

*Department of Humanities, Northumbria University*

**Honours Dissertation**

**British Naval Innovation and Performance Before and  
During the First World War: The 1916 Sinking of the HMS  
Invincible**

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# Table of Contents

<b>Introduction</b>	1
<b>Chapter One:</b> Conception, Design and Construction	3
<b>Chapter Two:</b> The Falkland Islands and Jutland	11
<b>Chapter Three:</b> Post-Jutland Analysis and HMS Hood	27
<b>Conclusion</b>	39
<b>Appendices</b>	43
<b>Bibliography</b>	43

## Introduction

On 31 May 1916, the British battlecruiser HMS *Invincible* exploded and sank, having briefly engaged the German battlecruiser fleet during the opening stages of the Battle of Jutland. Almost 25 years to the day later, the British battlecruiser HMS *Hood* engaged the German battleship *Bismarck* at the Battle of Denmark Strait and met a similar fate, exploding after only the fifth salvo fired by *Bismarck*.

Using *Invincible* as a case study, this dissertation will argue that not only was the concept of the battlecruiser intrinsically flawed, but that, despite early successes, its tactical deployment also contributed to the loss of *Invincible* and *Hood*. First Sea Lord 'Jackie' Fisher had conceived the battlecruiser as being better-armed than any cruiser, and so able to destroy any commerce raider attacking British trade, whilst being faster than any heavier ship, enabling it to choose when to engage and when to withdraw.

This was in keeping with Admiralty policy, formed on the basis of battle practice carried out by the fleet and on conclusions drawn from the Japanese Fleet actions during the Russo-Japanese war of 1904-05. This policy argued that 'strategically, superior speed enabled a fleet to concentrate at any desired spot as quickly as possible, or to overhaul a fleeing squadron'.<sup>1</sup> Tactically, it 'enables you to force or to decline an action, once in touch with the enemy. It gives you the choice of the range at which the action is to be fought, and the power of maintaining that range. With superior speed you can envelop the enemy's line, and you can keep out of range of his torpedoes.'<sup>2</sup>

This maxim of 'speed over protection' seemed to have been vindicated during the Battle of the Falkland Islands, when a British squadron, complete with *Invincible* and another battlecruiser, annihilated a German cruiser squadron in the South Atlantic, with *Invincible* suffering no casualties. Yet, less than two years later, *Invincible* and two other British battlecruisers would be lost in catastrophic fashion when engaged with the German battlecruiser fleet during the opening stages of the Battle of Jutland. This dissertation will examine how it was possible that the battlecruiser could achieve such success, but also such failure, within such a short period of time by revealing, through the study of *Invincible*, how the class went from being deployed on a mission for which it was designed and perfectly suited, to being deployed at

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<sup>1</sup> Arthur J. Marder, *Fear God and Dread Nought: The Years of Power, 1904-1914* (London: Jonathan Cape, 1956), p. 30

<sup>2</sup> Admiralty Memorandum, Admiralty Policy: Replies to Criticisms, October 1906, CAB 37/84/80

Jutland in a role for which it had not been envisaged, and for which it was ultimately not designed.

To achieve this, the conception, design and construction of *Invincible* will be examined in detail in order to understand the rationale behind the battlecruiser concept, how it was intended to complete its mission and the processes used in its revolutionary construction. Then, the engagements that symbolised both the great success and great failure of the battlecruiser, the Battles of the Falkland Islands and Jutland, will be analysed to establish why the Falklands was a near-perfect engagement, whereas Jutland resulted in the loss of three of the class to only one for the Germans.

Finally, the aftermath of Jutland, told through the reports of eyewitnesses and those in command, will be assessed in terms of the causes of the losses and the lessons learned for the future, specifically in the design, deployment, construction and fate of the last British battlecruiser, *Hood*.

Although explored by other nations, the development of the battlecruiser was symptomatic of the naval armaments race that took place between Britain and Germany at the beginning of the twentieth century. Germany's first battlecruiser, *von der Tann*, was laid down nearly a year after *Invincible*; a pattern was to be repeated as each nation launched larger, better armed and faster vessels in an attempt to gain supremacy over the other.

This dissertation will conclude by arguing that the sinking of *Hood* symbolised the end of the battlecruiser and the emergence of the aircraft carrier and submarine; the technologically-advanced future of the Royal Navy.

Archival naval documents, including admiralty commission reports, reports of senior officers, eyewitness accounts, private correspondence and maps will be examined to help gain an understanding of the rationale behind the construction of *Invincible*, its intended mission, its tactical deployment, its ultimate fate and the lessons learned for the future.

In addition, the board minutes and correspondence from Armstrong's Elswick Yard, where *Invincible* was built, provide an insight into the design and construction processes of the ship. A range of secondary literature will also be used to provide context to the primary sources examined, and also to give a flavour of the scholarly debate which has surrounded the battlecruiser since its inception.

## Chapter 1

### HMS Invincible:

#### Conception, Design, Construction

For the hundred years since the routing of the combined French-Spanish fleet at Trafalgar, the Royal Navy had been the world's pre-eminent naval force. Such was its dominance, that in the period between the Treaty of Vienna and the turn of the century, the Navy engaged in only one fleet battle (Navarino) and one war (Crimea).<sup>3</sup> In real terms, this meant that by the Battle of Jutland, it had been well over half a century since the Navy had fired its guns in anger against another major power.<sup>4</sup>

According to historian Peter Burroughs, the Navy entered a period of 'atrophy, marginalised by politicians and starved of funds during the years of peace and unchallenged British global supremacy'.<sup>5</sup> This sense of inertia was compounded by the prevailing attitudes of the upper echelons of the Navy. Weighed down by tradition and past successes, the Admiralty and senior officers held continuity in a higher regard than ingenuity.

Fisher wrote to Lord Selborne, the First Sea Lord, on 13 January 1901 bemoaning the situation, complaining that 'one of our cleverest and most experienced officers would be frightened to move a yard without orders in wartime'.<sup>6</sup> Indeed, when a practical suggestion was presented to a Sea Lord by a young lieutenant, the response was indignation: 'On what authority does this *lieutenant* forward such a proposal?'.<sup>7</sup> That this young officer would later become Admiral Sir Doveton Sturdee, of Falkland Islands fame, demonstrates the move towards bold, initiative-taking officers that was championed by Fisher, and will be illustrated in this chapter.

Fisher was a master of administration; a skill demonstrated during his time as Director of Naval Ordnance, Admiral Superintendent of Portsmouth Dockyard and then Controller of the Navy. This mastery was equally

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<sup>3</sup> C.I. Hamilton, 'The Victorian Navy', *The Historical Review*, Vol. 25, 2 (1982), p.471

<sup>4</sup> Arthur J. Marder, ed., *Fear God and Dread Nought* (Oxford: Jonathan Cape, 1952), p.149

<sup>5</sup> Peter Burroughs, 'The Mid-Victorian Navy and Imperial Defence', *The Journal of Imperial and Commonwealth History*, Vol. 30, No. 2 (2008), p.103

<sup>6</sup> Marder, *Fear God and Dread Nought*, p.181

<sup>7</sup> Arthur J. Marder, *The Anatomy of British Sea Power: A History of British Naval Policy in the Pre-dreadnought Era, 1880-1905* (New York: Alfred A. Knopf, 1940), p.549

adept at sea and was exhibited during his subsequent roles, first as Commander-in-Chief of the North America and West Indies Station, then of the Mediterranean; the Navy's most prestigious command.<sup>8</sup>

During his time in the Mediterranean, Fisher, in the words of Admiral Lord Beresford, transformed the squadron 'from a 12-knot Fleet with numerous breakdowns' into a '15-knot Fleet without breakdowns'.<sup>9</sup> Surrounded by a group of like-minded junior officers, Fisher set about implementing the kind of innovations that would revolutionise the Navy over the coming years, such as high-speed steaming exercises and gunnery trophies to increase accuracy.<sup>10</sup>

In 1902, Fisher was promoted to Second Sea Lord, gaining direct responsibility for the training of future officers; a role in which he oversaw the opening of the Britannia Royal Naval College at Dartmouth; the first shore-based, custom-built training facility in the history of the Navy.<sup>11</sup> It was here that Fisher intended technical education to be improved and the officer corps to become more flexible.

Further modernisations, such as the development of wireless communications technology, the director firing system of gunnery, the development of the submarine and the establishment of a naval wing of the Royal Flying Corps, were to follow. However, it was the introduction of a new type of battleship that came to symbolise Fisher's reforms and really captured the public's imagination – the Dreadnought.

Laid down in 1905, HMS *Dreadnought* was the realisation of Fisher's ideas; an all-big-gun warship, faster and more powerful than any other vessel afloat. This vessel revolutionised battleship design and single-handedly rendered all other battleships obsolete. However, the *Dreadnought* was not the only all-big-gun, fast capital ship being introduced by the Navy at that time.

In the spring of 1906, the first of three vessels, complete with the same all-big-gun design, but with significantly more speed, was launched. This speed, which was achieved by virtue of the removal of much of the armour plating in place on a Dreadnought, led to these vessels being known as fast armoured cruisers, and later, battlecruisers. The first of this new class of vessels is the subject of this study; the *Invincible*.

Fisher was obsessed with speed. In a letter sent on 5 January 1901 to Lord Selborne, Fisher stated 'It is

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<sup>8</sup> Duncan Redford, Philip D. Grove, *The Royal Navy: A History Since 1900* (New York: Palgrave Macmillan, 2014), p.10

<sup>9</sup> Lisle Abbott Rose, *Power at Sea – Volume 1* (Missouri: University of Missouri Press, 2007), p.31

<sup>10</sup> Marder, ed., *Fear God and Dread Nought*, pp.151-52

<sup>11</sup> Redford and Grove, *The Royal Navy*, p.10

clearly necessary to have superiority of speed in order to compel your opponent to accept battle, or enable you to avoid battle and lead him away from his goal till it suits to fight him'.<sup>12</sup> Later that month, Fisher again demonstrated his fondness for innovation and speed when writing a letter (to naval journalist and friend Arthur White) regarding the potential offer he had received of a directorship at Armstrong's Shipyard in Elswick, Newcastle:

... it's a place I should revel in, and I should immediately set to work to revolutionize the battleship, cruiser, and destroyer on revolutionary principles – oil fuel, turbine propulsion, equal gunfire all round, greater speed than any existing vessel of their class...<sup>13</sup>

Fisher was not alone in his adoration of speed. Fred T. Jane, the editor of *Fighting Ships*, argued in a paper presented at the Royal United Services Institute on 6 June 1902 that '...to cook our hare we have to catch him. Hence it logically follows that speed is more essential to us than any nation. We must have it at all costs, surely!'.<sup>14</sup>

To understand why speed was so important to Fisher, one must first understand the strategic role of the Navy. Britain was a nation dependent on trade, and, with a global trading empire and the largest mercantile fleet afloat to be protected, the Navy needed a ship capable of overhauling and destroying any potential raiders.<sup>15</sup>

With the launching of *Invincible*, a type of vessel had been created that, in essence, placed the guns of a battleship onto the hull of a cruiser. This enabled *Invincible* to be fast enough to catch any raider harassing British shipping and powerful enough to sink it; with the exception of a battleship.

Therein lies the issue that was to surround the battlecruiser for its entire existence; an issue that was succinctly and prophetically articulated in the 1907 *Brassey Naval Annual*:

The *Invincible* class have been given the armament of a battleship, their superiority in speed being compensated for by lighter protection...an admiral having *Invincibles* in his fleet will be certain to put them in the line of battle, where their comparatively light protection would be a disadvantage, and their high speed of no value.<sup>16</sup>

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<sup>12</sup> Marder, *Fear God and Dread Nought*, p.177

<sup>13</sup> *Ibid.*, p.185

<sup>14</sup> Fred T. Jane, 'Are 12-Inch Guns in Battle-Ships the Best Value for the Weight Entailed? A Plea for Ships Designed to Suit our Strategical Needs', *Royal United Services Institute Journal*, Vol. 47, No. 300 (1903), p.174

<sup>15</sup> Ronald Bassett, *Battle-Cruisers – A History 1908-48* (London: Macmillan London Limited, 1981), p.7

<sup>16</sup> Steve Backer, *Grand Fleet Battlecruisers* (Great Britain: Seaforth Publishing, 2011), p.7

In a letter to King Edward VII on 4 October 1907, Fisher reveals the esteem in which he regards *Invincible*, remarking 'England has 7 Dreadnoughts and 3 'Invincibles' (in my opinion better than Dreadnoughts)'.<sup>17</sup> It is clear that Fisher regards *Invincible*, and indeed the battlecruiser as a whole, as crucial to the future success of the Navy. With this in mind, it is necessary to analyse the design of *Invincible* in greater detail.

As illustrated in a 1911 letter to First Sea Lord Winston Churchill, Fisher had little regard for armour, or indeed those who championed it over speed and fire power:

The first desideratum is speed! Your fools don't see it. They are always running around to see where they can put on a little more armour! ... You hit him first, you hit him hard and you keep on hitting. That's your safety! You don't get hit back! Well! That's the improved 13.5 inch gun! But disassociated from dominating speed, that gun is futile.<sup>18</sup>

Although armour was not paramount, what little the battlecruisers had was of the best quality. Around the turn of the century, an innovative new type of armour plate was created by the German firm Krupp. Krupp Cemented Armour represented a twenty-five per cent improvement over the previous Harvey armour thanks to the addition of nickel-chrome steel alloys.<sup>19</sup>

On 24 November 1898, a letter, written by Armstrong's Director Sir Andrew Noble, was sent to Krupp asking 'whether you are at liberty to communicate to us the Krupp system of manufacture, and, if so, upon what terms.'<sup>20</sup> Armstrong's took up production of the armour and it was fitted to all subsequent vessels, including *Invincible*. That the British vessels facing the German High Seas Fleet at Jutland had Krupp armour on board was only one example of the close pre-war relationship between British and German industry; another being the use by certain British shells of Krupp fuses, manufactured under a 1902 licensing agreement.<sup>21</sup>

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<sup>17</sup> Arthur J. Marder, *Fear God and Dread Nought: Years of Power: 1904-1914* (Oxford: Jonathan Cape, 1956), p.140

<sup>18</sup> Admiral Jackie Fisher, Letter to Sir Winston Churchill, CHAR 13/2/124-126, The Churchill Archive

<sup>19</sup> Roger Parkinson, *Dreadnought: The Ship that Changed the World* (London: I.B.Tauris & Co., 2015), p.29

<sup>20</sup> Sir Andrew Noble, Letter to Messers Krupp, DS.VA/1/29, 24 Nov, 1898, Armour Plate Minute Book, Tyne and Wear Archive, Newcastle Upon Tyne

<sup>21</sup> Anthony Saunders, *Reinventing Warfare 1914-18: Novel Munitions and Tactics of Trench Warfare* (London: Continuum International Publishing Group, 2012), p.156



It is clear that Fisher was not overly concerned with armour. In addition to his penchant for speed, he asserted: 'Hitting is the thing, not armour'.<sup>22</sup> As referenced earlier, the *Invincible* had far less armour plating than contemporary battleships. The main belt, or side, armour had a maximum thickness of six inches, whereas the deck was only covered by up to two and a half inches. The gun turrets were covered by seven inches on the face and side, but only two and a half on the top. The barbette protection, which covered the trunk of the gun down into the ship, was up to seven inches.<sup>23</sup>

What can be ascertained from these figures is that *Invincible* was substantially better protected from incoming fire to the side than it was from above. This is in keeping with traditional naval doctrine that saw projectiles being fired into the side of vessels; a tradition dating back to the earliest days of naval warfare. However, given the extended range of newer, larger calibre guns, shells were more likely to impact from a higher angle, known as plunging fire. Projectiles fired in this manner had a greater velocity upon impact, therefore causing more damage. This, combined with the thinner top armour, represented a significant problem with *Invincible's* design; a problem that was to prove catastrophic when the two fleets met at Jutland.

To facilitate the high speeds which Fisher demanded, a revolutionary new type of engine was designed and fitted to the battlecruisers, and it achieved the desired effect. On Tuesday 4 August, *Invincible's* sister ship, *Indomitable*, arrived in Canada carrying the Prince of Wales. *Indomitable* had gone straight from the builders yard to begin the cruise, and would return there for final completion upon its return.

The voyage was a chance to test the speed of the new class, and the Prince was so delighted with the performance that he even took a turn at stoking, extolling that she was 'a grand success in every way. She is indeed a grand ship and the finest steamer I have ever seen'.<sup>24</sup>

*Indomitable's* average of over twenty-one knots an hour beat the previous record for a warship, set in 1905, and was largely regarded as a triumph of the Parson's turbines on board.<sup>25</sup> Furthermore, Fisher went to Chatham to check the ship's logs and register to confirm the achievement for himself, and, such

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<sup>22</sup> Marder, *Fear God and Dread Nought: Years of Power: 1904-1914*, p.31

<sup>23</sup> Mark Stille, *British Battlecruisers Vs German Battlecruisers 1914-16* (Oxford: Osprey Publishing, 2013), p.31

<sup>24</sup> Marder, *Fear God and Dread Nought: Years of Power: 1904-1914*, p.187

<sup>25</sup> "Indomitable at Cowes", *New York Times*, 4 August, 1908.

was his personal interest, even penned a letter to Parsons, congratulating him on the vessel's performance.<sup>26</sup>

Parsons had first developed his marine steam turbine in the 1880s, but it was at the 1897 naval review celebrating Queen Victoria's diamond jubilee that it came to the attention of the Navy and the nation as a whole. The *Turbinia* was an experimental craft designed in Newcastle upon Tyne to showcase Parsons' technology, and when it appeared at Spithead, darting in between the huge cruisers and battleships lined up for review, it induced quizzical looks from the assembled dignitaries.

One who witnessed the display was naval architect Eustace Tennyson d'Eyncourt, describing *Turbinia* as 'appearing to be leaping from one wave to another' and making 'a tremendous impression on the Queen and everyone there, none of whom had seen anything like it before.'<sup>27</sup> *Invincible*, *Inflexible* and *Indomitable* all employed Parsons' revolutionary turbines, making them, along with *Dreadnought*, the earliest vessels in the world to use such technology.

In addition to revolutionary propulsion, *Invincible* also had a revolutionary all-big-gun format. Armed with the same eight 12-inch guns as *Dreadnought*, they were arranged in four turrets; one forward, one aft and two amidships, slightly echeloned. Although this calibre was quickly succeeded by the 13.5-inch gun of the *Lion*-class onwards, it was a reliable and successful weapon.

However, the ability of the 12-inch gun to pierce enemy armour was hampered by defects with the shells. If British shells hit armour obliquely, as was often the case, they had a propensity to detonate prematurely, before fully piercing the armour.<sup>28</sup> Although this problem was later rectified, it would come too late for the battles of the Falklands Islands and Jutland.

Due to slower shell hoists, *Invincible* was not able to fire as quickly as German vessels. In an effort to speed up the rate of fire, it became commonplace for charges to be left at various points between the magazine and the turret, and in addition, magazine doors were left open in combat.<sup>29</sup>

The combination of poor charge handling practices, the highly inflammable Modified Cordite used

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<sup>26</sup> Marder, *Fear God and Dread Nought: Years of Power: 1904-1914*, p.189

<sup>27</sup> Eustace H.W. Tennyson d'Eyncourt, *A Shipbuilder's Yarn: The Record of a Naval Constructor* (London: Hutchinson & Co, 1949), pp.40-41

<sup>28</sup> Stille, *British Battlecruisers Vs German Battlecruisers*, pp.18-19

<sup>29</sup> Stille, *British Battlecruisers Vs German Battlecruisers 1914-16*, p.19

in British shells and the poor deck and turret roof armour left *Invincible* dangerously exposed; a vulnerability that would be demonstrated to terrifying effect at Jutland.

*Invincible* was constructed at Armstrong's Elswick works in Newcastle upon Tyne (barely three miles from where Parson's turbines were manufactured). The Elswick works was not immune to the poor industrial relations endemic in heavy industry at the time. The north-east coast was facing the worst depression in the shipbuilding and engineering industries for fifteen years, with 1908 tonnage levels down nearly thirty percent on 1906.<sup>30</sup>

Strikes by the Shipwrights, Joiners and Drillers, followed later by the Engineers' strike, caused delays in production of *Invincible*, and can be seen to be lamented in the board minutes of the Elswick yard.<sup>31</sup> Such were the effects of the strike that a meeting of north-east shipbuilding employers came to the conclusion that unless the men resumed work, the strike-affected yards would have to close.<sup>32</sup>

Such was the gravity of the situation that the President of the Board of Trade (and future Prime Minister) Lloyd-George was called in to negotiate a settlement to the dispute. The situation was further complicated by the number of different unions involved in the action, making a single, comprehensive settlement much more difficult.<sup>33</sup> Finally, the men accepted a reduction in pay and returned to work.<sup>34</sup> The minutes from the Elswick works describe *Invincible* as having undergone the whole of its trials with most satisfactory results, and the ship was handed over to the Admiralty on 15 February 1909. It completed its twenty-four hour trial with the Admiralty and proceeded to Portsmouth on the 17<sup>th</sup>.<sup>35</sup>

However, the German Imperial Navy had taken a keen interest in the construction of *Invincible* and had begun designing their own battlecruiser. The *Von Der Tann* was laid down in 1908 and possessed several key advantages over *Invincible*. *Von Der Tann's* main armour belt was up to ten inches thick, and with the addition of further armour on important areas such as the turrets, the ship's armour weighed in at 5,693

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<sup>30</sup> "The Shipyard Strike on the North-East Coast", *The Times*, 28 January, 1908

<sup>31</sup> Armstrong and Whitworth Limited, Minutes Book Number Two, DS.VA/1/12/2, p.359, 373

<sup>32</sup> "The Shipyard Strike on the North-East Coast"

<sup>33</sup> "The Shipbuilding Dispute", *The Times*, 25 February, 1908

<sup>34</sup> Browne, Benjamin Chapman, *Selected Papers on Social and Economic Questions* (Cambridge: Cambridge University Press, 1918), p. 155

<sup>35</sup> Armstrong and Whitworth Limited, Minutes Book Number Two, p.422, 450, 469,

tons compared to the 3,735 of *Invincible*.<sup>36</sup>

Von der Tann's main armament consisted of eight 11-inch guns and, due to the extra armour, it was slightly slower than *Invincible*. However, the decision to sacrifice a small amount of speed and having slightly smaller guns proved to be a price worth paying to accommodate the extra armour, as it resulted in the *von der Tann* being a considerably better ship than *Invincible*.<sup>37</sup>

By the time *von der Tann* was launched, it was too late to do anything to alter the next class of British battlecruisers, the '*Indefatigables*'; they had the same armament and, because Fisher did not like to 'handicap the racehorse', as he put it, the same armour.<sup>38</sup> This pattern would continue, with the British believing in speed as defence, and the Germans sacrificing a knot of two in return for better armour protection, throughout subsequent classes of opposing battlecruisers.

These differences in design ethos will be examined in the next chapter as a possible contributing factor towards the better performance of the German battlecruisers against the British at Jutland.

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<sup>36</sup> Stille, *British Battlecruisers Vs German Battlecruisers 1914-16*, p.21

<sup>37</sup> N.J.M. Campbell, *Battlecruisers* (London: Conway Maritime Press, 1978), p.19

<sup>38</sup> Bassett, *Battle-Cruisers*, p.11

## Chapter 2 The Falkland Islands and Jutland

At 6:33 p.m on 31 May 1916, a huge explosion erupted deep inside HMS *Invincible*, tearing the ship in half and sending the shattered remnants and over a thousand souls to the bottom of the North Sea. Having only just entered the fray, the loss of the mighty battlecruiser came as a tremendous shock to the British, although, as will become apparent, it had not been the first shock of the day.

*Invincible* was destroyed at the height of the battlecruiser action in what would prove to be by far the largest naval confrontation of the the First World War: the Battle of Jutland. Yet only 18 months earlier, *Invincible* and sister ship *Inflexible* had successfully engaged and destroyed a German squadron in the South Atlantic, suffering minimal damage in the process.

This chapter will explore both confrontations and provide a clear understanding of the differing circumstances that lead to both great success and great failure.

Having considered the conception, design and construction of *Invincible*, it is now time to asses its performance in battle. To do this, two different battles will be examined; the Battle of the Falkland Islands on 8 December 1914, and the Battle of Jutland, which took place between the 31 May and 1 June 1916. It is important to point out that these battles were not the only confrontations involving battlecruisers during the war; others, such as Dogger Bank, would provide an equally interesting study. However, it is the contrast in mission, tactics and outcome between the Falklands and Jutland that render the most rewarding comparative study.

The Falklands can be regarded as a brilliant victory, achieved thanks to the deployment of the appropriate assets and the use of considered tactics. This is not to say that the engagement was faultless, and this chapter will address those failings below, but it was nevertheless a decisive victory.

At Jutland, the loss of three battlecruisers, in relatively quick succession and having withstood relatively little punishment, sent shockwaves throughout the Navy and the country at large. The

destruction of the second, *Queen Mary*, prompted Admiral Beatty to turn to his Flag Captain, Chatfield, on the bridge of *Lion* and remark 'There must be something wrong with our bloody ships today!'.<sup>39</sup> This chapter will consider whether this much-quoted remark was, in fact, accurate. Was there something wrong with the ships that day?

By examining both battles, a clearer insight will be given into the chain of events that lead to both the great success and great failure of the battlecruiser, allowing conclusions to be drawn regarding deficiencies in armour, problems with cordite storage and shell effectiveness, and the tactical deployment of the battlecruiser class as a whole.

On the 1 November 1914, the British South Atlantic squadron under Rear-Admiral Sir Christopher Craddock was patrolling off the coast of Chile. Consisting of the new light cruiser *Glasgow*, two old armoured cruisers *Good Hope* and *Monmouth*, and the armed merchantman *Otranto*, the squadron was hunting for Vice-Admiral Maximilian von Spee's German East Asia Squadron. Von Spee commanded a formidable force of five modern vessels, including the two armoured cruisers *Scharnhorst* and *Gneisenau* and the light cruisers *Dresden*, *Leipzig* and *Nurnberg*.

When they finally met off the coast of Coronel, out-matched and out-gunned, the British squadron was annihilated. A great many men, including Craddock, perished, with only *Glasgow* making good her escape. Despite the adulation from German expatriates, when von Spee put in to the Chilean port of Valparaiso to exact repairs, he was far from jubilant. Yes, he had won a great victory, but at what cost?

Having expended a large amount of ammunition, which he could not replace, and knowing the British were certain to send a more powerful squadron to avenge Craddock, Spee remarked, somewhat prophetically, that flowers presented to him by the locals would do nicely for his grave.<sup>40</sup>

Back in London, Fisher was re-appointed First Sea Lord, aged 74. His first act was to sack Chief

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<sup>39</sup> Stephen Roskill, *Admiral of the Fleet Earl Beatty* (London: Collins, 1980), p.160

<sup>40</sup> Enrique Dick, *In the Wake of Graf Spee* (Southampton: WIT Press, 2015), p.39

of the Naval Staff Vice-Admiral Sir Doveton Sturdee, to whom he snarled:

You, Sturdee, were responsible for this whole bloody mess, now you can go and clean it up. And don't come back until your orders have been carried out to the letter – until von Spee and his squadron have been wiped off the face of the earth!<sup>41</sup>

Sturdee raised his flag in *Invincible* and, along with *Indomitable*, on the 29 November he proceeded toward the South Atlantic at the impressive mean speed of over 18 knots.<sup>42</sup> Upon rendezvousing with the rest of his squadron, Sturdee steamed to the Falklands, arriving on 7 December, and commenced coaling, prior to beginning the search for von Spee.

In addition to the battlecruisers, Sturdee had the armoured cruisers *Carnarvon*, *Cornwall* and *Kent*, and the light cruisers *Glasgow* and *Bristol* at his disposal. Finally, the old pre-Dreadnought battleship *Canopus* had been grounded in Port Stanley as a guard ship, out of sight, but able to fire its 12inch guns over the headland out to sea. When Von Spee arrived the next morning, he was in for a most unpleasant surprise.

The German decision to attack the Falklands was aimed at depriving the British of a valuable coaling station and harbour in which to take on supplies and conduct minor repairs. On the morning of the 7<sup>th</sup>, Spee received word from a German agent in Port Stanley that the harbour was empty of warships, which was true, but unfortunately for the Germans, this was no longer the case upon his arrival.<sup>43</sup>

As the *Gneisenau* approached the harbour, her gunnery commander reported seeing tripod masts over the headland. *Gneisenau's* captain, Maerker, knew that tripod masts meant one of only two things: Dreadnoughts or battlecruisers. Confident that there were no Dreadnoughts south of the Mediterranean, Maerker dismissed the sighting, reporting to Spee the probable presence of three

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<sup>41</sup> Bassett, *Battle-Cruisers*, p.56

<sup>42</sup> H. Spencer-Cooper, *The Battle of The Falkland Islands 1914* (Leonaur, 2011), p.54

<sup>43</sup> Bassett, *Battle-Cruisers*, p.64

'County' class cruisers, one light cruiser and two possibly pre-Dreadnought battleships.<sup>44</sup>

Conscious of his lack of a friendly port in which to repair possible battle damage, Spee ordered Maerker to rejoin the squadron, confident that they could easily outrun the lumbering British ships. It was only when the British ships emerged from the harbour and took up the chase that the Germans noticed two of them were gaining ground.

With all glasses trained on the pursuing ships, the unmistakable shapes of *Invincible* and *Indomitable* loomed into view and the challenge awaiting the German sailors became painfully apparent, as Commander Pochhammer of the *Gneisenau* noted with some despondency:

The possibility, even probability, that we were being chased by English battlecruisers ... this was a bitter pill to swallow. We choked a little ... the throat contracted and stiffened, for it meant a life and death struggle, or rather a fight ending in honorable [sic] death.<sup>45</sup>

Such was his confidence of victory, Sturdee ordered his men to lunch; he would engage on his own terms, when good and ready.<sup>46</sup> The British had a weight of shell of 5,100 pounds to the German 1,957 and had the advantage in speed, enabling them to stay inside their maximum range of 16,400 yards but outside the maximum range of the Germans, which was 13,500.<sup>47</sup> This allowed Sturdee to use his battlecruisers as Fisher had intended; using their powerful guns to destroy the enemy whilst using their speed to pick and choose the terms of engagement.

Spee was well aware that he could not outrun the British battlecruisers, so in a valiant attempt to save part of his force, he ordered his cruisers to make a run for it whilst the *Scharnhorst* and *Gneisenau* turned to engage the British. The result was as predicted, as first *Scharnhorst*, then, two hours later, *Gneisenau* succumbed to the pounding they had received, slowly rolled over, and sank. In due course, the smaller ships of the German squadron were in turn hunted down and

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<sup>44</sup> Backer, *Grand Fleet Battlecruisers*, p. 22

<sup>45</sup> Robert K. Massie, *Castles of Steel: Britain, Germany and the Winning of the Great War at Sea* (Great Britain: Vintage, 2007), p.263

<sup>46</sup> Spencer-Cooper, *The Battle of The Falkland Islands*, p.73

<sup>47</sup> John A. Roberts, *Invincible Class* (London: Conway Maritime Press, 1972), p.40



destroyed by the British cruisers, albeit three months later in the case of *Dresden*.<sup>48</sup>

Despite appearing to be, on the face of it, an overwhelming military success, the Battle of the Falkland Islands did in fact leave some worrying questions in need of answers. Both battlecruisers expended almost 600 shells during the action, out of a total complement of 640.<sup>49</sup> This raises the question as to quite why so many 12inch shells were needed to sink two relatively poorly armoured vessels. One possible explanation for this was the incredible amount of smoke being produced by the chasing battlecruisers.

The British ships added fuel oil to the coal when steaming full ahead, and as such produced copious amounts of thick black smoke. This smoke, whilst not interfering with the sight of the foremost 'A' turret, did however cause serious issues for 'P', 'Q' and 'X' turrets.

Indeed, in a telegram sent on 2 January 1915, Sturdee reported to the admiralty that “‘INFLEXIBLE’ much hindered by ‘INVINCIBLE’ funnels smoke, and control over fire in both ships was seriously hampered by smoke from battle cruisers necessitating alteration of course”.<sup>50</sup> Upon receipt of the telegram, a subcommittee concluded that the excessive smoke was in fact due to 'untrained staff' as opposed to the practice itself, and suggested that training should be improved and that the Commander-in-Chief Grand Fleet release a brief statement on its use.<sup>51</sup>

Although the issues regarding British shells have been examined in the previous chapter, it is nevertheless worth exploring why the German ships did not explode under such a tremendous barrage of fire. At least part of the answer lies in the type of powder charge used, and the brass cartridges in which it was housed.

One key difference between German and British powder was that German powder tended to burn when receiving fire, not explode, as British powder did. Furthermore, German charge cases were made out of brass, as opposed to the silk used by the British. This meant that an impact such as

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<sup>48</sup> Spencer-Cooper, *The Battle of The Falkland Islands*, pp.123-124

<sup>49</sup> Roberts, *Invincible Class*, p.40

<sup>50</sup> Telegram No. 39, C-in-C 'Invincible' to Admiralty, 2<sup>nd</sup> January 1914, ADM 1/8408/6

<sup>51</sup> Minutes sheet No.1, Subcommittee, 2<sup>nd</sup> January 1915, ADM 1/8408/6

that which was to sink *Invincible* may not have proved fatal in the case of a German vessel.

A case in point is the damage done to the German battlecruiser *Seydlitz* at Dogger Bank. Having been hit by a British heavy shell, hot shards of metal penetrated her magazine and ignited a fire, killing all those inside. Crucially, however, it did not explode; a similar hit on a British ship would surely have resulted in disaster.<sup>52</sup>

Providing further weight to the argument, survivors of the *Gneisenau* stated that although shocking injuries had occurred on the main and upper decks, such as heads and limbs being blown clean off, no fires whatsoever had occurred on board and no shells penetrated the engine or boiler rooms.<sup>53</sup>

Given this disparity, there were indeed lessons to be learned from the battle. A report for the Naval Ordnance Department remarked that the direction and fire discipline of the Germans was excellent, and that plunge hitting (shells impacting vertically as opposed to horizontally) was very effective at long range.<sup>54</sup>

Furthermore, it was proposed to issue a Gunnery Order at once 'to the effect that experience has shewn [sic] the great danger of allowing cordite to accumulate in gun positions and causing severe fires, this accumulation should on no account be allowed'.<sup>55</sup> Whether or not these recommendations were operationalised will be considered in the following analysis of the Battle of Jutland.

Between the 31 May and the 1 June 1916, the long-awaited clash between the British and German fleets finally took place. For the British, it was a chance to 'Trafalgar' the Germans; to destroy their fleet in one decisive battle and retain command of the seas. For the Germans, Jutland represented an

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<sup>52</sup> Stille, *British Battlecruisers Vs German Battlecruisers*, p.25

<sup>53</sup> Statement of survivors of *Gneisenau*, Vice-Admiral F.C.D. Sturdee Report of Action off the Falkland Islands, 8<sup>th</sup> December 1914, ADM 186/566, p. 61

<sup>54</sup> Report into action off the Falkland Islands, Naval Ordnance Department, 9<sup>th</sup> January 1915, ADM 1/8408/6

<sup>55</sup> Minutes sheet No.2, Subcommittee, 2<sup>nd</sup> January 1915

opportunity to lure a sizeable portion of the British fleet away from the main body in order to destroy it, creating parity between the fleets and ending British domination of the seas.

Neither side was to achieve its goals, and yet both sides claimed victory. The British lost three battlecruisers, three armoured cruisers, eight destroyers and 6,094 men. The Germans lost one battlecruiser, one pre-Dreadnought, four light cruisers, five destroyers and 2,551 men. As such, the Germans trumpeted their material victory over the British, with the Kaiser making a speech welcoming home the fleet and praising its gallant deeds.<sup>56</sup>

However, a simple comparison of numbers does not reveal the true picture. The British had an overwhelming superiority in numbers of ships and could afford the losses whilst still maintaining their advantage. Although the British public craved a decisive action in the mould of the Nile or Copenhagen, Admiral of the Grand Fleet Jellicoe's over-riding priority was not to risk the fleet; as First Lord Winston Churchill remarked, Jellicoe was 'the only man who could have lost the war in an afternoon'.<sup>57</sup>

The Germans retreated to port having performed heroically, but having abjectly failed to achieve their objective. Commander Georg von Hase of the German battlecruiser *Derfflinger* understood the true ramifications of the action:

The English fleet, by remaining a 'fleet in being', by its mere continued existence, had so far fully fulfilled its allotted task. The Battle of Skagerrak [Jutland] did not relax the pressure exerted by the English fleet as a 'fleet in being' for one minute.<sup>58</sup>

Given that Jutland was such a gargantuan clash (some 250 ships were involved), this is not the place to give a detailed account of the battle in its entirety, and in any case this has been done many times before.<sup>59</sup> The focus of this assessment will be on the specific deployment of the battlecruisers.

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<sup>56</sup> R. Scheer, *German High Seas Fleet in the World War* (London: Cassell, 1920), pp. 175-75

<sup>57</sup> R.H. Bacon, *The Life of John Rushworth Earl Jellicoe* (London: Cassell, 1936); p. 243; Cyril Falls, *The First World War* (Great Britain: Longmans, Green and Co Ltd, 1960), p.128

<sup>58</sup> G. von Hase, *Kiel and Jutland* (London: Skeffinton, 1921), p. 229

<sup>59</sup> Donald MacIntyre, *Jutland* (London: PAN Books Ltd, 1966); Jon Sutherland, Diane Canwell, *The Battle of*

The Third Battlecruiser Squadron, consisting of *Invincible*, *Inflexible* and *Indomitable*, was temporarily attached to the Grand Fleet and was commanded by Rear-Admiral Horace Hood. The main battlecruiser fleet was commanded by Vice-Admiral Sir David Beatty on board *Lion* and consisted of *Princess Royal*, *Queen Mary* and *Tiger* in the First Battlecruiser Squadron, and *New Zealand* and *Indefatigable* in the Second Battlecruiser Squadron.

On 30 May, Jellicoe received news that German signals had been intercepted by the Admiralty indicating that something was afoot in the North Sea.<sup>60</sup> Jellicoe immediately ordered his forces to prepare to sail, and ordered Beatty to do the same with his battlecruiser force.

Once at sea, Jellicoe ordered Beatty to take up position 50 miles in front of his main force to act as a screen, searching for the enemy, and Beatty was told that if by 2 p.m on the 31<sup>st</sup> no further news had been received, he was to head north and rendezvous with Jellicoe's main force. There were then further, incomplete, intelligence reports received by both sides, with the result being that neither Jellicoe nor the German Admiral, Reinhard Scheer, knew the other was at sea.<sup>61</sup>

At 2.20 p.m, Beatty's scouting cruisers intercepted their opposite numbers. It was then the turn of Beatty's battlecruisers, as they converged with their five German counterparts, commanded by Admiral Franz von Hipper. Hipper had under his command five vessels; *Lutzow*, *Derfflinger*, *Seydlitz*, *Moltke* and *von der Tann*. Each had followed in *von der Tann's* mould of having better armour protection than their British counterparts; an advantage that would now be fully demonstrated for the first time.

At 3.48 p.m, Hipper opened fire, with Beatty returning almost immediately (Appendix 1). During the initial action, Hipper had the advantage of Beatty's ships being illuminated by the sun, and as such had the better of the early exchanges.

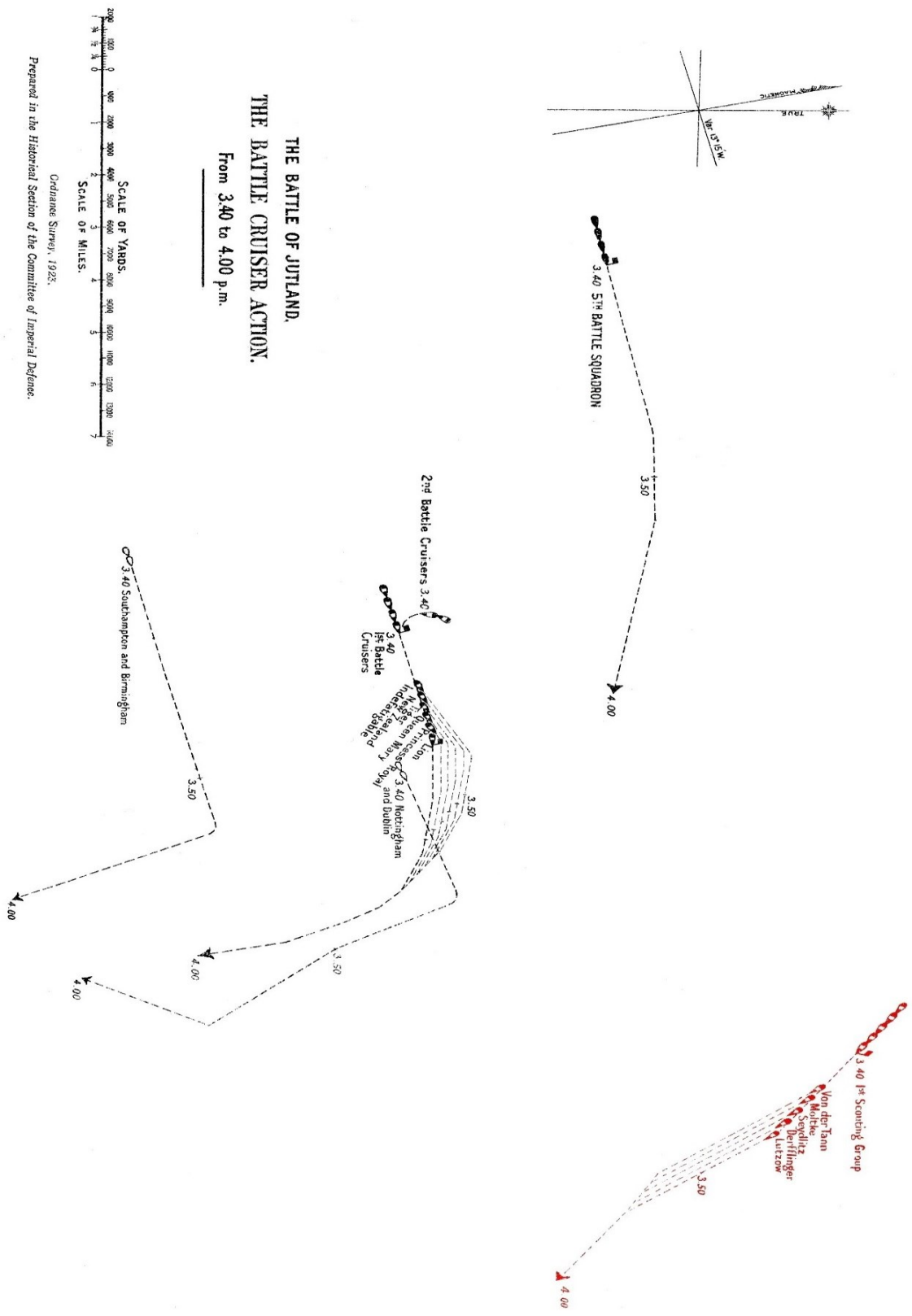
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*Jutland* (Great Britain: Pen and Sword Maritime, 2007); Nigel Steel, Peter Hart, *Jutland, 1916: Death in the Grey Wastes* (London: Cassell, 2004)

<sup>60</sup> W.S.Chalmers, *The Life and Letters of David, Earl Beatty* (London: Hodder and Stoughton, 1951), p. 222

<sup>61</sup> *Ibid.*, p. 223

Early on, *Lion* received a direct hit, with 'Q' turret being completely destroyed, causing a fire to rage ferociously. Indeed, only the quick thinking of the officer in charge of the turret, Major F.J.W Harvey, saved the whole ship from destruction. With his dying breath, he ordered the doors closed and for the magazine to be flooded. This action undoubtedly saved the ship, as when the magazines were reopened after the battle, the dead crewmen were found with their hands still on the door clips,



Appendix 1 – Battlecruiser action at Jutland, 3:40 to 4:00 p.m., Ordnance Survey, 1923

having securing them in the nick of time. For his actions, Harvey was posthumously awarded the Victoria Cross.<sup>62</sup>

Unfortunately, *Indefatigable* and *Queen Mary* were not so lucky. At roughly 4.05 p.m, *Indefatigable* was hit by around five heavy shells from *von der Tann*, blowing up with the loss of over 1,000 souls. At this point, the Fifth Battleship Squadron, under the command of Rear-Admiral Hugh Evans-Thomas and consisting of the Queen Elizabeth-class fast battleships *Barham*, *Valiant*, *Warspite* and *Malaya*, arrived on the scene. They had been assigned to the battlecruiser fleet, but were lagging behind due to the battlecruiser's superior speed.

The Queen Elizabeths were the most powerful vessels afloat at the time, and as such, started to make their presence felt on the *Moltke* and *von der Tann*.<sup>63</sup> By now, Beatty's shots were beginning to tell, with *Queen Mary* scoring two hits on *Seydlitz's* 'C' turret, knocking it out of action.

Significantly, the Germans had learned their lesson from Dogger Bank, where *Seydlitz* had lost 'C' and 'D' turret and 190 men due to 13,000 pounds of cordite igniting. This time only one cartridge caught fire and the flash did not reach the magazines. The Imperial Navy had introduced anti-flash procedures and stored their secondary charges (those not encased in brass) in tin boxes. As a result, only 20 men died and only one turret was put out of action.<sup>64</sup> Unfortunately for the British, this is a lesson they did not learn.

Only 20 minutes after *Indefatigable* had been destroyed, another disaster rocked Beatty's men. With the damaged *Lion* temporarily falling out of line, both *Derfflinger* and *Seydlitz* were able to concentrate their fire on *Queen Mary*. Before long the weight of fire began to tell and the first in a series of explosions erupted, leading to the ship blowing up and sinking in a similar fashion to *Indefatigable*. This time, over 1,200 officers and men were killed.

The situation for Beatty was looking grim. Having entered into the battle with numerical

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<sup>62</sup> Daniel Allen Butler, *Distant Victory: The Battle of Jutland and the Allied Triumph in the First World War* (Westport CT: Praeger Security International, 2006), p. 147

<sup>63</sup> Roskill, *Admiral of the Fleet Earl Beatty*, p.160

<sup>64</sup> Steel and Hart, *Jutland 1916*, p.89

superiority, he had now lost two ships and was now the weaker force, not to mention the psychological effect that seeing two of their battlecruisers destroyed would have had on his remaining men.

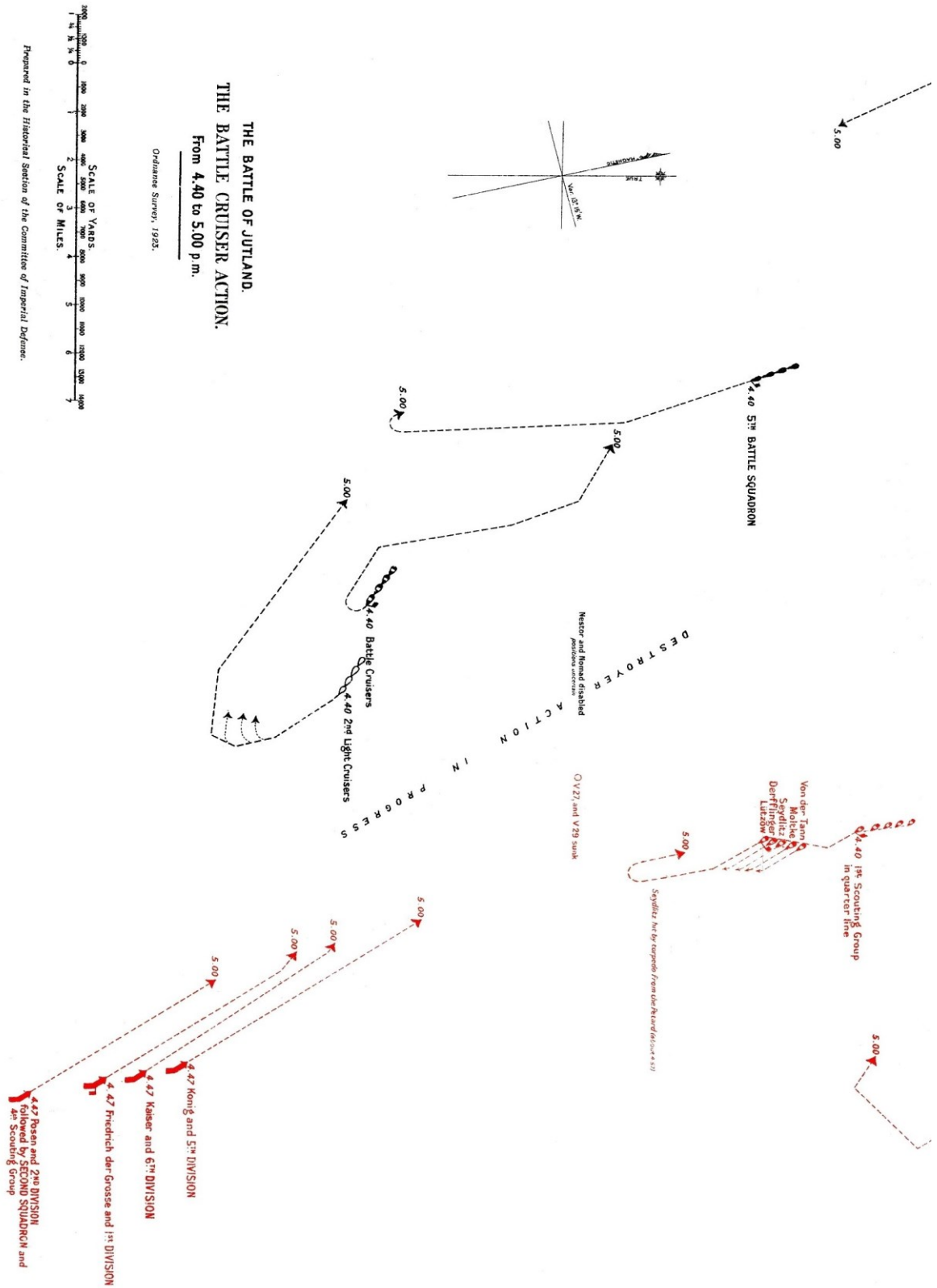
The situation was summed up by Sub-Lieutenant Colin Buist on board the Light Cruiser *Southampton*: 'The scene was now a terrible one, the *Lion* was afire somewhere amidships, and of the *Indefatigable* and *Queen Mary*, nothing remained but two great columns of smoke'.<sup>65</sup> However, with the Fifth Battle Squadron drawing ever closer and bringing more of its guns into action, the situation was sure to improve.

Unfortunately for Beatty, this was not to be. Hipper had carried out his orders to perfection, for he had drawn Beatty's forces right into the path of the oncoming Scheer and his High Seas Fleet (Appendix 2). It was *Southampton* which, managing to avoid incoming heavy calibre fire, reported the presence of Scheer; this was the first Beatty and Jellicoe knew of the German High Seas Fleet being at sea.

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<sup>65</sup> Steel and Hart, *Jutland 1916*, p.113





Appendix 2 – Battlecruiser action at Jutland, 4:40 to 5:00 p.m., Ordnance Survey, 1923

It was now Beatty's turn to draw the enemy onto his Battle Fleet, and he therefore conducted a 180-degree turn and proceeded toward Jellicoe. This signalled the end to the action known as the 'run to the south', and so began the 'run to the north'.

At 4.51 p.m, Jellicoe, having received the radio message from *Southampton*, knew this meant a fleet action was imminent, deployed his force and informed the Admiralty.<sup>66</sup> Jellicoe had ordered Hood's Third Battlecruiser Squadron ahead in support of Beatty, where they joined forces. Together, they inflicted punishing fire on Hipper's battlecruisers, badly damaging two, and forced them to fall back on Scheer. This had the effect of drawing Scheer's destroyers towards Beatty and Hood, depriving the German Admiral of his screen which would have reported Jellicoe's presence.<sup>67</sup>

It was now Beatty who, aided by the timely arrival of Hood, performed valiantly by leading the enemy onto Jellicoe's Battle Fleet (Appendix 3). As Jellicoe moved into position, Hood engaged the *Lutzow* and *Derfflinger* with his lead ships, *Invincible* and *Inflexible*, scoring eight hits. Hood telephoned his gunnery commander: 'Your firing's very good [Commander Hubert] Dannreuther ... Keep it as fast as you can. Every shot's telling'.<sup>68</sup> Despite this, Hood's vessels were also receiving accurate fire.

At 6.33 p.m, just as Beatty had reached his position ahead of the Battle Fleet, a heavy shell ripped through *Invincible's* 'Q' turret, causing a massive explosion that blew the ship clean in two, leaving only six survivors from her crew of 1,026.<sup>69</sup> The subsequent inquiries clearly attribute the loss of three of Fisher's 'greyhounds' to the detonation of one or more of their magazines as a result of fire received from the enemy and as such this is not subject to debate.<sup>70</sup> However, the reasons behind these explosions are worthy of further exploration.

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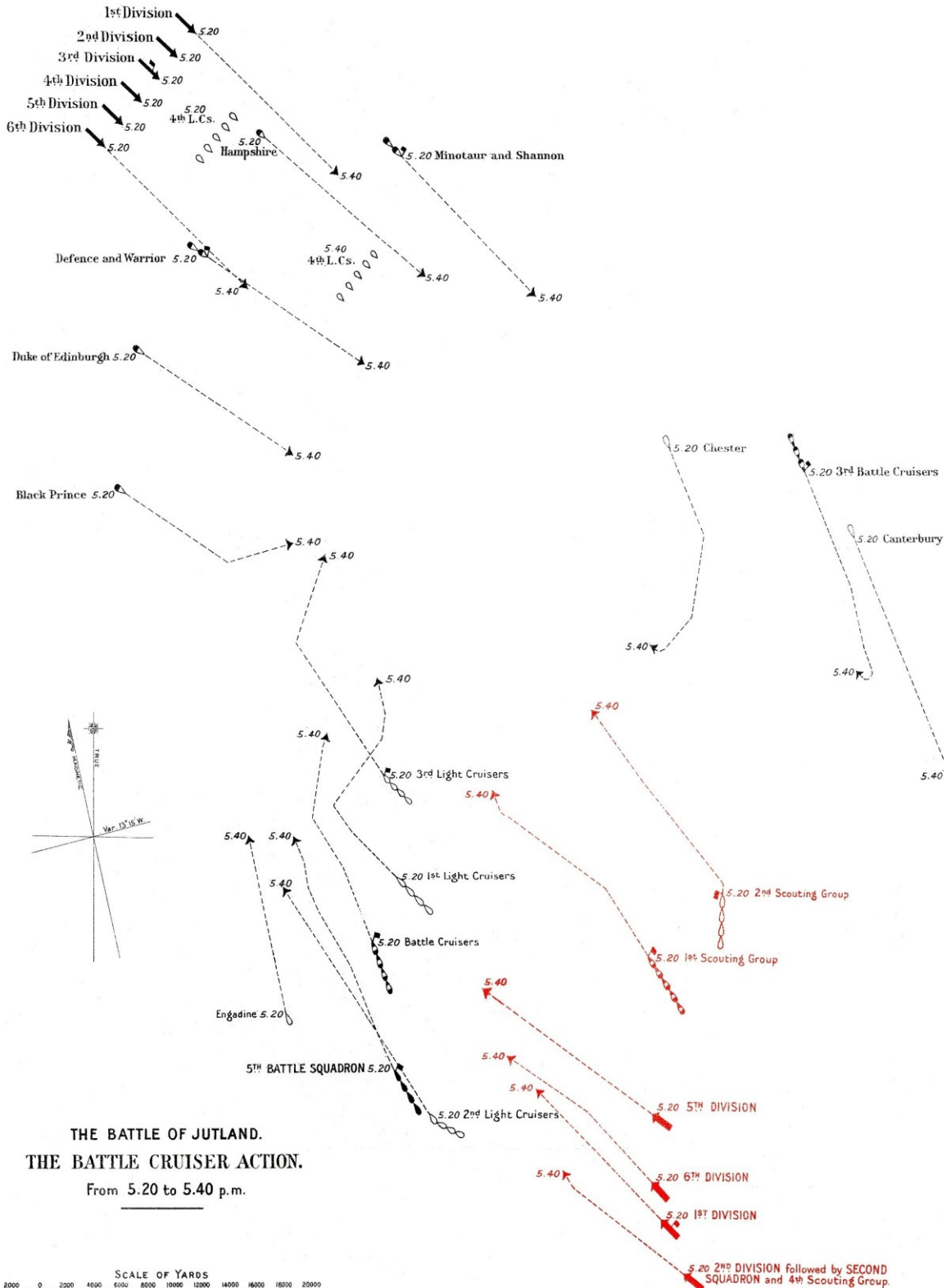
<sup>66</sup> N.J.M. Campbell, John Campbell, *Jutland: An Analysis of the Fighting* (Great Britain: The Lyons Press, 2000), p. 58-59

<sup>67</sup> Roskill, *Admiral of the Fleet Earl Beatty*, p.163

<sup>68</sup> Bassett, *Battle-Cruisers: A History 1908-48*, p.122

<sup>69</sup> Roskill, *Admiral of the Fleet Earl Beatty*, p.171

<sup>70</sup> Report on the Loss of HMS Hood, ADM 116/4351



THE BATTLE OF JUTLAND.  
 THE BATTLE CRUISER ACTION.  
 From 5.20 to 5.40 p.m.

SCALE OF YARDS  
 0 2000 4000 6000 8000 10000 12000 14000 16000 18000 20000  
 SCALE OF MILES.  
 0 1 2 3 4 5 6 7 8 9 10

Ordnance Survey, 1923.  
 Prepared in the Historical Section of the Committee of Imperial Defense.

Appendix 3 – Battlecruiser action at Jutland, 5:20 to 5:40 p.m., Ordnance Survey, 1923

The reports of eye-witnesses on different vessels, including a survivor from *Invincible*, and the subsequent recommendations of the Commander-in-Chief and other senior officers provide a detailed examination of the causes of the losses and the action taken to prevent such an event happening again. In addition to the technical debate, the tactical deployment of the battlecruiser force, in relation to their original perceived mission, and especially their use against German battlecruisers, will be further examined.

Finally, the vessel that represented the culmination of the British battlecruiser concept, HMS *Hood*, will be analysed and its fate considered to establish whether lessons truly were learned.

Chapter 3:  
Post-Jutland analysis and  
HMS Hood

Regardless of the debate surrounding the strategic outcome of Jutland, the destruction of the battlecruisers was a cause of both great shock and concern for the Admiralty. In the aftermath of the battle, both the official reports of the action and subsequent commissions sought to establish the reasons behind the losses and tried to put in place systems to prevent them from being repeated. HMS Hood was the manifestation of these processes, and its fate serves as a litmus test for the changes made and the future viability of the class as a whole.

In the first instance, this chapter will investigate the official reports of the officers involved in the battle. Reports from Jellicoe, Beatty, Chatfield and d'Eyncourt along with statements from survivors of *Invincible* and *Queen Mary* and the captains of *Indomitable* and *Inflexible* will be examined to give a full picture of the battlecruiser action.

In the aftermath of Jutland, a range of reports were commissioned on a variety of subjects (including deployment, design, actions when meeting the enemy and protection from plunging fire), whilst design alterations were also recommended. These orders will be examined, as will the issues surrounding cordite storage and use.

Finally, the design and service of *Hood*, the final British battlecruiser to be built, will be analysed to establish whether the lessons from the loss of *Invincible* and her sisters were indeed learned.

In Admiral Jellicoe's report to the Admiralty, his praise for the actions of his officers and men was lavish: 'The conduct of the officers and men throughout the day and night actions were entirely beyond praise ... On all sides it was reported to me that the glorious traditions of the past were most

worthily upheld.<sup>71</sup>

Subsequently, Jellicoe went on to make some interesting points. The Fifth Battle Squadron had a top speed of 25 knots, making them the fastest battleships in the world at the time. However, whilst moving away from the German battleships *König* and *Kaiser* and leading them on to the Grand Fleet, they were unable to increase the distance between themselves and the enemy, despite the German ships being reported to have a top speed not in excess of 21 knots. This 'unpleasant surprise' was recognised by Jellicoe to have 'considerable effect on the conduct of future operations'.<sup>72</sup>

Next, Jellicoe went on to tackle the brutal truth that in the initial action five German battlecruisers were able to engage six British battlecruisers (later joined by four Queen Elizabeths) and sink two of them, without loss to themselves. In this initial report, Jellicoe attributed this fact to 'indifferent armour protection, particularly regarding turret armour and deck plating' and the 'disadvantageous lighting conditions' faced by his ships.<sup>73</sup>

Both the accuracy and rate of fire of the German vessels impressed Jellicoe, especially during the night action, leading him to remark 'I am reluctantly compelled to the opinion that under night conditions we have a good deal to learn from them'.<sup>74</sup> In reply, the Admiralty was in agreement with Jellicoe's appraisal of the battle and lavished praise upon him, his officers and his sailors.<sup>75</sup>

Crucially, however, Jellicoe reported that whilst there was no evidence that deficient armour resulted in enemy shells penetrating the magazines, there could be no doubt that the amount of exposed cordite about the ships was enormous. He went on to attribute this lax handling to the lack of efficient control of ammunition parties due to the unavoidable stringency in officers.<sup>76</sup> This statement implies that had there been more officers, perhaps the cordite would not have been

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<sup>71</sup> John Jellicoe, Jutland - 31<sup>st</sup> May 1916, ADM 137/301 p. 28

<sup>72</sup> Ibid., p. 39

<sup>73</sup> Ibid., p. 40

<sup>74</sup> Ibid., p. 41

<sup>75</sup> John Jellicoe, Action on 31<sup>st</sup> May - 1<sup>st</sup> June 1916, Reports from Flag and Commanding Officers who took part, ADM 137/301 p. 366

<sup>76</sup> John Jellicoe, Action on 31<sup>st</sup> May - 1<sup>st</sup> June 1916, Reports from Flag and Commanding Officers who took part, ADM 137/301 p.144

stowed in such an unsafe manner, thus seeming to attribute the loss of the ship (in contradiction to his earlier praise) to the unprofessional behaviour of the men.

Finally, Jellicoe argued that 'the most unfortunate result of the battle has possibly been to give rise to the false idea as to the necessity and value of armour protection.'<sup>77</sup> In making this remark, Jellicoe revealed himself to be a follower of Fisher's doctrine of speed over armour, and as such he did not blame the design of the ships, but the poor cordite handling practices for their loss.

In his report, Director of Naval Construction Sir Eustace Tennyson d'Eyncourt argued against what he saw as a prevailing impression throughout the fleet that the battlecruisers were lost due to shells penetrating the magazine. In particular, d'Eyncourt took issue with the report of the Commander of the First Battlecruiser Squadron, Rear-Admiral Osmond de Beauvoir Brock, which stated that *Queen Mary* was destroyed by plunging fire which penetrated her magazine.

In defence, d'Eyncourt argued that there were very few cases of shells, or parts of shells, penetrating protected areas such as the machinery, despite these areas covering a much greater area than the magazine.<sup>78</sup> In summation, d'Eyncourt was concerned, as was Jellicoe, that this misconception would lead to additional armour being fitted, which went against the traditional maxim of British warship design; that the best defence was superior offence.<sup>79</sup> D'Eyncourt's support for the design of British warships was hardly surprising, given his role overseeing their production; a role that would later include the construction of *Hood*.

In Admiral Beatty's report, he detailed the actions of the battlecruiser and escort vessels under his command. In an attempt to gain a more accurate picture of the enemy's strength, the light cruiser *Galatea* launched a seaplane to investigate. Such use of aviation provides an insight into the beginnings of naval air power and the benefits of modern technology in the Navy; a fact that was not

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<sup>77</sup> Ibid., p.145

<sup>78</sup> Eustace Tennyson d'Eyncourt, Action on 31<sup>st</sup> May - 1<sup>st</sup> June 1916, Reports from Flag and Commanding Officers who took part, ADM 137/1645 p. 141

<sup>79</sup> Ibid., p. 142

lost on Beatty, who remarked 'seaplanes under such circumstance are of distinct value'.<sup>80</sup>

Beatty reported that at 4 p.m., *Indefatigable* was hit by three shells falling together on the outer edge of the upper deck in line with the after turret. Following an explosion, *Indefatigable* fell out of line, where it was struck once more, turned over and disappeared.<sup>81</sup> Beatty goes on to note that eight minutes later, the Fifth Battle Squadron opened fire at extreme range of 20,000 yards, causing enemy fire to slacken.<sup>82</sup> Given the effectiveness of this fire, the distance to which the Fifth Battle Squadron had been allowed to fall behind seems unfortunate. Admiral Sir Richard Bacon went further; he held Beatty's failure to consolidate his forces responsible for his battlecruisers paying a heavy price, and the nation missing what should have been an annihilating victory.<sup>83</sup>

At 4:26 p.m, Beatty reported a violent explosion erupting from *Queen Mary*, enveloping the ship in grey smoke, after which it disappeared beneath the waves. According to Captain Pelly of *Tiger*, *Queen Mary* was struck by a salvo abreast of 'Q' turret directly preceding the explosion, and when *Tiger* passed through the grey smoke some 30 seconds later, nothing remained of *Queen Mary*.<sup>84</sup>

The speed at which *Queen Mary* sank beneath the waves suggests that the ship was subject to an explosion of such catastrophic power that only the detonation of one or more of the magazines could be responsible. This theory is supported by the report of the highest ranking of the 17 survivors, Midshipman Storey, who reports a gap of roughly four minutes between the initial impact and explosion of 'Q' turret and a second, far larger explosion that threw him into the water and left nothing of the ship.<sup>85</sup>

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<sup>80</sup> David Beatty, Action on 31st May - 1<sup>st</sup> June 1916, Reports from Flag and Commanding Officers who took part, ADM 137/1645 p. 146

<sup>81</sup> Ibid., p. 146

<sup>82</sup> David Beatty, Action on 31st May - 1<sup>st</sup> June 1916, Reports from Flag and Commanding Officers who took part, ADM 137/1645 p. 148

<sup>83</sup> Richard Bacon, *The Jutland Scandal* (London: Hutchinson and Co Ltd, 1933) p. 90

<sup>84</sup> Beatty, Action on 31st May - 1<sup>st</sup> June 1916, p. 148

<sup>85</sup> J.L. Storey, Action on 31st May - 1<sup>st</sup> June 1916, Reports from Flag and Commanding Officers who took part, ADM 137/301 p. 170



Captain Chatfield, Beatty's flag captain on-board *Lion*, in listing the officers and men he deems worthy of special praise, singled out, amongst others, the commanders of 'A', 'B' and 'X' turrets for their ability to keep the guns firing at an impressive rate throughout the action, firing 321 rounds in total.<sup>86</sup> The importance placed upon rate of fire is consistent with the previously-discussed naval doctrine of the time. It is, however, the exploits of Major Harvey which received Chatfield's praise above all others. In his remarks, the captain readily acknowledges that, had Harvey not acted as he did, the ship would have been lost.<sup>87</sup>

Commander H.E. Dannreuther was the highest ranking of the six survivors of the sinking of *Invincible*. Dannreuther observed that no appreciable damage had been done to the ship until a shell struck 'Q' turret, bursting inside and blowing the roof off. However, it was a second, far larger explosion soon after that sealed the ship's fate, indicating as it did the detonation of 'Q' magazine which resulted in the ship breaking in half and sinking within 10 to 15 seconds.<sup>88</sup>

That the second explosion was not instantaneous implies that the shell itself did not penetrate the magazine, but that the explosion in 'Q' turret caused a flash which made its way down to the magazine. This supports the report of d'Eyncourt in which he denied that enemy shells were capable of breaching the magazines of the battlecruisers.

Such was the catastrophic force of the second explosion that, when the smoke and mist cleared, the two ends of the shattered *Invincible* could be seen protruding from the water, standing as if to attention on the seabed (Appendix 4).

Several key issues were raised by the reports of those involved in the battlecruiser action at Jutland. Firstly, it is clear that the technical specification of the German vessels attributed by the Admiralty was incorrect. The underestimation of the speed which the German ships possessed

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<sup>86</sup> Ernle Chatfield, Action on 31st May - 1<sup>st</sup> June 1916, Reports from Flag and Commanding Officers who took part, ADM 137/301 p. 164

<sup>87</sup> Ibid., p. 160

<sup>88</sup> H.E. Dannreuther, Action on 31st May - 1<sup>st</sup> June 1916, Reports from Flag and Commanding Officers who took part, ADM 137/301 pp. 212-213

presented a serious tactical problem to the British, as the future attachment of fast battleships (such as the Fifth Battle Squadron) to the battlecruiser fleet would nullify the battlecruisers' best defence: their speed. The removal of the extremely well-armed and protected Fifth Battle Squadron would deprive the Battlecruiser Squadron of much-needed support when engaging enemy battlecruisers; a point underlined by Beatty when he remarked 'There is the unfortunate fact that our ships blow up after only a short period of punishment whereas the enemy's ships never do'.<sup>89</sup>

Secondly, the issue of cordite storage was raised by Jellicoe, and the consequences of the resultant flash were reported by Beatty, Storey and Dannreuther. These are issues that were to be addressed, although to what degree of success will be considered shortly.

Finally, the issue of insufficient armour protection was not regarded by any of the officers in their reports as being of paramount importance. Indeed, Jellicoe and d'Eyncourt went as far as to say that they hoped the addition of supplementary armour would not take place.

In the aftermath of Jutland, the Admiralty convened a conference entitled 'Tactical and Strategical Questions arising from the Action on 31 May 1916'.<sup>90</sup> One of the reports it brought forth was entitled 'Action to be taken by Battlecruiser Fleet on meeting Enemy Force'.<sup>91</sup> It was the wording, and the apparent implications, of this report that was to provoke a furious debate between Beatty on the one hand and Jellicoe and the Admiralty on the other:

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<sup>89</sup> David Beatty, Action to be taken by Battlecruiser Fleet on meeting Enemy Forces, ADM 137/1645, p. 63

<sup>90</sup> Tactical and Strategical Questions arising from the Action on 31 May 1916, ADM 137/1645

<sup>91</sup> David Beatty, Action to be taken by Battlecruiser Fleet on meeting Enemy Forces, ADM 137/1645

The Battlecruiser Fleet and any vessels attached to it when ordered South, is to avoid becoming seriously engaged with superior forces until the Battlefleet is within supporting distance, unless the Admiralty consider the circumstances sufficiently urgent to render a different course necessary, in which case their Lordships will give instructions directly to Vice-Admiral Commanding, Battlecruiser Fleet

In a letter to Jellicoe, Beatty demonstrated his frustration with what he considered to be confusing and unnecessary orders. He queried what exactly was meant by 'superior force', and in what conditions would engagement be acceptable.<sup>92</sup> He went on to argue the case for the Fifth Battle Squadron to remain attached to the Battlecruiser Fleet, as to do so would lessen the risk to the battlecruisers.

To further argue the point, Beatty claimed that had it not been for the presence of the Fifth Battle Squadron at Jutland, the battlecruisers would 'either have been destroyed or had to haul off'.<sup>93</sup> Finally, Beatty contested that it was prescriptive orders such as these that had allowed for *Goeben* to escape into the Dardanelles earlier in the war.<sup>94</sup> Beatty believed his judgement and discretion were under question, and that the order given could result in the loss of opportunities of the greatest value which might never occur again.<sup>95</sup>

In reply, Jellicoe again reiterated to Beatty that the safety of the Battlecruiser Fleet lay in its speed, and as such the addition of the Fifth Battle Squadron would 'present a source of distinct embarrassment and risk'.<sup>96</sup> He argued that it was, in fact, this speed which allowed the Battlecruiser Fleet to remain engaged with the German Scouting Force whilst staying out of range of their

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<sup>92</sup> Beatty, Action to be taken by Battlecruiser Fleet, p. 63

<sup>93</sup> Beatty, Action to be taken by Battlecruiser Fleet, p. 63

<sup>94</sup> Ibid., p. 63

<sup>95</sup> Ibid., p. 63

<sup>96</sup> John Jellicoe, Action to be taken by Battlecruiser Fleet on meeting Enemy Forces, ADM 137/1645, p. 61

battleships.<sup>97</sup>

Then, in what appeared to be a damning rebuke, Jellicoe suggested that perhaps any misconceptions on Beatty's part were due to the use of the term 'Battlecruiser Fleet' to describe the force under his command:

This nomenclature may be taken to imply that it is a force distinct from, and not an adjunct to, the battlefleet and that, owing to its advanced position, it is expected to fulfil the role of a fast battle squadron and not that of a powerful scouting force possessing a speed which enables it to accept or refuse action with an enemy possessing no force of equal power which can compel it to accept action.<sup>98</sup>

The argument was ultimately settled by the Admiralty, who came down overwhelmingly in Jellicoe's favour, stating that the order freed Beatty from subsequent criticism if he decided not to engage a superior force.<sup>99</sup> That the Battlecruiser Fleet was not to act as an independent force nor travel too far ahead of the main Battle Fleet served to annul the tactical principles upon which Beatty had always acted.<sup>100</sup>

For such a debate to have occurred between two of the most senior officers in the Navy demonstrates that even in 1916, two years into the War, the most effective tactical deployment of the battlecruisers was still a highly contested issue.

Following the loss of the battlecruisers at Jutland, changes were made to both the tactics and design to be used with both existing and future vessels. With regards to the design, the catastrophic manner in which the three battlecruisers were destroyed meant that this was more than just bad luck; a fundamental problem existed. This was not, however, one individual problem, but a series of issues that, once combined, lead to such grievous losses.

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<sup>97</sup> Ibid., p. 61

<sup>98</sup> Ibid., p. 62

<sup>99</sup> Henry Oliver, *Action to be taken by Battlecruiser Fleet on meeting Enemy Forces*, ADM 137/1645, pp. 66-68

<sup>100</sup> Stephen Roskill, *Admiral of the Fleet Earl Beatty: The Last Naval Hero* (London: William Collins and Sons & Co, 1980), p. 196

The penetration of the turret armour combined with the resultant flash, the copious amounts of cordite stored out of the magazine and the lack of flash protection were all issues that needed to be addressed. As was reported by d'Eyncourt earlier, the magazines were relatively safe from plunging fire. It is known, however, that as the charges could only be passed to the handling room with the magazine door open, the doors were often kept permanently open during action to expedite a rapid rate of fire.<sup>101</sup> In light of the sinkings, charges were no longer allowed to be removed from the magazine until absolutely necessary and magazine doors were to remain closed when possible.<sup>102</sup>

In their final conclusion, the Admiralty authorised the installation of old-fashioned fearnought (fire proof) shutters in the turret trunks.<sup>103</sup> Finally, one inch of extra armour was to be fitted over the middle deck armour above the magazines.<sup>104</sup>

In conclusion, three main problem areas were cited with the battlecruisers: flash protection, cordite handling procedures, and armour. As a result, both technical and tactical changes were made to the battlecruiser fleet in the months following Jutland.

Although other battlecruisers came into service after Jutland, such as the *Renown* and *Courageous* classes, it is *Hood* that will be examined, not only because it was the last battlecruiser to be built, but also due to the similarities in its destruction with that of *Invincible*.

Laid down on 1 September 1916, *Hood* was considered the very embodiment of British naval might.<sup>105</sup> At the time of its launch, *Hood* was the largest warship ever constructed and was designed to incorporate the lessons learned from Jutland.

Despite the assertions from senior officers that the battlecruisers did not require increased armour, just a matter of weeks after the battle, d'Eyncourt authorised, in what appears to be

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<sup>101</sup> John Roberts, *Battlecruisers* (London: Chatham Publishing, 2003), p. 115

<sup>102</sup> *Ibid.*, p. 117

<sup>103</sup> Report of Committee, The Protection of Ships from Plunging Fire, ADM 137/2027, p. 15

<sup>104</sup> Report of Committee, The Protection of Ships from Plunging Fire, ADM 137/2028, p. 8

<sup>105</sup> Ian Johnston, *Ships for a Nation: John Brown & Company Clydebank* (Glasgow: West Dunbartonshire Libraries and Museums, 2000), p. 224

somewhat of a contradiction, changes to the design of *Hood*, increasing belt armour from 8 to 12 inches, whilst also increasing the barbette armour from 9 to 12 inches.<sup>106</sup> This increased barbette protection was especially significant given that it was the turrets of *Invincible* and the other battlecruisers that had proved to be a significant weakness. Despite these improvements and the eight 15-inch guns *Hood* boasted, the ship was still able to achieve a speed of 31 knots when launched.

However, with *Hood's* last refit having been in 1929-31, the ship was badly in need of a major overhaul. The outbreak of the Second World War put paid to that, and so *Hood* went to battle far from its early prime and denied the upgrades and modernisation afforded to earlier battlecruisers *Renown* and *Repulse* in 1936.<sup>107</sup>

On 21 May 1941, the new German battleship *Bismarck* slipped out of the North Sea and headed, in the company of the heavy cruiser *Prince Eugen*, for the Atlantic. *Bismarck* was the pride of the German Navy; a 46,000 ton battleship armed with eight 15-inch gun. On paper, *Hood* and the new battleship *Prince of Wales*, with the additional support of the heavy cruisers *Norfolk* and *Suffolk*, appeared to have the upper hand in the coming battle.

*Hood's* primary armament matched *Bismarck's*, whilst *Prince of Wales* had ten 14-inch guns to *Prince Eugen's* eight 8-inch guns, and as such the British enjoyed a weight of shell advantage of almost two to one.<sup>108</sup> As with German battlecruiser design, high priority was given to battleship armour. As a result, armour accounted for 41 per cent of *Bismarck's* displacement, whereas that figure was only 32 per cent in *Prince of Wales*, and considerably less in *Hood*.<sup>109</sup>

Despite its speed and power, *Hood*, as Corelli Barnett put it, was 'an obsolete and vulnerable

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<sup>106</sup> Eustace Tennyson d'Eyncourt, *Design of Battlecruisers*, ADM 1/9209, p. 1

<sup>107</sup> Bruce Taylor, *The Battlecruiser HMS Hood: An Illustrated Biography, 1916-1941* (London: Chatham Publishing, 2005), p. 39; Alan Raven and John Roberts, *British Battleships of World War Two: The Development and Technical History of the Royal Navy's Battleships and Battlecruisers from 1911 to 1946* (Maryland: Naval Institute Press, 1976), p. 197

<sup>108</sup> Marco Santarini, *Bismarck and Hood: The Battle of the Denmark Strait* (United Kingdom: Fonthill, 2013), p. 35

<sup>109</sup> Niklas Zetterling and Michael Tamelander, *Bismarck* (Berkshire: CASEMATE, 2009), p.34

ship'; 'a virtually unaltered floating museum of 1920 naval technology'.<sup>110</sup> In comparison, *Hood's* opponent, *Bismarck*, was brand-new, technologically advanced and, as mentioned, heavily armoured.<sup>111</sup>

When the two met on 24 May 1941, the pride of the Royal Navy was engulfed in a massive explosion and disappeared beneath the ocean within ten minutes of engaging the enemy. Of the crew of 1,418, only three survived. Within six days of the disaster an enquiry was ordered by First Sea Lord Sir Dudley Pound.

Pound was concerned by the disturbing nature of the sinking, expressing in a letter to Controller of the Navy, Vice Admiral Bruce Fraser, that:

Now, after a lapse of 25 years, we have the first close action between one of our capital ships and that of the Germans since the Battle of Jutland and *Hood* has been destroyed in minutes in what appears to the onlooker to be exactly the same manner as the *Queen Mary*, *Indefatigable* and *Invincible*, in spite of the action which was taken subsequent to Jutland to prevent further ships being destroyed as a result of 'flash'.<sup>112</sup>

Despite only hearing from a handful of witnesses, including only one of the three survivors, this first enquiry concluded on 2 June, reporting that one or more of *Bismarck's* shells directly penetrated *Hood's* armour and detonated one of the magazines.<sup>113</sup> This report was widely criticised, including by Pound's deputy Vice-Admiral Sir Tom Philips, and as a result, a second, much more thorough, enquiry was convened on 27 August.<sup>114</sup>

The second enquiry, which heard from the likes of the Director of Naval Ordnance, the Director of Torpedoes and Mining and the Chief Scientist of the Research Department of the Admiralty, came to the same conclusion; that a 15-inch shell had penetrated either the 4-inch or 15-

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<sup>110</sup> Corelli Barnett, *Engage the Enemy More Closely: The Royal Navy in the Second World War* (New York: W.W. Norton, 1991), p. 64

<sup>111</sup> Ralph Harrington, "The Mighty Hood": Navy, Empire, War at Sea and the British National Imagination, 1920-60, *Journal of Contemporary History*, Vol. 38, No. 2 (2003), p. 182

<sup>112</sup> Bruce Taylor, *The End of Glory: War & Peace in HMS Hood, 1916-1941* (Great Britain: Seaforth Publishing, 2012), p. 199

<sup>113</sup> Roger Chesneau, *Hood* (London: Cassell, 2002), p. 164

<sup>114</sup> *Ibid.*, pp. 164-165

inch magazine, causing an explosion that broke the back of the ship, completely destroying it.<sup>115</sup>

In conclusion, the deployment of *Hood* (albeit it in the company of the brand new and not yet fully worked up *Prince of Wales*) against the *Bismarck* symbolises the greatest departure from the original mission as envisaged for the battlecruiser by Fisher. *Hood* represented a ship type whose concept had, according to Harrington, been 'undermined by the experience of Jutland and whose role, perhaps more than any other type of surface ship, was compromised and unclear in the post-war world'.<sup>116</sup>

The sinking of *Hood* symbolised the end of the era of the battlecruiser, just as the destruction of *Prince of Wales* and *Repulse* later that same year, by Japanese air attack whilst on route to the Pacific, symbolised the beginning of the end of the capital ship, and the rise of the aeroplane as a decisive weapon.

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<sup>115</sup> Report on the Loss of HMS Hood, ADM 116/4351

<sup>116</sup> Ralph Harrington, "The Mighty Hood": Navy, Empire, War at Sea and the British National Imagination, 1920-1960', *The Journal of Contemporary History*, Vol. 38, No. 2 (2003), p. 184



## Conclusion

Having thoroughly assessed the evidence presented in this dissertation, there are a number of conclusions to be drawn. Battlecruisers were designed with a very specific task in mind, and when given that task (such as at the Falklands) they performed excellently. Furthermore, battlecruisers were not designed to be used in any engagement with ships of equal or greater power, but were to use their speed to withdraw.

Once *Invincible* had been built, however, the Germans were compelled to respond and build their own battlecruisers; in so doing creating vessels that were not only superior to their British counterparts, but also increasing the odds of the British ships being drawn into an engagement for which they were not designed. Stille argues that the role of commerce protector and fleet scout could have been carried out by regular heavy cruisers who, unlike the battlecruisers, would not have been drawn into the line of battle once the opposing Dreadnoughts had engaged.<sup>117</sup>

At Jutland, the predictions made in the 1907 Brassey Naval Annual came true; the battlecruiser had strayed from its primary role as a cruiser destroyer and found itself engaged in the line of battle during a fleet-on-fleet action, suffering the consequences. According to Lambert, the one point with which there is largely no dispute is that the British battlecruisers were inadequately armoured.<sup>118</sup> However, deployed as it had been conceived to be, the battlecruiser was an incisive, decisive weapon. It was as a result of ill-conceived strategy that its fatal weaknesses were exposed.<sup>119</sup> What is more, the British pursuit of the highest possible rate of fire led to inexcusable short-cuts being taken, such as the unsafe storage of cordite and the securing open of magazine doors; short-cuts that, in conjunction with inadequate flash protection, would seal the fate of *Invincible* and the other battlecruisers lost at Jutland.

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<sup>117</sup> Mark Stille, *British Battlecruisers Vs German Battlecruisers 1914-16* (Oxford: Osprey Publishing, 2013), p.76

<sup>118</sup> Nicholas A. Lambert, "'Our Bloody Ships' or 'Our Bloody System'? Jutland and the Loss of the Battle Cruisers, 1916", *Journal of Military History*, Vol. 61, No. 1 (1998), p. 30

<sup>119</sup> Arthur Marder, *Jutland and After*, Vol. 3 of *From the Dreadnought to Scapa Flow* (Oxford: Clarendon Press, 1966), pp. 208-14; H.H. Frost, *The Battle of Jutland* (Annapolis: Naval Institute Press, 1936), p. 213

Finally, the deficiencies of British cordite, both in its propensity to explode before penetrating the armour belt and also in its inherent instability, certainly contributed to the poor performance of the battlecruisers, even in their successful engagement at the Falklands. The sheer number of shells required to destroy von Spee's squadron, and the loss of HMS *Vanguard* due to a cordite explosion whilst safely in harbour during 1917, illustrate two serious issues surrounding British cordite<sup>120</sup>.

*Fortnightly Review* describes the hits to the turrets that lead to the destruction of *Queen Mary* and *Indefatigable* as an 'unfortunate coincidence which may never happen again in sea engagement'.<sup>121</sup> Given that *Invincible* was destroyed as the result of a similar strike shortly afterwards, not to mention *Hood*, this assertion seems hard to justify. Furthermore, it seems reasonable to suggest that, given their offensive power, the battlecruisers were always likely to be drawn into such battles as Jutland, with the success of the Falkland Islands serving only to enhance the reputation of the ships.

Although other nations had considered the battlecruiser concept, none, with the exception (to a lesser extent) of Japan, embraced it as the British and Germans did. The Japanese operated three battlecruisers, one of which was built in Britain and was the last Japanese capital ship to be constructed outside of Japan.<sup>122</sup> Each, however, was to be converted to battleship specification during the inter-war period.<sup>123</sup>

The battlecruiser did have its supporters in the US, such as Commodore Yates Stirling of the United States Navy, who claimed as late as November 1915 that 'the dreadnought battleship has passed away ... the battle-cruiser is the mistress of the seas'; however this support was silenced after

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<sup>120</sup> Norman Friedman, *Naval Firepower: Battleship Guns and Gunnery in the Dreadnought Era* (Great Britain: Seaforth Publishing, 2008), p. 285;

<sup>121</sup> Archibald Hurd, 'The Admiralty, The Fleet, and The Battle of Jutland, May 31<sup>st</sup> 1916', *Fortnightly Review*, Vol. 101, No. 6 (1917), p. 940

<sup>122</sup> Robert Gardiner (ed.), *Conway's All the World's Fighting Ships, 1906-1921*, Volume 2 (Annapolis: Naval Institute Press, 1985), p. 234

<sup>123</sup> Eric W. Osborne, *Battle Cruisers in World War I: A Student Encyclopedia*, eds. Spencer Tucker and Priscilla Mary Roberts (California: ABC-CLIO, 2006), p. 300

Jutland.<sup>124</sup>

The emphatic manner in which *Hood* was destroyed seems to underline that the age of the battlecruiser, if indeed there ever was one, was over. If further evidence was needed, the sinking of *Repulse* and *Prince of Wales* by Japanese aircraft whilst on route to the Far East later that year showed that, in addition to the the days of the battlecruiser being numbered, the rise of aircraft and naval air power had begun to bring to a close the era of the capital ship.

This paradigm shift in naval warfare was illustrated by the conversion of *Courageous*, *Glorious* and *Furious*, the three battlecruisers ordered directly prior to *Hood*, to aircraft carriers during the latter stages of the war, whilst the United States converted two hulls intended for its battlecruisers into the aircraft carriers *Lexington* and *Saratoga*.

In a similar vein, the loss of the battleship *Barham* on 25 November 1941 to torpedo attack from a German U-boat demonstrated the vulnerability of large, extremely expensive capital ships to relatively inexpensive weapons systems. As a result of advances in technology, the Second World War saw both the aircraft carrier and the submarine emerge as the primary offensive tools in the leading navies of the world.

In conclusion, *Invincible* was a revolutionary ship which, along with *Dreadnought*, brought about the era of the all-big-gun warship. Its pioneering method of propulsion changed the way in which ships were powered, seeing huge increases in the speeds achieved.

The first half of the twentieth century was a time of constant fear of war, interrupted only by actual conflict, and as such Plato's assertion bore true; necessity was the mother of invention. Warfare changed more during these few decades than during any previous period in history, and the rise and fall of the battlecruiser epitomised that rapid development and progression.

Although Fisher was a visionary, his battlecruiser concept only remained valid for so long as

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<sup>124</sup> William M. McBride, *Technological Change and the United States Navy, 1865-1945* (Maryland: The John Hopkins University Press, 2010), p. 1897

their only potential foes were older armoured cruisers; once Germany began building battlecruisers, the concept became obsolete. So limited was the scope of the missions they could complete successfully and so great was their cost that the battlecruiser became a liability almost as soon as *Invincible* had been launched. That the Germans sacrificed a fraction of their speed for the sake of increased armour was proved at Jutland to be a wise decision and demonstrated that in a conflict with enemy Dreadnoughts, the British were unlikely to emerge triumphant.

Despite the disasters at Jutland, Fisher refused to abandon his beliefs, remaining bullish:

Had the whole of Jellicoe's battleships been speedier, *how different the situation!!* The action began at 2 p.m. He (Jellicoe) only gets up at 6 p.m.! ... But you'll see: there'll be an outcry for ships as heavily armoured as a Spithead fort! *That will be the red herring!!*

Regardless of his bluster, Fisher's maxim of speed-is-armour proved ultimately to be flawed. Whilst great speed was certainly advantageous, Fisher placed in it too much faith, and as a result, the battlecruisers were under-armoured for the missions they would be required to undertake. One has to ponder the argument in his defence Fisher would have concocted had he still been alive when Hood went down.

The *Invincible* class was especially vulnerable, with armour no better than that of an armoured cruiser, a broadside restricted to three turrets and insufficient speed to outrun even moderately newer German battlecruisers.<sup>125</sup> The history of HMS *Invincible*, from its original conception to its eventual destruction, serves as a mnemonic for the class as a whole; a class that was ill-prepared for the tasks that would await it, and ultimately paid a heavy price.

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<sup>125</sup> Mark Stille, *British Battlecruisers Vs German Battlecruisers 1914-16* (Oxford: Osprey Publishing, 2013), p. 77

## Appendices

Appendix 1 – Battlecruiser action at Jutland, 3:40 to 4:00 p.m., Ordnance Survey, 1923 Available at: [www.naval-history.net](http://www.naval-history.net) (Accessed: 15 December 2015)

Appendix 2 – Battlecruiser action at Jutland, 4:40 to 5:00 p.m., Ordnance Survey, 1923 Available at: [www.naval-history.net](http://www.naval-history.net) (Accessed: 15 December 2015)

Appendix 3 – Battlecruiser action at Jutland, 5:20 to 5:40 p.m., Ordnance Survey, 1923 Available at: [www.naval-history.net](http://www.naval-history.net) (Accessed: 15 December 2015)

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