“Welsh coal and the informal empire in South America, 1850–1913”

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Abstract: Coal was crucial to the growth of several South American states between 1850 and 1913, being used for their expanding railway networks, to generate power for their emerging industries, and by the steamships in which much of their overseas trade was conducted. Lacking indigenous sources of sufficiently high quality, Argentina and Brazil in particular came to rely heavily on Welsh coal for their energy needs. While playing a crucial role in the economic development of such countries, Welsh coal and its distribution network of coaling stations also helped in protecting the trade between Britain and South America, allowing the Royal Navy to have access to the most suitable coal for its purposes at distances varying from almost 4,000 to 10,000 miles from its point of origin. This paper explores various aspects of the development of this trade and argues that, in discussions of the development of the informal empire, the significance of (Welsh) coal should not be overlooked, as has tended to be the case in some modern works.

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Many different ideas have been developed by historians to try to reflect the nature of the relationship existing in the nineteenth and twentieth centuries between Britain and Latin American countries. Foremost amongst these is that of ‘informal empire,’ an idea initially developed in John Gallagher and Ronald Robinson’s seminal publication, *The Imperialism of Free Trade*, and which suggested that Latin America countries, while not under British rule and therefore not part of the formal British Empire, provided a prime example of imperial dominion through British economic power. This idea was expanded upon by Cain and Hopkins who famously advocated the importance of free trade and the informal empire to Britain in the last quarter of the nineteenth century, predicated on the fact that business interests were often closely intertwined with political ones.¹ Cain and Hopkins’ concept of ‘gentlemanly capitalism’ drew specific attention to the role of finance and services such as shipping and insurance.² Subsequent work on South American states has reinforced the view that British influence was fundamental to their development in the nineteenth century.³

Nevertheless, the relevance of the term informal empire to describe this relationship has often been challenged since, not least with respect to key countries in South America. Winn, for example, notes that Britain’s desire for a level playing field with respect to free trade represented a “self-serving piety,” since she knew that Britain would be the only real beneficiary, while Simpson recognises the importance of free trade in creating “a framework in which self help and private initiative could flourish.”⁴ Despite their agreement over the importance of free trade, while Winn considers that the experience of Uruguay fits the Gallagher-Robinson informal empire model, Simpson argues that, in Argentina, there is no evidence of “any systematic policy of informal rule” exercised by the British government.⁵

While free trade can result in mutual benefits, as Lewis has pointed out, the gains need not be shared equally between the participants.⁶ Nevertheless, he notes that the benefits of British investment in Argentinian railways in the late nineteenth century accrued to both the London-based railway companies and the local political elites. Pointing out that this investment does not fit the hegemonic/satellite, Gallagher-Robinson or dependency models, Lewis argues that, broadly speaking, the foreign railway companies “delivered what was expected of them in terms of state-building, frontier-expansion, market-integration and nation-building, and the valorisation of local assets.”⁷ As in other countries, the Argentinian railways played an important role in shaping the nature and the extent of internal economic development through reducing internal transport costs. Using data on Argentina, Fajgelbaum and Redding have identified the significance of complementary internal investments in mediating the response of an economy to external integration into world markets in the late nineteenth century.⁸ Pascali, however, has pointed out that the reductions in trade barriers resulting from moves towards free trade do not automatically generate large positive effects on economic development.⁹ While noting that the development of the steam engine for marine propulsion accounts for about half of the growth in world trade in the second half of the nineteenth century, Pascali points to the important influence of institutions on urbanization rates and population density: trade had greater positive effects in those countries with inclusive institutions, in contrast to those with autocratic regimes.¹⁰

In recent years, the historical process of globalisation has attracted the attention of economic geographers, who have stressed the significance of trade networks for economic development.¹¹ Recent research into informal empire has likewise looked towards networks, questioning “how the existence and unity of

empires were made possible by supranational connections, and how empires fostered networks that cut across national boundaries.”¹² By combining the historical and geographical approaches, this paper examines one specific network which was fundamental to the relationship between Britain and South America between the middle of the nineteenth century and the First World War: the export of Welsh coal.

Economic relations between Britain and South America, 1850–1913

Analysing developments between the mid-nineteenth century and the 1920s, Bulmer-Thomas concluded that there was a “‘natural’ complementarity between the world’s greatest imperial power [Britain] and a region [Latin America] blessed with a capacity to produce cheap raw materials and foodstuffs.”¹³ A combination of factors, including Britain’s adoption of free trade, the growing commitment of Latin American countries to export-led growth, the willingness of capital to once again flow into Latin America, and, to a much lesser extent, the migration of British labour, all played a role in this process. While “British pre-eminence in foreign investment in Latin America was not [...] seriously challenged before the First World War,”¹⁴ its overall hegemony in Latin America began to wane from around 1870. This was reflected in its falling market share in the region, and one which “would have been more serious if Britain had not succeeded in keeping a strong grip on the Argentine market – by far the most important Latin American economy in terms of foreign trade by the end of the century.”¹⁵

The share of British exports accounted for by Latin America grew between 1860 and 1913 from 7.0 percent to 11.0 percent while its share of imports rose from 6.4 percent in 1854/6 to 9.9 percent in 1913.¹⁶ Looking more closely, we find that the share of British exports to Latin America taken by various countries changed

significantly between 1860 and 1913. Thus, while Chile's share fell slightly from 12.1 percent to 10.8 percent, and that of Brazil more significantly from 31.4 percent to 22.6 percent, that of the Argentine Republic grew dramatically, from 12.9 percent to 40.8 percent.¹⁷ It has been suggested that "trade inevitably followed capital flows, with British exports to each country closely correlated to the extent of British investment."¹⁸ Thus, the growth of British exports to the Argentine Republic was a reflection of Britain's financial investment in the country, especially the railways, which made possible the rapid expansion of agricultural output and increased exports to Europe and North America.

Key to such developments were two technological innovations of the period, namely the transatlantic steamship and the railway, both of which made importing and exporting to and from the region less burdensome.¹⁹ The penetration by railways of the interior of countries such as Brazil and Argentina, especially the latter, enabled the development of modern, steam-powered domestic textile and milling industries, by bringing the supplies of coal needed to power the new factories and mills.²⁰ As well as providing the means by which steam power could be distributed more widely, railways themselves required coal for their daily operations. Coal, therefore, was fundamental to economic growth in South America between 1850 and 1913, despite the emergence in some countries towards the end of the study period of hydro-electric power schemes and the exploitation of local oil resources.

Coal and economic development in South America, 1850–1913

Nineteenth century economic development was predicated on power, and while wind or water could be harnessed for some purposes, it was steam power that proved the most significant. While peat and wood could be used as fuels in certain circumstances,

coal was the most suitable for generating steam. Most South American countries, however, lacked an indigenous supply of suitable quality coal. It was only really in Chile that sizeable amounts of coal were produced on an annual basis, and even here levels of production paled into insignificance with those in countries in Europe and North America. From negligible beginnings in the 1840s, however, Chilean coal production had reached almost 900,000 tons by 1877, and by the end of the 1870s “coal mining in Chile was an important productive activity, not only in terms of its output, but also with regard to employment, technological innovation and its social effects.”²¹ Such development depended largely on domestic capital, only one English company, the Arauco Company, established in 1855, being formed to exploit Chilean coal.²²

Data provided by Mitchell, indicates that while Chile was still the major producer in South America in the mid-1890s, production had fallen back to only 200,000 metric tons in 1895, though it did enjoy an expansion thereafter to 1.28 million metric tons in 1913.²³ Of the other coal producers, Venezuela produced a mere 7,000 metric tons in 1913, and Peru 274,000 metric tons, while Argentina and Brazil produced nothing of any note. Indeed, the largest and fastest growing economies in South America after 1850 had virtually no meaningful domestic coal resources of their own and had to rely on imports. Throughout most of the study period the monopoly supplier of coal was Britain and, in particular, south Wales. It was not just Britain’s close trading relationship with South America that predicated this, but that Welsh coal had been widely proven to be of the best quality available. Somewhat ironically, while steam had largely replaced sail as the main delivery mechanism for higher value trade and ocean liners by the twentieth century, much of the coal exported to South America even in 1914 was brought in by sailing ship.²⁴

While the exports of raw material and foodstuffs from the region to Europe and North America have been the focus of attention of most historians, an important aspect of this trade was the coal which travelled in the opposite direction. This back-freight helped lower inbound freight rates and hence the cost of living in the countries receiving South American produce.

British (Welsh) coal was therefore ubiquitous, underpinning the economic development of South America before 1914. Not only did it help to open up the interiors of countries by enabling the spread of railways, it facilitated the export trade by lowering transport costs, both domestically and externally. But, as in other parts of the world, this trade, and the ships engaged in it, had to be protected. Welsh steam coal also played a fundamental role in the protection of trade in the South Atlantic, and to British control of the shipping lanes. The Royal Navy, crucial to Britain's oceanic hegemony, had gradually introduced steam warships from the 1820s and by the 1870s it was almost fully reliant on them, and therefore the availability of quality coal to perform these roles. Through helping to power Britain's "ubiquitous navy,"²⁵ coal facilitated the navy's role in holding together the fabric of empire. Indeed, the empire has been described as "an almost invisible web of connecting forces and influences, of which the Royal Navy was one of the most important."²⁶ While the limits on British power in Latin America have been described recently as "real and palpable" and Royal Navy blockades as "always a rather blunt instrument here,"²⁷ it has nevertheless been suggested that what power it had "revolved around naval bases and coaling stations, such as the Falklands/Malvinas, which became what Lord Curzon referred to as the 'tollgates and barbicans' of empire."²⁸ However, the number of Admiralty coaling stations in the South Atlantic was limited, and much reliance was placed by the Royal Navy on commercial coaling stations for their supplies.

Hence Britain's commercial trading activities in coal, in a number of different ways, played a key role in underpinning Britain's informal empire in South America.

The nature of British coal exports to South America will now be examined, followed by a consideration of the role of the network of ports and coaling stations which made this trade and its protection by the Royal Navy possible.

British coal exports, 1850–1913²⁹

With domestic supplies of coal falling well short of what was required to fuel economic development and the growth of urban centres, most South American economies, with the possible exception of Chile, were reliant on imported coal to meet their power needs.³⁰ Coal was needed to fuel the locomotives on the expanding railway network, to provide steam power to industry and to the steamships engaged in coastal and overseas trade. As with supplies for domestic use, the coal required for bunkering ships also had to be imported, but where did it come from?

In his statistical study of the “growth, character, and direction of our foreign trade in coal during the second half of the nineteenth century,” the Welsh coalowner and Member of Parliament, David Alfred Thomas, identified the growing importance towards the end of the nineteenth century of south Wales coal exports as compared to those from the ports of the Tyne in most overseas markets, though the degree to which this was so depended on geography. Moreover, he concluded that:

any considerable increase in our [coal] exports in the future will probably be confined to the European and Mediterranean markets, and markets on the East Coast of South America and West Coast of Africa.³¹

While data limitations make it difficult to be precise about the origins of British coal exports to South America prior to 1896, comments made in British consular and diplomatic reports provide further insights, not only into the source of British coal exports to specific destinations in South America but also the amount of competition faced there by British producers.

These reports, from consuls located across the continent, indicate that British coal held a virtual monopoly of the coal trade with South America, especially to ports along the east coast. Moreover, the British coal trade was dominated by ships departing the ports of the Bristol Channel carrying Welsh coal, in particular steam coal from the port of Cardiff. Thus an analysis of coal imports at Rio de Janeiro in 1894 indicates that 78 percent of the British coal (which accounted for 94.6 percent of total coal imports) came from south Wales (91.2 percent of this from Cardiff).³² From 1896, annual data on British exports to various countries allows us to be more precise, indicating that 80 percent of British coal exports to South America between 1896 and 1913 originated from the Bristol Channel ports.³³ Moreover, between 1896 and 1913, the proportion emanating from this group of ports rose from 76.75 percent to 84.75 percent, while that from the North-Eastern ports fell from 10.54 percent to below 5 percent.³⁴

Why did south Wales steam coal dominate the coal trade with South America? There are three inter-related factors which explain this dominance: the cost per unit of evaporative power of Welsh coal; the distance between south Wales and South America; and the requirements of the Royal Navy. Steam coal from the central portion of the south Wales coalfield, which was served in the main by the port of Cardiff, was widely recognised as the source of the best quality steam coals in the world, especially by the world's navies.³⁵ While other types of coal were shipped to

South America, including anthracite from the western part of the south Wales coalfield, it was the steam coals which dominated the trade. Thus, by 1911, three-quarters of the coal shipped from the ports of south Wales was of this type, including the dry, smokeless steam coals of the central region of the south Wales coalfield which were particularly suited to naval purposes. While not all customers had such demanding requirements as the Royal Navy, the marketing advantage provided to south Wales producers by the Admiralty's decision to purchase only the best steam coals from the region, following a series of Admiralty trials from the 1840s through to the 1870s, played a significant role.³⁶ Having, as a result, gained virtually a monopoly of supplies to the Admiralty by the end of the 1880s, south Wales producers of the best steam coals, i.e. those on the Admiralty List, had a very strong marketing advantage over competitors.

For the world's navies, Welsh steam coal had two major advantages over its competitors: the lack of smoke produced and the amount of evaporative power provided per ton of coal. For commercial customers, it was the cost per unit of evaporative power of a type of coal that was the determining factor. In South America, the cost per ton of American coal could occasionally be slightly less than that of Welsh coal, but its inferiority in steam-raising ability proved crucial. One Brazilian railway company which trialled American coal found, for example, that despite an initial lower cost per ton it had a greater cost per unit of evaporative power, since consumption was 12.5 percent greater than with Welsh coal.³⁷

From the perspective of the South American trade, not only did south Wales produce the best quality steam coal in the world, but the ports of the Bristol Channel which served the coalfield were closer than those which served other major British coalfields. Thus, Buenos Aires, for example, was 6,116 nautical miles from Cardiff

but 6,498 from Newcastle-upon-Tyne (for the distances to other South American ports from Cardiff see the Appendix). Shorter distances meant faster sailing times, but they did not necessarily imply a cheaper freight rate, shipping records revealing no simple link between the two.³⁸ Prior to the commencement of wheat exports around 1890, coal exports to South America “had to pay a significant portion of the round trip cost” but, thereafter, “wheat exports assumed much of the joint cost,” as did subsequently exports of cattle and meat.³⁹

Falling freight rates in the latter decades of the study period fuelled the expansion of coal exports. From relatively small beginnings in the 1850s,⁴⁰ annual British coal exports to South America finally exceeded a million tons in the early 1880s, having all but reached this total in 1874 (see Figure 1). The 2 million ton figure was breached for the first time in 1889, but it was not until five years later that exports regularly exceeded this figure. Having reached the three million ton mark in 1904, exports more than doubled within the next decade, falling just 42,000 tons short of the 7 million ton mark in 1913. As Figure 1 shows, throughout most of the post-1850 period, it was the countries on the eastern seaboard of South America, Brazil, Uruguay and Argentina, which collectively took the vast bulk of these exports.⁴¹

[Insert Figure 1 about here]

Against the background of this increase, the experience of the three countries during the study period was quite different. The share taken by Uruguay varied in the main between 10 percent and 20 percent, while Brazil saw its share fall from over one-half in the 1850s to just a quarter in 1913 (see Figure 2). By contrast, Argentina’s share rose from negligible proportions in 1850, and just 10 percent in the early 1880s, to

over 50 percent by 1913. Thus, in 1913, of the 7 million tons of British coal shipped to South America, 3.7 million tons went to Argentina alone; 5.9 million tons of the South American total was shipped from Bristol Channel ports, 3.2 million tons destined for Argentina. These developments reflected the much more rapid growth of Argentina over the study period, as indicated by gross domestic product per capita figures which trebled between 1870 and 1913 from 1,311 to 3,797 US dollars, while that of Brazil grew only from 713 to 811 US dollars over the same period.⁴²

[Insert Figure 2 about here]

But for what purposes was the imported coal used? In Brazil, one diplomatic and consular report indicates that, in the early 1900s, 75 percent of the coal imported at Rio de Janeiro was used for steam purposes (railways, steamships, etc.), 15 percent was gas coal and 10 percent was used for domestic (household) purposes.

Furthermore, “Of the steam coal imported it is estimated that 10 percent is reshipped for bunkers of British vessels.”⁴³ Within Brazil, the largest customer, the Central Railway, was supplied with 120,000 tons in 1900 by a British firm which undertook to supply Admiralty List coals.⁴⁴ In Argentina, “The Buenos Ayres and Rosario, Buenos Ayres Great Southern, and the Central Argentina Railway contracts regularly went to suppliers of South Wales steam coal.”⁴⁵ The rapid development of the Argentinian railways, and the industrial development associated with the opening up of the Pampas undoubtedly explain some of the rapid growth in coal exports to Argentina in the 1900s. Nevertheless, of the 3.8 million tons of coal imported into Argentina in 1913, virtually all of it from Britain, it is impossible to know exactly

how much was used domestically, and how much of it represented bunker fuel used to refuel visiting steamships.⁴⁶

Despite our lack of knowledge of the size of the bunker trade, how did Welsh bunker coal get to South America and how was it distributed?

From sail to steam

In the middle of the nineteenth century, the vast bulk of British trade with South America was conducted in sailing ships. While the Royal Mail Steam Packet Line commenced services to Brazil in 1851, longer routes were generally uneconomic for early steamships. Hence the vast trade in copper ore between Swansea and Chile, which peaked in the 1860s,⁴⁷ was conducted entirely by sailing barques specially constructed for sailing around Cape Horn. Such barques, on their outward journal from south Wales, often carried coal destined for ports in South America. Some of this, of course, was destined for railway use and some to provide power for the nascent industries of the period. The amount used as bunker fuel would have been tiny given the relatively small number of steamships within and visiting the region in the middle of the nineteenth century, but it undoubtedly grew as the nineteenth century wore on, even though sailing ships continued to be more economic on some trading routes in the region. Indeed, routes such as those round Cape Horn continued to be plied by sailing barques as late as the third decade of the twentieth century despite the fact that steamships had begun to enter the coal trade between south Wales and South America before the outbreak of the First World War.

Thus, Thomas's claim in 1903 that "The substitution of steam for sail is well-nigh complete" or, more recently, that of Pascali that sailing boats only ceased to be used on a large scale in international trade around 1910, do not adequately

characterise the coal trade between south Wales and South America at the end of our study period.⁴⁸ Nevertheless, technological changes in ship construction and engine design were significant factors in the switch from sail to steam in ocean-going shipping in the second half of the nineteenth century. By the 1860s, the development of high pressure boilers enabled the benefits of compound engines to be fully realised, such that in 1869, “the tonnage of British steam vessels engaged in international trade cleared in English ports surpassed that of British sailing vessels for the first time.”⁴⁹

Steamships, unlike sailing ships, were not at the mercy of the wind, enabling them to use shorter routes and reduce journey times. To operate effectively, however, steamships required an infrastructure or network of coaling stations at which they could refuel. The smaller the number of such stations, and the greater the distance between them, the larger the amount of coal a ship would need to carry for its own purposes, consequently reducing the income-earning cargo it could carry. While improvements in steam engine design led to greater fuel efficiency over time, the existence of coaling stations played a major role in determining the distances which steamships could travel, and the routes they could ply. While the importance of coaling stations has often been referred to in the historical literature, not only of the British coal trade but also that of specific locations, the number of detailed studies thereof in the English language is relatively small. Certain Atlantic ports and coaling stations have received recent attention, especially those on the Macronesian islands, in particular Cape Verde and the Canary Islands.⁵⁰ The emergence of Santos as a coffee port during the later nineteenth and early twentieth centuries has also been examined, but otherwise the coaling activities of South America ports have been largely ignored.⁵¹

On the South American mainland, port and coaling facilities developed slowly at first. Many of the primitive harbours used by sailing barques to load copper ore in Chile, for example, were unsuitable for steamships, lacking adequate bunkering facilities, with only poor quality local coals available and “turn-around times [which were] far too slow to make steamships economic.”⁵² The provision of suitable bunkering facilities was gradually achieved through a mix of harbour improvements and the establishment of specialised coaling stations, the size of this network increasing with the growth in the number of steamships.

The growth of harbour facilities

While smaller steamships may have been able to refuel at lesser ports and small natural harbours, the vast majority of large ones, especially those belonging to major shipping lines, would have collected their coal supplies when calling at the major ports due to their superior infrastructure. The amount of coal needed by such ships would depend on their size, the distance to be travelled and the precise routes taken (in particular, where the next possible coaling point might be). The choice of where to refuel could, however, be influenced greatly by the facilities available and the cost of taking on coal at individual ports.⁵³ The decision of ship’s captains on where to refuel depended heavily on the port charges and whether or not the coal imported for bunkering purposes had to incur any duty.

In 1911, Welsh coal was taken to 21 destinations in South America.⁵⁴ The amounts ranged from 1.83 million tons unloaded at Buenos Aires through 0.75 million tons at Montevideo and 0.74 million tons at Rio de Janeiro, to 0.33 million tons at Bahia Blanca, 0.25 million tons at Rosario, and 0.18 million tons at Santos. Minor destinations, such as South Georgia and the Falklands, failed to take any coal

in 1911, though they usually took small amounts each year. Since we do not have the space to examine developments at all locations, we will confine ourselves to a brief overview of developments at the two most important and sometimes rival locations, the Rio de la Plata and Rio de Janeiro, focusing on the competitive nature of the bunker fuel trade.

The coal trade of the Rio de la Plata

In the mid-1880s, Montevideo could be referred to as the “first harbour on the southern half of the South American east coast,” but at a time when sailing ships still dominated trade with South America its harbour was only usable for two-thirds of the year, due to the southerly winds which affected it between May and August.⁵⁵ While breakwaters were constructed to enable the harbour to be used all year round, Montevideo nevertheless faced increasing competition from the development of port facilities on the southern side of the Rio de la Plata estuary, at Buenos Aires and La Plata. The idea of constructing a port at Buenos Aires was first put forward in 1882, with work commencing in 1887 and being completed in 1897, when it was reported that the “improved dock accommodation here [Buenos Aires] and at La Plata enables steamers to take in bunker coals very rapidly and in large quantities, which formerly would have been shipped on board at Montevideo or other ports of call on the voyage to Europe.”⁵⁶ From this time onwards, competition for refuelling ships became significant in the Rio de la Plata.

In the early twentieth century it was noted that steamers calling only to take on coal at La Plata would no longer have to pay entrance and dock dues according to their tonnage but only according to the quantity of coal taken (minimum of 100 tons).⁵⁷ This, together with its location closer to the mouth of the Rio de la Plata,

meant that La Plata derived “some slight benefit from the entrance of steamers which call to coal only.”⁵⁸ Three years later it was noted that the port had been acquired by the Federal Government and, since it was now considered to form part of the port of Buenos Aires, “vessels having paid entry dues at either do not have to pay again on entering the other.”⁵⁹ Moreover, it was also noted that, at this time, coal to the Argentine Republic was imported free of duty.⁶⁰ Such factors clearly impacted on coaling activities at Montevideo where, in 1907, the 20 percent reduction in the number of British ships calling there was put down to two factors: first, an increase in the average carrying capacity of each ship; and second, the fact that it was cheaper to coal at Buenos Aires.⁶¹ The British consul cited the heavy lighterage dues rigidly enforced at Montevideo as part of the explanation for this, noting in his report for 1908 that they had been reduced by more than 50 percent, while the duty of 4 shillings per ton on coal was now remitted on all coal used for bunkering.⁶²

The collective impact of these various developments on the coal trade of Montevideo in the early twentieth century was that imports of coal for domestic consumption within Uruguay increased more rapidly than coal used as bunkers. In 1901, of the 300,000 tons of coal imported into Montevideo, about two-thirds was used as bunkers, and just one-third domestically.⁶³ By 1910–11 the relative proportion had fallen to 1.36:1.⁶⁴ In addition, coal was imported for domestic use, particularly by the Uruguayan railways which, it was noted, “import coal on their own account.”⁶⁵

Rio de Janeiro

In the early 1890s it was recorded that “homeward bound steamers of the Shaw Savill and New Zealand Shipping Companies call at Rio once a month each to coal” as well as bringing various supplies.⁶⁶ Nevertheless, refuelling at Rio was negatively affected

by the lack of facilities and the high duty (c.2 shillings per ton) imposed on coal imports at this time, causing ships to refuel at Montevideo, where it was duty free.⁶⁷ Although over time the facilities improved, problems of heavy charges still remained. Thus a decade later it was noted that, although coal had by this time become nominally free of duty, “the charges levied on it in Brazilian ports are in fact very heavy,” amounting to approximately 4 shillings per metric ton.⁶⁸ Local regulations were also viewed unfavourably:

Foreign steamers calling at Rio de Janeiro merely in order to take in coal or provisions must comply with all the ordinary formalities of entry and clearance before they can sail. The working hours of the custom-house are from 10 A.M. to 3 P.M., and a steamer putting in for bunkers runs the risk of being detained until the following day, and on Saturdays or on the eve of a holiday the detention may be even more serious.⁶⁹

Heavy port charges at Rio also had a negative effect, although by 1908 “a law is now enforced under which steamers entering solely for supplies and not working cargo are freed from all further expenses on payment of 2l. [i.e. 2 pounds sterling].”⁷⁰ A few years later, a reduction in port dues and in freight rates were cited as explanations for the marked increase in the amount of British shipping calling in at Rio, especially to refuel.⁷¹ The impact of the variability in freight rates and competition among coaling firms at this time was indicated clearly:

keen competition among some of the coaling firms [in early 1912] led to a considerable cutting in prices, with the result that ships could coal here much

more cheaply than in the River Plate. Freights rose again at the end of 1912, and if their present rate continues some of these ships may in future put into the River Plate again for their coal, instead of here.⁷²

The development of coal agencies and coaling depots

In order for ships to refuel in foreign ports, two things were necessary: infrastructure arrangements to facilitate refuelling, and supplies of coal. In the mid-nineteenth century, such arrangements were organised by general merchants, such as E. Johnston & Co. and Nathan Brothers, and/or specialist coal and steamship agents, such as Wilson, Sons & Co., established in 1837.⁷³ Wilsons subsequently became the Bahia agents of the Royal Mail Steam Packet Co. following that company's commencement of services to Brazil in 1851, and was subsequently joined by other specialist coal agencies as the century progressed.⁷⁴ Foremost amongst these was Cory Brothers, which began to set up agencies and subsidiaries across the continent in the late nineteenth century, having initially focused its operations in the Mediterranean.⁷⁵

Agencies were generally responsible for organising shipments for domestic customers and, in the case of shipping lines, making sure that coal was available for their ships to-refuel on arrival when required. Thus, Wilsons claimed in 1906 that amongst their regular contractors were "all leading steamship lines," another source specifically citing the Pacific Steam Navigation Company, and the British-owned Western Telegraph Company.⁷⁶ As the extent of steam shipping increased and the demand for bunker fuel rose, some of the larger agencies, rather than simply arranging cargoes for individual customers, began to establish their own coal depots at which coal could be deposited, and from which customers, including casual ones, could be supplied as and when they called. Such activity involved a greater financial

investment than that required for a simple agency office, and was carried out mainly by the more well-established coal agents and at those destinations with the heaviest trade and best harbour facilities.

Thus, when Wilsons became a limited liability company in 1877 it had “Warehouses and local managers [...] located in Recife, Salvador, Rio de Janeiro, Santos, Sao Paulo, as well as the Canary Islands, Montevideo, and Buenos Aires.”⁷⁷ In the mid-1890s it was reported that the completion by Wilsons of a large coal depot at Bahia, comprising six sheds capable of holding 10,000 tons, would be a massive improvement on the “somewhat primitive” arrangements currently existing there.⁷⁸ By 1906 Wilsons had storage facilities for 30,000 tons of coal on one of the islands in the bay of Guanabara, near Rio de Janeiro. Despite being smaller, having just two depots in 1913 at Rio de Janeiro and Rio Grande do Sul, with another being constructed at Buenos Aires, Amaral, Sutherland & Co. Ltd. was nevertheless able to trade coal throughout the continent via its network of agents at Manaus, Maranham, Campana, Parangua, Desterro, Salto, Rosario, Santa Fé and Chilean ports.⁷⁹ Through this network it supplied South American railways and steamship companies, including the Lloyd Brasileiro, while Mann, George & Co. acted as the River Plate agents for three shipping lines: the New Zealand Shipping Co. Ltd., Shaw, Savill & Albion Co. Ltd. and The White Star Line.⁸⁰ Such customers often required the best, if not the very best, qualities of coal available, and the coal agencies were capable of supplying this.

One reason for this is the links which coal agents had with particular colliery companies, their offices in the major Welsh ports (and elsewhere across Britain) enabling them to keep in close, rapid telegraphic contact with both their suppliers and their customers through their offices and depots overseas.⁸¹ Many coal agents, like Wilsons, started out as independent middlemen, engaged in arranging the shipping of

coal from the supplier to the customer. This continued to be the situation for many concerns as late as 1914, despite the precarious position in which it potentially placed them. Thus, Moxey, Savon & Company, which only commenced operations in the Suez region in the early 1890s, was able to expand its activities, despite its independence, to South America by 1914.⁸² However, the changing economics of the Welsh coal industry were beginning to impress themselves on the nature of the relationship between coal agents and colliery companies. Major coal producers, such as the Ocean Coal Company and the Powell Duffryn Steam Coal Company, were increasingly concerned with ensuring the markets for their output, in order to ensure regular and efficient working of their pits. While the incentives from both sides of the coal trade to secure long-term, contractual relationships were always strong, they tended to increase with the passage of time and an increase in competitive pressures. Thus, in 1908, the Ocean Coal Company, south Wales' second largest colliery concern by 1913, merged with Wilsons to form Ocean Coal and Wilsons Ltd.⁸³ Although Ocean had been a long-term major supplier to Wilsons, it was considered that a formal merger was in the best interests of both concerns. The Ocean company's main rival and largest coal company in south Wales on the eve of the First World War, the Powell Duffryn Steam Coal Co. Ltd., found it more difficult to secure such an arrangement, only in 1928 was the company finally able to effect a merger with a major shipping and coal agency business, Stephenson Clarke & Associated Companies, though there had been a close working relationship between the two concerns for many years.

Another main player in the coal industry which emerged in south Wales in the run up to the First World War was the Cambrian combine, a web of colliery companies and sales agencies which all came under the ownership and control of

David Alfred Thomas (later Lord Rhondda) and a small number of colleagues. Thus, Thomas & Davey acted as coal agents for the Cambrian colliery, Lysberg Ltd., “which was to become one of the most important ship-owning, coal exporting and pitwood-importing undertakings in South Wales,” became sales agent to the Glamorgan colliery, and L. Gueret Ltd. for the Naval colliery.⁸⁴ An off-shoot of the last of these was Gueret’s Anglo-Brazilian Coaling Co. Ltd. whose remit was to expand trade with South America.⁸⁵

One notable exception to the pattern of links indicated above was Cory Brothers and Company. After 1849, when Richard Cory’s two sons joined him, his ship’s chandlery and general merchanting business in Cardiff expanded into ship-broking, insurance-broking and coal exporting.⁸⁶ The business acquired its own ships in the 1860s, while towards the end of the decade strategic decisions were made to move into colliery ownership and to establish a network of coaling stations along the world’s major shipping routes. In 1906, Cory Brothers had 78 depots located around the world, 11 of which were in South America: Bahia, Bahia Blanca, Buenos Aires, La Plata, Montevideo, Para, Pernambuco, Rio de Janeiro, Rio Grande do Sul, Rosario and Santos.⁸⁷ On the eve of the First World War, the company, which produced just under 1.9 million tons of coal, making it the sixth largest producer in the south Wales coalfield, has been described by Yeo as “the largest coal-owning and exporting concern in South Wales.”⁸⁸

Thus, by the end of our study period, Ocean Coal & Wilsons, Cory Brothers and the Cambrian combine, were integrated coal producers and coal agents, the last two also owning their own ships. Their activities, and those of other coal agencies which had depots and coaling stations in South America, as was clearly indicated by their adverts in the trade press, were able to supply not just Welsh coal, but the best

Admiralty List coals, i.e. those Welsh coals which were considered suitable for use by the ships of the Royal Navy. This ability helped to under-write the security of British trade with South America.

The Royal Navy and coal supplies in South America

British trade routes, whether with the formal or informal empire, needed protecting, though not all to the same extent. Whereas the formal empire was the focus of heavy protection, and the Mediterranean and China stations were considered, outside of home waters, to be the areas in need of most naval presence, the trade routes to South America were not left unprotected. However, since the South Atlantic, like the Pacific, was not the most important area for the navy to protect, hybrid steam and sail ships continued to provide some of the Royal Navy's presence there even into the early twentieth century. While it was the adoption of the triple expansion engine in the 1880s, which finally enabled steam to fulfil its worldwide role, this progress was something of a two-edged sword.⁸⁹ On the one hand it provided the Royal Navy with an enhanced source of naval power, but on the other it made it easier for Britain's naval rivals to attack trade on a near global scale.

Despite being of less strategic importance than other oceanic spaces, control of the sea lanes of the South Atlantic was key to protecting the trade of the informal empire, as well as for relations with the South American countries themselves. In this respect, many of the most significant ties were intrinsically linked to the Royal Navy, which had a long and important connection with many of their navies.⁹⁰ The South Atlantic was also part of key routes to places beyond its boundaries. Indeed, until the Panama Canal was opened (in 1914), it was immensely important for controlling the Pacific and, in turn, for keeping in check the naval ambitions of the USA and France,

especially once ships' ranges increased. Since the Royal Navy remained predominantly coal powered into the First World War, to control the South Atlantic, and indeed just to pass through it, the navy needed to have a secure and reliable source of quality coal.⁹¹

The establishment of naval coaling stations at strategic points around the world was therefore vital to the protection of British trading routes by the Royal Navy, although sole reliance on such stations presented it with serious difficulties.⁹² The costs of establishing a station, and of maintaining coal stocks were not inconsiderable, though these could vary with their size and significance. However, due in part to the changing nature of the navy's ships and the ever-changing geopolitical situation, the relevance of specific naval coaling stations could, and did, differ, both at specific points in time and over time. Changes in the threat posed by other nations to British interests, both real and potential, in particular played a key role in the classification afforded to the different stations. In other oceans, the Admiralty had whole chains of naval stations which provided coal to the fleet, but in the South Atlantic the navy had few official coaling stations. Depending on how one divides the oceans, the main stations were St Helena, Ascension Island, the Falklands, Cape Coast Castle, Fernando Po and the Cape. Of these, only Simon's Town, at the Cape of Good Hope, is ever considered to have been a first class coaling station. Of the others, only St Helena, Ascension Island, and the Falklands were of any note, with Ascension Island losing its importance after the 1870s and the Falklands only gaining any significance in the early twentieth century.⁹³ It is important to note that there were huge distances between these stations, and even ships of the early twentieth century could not reach the Falklands, the only British station in the environs of South America, without

coaling *en route* from Europe, as it was some 3,000 miles beyond their range. The nearest station in the other direction, Vancouver in the Pacific, was even further away.

In the middle decades of the nineteenth century, Royal Navy vessels obtained coal from various Admiralty stores in South America, including Rio de Janeiro, Pernambuco, Bahia, Valparaiso and Callao, although ships' captains and commanders often needed to make casual purchases from commercial agents where no naval stores existed.⁹⁴ The amounts shipped out to these naval stores were small, that to Rio de Janeiro, the most widely used, averaging just 1,665 tons per annum for the four-year period 1856–59.⁹⁵ By 1869, in addition to locations already mentioned, HM ships were taking on board coal at Montevideo and the Falklands, though the amount at the latter for the first half of 1869 was just 169 tons.⁹⁶ The largest amount taken on board from South American stores by a single ship during the first half of 1869 was 571.5 tons by the HMS *Oberon*, in addition to the 257.35 tons it took on board at St. Vincent, Tenerife and Madeira.⁹⁷ Even at this early date, all but a tiny fraction of the 3,368.1 tons of coal used by HM ships in the first half of 1869 was Welsh.

The nature of the stores at which coal was loaded is not entirely clear, being described in some returns as naval establishments or depots, with other returns indicating that the coal was loaded at the contractor's yard. In all likelihood, these were merely stocks held by commercial coaling stations for naval use. This is suggested again by the fact that navy estimates for 1870–71 fail to indicate the existence of any coal depots or dockyards in South America, although a return of coal stocks at "home and foreign stations" for 1869–71 mentions Valparaiso.⁹⁸ Subsequent returns of proposed expenditure at naval dockyards at home and abroad contained in the navy estimates for the 1870s, 1880s and 1890s fail to make any mention of a dockyard or coaling station in South America. It is in the navy estimates for 1900–01

that the Falklands is mentioned for the first time, despite the fact that the territory had been under the control of successive Naval Officers in Charge during the early period of British re-occupation from 1833.⁹⁹ In the early 1840s a dozen Royal marines were garrisoned on the Falklands when settlement was shifted to what became Port Stanley, with its natural harbour.¹⁰⁰ Discussions over whether the Falklands should become a major naval station never seem to have got far, although in the third quarter of the nineteenth century it did become an important centre for provisioning and repairing ships sailing round Cape Horn, including British naval vessels.¹⁰¹

Due to their remoteness and isolation from outside threats, the Falklands were never considered to be of much importance by the Admiralty during the era in which sail continued to dominate in the South Atlantic and it would appear that the naval facility there was allowed to diminish. In their third and final report, published on 22 July 1882, Lord Carnarvon's Royal Commission on Colonial Defence declared that the Falklands would "at no remote period, cease to be of military importance" due to the fact that "Much of the British trade which passes round Cape Horn, or through the Straits of Magellan, will be diverted to the Panamá route when the Panamá Canal is completed."¹⁰² However, problems in constructing the canal meant, paradoxically, that the Falklands became more, rather than less, important as naval ships in the South Atlantic began increasingly to switch to steam. At the beginning of the 1890s, the First Lord of the Admiralty, Lord G. Hamilton, noted in a debate in parliament that "we shall shortly have to establish a new station in the South Pacific, probably the Falkland Islands, and we shall make an experiment there on a small scale," going on to note that it would be garrisoned by marines and if the experiment proved successful, it would likely be extended to the China stations.¹⁰³

There were, however, no immediate moves towards developing a naval coaling station on the Falklands until the late 1890s, and then seemingly in a somewhat unplanned manner. In his report for 1895, the consul emphasised the favourable position of the islands as a “rendezvous for both Atlantic and Pacific stations,” and reflected on the fact that during the year the Admiralty had acquired a rifle range for use of HM ships.¹⁰⁴ In October 1896, the Lords Commissioners of the Admiralty requested special permission from the Treasury to make unplanned expenditure on sending a Lieutenant-Colonel Lewis from the Royal Engineers and an assistant to the Falklands to investigate the possibility of establishing a naval depot there, a matter which was “becoming more urgent.”¹⁰⁵ With the financial collapse of the French company constructing the Panama Canal in 1899, the establishment of a coaling station on the Falklands gained vital momentum, with work commencing in 1900.¹⁰⁶ After a total expenditure of £45,010/6/9d, work on the depot ceased during 1904–05.¹⁰⁷

Despite the absence of other British naval stations or coaling depots in the South Atlantic or South America, the use made of the Falklands depot seems to have been somewhat limited, judging from the amount of coal sent there annually from Britain and the limited number of visits recorded in the consular reports by HM ships. Although visits by ships of the Royal Navy’s South-east Coast of South America squadron to the Falklands became more frequent following the construction of the naval coaling depot in the early 1900s, they were still few in number and often short-lived.¹⁰⁸ During the middle of the decade, consular reports fail to mention any such visits, but in 1908 it was noted that HMS *Sappho* had “paid a short visit to the Colony in February.”¹⁰⁹ In 1910, the 3,000 ton Topaz class cruiser HMS *Amethyst* stayed from 26 January to 5 February, and engaged in a field-day, with “the blue jackets and

marines being the attacking force and the [local, island] volunteers in the defensive.”¹¹⁰ The relatively small number of visits made by ships of the Royal Navy would suggest that the Falklands was not a major coaling station for naval vessels during the decade preceding the outbreak of the First World War though, paradoxically, it was to play an important strategic role once hostilities had commenced. In 1914, “Port Stanley was visited by thirteen warships,” a fact that reflects the surprise defeat suffered by the British navy at Coronel, off the coast of Valparaíso, on 1 November 1914.¹¹¹ The German fleet, commanded by von Spee, having achieved its victory, was advised to return home if it could, a difficult task since it would need to fully refuel at least once *en route* and Britain largely controlled all the coal north of the Falklands. With British-friendly ports refusing to supply them, the German fleet had to resort to capturing British colliers to obtain fuel and, in order to preserve fuel, was reduced to steaming at low speed, making it an easy target for a well-supplied British navy. In these circumstances, von Spee decided to raid the Falklands to obtain coal and destroy the facilities, preventing their subsequent use by the British navy. His actions were opposed by most of his captains and have been deemed unnecessary by some historians, but with little chance of making it home anyway, it could be seen as a last act of sabotage, or allowing the fleet more time to source coal to complete their journey.

The decision to raid the naval depot at the Falklands on 8 December 1914 ended in disaster for the Germans since, unbeknown to von Spee, a larger British squadron had arrived there the day before. Despite being in the midst of coaling at the time German ships were first observed, the attack was repelled by the British squadron which subsequently chased down and sank the bulk of the German fleet. It has been argued that, as a result of the Battle of the Falklands, raids on commercial

shipping by ships of the regular German navy were brought to an end. The naval coaling depot on the Falklands had shown its importance and, together with the links Britain had with commercial coaling stations, indicates the power of Britain to deny enemy ships coal, even when caught unprepared.¹¹²

The relatively limited use made of the Falklands coal depot before the First World War might seem surprising given the existence of stations belonging to naval rivals such as Germany and France on the western seaboard of Africa. However, this fact can largely be explained by the Royal Navy's ability to access Welsh coal via the naval stations of friendly powers such as Argentina, Brazil and Chile, and commercial coaling depots run by British companies such as those at Bahia (Abrolhos Rocks), Rio de la Plata (Buenos Aires and Montevideo) and Rio de Janeiro. British coal agents and depot owners operating in the region, such as Wilsons, acted not only as contractors for the Royal Navy, but also supplied "the navies of the United States, the Argentines, and Brazil," while Amaral, Sutherland & Co. supplied the "friendly navies" of Brazil and Chile.¹¹³ Indeed, it has been claimed that "All South American navies took Welsh coal for steam navigation, but not in considerable quantities."¹¹⁴

By accessing commercial depots in South America the Royal Navy was able to exert almost complete control of the South Atlantic in the study period, despite the limited number of British naval stations there. But key to its ability to use the commercial coaling stations was the availability of supplies of Welsh coal. This was crucial, the Admiralty stating in 1903 that, for the navy "irrespective of expense, [Britain] could not go below the minimum standard of requirements special to the Naval Service."¹¹⁵ With the coal trade between Britain and South America dominated by Welsh steam coal, the Royal Navy was able to access the highest quality of coal it

required for its warships from the network of coaling stations established across the continent to satisfy commercial needs.¹¹⁶

Thus, Britain's economic power in South America was especially important to the navy in the South Atlantic, as it allowed British warships to freely coal at the commercial stations located there, both in peace and war. Not only did this allow the Royal Navy the ability to function without founding major new naval stations, with all of the expense that that would have incurred, but also enabled Britain to put pressure on the ports at which these stations were located, especially in times of hostilities, to limit, or indeed cease, the supply of coal for foreign naval use. Such capabilities were central to the ability of Britain to retain commercial and political control of the South Atlantic and South American markets, reflecting the fundamental nature of Welsh coal to Britain's informal empire in this region. Moreover, since all Royal Navy ships could benefit from these arrangements, the existence of the informal empire effectively reduced the military costs of the formal.

Conclusions

In this paper we have argued that Welsh coal, and the network of coaling depots established throughout South America between 1850 and 1913 to distribute it played an important role in the relationship between the continent and Britain. Not only was Welsh coal a backhaul commodity that facilitated much of the industrialisation and modernisation in the region, it was also vital to Britain's ability to control and protect its interests in South America. With economic development in the long nineteenth century based on the exploitation of steam power and most, if not all, countries in South America deficient in domestic supplies, their development relied on imports of steam coal. Most of this came from Britain and, more especially, the ports of the

Bristol Channel, which served the south Wales coalfield, the source of the best quality steam coal in the world. South Wales steam coal helped to power the railways which enabled expansion of the interiors of Brazil and Argentina especially, and also increasingly fed the steamships which brought the produce of these countries to Europe. To give effect to these developments, a network of commercial coaling depots had to be established throughout South America. With the only naval coaling depot in the South Atlantic being that on the Falklands, ships of the Royal Navy relied heavily on the naval stations of friendly navies in the region and/or on the commercial coaling stations for their supplies. These stations formed not only part of the network of trade with the region, but also played an important role in the protection of that trade and British interests generally, helping to maintain British political, economic, and cultural domination of the continent up to 1914.

Our findings suggest that the geographical network of trade routes in which Welsh coal was implicated played an important role in the context of informal empire. The port cities along the Atlantic seaboard where coaling stations were established were vital to the economic development of South America, as too were the railways which radiated therefrom and distributed the imported coal to the hinterland. Despite the undoubted importance of coal, the index of an important recent work on informal empire contains no entries for coal or steam, and only minor references to coal-related issues are to be found in the text.¹¹⁷ Furthermore, in the volume of the *Oxford History of the British Empire* covering the nineteenth century, there are more references to coconuts and coffee than to coal, which has only three mentions. We therefore conclude that given its importance to Britain's trade with the continent, and in enabling the Royal Navy to protect this trade, Welsh coal needs to be re-integrated into, and given greater prominence within, studies of the informal empire. As the

Welsh Marxist historian, Gwyn Alf Williams put it, by the 1870s, Wales “nested at the heart of an imperial economy,” not least, due to the fact that “Welsh coal kept the Royal Navy afloat.”¹¹⁸

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Notes

¹ See Cain and Hopkins, *British Imperialism*, 28–29.

² Black, *The British Seaborne Empire*, 195.

³ Miller, “Informal Empire,” 437.

⁴ Winn, “British Informal Empire,” 126; Simpson, “An ‘Informal Empire’?,” 5.

⁵ Simpson, “An ‘Informal Empire’?,” 5.

⁶ Lewis, “Role of Railway Companies.”

⁷ *Ibid.*, 123.

⁸ Fajgelbaum and Redding, “External Integration.”

⁹ Pascali, “Wind of Change,” 23.

¹⁰ *Ibid.*, 22.

¹¹ See, for example, Crafts and Venables, “Globalization in History.”

¹² Thompson, “Afterword,” 233–234.

¹³ Bulmer-Thomas, “British Trade,” 6.

¹⁴ *Ibid.*, 9.

¹⁵ *Ibid.*, 7.

¹⁶ *Ibid.*, 3, 5.

¹⁷ *Ibid.* 3.

¹⁸ *Ibid.* 7.

¹⁹ Brown, “Informal Empire,” 10.

²⁰ Bauer, “Goods, Power, History,” 141.

²¹ Ortega, “First Four Decades,” 1.

²² Centner, “Great Britain and Chilean Mining,” 77.

²³ Mitchell, *International Historical Statistics*, 314.

²⁴ *South Wales Coal Annual* (hereafter *SWCA*) for 1916, 77–130.

²⁵ Kennedy, “Britain and Empire,” 17.

²⁶ Gough, “Profit and Power,” 80.

²⁷ Both quotes, Thompson, “Afterword,” 234.

²⁸ Brown, “Informal Empire,” 10.

²⁹ Unless otherwise stated, the data on British coal exports presented and/or used in this paper are taken as follows: 1850–1885 from annual parliamentary return of “Coals, culm and cinders”; 1886–1913 from Mining Association of Great Britain, *Statistical Review*, 16, 20.

³⁰ It has been suggested that, although free of duty, British coal exports to Chile did not “cause too many problems for the domestic industry” up to 1879 (Ortega, “First Four Decades,” 25), but another source suggests that, from time to time, due to their irregular nature, they could impact significantly on Chilean domestic coal production (Centner, “Great Britain and Chilean Mining,” 78).

³¹ Thomas, “Growth and Direction,” 503.

³² House of Commons Parliamentary Papers Online (Hereafter HCPP) 1895 [C. 7875–71], 31.

³³ Technically the term includes the ports of Bristol and Gloucester, but little or no south Wales coal was exported from these ports. The main ports of the south Wales coalfield in the late nineteenth and early twentieth centuries were Cardiff (including Barry and Penarth docks), Newport, Swansea and Port Talbot, although minor amounts were also exported from certain smaller ports.

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- ³⁴ Based on figures presented in Mining Association of Great Britain, *Statistical Review*, 16–36.
- ³⁵ See for example *The Times* 22 February 1910; *Morning Post* 16 July 1900; *North-Eastern Daily Gazette* 25 January 1893; *Sheffield & Rotherham Independent* 3 January 1893; *The Times* 14 December 1908; *The Times* 19 September 1913; *The Times*, 2 September 1913; *Progress Commerce* 1893, vols. 64–65; *Almanack* 1895, vol. 285.
- ³⁶ See, for example, Morris and Williams, *South Wales Coal Industry*, chapter II, especially 34–41.
- ³⁷ HCPP 1902 [Cd. 786–28], 22.
- ³⁸ Harley, “Coal Exports,” 329; Thomas, “Growth and Direction,” 496.
- ³⁹ Walters, *Economic and Business History*, 325, 327.
- ⁴⁰ Data on British coal exports to South America commence in 1816 but prior to 1850 they are somewhat unreliable.
- ⁴¹ Over the period 1851–1913, the proportion of the total British coal exported to South America taken by Brazil, Uruguay and Argentina was 82.5 percent; the lowest proportion in any year being 51.2 percent in 1852, with the largest proportion 90.6 percent being taken in 1913. Before 1883, the proportion taken by the three countries never exceeded 75 percent, but from 1892 it was always more than 80 percent.
- ⁴² Mitchell, *International Historical Statistics*, 413–414. These figures, however, are estimates, since reliable national income data for Latin American countries at this time, as for other countries, are not available. Interestingly, energy consumption figures (for countries like Argentina and Brazil this means coal import data) have recently been used to provide a basis for examining the differential degree of modernization of Latin American countries during the late nineteenth and early twentieth centuries (see Rubio *et al.*, “Energy as an indicator”).
- ⁴³ HCPP 1905 [Cd. 2236–27], 14.
- ⁴⁴ HCPP 1900 [Cd. 1–112], 14.
- ⁴⁵ Walters, *Economic and Business History*, 325.
- ⁴⁶ Bunker coal technically refers to the coal taken on board a ship for use in its own engines. However, it is also widely used to describe the coal taken to ports around the world and left there for re-fuelling ships.
- ⁴⁷ Greenshaw, *Swansea Copper Barques*.
- ⁴⁸ Thomas, “Growth and Direction,” 501; Pascali, “Wind of Change,” 8.
- ⁴⁹ *Ibid.*, 8.
- ⁵⁰ Bosa, “The Control of Port Services”; Prata, “Porto Grande of S. Vicente.”
- ⁵¹ Honorato and Ribeiro, “The Emergence of Santos.”
- ⁵² Rees, *King Copper*, 30. Not all of the coal, however, seems to have been of poor quality, it being recorded that the Pacific Steam Navigation Company switched its steamship *Nueva Granada* from Welsh to Chilean coal in the early 1850s, resulting in an annual saving of 18,260 pesos (£2,491) (quoted in Ortega, “First Four Decades,” 5).
- ⁵³ The decline in importance, within the Macronesian Islands, after 1850 of Cape Verde in favour of the Canary Islands, despite the latter’s “disadvantageous strategic situation along ocean coal routes” has been explained by the different degrees of willingness to carry out important infrastructure investment (Bosa, “The Control of Port Services,” 59).
- ⁵⁴ *South Wales Coal Annual* (Hereafter *SWCA*) for 1913, 268–271.
- ⁵⁵ HCPP 1884–85 [C. 4529], 65.
- ⁵⁶ HCPP 1897 [C. 8277–57], 12.

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- ⁵⁷ HCPP 1902 [Cd. 786–71], 14.
- ⁵⁸ Ibid., 28.
- ⁵⁹ HCPP 1905 [Cd. 2236–91], 10.
- ⁶⁰ HCPP 1905 [Cd. 2236–178], 17.
- ⁶¹ HCPP 1908 [Cd. 3727–135], 18.
- ⁶² HCPP 1909 [Cd. 4446–144], 7.
- ⁶³ HCPP 1902 [Cd. 786–151], 8, 14.
- ⁶⁴ HCPP 1912–13 [Cd. 6005–197], 6.
- ⁶⁵ HCPP 1909 [Cd. 4446–144], 7.
- ⁶⁶ HCPP 1893–94 [C. 6855–208], 34.
- ⁶⁷ HCPP 1895 [C. 7851–71], 13.
- ⁶⁸ HCPP 1908 [Cd. 3727–237], 14.
- ⁶⁹ Ibid., 14.
- ⁷⁰ Ibid., 14.
- ⁷¹ HCPP 1913 [Cd. 6665–7], 15.
- ⁷² Ibid., 15.
- ⁷³ Graham, *Modernization in Brazil*, 128; Jones, *Merchants to Multinationals*, 28.
- ⁷⁴ Walters, *Economic and Business History*, 303.
- ⁷⁵ Yeo, “Cory Brothers and Company,” 48–49; Walters, *Economic and Business History*, 310.
- ⁷⁶ SWCA for 1906, 154; Graham, *Modernization in Brazil*, 128.
- ⁷⁷ Graham, *Modernization in Brazil*, 128.
- ⁷⁸ P.P., 1896 [C. 7919–132], 11.
- ⁷⁹ SWCA for 1913, 29.
- ⁸⁰ Ibid., 29; SWCA for 1916, lxxiii.
- ⁸¹ On the organisation of the coal trade from south Wales, see Walters, *Economic and Business History*, Chapter VII.
- ⁸² Yeo, “Cory Brothers and Company,” 56; various editions of SWCA, especially 1916, xlv.
- ⁸³ Boyns, “Growth in the Coal Industry.” Ocean’s output was just over 2.4 million tons in 1913.
- ⁸⁴ Rhondda, D.A. Thomas, 130.
- ⁸⁵ Ibid., 132.
- ⁸⁶ Yeo, “Cory Brothers and Company,” 18.
- ⁸⁷ SWCA for 1906, lxii.
- ⁸⁸ Boyns, “Growth in the Coal Industry,” 155; Yeo, “Cory Brothers and Company,” 58.
- ⁸⁹ Beeler, “Steam Strategy and Schurman,” 43. It was first adopted by the Royal Navy in 1888.
- ⁹⁰ See, for example, Wise, *The Role of the Royal Navy*.
- ⁹¹ Wragg, *Royal Navy Handbook*, 173.
- ⁹² Parkinson, *The Late Victorian Navy*, 29; Wilson, “Fuelling the Steam Navy,” 23; Willock, *Bulwark of Empire*, 10.
- ⁹³ One should not, however, over-estimate the importance of the Falkland Islands, the coaling station there never being considered more than second-class.
- ⁹⁴ HCPP 1860 (363); HCPP 1860 (348).
- ⁹⁵ HCPP 1860 (363).
- ⁹⁶ HCPP 1868–69 (442).
- ⁹⁷ Ibid., 19.

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- ⁹⁸ HCPP 1870 (50); HCPP 1871 (20).
- ⁹⁹ HCPP 1900 (41); Royle, "The Falkland Islands, 1833–1876," 204–209.
- ¹⁰⁰ *Ibid.*, 206–209.
- ¹⁰¹ *Ibid.*, 212.
- ¹⁰² Both quotes, HCPP 1887 [C. 5091–I], 337.
- ¹⁰³ HCPP HoC sitting, 2 March 1891, Hansard 1890–1, 3rd series, Vol. 350, columns 1985–2002.
- ¹⁰⁴ HCPP 1896 [C. 7944–27], 17–18.
- ¹⁰⁵ HCPP 1898 (50), 148.
- ¹⁰⁶ HCPP 1902 [Cd. 788–4], 18.
- ¹⁰⁷ HCPP 1906 (7), 86–87. Circa 1902–03, coaling depots were also being constructed at Chatham, Haulbowline (Cork) and Esquimaux (Vancouver) (HCPP 1902 [Cd.950], 15).
- ¹⁰⁸ See Consular and Diplomatic reports for the Falkland Islands, 1901–1904.
- ¹⁰⁹ HCPP 1909 [Cd. 4448–8], 17.
- ¹¹⁰ HCPP 1911 [Cd. 5467–18], 20.
- ¹¹¹ HCPP 1914–16 [Cd. 7622–63], 8. A consular report for 1898 had described Coronel as the principle coaling port in Chile (HCPP 1899 [C. 9044–113], 8).
- ¹¹² After the war, the strategic importance of the Falklands for supplying coal to naval ships passing around Cape Horn diminished rapidly, and the islands lost their strategic importance until the Second World War broke out in 1939.
- ¹¹³ *SWCA* for 1906, 154; *SWCA* for 1913, 29.
- ¹¹⁴ Walters, *Economic and Business History*, 325.
- ¹¹⁵ HCPP 1904 [Cd. 1991], 143–155.
- ¹¹⁶ Thomas, "Growth and Direction," 501 indicates that "In the more distant markets the demand is now limited to special coal for naval purposes and for the use of liners."
- ¹¹⁷ Brown, *Informal Empire*.
- ¹¹⁸ Williams, *When was Wales?*, 201.

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