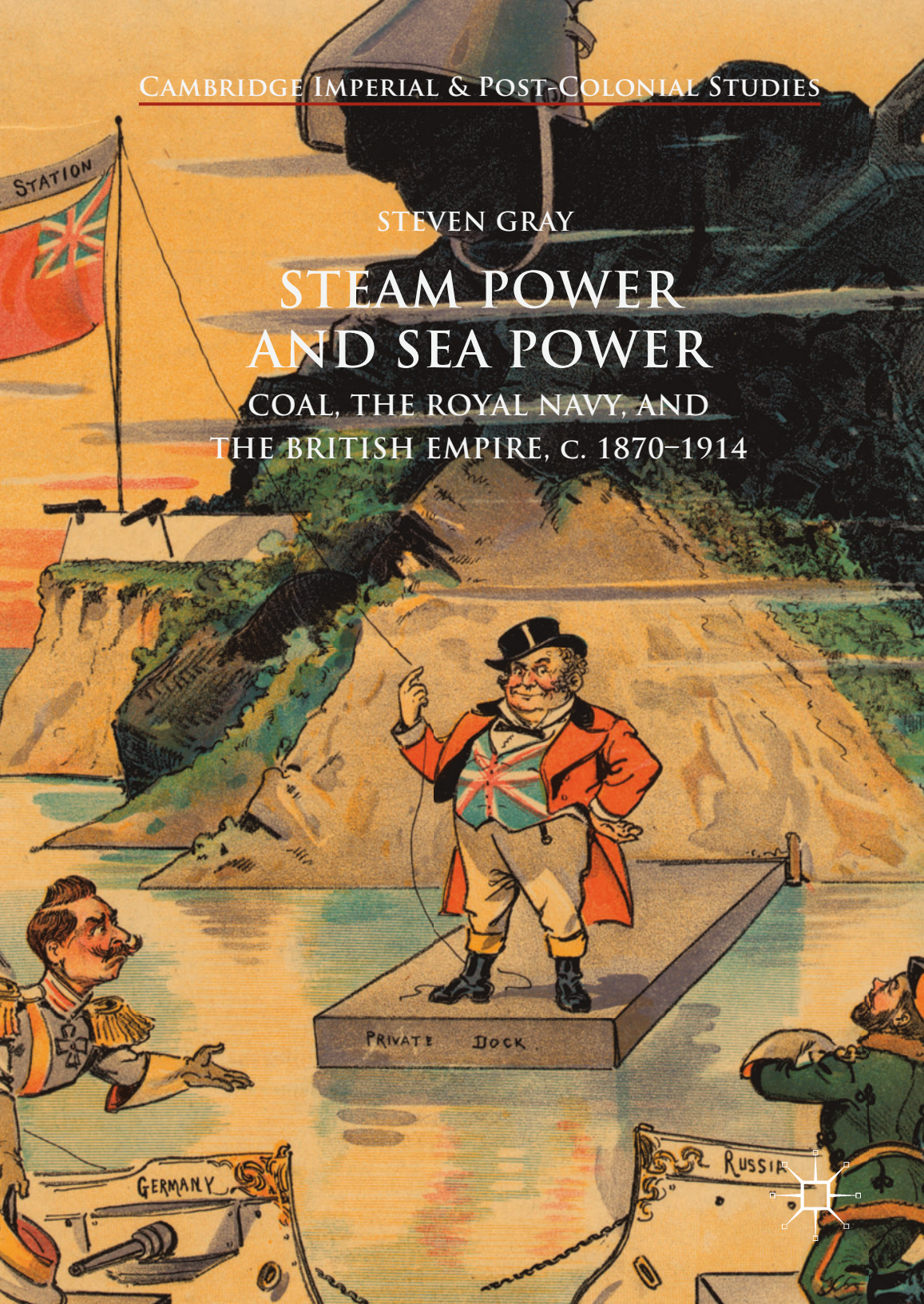


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STEVEN GRAY

# STEAM POWER AND SEA POWER

COAL, THE ROYAL NAVY, AND  
THE BRITISH EMPIRE, C. 1870-1914



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Steven Gray

# Steam Power and Sea Power

Coal, the Royal Navy, and the British Empire,  
c. 1870–1914

palgrave  
macmillan

Steven Gray  
History, SSHLS  
University of Portsmouth  
Portsmouth, Hampshire, UK

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## FOREWORD

This important book is concerned with fundamental technological change, the drivers of that change, and the impact these changes had on Britain, the Royal Navy, and the wider Empire from high policy to the sweating labour of refuelling great ships of war in both tropical and temperate climates. Britain, both nation and navy, adopted steam power at sea with alacrity and pursued ever subsequent development with the benefit of possessing the world's leading marine steam-engineering industry. By 1870, British power and prosperity depended on coal, and coal was rapidly re-shaping the empire as new harbours were built while steam technology moved out from the metropole. Although many historians have examined the wider impact of steam transport on land, few have addressed the situation at sea.

Coal fuelled the nineteenth century apogee of British power. After 1815, industry, commerce, and the Royal Navy were quick to adopt steam power, initially as an adjunct to pre-industrial sources and quickly thereafter as the prime move of national activity. Not only did British coal become a major export alongside the machinery it powered, it soon became clear that the finest coal for marine engines came from South Wales. British coal was in constant motion across the world's shipping lanes: In the 1890s, wooden sailing ships loaded coal in Liverpool for shipment to San Francisco by way of rounding Cape Horn. On arrival, that coal undercut supplies from the American East Coast. Coal gave British shipping a guaranteed outboard cargo, thus ensuring that they earned freight on both legs of any journey. This competitive advantage



helped to sustain the world's largest merchant shipping industry, and the coal it carried constituted a floating reserve for national use by supplementing coal stocks held ashore around the Empire. Foreign fleets bought this product, thus enabling British intelligence to monitor their war-like preparations and anticipate an early end to any naval conflicts with less fortunate powers.

Coal also helped the Royal Navy put on a show. When Queen Victoria came to throne in 1837, her fleets displayed their prowess to the other ships in the fleet, and to foreign rivals, by shifting their topmasts and changing yards. By 1901, they did so by competitive coaling, and these ritualised routines built the camaraderie and teamwork that formed the core of naval proficiency and produced the finely honed physiques that impressed crowds at home and abroad. Yet the navy was well aware that such work in the hot tropics could damage men's health and looking to local labour to preserve scarce skilled sailors.

By 1860, steam warships, built of iron and then steel, had replaced the wooden walls, and their demands for fuel, docking accommodation, and engineering support re-shaped British power as submarine telegraph cables, laid by iron steamships, connected the British imperial system into a modern information network for both trade and war. Those points on the globe where ships, docks, fuel, and communications met became the strategic keys that, in Jackie Fisher's delightful phrase, "locked up the word." In 1914, Britain used those points, a powerful fleet, and intelligence dominance to reduce the Central Powers to a purely European strategy, with fundamental consequences for the outcome of the conflict. By 1918, most of the world's navies had learnt the hard truth that they could not wage war effectively without British coal. Before such profound implications could be fully absorbed, the Royal Navy switched to oil fuel. Once again tradition and domestic sourcing were outweighed by superior efficiency and power. The British Empire was built by commerce, not sentiment, and defended by realists, not romantics.

Steven Gray has made a major contribution to a critical task: putting the sea back into British and Commonwealth history. He reminds us that the ties that bind were formed by ocean-going ships, which were sustained by steam, and that the great bulk of all international trade was, as it still is, maritime trade. Coal created that system, and its impact rippled across the globe, sustaining a century of British sea power, creating

new labour markets, and changing perceptions of local peoples. Today the dominion of coal is but a memory: Indeed this foreword was written on the first day that renewable sources produced more than 50 % of Britain's electricity.

July 2017

Prof. Andrew Lambert  
Laughton Professor of Naval History  
King's College, London



## ACKNOWLEDGEMENTS

This book has been 7 years in the making, during which time I have been associated with five institutions, so inevitably this book has gained greatly from the invaluable help of many colleagues, academics, librarians, archivists, and friends.

I am immensely thankful to those who guided me—particularly Professor Huw Bowen, Professor David Lambert, and Dr. Robert Blyth—through the process of becoming a historian. I am also grateful for funding from the AHRC, which funded the beginnings of this project. I am also indebted to former colleagues at Swansea University as well as current colleagues at the University of Portsmouth, particularly in the Port Towns and Urban Cultures group, who provided immense support and encouragement in creating a friendly and lively research environment. Staff at those libraries and archives I visited were invaluable to locating the myriad sources for which I searched.

Some academics went out of their way to assist me in the research and writing of this book, and I am humbled by their kindness. In particular, I am grateful to Professor Andrew Lambert, who offered sage advice and who agreed to write the foreword. I have also relied heavily on several brilliant academics, who I am proud to say are also good friends. Dr. Louise Moon and Dr. Robert James both offered comprehensive feedback on the entire manuscript, and Dr. Aimée Fox, Dr. David Morgan–Owen, and Dr. Daniel Owen Spence offered important comments on various iterations and parts of the book. Dr. Natalie Cox was an immense support as both a research assistant, who did an enormous

amount to get this book to publication, and a close friend. I am also grateful to Molly Beck and Oliver Dyer at Palgrave who showed endless patience with me as they guided me through the publishing process. Any errors in this book, of course, remain mine.

I am also grateful to those who often looked bemused when I tried to explain this book but who offered unconditional support nevertheless. As such I am hugely thankful to my family who have indulged and supported my love for learning since I was young and who were immensely supportive during times when I struggled. I am also fortunate to have the support of several close friends, who have done their best to keep me sane, and I am immensely grateful to Sam, Bish, Hef, and David. Finally, this book would not have been possible without the support of Lizzy, who offered seemingly infinite support and patience.

Writing this book coincided with a particularly difficult period for me, as I wrestled with the twin demons of depression and anxiety. I want to thank those friends and colleagues who encouraged me to get help, those who offered no judgment, but instead unconditional support, advice, and love. Relative strangers who took the time to offer reassurance and share experiences were invaluable, and reminded me that no one is truly an island. Writing this book gave me unparalleled insight into challenges facing academics with mental health issues. We are not alone. I am therefore grateful for those who have helped to highlight issues of mental health both in academia and more widely. With a chronically underfunded mental health sector, I am also grateful for charities such as CALM (Campaign Against Living Miserably) and Movember, who do so much to plug the gaps. Any royalties will be donated to those charities.

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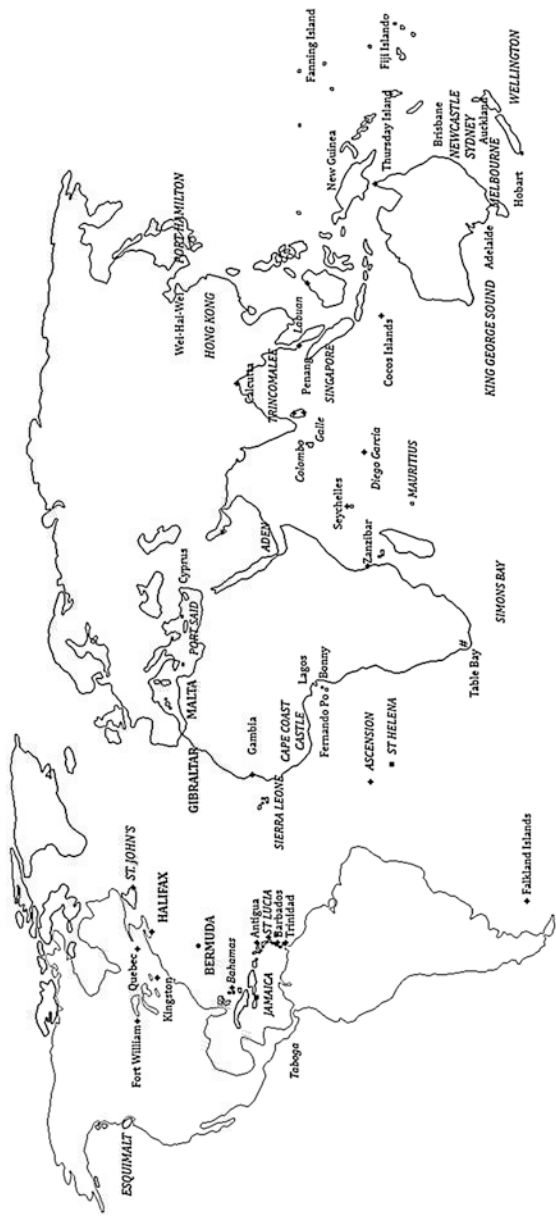
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**LEGEND**

- BERMUDA - Imperial Fortresses
- JAMAICA - First Class Coaling Stations (According to Stead)
- ▲ Esquimaut - Other Naval Coaling Stations
- # Adelaide - Commercial Coaling Stations

Principal coaling stations used by the Royal Navy, 1870 to 1914

## Introduction

On 12 July 1871, the sea-going monitor H.M.S. *Devastation*—“by far the most formidable of its kind yet constructed”—was launched in Portsmouth. Attracting a great crowd despite inclement weather, the ship “slowly glided out of the dock” as the Royal Marine Band played the national anthem and sailors on nearby ships “hurrahed tremendously.”<sup>1</sup> It was a truly revolutionary ship, its ground-breaking design shown through the presence of large coal bunkers: H.M.S. *Devastation* was the first Royal Navy ship powered purely by steam and was entirely without sails. Moreover, it was the first ocean-going capital ship with all of its armaments mounted on the hull with “exceptionally heavy armour and armament.” This radical break with tradition meant that, unsurprisingly, its trials attracted international attention, with commentators being unsure if the ship was truly seaworthy.

These fears were not unfounded but were based on recent history. Less than one year earlier, the sea trial of another innovatory ship with turret guns, H.M.S. *Captain*, had ended in disaster when the unstable ship had sunk taking nearly 500 lives. With its mastless design, H.M.S. *Devastation* was more radical even than the *Captain*. It is perhaps unsurprising then that this new technology aroused fears of the unknown and a suspicion that ship architecture had moved into the realm of the impossible.

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<sup>1</sup>“Her Majesty’s Ship *Devastation*,” *The Times*, 13 July 1871.

An American commentator, aboard for a sea trial, questioned whether it was even a ship at all:

the *Devastation* moves slowly ahead, and glides through the water as if she were a ship, instead of being a sort of infernal machine created by some tremendous engineering mind, when in a state of nightmare. In fact she is more like one's infantile idea of a bogie than anything we have ever seen.<sup>2</sup>

Yet these suspicions were soon allayed. Although never designed for long cruises of imperial waters, the *Devastation* was still “able to steam over long distances and keep the sea for a considerable time.”<sup>3</sup> It may have been otherworldly to contemporary eyes, but it proved to be far from a nightmare, except for Britain's enemies. Instead, it was concluded that “she can steam; she can fire; and all works well ... she is a wonderful vessel.”<sup>4</sup>

The ship marked the beginning of the new era of the mastless steamship whose decks allowed better-positioned guns, thus making warships far more formidable in battle. Whilst more hybrid ships with sail and steam engine were built for the navy, the last of these was launched just 4 years later. It is not surprising, therefore, that H.M.S. *Devastation* has an iconic status in naval history by marking a watershed moment in ship design. It also has a cultural legacy, which lasts even to this day, as the ship famously featured at the centre of the design for “England's Glory” matches (Fig. 1.1).

This watershed created new issues for Britain. The free mobility of the Royal Navy in the age of steam has often been assumed, yet—as a correspondent aboard for the trial of *Devastation* suggested, the ship, “if working up to full power all day ... consumes 150 tons of coal per day.” Without coal, therefore, as well as the engineers and stokers to manage the engines, “the *Devastation* becomes the veriest hulk in the navy.”<sup>5</sup>

---

<sup>2</sup>“The Devastation,” *Inter Ocean* (Chicago), 19 July 1874. The ship was also covered extensively in J.W. King, *Report of Chief Engineer J.W. King, United States navy, on European ships of war and their armament, naval administration and economy, marine constructions and appliances, dockyards*, etc, (Washington, DC: Government Printing Office, 1877).

<sup>3</sup>“Her Majesty's Ship Devastation,” *The Times*, 13 July 1871.

<sup>4</sup>“The Devastation,” *Inter Ocean* (Chicago), 19 July 1874.

<sup>5</sup>*Ibid.*



Fig. 1.1 H.M.S. *Devastation* pictured on the “England’s Glory” matchbox. Courtesy of Marcus Böckmann

The American Admiral Asa Walker echoed these remarks in 1900, stating that ‘the modern man of war presents no canvas to the winds; within her bowels is an insatiable monster whose demand is ever for coal and still more coal’.<sup>6</sup> Therefore, Britain was only able to project its power, both militarily and culturally, and to protect British interests and commerce globally in the period from 1870 to 1914, because of the global coaling infrastructure it controlled for the use of its navy. This was, of course, central to the ability of the Royal Navy to either fight or be an effective deterrent. To this end, perhaps the most influential naval theorist of this period, A.T. Mahan, suggested in 1911 that “fuel stands first in importance of the resources necessary to a Fleet. Without ammunition, a

<sup>6</sup>Asa Walker, “The Battle of Manila Bay,” Unpublished manuscript, Record Group 14, Naval War College Archives, Newport, R.I., 1900. Cited in John H. Maurer, “Fuel and the Battle Fleet: Coal, Oil, and American Naval Strategy, 1898–1925,” *Naval War College Review*, 34 (6), 60.

ship might run away, hoping to fight another day, but without fuel, she can neither run, nor reach her station, nor remain on it, if remote, nor fight.”<sup>7</sup>

Supplying a fleet as large as Britain’s, with operations both diverse and global, required an immensely complex series of operations. Suitable fuel had to be found, tested, bought, and, transported. Strategic spaces had to be found to store the coal; labour was needed to load it; and plans were needed to protect them. Moreover, stock had to be managed and maintained to ensure that ships would have enough fuel to load when they arrived. The establishment of coaling stations also had ramifications for both those sailors who found themselves with leave after refuelling was done and for residents of those spaces who found naval visitors to be free-spending consumers, drunken nuisances, and carriers of disease.

This book therefore looks to understand the global changes wrought by a shift from a sail to a steam navy. To do so, it will not only look at the huge geopolitical and infrastructural issues caused by such a change but also the social and cultural ramifications for sailors, imperial labourers, and those residing at coaling stations. It also raises important questions about the British Empire itself. As Daniel Headrick suggests, when considering new imperialism, we must ask, ‘How did technological forces shape its development?’<sup>8</sup> Indeed, when we frame it this way, coaling stations, and the networks that emanated from and around them, emerge as an important layer of the “British world-system” of the period of *Pax Britannica*. Much as John Darwin suggests in *The Empire Project*, these systems and processes often fall outside the term “British Empire,” which nonetheless played a vital role within the global British-world system.<sup>9</sup> The Royal Navy was, as Andrew Lambert suggests, the “shield of Empire” (including its economic interests), and thus coaling stations were an integral part of the maintenance and expansion of global British influence in the last quarter of the nineteenth and first decade of the twentieth century.<sup>10</sup>

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<sup>7</sup>Robert Seager and Doris D. Maguire (eds), *Letters and Papers of Alfred Thayer Mahan*, Vol. 3 (Annapolis: Naval Institute Press, 1975), 399.

<sup>8</sup>Daniel R. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (Oxford: Oxford University Press, 1981), 4.

<sup>9</sup>John Darwin, *The Empire Project* (Cambridge: Cambridge University Press, 2009).

<sup>10</sup>Andrew Lambert, “The Shield of Empire 1815–1895,” in J.R. Hill (ed.), *The Oxford Illustrated History of the Royal Navy* (Oxford: Oxford University Press, 1995), 161–199.

This study, then, is far more than a technocentric history of naval architecture. Instead, the book argues that the navy's reliance on coal, a substance "utterly lacking in glamour," in fact had important consequences that shape and augment our understanding of British strategy, geopolitics, infrastructure, and transnational and imperial history in this key episode of the *Pax Britannica*.<sup>11</sup> It shows that the Royal Navy had profound effects not just on defence issues but also on labour forces, indigenous societies, imperial networks, and imaginations of empire. The navy was a key "tool of empire" and thus understanding a radical change of technology within it is crucial to our understanding of the period of high imperialism, part of "hundreds of diverse products and processes" which allowed Britain to consolidate its global power.<sup>12</sup>

### THE COAL PROBLEM

Whilst H.M.S. *Devastation* was the first British warship to be powered solely by coal-powered steam engines, the need for a coaling infrastructure for the Royal Navy, thus allowing ships to be at least partly powered by their engines, predates its launch. Indeed, mastless ships were just one part of the huge changes in naval technology that occurred in the second half of the nineteenth century. The rapidly improving technology of steamships, particularly those developed after the Crimean War, increasingly offered advantages with which sail ships could not compete. Steam propulsion allowed ships' routes to be more direct, and their speed to be increased. Furthermore, it enabled the use of iron and steel in hull design, allowing more effective armour. This was especially important as new projectiles developed in the mid-nineteenth century, such as exploding shells, were devastating to wooden warships: in terms of armour that the "wooden walls" were no longer adequate. Thus, a ship design that had served Britain so admirably in the wars of the long 18th century was now obsolete.

These changes took around two decades to fully embed. It would take the radical design of the *Devastation* to fully shackle the navy to the coaling station as, until the 1870s, steam engines remained too inefficient

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<sup>11</sup>B. Freese, *Coal: a human history*, Oxford, 2003, 2, 13.

<sup>12</sup>Headrick, *The Tools of Empire*, 11–12.

to be the sole source of power for a warship. Thus, even though the Battle of Navarino in 1827 was the last to be fought by the British Navy entirely with sailing ships, the shift to a steam navy was a gradual one, with hybrid ships of both sail and steam, such as H.M.S. *Warrior*, common in the early part of this period. The shift was not instantaneous, but it did have enormous ramifications for the Royal Navy, the British Empire, and its global trade.

### STRUCTURE OF THE BOOK

At its heart, this book is about mobility. Britain had global interests that it needed to protect, and thus the Royal Navy had to be able to move across the globe. As soon as it could no longer rely on the free and abundant power of the wind, its mobility relied on the presence of fuel at strategic points across the oceans. This need was a complex one, and had ramifications for imperial defence, created a need for infrastructure and vast labour forces, and meant that Royal Navy ships became far more common sites across the world, as they stopped to refuel. This book is comprised four parts, constituting a journey from the geopolitical planners in Whitehall, through the pits and coal export ports, to the imperial coaling stations, where sailors experienced both indigenous labour, local peoples, and exotic landscapes.

The first part of the book discusses the political issues resulting from a dependence on coal and uses the term “coal consciousness” to describe the increasing awareness of the importance of coal to British imperial and commercial security. Rather than discuss the coal issue in isolation, however, it argues that it is imperative to see the wider context of the last quarter of the nineteenth century in order to understand the place of coal in discussions about imperial defence. Indeed, it shows that the emerging acceptance of the need to defend coaling stations in the later 1880s, and its important effects in terms of imperial defence and naval mobilisation, did not stem only from concern about the safety of coaling in war, but was also a result of a combination of interdependent changes in state, politics and popular opinion.

Chapter 2 considers how the Carnarvon Commission, compared with the earlier Colonial Defence Committee, created an enduring coaling knowledge. This was achieved through the sheer weight of evidence and data collected, reflecting wider belief in the power and practical utility of information and knowledge.



Chapter 3 shows that even with such a glut of recommendations from the Carnarvon Commission, progress on coaling station defence was still subject to the political ideology of the incumbent government. Responses to a coal consciousness were advanced or impeded by party politics, economics, and popular views of imperial and naval weakness. While Gladstone's liberal imperialism held sway, little progress was made. Yet with a rise in pro-imperial activism, measures were eventually taken to consider the coaling issue, leading to higher naval spending. The chapter then considers the legacy of coal consciousness, arguing that it placed coal at the centre of a growing imperial defence movement, and allowed Britain to respond quickly and effectively to the German maritime threat in the First World War.

In assessing the role of the coal problem in wider debates about imperial defence, this part of the book adds an additional angle to existing studies. In doing so, it extends—and crucially draws connections between—existing studies of the navy, imperial defence and government foreign policy in the nineteenth century. Thus, it does more than simply show the importance of coal to the navy, but shows how this had strategic and imperial ramifications for the Admiralty and British government.

The second part of the book considers the materiality of naval coaling networks. Coal did not simply appear at overseas stations, but needed to be chosen, purchased, transported, and stored. As coal was so crucial to steam warships, decisions about types of coal and the supply infrastructure's robustness were central to the Royal Navy's ability to protect British interests and trade.

The coaling infrastructure used by the Royal Navy in the late nineteenth century was remarkable in many ways. Chapter 4 considers each part of the process in turn, showing not only the complexity of the system, but also its vast geographical scale and the involvement of a bewildering number of non-state actors. Despite its sprawling nature, the infrastructure was remarkable robust, even during crises, and especially compared with the systems used by Britain's rivals. The Admiralty's trials in the early part of the period showed which coal made the most suitable and efficient fuel, allowing the navy to establish and maintain high-quality supplies. Furthermore, its careful supervision of the commercial agents employed to manage the structure was crucial to ensuring that the navy's needs were met.

Chapter 5 considers how coal consciousness also affected how data were gathered about coaling worldwide with stations increasingly

required from the 1880s to provide London with information about stocks, facilities and station activities. These processes underpinned the success of Britain's naval coaling infrastructure. Indeed, by concluding with examples of the stresses and failures in the coaling systems of foreign navies, the chapter argues that Britain entered the twentieth century with the most secure infrastructure of any power.

This part of the book builds on other studies of naval supply—in particular those relating to victualling and oil—to show how supplies of coal were secured across the globe for the late nineteenth—and early twentieth—century Royal Navy. Furthermore, it extends studies of imperial networks by examining the infrastructure that allowed them to function, thereby highlighting the materiality of empire. In looking at coal, it also furthers the scope of global commodity histories, emphasising the key role and ramifications of the movement of a bulky, low-value, and unglamorous fuel such as coal.

Coaling stations were not just strategic points but also working environments. Coaling a naval ship at any station involved substantial work, especially as the amount of fuel ships required increased in the late nineteenth and early twentieth centuries. Coal, for all its advantages, is a solid, heavy, dirty fuel, and transferring it was a long and taxing process, however it was performed. The third part explores this laborious process, acknowledging not just the different systems used to coal ships, but the human experience of moving coal on board.

Coaling was often undertaken by indigenous workers. In examining accounts of these coal heavers recorded by sailors, Chap. 6 argues that, despite the unique nature of the activities and interactions at coaling stations, sailors' ideas about imperial labour and race, in particular, reflected those held commonly by Britons in the late nineteenth and early twentieth centuries. Indeed, although not all records castigate local labourers, they are usually seen as cogs in a machine, replaceable when broken. This chapter therefore explores how the need to coal ships affected local populations, showing how they caused the migration of labour, often to places where coaling was the sole employment.

Chapter 7 analyses how, as the period progressed, sailors were increasingly used to coal ships as a convenient and ostensibly free source of labour. A laborious and dirty job, coaling was unsurprisingly an almost universally hated exercise. This was compounded by the dangers involved. Often needing to coal once a week, sailors inevitably developed coping processes, which show much about both their personal and

collective identity. Indeed, competition among ships to achieve the highest coaling rates tells us much about how the naval man was built on ideas of pride, hard work, and endeavouring to be the best. Accounts also suggest that sailors realised the wider importance of coaling efficiently to allow the Royal Navy to quickly mobilise in defence of its empire.

The final part of the book examines coaling stations as sites inhabited and visited by historical actors. In fact, because of their strategic, and often commercial, importance, these diverse and multicultural places could contain a wide variety of people, including British naval personnel, merchant seafarers, local populations, economic migrants, garrison soldiers, and foreign navies. Indeed, although they were distinct places in purpose and make up, coaling stations did not exist in vacuums, but were part of other geographical places. Like ports, naval coaling stations were hybrid spaces. The strategic and logistical importance of coaling stations to the navies of both Britain and other nations created a mix of peoples and a naval community that did not exist at any other place, maritime or imperial. Moreover, as the global reach of other navies grew, these coaling stations became more diverse as the period went on. As a result, coaling stations were key contact zones between Britons, the empire and other European people abroad in the late nineteenth century and, in fact, are one of the prime examples of everyday encounters between Britons and the wider world.

Chapter 8 explores how sailors experienced the station, analysing interactions with other “westerners,” and how this shows that stations possessed a western maritime culture. It also examines the more predictable pastimes of drinking and violence, showing how these can help elucidate visions of patriotism, masculinity, and class amongst the navy, and how this could disrupt feelings of community. The chapter extends social and cultural histories of the navy by uniquely looking at the sailor in the empire and at leisure.

An integral part of leave at a coaling station, particularly for bluejackets, was an immersion in that place’s indigenous populations, cultures, unique sights, landscapes, and fauna, and it is this which the final chapter explores. Such experiences were widely recorded in diaries, published accounts, and through sketches and photographs, many of which were widely disseminated at home. The ways in which stations and their populations were depicted largely fitted a wider pattern of seeing imperial spaces, and the populations, landscapes, and fauna that resided in them

as exotic and “other.” The chapter also explores use of indigenous prostitutes, showing how, although tolerated “on station” despite domestic moral fervour, the spread of venereal disease was a real problem for the navy, something often blamed on the race of the women.

This book therefore shows that the technological changes of the second half of the nineteenth century were far more complex, and with far bigger ramifications, than is often considered. At the centre of these ramifications were lumps of steam coal—“the black diamond ... [that] ... sways the destinies of Empires.”<sup>13</sup>

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<sup>13</sup>“King Coal,” *Western Mail*, 9 November 1898.

PART I

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The Rise of Coal Consciousness: Coal,  
State, and Imperial Defence

## Investigating the Coal Question

In 1882, Lord Carnarvon delivered his Commission's third and final report on "the best means ... of providing for the defence and protection of Our Colonial Possessions and commerce ... special attention being given to necessity of providing safe coaling, refitting and repairing stations ... in time of war."<sup>1</sup> These three reports attempted to assess and make recommendations for the permanent security of British interests and shipping. Their influence was such that they are widely seen as the beginnings of a coherent global defence strategy.

This book is, of course, not the first to argue for the importance of the Carnarvon Commission. Indeed, Peter Burroughs has described it as "a turning point in official [imperial defence] policy."<sup>2</sup> It does, however, argue for a more complex understanding of these reports, framing them within a changing political landscape and placing the Commission within the rapidly changing context of imperial and foreign policy that came to dominate the politics of the late nineteenth century. At the centre of these debates was, necessarily, the Royal Navy, the primary safeguard of British global trading interests. Whilst threats to empire and trade, both real and imagined, help to explain the development of these debates, the

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<sup>1</sup> *London Gazette*, 12 September 1879.

<sup>2</sup> Burroughs, "Defence and Imperial Disunity," Porter, A.N. (ed.), *The Oxford History of the British Empire. Vol. 3, the Nineteenth Century*. (Oxford: Oxford University Press, 1999), 335.

primary causes for alarm were the problems the navy faced in fulfilling its worldwide role in the age of steam.<sup>3</sup> Chief amongst these was a need for a safe and regular supply of quality coal wherever a ship may be. Thus, to understand this turning point in imperial defence policy, we must trace the rise of “coal consciousness”—a dawning realisation about the crucial part that the security of coal and coaling infrastructure played in the protection of British interests abroad.

Whilst it may have been a defining moment, the Commission was far from the beginning of debates around the coal question, nor the first time it had been understood in terms of a wider imperial context. An awareness of the strategic importance of coal had existed for some time in commercial and shipping circles, and had been an important issue for the Admiralty from the moment that a steam navy had been pursued by Britain. Yet outside of a small minority of navalists, the linkage between coal supply and strategy had received little attention, and even less concerted investigation. That this issue came to be placed front and centre in imperial defence planning can therefore be explained for two reasons. First was a rapid expansion of seaborne trade on a global scale, which mobilised much stronger commercial and financial backing for a strong navy. Second was a growing uncertainty in Britain more generally about its place as the global hegemon. It was only when this status, and therefore trade, appeared to be under threat that Britain began to seriously consider the importance of coal to imperial defence.

This connection meant that debates around the coaling question necessarily were made in the context of wider understandings of imperial and trade debates, yet the importance of this context, and of coal’s importance to other parts of this debate, have largely been ignored by historians. This chapter, therefore, charts the course of coaling debates until the publication of the Carnarvon Commission’s reports in 1882, considering how responses to the coal question were both affected by, and crucial to, shifts in political thought about imperial defence. In particular, it considers how the Carnarvon Commission, compared with the earlier Colonial Defence Committee, created an enduring coaling knowledge, achieved through the sheer weight of evidence and data collected,

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<sup>3</sup>Beeler, “Steam Strategy and Schurman,” in Kennedy, Greg, Neilson, Keith and Schurman, Donald M. (eds.), *Far-Flung Lines: Essays on Imperial Defence in Honour of Donald Mackenzie Schurman*. (London: Frank Cass, 1996).



reflecting a wider belief in the power and practical utility of information and knowledge.

### UNDERSTANDING THE COAL QUESTION

The Marquess of Salisbury famously remarked in 1877 that “English [foreign] policy is to float lazily downstream, occasionally putting out a diplomatic boat-hook to avoid collisions.”<sup>4</sup> This statement reflected a general confidence in the political–economic orthodoxy of free trade that had been highly successful in expanding Britain’s merchant marine, whilst driving down defence costs around the empire.<sup>5</sup> Yet the world was changing. Although things would not come to a head until a year later at the height of the Eastern Crisis, questions were being raised about both Gladstonian foreign policy and attitudes toward empire. Unrest in the formal and informal empires, including major rebellions in Jamaica and New Zealand in the 1860s, undermined a policy based on the low-cost defence of empire, not least because they were widely seen to have been exacerbated by cost-saving troop withdrawals from the colonies. Alongside the growth of other powers, both in a commercial and in a military sense, Gladstone faced the accusation that they were endangering the empire for a foreign policy that appeared to be based on peace at all costs. This led to what have often been seen as defensive annexations, prompted by fear of a rival power taking control of territories and denying Britain access to its trade.<sup>6</sup>

Seizing on this discontent, the Conservative Party under Benjamin Disraeli reinvented itself as the “imperial party.”<sup>7</sup> Epitomised by Disraeli’s Crystal Palace speech of 1872 where he announced that one of the aims of his party was “for maintaining the greatness of the kingdom and the empire,” Gladstone’s imperial and foreign policies came under attack.<sup>8</sup> Disraeli suggested that the Liberal leader’s refusal to increase

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<sup>4</sup>Malcolm Pearce and Geoffrey Stewart, *British Political History, 1867–1990: Democracy and Decline*. (London: Routledge, 1992), 143.

<sup>5</sup>E.H.H. Green, *The Crisis of Conservatism: The Politics, Economics, and Ideology of the Conservative Party, 1880–1914*. (London: Routledge, 1995), 2.

<sup>6</sup>Green, *The Crisis of Conservatism*, 67.

<sup>7</sup>Ibid. 67–69.

<sup>8</sup>Disraeli suggested that the working classes “are for maintaining the greatness of the kingdom and the empire, and they are proud of being subjects of our Sovereign and members of such an Empire. Well, then, as regards the political institutions of this country, the