

Politics, Technology and Policy-Making, 1859-1865: Palmerston, Gladstone and the Management of the Ironclad Naval Race

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This paper has two objects. It will re-examine how British naval policy was actually made during a critical period of the nineteenth century; and in the process it will stress the unity of historical scholarship. The paper argues that the ironclad naval race cannot be understood without addressing the politics and diplomacy of the Second Empire, the internal divisions of the Palmerston coalition, and the strategic and tactical uncertainty caused by the novel, and apparently unstoppable, nature of technical development. In a paper of this length it has proven easier to convey the underlying complexity of the period, and the shifting pattern of ideas and influence within the cabinet, than to provide a simple conclusion. If the study of the naval past is to survive and prosper, those who practice it must address their work to the entire historical discipline. We have much to learn from those working in other branches of scholarship, but the process works both ways. The skills required to deal with naval issues are just as important as any other form of specialist knowledge, but they must be used to complement the work of other historians, not to stress the unique nature of "naval" history.

Between 1858 and 1865 British policy-makers countered the most serious threat to national security between Waterloo and the First World War. The French Emperor, Napoleon III, built a powerful ironclad fleet with which he hoped to secure British support for a wide-ranging reconstruction of the European state system. Although relations with France dominated British diplomacy throughout this period, they have attracted relatively little explicit attention, in contrast to the individual diplomatic problems of the period, from Italy and the *Trent* to Poland and Schleswig-Holstein. Yet these crises can only be understood against the wider backdrop of Anglo-French relations. These relations took the form not so much of a rivalry as of France's desire to dominate, or at least largely influence, British decision-making. Britain resisted French pressure because it wished to preserve its diplomatic freedom to support its own interests. Britain was particularly anxious to avoid falling under French influence because Napoleon's European programme was entirely antithetical to British interests. What Britain prized above all was the ability to respond to each new set of circumstances on its merits. This could only be secured through a successful defence policy. It is only by accepting the centrality of Anglo-French relations to British diplomacy that the British response to the re-unification of Italy, the *Trent* Crisis, Poland and Schleswig-Holstein can be understood. They were all variations on the theme of

containing France in the interests of preserving the general European peace. Once Britain had demonstrated a commitment to the maintenance of a "free-hand," the UK could adopt an independent line. This was not the first time France had employed naval power in an attempt to coerce Britain. On this occasion, however, development and execution of policy were complicated by the internal dynamics of the Liberal party and a sudden surge of naval technical progress, which threatened the balance of power between fixed shore defences and large fleets, and called into question the fundamental assumptions of British strategy.

During the decade that separated the Crimean and Austro-Prussian wars, Napoleon III dominated European politics. Although his policy was based on an alignment with Britain, Anglophobia, an "endemic disease with the French public," meant it had to be based on French naval strength.' This situation was largely mirrored in Britain, with the important *caveat* that the British were only concerned with naval power, having no interest in a military challenge to France. Lacking the stability of a well-established regime, Napoleon was constrained by domestic opinion in France, which was both ambitious and largely opposed to war.' Napoleon ultimately wanted a European Congress to re-draw the map of the continent along national lines: all frontiers would move east, adding much of Belgium, Savoy and the Rhineland to France. Italy and Germany would each be divided into three kingdoms under a loose federal structure and, absorbed in their own internal struggles, easily controlled by France. While some revisionists have argued for an idealist "European" Emperor, the reality would appear closer to J.F. McMillan's cynical *realpolitiker*, seeking domestic strength through a successful foreign policy that would enhance France's position by exploiting nationalist fault lines in Europe.'

After the Crimean War, Napoleon recognised that a binding alliance with Britain offered the best chance to secure his aims. When he discussed this with Prince Albert in 1858, at the vast dockyard and arsenal of Cherbourg, surrounded by his new fleet, Albert pointed out that no British statesman would commit himself for the future. The Prince Consort returned to Britain convinced of the need for increased defence preparations to resist French pressure.' Still anxious for British support, Napoleon considered applying pressure through an alliance with Russia, and came close in 1857, but as this would permanently alienate Britain, he was forced to rely on French naval resources. The construction of a powerful, modern fleet should not be seen as a direct challenge to British security or as preparation for war; it was a national and dynastic prestige symbol intended to coerce Britain into accepting French policy.' To this end French government propaganda linked statements to the effect that Britain needed French support to remain a great power with threats to use the new fleet and the base at Cherbourg.' In 1860 the French Ambassador in London issued an explicit warning: if Britain did not support France over the unification of the Danubian Principalities, its dockyards, the basis of British naval and world power, would be destroyed.' Napoleon had tried to use naval power to influence Britain since his inauguration as President of the Second Republic. While he claimed the navy would make France a world power, the fleet was configured for specific operations in European waters. The similarities to Tirpitz's "High Seas Fleet" and the coercive diplomacy of *Weltpolitik* are significant.

The basis of British strategy from 1817 to 1904 was the "two-power standard" — the possession of a fleet equal to the combined strengths of the next two navies. These were,

with brief exceptions, the navies of France and Russia. Any increase in French or Russian naval construction would force Britain to respond, and the domestic political costs of this response were serious concerns for conservative politicians, like Lord Palmerston, who wanted to maintain the existing political and social order. On the other hand, many of his contemporaries, like William Gladstone and Richard Cobden, favoured reduced budgets and political reform. This internal dynamic complicated the development of naval policy by every government between 1816 and 1914. The additional distraction of a major French construction programme was always unwelcome, but never more so than in 1859, when strategy and technology were in a state of transition.

The strategic policy-making of this period was greatly complicated by a surge in naval technical development. For 200 years naval power had been measured in wooden sailing battleships, with each generation but little better than the last, and forty-year-old ships, like *Victory* at Trafalgar, remaining perfectly combat-worthy. Between 1852 and 1870, battleships were fitted with steam engines and then with iron armour; they were built of iron, equipped with ever-heavier rifled artillery, and finally reached a point at which the old order entirely disappeared. In the period covered by this essay the critical issues were the use of armour, iron construction, and finally heavy guns. Iron armour was introduced during the Crimean War for French and British floating batteries; initially designed to attack Cronstadt, they were first used to bombard Fort Kinburn on the Black Sea coast on 17 October 1855. Over the next four years French and British naval architects and policy-makers grappled with the problems of translating the new technology into effective sea-going warships. Britain deliberately allowed the French to make the running, because Britain had a far superior maritime industrial base and could expect to out-build France should it ever be necessary. By March 1858 the British had prepared the design for a wooden-hulled ironclad frigate, but had no interest in starting a new naval arms race.⁸ Iron hulls were introduced because wooden hulls had reached their limits. They could not support the weight of armour as easily as iron; had a far smaller carrying capacity for any given displacement; and were prone to early and catastrophic decay when closed in behind metal plates. Their advantages were ease of construction; the fact that they required no new infrastructure; they made limited demands for iron; and they could use existing timber stores or half-built ships. In essence, iron ships were the future, while wooden-hulled ironclads were merely a stop-gap.

France could risk building an ironclad navy because it had little need for a battlefleet outside Europe and had nearly equalled the British in wooden steam battleships. Furthermore, since the real French object was to secure British support for its European policies, the fleet only had to appear capable of fighting. As a result, the new ships were built cheaply, relying principally on old technology. The new ironclad fleet, which included nine powerful floating batteries, was designed for offensive coastal operations rather than classic command of the sea or *guerre de course* strategies. Because the object was asymmetric — attacking dockyards rather than engaging similar squadrons — Britain could not simply follow suit. Britain still required a fleet capable of commanding the broad oceans, a task for which the early ironclads were ill-suited because of doubtful seaworthiness, excessive marine fouling on iron hulls, and poor habitability in wooden-hulled

ironclads. As a result, Britain had to retain superiority in conventional wooden warships while at the same time responding to the French ironclads.

From the first use of ironclads at Kinburn, their real importance had been to alter the balance between fixed shore defences, forts, and fleets. Even before the introduction of armour, the tactical impact of steam-powered ships had been profound. Steam allowed powerful warships to operate close to shore, where their large batteries of guns could overpower, or at least temporarily silence, forts. Armour allowed them to stand and fight to a finish. The most important result was that naval dockyards, hitherto invulnerable to naval assault due to navigational difficulties and large fortifications, were now open to direct attack by armoured steamships, against which their small-calibre smooth-bore guns were useless. After 1855 both France and Britain recognised that future naval wars would revolve around the attack and defence of dockyards.

Much confusion has been generated by the terminology applied to the early ironclads. The first sea-going ironclads were not battleships, ships designed to fight similar vessels in squadrons or fleets. The French *Gloire* class were originally classed as frigates simply because they had one covered gundeck. In fact they were essentially armoured, single-deck versions of the latest wooden battleships, designed to attack dockyards. They made few technical or infrastructure demands. The first three *Gloire*-class units were ordered in March 1858, and a fourth was added in September after Napoleon's abortive attempt to secure British support through discussions with Prince Albert. In June 1859 two larger *Solferino*-class ironclads were ordered in response to the British *Warrior*. Anticipating that they would secure command of the sea, the French in May 1859 had ordered four more floating batteries, designed for offensive coastal operations. Only after *Gloire's* trials in mid-1860 did Dupuy de Lome, the Directeur du Material, propose replacing the wooden steam battlefleet planned in 1855 with forty ironclads and twenty floating batteries. The batteries were of a new design, intended primarily for defence of the coasts, roadsteads and, above all, the harbour at Cherbourg. The programme was quickly adopted. Ten ironclads and nine floating batteries, the most that could be handled by French resources, were ordered.⁹

French policy *in* 1858-1859 had been based on securing command of the sea through the technical advantage of armoured ships that could destroy British dockyards, particularly Portsmouth. This was the only justification for constructing the 1859 "offensive" floating batteries. They could only be useful against Britain if France had command of the sea. By mid-1860 Britain had done enough to counter this strategy, forcing the French to shift their focus back to regular fleet operations; they clearly anticipated defeat because a large part of the 1860 programme was given over to the new "defensive" floating batteries, which would only be required if Britain had command of the sea. These reflected the growing realisation that the attempt to create a navy capable of influencing British policy could not be sustained. The money and materials committed to the 1859 and 1860 floating batteries, equivalent to four battleships, revealed the high-risk strategy the French had adopted as the basis for their diplomacy. Napoleon had gambled on securing British acquiescence, but Palmerston called his bluff: Britain was prepared to commit resources to the preservation of its free hand.

The cost of the French naval programmes was high. Once it became obvious that they were not going to deliver the result for which Napoleon had hoped, they had to be cut; alternative policies were adopted to stabilise the regime. In December 1861 the Second Empire began the process of liberalisation.¹⁰ The government renounced the practice of raising supplementary funds without consulting the *Corps Legislatif*, which was given some control over service expenditures." The renunciation of this key mechanism signalled the effective end of the naval race, a recognition that France could not coerce Britain into supporting its European programme. The naval programme ran down; the 1860 ironclads were only completed between 1865 and 1867. Three ironclads ordered in 1865 were not delivered until 1870. (see appendix 1)

Existing studies of Anglo-French relations in this period tend to focus on individual crises and to take a simple view of the defence issue.' Some persist in the idea that Napoleon meant to invade.¹³ Others have seen the French navy as a fundamental challenge to British security.¹⁴ In fact, the French navy was exploited by a variety of parties, factions and interest groups in Britain. The Royal Family hoped to strengthen links with Prussia, Austria and even Russia, to resist France and uphold the *status quo*, at home as well as abroad. They argued that the French fleet was a fundamental challenge to Britain. The Army, especially the Royal Engineers and artillery, talked up the invasion scare in their search for new fortifications. The ability of General Sir John Burgoyne, the Inspector-General of Fortifications, to repeat the 1847-1848 invasion scare demonstrated the weakness of democracies in the face of coherent military elites. The "invasion scare," and a lack of strategic insight at the highest level within the Navy, left the Admiralty short of authoritative voices in this debate.¹⁵ But the most important contributor was Palmerston. This paper will argue that he never considered the ironclads a serious threat, because they were always going to be answered, once the Admiralty had decided the best way of doing so; that Palmerston used the alarm they generated to pursue a reasoned, tough policy based on relatively high levels of taxation; and that most of the additional money raised was spent on dockyard fortifications and an active policy outside Europe. Fortification of the dockyards neutralised the French ironclads, allowing Britain to exploit the deterrent strength of a battlefleet equal to the next two powers and a powerful coast assault fleet to secure a free hand in Europe and elsewhere. In the absence of a specific issue over which to fight, Britain and France expressed their rivalry in an arms race. Furthermore, neither country would benefit from war. British interests in Europe were largely negative, and were best served by peace; its active interests, outside Europe, were exposed to Russia and the United States. France, by contrast, had to expect that the German powers would exploit an Anglo-French war, as they had the Syrian crisis of 1840, to advance their own interests.¹⁶ The naval arms race was the mechanism whereby Britain and France clarified their relationship; France challenged British maritime supremacy, and Britain responded.

For the previous forty years Britain's European policy had been generally opposed to the expansion of France, and particularly concerned to keep its rival out of Belgium. For much of the period it had been dominated by Henry John Temple (1784-1865), Third Viscount Palmerston. Palmerston served as Secretary of War from 1812 to 1829, Foreign Secretary in 1830-1841 and 1846-1851, and Prime Minister from 1855 to 1858. Driven from office in 1858 for appearing to bow to French pressure, Palmerston was returned in July

1859 at the head of a broad liberal coalition, when the Tory ministers appeared to be drifting into a war with, or surrender to, France. He believed in deterrence: Britain and its worldwide interests would only be secure if it had the strength to protect them without relying on other powers. In 1859 the relative weakness of the RN constrained his Italian policy, and even in opposition Palmerston had asked the editor of *The Times* to avoid antagonising Napoleon." Once in office he used the war scare to reconstruct national defences. The measure of his success would be Britain's recovery of a free hand in Europe and the continuation of an active policy further afield, rather than the possession of a larger fleet than France. In September 1859 he told the Foreign Secretary, Lord John Russell, that although he did not fear war, Napoleon was building up the French Navy "for the purpose of keeping us in check and overawing us upon some occasion."⁸ Since Britain required such defences "as may enable us to have an opinion on matters which may seriously affect our interests," naval expenditure would take priority over economy.¹⁹ In November he argued that Napoleon actually meant to attack Britain. By building up national defences Palmerston deterred such an attack and recovered Britain's ability to pursue its own interests in the second phase of the Italian Reunification. The most obvious result was that Italy was allowed to follow its own inclinations, assuming a form and size that accorded with British interests rather than the French preference for a tripartite federal solution. The change of French Foreign Minister in 1860 was a critical indicator. The new minister, Thouvenel, was convinced Britain would fight or form a coalition to embarrass France. Once its fleet was no longer capable of threatening Portsmouth, France was forced to take British interests seriously.²⁰

In forming British external policy during his second ministry, Palmerston's greatest problem was that he led a liberal coalition, including Whigs, Peelites and Radicals. These groups, and especially their leaders, constantly jockeyed for position. Naval policy was only one of many major issues which divided the party, but it is of particular significance to an understanding of the period because it had a high priority for Palmerston and lay at the heart of his six-year struggle over defence spending. Although the Peelite Chancellor of the Exchequer, William Ewart Gladstone (1809-1898), had used the Italian issue to justify serving under Palmerston, his real interests were indicated by his insistence on the Chancellorship. Gladstone was too powerful to be ignored and Palmerston recognised that his reputation for sound finance would be crucial to the government's longevity. By joining the ministry Gladstone laid his claim to succeed to the Liberal leadership, but he would only secure the prize if he resisted the temptation to resign.²¹ Gladstone was unique in that he had the political weight, application and intellect to challenge the case for high defence spending. He forced the service ministers to fall back on Palmerston and the cabinet. Palmerston relied on public opinion and Tory support in the House of Commons to defeat Gladstone's logic. Gladstone had entered office without a political base, the Peelites having disintegrated.²² Over the next six years he would attract a following among the Radicals and a new generation of moderate Liberals, men more concerned with policy than politics. Although he co-operated with the Radical leaders, Richard Cobden and John Bright, notably over the 1860 French Commercial Treaty and more generally in opposing cabinet policy, Gladstone differed in being prepared to compromise. He agreed with Palmerston that it was

better to fight from within.²³ Pressure from outside cabinet rarely affected government policy and invariably lacked the precision to achieve specific objects.

As First Lord of the Admiralty, Palmerston selected Edward Adolphus Seymour (1804-1885), 12th Duke of Somerset, a Whig with a reputation for sound administration.²⁴ To represent the Admiralty in the House of Commons Palmerston chose Captain Lord Clarence Paget as the First or Political Secretary.²⁵ Paget had been the darling of the economic radicals in early 1859 for his blistering attacks on naval profligacy. Through Cobden and Bright he met Gladstone, providing the professional core for an alternative naval policy.²⁶ His parliamentary performances as a "bluff seaman" were masterpieces of cheap theatre. Paget was an ambitious and effective politician who traded his political post for a sea-command and later sought a peerage from Gladstone.

When the new Admiralty Board first sat, naval policy was in a state of transition. After visiting Cherbourg in 1858, the Queen and the Prince Consort had pressured Lord Derby's ministry to overhaul naval policy. Sir John Pakington's Admiralty Board increased the active fleet, won the wooden battleship race with a combination of new and converted units and, in May 1859, ordered the first British sea-going ironclad, the epochal frigate *Warrior*. Still, the future of naval design was far from certain. Entering office in June 1859, Somerset resisted the temptation to stop building wooden battleships and rush into ironclads before *Warrior* had been tried at sea. Palmerston, influenced by the veteran artilleryist General Sir Howard Douglas, suspected improved guns might render armour useless. Somerset continued gun and armour trials and ordered three more wooden battleships. Paget, having publicly called for the end of wooden battleship construction in favour of ironclads, offered to resign rather than propose the 1859 estimates; when Palmerston rejected his gesture he, like Gladstone, elected to stay in office.²⁷

Once armour had been accepted, and the trials of *Gloire* had demonstrated that it could be employed on sea-going ships, there still remained one fundamental question about the type of ship to be built. In December 1860 Paget explained:

should they be built, as the French generally build them, of wood, or of iron, as we build them?...Iron vessels are not liable to decay, and they can be built in almost any numbers in our mercantile yards; but they cannot be built and repaired in our Government dockyards without a large increase in the iron working plant, and they are unfitted for long and distant service from the constant fouling of their bottoms, which necessitates their being continually docked. Wooden vessels, on the other hand, require seldom to undergo the process of docking. They can be built and repaired in our dockyards at home and abroad; but they are liable to decay, and it is questionable whether they would be adapted for high speed, as the excessive vibration caused by the action of screw loosens the after body to such a degree that they have been almost wholly discarded in the Mercantile Marine. With regard to first cost, it is not known that much can be advanced in favour of one over another.²⁸

Only Britain had this choice — and a final decision was put off until 1864. In the interim, ships were built with iron or wooden hulls, and the Royal Dockyards converted to construct the largest iron ships. *Warrior* was built of iron to obtain high speed because its original design was for a high-speed armoured frigate, not a battleship. Only when true ironclad battleships were required did the Board agree to convert and build wooden-hulled ships. Furthermore, because iron ships were viewed with profound suspicion in naval circles after the iron frigate debacle of the 1840s, about which Somerset was very well informed, the Admiralty would only build the bare minimum number until such time as one had been tried at sea. This made the completion of *Warrior* a matter of grave importance for British strategy.²⁹

Yet the greatest impact of iron hulls on naval policy lay in releasing designers from the age-old constraints on the size and shape of ships imposed by the use of timber as a structural material. The result was immediate, as reflected in vast armoured frigates like *Warrior* and shallow-draught coast assault units like *Prince Albert*. Technology complicated policy choices by opening up the possibility of limitless change and the rapid obsolescence of each succeeding class of ships. For politicians and admirals who had grown up in an age when ships were almost unchanging, and only numbers mattered, this was confusing.

The critical issue was the inability of guns to damage armoured warships. This increased the threat they posed to naval arsenals, which had defensive systems designed to cope with wooden sailing ships. The French exploited the opportunity with a coercive strategy. British strategy — based on the ability to blockade the French fleets, cut its sea-borne communications and assault Cherbourg — was deterrent. The offensive focus of this programme, central to British strategy since the late 1840s, had dominated the planning and conduct of the Crimean War. The basic approach was a layered attack, beginning with long-range bombardment by gunboats and mortar vessels, followed by a close-range armoured attack on specific elements of the defence, with the *coup de grace* provided by the battlefleet. The destruction of Cherbourg would secure control of the Channel, destroy the French fleet and the transports needed for an invasion, "perfect" Britain's command of the sea, and facilitate the most complete application of maritime power to the problem of defeating a self-sufficient continental state.³⁰ As the "Cherbourg Strategy" required a powerful flotilla, it was hardly surprising that Somerset's first battles with Gladstone concerned twenty new gunboats to replace those sent to China and the defence of Alderney, the advanced base for flotilla operations against Cherbourg.³¹ Around 200 gunboats were maintained throughout the Palmerston administration, most in reserve at Portsmouth.³² They were a primary target for French coastal warfare planning.

In May 1860 Somerset advised Palmerston:

If there should be a war, we shall have no safety or repose until we shall have destroyed their navy; for this object we must be prepared to sacrifice both ships and men, and we must have another efficient fleet ready to come out in support of, or it may be in substitution for the first. I had a clever paper the other day from Captain Sullivan of the Board of Trade on the tactics to be pursued in case of war. I will have some of these suggestions arranged and then submit them for consideration.³³

Sullivan, the architect of British success in the Baltic Campaigns of 1854 and 1855, and the "Great Armament" to attack Cronstadt in 1856, was the expert on coastal operations.³⁴ Only an assault on Cherbourg, or similar large-scale operations against defended harbours, would explain the determination of Palmerston and Somerset to maintain a replacement wooden fleet. Although the Admiralty produced no "war plans" against France, the basic themes of contemporary strategy were revealed in a Confidential Cabinet Print during the *Trent* Crisis. Available intelligence on the navigation, defences, facilities and naval forces at every American port was followed by a statement of the force required to blockade or assault each harbour.³⁵

On coming into office the ministers faced pressure, not least from the Queen, to begin more ironclads.³⁶ After a visit to London, Colonel Claremont, the military attaché in Paris, was convinced the Palace and government were using the invasion scare to keep up defence spending. He was sent to report on the harbours and arsenals of northern France to ascertain the reality.³⁷ The availability of high-grade intelligence from France, including detailed drawings of new ships, allowed the government to make a calculated response. The French made no attempt to hide their efforts; they were seeking political suasion based on power, not a strategic or tactical surprise.

Gladstone's 1859 budget raised income tax from five pence in the pound to nine pence (old pence: 240 to the pound) to meet a deficit of £5,000,000 caused by increased defence spending.³⁸ In his search for career-enhancing tax cuts, including the end of the income or "war" tax, he sought reductions in defence spending. To this end he opened a correspondence with Paget in August 1859; for the next six years they would attempt to subvert the policy of the cabinet in which Gladstone sat and the Admiralty Board that Paget served. Inspired by Cobden's opposition to wooden battleships and his projected French trade treaty, they produced a coherent, logical naval policy. They sought a complete switch from wooden battleships to ironclads; to recall forces stationed outside Europe; to increase security without raising more men; and to reduce tension by political measures, notably a trade treaty and arms limitation, that fell short of a binding alliance.³⁹ They wanted to maintain British naval dominance in European waters more economically. While Cobden was the inspiration and Paget provided professional advice, Gladstone alone had the power and position to sustain a challenge for six years. This approach ignored two fundamental aspects of Palmerston's policy; the active promotion of British interests outside Europe and the capacity to take the initiative at sea through the "Cherbourg strategy." For Cobden and Gladstone, the possession of an offensive power-projection fleet was both unnecessary and provocative. They were ready to restrict Britain to a purely defensive strategy, to support a liberal, pacific policy.

Gladstone opened his campaign in October 1859. Palmerston rejected his approach; he was not going to denude the extra-European world of British ships and men to deter France. Palmerston believed that if Britain showed sufficient resolve, and avoided open arguments, war was unlikely. He wanted to use the alarm to upgrade defences for the long term.⁴⁰ Gladstone sought support outside the cabinet, from the Peelite elder statesman and twice First Lord of the Admiralty, Sir James Graham, but was firmly rebuffed.⁴¹ Gladstone accepted the need for ironclads, he quickly sanctioned four more, and queried whether

resources should be transferred from wooden construction to iron. Palmerston argued that the evidence was not yet clear, since he was not convinced the ironclads would work.⁴²

Gladstone was prepared to fund expensive new ship types, so long as they fitted into his Cobdenite concept of British security needs — that is to say, they were clearly defensive. Throughout his career, this trend in liberal ideology resulted in the application of misleading terminology to ship types. Somerset, heavily influenced by Paget, ordered a pair of coastal defence ironclads. These would test the ironclad concept for smaller units and would, he hoped, anticipate the conclusions of the 1859 Royal Commission to Consider the Defences of the United Kingdom. In the event, the Army-dominated Commission favoured a heavy programme of shore-based dockyard fortification, rejecting floating batteries and ships.⁴³ The other pair of ironclads were held over until April 1860, when it was expected that *Warrior* would have been launched. The results were thoroughly unsatisfactory. In name and design, *Defence* and *Resistance* reversed British naval policy. They were second-class, defensive assets, built for Channel service. They were exactly what Gladstone and Cobden wanted, but proved to be uneconomic, with short effective front-line careers. By the time they were complete the French challenge had declined; they served as second-class battleships hampering the strategic and tactical mobility of the fleets in which they served. Neither Gladstone nor Cobden understood the technical or strategic issues of ironclad policy, being content to take advice from Paget.

Defence and *Resistance* were smaller and slower than *Warrior* and, critically, slower and less well-protected than *Gloire*. The strenuous protests of the Controller of the Navy, Admiral Sir Baldwin Walker, who argued that *Defence* was too slow to avoid combat with wooden battleships, secured the order for a second *Warrior*, the deliberately-named *Black Prince*. Walker believed that ironclads were not a replacement for battleships, but a special type, for which the future role remained uncertain.⁴⁴ His preference, clearly seen in *Warrior*, was an armoured version of the latest heavy frigate, a ship superior to *Gloire*, with the speed to select the range at which it fought, or to provide tactical flexibility to the battle-line. The Controller's Office dominated Britain's response to the ironclad. Somerset had been advised to rely on Walker, while the First Sea Lord, Admiral Dundas, held him in the highest regard.⁴⁵ Although Paget criticised Walker for obstructing the early transfer of resources to ironclads, the failure of the *Defence* and *Hector* classes suggests that he, and not Sir Baldwin, was in error. Britain could not afford to risk command of the sea by entering too readily into the new order without restoring its dominance in the old and ensuring that the principles of the new system were fully understood. British policy had to be cautious.

At this stage Palmerston was not alarmed, although he was willing to promote alarm in others. He stimulated the invasion scare to secure additional funds to fortify the dockyards. This would neutralise the specific threat posed by the French ironclads. His views, based on those of Douglas and Sir John Burgoyne, dominated Sidney Herbert's memorandum on national defence of November 1859. Herbert, the Secretary for War, was Gladstone's closest personal and political friend. Because he assumed that blockades were no longer possible, he believed the navy could no longer guarantee national security, and therefore called for 26,000 more troops, fortification of the major naval and military arsenals and re-organisation of the militia. His case was bolstered by increases in the French

channel fleet, reinforced defences at Brest and Cherbourg, and large orders for armour and coal.⁴⁶

Gladstone responded with two letters. Herbert dealt with the first, on matters of detail; but the second was a crushing demolition of his argument. Gladstone did not share Herbert's alarm: "I shall attach far greater value than you do to our nautical means of defence when once we begin to correct (as we may very rapidly do) our senseless system of dispersing force all over the world." Moreover, France's "great anxiety to obtain our support and concurrence in the Italian congress does not square with the assumption she is resolved on a rupture." If the French meant to attack, they would have done so during the Indian Mutiny or the Orsini outrage.⁴⁷ As for inferring intent from actions, Gladstone pointed to Alderney, where £3,000,000 was being spent on a breakwater and forts to seal up Cherbourg. He suggested that the French had good reason to suspect Britain, on past performance, of joining coalitions against them; indeed, Britain had come close to doing so earlier that year. Only in concluding did his formidable logic slip, when he subscribed to the Cobdenite line that large armaments cause war.⁴⁸

Herbert left Palmerston to argue the case. At a heated cabinet meeting on 30 November, Gladstone found himself "very lonely on the question of military estimates." He persuaded Somerset to order no more wooden battleships, but Palmerston was determined to have the forts.⁴⁹ The only question was whether the cost, £10-11,000,000, should be met by raising income tax or through loans. Having secured passage on 22 January of the Anglo-French Commercial Treaty, a measure aimed at reducing tension, and added one pence to the income tax for 1860, Gladstone returned to the forts question. When he threatened to raise income tax to thirteen or fourteen pence, Herbert resigned. Palmerston insisted that he remain, arguing that the forts were vital.⁵⁰ With little or no support in Cabinet, Parliament or the electorate for his opposition to the forts loan, Gladstone considered resigning. Graham advised him to stay; the nation clearly wanted to spend the money, so he should control the process. Palmerston bluntly warned him he would be "lost" if he resigned over defence spending. He tried one more memorandum in July and then accepted defeat, leaving cabinet before the issue was discussed and absenting himself from the House when it was passed. For Palmerston, the loan offered cheap security by deterring aggression. Once built, the forts would prevent any naval force from attacking Portsmouth, the Thames-Medway region, and to a lesser extent Plymouth. Palmerston was almost alone in grasping the essential unity of British strategy, and in having a view not dominated by the interests of one service. The forts protected the ability of the fleet to operate at sea in the aggressive manner essential to the Cherbourg strategy. In the short term, the decision to build the forts, and in particular to fund them, demonstrated British resolve. The latter point was important, because little work was completed on the forts before Palmerston's death.⁵¹ In addition, Derby and Palmerston used the Rifle Volunteer movement of 1859, a reflection of public concern, as a cheap method of bolstering the appearance of defence; indeed, Palmerston reinforced the effect of the movement by issuing rifles.⁵² But the nation's real defence remained the fleet. There were alternative policy options: the Queen and Prince Albert favoured an alliance with Prussia, Austria and even Russia, against France. Cobden, not without reason, considered the court, influenced by Brussels and Berlin, was responsible for increased armaments. After the annexation of Nice and Savoy, Palmerston suggested that

Britain should pool information with Austria and Prussia, but cabinet demurred.⁵³ It may have been merely a gambit in his battle with Gladstone, showing that the alternative to increased defence spending was an unpopular and undesirable alliance with the autocratic monarchies.

Palmerston had to use the volunteers and forts to make his point to Napoleon because the Admiralty was not yet ready to rely on ironclads. Consequently, it was impossible to order a large naval programme, a clear-cut and peculiarly British demonstration of resolve. The role of the ironclad remained an open question at the Admiralty. Having been promised that *Warrior* would be ready in April, July and then September 1860 the Board, after the final disappointment on 22 September, requested the Controller to design a wooden-hulled ironclad not inferior to *Gloire*, indicating how it could be converted into a battleship or frigate if it were necessary to remove the armour. These ships would be built in the Royal Dockyards, in lieu of battleships already on order. The Controller proposed iron frigates like *Warrior*, and was ordered to design one, with the fall-back role of transport. Walker's insistence on iron hulls reflected the need for speed: he still considered ironclads a special type, rather than a replacement for battleships. Somerset agreed, ordering a modified *Warrior*, *Achilles*, at Chatham. In October the Treasury sanctioned two contract-built ironclads, but the Board prevaricated, eventually ordering the two second-class "Channel Service" ships, *Hector* and *Valiant*, which were little better than *Defence*.⁵⁴ Gladstone accepted both the Admiralty case to build six more *Warriors* and Paget's that the belated decision for ironclads was a severe criticism of previous policy. Paget favoured a mixture of new iron ships and wooden conversions, and suggested a Committee of the Admiralty and Treasury should report on the necessary estimates.⁵⁵

Aware that the French were about to lay down more ironclads, Palmerston argued that naval mastery had to be recovered at any price. While he accepted the need for further ironclads, if only for home service and to attack forts, he thought the unarmoured bow and stern of *Warrior* made it inferior to *Gloire*.⁵⁶ Gladstone wanted to fund the ironclads and reduce naval estimates by cutting overseas stations and wooden shipbuilding. He believed the invasion scare was abating.⁵⁷ Somerset offered to cut 4000 men, but further reductions would be unwise until Europe was "tranquil." Palmerston agreed; bolstered by Tory support, he knew few would oppose the estimates.⁵⁸ The few Cobden followers had decided to attack his naval policy. On 1 January 1861 John Bright urged Gladstone to work for an arms limitation treaty, building on the Commercial Treaty and the "good faith" of the French government. Gladstone also warned Somerset that some government supporters would submit a memorandum calling for a reduction in naval expenditure, which he personally supported. He also asked for Graham's support, but received a fundamental lesson in the nature of responsible government. Graham reminded him that as the estimates were settled in cabinet, all members were bound to defend them or resign. "The battle of economy within the limits of public safety, must be fought in the cabinet without external pressure," he declared, "while you continue to sit with them." Somerset considered that the disturbed state of Europe, with wars anticipated in Hungary, northern Italy and the Rhineland, made defence cuts inappropriate.⁵⁹ Initially Henry Brand, the Liberal Chief Whip, believed the address was sincere, if misguided. By contrast Palmerston blamed "that dangerous lunatic Cobden" who intended that Britain "should cease to be an influential Power in the

World...[and] hold our existence as a nation at the good will of France and Russia." After further investigation Brand agreed, advising Palmerston not to treat it as a question of confidence. Prince Albert confirmed that the Tories would not support the measure.⁶⁰

Chastened by Graham's response and the failure of the memorandum, Gladstone shifted his attention to arms limitation.⁶¹ Paget tried a twin-track approach, sending a memorandum to Palmerston and to William Schaw Lindsay, a radical shipowner, while cynically observing to Gladstone that "these outsiders may be made very useful & should be encouraged."⁶² Over dinner Gladstone and Paget settled that manpower could be cut to 75,000 without affecting the Channel or Mediterranean, and resources switched from wood to iron shipbuilding. This would have been a complete reversal of cabinet and Admiralty policy. Gladstone approached Somerset before the cabinet, but the First Lord warned Palmerston that "I feel the future position of this country amongst the powers of Europe depends in great measure on a right decision."⁶³ In cabinet Gladstone was first horrified to hear Somerset call for 81,200 men, despite the end of the war in China, and then mortified to find Paget cited as an authority for the fact that the French could mobilise 25,000 seamen in one month, which was used to justify the high level of British active manpower. Palmerston then crushed Paget's memorandum with a combination of faint praise, reference to the navies of other powers and the observation that such a treaty would "shackle the free action and discretion of England in a manner which we never would submit to."

With his case in ruins, Gladstone again shifted ground, discussing alternative defence schemes with Captain Cowper Coles, the pioneer of the turret.⁶⁴ Coles' economic argument for small-turret ships became the Radical alternative to conventional naval and military defences. Cobden tried to start a City of London Address to the Queen in favour of Anglo-French naval arms limitation but found no support.⁶⁵ In Paris the Minister of the Marine, Admiral Chasseloup-Laubat, persuaded Lindsay that British figures for French naval expenditure were exaggerated. He suggested that Paget should inspect French resources. Paget pressed the Ambassador, his half-brother, to keep Lindsay quiet.⁶⁶ This was no time for a member of the government to advocate arms limitation.

On 9 February the newly-appointed naval attaché in Paris, Captain Edward Hore, confirmed that ten *Provence-class* ironclads, slightly improved versions of *Gloire*, had been ordered, funded with a special credit of 100 million francs. The Naval Lords called for an immediate response, "Otherwise the spring of 1862 might see the French in possession of such a fleet of iron cased ships as could give them command of the Channel." They wanted to build ten new iron-hulled ships and convert ten old sailing battleships.⁶⁷

Recognising that he had to respond, Somerset called for a Cabinet committee and a block order backed by a motion of confidence. Palmerston agreed, and particularly urged the short-term measure of converting old sailing battleships.⁶⁸ Somerset also suggested converting a half-built wooden steam battleship into an ironclad, an approach developed by the new Controller, Rear-Admiral Sir Robert Spencer Robinson. This reflected Robinson's belief that ironclads had now replaced battleships. Palmerston, having secured Tory support for the Naval Estimates, endorsed the call for twenty ironclads. He favoured redeploying some money voted for forts and securing more terminable annuities, a switch of resources that revealed both his underlying strategic wisdom and a recognition that the challenge in

home waters might become serious. He wanted to know how much money would be spent this year.⁶⁹

Gladstone was horrified by the Premier's "wild measure." While he approved of putting more effort into ironclads, it was very bad form for the Admiralty to ask for more funds so soon after cabinet had settled the estimates. Furthermore, such measures would create alarm and lead to claims of bad faith in the House. He did not believe the French were going to spend £4 million on their navy and considered loans objectionable in principle and effect. He suggested the gradual shifting of resources from wooden ships to ironclads. Palmerston responded immediately, pointing out that the French ships had only just been ordered, while no amount of re-organising resources could meet the need. "Our measures of defensive preparation may doubtless make the French angry, but only because they render us secure against the effects of French anger." Somerset prevaricated, admitting the danger of alarm but stressing the need to improve naval strength. He advised converting wooden sailing ships, to avoid reducing the number of complete steam battleships, and to shift gradually into iron ships. He feared the French would accelerate their efforts, completing sixteen ironclads and sixteen floating batteries next summer, while Britain would have only seven and eight, respectively. Although it was essential to act, he wanted to wait on the trials of *Warrior* before beginning any new iron ships.⁷⁰

The following morning Gladstone wrote out his resignation, but did not send it. After discussions with Somerset and Paget, he believed that "the absurd scheme of yesterday seems to have little chance of success, & I breathe again." Relieved by Somerset's pragmatic response, and still troubled by differing statements of French strength in official publications, he agreed with Somerset that Paget would give "a simple and guarded intimation" of the reasons for an increase in moving the Naval Estimates.⁷¹ Paget hoped the provision for ironclads, a sign of British determination, would cause Napoleon to pause for thought.⁷²

For a few days the news from France — notably the trials of *Gloire*, a public speech by the Emperor's cousin, Prince Napoleon, and a succession of hostile pamphlets — supported Palmerston's analysis.⁷³ He wanted two £2-million terminable annuities during the year for forts and ironclads, and he still favoured converting old sailing ships, the naval "panic" measure. Gladstone opposed the annuities. Somerset, aware that the French had slowed the pace of construction, wanted to try *Warrior* before ordering any more new ships. He believed conversions could be achieved quickly and were not yet required. Recent progress in heavy artillery performance was also complicating design.⁷⁴

The Radical response to the crisis was predictable. Lindsay, already in Paris "in a semi-official capacity," had been shown details of French naval spending. He urged Paget to come and see for himself, and reported to Cobden that the British government was creating an unreal danger to tax the people. He decided to attack Paget's own "Achilles heel," the continuation of wooden shipbuilding, which Lord Clarence had deprecated as far back as 1858. Cobden developed these arguments in a letter to Russell, the only senior statesman he considered open to persuasion.⁷⁵ Russell was not persuaded, accusing Cobden of being a French dupe for advising Britain to disarm while France was increasing its navy, reminding him that Castlereagh's 1817 "Two Power Standard" was the basis of national security, and expressing his confidence that government policy had the support of the House

and the country. Cobden believed that a simple comparison of the naval estimates of the two countries would demonstrate that France was not a threat, and that any temporary superiority merely reflected badly on the Admiralty.⁷⁶ This analysis ignored the different strategic roles of the two forces. Britain had world-wide commitments and interests, many of which were linked to commerce, and supported by the business community Cobden claimed to represent. He was left to reflect that Palmerston's "lies" about the French navy might have an ulterior purpose.⁷⁷

Palmerston had manipulated newspapers and popular agitation to ride a wave of public concern, in which he occasionally half-believed, to reconstruct the national defences. He kept up pressure on his colleagues with alarming prognoses and calls for loans. This had the added bonus of keeping the support of the opposition and the Palace against Gladstone and the radical elements in his own party. As his object, to recover Britain's free hand in European affairs, was too vague to be the basis of a sustained popular agitation, Palmerston simplified and corrupted it into an "invasion" that would be more easily swallowed by the House of Commons, his Cabinet colleagues and the literate classes generally. It was typical of the man that he judged the public mood far better than his critics or his colleagues.

In May Cobden went to Paris. There he dined with French Ministers, including Chasseloup-Laubat, and discussed naval arms limitation. This regular procession of semi-official suitors must have amused the French, who took the opportunity to spread a little disinformation about their naval spending. Cobden actually believed France only wanted to be the leading second-class navy, "to meet the preparations going on in England." He tried to advance his cause in combination with Disraeli, but Lindsay accepted Paget's blandishments, ending the visionary prospect of a Tory/Radical alignment. After discussing the issues with Gladstone, Cobden worked out these themes in his pamphlet *The Three Panics*, which accused Palmerston of deliberately promoting alarm. For all the popular success of Cobden's polemic, the Admiralty saw nothing of merit in the argument advanced or the evidence assembled.⁷⁸ Somerset had initially demanded ten new ironclads as an issue of confidence, but financial and technical uncertainties led him to issue a qualified statement in Parliament, leaving scope for an increase if Napoleon began more ironclads. Palmerston favoured keeping funds in reserve for the autumn and the short-term solution of converting old sailing ships which, even if they only lasted three or four years, would be "a valuable means of averting and preventing a war during that period." Improved defences gave "greater weight to our diplomatic exertions for the maintenance of the general peace of Europe." European peace was essential because there was no telling when the American Civil War might involve Britain. Only if Britain was strong could it counter French aggression and meet a threatening situation in America. Moreover, he was anxious not to provoke those Conservatives who had supported him against the radical wing of his own party.⁷⁹

Gladstone opposed the increased expenditure in cabinet and demanded the Admiralty stop work on wooden battleships. Somerset did not resist, although he believed that wooden ships were still valuable. He was not ready to commit the current budget surplus to ironclads, and while the Admiralty was now committed to them, it had yet to settle on a new "battleship" design. If a short-term response were needed, he favoured converting incomplete wooden battleships in the Royal Dockyards rather than ordering more

iron ships from private shipyards, because he had spare workmen for the task and could produce ships equal to *Gloire*. He preferred to keep the surplus in hand for the autumn. Gladstone responded by reducing the surplus to a minimum, cutting income tax by one pence and repealing the taxes levied on newspapers, a popular radical measure.⁸⁰

By mid-May 1861 the Admiralty knew the French had begun seven of the ten new ironclads. The Controller advised converting five incomplete wooden battleships. Although inferior to the iron-hulled *Achilles*, the conversions were the only practical way to match French progress. They were also the first British ironclad "battleships," the ancestors of the Victorian battlefleet. The First Sea Lord, Dundas, supported the Controller, calling for ten new ships, while the Board was "convinced that none but the most vigorous measures will prevent the command of the channel at an early date falling into the hands of the French Emperor."⁸¹ Although it now was nearly four months after the initial alarm, Somerset would not be rushed. He had ordered *Achilles* in April, and the conversion of the incomplete wooden battleship *Royal Oak* the previous week, but he was delaying a final decision to wait for a better system of applying armour. Dismissing the conversion of old sailing ships as limited in value and durability, he adopted the incomplete battleships because they were equal to *Gloire*, under the control of the Board and did not require a supplementary vote. To build new iron ships without trying *Warrior* would cause problems in Parliament, while a supplementary vote might alienate France, just when its support was needed against America. He ordered four more *Royal Oak*-type conversions. Palmerston accepted the limited response; as the American Civil war had just broken out, he was temporarily more concerned with the defence of Canada than a rupture with France.⁸²

The converted ships demonstrated the wisdom of continuing work on the wooden fleet into 1860. In 1861 there were nine battleships on the slipways, with their timbers fully seasoned, and most had engines. Ultimately seven would be converted, with two kept in reserve until 1872. Significantly, *Royal Oak* was completed in 1863, two years before the first of the *Provence* class it had been converted to counter. The decisions taken in 1861 demonstrate that Britain could have out-built France at any time. In June the naval attaché reported no extraordinary exertions in French dockyards and stressed that as the French were relying on cheaply built and armed ships, their challenge would have to be defeated quantitatively, not merely qualitatively.⁸³

Paget and Gladstone continued to favour arms limitation as a confidence-building measure, but Paget would not go to Paris, hoping Lindsay had "made some impression on the Emperor."⁸⁴ Somerset reported that £750,000 would be needed for five wooden conversions and six iron ships in the current financial year. When Palmerston pressed for a transfer of resources from forts to ironclads, and the raising of further loans, Gladstone called Paget to dinner. The following day he objected to Palmerston's attempt to hurry him into a decision before cabinet met and then demolished his case. As the Admiralty was only asking for £750,000, there was no need for loans, especially as Paget thought that only £200,000 would be spent in the current year. This could be covered by the existing budget surplus. The cabinet agreed to suspend the £10 million forts loan and to forego the ironclad loan.⁸⁵

Palmerston shifted his ground, using the "superiority" of French ironclads over the *Warrior* type to press for the rapid completion of five or six wooden ironclads. "Peace and

good understanding between England and France," he concluded, "are most likely to be permanent when France has no naval superiority over England." Having neutralised the threat to the dockyards, Palmerston was trying to recover a decisive British superiority over all corners, treating the Russian and Spanish fleets as potential allies for the French. Gladstone proved more prescient; he did not think the French would be ready for at least four years.⁸⁶ Although Somerset saw no reasonable grounds for alarm, it was necessary to commence further ships. Iron hulls would be more economical in the long term, but the five wooden battleships only required two more engines and armour. He proposed to order the frames and heavy castings for the iron ships, holding over the final design for yet more armour trials. The three colossal iron-hulled *Minotaur-class* frigates, ordered in September, were the final, crushing statement of British industrial, technical and financial superiority. The other two ships, *Agincourt* and *Northumberland*, were named to remind the French that they had good reason to be careful. The former was an obvious choice, while the latter was chosen in honour of the ship that carried Napoleon to St. Helena. They were also the last of their type. The naval environment was changing. Having adopted a new battleship, based on the wooden conversions, Britain exploited the new certainty, adopting Coles' turret for new coastal ironclads. The French, having lost the will to sustain their challenge at sea, began another round of coastal defences. In view of the threat posed by coastal assault, the reinforcement of Cherbourg was sound policy.⁸⁷ The balance of threat had shifted. After inspecting *Warrior*, Palmerston's initial concern over its weakness was replaced by alarm that, as ironclads were invulnerable, dockyards could not be protected by guns. He favoured mines. Somerset suggested batteries equipped with Coles' turrets moored between forts, for close-range fire would be cheaper and easier than heavier guns.⁸⁸

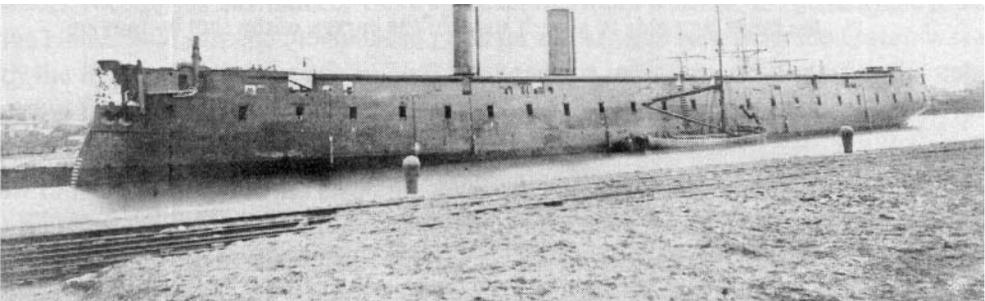


Figure 1: A final, crushing, statement of British superiority in the ironclad naval race. HMS *Agincourt* in birkenhead Dock, 27 March 1865. She had been floated out of the dry-dock in John Laird's Shipyard where she had been built earlier that day. Because the French challenge had collapsed she would not finally be completed for sea until 1868. France would not complete a ship of her displacement for another decade.

Source: Devon Record Office. I would like to thank the Duke of Somerset for permission to publish this photograph.

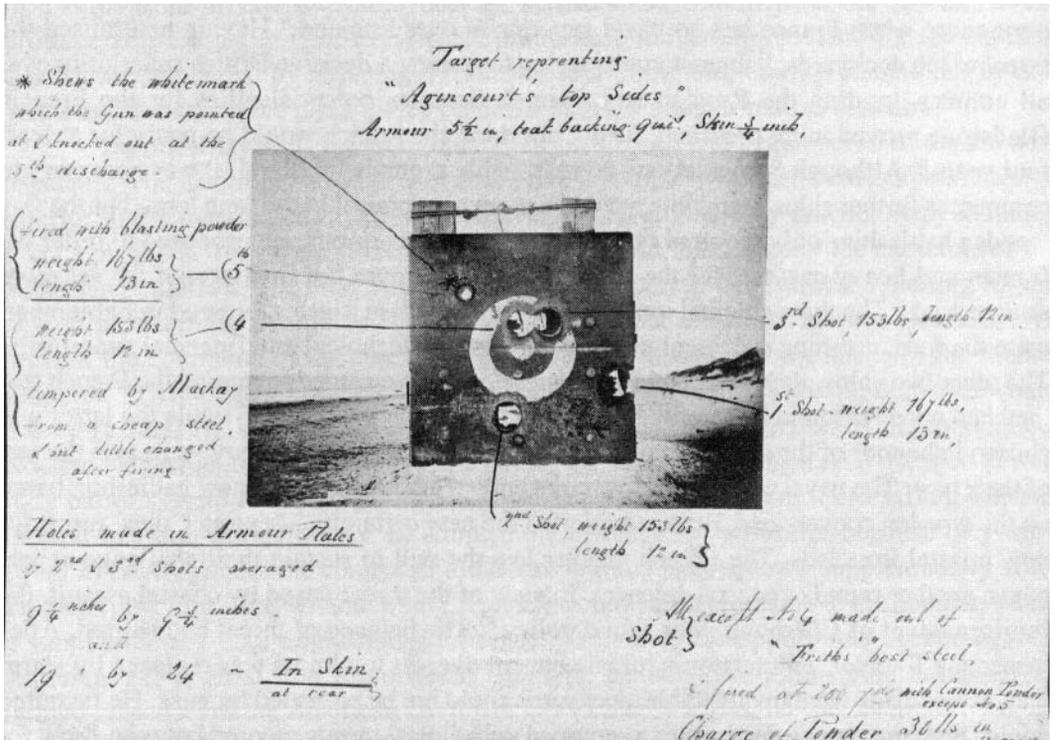


Figure 2:

By 1865 the best British guns were capable of defeating the protection of the new ships. Here are the results of a trial on Southport Sands in 1865, between a 7-inch Whitworth gun and a mock up of the upper works of HMS *Agincourt*. Such trial performances were not replicated in service, as the impact was rarely perfect, and the target was able to absorb some of the energy of the shot by moving.

Source:

See figure 1.

Gladstone's success in resisting the loans proposal encouraged Graham to widen the debate. He accepted Cobden's view that the French alarm was being kept up to provide funds for wars in New Zealand, Mexico, Japan and the reinforcement of Canada. He hoped that high taxes would lead the electorate to restrain their rulers. Graham recognised that high estimates were caused by the deployment of larger forces outside European waters, not ironclad construction. China and North America both required up to 10,000 men in years of war or crisis. Between 1861 and 1865 the Channel and Mediterranean Fleets were halved — the South American stations were the only other squadrons similarly cut. This reflected the reality of Palmerston's policy: where Britain had interests to promote, large forces were deployed, but the European *status quo* was sustained by deterrence. This was based on the reserve fleet, not the active squadrons. The real cost of the ironclad navy was small; on average four were ordered each year, costing about £1,000,000 (see appendix 2). These replaced a similar number of wooden ships, costing at least £600,000. Against that could be

set the smaller crews, lower maintenance costs and longer lives of the iron ships, reducing the margin close to insignificance. The high cost of seapower between 1859 and 1865 reflected the manpower costs of large active forces which, as Somerset lamented, were dictated by a Foreign Office whose demands knew no limit. Perhaps the ultimate irony was that even Gladstone's non-interventionist foreign policy in the early 1870s could not reduce the naval estimates to pre-Crimean War levels.⁸⁹ Pressed by Gladstone to find savings for 1862, Paget suggested relying on the 10,000-man reserve to cut 5000 from the active fleet; reducing the timber vote; and abandoning dockyard improvements. Allowing for more ironclads, he expected to save between £750,000 and £1,000,000.⁹⁰ Gladstone did not expect any "violent reduction of our present vast expenditure," but Somerset reminded him that the vote for men was critical and the reserves were not available for general service. He wanted a cabinet discussion.⁹¹ Gladstone continued his attack, but the urgency of discussions on Naval Estimates was greatly reduced by the *Trent* Crisis at the end of November.⁹²

Cobden sent Palmerston a proposal for naval arms limitation, beginning with wooden steam battleships, but the Prime Minister argued that current levels of naval expenditure provided cheap deterrence. Somerset agreed, expecting medium-term economies from keeping the ironclads in harbour, leaving the general duties of the fleet to smaller ships; this would reduce the number of men required. He was convinced that the naval build-up had dampened war enthusiasm.⁹³ Palmerston decided to cut costs.⁹⁴ He was astute enough to recognise that the tide had turned. As the Commons had turned against the Spithead Forts, Somerset suggested switching resources to floating defences, ordering the turret ships *Prince Albert* and *Royal Sovereign*, for offensive and defensive coastal operations, rather than sea-going battleships.⁹⁵ When the Radicals prepared another attack on government policy, Palmerston pushed Gladstone to distance himself from Cobden and Bright. Out-manoeuvred, Gladstone tried to avoid supporting the government counter-amendment. The Radical motion failed when Tory support was withheld.⁹⁶ Palmerston, however, recognised the limits of victory, accepting Brand's advice to "yield to the humour of the House" and suspend the Spithead Forts for a year. A protest from the Queen was met with the lessons of the American War, the need for more powerful guns and a cabinet decision for floating batteries to "go out and fight at close quarters any enemy that might attempt to enter into the Solent."⁹⁷

When aspects of the Radical programme were adopted, Gladstone pressed his advantage.⁹⁸ Palmerston argued that the "bad political effect of any such reduction would very far counter balance any economical advantage to be derived from it."⁹⁹ But he remained pragmatic and flexible. When the estimates were moved, the vote for timber was so strongly attacked by "the iron founders & Pakington" that he advised Paget to concede. Somerset was troubled by the vote, for wooden ironclads were built in the Royal Yards and unlike contract-built iron ships, their design could be modified without undue cost. The Controller considered them preferable, until the design process had stabilised. Two *Lord Warden-class* wooden-hulled ironclads, improved versions of *Royal Oak*, were ordered in 1863, supposedly to use up existing stocks of timber, but the premature decay of *Lord Clyde* suggested that this was at best a dubious assertion. A third ironclad, *Bellerophon*, was built of iron.¹⁰⁰ These were the first new ironclad "battleships."

The search for the "certainty" of previous decades was hopeless. Naval design would never again permit forty-year-old ships to stand in the front line, or long-term reserve fleets to act as Britain's deterrent. In late 1862 the Manchester-based engineer and gun designer Joseph Whitworth finally fired a seventy-pound shot through a *Warrior* target. The brief invulnerability of armour had ended. This had serious implications for the French challenge.¹⁰¹ By the end of 1863 it was clear that existing French guns, rifled up old muzzle-loaders, were utterly inadequate against armour. Napoleon realised his navy was toothless and that the British had called his bluff; this proved significant in his decision to end the naval race. A new generation of heavy guns would require an expensive long-term programme. British persistence in seeking a technical solution had paid off; not, as Sir Howard Douglas had hoped, in rendering armour irrelevant, but in rendering the inferior quality plate of French ships vulnerable. British plate was at least twenty-five percent stronger than the French equivalent, allowing the new British six-ton gun to penetrate any French armour.¹⁰² As a political lever, the French ironclad navy no longer counted.

In late 1863 Somerset anticipated having fourteen or fifteen ironclads in service the following summer. While Palmerston had to admit there was "no good reason to expect a rupture with France," he simply changed tack, claiming "it would be dangerous to say as much of our relations with the United States."¹⁰³ He was not prepared to reduce service estimates, because British preparations were defensive. Yet he did not rule out cuts on the eve of a dissolution, for political advantage. Somerset considered it unduly risky to cut construction, preferring Paget's approach of ending permanent overseas squadrons as the best long-term economy. No ironclads were ordered in 1864.¹⁰⁴

Still seeking a European deterrent rather than an Imperial force, Gladstone wanted to cut men and rely on the reserves. He pointed out that in 1854 the Navy only had 70,000 men, whereas in 1862 it employed 75,000 and 15,000 reserves.¹⁰⁵ He tried again in late 1864, using Paget's suggested savings of £500,000, but cabinet on 19 January accepted the Admiralty's case. Only two ministers lent any support.¹⁰⁶ Palmerston observed that the country did not expect any great reduction and that cabinet was far from united behind his plan to cut income tax. Later he reported that "it is worthy of remark that in the two nights discussion of navy estimates the complaints made were not that we have too many sailors, but that we have injudiciously reduced the number of sailors, boys and marines, and that we have not iron clads, guns and docks, sufficient for our wants."¹⁰⁷

In September 1865 the British and French navies exchanged visits. On the surface these were useful exercises in reducing tension, but a deeper meaning was evident. The Admiralty sent *Royal Sovereign*, the symbol of British offensive strategy, to Cherbourg, where its protection and heavy guns made a profound impression.¹⁰⁸ As the leading element of the large British coastal assault fleet, it posed a powerful threat to Cherbourg. Having recovered freedom of action by retaining command of the sea, Britain was once again ready to exploit a deterrent force capable of carrying war into the harbours and arsenals of France.¹⁰⁹ The visits allowed Palmerston to reflect that with Anglo-French relations restored to "normality" by a superior Royal Navy, "the Yankees will be all the less likely to give trouble either in Canada or Mexico."¹¹⁰ Little over a month later Palmerston was dead. He had skilfully exploited popular alarm to fund the reconstruction of Britain's defences, the

maintenance of its deterrent, and the pursuit of a dynamic global foreign policy, while keeping control over expenditure and holding together a broad liberal coalition.

In 1859-1860 the Palmerston Ministry elected to wait on events, especially the completion of the radical iron-hulled frigate *Warrior*, relying on accurate intelligence of French progress while experimenting with design, guns and armour until such time as a more decisive response was required. It neutralised the French threat by fortifying the dockyards, continued work on wooden battleships, and ordered six ironclads before mid-1861, the minimum response to six French units. The order for the *Provence* class could have led to panic, but Somerset resisted the hasty measures urged by his Board and was supported by Palmerston. Only six months later, in mid-1861, did Britain respond decisively. Of equal significance, Somerset rejected the short-term measure of converting old sailing ships. The conversion of five incomplete wooden battleships and the construction of four large iron frigates recovered undisputed British superiority at sea by 1864. Wooden conversions eased the constraints of Treasury control and met technical uncertainty, while the iron ships provided a qualitative edge. By waiting on the development of superior guns and armoured structures, the British outclassed the French on the proving ground, confident they were in control of the situation. The inexpensive French fleet lacked strength and firepower, being comprehensively outclassed by *Warrior* and *Minotaur*. Further, the French lost interest in their navy before the British response was complete. Once the British demonstrated that they were determined to recover their "free hand," Napoleon recognised that his policy had failed; further effort would be futile. France lacked the industrial and financial resources to sustain a long-term challenge. He had gambled that a "cheap" ironclad fleet could secure British support.

Gladstone's political ambitions were threatened by high defence spending. Influenced by Cobden and advised by Paget, he sought savings in an early shift to iron ships and by recalling forces to the Channel. This was logical, but he was out-manoeuvred by the Prime Minister. This was fortunate, for Paget's ambitions were better thought out than his policies, while Cobden's judgement on the strength and purpose of the French navy was all too obviously the result of disinformation, and his views were unpopular. The Radical leadership was isolated in opposing defence expenditure; the business community either supplied the navy or appreciated naval protection for their overseas activities, and Palmerston was careful to cultivate them. Only Lindsay's attack on wooden shipbuilding in the Royal Dockyards mobilised enough support to earn a concession.¹ Gladstone conspired with Cobden against the policies of the Cabinet. His hope that raising income taxes would discourage expenditure proved unfounded.'

The cost of government naval policy appeared significant to Gladstone, but the reality was closer to Palmerston's belief that it represented cheap security. (see appendix 3) Over the entire Ministry, naval estimates averaged sixteen percent of total government expenditure (the average between 1815 and 1850, a period of limited technical and political change, had been ten percent of lower expenditures). While there were budget deficits in 1859-1863, followed by small surpluses, these figures were dictated by the remission of duties and income tax levels, rather than defence spending. In total, counting the terminable annuities taken out to finance the fortification of the dockyards and deficits, the Palmerston ministry spent £2 million per annum above income to recover British freedom of action and

avoid war in Europe. But the money was not spent on ironclads, and the real costs were incurred in China, Japan, Africa and North America. Because it was secure in Europe, Britain continued to operate globally. This was the object of Palmerston's policy.

The recovery of undisputed British naval mastery allowed British European policy, seriously compromised over Italy in 1859, to reassert its independence and integrity. In 1863 Poland and then Schleswig-Holstein threatened the European balance, but Britain was able to act in its own interests and was not over-scrupulous about the feelings of France. Palmerston recognised that Britain could only intervene in these crises with French support, which would be costly, for Napoleon sought conquest in the Rhineland, new allies in Poland and a revived "Three Crowns" Scandinavian monarchy under the Bernadottes. British interests would be damaged by any of these changes. Palmerston had recovered Britain's freedom of action, avoiding the twin dangers of an alliance with the autocracies of eastern Europe and acquiescence in French ambitions.¹¹³ Ironically, he over-rated French power and underestimated the growing challenge of Prussia/Germany. This can be largely attributed to the impact of Napoleon's prestige fleet on British decision-makers.

NOTES

- * Andrew Lambert is a Senior Lecturer in War Studies at King's College, London. He has just completed a biography of Sir John Know Laughton, the pioneer naval historian. An earlier version of this paper was presented to the Second International Congress of Maritime History in Amsterdam in June 1996. The author would like to thank the organisers, and particularly his good friend David Williams, who chaired the session in which it appeared. It has greatly benefitted from the advice of Michael Dockrill, Michael Miller, John Ferris, and the editors of this journal.
1. L.M. Case, *French Opinion on War and Diplomacy during the Second Empire* (Philadelphia, 1954), 96-97.
 2. W.E. Echard, *Napoleon III and the Concert of Europe* (Baton Rouge, 1983), 173.
 3. J.F. McMillan, *Napoleon III* (London, 1991).
 4. Echard, *Napoleon III*, 185; and T. Martin, *The Life of His Royal Highness the Prince Consort* (5 vols., London, 1879), IV, 263-278.
 5. T. Ropp, *The Development of a Modern Navy: French Naval Policy, 1871-1904* (Annapolis, 1987), 6-25; and J. Chantriot, "La Frigate cuirassée *La Gloire*," in *Marine et Technique au XIXe siècle* (Paris, 1988), 347-371.
 6. N. Isser, *The Second Empire and the Press: A Study of Government-Inspired Brochures on French Foreign Policy in their Propaganda Milieu* (The Hague, 1974), 47-54 and 60.
 7. E. Ashley, *The Life and Correspondence of Henry John Temple, Viscount Palmerston* (2 vols., London, 1879), II, 192-198.
 8. A.D. Lambert (ed.), *Steam, Steel and Shellfire: The Steam Warship 1815-1905* (London, 1992), 51-59.
 9. J.P. Baxter, *The Introduction of the Ironclad Warship* (Cambridge, MA, 1933), 147-150; and P. de Geoffrey, "Des Batteries flottantes aux garde-cotes," in *Marine et Technique*, 307-345.
 10. C.I. Hamilton, *The Anglo-French Naval Rivalry 1840-1870* (Oxford, 1993), 294.
 11. A. Plessis, *The Rise and Fall of the Second Empire* (Cambridge, 1985), 151.
 12. K. Bourne, *The Foreign Policy of Victorian England 1832-1902* (Oxford, 1970), 107-110, basically ignores the arms race. On the other hand, D. Beales, *England and Italy 1859-60* (London, 1961), 130-139, implies that British naval superiority was important, and mentions the invasion panic, but does not link the issues.

13. M.S. Partridge, *Military Planning for the Defence of the United Kingdom, 1814-1870* (New York, 1989), 38, concludes that the Royal Navy could not provide for the security of the British Isles at the outbreak of war.
14. Hamilton, *Anglo-French Naval Rivalry*, 142, concludes that while the French were interested in attacking the British dockyards they would not have dared to try an invasion. This is the most convincing case, based on a thorough examination of the French archives.
15. See, Partridge, *Military Planning*, for a discussion of Burgoyne and the 1847-1848 scare. See also Baxter, *Introduction*, 114; and I.F.W. Beckett, *Riflemen Form: A Study of the Rifle Volunteer Movement 1859-1908* (Aldershot, 1982), 7-34.
16. G. Cox, *The Halt in the Mud: French Strategic Planning from Waterloo to Sedan* (Boulder, CO, 1994).
17. E.D. Steele, "Palmerston's Foreign Policy and Foreign Secretaries 1855-1865," in K.M. Wilson (ed.), *British Foreign Secretaries and Foreign Policy: From the Crimean War to the First World War* (London, 1987), 29; Steele, *Palmerston and Liberalism, 1855-1865* (Cambridge, 1991), 252, and generally for the domestic and party politics of this era; Palmerston to John Delane, 2 March 1859, in *The History of The Times* (5 vols., London, 1939-1952), II, 329.
18. Great Britain, Public Record Office, Russell Mss. 30/22/22, f. 38, Palmerston to Lord John Russell, 18 July 1859.
19. *Ibid.*, f. 174, Palmerston to Russell, 30 September 1859.
20. *Ibid.*, f. 235, Palmerston to Russell, 4 November 1859; and Beales, *England and Italy 1859-60*, esp. 167-168.
21. H.G.C. Matthew, *Gladstone: 1809-1874* (Oxford, 1986), 108 and 137-138; and R. Jenkins, *Gladstone* (London, 1995), 198 and 203-213.
22. On the Peelite party, see J.B. Conacher, *The Aberdeen Coalition 1852-1855: A Study in Mid-Nineteenth-Century Party Politics* (London, 1968); and Conacher, *Britain and the Crimea: Problems of War and Peace* (New York, 1987).
23. J. Morley, *The Life of Richard Cobden* (London, 1879), 694-695.
24. C.F. Baxter, "Admiralty Problems during the Second Palmerston Administration, 1859-1865" (Unpublished PhD thesis, University of Georgia, 1965), 15-17; A. Hawkins, *Parliament, Party and the Art of Politics in Britain, 1855-59* (London, 1987), 236 and 242-262; Lord Stanmore, *Sidney Herbert: A Memoir* (2 vols., London 1906), II, 199-201; and J. Vincent, *The Formation of the British Liberal Party 1857-1867* (London, 1966), 53.
25. A. Otway, *Autobiography of Admiral Lord Clarence Paget* (London, 1896).
26. *Ibid.*, 186-202; and Steele, *Palmerston*, 99.
27. National Maritime Museum, Lindsay Mss. Add 44,421, f. 313, Captain Lord Clarence Paget to Gladstone, 25 August 1869; Otway, *Autobiography*, viii; W. White, *The Inner Life of the House of Commons* (2 vols., London, 1897), II, 137-138; and A.D. Lambert, "Deterrence: The Critical Parameter of British Naval Power 1850-1914," in M. Duffy (ed.), *Parameters of British Naval Power 1850-1950* (Exeter, 1999), forthcoming.
28. Devon Record Office (DRO) 1392M, box 20, Somerset Mss., Paget Confidential Cabinet Print *Iron cased ships*, 1 December 1860. For general remarks, see Lambert (ed.), *Steam, Steel and Shell-fire*.
29. Great Britain, Parliament, *Parliamentary Papers (BPP)*, XXI, "Report from the Select Committee on the Navy Estimates" (1848), 50-52. Somerset, then Lord Seymour, chaired this Committee, which investigated iron ships as part of its brief.
30. A.D. Lambert, "The Royal Navy and the Cherbourg Strategy: 1840-1890" (Unpublished paper, 1996).
31. British Library (BL), Additional Manuscripts (Add) 44,304, f. 7, Gladstone to Somerset, 1 October 1859; and DRO, 1392 M/L19/59, Gladstone to Somerset, 1 July 1859.
32. J. Major and A. Preston, *Send a Gunboat* (London, 1967), 206-210.
33. Southampton University Library (SUL), Palmerston Papers (PP), Broadlands Mss. (Bdlds)

- GC/SO 29, Somerset to Palmerston, 9 September 1860.
34. H.N. Sullivan, *Admiral Sir B.J. Sullivan* (London, 1896); and A.D. Lambert, *The Crimean War* (Manchester, 1990).
35. DRO, Somerset Mss., box 21, List of the Chief Ports etc., Admiralty Confidential Print 15 December 1861. See also A.D. Lambert, "The Admiralty, the 'Trent Crisis' of 1861 and the Strategy of Imperial Defence" (Paper presented to the Seventh Franco-British Conference on Naval History, Brest, May 1998).
36. SUL, Bdlts, Royal Correspondence (RC) F 900, Queen to Palmerston, 3 July 1859.
37. PRO, Foreign Office (FO) 519/168, Colonel Claremont to Cowley, 1 and 16 August 1859.
38. R. Shannon, *Gladstone* (London, 1982), 390.
39. *Ibid.*, 395-396; H.G.L. Matthews, *The Gladstone Diaries (GD)* (Oxford, 1978), V and VI, I August; 7 and 12 September; and 19 October 1859; BL, Add Mss. 43,669, Paget to Richard Cobden, 19 August 1859.
40. Buckinghamshire Record Office (D/RA), Bulstrode Collection, Somerset Mss., 2A 14, Gladstone to Somerset, 4 and 18 October and 6 November 1859; and DRO, M/L19/59 1392, 14 October 1859.
41. BL Add Mss. 44,164, f. 208, Sir James Graham to Gladstone, 22 November 1859.
42. SUL, Bdlts GC/SO 13, Somerset to Palmerston, 25 November 1859; Palmerston to Gladstone; Gladstone to Palmerston, 25 November 1859; Palmerston to Gladstone, 24 and 29 November 1859; and P. Guedalla, *Gladstone and Palmerston* (London, 1928), 113-114.
43. Partridge, *Military Planning*, 107-114.
44. BPP, "Report of the Select Committee on the Board of Admiralty," V (1861), 6-7, Somerset evidence, 16 April 1861; Baxter, *Introduction*, 157.
45. A.D. Lambert, *Battleships in Transition* (London, 1984), 25-30 and 76-80; DRO, 1392 M/L19/59, Graham to Somerset, 21 September 1859; and D/RA, 2A 10/3, Admiral Dundas to Somerset, 21 November 1860.
46. Lambert, *Crimean War*, 26; Partridge, *Military Planning*, 12 and 112-115; and Stanmore, *Sidney Herbert*, 211-220.
47. On 8 January 1858 British-based Italian nationalists led by Felice Orsini threw bombs that had been made in Birmingham at Napoleon. See F. Wellesley, *The Paris Embassy during the Second Empire* (London, 1928), 145-150.
48. Gladstone to Sidney Herbert, 28 November 1859; and Stanmore, *Sidney Herbert*, 225-235.
49. *GD*, 30 November 1859; and Bdlts GC/SO 14, Somerset to Palmerston, 30 November 1859.
50. Shannon, *Gladstone*, 401-413; Herbert to Palmerston, 6 April 1860; Palmerston to Herbert, 11 April 1860; and Stanmore, *Sidney Herbert*, 248-250 and 254.
51. *GD*, 30 May, 2, 4 and 6 June and 16 and 20 July 1860; Add 44,164, f. 231, Gladstone to Graham, 22 July 1860; Graham to Gladstone, 23 July 1860; Palmerston to Gladstone, 16 July 1860; Guedalla, *Gladstone and Palmerston*, 142-143; SUL, Bdlts, Palmerston Diary (PD), 5 June 1860; and A. Saunders, *Fortress Britain: Artillery Fortification in the British Isles and Ireland* (Liphook, Hants, 1989), 179-189.
52. Beckett, *Riflemen Form*, 20-24.
53. SUL, Bdlts, Cabinet Papers (CAB) 111, Palmerston Cabinet Memorandum, June 1860; and Cobden Journal, 26 July 1860, cited in Morley, *Cobden*, 779.
54. SUL, Bdlts, ND/D (Navy) 16, Cabinet Memo on Navy Estimates, 11 May 1860; Add 44,304, ff. 48-55, Somerset to Gladstone, 17 May 1860; PRO, Admiralty Papers (ADM) 87/77, Admiralty to Controller, 22 and 29 September and 24 October 1861; ADM 87/77, Controller to Admiralty, 28 September 1860; ADM 1/5746, Treasury to Admiralty, 6 October 1860; SUL, Bdlts, GC/SO 37, Somerset to Palmerston, 29 September and 9 October 1860; Baxter, *Introduction*, 165-167.
55. DRO 1392M, box 20, Paget Confidential Paper, *Iron cased ships*, 1 December 1860, and

especially his handwritten marginalia on the copy in Somerset's archive; Add 44,394, ff. 299 and 314, Gladstone to Paget, 8 and 13 December 1860; and *ibid.*, f. 310, Paget to Gladstone, 11 December 1860.

56. DR/A, 2A/271/2, Palmerston, Cabinet note, 13 December 1860; and DRO, 1392 M/L 19/60, Palmerston to Somerset, 15 and 16 December 1860.

57. D/RA, 2A/14/13, Gladstone Memo, 18 December 1860; and *GD*, 27-29 December 1860.

58. SUL, Bdlids, GC/SO 43, Somerset to Palmerston, 28 December 1860; D/RA, 2A/36/19, Palmerston to Somerset, 29 December 1860; and Palmerston to the Queen, 1 January, 1861, as printed in A.C. Benson and L. Esher (eds.), *Letters of Queen Victoria* (3 vols., London, 1908), III, 422-423.

59. G.R. Searle, *Entrepreneurial Politics in Mid Victorian Britain* (Oxford, 1993), 151; G.M. Trevelyan, *Life of John Bright* (London, 1914), 292-293; Shannon, *Gladstone*, 428-429; D/RA, f. 19, Gladstone to Somerset, 3 January 1861; Add 44,164, f. 257, Gladstone to Graham, 3 January 1861; *ibid.*, f. 259, Graham to Gladstone, 6 January 1861; and Add 44,304, f. 82, Somerset to Gladstone, 5 January 1861.

60. SUL, Bdlids, GC/BR 7 and 8, Henry Brand to Palmerston, 7 and 20 January 1861; Palmerston to Brand, 15 January 1861, as cited in Vincent, *Formation*, 280; and SUL, Bdlids, RC/H 108, Prince Albert to Palmerston, 22 January 1861.

61. BL, Add Mss. 44,531, f. 108, Gladstone to Paget, 16 January 1861; and Add Mss. 44,395, f. 60, Paget to Gladstone, 16 January 1861.

62. *GD*, 20-21 January 1861; BL, Add Mss. 44,395, ff. 87, 94 and 96, Gladstone to Paget, 22 and 24 January 1861; and Paget to Gladstone, 24 January 1861.

63. BL, Add Mss. 44,304, f. 86, Gladstone to Somerset, 25 January 1861; SUL, Bdlids, GC/SO 47, Somerset to Palmerston, 25 January 1861.

64. Palmerston to Paget, 31 January 1861, as cited in Otway, *Autobiography*, vii; BL, Add Mss. 44,531, ff. 105 and 135, Gladstone to Paget, 26 and 28 January 1861; *GD*, 1 and 4 February 1861.

65. Cobden to Henry Richard, 4 February 1861, as cited in J.A. Hobson, *Richard Cobden, The International Man* (London, 1919), 282.

66. BL, Add Mss., Add 43,670, f. 101, William Lindsay to Cobden, 15 February 1861; and PRO, FO 519/208, f. 347, Paget to Cowley, 19 February 1861.

67. PRO, ADM 1/5765, Minute by Naval Members of the Board, 13 February 1861 (misdated 13 January 1861).

68. SUL, Bdlids, GC/SO 48, Somerset to Palmerston, 15 February 1861; and BL, Add Mss. 48,582, f. 87, Palmerston to Somerset, 19 February 1861.

69. SUL, Bdlids, GC/SO 50, Somerset to Palmerston, 21 February 1861; SUL, Bdlids, CAB 153, Palmerston Cabinet Memorandum, 25 February 1861; and D/RA/A 2A 47, ff. 9 and 10, Palmerston to Somerset, 21 and 25 February 1861.

70. *GD*, 25 February 1861; Gladstone to Palmerston, 25 February 1861 and Palmerston to Gladstone, 25 February 1861, as cited in Guedalla, *Gladstone and Palmerston*, 157-160; D/RA/A 2A 37, f. 11, Palmerston to Somerset, 25 February 1861; and SUL, Bdlids, GC/SO 49, Somerset to Palmerston, 25 February 1861.

71. *GD*, 26 and 27 February 1861; Gladstone to Palmerston, 26 February 1861 (not sent), as cited in Guedalla, *Gladstone and Palmerston*, 161-162; D/RA/A 2A 14, f. 24, Gladstone to Somerset, 27 February 1861.

72. PRO, FO 519/208, f. 359, Paget to Cowley, 25 February 1861.

73. *Ibid.*, FO 519/204, E.W. Mark, Consul at Marseilles, to Cowley, 13 March 1861; Palmerston Memorandum, 14 March 1861, as cited in G.P. Gooch (ed.), *The Later Correspondence of Lord John Russell* (2 vols., London, 1925), II, 273-274; and DRO, French pamphlets, with Somerset's marginalia.

74. Palmerston to Gladstone, 19 March 1861, and Gladstone to Palmerston, 20 March 1861, as cited in Guedalla, *Gladstone and Palmerston*, 162-164; BL, Add Mss. 48,582, f. 93, Palmerston to Somerset, 27

- March 1861; and SUL, Bdllds, GC/SO 52, Somerset to Palmerston, 28 March 1861.
75. Cobden to Richard, 1 March 1861, as cited in Hobson, *Cobden*, 284-285; BL, Add Mss. 43,670, f. 106, Lindsay to Cobden, 8 March 1861; and PRO 30/22/62, f 324, Cobden to Russell, 22 March 1861.
76. SUL, Bdllds, GC/CO 6, Russell to Cobden, 2 April 1861; and PRO 30/22/62, ff. 334-341, Cobden to Russell, 17 April 1861.
77. Cobden to Richard, 7 April 1861, as cited in Hobson, *Cobden*, 286.
78. Cobden Diary, 15 May 1861, as cited in Morley, *Cobden*, 832; and *The Political Writings of Richard Cobden* (2 vols., London, 1867), II, 375-386, analysing Palmerston's House of Commons Speech on the Forts Loan, 23 July 1860. See especially the critique of the use of evidence in the pamphlet in Somerset's copy, written by his Private Secretary, Captain John Moore, RN, in DRO 1392/M, PPP 21, box 22, 15 May 1862.
79. BL, Add Mss. 48,582, f. 100, Palmerston to Somerset, 7 April 1861; D/RA/A 2A 37, f. 15, Palmerston to Somerset, 11 April 1861; and *GD*, 12 April 1861.
80. SUL, Bdllds, GC/SO 51, Somerset to Palmerston, 12 April 1861; Palmerston to Gladstone, 14 April 1861, as cited in Guedalla, *Gladstone and Palmerston*, 166; and Shannon, *Gladstone*, 435-436.
81. PRO, ADM 1/5765, Controller's Submission, Minute of First Sea Lord, endorsed by the other Sea Lords, 22 May 1861; and *ibid.*, Proposed Board Minute, 23 May 1861.
82. *Ibid.*, Somerset to Naval Lords, 23 and 27 May 1861; and BL, Add Mss., 48,582 f. 114, Palmerston to Somerset, 26 May 1861.
83. PRO 30/22/56, f 343, Grey, Charge D'Affairs in Paris, to Russell, 4 June 1861.
84. BL, Add Mss. 44,396, f. 128, Paget to Gladstone, 17 June 1861.
85. SUL, Bdllds, GC/SO 57, Somerset to Palmerston, 15 July 1861; Palmerston to Gladstone, 19 July 1861, as cited in Guedalla, *Gladstone and Palmerston*, 172-174; *GD*, 19 July 1861; Gladstone to Palmerston, 20 July 1861, as cited in Guedalla, *Gladstone and Palmerston*, 180; and BL, Add Mss. 44,636, ff. 59-63, Gladstone Cabinet Memorandum, 20 July 1861.
86. Palmerston to Gladstone, 21 July 1861, as cited in Guedalla, *Gladstone and Palmerston*, 181-187; BL, Add Mss. 44,304, f. 92, Somerset to Gladstone, 21 July 1861; and D/RA/A 2A 14, f. 28, Gladstone to Somerset, 22 July 1861.
87. PRO, 30/22/24, f. 543, Palmerston to Russell, 2 September 1861; 30/22/62, f. 343-346, Perrier, Consul at Brest, to Russell, 29 July 1861; D/RA/A 2A 19 f. 1, Grey, First Sea Lord, to Somerset, 23 September 1861; PD, 25 September 1861; RC/H 122, Albert to Palmerston, 5 October 1861; and Hamilton, *Anglo-French Naval Rivalry*, 127 and 133.
88. D/RA/A 2A 37, f.28, Palmerston to Somerset, 24 October 1861; SUL, Bdllds, GC/SO 67, Somerset to Palmerston, 24 October 1861; and PRO, ADM 1/5795, Admiralty Board to Controller, 14 January 1862.
89. BL, Add Mss. 44,164, f. 280, Graham to Gladstone, 6 October 1861; *GD*, 11 October 1861; C.J. Bartlett, "The Mid-Victorian Re-appraisal of Naval Policy," in K. Bourne and D.C. Watt, (eds.), *Studies in International History* (London, 1967), 189-208.
90. BL, Add Mss. 44,397, f. 140, Paget to Gladstone, 19 October 1861.
91. BL, Add Mss. 44,304, ff. 96, 104, 108, 112 and 114, Gladstone to Somerset, 23 and 31 October and 14 November 1861; Somerset to Gladstone, 28 October and 1 November 1861; and *GD*, 12 November 1861.
92. DRO, 1392 M/L19/61, Gladstone to Somerset, 13 December 1861.
93. BL, Add Mss. 48,582, f. 214, Palmerston to Cobden, 8 January 1862; and SUL, Bdllds, GC/SO 77, Somerset to Palmerston, 11 January 1862.
94. Gladstone to Palmerston, 1 February 1862, as cited in Guedalla, *Gladstone and Palmerston*, 199-200; and PD, 1 and 3 February 1862.

95. SUL, Bdllds, GC/SO, 79 and 81, Somerset to Palmerston, 27 February and 1 April 1862.
96. Palmerston to Gladstone, 7 and 27 May 1862, as cited in Guedalla, *Gladstone and Palmerston*, 214-216 and 223-225; Gladstone to Palmerston, 9 May 1862, as cited in *ibid.*, 217-220; *GD*, 23 and 27 May and 3 June 1862; BL, Add Mss., 44,304, f. 122, Somerset to Gladstone, 12 May 1862; SUL, Bdllds, GC/SO 88, Somerset to Palmerston, 23 May 1862; Searle, *Entrepreneurial Politics*, 152; and D/RA/A 2A 38, f. 9, Palmerston to Somerset, 1 June 1862.
97. SUL, Bdllds, GC/BR 13, Brand to Palmerston, 7 June 1862; Searle, *Entrepreneurial Politics*, 153; Phipps, Queen's Private Secretary, to Palmerston, 18 June 1862, in G.E. Buckle (ed.) *Letters of Queen Victoria* (London, 1928) I, 37; Palmerston to the Queen, 22 June 1862, in *ibid.* 37-39.
98. *GD*, 22 November and 1 December 1862.
99. SUL, Bdllds, GC/SO 80, Somerset to Palmerston, 11 January 1863; and D/RA/A 2A 1863, f. 1, Palmerston to Somerset, 12 January 1863.
- 100.D/RA/A 2A 1863, f. 3, Palmerston to Somerset, 26 February 1863; SUL, Bdllds, GC/SO 80, Somerset to Palmerston, 4 March 1863; PRO, ADM 3/271, Admiralty to Controller, 18 March 1863; and O. Parkes, *British Battleships* (London, 1956), 93-97.
- 101.N. Atkinson, *Sir Joseph Whitworth* (Stroud, 1996), 261.
- 102.PD, 17-18 October 1862; PRO, ADM 1/5903, Foreign Office to Admiralty, 30 August 1864; D/RA/A 2A 21, f. 22, Earl De Grey, Secretary of State for War, to Somerset, 4 September 1864; and PRO 30/22/24, f. 431, Somerset to Russell, 6 September 1863.
103. SUL, Bdllds, GC/SO 80, f. 113, Somerset to Palmerston, 1 October 1863; and D/RA/A 2A 39, f. 18, Palmerston to Somerset, 2 October 1863.
104. Palmerston to Gladstone, 21 November 1863, as cited in Guedalla, *Gladstone and Palmerston*, 270-271; and BL, Add Mss. 44,304, f. 156, Somerset Memorandum, 23 November 1863.
105. BL, Add Mss. 44,304, f. 163, Gladstone to Somerset, 27 November 1863.
- 106.D/RA/A 2A 40, ff. 15 and 16, Palmerston to Somerset, 26 and 30 November 1864; SUL, Bdllds, GC/SO 130, Somerset to Palmerston, 1 December 1864; BL, Add Mss. 44,601, f. 1, Paget memorandum for Gladstone, 1 January 1865; *GD*, 3, 4, 19 and 28 January 1865; and BL, Add Mss. 44,409, f. 28, Paget to Gladstone, 9 January 1865.
107. Palmerston to Gladstone, 31 January and 12 March 1865, as cited in Guedalla, *Gladstone and Palmerston*, 320-326.
108. S. Sandler, *The Emergence of the Modern Capital Ship* (Newark, DE, 1979), 59.
- 109.PRO, FO 519/208, f. 371, Paget to Cowley, 21 June 1865; ADM 1/5943, Controller to Admiralty, 20 November 1865; and ADM 1/5954, Foreign Office to Admiralty, enclosing Captain Hore's report on the French Dockyards.
- 110.D/RA/A 2A 41, f. 12, Palmerston to Somerset, 2 September 1865; Palmerston to the Queen, 4 September 1865, in Buckle (ed.), *Letters of Queen Victoria*, I, 275.
111. Searle, *Entrepreneurial Politics*, 127, 130 and 144-149.
112. *Ibid.*, 151 and 232.
113. A.D. Lambert, "Part of a Long Line of Circumvallation to Confine the Future Expansion of Russia: Great Britain and the Baltic, 1809- 1890," in Rystad, Bohme and Carlgren (eds.), *In Quest of Trade and Security: The Baltic in Power Politics 1500-1990. Part 1: 1500-1900* (Lund, 1994), 297-334.

Appendix 1
French Ironclad Warships

	Order	Laid Down	Launched	In Service
<i>Gloire</i>	4.3.1858	3.1858	24.11.1859	8.1860
<i>Invincible</i>	4.3.1858	5.1858	4.4.1861	7.3.1862
<i>Couronne</i>	4.3.1858	14.2.1859	28.3.1861	2.2.1862
<i>Normandie</i>	3.9.1858	14.9.1858	10.3.1860	13.5.1862
<i>Magenta</i>	6.1859	22.6.1859	22.6.1861	2.1.1862
<i>Solferino</i>	6.1859	24.6.1859	24.6.1861	25.8.1862
<i>Provence</i>	16.11.1860	3.1861	29.10.1863	1.2.1865
<i>Flandre</i>	16.11.1860	21.1.1861	12.6.1864	5.1865
<i>Gauloise</i>	16.11.1860	21.1.1861	26.4.1865	12.4.1867
<i>Guyenne</i>	16.11.1860	3.1861	6.9.1865	15.4.1866
<i>Magnanime</i>	16.11.1860	27.2.1861	19.8.1864	1.11.1865
<i>Revanche</i>	16.11.1860	3.186	28.12.186	1.5.1867
<i>Savoie</i>	16.11.1860	3.1861	29.9.1863	25.3.1865
<i>Surveillante</i>	16.11.1860	28.1.1861	18.8.1864	21.10.1867
<i>Valeureuse</i>	16.11.1860	23.5.1861	18.8.1864	2.1867
<i>Heroine</i>	16.11.1860	10.6.1861	10.12.1863	5.1865
<i>Ocean</i>		7.186	15.10.1868	21.7.1870
<i>Marengo</i>		7.1865	4.12.1869	1872
<i>Suffren</i>		7.1865	26.12.1870	1875
<i>Friedland</i>		7.1865	25.10.1873	1876

Coast Defence Ships

Floating batteries: Offensive

Devastation class 4 units built 1855

Paixhans class 4 units begun 1859 comp. 1862-1863

Floating Batteries: Defensive

Arrogante class 3 units begun 1861 comp. 1864-1865

Embuscade class 4 units begun 1862 comp. 1866-1867

Rams: Defensive

Tareau begun 1863 comp. 1866

Cerber class 4 units begun 1865 comp. 1868, 1872/3/4

Note: The French also completed seven ironclad cruisers of small dimensions, limited speed and strength: *Belliqueuse* (laid down, 9.1863, launched 6.9.1865, comp. 1866; *Alma* class (6 units), 1865, comp. 1867-1869

Source: R. Gardiner (ed.), *All the World's Fighting Ships 1860-1905* (London, 1979).

Appendix 2
British Ironclad Warships

	Order	Laid Down	Launched	Completed
<i>Warrior</i>	11.5.1859	25.5.1859	29.12.1860	24.10.1861
<i>Black Prince</i>	6.10.1859	12.10.1859	27.2.1861	12.9.1862
<i>Defence</i>	14.12.1859	14.12.1859	24.4.1861	12.2.1862
<i>Resistance</i>	14.12.1859	21.12.1859	11.4.1861	5.10.1862
<i>Hector</i>	25.1.1861	8.3.1861	26.9.1862	22.2.1864
<i>Valiant</i>	25.1.1861	1.2.1861	14.10.1863	15.9.1868
<i>Achilles</i>	10.4.1861	1.8.1861	23.12.1863	26.11.1864
<i>Royal Oak</i>	C 14.5.1861		10.9.1862	28.5.1863
<i>Prince Consort</i>	C 31.5.1861		26.6.1862	6.2.1864
<i>Caledonia</i>	C 31.5.1861		24.10.1862	6.7.1865
<i>Ocean</i>	C 5.6.1861		19.3.1863	6.9.1866
<i>Royal Alfred</i>	C 5.6.1861		15.10.1864	23.3.1867
<i>Minotaur</i>	2.9.1861	12.9.1861	12.12.1863	1.6.1867
<i>Agincourt</i>	2.9.1861	30.10.1861	27.3.1865	19.12.1868
<i>Northumberland</i>	2.9.1861	10.10.1861	17.4.1866	8.10.1868
<i>Royal Sovereign</i>	C 3.4.1862			20.8.1864
<i>Prince Albert</i>	8.4.1862	29.4.1862	23.5.1864	23.2.1866
<i>Zealous</i>	C 2.7.1862		7.3.1864	4.10.1866
<i>Lord Warden</i>	25.5.1863	24.12.1863	27.5.1865	20.8.1867
<i>Lord Clyde</i>	3.7.1863	29.9.1863	13.10.1864	15.9.1866
<i>Bellerophon</i>	23.7.1863	28.12.1863	26.4.1865	11.4.1866
<i>Pallas</i>	23.7.1863	19.10.1863	14.3.1865	4.4.1866
<i>Hercules</i>	2.1865	1.2.1866	10.2.1868	21.11.1868
<i>Penelope</i>	2.1865	4.9.1865	18.6.1867	27.6.1868

Notes: In addition, the Royal Navy completed three small wooden-hulled ironclads in 1864 and 1866. These were useful for local operations, supplemented by the twin turret ships *Scorpion* and *Wyvern*, purchased in 1864, to avoid complications with the United States. C indicates that the ship was converted from a wooden unarmoured battleship already under construction.

Source: See appendix 1.

Appendix 3
British Budgets and Defence Estimates, 1859-1865
 (£ million)

	Total Govt Exp.	Income	Army & Ordnance	Navy	Navy as % of TGE	Vote of Credit
1859	64.8	64.3	12.5	8.2	12.6%	0.8
1860	69.6	70.1	14.1	10.8	15.5%	0.9
1861	72.9	69.7	15.0	13.3	18.2%	3.0
1862	72.3	69.0	16.5	12.6	17.4%	1.3
1863	70.3	68.8	17.3	11.4	16.2%	
1864	67.8	68.4	15.4	10.8	15.9%	0.1
1865	67.1	68.7	15.0	10.9	16.2%	
<i>Total</i>	484.8	479.0	105.8	78		6.1
<i>Average</i>	69.2	68.4	15.1	11.1	16.0%	1.0

Note: Deficit 5.8 & 6.1 in credits = 11.9 million average 2.0.

Source: B.R. Mitchell and P. Deane, *British Historical Statistics* (Cambridge, 1988), 587-588.