



After the *Athenia* incident Hitler strictly forbade U-boats to attack any more liners, but the German Prize Regulations - which governed attacks on merchant ships - were continually revised to allow greater freedom to the U-boat commanders. In late 1939, a less restricted submarine campaign began against Allied and neutral shipping. The scene was set for what came to be known as the Battle of the Atlantic.



Most of the subs' victims were ships sailing alone. Coastal vessels also faced a new menace, the magnetic mine. (see box below) Not only merchant ships fell foul of the submarine menace; before 1939 was out the Royal Navy had lost the fleet carrier HMS *Courageous* on anti-submarine patrol and then one of its largest warships, *Royal Oak*.

The U-boats sank many unescorted vessels in the early weeks of 1940, and sinking's peaked at 45 ships in February. But submarines could gain successes against convoys only at their dire peril. In January 1940, convoy OA-80, sailing in bad weather and escorted only by a single sloop, was attacked by U-55. Two ships were sunk, but two destroyers and a Sunderland

flying boat came to the convoy's aid and so harried the submarines that its commander scuttled his boat.

THE MENACE OF MAGNETIC MINES

German magnetic mines were fired by a change in magnetism caused by the passage of a ship above them. Every steel ship has a magnetic field, and this triggered the mines, some moored just below the sea surface like conventional mines and others that were laid on the sea bottom. One type, the LM series, was laid by being dropped from the air by parachute, and it was one of these that enabled the Royal Navy to find an effective answer to the menace.

In November 1939 a type LM mine landed on the mudflats at Shoeburyness in the Thames Estuary. The mine was defused by Lt. Commander John Ouvery, who calmly went about his task while talking to colleagues on shore through a throat microphone; he described each phase of the operation so that, should he make a mistake and be blown to eternity, the next man to disarm a mine would know what not to do.

Through the above effort, the mine gave up its secrets and the answer was found. Ships were 'degaussed' - their magnetic fields neutralised - by fitting a cable around the hull and passing an electric current through it.

The invasion of Norway by Germany in April 1940 kept both the Kriegsmarine and the Royal Navy fully occupied, and brought about a lull in the Battle of the Atlantic. But when France fell two months later the U-Boats returned to their main task of attacking the Atlantic convoys - and now they had the use of the French ports on the Bay of Biscay and a command centre at Lorient.

German U-boat commanders called the period from July to October 1940 the 'happy time'. During those four months, 217 merchant ships, mostly sailing independently, were sunk. Like the fighter pilots of WW I, U-boat commanders became 'aces', with men like Kretschmer, Liebe, Wolfgang Luth and Gunther Prien becoming household names in Germany. On August 17 Hitler - inflamed by Churchill's dogged refusal to capitulate - declared a total blockade of the British Isles. He directed that all shipping of whatever nationality, apart from a few specified Irish ships, was to be sunk on sight.

The aces made their reputation by picking off ships as they made their own way after leaving a convoy at its dispersal points, straggled away from convoys or sailed their own lonely courses. Since the invasion of Britain was a real threat, the Royal Navy could not divert resources from home waters to extend anti-submarine protection. What little protection it could provide was limited by inadequate training, while the U-boat force was growing in strength and experience. It was these two factors that encouraged Donitz to send his wolf packs into action against the convoys - beginning with the ill-fated SC-7.

HOLDING THE THREAT

The mass night attacks of the wolf packs caught the convoy escorts almost totally unprepared. Apart from the uselessness of asdic against U-boats on the surface, there were no proper communications between escort vessels other than signal lamps using

Morse code, sirens and flags. (Escorts were fitted with radio telephones only after November 1940.) Often the escort ship commanders did not know one another and were not briefed on tactics.

That began to change in July 1940 when the fire-eating Commodore Gilbert O.

Stephenson was put in charge of a training base - HMS *Western Isles* - at Tobermory on the Hebridean island of Mull. Known variously as 'Monkey', the "Terror of Tobermory" and



THE CONDOR THREAT

Nicknamed the 'scourge of the Atlantic', the Focke Wulf Fw200 Condor was a long-range (2206 mile) reconnaissance and bomber aircraft. A gondola fitted to the underside of the aircraft carried a forward-firing 20 mm cannon and 3,857 lbs of bombs.

Condors went into service in 1940 in their dual role as bombers and convoy spotters for the U-boats. Communications with the U-boats were poor at first, and navigational errors sometimes led the U-boats the wrong way, but the aircraft were highly successful in their bombing role, sinking 11 ships in 1940 and crippling the liner "Empress of Britain," later finished off by a U-boat. Sometimes it was the U-boats that called up the Condors to attack a convoy, rather than the other way around, and in February 1941 a submarine spotted convoy HG-53 outward-bound from Gibraltar and called up six Condors which sank five ships.

The threat was met by the introduction of escort aircraft carriers, by fitting anti-aircraft guns to Allied merchant ship and by the use of long-range fighter aircraft. CAM ships (Catapult Aircraft Merchantmen) were another effective, though expensive, defence against the Condors. These ships carried a Hawker Hurricane fighter which could be launched from the deck by catapult, but after his mission the pilot had either to ditch his aircraft in the sea close to the CAM or parachute from it. In either case the aircraft was lost.

"Lord of the Western Isle," Stephenson struck greater fear into the hearts of his trainee escort commanders and their crews than the U-boats they were to face. But shock tactics worked. Many a crew lived to that the commodore for his insistence on the highest standards of efficiency.

Other factors that helped turn the tide against the U-boat threat were the development of surface radar, which enabled escort vessels to spot surface U-boats at night, and the breaking of the code used by the U-boats to send signals to Lorient.

RADAR: THE ANSWER TO THE SURFACE SUBMARINE

When radar was fitted to British escort vessels in 1941, it completed a ship's capacity to spot a U-boat. An attacker could be detected whether on the surface or, by the use of asdic, submerged. The first radar, Type 286, could detect a submarine up to 1¼ miles ahead. Its first success was when HMS Vanoc accounted for U-100 in March 1941. Later types could spot targets as small as a periscope in all directions, and surface U-boats at up to about 5¼ miles. Similar sets were mounted in aircraft; the ASV (air to surface vessel) Mk3 radar helped aircraft to become the main means of sinking U-boats in 1943.

The first breaks into the code were made in March 1941, and in May the British captured Lemp's U-110, complete with its Kriegsmarine version of the Enigma code machine. The Government Code and Cypher School at Bletchley Park devoted one of its computers to naval work, and German signals could usually be decoded within 36 hrs - sometimes immediately. Controllers could thus route convoys away from impending U-boat attacks, and even when such attacks occurred, the better equipped and better trained escorts were able to exact a heavy toll.



“THE FLOWER POWER”...The “Corvette”.....and “a vessel that could roll on wet grass.” They were built in large numbers before and during the war, but were poorly suited to ocean work, and unpopular with crews....nonetheless....they were the mainstays for the convoy escorts. Lightly armed, their main weapon was 40 depth charges....later increased to 72. Top speed of about 16.5 knots.....and was based on the ‘whale-catcher’ design. This class was replaced in 1943 by the much improved ‘Castle’ design.

Soon the U-boat aces began to disappear. Prien was killed while attacking convoy OB-293 on the night of March 7, 1941, blown into oblivion by the destroyer HMS *Wolverine*. A few weeks later Lemp spotted a convoy HX-112, and his radio signal to Lorient resulted in four other boats racing to the scene, including Lt. Commander Joachim Schepke in U-100 and Kretschmer in U-99. Despite the escort of five destroyers and two corvettes, Kretschmer got into the center of the convoy and sank five ships.

Shortly afterwards depth charges from HMS *Walker* and *Vanoc* swept U-100 to the surface where the sub was picked up on radar - the first time this had been achieved. Schepke and most of his crew died when *Vanoc* rammed U-100 and sank it. Now Walke, under Captain Donald MacIntyre, picked up U-99 on asdic. Seven depth charges went over the side, and

moments later *Vanoc*'s searchlight revealed U-99's conning tower as it lifted out of the water. A message flashed from the conning tower came out at “We are sinking.” It was the end of the war for Kretschmer -Germany's most famous ace - as he and most of his crew were taken prisoner.

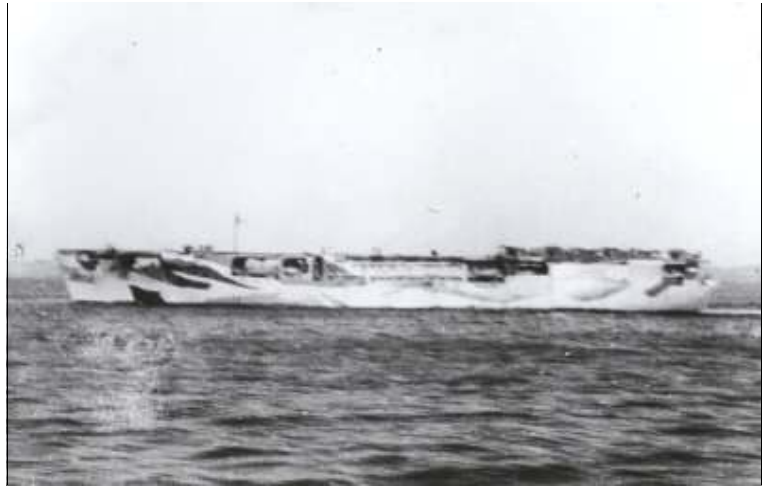
COVER FROM THE AIR

Despite these British successes the wolf packs continued to be a threat, especially in areas where air escort was still unavailable. One way of providing air cover was to use escort carriers, and the first to go into service was HMS *Audacity*, which was converted from a captured German merchantman. It's main role was dealing with the Focke Wulf Fw200 Condor maritime bomber.

Audacity was a strange-looking vessel, with no superstructure and a short flight deck carrying six American-built Grumman Martlet fighters (the British name for the Wildcat). Nevertheless it soon proved its usefulness against both aircraft and submarines - so much so that

Donitz ordered it to be sunk. The end came in December 1941, when it was ordered to escort convoy HG-76 sailing from Gibraltar to Britain.

The 32 merchant ships had a massive escort: no fewer than 16 warships led by Commander F. J. (Johnnie) Walker in the sloop HMS *Stork*. Walker had his own ideas on how to deal with a submarine attack, and on the morning of December 17 he was able to put them into practice. *Audacity's* planes made the first sighting, a U-boat on the surface some 23 miles away. Walker sent five ships in hot pursuit, and the submarine, U-131, hastily crash-dived - but not hastily enough, and a corvette plastered it with ten depth charges and forced it to the surface again. The sub's anti-aircraft guns brought down one of the Martlets. But intense fire from the 4-in guns of the attacker eventually sank it.



That strange looking carrier "Audacity"from a converted captured German merchantman.

The next day the escort made its second kill, depth-changing U-434, and the convoy steamed on intact. But here were more dangers to come. In the early hours of the 19th a tremendous explosion lit up the dawn sky. HMS *Stanley* - one of the old four-stack destroyers given to Britain by the USA in 1940 in exchange for military bases in the Caribbean - had been hit by torpedoes from U-574 which had been shadowing the convoy. Walker raced to the destroyer's assistance, and immediately picked up an asdic contact at close range. Depth charges hurtled from the *Stork's* launchers in a blistering pattern, and suddenly U-574 surfaced only 200 yards ahead of the sloop.



A watchful eye over the "Convoy."

Then began a desperate chase. The U-boat turned in a tight circle, with the sloop close behind - so close that *Stork's* guns could not be depressed low enough to keep the U-boat in their sights. Three times pursued and pursuer circled, until Walker rammed the submarine, then unleashed a salvo of depth charges. *Stanley* was avenged.

On December 21, three more U-boats moved in. One, U-567, was commanded by Endrass - since the capture of Kretschmer, Germany's top U-boat ace. He was about to play his

last trump. After sinking a ship carrying iron ore, U-567 was bombarded by depth charges from



A CAPTAIN COURAGEOUS: Frederick John Walker (1897-1944) was one of the Royal Navy's most successful convoy escort commanders. Knowing that the U-boats preferred to attack on the surface and at night, Walker, who commanded 36th Escort Group, concentrated on bringing the maximum amount of firepower against the U-boats, so forcing them to submerge where they could be detected by asdic and destroyed by depth charges. His successes earned him promotion to captain, the DSO and Bar and the awe of the U-boat commanders. While later leading 2nd Escort Group, in HMS *Starling*, Walker sent six U-boats to the bottom during one patrol in January and February 1944. He was a workaholic and died soon afterwards of a stroke. He was buried at sea.

sloops *Deptford* and *Stork*, and sank without trace. In the meantime *Audacity* was patrolling the starboard flank of the convoy, and crossed the path of U-751. The U-boat's first torpedo hit the carrier's engine room, and two more fired at point-blank range blew off its bows and sent the first British escort carrier to the bottom. But, happily for the convoy, it was now within range of air cover provided by Coastal Command Liberators.

Those American-built long-range bombers were to play a decisive role in the battle to rule the Atlantic waves. Together with the later mass-produced escort carriers they were able to give convoys full air cover. The days when the wolf packs could roam the seas at will were numbered - though America's entry into the war offered them some rich picking for awhile.

THE SECOND "HAPPY TIME"

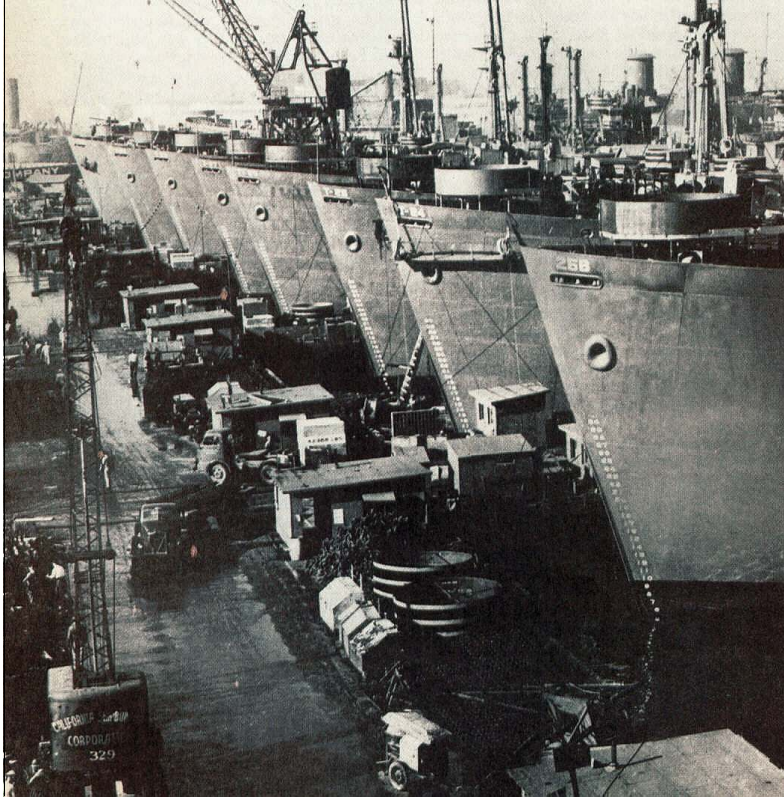
On the night of January 13/14, 1942, Lt. Commander Reinhard Hardegan of U-123

"MILCH COW" SUBS

To increase the range of U-boats, the Germans introduced supply submarines (NOTE: An article that goes into detail about these 'Milch Cow' Subs...it is titled "SLAUGHTERED 'MILK COWS'"...very interesting reading on these "suppliers" of the U-boats). nicknamed 'milch cows', in 1942. They could carry over 430 tons of fuel oil as well as the 206 tons they needed themselves. Their range was over 10,600 miles. First in service was U-549, fuelling small Type VII submarines north-east of Bermuda in April and May. Another five were operational by August. 'Milch Cows' were protected against air attack by two 37 mm guns and one 20 mm - but all but one were sunk wholly or partly from the air. Also used were four large minelaying submarines - as tankers. All were sunk in 1942 - 43.

realised a lifetime ambition. "I always wanted to see New York," he told his crew, "and now this

is our opportunity.” He made the teasing claim that he could see the dancers on the roof of the Hotel Astor! It was the New York skyline, still up as in peacetime, that enabled him to pick off two tankers off Long Island. Weather reports from U. S. commercial radio stations also helped his activities. Obviously the USA, on its home front at least, was acting as if it was not at war at all.



The Germans were quick to take advantage, and five large Type IX U-boats arrived off the eastern seaboard. The “Happy Time” had come again, and with a new crop of aces. Hardegan was the first. Three days after his successes off New York he reached the busy shipping lane off Cape Hatteras 375 miles to the south. Within 90 minutes he sank an American tanker and a small freighter. The following night he brought U-123 to the surface, and from the conning tower watched ship after ship sail by with lights blazing. An old freighter, *City of Atlanta*, was his first victim, but now he had only two torpedoes left, and there were eight ships out there.

In the dark days following the fall of France, the outcome of the Battle of the Atlantic depended on a grim equation: could the Allies build merchant ships faster than the U-boats could sink them? They could and did - thanks to American assistance. In May 1941, as part of the Lend-Lease, Roosevelt ordered 2 million tons of merchant shipping to be built. The shipyards of Delaware, the Great Lakes, Mississippi and West Coast went to work with a will. Standardised designs allowed ships to be prefabricated in sections, for quick assembly at yards.

Most famous and numerous of these designs was the freighter known as the “Liberty Ship.” Thousands rolled down the slipway under the guidance men like the dynamic industrialist Henry J. Kaiser. The first Liberty ship took 244 days to build, but once the design was mastered the time was cut to only 42 days - though on one occasion a ship was completed in less than five. In 1942, 646 freighters, including 597 Liberty ships, slid off American launch ways. By July 1943, Allied shipbuilding as a whole outstripped the number of U-boat sinkings. The flow of supplies across the Atlantic was saved

Hardegan turned his gun on a big tanker, *Malay*, set it on fire, then went after another victim. But then U-123 broke down. Hardegan waited patiently while repairs were carried out - with the U-boat still on the surface. When his boat got under way again, Hardegan picked up a radio message from *Malay* which had also managed to get going. As U-123 moved to finish it off, Hardegan sank a Latvian freighter with his penultimate torpedo, before using the last to send *Malay* to the bottom.

After returning home for more torpedoes, Hardegan came back and between mid-March and late April sank 11 more ships. Meanwhile, Hardegan's fellow U-boat commanders were also having a field day, sinking 40 ships in the western Atlantic alone in January 1942. In February the U-boats moved south, where the bright lights of Miami still blazed for the tourists. Now the tourists were treated to the spectacle of ships being sunk only a few miles offshore.

HUNTERS BECOME VICTIMS

Against British advice, the Americans started submarine-hunting patrols and used decoy ships, though both methods had been tried by the Royal Navy and found useless. The sub-hunters themselves became victims of the U-boats. A destroyer was sunk at the end of February. The American Chief of Naval Operations, Admiral Ernest King, refused to introduce convoys, on the grounds that he lacked escort ships for the job.

The British were furious at so much shipping being lost. The U-boat menace in the eastern Atlantic had by now been contained, yet ships that had safely crossed the ocean were being sunk within sight of port. A particularly sad loss was the tanker *San Demetro*, heroically saved in November 1940 only to be torpedoed off the US coast in March 1942. To persuade the Americans to adopt the convoy system, Britain offered corvettes, anti-submarine trawlers, plus two experienced convoy officers.

They accepted the ships, but obstinately refused to be told how to use them. However, in

April they introduced a scheme called the "Bucket Brigade" - groups of ships were escorted from port to port by day, staying in protected anchorages by night. This made for slow progress, but it developed into a proper convoy system and the U-boats moved south to the Caribbean and the Gulf of Mexico, aided by 'milch cow' tanker submarines.



In May the losses along the coast fell to five, and to three in July. In the Gulf of Mexico, however, 41 ships were sunk in May. But in July a system of interlocking

convoys was set up; ships sailed in convoy from Trinidad to New York, linking there with the

Atlantic convoy system. Sinkings in the Gulf fell, the ceased altogether. The second “Happy Time” was over.

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