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1 The Coming of Steam

When the Napoleonic Wars ended in 1815 the Royal Navy was supreme on the world's oceans. The established rival navies of mainland Europe had been comprehensively defeated and the upstart United States put in its place by an aggressive maritime campaign. Control of the seas remained vital for the maintenance of Britain's imperial position after her victory over Napoleon's Empire, and Britain's leaders had every intention of asserting it.¹ However, there was no intention of maintaining a wartime-sized fleet. The annual numbers of sailors and Royal Marines voted by Parliament were already massively and rapidly decreasing from over 140,000 in 1813 to only 19,000 in 1817 although numbers actually borne were almost 23,000.² The number of officers employed in 1817 was almost 600, a reduction to less than 25 per cent of the 1813 figure.³ Ships in commission came down from a peak of 713 in 1814 to 121 in 1818.⁴

One reason for shortage of funds was Parliament's abolition of income tax, which severely strained government finances, given the demands of servicing the war-inflated National Debt.⁵ In 1817 the Select Committee on Finance recommended annual Naval Estimates of no more than £6 million (against almost £23 million in 1815). The Admiralty was able to squeeze a little more out of the Government into the 1820s but the peacetime naval spending was reduced by more than half as a proportion of the total budget.⁶

In this atmosphere of stringency, the naval authorities strove to maintain a fleet that could both execute its enhanced peacetime commitments and provide a sufficiently dominant force to deter and defeat likely opponents. In 1817 Foreign Secretary Castlereagh pronounced a two-power standard of naval strength and the following year set the standard for the rest of the nineteenth century by stating

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that a combination of France and Russia was the 'only one that can prove really formidable to the liberties of Europe'.⁷

Given the poor condition of wartime ships built out of inferior timber, only 79 line-of-battle ships were fit for service, against a target of 100. The situation with frigates was even worse, with only 78 ships ready for service against a requirement for 160. Policy makers had to balance the various financial and manpower demands of new construction, repair and the maintenance of a seagoing fleet of sufficient strength.⁸

The authorities who grappled with these difficulties were the Admiralty and the Navy Board: the former was in charge of policy and overall direction, the latter in charge of the administration and upkeep of the ships of the fleet. They occupied different buildings in London, the former in Whitehall, the latter in Somerset House. The Navy Board pre-dated the Admiralty as a committee formed by Henry VIII to control his growing 'Navy Royal' in the sixteenth century. The Lords Commissioners for the Execution of the Office of Lord High Admiral dated back to the Revolution Settlement of 1689, although there was a brief period when the Lord Admiral resumed his personal duties from 1702 to 1709. In 1815 the Board of Admiralty had just evolved into its 'modern' form, headed by a politician and with a senior professional officer serving as First Naval Lord (although the latter still had a party affiliation).

The First Lord from 1812 was the amiable, judicious, experienced and powerful Robert Dundas, Second Viscount Melville.⁹ Melville held the political reins in the Navy until 1830, with only a short break when the Duke of Clarence (later King William IV) was appointed Lord Admiral in 1827–8. Melville's influence was profound, notably in the selection of Admiral Sir Thomas Byam Martin as Controller, the Head of the Navy Board. Martin exerted enormous influence on the size and state of the fleet until his removal in 1831.

Melville and Martin were not the only key figures of this period. A third was Sir Robert Seppings, a Surveyor of the Navy from 1813 to 1832. As an Assistant Surveyor he had developed a new system of framing ships diagonally that greatly increased their strength. He also introduced new bow and stern structures that not only increased structural strength but also reduced vulnerability to raking fire. His

improvements were major advances in ship design and were part of the contemporary technological revolution. Seppings also introduced iron into the construction of ships, using iron diagonal frames in frigates and smaller ships to save on timber and to increase volume.

Seppings's design features were introduced both into new ships and older vessels that were given 'large repairs', i.e. were rebuilt. Byam Martin was an enthusiast for large and powerful ships. No more 74-gun two-deckers (which made up almost half the operational fleet of 14 ships of the line in commission in 1820) were ordered after 1817.¹⁰ The new standard for ships of the line was the 84-gun two-decker and the 120-gun three-decker. Some larger frigates were built from new or converted from smaller ships of the line.¹¹ In 1820 there were three 58–60-gun frigates in commission plus 18 of 42–50 guns and 14 of 24–26 guns. Thirty of the standard new Leda-class frigates, with 38 guns (plus eight carronades), were launched between 1816 and 1830.¹² Of the 42 sloops in commission in 1820, 23 were the traditional 18-gun type.

In 1821, under constant economic pressure, the Admiralty decided that its original plans for a mobilized wartime fleet were too ambitious. Cuts in ship orders would allow cuts in the dockyard labour force that would in turn allow a larger peacetime commissioned fleet. By 1823 the estimates were reduced to only £5.4 million, although the number of men rose to 26,000.

Naval Estimates grew again to over £6 million in 1827 because of the first of the many nineteenth-century naval scares. Heavily armed French and American ships were causing concern and the armament of British ships of the line was enhanced with more 32-pounders. The first completely new postwar class of ships of the line, the 90-gun Nile class, was ordered. By April 1827 the number of ships of the line in commission had increased to 17, with a further 57 fit for service. More 74-guns were cut down to provide powerfully armed large frigates.

The increased Naval Estimates was also connected with the brief ascendancy of George Canning, the former Foreign Secretary, who combined the duties of Prime Minister and Chancellor of the Exchequer. Canning also temporarily abolished the Admiralty, making William, Duke of Clarence, Lord High Admiral. It was expected

that the King's brother would be no more than a figurehead and his Council would carry out the duties of the Board of Admiralty as before but William seized his chance to spend money to improve the lot of naval personnel. Although Clarence outlasted Canning, the Duke of Wellington as Prime Minister restored both Melville and the Board of Admiralty in September 1828. The following year's Naval Estimates reverted back to below £6 million, a figure they would not reach again until 1842.

Given this level of financial stringency, it is surprising how quickly the Admiralty and Navy Board adopted the new technology of steam propulsion. It is too often quoted that Melville's Admiralty 'felt it their bounden duty to discourage to the utmost of their ability the employment of steam vessels'. This statement represents the opposite of the truth.¹³ A Mechanist to the Navy Board, Simon Goodrich, had been appointed as early as 1814, but attempts in 1815 to build a steamer, *Congo*, to explore the river of that name, failed because the engines were too heavy. By 1819 steam vessels were beginning to tow sailing ships in and out of harbour and between ports. Rather than creating their own craft, the cash-strapped Navy Board commissioned the Post Office to build and operate a steamer for the Holyhead–Dublin run. Goodrich examined these vessels and in November 1821 *Comet* was laid down by the Admiralty at Deptford, for completion the following year. She was 115 feet long and had 80 hp engines. The larger *Lightning* followed in 1823. She was first used as a coastal tug but was soon used to support ships on operational deployments.¹⁴

The wind was being conquered. By the end of 1827 *Lightning* was joined by *Meteor* and *Echo* and the Lord High Admiral appointed an established crew under a Lieutenant RN to the three ships. Thus they appeared in the 1828 Navy List as HM Ships (*Comet* achieved this status in 1831). Each was armed with two small guns. By 1829 the Royal Navy possessed a total of eight paddle steamers and had under construction a much larger steam warship, *Dee*, ordered in 1827 as one of the last acts of Melville's Board of Admiralty. Steam greatly increased the power of the fleet to project power at close ranges. This littoral emphasis in naval operations was clearly shown in the immediate aftermath of the Napoleonic War, in the bombardment of Algiers.

In the summer of 1816 Lord Exmouth was put in command of five ships of the line, five frigates, three sloops, two brigs and four bomb vessels, *Beelzebub*, *Fury*, *Hecla* and *Infernal*, the latter fitted out as an explosion vessel.¹⁵ The British gunners had been specially trained for accuracy, with gunnery practice twice daily and full broadsides fired by each ship twice a week.

The bombardment began at 15:00 on 27 August. Exmouth was able to anchor his flagship within 80 yards of the battery at the head of the harbour mole. At this range the hail of accurate fire from his 50-gun broadsides were able to sweep away the Algerines. *Impregnable*, whose armament had been enhanced with heavier guns, anchored at longer range, but was unable to overwhelm its target before suffering serious casualties. The bombardment was maintained for nine hours, the bigger ships being supported by the smaller craft. *Infernal* was also sent in and exploded, though not in the position planned. The Algerine pirates' ships were burnt and the Dey acquiesced to British terms by releasing Christian prisoners. Algiers was a transitional action: it demonstrated the developing potential of well-deployed and well-armed ships against shore batteries but it also showed that shore-mounted artillery remained a significant threat. There were 818 casualties, with 128 dead. As Lambert says: 'a 16% casualty rate made this as bloody a battle as any in the age of sail'.¹⁶

The Algerine Treaties were short-lived and, in early 1824, another bombardment was being prepared. The paddle steamer *Lightning* was sent out, which made what was probably the longest voyage yet made by a steamer.¹⁷ The intention was for her to tow sailing ships into the best bombardment positions, but this was not required as the Dey submitted to British pressure without the need for a full-scale action. Nevertheless it was the first operational deployment by a Royal Navy steamer.

In 1825 Mehemet Ali, the French-backed autonomous Egyptian warlord, sent forces to assist the Turks against the Greeks who had been in revolt since 1821. Propelled by pro-Greek public opinion, the British, who were concerned that this situation must not provide an opportunity for Russian expansion, joined with the French and Russians in the Treaty of London in July 1827 and offered mediation. The Greeks accepted but Turkey did not. Instructions were sent to the naval commanders in the area to enter into friendly relations

with the Greeks and 'to intercept any expedition by sea, of men, arms etc. destined against Greece and coming from either Turkey or from Africa in general'.¹⁸

The British naval commander in the Mediterranean was the aggressive Vice Admiral Sir Edward Codrington, 'Go it Ned', who had been repelled by Egyptian conduct in Greece and was in favour of 'strong coercion' of Turkey.¹⁹ A Muslim fleet of about 100 vessels was amassed at Alexandria.²⁰ To pre-empt diplomatic pressure forcing him to climb down, Mehemet Ali began to send these ships to sea on 5 August. This was a timely precaution as, two days later, Codrington received orders to intercept the Ottoman fleet and to act under the authority of Stratford Canning, British Ambassador at Constantinople. Canning authorized the admiral to use force if necessary to enforce the armistice. The Ottomans eluded their pursuers and arrived at Navarino on 7–8 September. Codrington had only five ships but he was confident enough of their fighting abilities to threaten the Turkish admiral with his orders to prevent the Ottoman reinforcement of Greece. Any firing at British ships would be 'fatal to the Ottoman fleet'.²¹ On 25 September a temporary truce was achieved.

Codrington ordered a concentration of Allied ships off Navarino on 10 October. The Allied fleet was composed of three British ships of the line, four frigates, a sloop, three brigs and a cutter; seven French ships and eight Russian.²² Codrington flew his flag in the powerful 84-gun two-decker *Asia*, armed with two ranks of 32-pounders in the latest style, supplemented by thin-walled, short-barrelled 42-pounder carronades on the upper deck. The other two British ships of the line were 74s, HMS *Albion*, launched in 1802 and a veteran of Algiers, and HMS *Genoa*, taken over from the French while being built in Genoa in 1814. Their armament comprised 18- and 24-pounders.

The 42-gun frigate *Dartmouth* went into Navarino on 18 October and obtained good intelligence concerning the Ottoman dispositions. The latter had over 60 warships of all sizes, but only three ships of the line.²³ The Allies agreed to enter Navarino on the 19th to force a more co-operative attitude from the Ottomans. Winds were too light to allow entry on that day and there were no available steamers, although Codrington had asked for them. The operation was therefore delayed until 20 October.

As they arrived the lead British ships anchored. Tension was great and when the boat of a British frigate sent to remove a threatening fireship was fired upon, the shooting became general. *Asia* disabled the Turkish flagship and, after an abortive attempt to make a truce with the Egyptian flagship, engaged her next. *Asia*'s powerful armament tore huge holes in the Egyptian's side. The battle raged for the rest of the day but the superior fighting qualities of the Allied ships proved devastating. They were more heavily armed and better built and their gunners were more experienced. The Ottoman fleet was almost annihilated, many damaged vessels being blown up by their own crews. One of the ships of the line and the four Egyptian frigates were able eventually to return to Alexandria as part of 46 survivors, some of them heavily damaged, that arrived by the end of the year. Ottoman human casualties, however, were great: 6000–7000 (ten times those of the Allies).

This was a violent form of what a later age would call 'peace enforcement'. The international force, having released Turkish prisoners, turned its attention to the Greeks, threatening them with Navarino-type sanctions if they persisted in operations outside their recognized blockading areas. The fleet, however, had to lick its wounds and the British, followed by the Russians, retired to Malta. All three British ships of the line had to be sent home for repairs but Mehemet Ali had been overawed and told British representatives there would be no war or reprisals. The Turks were less happy and threatened war, which eventually broke out with Russia alone in April 1828.

At home, the government was embarrassed by the scale of Codrington's victory, and the coming to power of Wellington saw a shift of policy in a more pro-Turkish direction. His government's King's Speech at the opening of Parliament called the battle an 'untoward event' concerning 'an ancient ally'.²⁴ Codrington was left in limbo at Malta. Not until May was he allowed to follow up his victory and blockade Greek ports in Turkish or Egyptian hands. In July a direct blockade of Alexandria began. The previous month Codrington had learned that the Foreign Secretary had demanded his recall but he was determined to obtain Egyptian agreement to a withdrawal from Greece before returning home. Codrington went in person to Alexandria to confer with Mehemet Ali and in August

1828 an agreement was signed covering the withdrawal of Egyptian forces from Greece. The promise of Navarino had been fulfilled.

Wellington's attitude to Codrington reflected his general approach to foreign and defence policy. The Iron Duke believed that economic realities demanded a less forward foreign posture. His attempts to trim expenditure, however, were countered by Sir George Cockburn, the able First Naval Lord who took up office in 1828. Cockburn had, as Second Naval Lord, been a strong supporter of Codrington. Each of the admirals was as ruthless and aggressive as the other, Cockburn having been responsible for the burning of Washington. Quoting foreign naval strength, Cockburn was able to prevent the Government's Finance Committee cutting the Naval Estimates too far; sailors and marines actually borne remained above 31,000.²⁵

The battlefleet was in quite good shape, with 71 ships in good order and 19 building, meeting the revised wartime establishment of 90 ships.²⁶ Byam Martin tried to get more money out of Melville, who, as part of a government being pressed for tax cuts, could not oblige. The situation got even worse in 1830 when a new and reforming Whig administration took over under Sir Edward Grey. The incoming Whigs were no friends of the existing naval establishment and the winds of reform were about to blow over the Royal Navy – with storm force.

In opposition the Whigs had been strong supporters of cuts in the Naval Estimates, not least Sir James Graham, who became First Lord on 25 November 1830. Prime Minister Grey, whose last government post had been First Lord in 1806, and whose opinions on the Navy Board and the dockyards had been negatively influenced by Lord St Vincent, heavily influenced Graham. The First Lord ordered cuts in the line-of-battleship programme and in the dockyard labour force. There was a strong political imperative to discredit the Navy Board. As Lambert says, 'First, it would reinforce the commitment to change that had been central to the Whigs' appeal to the radical elements; and second it would provide the financial savings needed to bribe the independent landowning members who were vital to the passage of the major item on the political agenda, the Bill to reform parliamentary representation.'²⁷

The Whigs were also deeply suspicious of the Tory character of the existing naval administration, in an era when the concept of apolitical officials was not yet established. Both Martin and Cockburn were Tory MPs and, although Martin stayed in office as Controller and head of the Navy Board, Cockburn was replaced as First Naval Lord by Nelson's former flag captain Admiral Sir Thomas Hardy. The situation was untenable and, after Grey had informed the King that Graham and Hardy found it impossible to conduct business with Byam Martin, the latter was dismissed on 17 October 1831. His replacement was Admiral George Dundas.

The Admiralty was now firmly in control of the Navy Board, but Grey and Graham wanted more. In the Admiralty Act of 1832 the Navy Board was abolished and the Board of Admiralty took over the entire administration of the Navy. Five Principal Officers – the Surveyor, Accountant General, Storekeeper General, Controller of Victualling and Physician General – were created, each responsible to a member of the Board, who, in turn, reported to the First Lord, who was responsible to Parliament.²⁸ The historic Navy Board ceased to exist in June 1832.

This administrative earthquake saw the appointment of a new Surveyor, Sir William Symonds, on 9 June. Symonds was a controversial figure with strong ideas on warship design. As Lambert has pointed out, he was intended more as a policy director in the new organization, but he could not resist imposing his strong ideas and was allowed to do so by the Admiralty. Work on existing designs was thus suspended and new ships were laid down according to the new principles.

Construction of new vessels proceeded slowly, however, as the Whigs cut the Naval Estimates. By 1833 these were down to £4.8 million, and £4.7 million in 1834, just over 9 per cent of the total national budget.²⁹ Cuts were made in dockyard staff and those clerks who were not made redundant had their working hours increased; rations at sea were also reduced. The number of men actually borne was 28,000 in 1834.³⁰ The number of officers employed at this time was about a thousand.³¹ In 1834 the Fleet was made up of 16 ships of the line, with 72 in Ordinary, 6 large frigates with 14 in Ordinary, 8 smaller frigates with 60 in Ordinary, 17 steamers and 140 other vessels.³²

The need for operational deployments took resources away from new construction. The forward diplomacy of Palmerston, the Whig Foreign Secretary, required the backing of British naval power. A British squadron had long been in the Tagus off Lisbon. It supported Portuguese independence from Spain, Brazilian independence from Portugal, and influenced Portuguese politics.³³ Strength varied: three ships of the line and a frigate in 1824, two of each type in 1826. The need to maintain forward presence meant ships rarely went to sea (one ship of the line was at anchor for a year and a half!) and the force was ultimately strengthened to three ships of the line and three sloops to allow sea training to be given to crews without arousing Portuguese apprehensions. In 1831, with civil war raging ashore between the constitutionalist and absolutist factions, the squadron had to be reinforced still further using, among others, units from Codrington's Squadron of Evolution, formed to conduct trials on new hull forms. During another crisis in 1836, when the Portuguese Queen had to be rescued by British Marines from rebels, the Tagus Squadron was increased to six ships of the line and it continued to be significant until the 1850s.³⁴

The threat of France dominating Belgium (which had successfully revolted against the Netherlands in 1830) was a strategic factor in the formation of the Squadron of Evolution in 1831. It was deployed off the Belgian coast to encourage a withdrawal of French forces sent to assist the Belgians against a Dutch invasion. Further naval deployments were carried out in the Downs to deter a Dutch counter-attack in October 1831.³⁵

In order to pressure the Dutch into a settlement, a blockade of the Netherlands was instituted in 1832, in co-operation with the French. The ships were again largely from the Squadron of Evolution. In late 1832 Sir Pulteney Malcolm deployed five ships of the line, four frigates, seven sloops, a brig and two steamers (*Dee* and *Rbadamanthus*).³⁶ The blockade had only limited effect and was unpopular with trading interests at home but it did, together with French operations ashore, help achieve a *modus vivendi* between the Belgians and Dutch.

The combination of Portuguese and North Sea commitments stretched the operational fleet, as it was capable of only coping with two European crises at once.³⁷ The impossibility of making a show of

strength in the Mediterranean contributed to Turkey falling under Russian influence as she sought protection in the aftermath of Mehemet Ali's expansion into Syria in 1832. Once the Belgian crisis began to fade, reinforcements began to be sent and, by the autumn, Malcolm (commanding in the Mediterranean once more) had six ships of the line and a supporting steamer. The Tagus Squadron was available for further reinforcement and, with the French fleet, his force was more than a match for the Russian Black Sea Fleet. The Ambassador at Constantinople was authorized to bring the Mediterranean Fleet through the Dardanelles, should Turkey request it. This show of coalition naval strength, combined with naval pressure on Mehemet Ali not to try for independence, had the required effect: Turkey began to move away from Russia.³⁸

In 1834 Graham left office, closely followed by his mentor Grey. Graham was replaced by Lord Auckland and Grey by Lord Melbourne. The pressure for cuts in Estimates continued, however, and Sir Thomas Hardy could take no more. In August he resigned to take over Greenwich Hospital, being replaced, first by Admiral George Dundas, then, shortly afterwards, by Admiral Sir Charles Adam. Auckland laid down a new establishment. Graham had left 11 ships of the line in commission and 11 'advanced', more or less fitted out and ready for their crews. Much political capital had been made of these ships but they decayed at the same rate as ships in commission. Thirty-six other ships were deemed to be 'in good repair' and 30 in need of repair. Fifteen were being built or repaired, giving a total of 103 (not counting ships in harbour service). Auckland proposed a reduced establishment of 75 ships of the line (25 of each rate) and 25 fourth-rate large frigates (the promotion of the latter category to capital status being noteworthy). Of these, 50 would be afloat, 25 complete on the stocks and 25 framed and ready for completion.³⁹

At the end of 1834 the Tories briefly returned to power under Sir Robert Peel. A minority Prime Minister, Peel continued the policy of economy, but further reductions would have caused problems. De Grey, the new First Lord, consulted the Foreign Secretary, the Duke of Wellington, on policy requirements and, although manpower was cut to 26,000, the Estimates were reduced only minimally, to £4.4 million.

The Whigs returned to power in April 1835. The Earl of Minto replaced Auckland with Sir Charles Adam as his First Naval Lord. A reluctant government granted them £4.7 million in 1836 and £4.9 million in 1837 and the number of men voted increased to 34,000.⁴⁰ In mid-1836 there were 20 ships of the line in commission (eight at home, three guardships, six in the Mediterranean and three at Lisbon). The King opposed reductions in this active force, indeed measures were taken to improve the readiness of the advanced ships in Ordinary, all of which reduced funds for Symonds's new ships. Minto and Adam preferred to rely on repairs to existing units.⁴¹

The first ship of the line to be built on Symondite principles was HMS *Vanguard*, laid down in May 1833. A sister, *Goliath*, had been ordered the same year but there was a gap until *Superb* was ordered in 1838. Symonds had been able to restart a third-rate *Boscawen* to his new design, as a 70-gun two-decker, in 1834 and a sister, *Cumberland*, followed about two years later, but neither of these ships were in the water until the following decade. Symonds kept up the pressure for new construction, but with little success when the Treasury was exhorting the Admiralty 'to take every step in their power to reduce the Public Expenditure in their Lordships' department, to the utmost possible extent which is practicable without detriment to H. M.'s service'.⁴²

In these circumstances, it is a sign of clear perception of its utility that investment in steam continued as it did. Indeed, the atmosphere of economy probably helped steam, as commanders began to value armed steamers as being of equal value to large manpower-intensive sailing ships, for peacetime contingencies at least (despite the opinions of enthusiasts, a steamer of this period was no match for the broadsides of a well-handled contemporary sailing vessel). In 1833 Malcolm, in the Mediterranean, rated his armed steamer as 'more useful to him than another 74'.⁴³ In his arguments with Symonds later in the decade, Minto recommended transfer of personnel to more labour-intensive steamers.⁴⁴

Some 15 steamers were completed for the Admiralty between 1830 and 1837, with two more purchased specially for the packet service to Corfu operated by the Royal Navy. The advent of steam to this latter task cut passage time by two-thirds.⁴⁵ Most steamships

were kept in commission: in 1837, of the 24 such steamers available, only two were in Ordinary. Indeed, there were as many, if not more, steamers in commission as there were ships of the line. A much larger vessel, HMS *Gorgon*, was under construction; it was over half as big again as the largest existing RN steamer. By the 1830s some paddle steamers were mounting between three and six 32-pounders, size of gun making up for inability to mount a broadside.⁴⁶ In 1837 the number of Royal Navy steamers was greatly increased when the 34 Post Office packets were taken over after complaints about the quality of service. The five Channel and Irish Sea routes were passed to contractors between 1845 and 1854, but many of the former packet steamers remained in naval service, expanding the increasing steam flotilla.⁴⁷

Along with the rise of steam propulsion, another major 1830s development was the improvement of naval gunnery. The establishment of HMS *Excellent*, moored in Fareham Creek as a gunnery school, was the work of the Melville Board, but the establishment had the support of its successors and was made permanent in 1832. Seaman Gunners were enlisted for five or seven years for additional pay, an important move away from the traditional system of employing men for the duration of ships' commissions. A first-class certificate from *Excellent* became a prerequisite for promotion to Seaman Gunner. In 1838 it was laid down that each class of ship should have a certain number of seaman gunners and gunners' mates, and that *Excellent* should set the standard of gunnery throughout the fleet. Advanced gunnery courses were provided for officers.⁴⁸ A gunnery school was also established at Plymouth in 1838.

It was not just the accuracy of the guns that improved. In 1838 it was decided that all ships of the line and frigates should be armed with uniform armaments of 32-pounders of various lengths, supplemented by a few 8-inch shell guns. The French put great store on these new weapons although they were inferior in range, accuracy and rate of fire to solid shot cannon; the Royal Navy saw them as being of limited utility, at best supplements to conventional armaments. The early spherical shells did not live up to their destructive promise and were a danger to the ships that carried them. Even the larger 10-inch shell guns were inferior to the standard 32-pounder in range and

accuracy and, after trials, they were confined to paddle steamers where the large explosive shell made up somewhat for the lack of a broadside.⁴⁹

The international situation deteriorated in the late 1830s. The French Navy improved as relations with Britain became more uneasy. In 1838 a reinforced British fleet was sent to mediate between France and Mexico and French challenges elsewhere led to other moves, notably the cession of New Zealand by the native population to the senior naval officer in Australian waters. But it was in the Eastern Mediterranean that the main crisis continued, with Mehemet Ali's ambitions threatening the Turkish Empire, and Russia only too ready to pick up the pieces.⁵⁰

Against this darkening international scene, the Government's naval policy was subjected to increasing criticism. The critics argued that the fleet was too weak, especially in home waters. Indeed, the battlefleet had been reduced to only 77 units, with 12 beyond economic repair. Minto was alarmed and a considerable programme of new construction was begun to counter the quality of the latest foreign vessels. In 1839 three new ships of the line were launched and no less than six ordered. In 1840 another two were launched and six more ordered. The Estimates increased to £5.5 million in 1839 and they jumped to £6.2 million the following year, passing the 10 per cent mark again as a proportion of the total budget.⁵¹ Numbers voted increased to almost 40,000.⁵²

This created something of a manning crisis. Attempts had been made to reform the provision of naval personnel. The old wartime system of impressment was becoming less acceptable and, in 1835, a register of known seamen was drawn up to allow wartime conscription, if necessary, to be carried out on a more coherent basis. Service was limited to five years. Peacetime volunteers were now also expected to serve five-year terms, although this was far from standard. There was a growing core of more or less permanent seamen, former boys retained in 1815; gunners; and others with an eye on the pension available since the 1820s for those with more than 21 years' service.⁵³ But this was not enough to cope with peacetime crises.

Since 1835 the number of seamen and marines borne had lagged behind the number voted. In 1836 the shortfall had been over 3500,

in 1837 almost 2900, in 1838 over 3100. Things improved in 1839, with a small surplus of 692 borne over the 34,165 voted, but it proved impossible to meet the new 1840 total. In any case, the votes reflected reduced peacetime complements. Shortage of seamen meant reduction in capability as numbers of ships in commission were traded against the fighting capacity of individual units. The available fleet was stretched taut with very few ships left operational in home waters despite an increase in the total number of Royal Navy ships in commission, from 176 in 1835 to 228 in 1839.⁵⁴

Foremost among the threats was still Mehemet Ali in Egypt. The Egyptian warlord, backed by France, was trying to carve out a new Egyptian Empire. At a four-power convention in July 1840, Britain, Russia, Austria and Prussia decided that he should be ordered to withdraw from Northern Syria, Arabia and Crete, in return for which he would be recognized as hereditary Viceroy of Egypt and be allowed to continue to hold Acre and some other territories. If he refused he would be deposed by force. The large paddle steamer *Cyclops*, a later, larger sister of *Gorgon*, delivered the ultimatum to Alexandria on 9 August. France opposed these moves and began to prepare for war. Melbourne found the situation 'most disquieting', given the balance of power between the British and French Mediterranean fleets, especially as the latter might well be reinforced by Mehemet Ali's ships.⁵⁵

The outlook in Sir Robert Stopford's Mediterranean fleet, which grew from 29 to 37 units in 1840 (making it the largest individual station), was not happy. Commanding officers worried about lack of men, but, in reality, the French threat was more apparent than real. They too were having difficulties manning their ships and the British had a much greater reserve.⁵⁶ Despite doubts about dividing his fleet, Stopford ordered Captain Sir Charles Napier to hoist a Commodore's pendant and take a squadron made up of four ships of the line, a frigate and the steamer *Gorgon* to Beirut.⁵⁷ There had been an anti-Mehemet rising there which it was hoped it might revive at the sight of Napier's squadron. Stopford remained off the Dardanelles.

When the ultimatum expired, a general blockade of Egypt and Syria was declared and Napier used *Gorgon's* mobility to scout the coast for possible landing points. On 9 September Stopford arrived

with the main fleet. Thirty-three ships were visible off Beirut. Napier, unwilling to serve under Stopford, asked to go ashore in command, as the troops' commander had been taken ill. Stopford was only too keen to agree. A force of Royal Marines and Turkish troops were put ashore with Napier, who was soon in command of a mixed force of British, Turks, Austrian marines and dissident locals. It was protected from attack by the guns of HMS *Revenge*, which dominated the road between it and Beirut. The fleet then bombarded Beirut and demolished its defences, but Napier was not yet ready to occupy it.

Coastal towns and fortifications fell to British ships and landing parties. Napier put himself in command of a joint attack on Sidon, to be carried out by the 84-gun *Thunderer*, no less than four paddle steamers, the brig *Wasp*, an Austrian frigate and a Turkish ship carrying between them 750 Royal marines, 100 Austrians and 500 Turks. The big paddlers, *Gorgon* and *Cyclops*, had been built with covered gun decks but only carried armament on the upper deck, leaving their large lower gun decks free for troops. *Stromboli*, built afterwards to a slightly smaller but basically similar pattern, did not have gun ports on this deck. They were, in effect, pioneer assault ships, capable of covering their landing parties with six heavy guns on their upper decks. With this force Sidon was bombarded and taken and the garrison captured.

Napier next defeated the Egyptians ashore at Boharsef, an engagement in which he showed considerable bravery. As Lambert said, his 'army of British and Austrian marines, rocket troops and Turkish soldiers had gained one of the Royal Navy's most interesting victories'.⁵⁸ Napier then reconnoitred the fortress city of Acre, which Stopford was ordered to attack. The fleet commander sailed from Beirut on 31 October with seven ships of the line. The four steamers, *Gorgon*, *Phoenix*, *Stromboli* and *Vesuvius*, preceded the fleet (moving slowly under light airs) and summoned the Egyptians to surrender. The frigates *Pique* and *Talbot* surveyed the shoals and laid navigational buoys, at which the Egyptians, mistaking them for anchor buoys, aimed their guns. Stopford planned to use the steamers to tow his ships into position but the wind was sufficient on the day (3 November,) and the role of the steamers was changed to mobile shell firers and, in *Phoenix's* case, command ship.

The ships anchored much closer to the walls than the Egyptians expected and, at 800–900 yards, the fire of their *Excellent*-trained gunners was devastating. The 104-gun flagship *Princess Charlotte* had been almost completely rearmed with 32-pounders, albeit mainly of the shorter models, as she was a relatively old and small ship. These proved highly effective, however, as did those of the other ships of the line. There was some confusion about the final deployment, which led to recriminations after the battle, but it only took about three hours for virtually every gun on the western face of the fort to be disabled. The southern attack was at even closer range, 500–600 yards, at which even carronades were effective.

The Egyptian fire was inaccurate, being aimed at the buoys and not the ships, and only one shot hit a carronade in the 72-gun HMS *Edinburgh*, killing four. At 16.20 the main magazine ashore blew up, hit by a shell, either from *Gorgon* or the 72-gun *Benbow*. Over a thousand men, 25 per cent of the garrison, were killed and resistance weakened. The guns on the southern face in action were quickly disabled and firing ceased at 17.00. Stopford ordered a general cease-fire at 17.50.

Some of the ships had their rigging badly damaged and had to be towed away, but damage to hulls was slight and the entire fleet lost only 18 killed and 41 wounded. The ships had fired some 48,000 rounds. The demoralized Egyptians evacuated the city and were replaced by troops landed by the fleet, reinforced by those from Beirut.

Stopford sent Napier in the 84-gun *Powerful* to Alexandria, which had been blockaded by a small squadron while the fighting went on in the Levant. Napier, without authorization, entered into negotiation with Mehemet Ali through the good offices of Captain Sir Thomas Mansell of HMS *Rodney*. Mansell knew the Egyptian leader and eventually Napier went ashore in the steamer *Medea* to conclude an agreement. Mehemet Ali agreed to evacuate Syria and restore the Ottoman fleet in return for becoming hereditary governor of Egypt. The four-power terms had been accepted and Palmerston, a political ally of Napier's, welcomed the result. The irrepressible Napier wrote a little prematurely, and disingenuously, to the Admiralty: 'I do not know whether I have done right in settling the Eastern question...'⁵⁹

Palmerston certainly saw the wider implications of the triumph at Acre, the last engagement thought worthy of record when the

gunroom at the new Royal Naval College at Dartmouth was built over half a century later. He saw it as:

an event of immense political importance as regards the interests of England [sic] not only in connection with the Turkish question, but in relation to every other question which we may have to discuss with other powers. Every country that has towns within cannon shot of deep water will remember the operations of the British fleet off the Coast of Syria in September, October and November 1840 whenever such country has any differences with us.⁶⁰

Pax Britannica had indeed been consecrated.

British sea power was also being applied in the Far East. In 1837 the Chinese Imperial government imposed strict measures to stamp out the trade in opium, which balanced the East India Company's trade in tea and which provided a significant part of the revenues of the government of India. In 1839 the situation had become serious and there was a clash between the 28-gun frigate *Volage*, the 18-gun sloop *Hyacinth*, and a fleet of war junks. In 1840 British forces were built up under Commodore Sir Gordon Bremer. The 72-gun liner *Blenheim* came from the Cape, along with 42-gun frigate *Blonde*, 20-gun corvette *Nimrod* and 18-gun sloop *Pylades*. The 26-gun frigates *Calliope* and *Samarang* came from the West Coast of South America. There were also transports containing troops and a number of steamers, both of the East India Company and the Indian Government's Bengal Marine, as well as the experimental iron-hulled paddler *Nemesis*, 'a privately promoted mercenary without status as a ship of war'.⁶¹

Chusan was occupied after a brief action. Skirmishing continued until the end of 1840 as negotiations with the Chinese were carried out, but at the beginning of 1841 it was decided to attack the forts in the approach to Canton. *Nemesis* particularly distinguished herself in this action, which forced the Chinese to sign a convention resuming trade and also ceding Hong Kong, which had become a base for British merchants. The British evacuated Chusan but the Chinese were only playing for time. A naval demonstration achieved another truce but fighting quickly began again and troops were landed. They soon commanded Canton. But, controversially, the British forces were withdrawn in return for an indemnity and a resumption of trade.

Palmerston was unhappy with this course of events and ordered a more forward policy. Rear Admiral Sir William Parker, appointed Commander of the East Indies and China Station, arrived by steamer in August 1841. Under his command, Amoy, Chusan, Chinhai and Ningpo were taken in amphibious operations. In March 1842 the Chinese counterattacked and Parker's ships supported the defence. A Naval Brigade was part of a landed force that defeated a Chinese army but it was thought that only an advance up the Yangtze would finally bring China to terms. British ships appeared off Nanking in early August. Troops were landed and bombardment threatened and on the 29th a major treaty was signed aboard the 72-gun liner HMS *Cornwallis*. The Treaty of Nanking gave Britain an indemnity, access to Canton, Amoy, Foochow, Ningpo and Shanghai and perpetual ownership of Hong Kong. There was little China could do against the firepower of British warships, coupled with the mobility of the new steamers. Palmerston's claim could be expanded to anyone within cannon-shot of deep or shallow water. With steam propulsion, rivers as well as littorals gave British sea power access. This was Pax Britannica indeed.