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## ***Great Britain: 1750-1914***

Kelly P. Bushnell

British identity is inextricable from the sea, and perhaps in no time has the national relationship with the sea been so significant—or transformed so dramatically—as in what is often termed the “imperial century.” Though the period 1750-1914 is bookended by war (the Seven Years’ War and World War One, respectively), it also encompasses the Pax Britannica of 1815-1895 in which Britannia indeed “ruled the waves” largely unchallenged but for the Crimean War in 1854-56. This relative peace after the Napoleonic Wars of 1793-1815 allowed Britain to establish influence or outright supremacy in other aspects of the maritime world including trade and shipping, travel, navigation, oceanography and marine science, seacoast tourism, naval architecture and shipbuilding (including the transition from sail to steam), and the creation of the largest empire in human history.

The loss of the American colonies in 1783 marked the transition from Britain’s first empire to its second, in which the Crown would acquire immense holdings in Africa, Asia, and the Pacific. In 1806 Britain took over the Dutch colony at Cape Town, South Africa, ensuring control over this important waypoint on the shipping route between Europe and Asia. Victory in the Napoleonic Wars also largely eliminated France as an economic rival for trade in the East. British shipping grew increasingly dominant, and in 1816 there were an estimated 6,000 merchant sailings from Britain to foreign ports. In the 1830s monopolies such as the East India Company (who took in more than thirty million pounds per year in tea profits alone) were regulated, opening up competition for the world’s shipping traffic to more competitors.

Britain’s role in the Atlantic changed after the passage of the Slave Trade Act in 1807. During the Triangle (or Triangular) Trade of the seventeenth and eighteenth centuries, Britain transported more than three million African slaves to its colonies via the infamous Middle Passage, during which it is estimated as many as half a

million died in horrific conditions below decks. The 1799 Slave Trade Act limited British slave ships to only three ports (London, Bristol, and Liverpool), and the Slave Trade Act of 1807 abolished buying and selling enslaved peoples in the British Empire while still allowing for their ownership. The Royal Navy established the West African Squadron, which captured an estimated 1,600 illegal slave traders carrying 150,000 people between 1808 and 1860 along the African coast. Slavery was not categorically abolished in the British Empire until the Slavery Abolition Act of 1833 (though it included a provision excepting the East India Company's territories).

The most dramatic technological shift in the British maritime world of the nineteenth century was the transition from sail to steam power. Beautiful but heavy sailing ships built of British oak were replaced by grumbling steam engines powered by coal and constructed of lighter iron (and, in the 1880s, even lighter steel). This transition is emblemized by JMW Turner's stirring 1838 oil painting "The Fighting *Temeraire*" in which the old ship of the line (and Trafalgar hero) HMS *Temeraire* is towed to Rotherhithe (by a sooty, unprepossessing little steamer to be broken up. (It should be noted, however, that well into the nineteenth century many underwriters still preferred clipper ships—such as the famous tea clipper *Cutty Sark*—for longer voyages as they did not require room for coal and could be crewed by fewer sailors.) The Royal Navy lagged behind its merchant counterparts in this area, and by the time the Admiralty saw fit to put steam engines in explorer John Franklin's ships in 1845 merchant ships had been using steam power for decades. Early steamships, still made of wood, employed cumbersome paddle wheels, including those which began to regularly cross the Atlantic in the 1830s. In 1839 Francis Pettit Smith developed the steam-powered screw propeller, which quickly became the standard.

Until the nineteenth century there had been only two major ship designs: merchant ships and warships. As steam power proliferated, ships were increasingly purpose-built: packets and passenger ships, coasters and ferries, refrigerator ships, cargo tramps, early tankers and, of course, colliers for coaling at sea. Britain excelled at both the design and construction of the new classes of steam ships. In 1868 the tonnage of the new iron ships equaled the tonnage of wooden ships in Britain for the first time, and the balance shifted significantly in the 1870s. London was the largest port in the world, and dockyards lined the Thames, notably at Blackwall and Woolwich and later at private docks such as St. Katherine's and Royal Albert. By 1886 there were seven enclosed

docks at the port of London alone. Other important British dockyards beyond London included Hull, Cardiff, Bristol, Portsmouth, Plymouth, Glasgow, Belfast, and even Manchester via the Manchester ship canal. Port cities like Liverpool and Southampton became hubs for passenger ships, and faster passages by steamship supported waves of immigration from the British Isles: to Canada in the 1820s, to Australia in the 1850s, and to the United States in the 1870s. (Forced migration of convicts—first to America and then to Australia—transported another 164,000 Britons overseas from 1787 to 1868.) These faster passages were not always safer, however, as evidenced by the 1912 sinking of the “unsinkable” RMS *Titanic*.

British engineer Isambard Kingdom Brunel was a major figure in this steam revolution; his SS *Great Britain* was the first steamship to regularly transit the Atlantic Ocean and his *Great Eastern* helped lay the first successful Atlantic submarine cable. The 1858 attempt at an Atlantic submarine cable failed after two weeks, while the 1865-66 installation worked properly and messages could cross the sea in seconds rather than weeks, further uniting the increasingly far-flung empire. The construction and operation of submarine cables proved another area of the maritime world dominated by Britain. By 1900 twenty-four of the thirty cable ships afloat were British, and Britain owned and operated two thirds of the cables themselves. After declaring war on Germany in 1914, Britain immediately dispatched the cable ship *Alert* to cut Germany’s submarine cables (leaving one which could be strategically monitored), damaging German communications for the duration of the war.

In the nineteenth century the British public also engaged with the sea in new ways when the coast became a popular tourist destination. Cities like Brighton, Margate, and Weymouth were praised (and even prescribed by doctors) for the medicinal properties of their seawater. Citizen science such as tide-pooling and seaweed collection became popular, and the public flocked to beaches where a whale or other large or rare “sea monster” had been reported. (After its stench became unbearable an entrepreneur might take custody of a beached sea creature, clean and articulate the skeleton, and take it on tour, charging the public to see it. As the London *Times* reported in 1878, “There is nothing so fascinating to a British crowd as a sea monster.”) This new public interest in the life and science of the sea sparked the “aquarium craze” of the 1850s in which public and private aquariums became fashionable and, for the first time, the public

could see aquatic animals move within their natural element. In 1883 London hosted the International Fisheries Exhibition, and in 1888 Lord Salisbury famously remarked of his countrymen, “We are fish.”

And fish abounded in British waters. The herring industry boomed in the nineteenth century and peaked in 1907 when 250,000 tons were exported to the Continent (with the help of government subsidies and incentives), though the industry was soon halted by the First World War in which many fishermen served in the Royal Navy and Reserve. In the eighteenth and early nineteenth century the British whaling fleet was also at its most robust. While many British ships “fished” whales in the South Seas, northern ports such as Hull and Dundee supported British whaling in the Arctic, which often included the hunting of seals and walrus. During the Napoleonic Wars, as voluntary manpower on His Majesty’s ships waned, British whalers were prime targets for the naval press gangs, as they were already accomplished seamen and the Admiralty believed it would be easier to teach sailors to be soldiers than vice-versa. (The impressment of whalers in the 1790s is described in Elizabeth Gaskell’s 1863 novel *Sylvia’s Lovers*, in which the fiery specksioneer Kinraid, of the fictional whaling town of Monkshaven, resists but is ultimately captured by a press gang.) By the mid-nineteenth century British whaling had been eclipsed by the Yankee fleet’s success in the sperm whale oil industry and whale men and their underwriters turned to more lucrative maritime trades such as shipbuilding.

Crown-sponsored exploration of the farthest reaches of the sea began in earnest during the fifteenth century, and the naval superiority earned at Trafalgar freed up time, money, and men to claim new lands for Britain. By *Beagle’s* second voyage the Royal Navy had not only forged new trade routes and begun building a global empire but the fleet was also heavily engaged in hydrography and oceanography. Most famous of these were Captain James Cook’s three voyages of exploration into the Pacific (1768-71, 1772-75, and 1776-79) and George Vancouver’s charting of the Pacific coast from 1791-95. In 1795 the Admiralty officially established the Hydrographic Department, which charted the coastlines of every ocean of the world. The voyages were aided by new navigational technology, particularly the achievement of the centuries-long quest for longitude. The invention of precise marine chronometers meant that a ship’s position could be determined anywhere in the world, far out of sight of land. (The ship’s chronometer from *Beagle’s* second voyage was the focus of an entire

episode of BBC Radio 4's *A History of the World in 100 Objects*, underscoring the importance of the chronometer, the voyage and, indeed, the sea in world history.)

Exploration in this period frequently included a scientific component (if science was not the object itself), and Britain excelled at the science and medicine associated with the sea. John Byron (the poet's grandfather) captained the Royal Navy's first scientific voyage from 1764-66 aboard HMS *Dolphin*; HMS *Challenger* undertook her famous marine research expedition from 1773-76; and naturalists served aboard practically all voyages of discovery, including Charles Darwin, whose notions about his theory of evolution were developed during the second voyage of HMS *Beagle* from 1831-36. Some of these discoveries even benefited seafarers, for whom conditions could be particularly harsh. After the realization that scurvy, bane of extended sea voyages for centuries, could be prevented with citrus, the Merchant Shipping Act of 1867 decreed that all ships of both the Royal and Merchant Navies must supply their sailors with daily lime rations (genesis of the term "Limey").

While the most famous voyages of discovery took place in wooden sailing ships, the Admiralty could not ignore the change in warfare which steam power would necessitate. In 1889 Parliament passed the Naval Defense Act calling for a "two-power standard" in which the Royal Navy was ordered to maintain a fleet at least the size of the second and third largest world navies combined. The days of boarding parties, cannon fire, and man-sized splinters of oak were relegated to memory by the 1906 launch of HMS *Dreadnought*, first of the Dreadnought class of battleships. Built at Her Majesty's Dockyard Portsmouth, the 527-foot *Dreadnought* changed the face of naval strategy in the twentieth century with steam turbine engines which could travel at 21 knots, a uniform main battery of five twin 12-inch guns (for a total of ten), a secondary battery of twenty-four 12-pounder guns, and five submerged 18-inch torpedo tubes.

Between 1750 and 1914 Britain shaped—and was shaped by—the maritime world in practically every aspect of warfare, travel, trade, and exploration. Wooden ships of the line gave way to the steam-powered Dreadnought class of battleships and the Royal and Merchant Navies were, by far, the largest and most powerful in the world. A ship's crew could know their precise location at sea using a ship's chronometer (while avoiding scurvy with their daily citrus ration). Crown-sponsored voyages of exploration charted lands

before unknown to Europeans as well as charting new scientific territory. Atlantic crossings became faster, though their speed was dwarfed by the speed with which messages could be transmitted throughout the empire via telegraph. The volume of exports from British ports was thirty-two times greater in 1914 than in 1814, and by the end of the nineteenth century 64% of the world's shipping was built—and 52% owned—by Britain (the next closest competitor was the United States, which owned just 5%). At home, the seacoast became a fashionable destination, and its creatures and their lives could be viewed in public aquariums for the first time. These developments—and the cultural weight they carried—facilitated the largest empire in human history, stretching over thirteen million square miles across Asia, Africa, the Middle East, Australia, North America, and the Pacific.

From sail to steam, Trafalgar to gunboat diplomacy and the imperialism of free trade, Britain is generally understood as a uniquely and intrinsically maritime culture, and many of our current perceptions about British seafaring originate from this period. The Romantic (1780-1837) and Victorian (1837-1901) periods of British art and literature reinforce the centrality of the sea in the British identity: Captain Marryat is the best-known maritime novelist of the nineteenth century (adopted Englishman Joseph Conrad follows closely at the turn of the twentieth century), but practically all major writers—including Jane Austen, Charles Dickens, and opera duo Gilbert and Sullivan—engaged the sea in their work. Students and scholars continue to be fascinated by the events, personalities, art, and literature of this remarkable period of sea history and by the national narrative of a small island whose often-brutal maritime prowess facilitated a global empire whose effects are still felt today.

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# *John Franklin (1750-1914)*

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Royal Navy officer and explorer Sir John Franklin mapped thousands of miles of Canadian coastline before his final Arctic expedition in which he and his entire crew disappeared searching for the famed Northwest Passage.

Franklin was born to a gentle country family in Lincolnshire and entered the Royal Navy as a midshipman at age fourteen. Though he saw action in some of the most important naval battles of his time (including Trafalgar aboard HMS *Bellerophon*), he is best remembered as an explorer. His second Arctic expedition from 1819-1822 (his first in command) was a disaster which earned him the nickname “the man who ate his boots” after the party tried to survive by boiling shoe leather. He was knighted for leading another, more successful, overland expedition which mapped over six hundred miles of Arctic coastline between 1825 and 1827, and in 1836 he was appointed Lieutenant-Governor of Van Diemen’s Land (now Tasmania), though he was recalled in 1843.

Though Franklin was not the Admiralty’s first choice, in 1845 he was selected to lead Britain’s most ambitious Arctic expedition yet: a search for the Northwest Passage (the route through Canada which could connect the Pacific and Atlantic Oceans without having to round perilous Cape Horn). Her Majesty’s Ships *Erebus* and *Terror* were outfitted with the newest technologies, including steam-heated cabins, iron rudders, screw propellers, reinforced bows to break the Arctic ice, and steam engines from the English railway which could make four knots. *Erebus* and *Terror* were last seen in Baffin Bay in late July 1845, and what happened thereafter remains one of the enduring mysteries of history.

After three years without word from Franklin, the Admiralty launched rescue missions overland and by sea, and nearly nine years after their disappearance the crew of 129 men was officially pronounced dead on March 31, 1854. In 1859 a search party organized by Lady Franklin discovered a document in a cairn on King William Island, written by Franklin’s second and third in command. It indicated that the ships had become trapped in pack ice in September 1846, Franklin had died June 11, 1847, and the ships were abandoned in April 1848 (after a further twenty-four



men died). The survivors set out on foot but none survived.

It is now known via recovered artifacts, accounts of Inuit hunters, and forensic analysis of graves found on King William Island that starvation, exposure, and disease (scurvy, pneumonia, tuberculosis, and lead poisoning possibly caused by tinned food) contributed to the men's deaths. The specter of cannibalism (to which the crew likely resorted in their final days) haunted Victorian Britain, and caused Lady Franklin and the Admiralty to carefully enshrine Franklin as a hero and "Discoverer of the Northwest Passage" (though untrue). He was posthumously promoted to Rear Admiral in 1852, and his life has inspired art, literature, and film in Britain and Canada. In September 2014 a Canadian expedition located the wreck of HMS *Erebus*, renewing interest in the fate of the expedition and the life of John Franklin.

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# *David Bushnell's Turtle Submarine*

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The *Turtle* was a Revolutionary War submarine built in 1775 by American inventor David Bushnell (1754-1824). It was the first attempt at engaging an enemy underwater, marking the beginning of submarine warfare.

Based on primitive sixteenth- and seventeenth-century principles for underwater vessels, the *Turtle* was seven feet tall and three feet wide, constructed of two steel-reinforced oak halves caulked together and coated in tar (from which the vessel took its name, as each half resembled a turtle shell).

The *Turtle* used an entirely new system of ballast in which it dived by drawing water into a bilge tank below the pilot and ascended by jettisoning that water with a hand pump, though the vessel also had another two hundred pounds of adjustable lead ballast. A single pilot steered the two propellers and rudder by operating cranks with his hands and feet and could travel roughly three miles per hour. The interior was illuminated by small windows near the hatch and by phosphorous affixed to the barometer and compass.

With enough air for just thirty minutes, the *Turtle's* mission was to dive underneath an enemy ship, bore a small hole, and affix a time-sensitive charge (a "torpedo"). David Bushnell's brother Ezra trained for the role of pilot but was taken ill and replaced by Sergeant Ezra Lee. On September 6, 1776, Lee attempted to use the *Turtle* to fasten charges to the British flagship HMS *Eagle* blockading New York Harbor; the attack failed when, after two attempts, Lee could not penetrate the *Eagle's* hull. He tried again, on a frigate, on October 5 but was sighted by the British and retreated. The *Turtle* was lost in late 1776 when the tender carrying it was sunk by the British near Fort Lee, New Jersey.

Though the attack on HMS *Eagle* failed, the *Turtle's* revolutionary architecture (most notably the two-bladed propeller, new system of ballast, and "torpedoes") formed the foundation of modern submarine warfare. George Washington appointed Bushnell a Captain-Lieutenant in the newly-formed Corps of Sappers and

Miners (the antecedent of today's Army Corps of Engineers) and called the *Turtle* "an effort of genius" in a letter to Thomas Jefferson.

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*Sidebar:*  
*Shipboard Life in the Age of Sail*

Kelly P. Bushnell

Despite their often-romantic depictions, conditions aboard ships in the Age of Sail were harsh and endured for poor pay without contact with home or the outside world for months or years. Though specific hazards were dependent upon the voyage (a Navy midshipman might fall in battle while a Yankee harpooner might lose his life fighting a sperm whale in the South Sea), many dangers shadowed all ships at sea: storms, running aground, a fall from the rigging, and disease (especially the scourge of the age, scurvy). In such conditions, maintaining order aboard a ship was the captain's highest priority, and punishments for any infraction were swift and brutal (often a flogging with the cat o' nine tails). In the absence of such peril, however, the life at sea could also be numbingly tedious. Sailors kept boredom at bay and morale buoyant with games, storytelling, singing, and crafts such as tattooing and intricate scrimshaw. Officers could expect better food and berthing, but average seamen (many just boys) lived and worked in cramped, often unhygienic conditions without privacy, tapping the insects out of their biscuits before a meal (which might also include cured meats and other provisions which did not require refrigeration). These conditions led Frederick William Wallace to title his famous 1924 book about the end of the Age of Sail *Wooden Ships and Iron Men*, which (though it ignores the surprising number of women who also toiled in maritime trades) has since become common nomenclature for these sailors and their vessels.