

***Constitution's* Guns: Today vs. 1812**

Originally rated as a 44-gun frigate, *Constitution* typically carried around 54 guns. During the War of 1812, she mounted thirty 24-pdr long guns on the gun deck and twenty-four 32-pdr carronades on the spar deck, as well as a long 18-pdr "chase" gun forward. In 1814, Capt. Charles Stewart removed four carronades and replaced them with two 24-pdr Congreve "shifting gunades." She also carried a 12-pdr brass carronade for the launch.

Today, *Constitution's* guns are replicas, not originals. Two carronades aft on the spar deck were cast in 1981, and are closer to *Constitution's* 1812-era spar deck armament. All of the other guns were cast for the 1927 restoration. Some of the replica 24-pounders are marked with a board arrow and a cipher making them appear British in origin. The incised "broad arrow" is a British mark, signifying that the gun was originally "Property of the (British) Crown." The "royal cipher" GR2 refers to *Georgius Rex* (King George the Second; reigned 1727-1760).

Constitution's original (1797) battery was to have been supplied by Hope Furnace in Rhode Island. However, after running into some casting and boring problems, the contractor could not fill the contract by the time the ship was ready to sail in 1798. To complete her battery, the Commonwealth of Massachusetts loaned the Navy sixteen 18-pound long guns from Fort Independence, but these guns had been replaced by the War of 1812.

Between 1807 and 1808, Maryland's Cecil Iron Works cast all of the 24-pounder guns used during the War of 1812. They weighed 5554 pounds each, not including the weight of the carriage, and required a crew of 7 to 14 men to operate them. Henry Foxall cast the original carronades in 1808, and these were on board when she was re-commissioned in 1809. All of the guns required black powder to create an explosion strong enough to project the desired shot. Powder Passers, informally referred to as "powder monkeys", were boys or seamen who carried powder from the magazine to the main hatch, or from the main hatch to the guns, during battle.

What is the weight of a 24-pound long gun and a 32-pound carronade?

The 1807 24-pound contract guns, the ones with which *Constitution* was armed during the War of 1812, weighed 5554 pounds, exclusive of carriage. The tubes of the 32-pound carronades weighed 2222 pounds.

A 24-pounder carriage (made of white oak) weighed about 900 lbs.

What is the velocity of a 24 and 32 pound cannonball when shot from a long gun or carronade?

The muzzle velocity of a 24 lb ball fired from a long gun with a 6 lb powder charge equals 984.4 ft/sec. A 32 lb ball fired from a carronade has a muzzle velocity of 750 ft/sec.

What is the approximate recoil of a 24-pound long gun?

The length of the recoil depends on the length of the breeching tackle. According to Gunner George Marshall (*Marshall's Practical Marine Gunnery* [1821]), the breeching should be three times the length of the gun. Assuming the 24 pdr's barrel is 9 ft 4 inches long (but the lengths

vary from pattern to pattern), this would make the breeching 28 ft long. At most, the gun could recoil only 9 ft. 4 inches. We do not know if Marshall's measurement took account of the fact the breeching was seized to the ringbolts on either side of the gunport- this must have taken up almost two feet of its length. Then again, the breeching had to let the gun be run in so that the muzzle was inside the gunport, thereby allowing the guns to be "housed" (lashed securely for sea.). British experiments in the early nineteenth century revealed that an iron 24-pdr on a level surface with 8 lbs of powder and one ball recoiled 11 ft before coming to a stop (Burney's *New Universal Dictionary of the Marine*, p. 387). Obviously this could not happen at sea, where the recoil was checked with the breeching rope.

As for speed of recoil, no one has yet done the math for this. One physicist found that a 32-pdr long gun weighing 6,496 pounds recoiled at 6.8 ft per second, which is only 4.6 miles per hour. A 32-pdr carronade on a slide carriage, on the other hand, recoiled at about 11.3 mph. (William Roberts, "That Imperfect Arm: Quantifying the Carronade," *Warship International*, Vol. XXXIII no. 3: 1996, p. 234)

Have cannonballs ever penetrated Constitution's sides?

According to Abel Bowen, in his 1816 work *The Naval Monument...*, during the battle with *Cyane* and *Levant*, "one of their shot came through the side of *Constitution*, killed one and wounded four men, and lodged in the galley.... In the action of the *Guerriere* the *Constitution* was hulled three times; in that of the *Java* four times, and in this engagement thirteen times...". Some British balls may have bounced off *Constitution's* sides, but clearly not all. In his narrative, Moses Smith says that at the beginning of the action with *Guerriere*, an "18lb. shot came through us under the larboard knight-head, striking just abaft the breech of the gun to which I belonged" [*Naval Scenes*, p. 31]. Knighthead is another term for the foretopsail sheet bits, located just forward of the foremast on the spar deck; the timber extends down to the gundeck below. If a shot came in "below" the bits, it had to have entered the hull on the gundeck. Did it come in through an open port? Apparently not, for Smith says "splinters flew in all directions; but no one was hurt." Later, just before the famous lines, "Huzza! Her sides are made of iron!" he says, "*Several shot now entered our hull.*" Clearly, British cannonballs were passing through *Constitution's* triple-layer hull. Pardon Mawney Whipple wrote from *Constitution*, in 1813: "...Old Ironsides; a name which has been given her by the sailors, supposing that her sides are impenetrable from the circumstances of *very few* shot having as yet penetrated her side" [Pardon Mawney Whipple, *Letters from Old Ironsides 1813-1815*, N.A. Price, ed. (Tempe, AZ: Beverly-Meriam Press, 1984) 6]. Isaac Mayo, a midshipman on board the *Hornet*, saw the battle damage done to *Constitution* by the *Java*: "came up with the *Constitution*..., and passed under her stern, one of the Midshipman from the prize ship John [?], had been just on board of me, we both discovd. that the *Constitution* had shot holes in her stern and stern boat." In 1820, when *Constitution* was undergoing repairs at the Charlestown Navy Yard, two, 32-pound shot were dug out of her sides – leftovers from her battle with *Cyane* and *Levant*. The two shot were sent, with wood of the hull still attached, as souvenirs to the office of Naval Commissioners in Washington, how displayed them in their office!

Constitution's hull was indeed over-built and immensely strong, but an 18 or 24 pound ball fired at point blank range packs a terrific punch. Therefore, while some of the British shot hit and fell off her thick oak sides ("Huzza!"), and some shot hit and became stuck in the hull, other shot did pierce *Constitution's* sides in battle, causing damage and destruction to the ship and the crew.