USS Demologus/Fulton

2 names as renamed after initial launch in honour of creator who died.

Coastal defence battery 30\*32 pounders, 5.5 knots speed

Ordered during the war of 1812 (very interesting read as the Americans are very biased about all history surrounding)

Paddle wheels

Fire

USS Bonhomme Richard

Wasp-class LHD (Landing Helicopter dock)

Caught fire while in dock at Naval base san diego on 12th July 2020.

The fire caught and spread throughout the ship leading to her being eventually deemed uneconomical to repair.

The loss was mainly due to incompetence from those on duty and lack of coordination between civilian firefighters and military staff. This is shocking as the Americans since the second waorld war have always prized themselves on their damage control abilities.

Also due to lack of facilities such as firefighting ships (a lack in almost all harbours of the world)

The fighting Temeraire

Painting on the £20 note

Incredibly influential in the transition from the ship of the line to the steam navy

HMS Temeraire at Trafalgar

Historic name after ships captured from the French specifically named after the lead ship of the French temeraire class the most numerous class of capital ship ever built 107. Also the royal navys most numerous class of 3rd rates as so many were captured.

Nelsons victory over the combined franco-Spanish fleet on the 21st October 1805

HMS Temeraire 98-gun second rate ship of the line

Second in line of the weather column (Nelsons) behind HMS Victory

The story is that when redoubtable was fighting victory and victory looked like she was about to fall Temeraire came out of the smoke hauled up alongside the redoubtable grappled on fired a double shotted broadside killing many and kept pouring in broadsides killing 200 aboard. Eventually Redoubtable surrended with only 99/643 men fit.

Back to Temeraire

She represents the transition beginning to happen although the screw was yet to come about. Engines were becoming more efficient when Watts patent expired and development was allowed to take place.

This is why the tug with its dirty funnel spewing smoke is the centre of the picture pulling the helpless goliath through the dawn. Representing the end of the sailing line of battle and the beginning of the age of steam.

Unrealistic to the actual scene of the day as Temeraire would have no masts and probably overall be in much worse condition.

MN Napoleon

Screw powered

90-gun ship of the line

First purpose built steam battleship

Crimean war involvement

Panic and subsequent ships and the Palmerston forts (Aldereny, Belfast, Berehaven, Bristol, Chatham, Clyde, Cork, Dover, Isle of wight, Milford haven, north thames and east anglie, Plymouth, Portland, Portsmouth

HMS Warrior

Not the first ironclad that was MN Gloire – warrior design

Speed 14knots similar to HMS Endymion – 13knots

Rectangular boilers

40 guns

Gloire, Warrior and her sister Black prince represent a possible unique point in naval history were they were completely untouchable by any other warship afloat. Every warship of all classes in the world was made obsolete by the commissioning of these ships.

Never fired her guns in anger

Placed in reserve in 1875, decommissioned in 1883, stroeship and depot ship until 1904, used as torpedo training school until was converted into oil fetty in 1927 remained in roll until 1979 at which point she was donated to the navy and became a museum ship in her current form.

HMS Devastation

First of the steam battleships begins to have the appearance of a battleship

Low freeboard due to weight of turret only possible due to angles opened by having no masts.

In original config seen here mounting 2 twin 12inch guns muzzle loading.

Armor 12-14inches thich

8 rectangular boilers similar to warrior

HMS Inflexible

true steam battleship also first purely lit by electricity

has masts for sails but these are for training rather than use sails. 1,720 square metres about 0.19 square metre per ton. For me this would be about the same as using a quarter of A4 paper to pull me through the water. To quote Fisher “The sails had so much effect upon her in a gale of wind as a fly would have on a hippopotamus in producing any movement” the sailing rig was removed in 1985 with 2 simpler masts replaced instead.

2 x twin 16inch muzzle loaders mounted en echelon

Cylindrical boilers.

Steam being as well as her main engines had 39 auxillary engines. steering, reversing, working the turret engines, pumping engines, hoisting, bilge pumps, fan engines, ventilator fans, 800 volt d.c. electric generators did not take long to kill.

Mounted 2 twin 16 inch muzzle loaders en echelon part of an arms race with Italian dullio class for gun size so ordered an 17.7 inch 100 ton gun which couldn’t fix inflexible and is still situated at fort rinella malta + one in gibralter

The thickesr armour ever deployed on a warship 24inchs + 17inches teak backing

Ram bow after the battel of lissa where the austro-hungarioan Ferdinand max rammed and sunk the Italian Re d’italia (1866)

Fitted with 2 underwater torpedo tubes.

Saw action in bombardment of Alexandria her guns caused more damage to her own upper works than the shore.

Scrapped in 1903

HMS Barfleur

The second class of Pre-dreadonught or sovereign style battleships the latter being my preferred terms obviously preceded by the Royal Sovereign class. Rated as a second class battleship meaning less heavily armed and armoured. As she was intended for foreign station this was swapped for increased speed 17knots and increased range. This design change was due to gunnery ranges really starting to increase in the 1890s

The difference being armoured barbettes instead of turrets with armour covering the top and side.

Armament. 2 twin 10 inch guns with a mix of smaller calibre guns

Served on the China station to start with and her and her sister Centurion were on station in 1900 and participated in the 8-nation alliances putting down the boxer rebellion. Only involvement being against coastal forts

8 cylindrical boilers

HMS Glory

In the Canopus class the first class of battleship to have water tube boilers specifically 20 of them allowing a higher top speed of 18 knots.

Still had a long life as a ship by the first world war she was by far second rate served in the Dardanelles campaign but only barely mainly her crew were used for help on shore then moved to protect the suez canal. And after refitted in Portsmouth until July 1916. After she was flagship of the British north Russian squadron were she deterred a Finnish invasion of Murmansk.

Stayed around Russia for the allied intervention in the Russian civil war and was the last pre-dreadnought still in active service returned to the UK in September 1919 Disposed of by 1922.

HMS Invincible

The worlds first class of Battlecruisers being the epitome of the cruiser role taking the speed and line of a cruiser with heavier armour (still much below a battleships armour). And a battleships armament in this case 4 twin 12-inch guns same as HMS Dreadnought.

Speed of 25.5 knots

HMS Dreadnought made 21 knots

3 knots being the difference needed for a decisive advantage

Also featured a mixed fuel with mainly coil sprayed with fuel oil to improve its burning characteristics.

31 water tube-boilers

Inflexible Yarrow boilers

Indomitable Babcock & wilcox boilers.

The yarrow arrangement was 151 tons lighter.

At the battle of Heligoland blight

Battle of the Falklands

Battle of Jutland where she was lost to magazine explosion.

Maybe don’t name a ship invincible when technology is moving so fast.

HMS Renown (1916)

Ordered at the start of the first world war also my favourite ship

Built in a record time of 15 months

Missed the battle of Jutland by a couple months

42 yarrow water-tube boilers

Making a speed of 32 knots

6 inches of belt armour compared to 13inches of a QE

For a long time after Renown, Repulse and Hoods commissioning all the navies of the world were left with a problem 32 knots was a decisive speed advantage against any capital ship afloat (non-carrier).

HMS Renown (1939)

Went from 42 yarrow boilers down to 8 admiralty three-drum boilers.

With a speed loss of 32 knots down to 31knots although the interwar period the Royal navy had a record of underreporting speeds but people use the one they can site. Although sometimes the ship clearly exceeded this limit.

Transatlantic (Britain to America)

* 1620 66 days - Mayflower
* 1838 16 days – PS Great Western
* 1860 11 days – screw and paddles and massive SS Great Eastern
* 1872 7 days 23 hours – single screw SS Adriatic
* 1889 5 days 19 hours – Twin Screw SS City of Paris
* 1907 4 days 20 hours – Steam turbine RMS Lusitania
* 1929 4 days 3 hours – Bulbous bow SS Bremen
* 1936 4 days – Yarrow boiler RMS Queen Mary

Coaling stations.

These are only the British coaling stations of the world but there were few non-British coaling stations on the high sea especially on small island stations.

It was possible but would create a lot of difficulties like the Americans trying to help the allied naval fight in the first world war was only by the help of British coal and colliers. When admiral Graf Spee (the person) was raiding the south Atlantic this was only possible by supply from Chile then once the British put their weight on south America to stop helping the Germans his ships were in a tough spot and his diary between the battle of coronel and the battle of the Falkland’s reads as a man obsessed with calculating endurance coal reserves and potential rendezvous with colliers.

Evolution of the boiler

1. Haystack
2. Flued
3. Fire-tube
4. Water-tube
5. Small-tubed
6. Saturated vs superheated steam
7. Pre-heater
8. Economiser
9. Superheater
10. Forced draught
11. Balanced Draught
12. Induced Draught
13. Coal fired
14. Oil fired
15. Diesel engines
16. Gas turbines
17. Nuclear PWR
18. Boiler brick laying
19. Three-drum boiler
20. High-pressure boiler
21. Expansion engines vs turbines
22. Turbo-electric drive
23. Condenser
24. Funnels & trunking
25. Stoking
26. Auxiliary use of steam
27. Once-through boiler
28. Boiler maintenance
29. Auxiliary boilers
30. Boiler control
31. Soot blowers
32. Boiler room placement

Haystack boiler

Simplest boiler around really is a drum of water above a fire and then the steam is taken away from the top of the boiler incredibly inefficient at delivering steam slow to produce steam. Bad for fuel economy basically never seen in the world as there was limited point putting this in merchant ships. Unreliable and dangerous at the time

Flued boiler

The flue is an opening in the boiler for air to come in different from exhaust this is where the fire is stoked(fuel added) and air taken in might be connected to the deck for intake of air. Hot gasses produced in the flue heating water in a cylindrical pressure tight container around it.

These are rare but can be seen in the wild still rare due to any ship having these would be reboilered to the next type to increase efficiency.

Fire-tubed boiler

The most common type of boiler you will encounter for a main boiler in large ships

Works the same as the flued boiler for the 2 flues at the bottom but this gas is then passed through tubes curving up to the fire tubes in the back this massively increases heating area and increases fuel efficiency.

Water-tubed boiler

This is like real good boiler

To increase the surface heating area running water through tubes in the heating area ensures maximum contact. Allows a bigger area for the fuel heating area. A quicker reaction of the water as large surface area of water exposed to a lot of heat creates higher pressure.

Add-ons

such as superheater / economiser

also water walls to increase heating area

PWR

The last real boiler in the world propelling ships

Most of the interesting engineering is in the actual reactor rather than the boiler but effectively pressurised water from the reactor is maintained in reactor system and the useful steam is passed inside the shielding and heated by the water from reactor similar to a fire tube boiler.

Interesting fact aboard a nuclear submarine the average person experiences a greatly reduced radiation dose than those on the surface due to cosmic rays being absorbed by the water the sub is under.

Diving wrecks

Starting with my local dive sites in the east Solent. To specify I made this map it needs work at the moment some of the wrecks I believe I should have not included as they non-existent, but it shows the point and still useful as a reference for wreck relative positions.

Tough diving due to tide and weather for a lot of the year (slack window is about 20-30 mins) with a little longer each side being tenable.

SS Elford

-Wreck Database

-Table I created off Database

-Lloyds register homepage

-Lloyds register search page

-Ship Plans

-Ship Documents

-Boiler plans

Map

Animation for highlights

HMS Boxer

image

HMS Spider Torpedo gunboat

Slow expected the torpedo boats to com to her

MN Ourageon

Haut-mer type torpedo boats (high seas) had the endurance to raid across the channel

HMS Havock the first torpedo boat destroyer

Feb by 2 locomotive fire tubed boilers feeding twin funnels amidship. Stokeholds faced opposite directions. Armament consisted of one 12 pounder near the bow above the conning tower. Athwart the conning tower are 2 6-pounders. Another near the stern abaft the torpedo tubes. The torpedo tubes are mounted facing opposite directions so can fire on both beams which is silly.

-back to Image

-table

-Boilers 1

-Boilers 2

-Boilers 3

-Boilers 3

-debris field

Malta Map

Animation for arrow

HMS Maori

-Image

-Wreck 3d model

-gun platforms highlighted

-both sides of 3d model

-HMS Mashona

HMS Maori

Quite life for a tribal only 5 battle honours. Record was HMS Nubian with 13 second only to HMS Warspite with 14.

12/16 British tribals lost during the war.

Was part of the force that encountered the altmark in 1940 the last boarding action of the royal navy.

Altmark tried to ram Cossack who entered alone in to the fjord the manoeuvrability of a tribal and quick handling brought the ships together where men then boarded the merchant ship. Force under Vian

Next action as part ig 4th DF under Vian again in Cossack with Sikh and Zulu and polish Piorun. When put up chase for the Prinz eugen and the Bismarck sighted in the Denmark strait.

Ordered to leave convey and join up with admiral Tovey in King George V whos escorts needed to be sent back for fuel. Arrived in time to relive Sheffield whos radar was malfunctioning and was struggling to hold contact.

Attempted torpedo attacks on the goliath. 16 fired 3 hits registered 1 from maori

As dawn drew the Bismarck was kept track off and as she was brought in step HMS Rodney arrived to finish the job escorted by 3 more tribals Somali, Tartar and Mashona.

Maori remained with Dorsetshire.

Involved in the battle of cape bon with 4th destroyer flotilla Sikh, Maori, Legion and Dutch Isaac Sweers. Where 2 italian cruisers were sunk with zero damage to the British side mainly by sikh who got two torpedoes into the first and silenced the 2nd with gun fire before Maori and legion got torpedoes in.

This the followed by Atlantic and malta convoys

Sunk by german aircraft attack in grand harbour Valetta bomb penetrated her engine room and exploded

She was raised as was in way of shipping and scuttled at silema creek under the guns of fort st elmo

Majority was raised again post war and moved out to sea where the rest of her lies.

Boiler lecture end