped with to such a degree as to make us masters of the blockade inflicted on us, or even of the Island Empire itself, not even

were all the U-boats to be available for military purposes. A victorious end to the war at not too distant a date can only be looked for by the crushing of English economic life through U-boat action against English commerce.

Scheer went on to propose the resumption of unrestricted submarine warfare.¹⁰⁷ Even before Scheer's memorandum, the chief of the Admiralstab, Holtzendorff, had asserted in a naval audience at the palace on 10 June that U-boat warfare with few restrictions should be increased starting 1 July to compensate for the reduced activities of the High Sea Fleet as a result of battle damage received at Jutland.¹⁰⁸ This pressure for unrestricted submarine warfare grew.

RESUMPTION OF THE SUBMARINE CAMPAIGN

The assertion is sometimes made that the German fleet never came out again after Jutland. This is false. The Germans did sortie, because Scheer, however anxious to avoid a major encounter, still hoped to whittle down the British advantage with submarines. The German submarine traps so carefully prepared before the battle had proven to be a major disappointment. There were numerous reports of submarine sightings and attacks in the Grand Fleet during the battle, but they were all false. The Germans did have an unexpected dividend: one of the new long-range minelayers, *U.75*, laid a field off the northwest Orkneys—ironically in the wrong place—which sank the cruiser *Hampshire* after she had sailed from Scapa on 5 June carrying Lord Kitchener on a mission to Russia. The loss of Kitchener was a major disaster for the British public, but the circumstances that produced it were purely accidental.¹⁰⁹

Scheer decided that a concentration of U-boats directly off the British bases was counterproductive, for the submarines would tend to get in each other's way. He decided to try a variation, deploying the submarines in a movable base line across the probable line of approach of the British heavy forces. The German fleet would put to sea at night and advance toward the British coast. If there was no contact with British ships, and if reconnaissance indicated the British fleet was not out and attempting to cut off the German line of retreat, the First Scouting Group would push on to the British coast and bombard the town of Sunderland at sunset. They would then return to the Bight under cover of darkness while the U-boats shifted to secondary positions across the probable line of approach should the British come out as a result of the bombardment. Scheer had no intention of being surprised by Jellicoe the way he had been at Jutland, and his new plan placed great emphasis on zepelin reconnaissance. There would be four zeppelins deployed on patrol lines across the North Sea from Scotland to Norway and another four between the Firth of Forth and the North Hinder light vessel, patrolling to the north and in front of the advancing Germans. No fewer than twenty-four submarines were employed in the operation. The High Sea Fleet submarines were deployed in lines of five boats each off Blyth, Flamborough Head, and the Dogger Bank, and nine U-boats from the Flanders Flotilla were deployed in two lines in the southern part of the North Sea.