

# History

## From mad-cap invention to sleek killing machine

Historian and journalist **John Swinfield** looks at how the once-sneered at submarine slowly gained respect over hundreds of years

The British Admiralty was initially snooty about submarines. Its battleships had ruled the world's oceans for centuries, each in its pomp and glory. Submarines were seen as small, scruffy and silly.

Admiralty grandees wanted them swatted as an irritant. One said submarines were "underhand, unfair and damned un-English". Another wanted captured foreign submariners hanged as pirates. Commanders and crews were the wrong sort and their game too sly. It just wasn't cricket.

Leonardo da Vinci (1452-1519) was the first to envisage subsmersibles. His diagrams presaged 400 years of mad-cap invention and a torrent of bizarre contraptions.

From underwater rowing boats to steam-driven submarines with folding chimneys. From clock-work submarines to another with wheels to trundle along the sea-bed.

While some designers were oddballs, some were thought de-

### 45ft

The length of the Resurgam, which had a crew of three

ranged. Relatives committed one to a lunatic asylum on learning he had spent the family fortune on submarines.

Progress quickened in the mid 19th century when the developed world grew molten with invention.

French naval architect Henri Dupuy de Lome (1816-85) had a fanciful notion about a submarine fleet being built to ferry platoons of soldiers to invade Britain.

He had learned about steam and iron ships as a young man while studying in the maritime hub of Bristol.

While there he made a careful appraisal of the construction of Brunel's stellar ss Great Britain. It was a useful spying trip.

Mancunian vicar, the Rev George Garrett, built the steam-driven Resurgam, Latin for "I shall Rise Again". It didn't.

Resurgam was 45ft long, steam-driven, with a crew of three.

The Admiralty designed an interest and asked to inspect it at the Ports-

mouth Navy base on the south coast. In 1880 Garrett set sail from Liverpool.

Engine problems had him pull in at Rhyll on the Welsh coast.

After repairs he set off again, pulled by a steam-yacht.

But the yacht broke down, the tow-ropes snapped and Resurgam sank.

Garrett survived, becoming embroiled with Sir Hiram Maxim (1840-1916), inventor of the Maxim machine-gun and the ubiquitous mousetrap.

Steam submarines trailed giveaway smoke, negating the submarine's greatest strength: its stealth. Interiors were scorching. Crews complained they were parboiled.

Petrol engines ousted steam. Petrol was later superseded by long-range and less-explosive diesel units. Cumbersome banks of bulky batteries provided underwater propulsion.

At the turn of the 20th century the American Navy swiftly aped by the Royal Navy, acquired the designs of a former Irish monk and Republican John Philip Holland.

An unlikely-looking revolutionary in bowler-hat and wing-collar, eyes lost behind heavily pebbled-lens, John Holland wanted to rid the seas of the Royal Navy.

He left County Clare for America. His first submarine was financed by the Fenian republican movement. It was followed by his Hollands, the prototype for British submarines in the First World War.

From the Hollands of 1880 to the war in 1914 - Britain developed several submarine classes.

The D- and E-class were deployed with success during the conflict. Britain's submariners in the North Sea, Atlantic, Baltic and the Sea of Marmora won five VCs, Britain's highest military decoration.

The road to the E-class had been perilous. Calamity hit the A-class. They blew up, some sank, one was accidentally rammed to the bottom. The toll in lives was heavy.

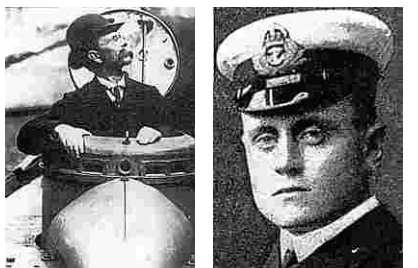
In 1914, A-7 went down in Whitsand Bay, Cornwall. Thirteen died. It took hours to find her and the Navy tried for a month to raise her before leaving her where she lay.

Early submarines were dangerous, cramped and claustrophobic. They were stiflingly hot, dripping with damp, hellishly-noisy, fume-filled and insanitary.

As a leading Admiralty engineer said in 1901, nobody ever went down in a submarine for their health.

They reeked of petrol, batteries, stagnant water, sweat, terror and bodies. Crews had no washing facilities or lavatory. They shared a bucket.

One commander used to surface and conduct his toilet perched on the stern rail, until a German Zeppelin



Main image, top, submarines were once regarded as unreliable and uncomfortable - mother ships offered food and provisions; submarine designer John Holland, above left; Admiral Sir Martin Eric Dunbar-Nasmith, the commander of E-11, above right; the first US A-1 submarine Plunger, right



airship appeared and bombed him. There were no bunks. Crews slept among torpedoes and other paraphernalia.

Some submariners were locked in a bread-oven for 24 hours to see if anybody suffocated. They didn't. But there was a high-migraine count.

Reginald Bacon, the droll "father" of the submarine service, later an eminent Admiral, said the worst thing about the confinement was that one detainee was a flute-player and had taken his instrument in with him.

When submariners dived they didn't know where they'd surface, or if. The periscope, created by Dubliner Howard Grubb - and modified by Bacon - transformed the submarine, enabling it to see without having to break cover.

The development of the torpedo in the 1860s, by British engineer Robert Whitehead, and marrying it to the submarine, created one of the world's deadliest weapons.

Torpedoes were unreliable. In the First World War, commander Martin Nasmith had been known to swim after an unexploded torpedo, neutralise it in the water - as best he could - before swimming alongside it while chaperoning it back to his boat so he could use it again. Torpedoes were expensive and especially valuable in that boats accommodated so few.

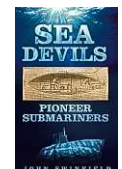
In both world wars U-boats brought Britain to the lip of catastrophe. Several incidents wreaked global opprobrium, including the sinking of the British passenger steamer Falaba, torpedoed off Milford Haven in March 1915.

Falaba's passengers were getting into lifeboats, knowing the surfaced U-boat intended to sink the vessel. Instead of waiting for them to depart, the U-boat fired a torpedo into the ship's side beneath a crowded lifeboat being lowered to the sea. Lifeboat and occupants were blown to smithereens.

On May 7, 1915, U-20 torpedoed the liner Lusitania, killing 1,196 people. Some were Americans. It was one of the reasons the US joined in the conflict.

Though it had taken some 400 years for the submarine to develop from daVinci to Holland, its presence was secured in the First World War. By the Second World War, 21 years later, it had become cardinal to victory for Britain and her allies.

**Sea Devils: Pioneer submariners** by John Swinfield, published by The History Press, £18.99



## What did Brunel really mean to the people of Bristol?

Isambard Kingdom Brunel is a major industry more than 150 years after his death, especially in Bristol, where he's given the city its trademark bridge, a rail link to London and, in the shape of the ss Great Britain, one of England's finest visitor attractions.

But it wasn't always like this, writes Eugene Byrne, author of this new Pocket Giants book.

When there were still people living in Bristol who remembered him, he was widely regarded as an irresponsible show-off who was more interested in radical mechanical and structural innovations than profits.

The Great Britain set the standard for all later ships, but the time and expense in building it meant Bristol lost out on the transatlantic passenger trade to Liverpool, and never got it back.

Even the biggest success of his lifetime, the Great Western Railway, cost twice his original estimate and was built to his own Broad Gauge with rails wider apart than those of the Standard Gauge adopted everywhere else.

Dawlish, recently in the news because of the weather, was the scene of his abortive Atmospheric Railway. Brunel's final project, the Great Eastern, was a gargantuan ship five times the size of anything else afloat at the time.

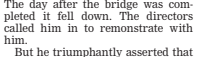
Now we can appreciate how ahead of his time he was.

We can also appreciate his humour: his reckless physical courage, his undoubted genius, the sheer charisma of the man and of the things he built.

Brunel's life is full of great stories. Here's one - it's completely apocryphal, but it sums up the Victorian view of him. Mr Brunel was engaged, the story went, to build a new railway. He told the company directors that he planned to use an expensive and untried design for one of the bridges. The day after the bridge was completed it fell down. The directors called him in to remonstrate with him.

But he triumphantly asserted that he had just saved the company a huge amount of money. Because he had planned to build every other bridge on the line to the same design. But now he would not.

Brunel by Eugene Byrne, published by the History Press in its Pocket Giants series, price £6.99



Brunel - an irresponsible show-off or simply ahead of his time?



From the top, a U-boat stranded on the south coast causes excitement; Blackbeard rides into New York's harbour on a U-boat in 1917, as drawn by artist W A Rogers; an impressive fleet of submarines