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The MACS & the Swordfish

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THE MACs AND THE SWORDFISH

What on earth (or sky or ocean) was the Admiralty doing sending Fleet Air Arm aircrews in open-cockpit biplanes to fly in the gales, blizzards and ice of the mid-Atlantic flying from short decks built on top of grain-carrying or fuel tankers, manned by the merchant Navy where (on tankers) the three Swordfish lived and were maintained and repaired by FAA ground crew in all weathers, day and night, on the pitching and rolling deck? (You may now breathe).

To answer this question it is best to first understand the context and thus see why such desperate steps were taken. The following account is a patchwork creation based on the autobiographies of two Swordfish pilots, a BBC History website, and two seemingly well-researched Wikipedia articles.

1. BACKGROUND

The Battle of the Atlantic

The term 'Battle of the Atlantic' was coined by Winston Churchill to describe the protracted struggle by the Allies to secure shipping routes across the Atlantic. The Allies' main objectives were to blockade the Axis powers (limiting productivity and diminishing morale), to secure their own shipping routes, and to wage war overseas without any impediment. *(Left: The Atlantic Star*).

As a struggle the Battle of the Atlantic is symbolic of the scale of the global war in which nations had to fight against the enemy on land or sea thousands of miles from home. The successful transportation of troops and materials was as crucial as battle itself. Only after the war did Churchill confess that it was the Atlantic that caused him most concern:

'The only thing that really frightened me during the war was the U-boat peril.'

Britain had the largest merchant fleet in the world, 3,000 ocean-going vessels and 1,000 large coastal ships. They required 160,000 men to man them. The German navy, in contrast to the submarine fleet, was in poor condition following World War One and initially the Germans underestimated the role the U-boat might play - only 46 vessels were in operation, intended for surface attacks.

The British navy was successful in sinking the pocket battleship *Graf Spee* in December 1939 and the battleship *Bismarck* in 1941, but from the summer of 1940 the U-boat menace began to grow. The air gap in the Western Atlantic meant that the RAF and RCAF could not fully accompany convoys. The Allied occupation of Iceland (belonging to German-occupied Denmark) was an advantage, but long-range aircraft had to be developed before the air gap could be conquered. The Canadian navy eventually assisted Britain in reducing this gap.

The Battle of the Atlantic really gained pace after 1941 when the U-boat captains began to expand operations further. Admiral Dönitz, the German commander of the U-boats, developed a strategy known as the 'wolf-pack', in which U-boats would meet up and close in on the enemy at night.

The British Navy had previously placed much faith in Asdic (an early form of sonar) to detect submerged U-boats; this way they were partly able to counter the surface threat they posed, but in a wolf-pack attack the few escort vessels were overwhelmed.

The conquest by Germany of Norway and France gave the U-boats forward bases, increasing their range and enabling long-range aircraft to patrol over the Atlantic to carry out reconnaissance patrols. As the U-boats became more successful they were put into wider use.

The British were consequently forced to divert their own shipping away from vulnerable UK ports, and needed to provide naval escorts for convoys for greater stretches of the journey to North America. Churchill sought help and negotiated the destroyers-for-bases agreement with the US administration.

This added a further 50 ex-USN WWI destroyers in exchange for access to British bases, predominantly in the West Indies. These often derided lightly-armed four-funnelled destroyers were much needed and the USA had begun to stretch the definition of 'neutrality'.

Although not at war with Germany the USA then entered the battle in May 1941 and took over escort duties in the western Atlantic, beginning a shooting war with Germany that resulted in their first loss - the US destroyer *Reuben James* which was torpedoed and sunk by the submarine U-562.

The *Reuben James* sinking helped strengthen President Roosevelt's efforts to aid Britain but there was still considerable opposition to this in the USA. Many Americans were descended from waves of German and Irish immigrants in the 1800's who did not wish to fight alongside the British or against the Germans (or both!). They was also a strong isolationist tradition in America with a desire not to be dragged into 'foreign wars'

Along with the whole course of the war the Atlantic battle changed with the German invasion of Russia and following Pearl Harbour on the 7th December 1941 with the entry of Japan into the war. The USA did not declare war on Germany but within days Germany declared war on the USA. It is said that Churchill believed (with considerable relief) that Pearl Harbour was the point at which the war became winnable, with the enourmous resources and manpower of the USA behind us; but these still had to be shipped across the Atlantic.

This increased the scale of the war and Japan was seen as America's primary threat now. But America's response on the Atlantic coast was surprising; they ignored the advice and experience of Britain and failed to set up coastal convoys and to blackout coastal towns. The U-boats enjoyed what was darkly known as the 'happy time', destroying vast amounts of US coastal shipping.

The real crisis came in early 1943 when Britain was running out of fuel and down to two weeks food reserves. By then the number of operational U-boats had increased from 47 to 200. The Allies' greatest weapon became radio intelligence and the ability to intercept the German Enigma code so that U-boat manoeuvres could be anticipated. This intelligence (Ultra) saved the situation, along with aggressive anti-submarine tactics, better weapons and the development of long-range aircraft (Liberators) equipped with advanced radar. *(Right: A painting of a burning tanker in the North Atlantic by Lieutenant Commander Anton Otto Fischer, US Coastguard Reserve in early February 1943.)*

By April 1943 the U-boats were clearly struggling to make an impact and Allied destruction of German submarines began to escalate: 45 were destroyed in April and May. Dönitz decided to put a halt to U-boat operations on 23 May 1943. Had the Germans succeeded in producing their new types of super-submarines, the Types XXI and XXIII (which were being tested in the Baltic even as German defeat looked inevitable), they would have proved an even greater threat, possibly reversing the outcome of World War Two.

Although the Germans called a halt to major U-boat operations in the Atlantic on 23 May 1943 the threat to Allied shipping was never entirely eliminated.

The Cost

Allies	Germany
36,200 Navy sailors	30,000 U-boat sailors
175 Warships	783 U-boats
36,000 Merchant seamen	
3,500 Merchant ships	

The German sailors killed were 75% of Germany's 40,000 men of the U-boat fleet. These were the only losses in a major fighting arm, by proportion, greater than those of RAF Bomber Command of 55,573 killed, being 45%.

The 'Air Gap'

The above summary does not mention the role of aircraft that provided cover for convoys in the mid-Atlantic 'air gap' between land-based aircraft from both sides of the Atlantic. Even before reaching this gap from the British coast the convoys were vulnerable to Focke-Wulf Fw 200 Condors. These four-engined long range reconnaissance aircraft passed back convoy information for the U-boats.

A convoy might be 10 miles across and four miles deep, with black smoke pouring from ancient coal fuelled engines. They often left from well-known ports and had to go round Ireland to reach the open Atlantic. They were not difficult to find.

This air gap was the place where U-boats could operate more safely, particularly for example by cruising on the surface on diesel engines while charging their batteries for underwater use.

On the surface the U-boats could make 17 knots and could outrun the convoys which often travelled at 10 knots or slower. Underwater the U-boats made 7 knots and were far less able to travel and manoeuvre. Obviously a U-boat on the service was easier to spot and detect on radar than when underwater, even at periscope depth.

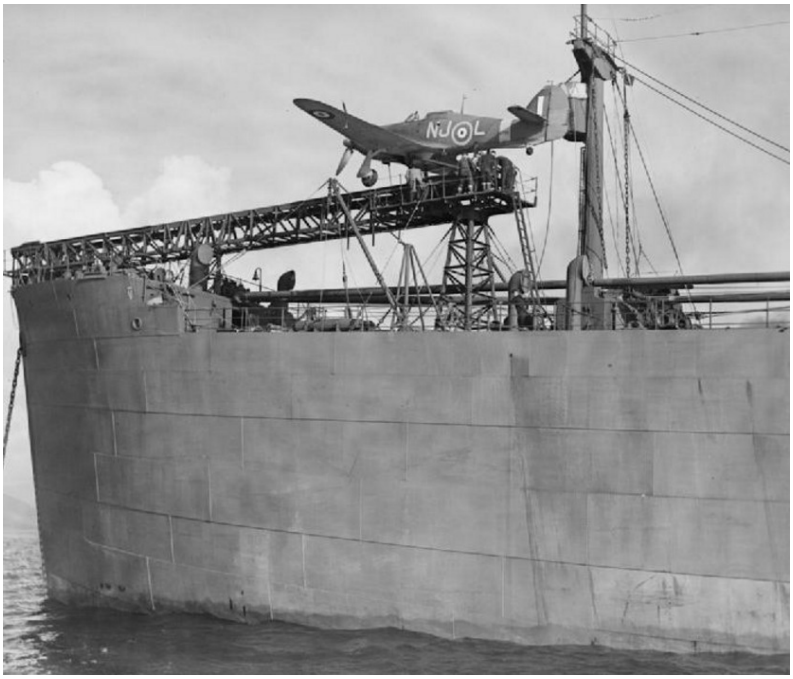
A convoy might have five escorts for perhaps fifty ships. Anyone who has seen the epic film 'The Cruel Sea' (which I particularly recommend) will have some idea of the ordeal faced by the small escorts with their uncovered bridges, open at all time to the Atlantic weather. The horrors which faced the merchant ships are also made clear.

Naval Aviation

Full size, fast, 'fleet' aircraft carriers were limited in number and highly prized assets. They were usually part of a fleet or task force with a screen of protecting destroyers. They were not invulnerable and perhaps the most famous, HMS Ark Royal, was sunk by a U-boat in the Mediterranean.

There was no possibility of using such carriers on convoy escort duty. So the question was, 'how to provide air cover for the convoys?'.

CAM Ships



The first means of providing air-cover for convoys was a stop-gap measure by fitting ramps to the front of some of the cargo ships, known as Catapult Aircraft Merchantmen (CAM ships). These carried a lone and expendable Hurricane fighter aircraft. When a German bomber approached, the fighter was fired off the end of the ramp with a large rocket to shoot-down or drive off the German aircraft, the pilot then ditching in the water and (hopefully) being picked up by one of the escort ships if land was too far away.

In terms of enemy aircraft losses results gained by the CAM ships and their Hurricanes were not great. The aircraft shot down were mostly Fw 200 Condors flying out of range of the convoy's guns and reporting back the convoy's course and position. The CAM ships and their Hurricanes probably justified the cost in fewer ship losses overall.

Nine combat launches were made, resulting in the destruction of eight Axis aircraft for the loss of one Allied pilot. One can only marvel at the cold-blooded courage needed by the Hurricane pilots.

MAC Ships

A **merchant aircraft carrier** (also known as a **MAC**) was a limited purpose aircraft carrier built on a British hull designed for bulk grain ships and oil tankers. A flight deck and 'island' were added above the main deck enabling the ship to operate anti-submarine aircraft in support of Allied convoys in the air gap during the Battle of the Atlantic.

MACs began entering service in May 1943 and although originally intended as an interim measure, pending the introduction of escort carriers, they remained operational until the end of the war in Europe. *We shall come back to these in section 2.*

Escort Carriers

These were originally developed and largely built in the USA at the behest of the United Kingdom. They operated as part of a North Atlantic convoy escort, rather than as part of a naval strike force. Many of the escort carriers produced were assigned to the Royal Navy for the duration of the war under the Lend-Lease act.

Allied escort carriers were typically around 500 ft (150 m) long, not much more than half the length of the almost 900 ft (270 m) fleet carriers of the same era. The CAM Ships had decks of 390 t0 460 feet.

They supplemented and then replaced the converted merchant aircraft carriers MAC's that were put into service by the British and Dutch as an emergency measure until the escort carriers became available. These ships were lightly protected and among their crews one type called CVE's was sarcastically said to stand for "Combustible, Vulnerable, and Expendable".

The ships sent to the Royal Navy were slightly modified to suit the traditions of that service. The ice cream making and Coke machines were removed: these were considered unnecessary luxuries in ships which served grog and other alcoholic beverages (the US Navy was 'dry'). The heavy duty washing machines of the laundry room were also removed since, "all a British sailor needs to keep clean is a bucket and a bar of soap". The spirit of Nelson lived on!

2 THE MERCHANT AIRCRAFT CARRIERS

The Ships (MACs)

There was some initial resistance to the MAC concept in 1941, in particular through concerns about operating aircraft from short, relatively slow ships. The Admiralty considered that a flight deck length of 460 ft. was needed for safe take-offs and landings and a speed of 15 kts. to provide a sufficient margin over convoy speeds. They were especially doubtful that tankers, with their low freeboards and volatile cargoes, could be utilised.

As the U-boat situation worsened, however, such concerns were out-weighed by the urgent need to provide convoy air support. Once it was accepted that the grain-ship variant at least could be made to work the Admiralty became more enthusiastic about the project.

By September 1942, the Admiralty was asking for 'about 50' MACs to be made available, to allow one to be included in every North Atlantic convoy; in October the requirement was set at 52. This ambitious target had been scaled back to 40 by the time the MAC project was formally endorsed by the War Cabinet in October 1942, but it was apparent that even this reduced number could not be produced sufficiently quickly without American help. In the event, all 19 MACs were built and/or converted in British shipyards. *Below MV Rapana.*

Two of the nine converted 'Rapana Class' or 'Triple Twelve' tankers MAC's were Dutch, crewed entirely by Dutch merchant seamen and with aircraft flights drawn from the Royal Netherlands Navy-manned 860 Naval Air Squadron would have the distinction of becoming the Netherlands' first aircraft carriers.

The six new-build grain ship MACs were based on the Admiralty's requirement for a flight deck of not less than 390 ft. length and 62 ft. breadth. They were eventually built with flight decks of between 413 ft. and 424 ft. These were named 'Empire' followed by a Scottish clan name, e.g. 'MacKay', as were the new-build tankers below.

The standard design used for the four new-build tankers enabled a longer flight deck of approximately 460 ft. A more powerful engine enables these ships to travel at 12 knots, 1 higher than the converted vessels. The most obvious modification was the flight deck and its supporting structure which was arranged in sections (three on the grain ships; four in the case of tankers) with expansion joints between each.

The flight deck was built at the level that would normally have been occupied by the wheelhouse. The space immediately under the flight deck was utilised for the arrester gear mechanisms, four wires to each MAC, with an additional unit fitted to the tankers to operate the safety barrier. A small island structure contained the bridge and wheelhouse and, in the tanker MACs, a chartroom that could be used as a pilots' briefing room.

Less apparent modifications included; accommodation for 107 crew (about 50 more than normal); improved internal subdivision; additional ventilation, including exhaust arrangements that could be adjusted to vent to the leeward side; changes to lifeboat positions; and magazines for the safe stowage of bombs, depth charges, ammunition and pyrotechnics.

One centre cargo tank in each tanker was adapted for the carriage of aircraft fuel (or 'Avgas') but in the grain ships this necessitated a special compartment containing two pressurised fuel tanks, together with a control room and associated piping.

The most significant difference between the grain ship and tanker MACs was the provision of hangar space within the grain ships. The three after-holds were converted to provide a hangar 142 ft. long, 38 ft. wide to a height of 24 ft. in which the ship's full complement of four Swordfish aircraft could be stowed with wings folded. An elevator platform could lift a fully loaded aircraft from hangar to deck level in under a minute.

It was impracticable to fit tanker MACs with a hangar as this would have entailed very extensive structural alterations and a significant reduction in cargo capacity. Although capable of operating four aircraft the tanker MACs normally embarked three. These had all to be kept on deck; parked aircraft had to be moved to the forward end when other aircraft were landing on, and a collapsible safety barrier was fitted to prevent collisions. Hinged side screens or 'palisades' were fitted around the aft end of the flight deck to provide weather protection for parked aircraft, but with only limited effect

The Firth of Clyde was initially designated as the UK terminus for all MAC cargoes because of its superior aviation training facilities. On discovering that it would take more than a week to unload a single ship at the un-modernised facility in Glasgow, it was decided that grain MACs would discharge at Alexandra Dock, Liverpool; here two grain ships could be unloaded simultaneously in thirty-six hours. Tanker MACs normally discharged on the Clyde, with the Mersey as an alternative.

The Crews

Despite their military appearance and combatant function MACs were civilian ships that did not appear in the *Navy List* nor were they commanded by commissioned officers: this unusual status is one of their defining characteristics. The hybrid nature of the MACs raised from the outset the question of whether they would be commissioned warships like the new escort carriers, or if they would operate as merchant ships under the Red Ensign like the earlier CAM ships.

The Admiralty's preference was to operate them as regular warships. It soon became clear that there were not enough personnel available to man them to naval standards without causing serious shortfalls in other areas, in particular the large numbers of escort carriers that would soon arrive. The Admiralty and Ministry of War Transport therefore agreed that the MACs would be civilian-manned. *Left*: *Merchant Navy Cap Badge*

The authorities remained sensitive about the civilian status of MAC ships, which were specifically excluded from the publicity arranged for other 'special service' merchant ships, e.g. rescue ships. As late as September 1944, masters were reminded to point out to their crews the need to maintain secrecy about the MACs' operations and functions.

The Air Party

The air party were responsible for flying and supporting the aircraft. The official manning scale comprised a lieutenant commander RN or RNVR who, as Air Staff Officer (ASO), was the master's principal adviser on naval and aviation matters; a pilot, observer and air gunner for each aircraft carried; three signalmen; five communications and armament ratings; and at least seventeen aircraft fitters. A seventeen-strong team of RN and Royal Artillery personnel looked after the MAC's substantial defensive armament.

To comply with the Board of Trade regulations, all naval and military personnel were signed onto the ship's Articles as supernumerary crew members and as such all servicemen reported ultimately to the captain. For this they received a nominal payment of one shilling per month and the more tangible reward of one can of beer per day.

They also received a small metal Merchant Navy seaman's badge, which the FAA apparently wore in their uniform button-holes with cheerful disregard for uniform regulations. On one ship at least the FAA replaced the 'Royal Navy' wording on the side of the Swordfish with 'Merchant Navy'. The camaraderie and mutual respect between the FAA and the MN became very strong.

The Fairey Swordfish

Most of you will have some knowledge of this strange and remarkable aircraft. Flying first in 1935 it more resembled the Bristol F2B Fighter of 1916 than anything else flying in the 1930's. It was considered obsolete by 1939 but flew in action throughout WWII until VE Day and outlived its intended replacement, the Fairy Albacore.

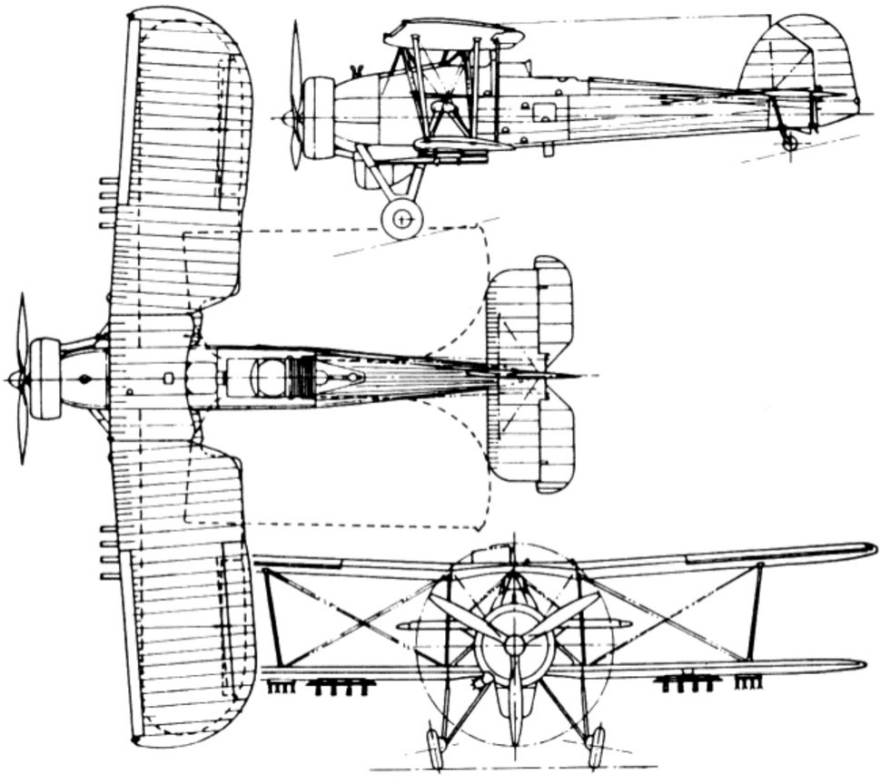
Designed as a FAA carrier dive bomber and torpedo aircraft the Swordfish was adapted to carry rockets, depth charges, magnetic mines, searchlights and radar. It was armed with a single fixed Vickers 0.303 inch machine gun firing forward and a rear-mounted Vickers K or Lewis 7.7 mm gun handled by the TAG (Telegraphist Air Gunner). Communication was by Aldis signal lamp because of radio-silence.

The Swordfish was a frame-and-fabric biplane with the frame mostly made of steel tubing. The Pegasus IIIM3 radial engine drove a three-bladed fixed-pitch metal propeller. The wings could be pivoted back along the fuselage for compact on-board storage.

The Swordfish had accommodation for three crew members: pilot, observer, and TAG. It was clearly designed for carrier work and robust enough to withstand a harsh maritime environment. It has a sturdy undercarriage with long-travel oleos to absorb the impact of landing on pitching in heavy seas.

As a 45 foot wing-spin biplane it was the only aircraft capable of using the short landing decks of the CAMs. That deck was shortened in practice by a crash barrier raise to protect the other two swordfish since all aircraft on the tanker MACs lived on deck.

The Swordfish is best known as a torpedo bomber and sank more shipping that any other Allied type, and more than all British types added together. The most famous action was the Battle of Taranto on 11th November 1940.



In a meticulously planned attack (conceived two years earlier, and said to be an inspiration for Pearl Harbour) 20 Swordfish from HMS Illustrious in two waves sunk or badly damaged half the Italian Navy's main battle fleet. Only two Swordfish were lost and two of the six crew survived and were taken prisoner.

By comparison, the heroic and remorseless anti-submarine role of the Swordfish on MAC ships in the Atlantic and the Russian convoys is little known.

(*Right :RNHF Fairey Swordfish at an airshow in 1988. This aircraft, was assigned to 'L' Flight of 836 NAS on board the MAC ship Rapana (shown earlier) in WW2 War II.)*

The Swordfish had been equipped with ASV radar as early as October 1940, to help it hunt down German U-boats cruising on the surface. Two months later, on 21 December 1941, a Swordfish operating from Gibraltar was the first aircraft to sink a submarine at night. A year and a half later, on 23 May 1943, a Swordfish was the first aircraft to prove the effectiveness of rockets in antisubmarine warfare when one Swordfish sunk the U-752 off the coast of Ireland, even though the U-boat put up a determined defence with its quadruple 20 mm flak guns.

On convoy duty in the Atlantic the Swordfish was not allowed to use radar as part of the radio-silence policy: radar emissions could be detected and might give away the location of the convoy.

2,396 Swordfish were built, many by Blackburn. In their least known role Swordfish are credited with destroying 14 U-boats.

The Swordfish Aircrew

I highly recommend both the following books by Swordfish pilots who operated from MACs:

Stanley Brand, (2005/2011). ***"Achtung Swordfish: Merchant Aircraft Carriers"***
Published by Propagator Press.
New – out of stock but can be ordered, Second hand available.

John (later Lord) Kilbracken, (1980). ***"Bring Back My Stringbag: A Swordfish Pilot at War"***
Published by Pen & Sword and by Pan. Available second hand only on Amazon.

Kilbracken was in the FAA from the early days of the war on Course 16 and this is where his book begins. By contrast Brand was younger and started with Course 44 in October 1942 (there was one very 4 weeks), only getting his wings in November 1943. His training was elongated by serious illness, accident, and advanced training on Harvards in the USA and Canada. Having recently read Brand's book I shall draw on that for some stories of his time in the Atlantic.

Brand joined a 'stone frigate' (shore base), St Vincent in Portsmouth, as a Naval Airman 2nd Class where was introduced to the mysteries of the seaman's uniform with bell-bottom trousers etc. The said trousers, for example, were pressed inside-out with seven horizontal creases (to represent the seven seas). After that it gets more complicated.

The seamen's mess had a curiously foul smell which he was told was due to the infestation of cockroaches. On their first visit his intake were treated to individual 'steak' pies. As they broke the crust they discovered only cockroaches, which had already eaten the steak.

After learning the ritual mysteries of, knots, flags etc and boarding a notional 'liberty boat' to go 'ashore' (outside the base) they eventually got to basic flying training. This was at No. 44 Pilots' Training Course at Sealand near Chester, which was quite civilised and comfortable in the, newer, RAF tradition. This, he felt, "was a typical example of the difference between Lord Trenchard and Lord Nelson towards the troops". They flew the DH 82a Tiger Moth and Brand went solo after just under 9 hours.

On completion of basic training he was posted, under the Empire Training Scheme to Kingston, Ontario in Canada for advanced training. This scheme allowed great numbers of Allied pilots to be trained more rapidly in the prevalent good weather and without enemy interference.

Getting there involved a fast and luxurious 7 day Atlantic crossing the Queen Elizabeth. In the USA and Canada Brand and his fellows enjoyed cheap, plentiful and high quality food and generous hospitality from US and Canadian families. Oh yes, they also had excellent tuition on the North American Harvard advanced trainer. Brand was an above average pupil in all aspects of the course.

His return to Britain could not have been more different. Crammed with 12,000 other troops into a smaller liner for a 14 day voyage Brand and friends were located in a cramped area below the waterline, eventually swimming with vomit (and much worse) with only brief and rationed time on deck.

They lived on dehydrated rations which required that they drink a lot of water. After two days the water supply was contaminated and they had to rely on water from the ship's engines' condensers. Brand was constipated for the remaining 12 days and developed anal fissures for life.

At last his intake began extensive training in Swordfish, based in Northern Ireland and then the Clyde. This included landings on runways marked to the size of a carrier deck. When this training was completed he at last joined No. 766 Naval Air Squadron.

An early accident in Scotland when solo in Swordfish W 5856 almost ended Bland's career. The plane had just had a major overhaul including re-piping of the fuel system. At 30 feet after take-off the engine coughed and lost power.

Brand tried the 3-way fuel cock in all positions to no effect. He hoped to clear a boundary fence and a bus beyond it but his wheels caught the fence, narrowly missed the bus, and crashed upside down tail first in a soggy ploughed field.

The petrol tank began to glug its 155 gallons onto him and he passed out. He was rescued by RAF personnel from the bus who with their bare hands dug away the soil under the cockpit. Brand spent some time in hospital: even that was not safe as a dummy 1,880 lb concrete torpedo crashed through the roof and buried itself in the floor between two beds to a depth of six feet, only twelve feet away from him.

The Swordfish, W 5856, *(above)* is now part of The Royal Navy Historic Flight

Now came the time to 'crew up'. Pilots and observers met informally and then pilots could fly an hour each with up to six prospective observers. Brand felt a close rapport with a Scot from Fife called Bill Thompson; they had much in common, including foregoing their hard-earned scholarship places to go to university in order to join-up. Over the next year they bonded closer than brothers.

Their first choice of TAG did not work out and they took on a young and immature looking man who was enthusiastic and had an 'impish sense of humour'. He was Johnny Hopkins and a year later he announced his 17th birthday.

After yet more training, now as a regular crew, came the grand finale of landings on a smallish, real, carrier, HMS Argus: 15 by day and 9 at night. The Deck Landing Control Officers, 'Bats', were also finishing their training; to disobey them was a serious disciplinary offence! For disobeying an incompetent Bats in order to prevent a major accident Brand was censured in his log book.

At last came 'The Real Thing' and Brand's Swordfish was assigned to Q flight as M3Q (third Swordfish) aboard the oil tanker MACship, m.v. Alexia (m.v. for diesel motor vessel). Fortunately, Alexia had highly competent Bats.

A short period of settling, with yet more exercises, and then they joined a convoy of 51 merchantmen bound for Halifax. With a theoretical speed (not often attained) of 7 knots the convey spread over miles of ocean in short columns. In the middle behind the lead two rows was an open 'box' of clear water for use by the MAC ship, which positioned itself in the corner that best enabled it to turn into wind to launch aircraft.

The Squadron record for launching three Swordfish from a tanker-MAC from being 'steady into wind' to 'helm over to resume course' was 16 seconds; the record for them landing was 42 seconds.

There followed endless two hour patrols looking for U-boats (or dissuading them from surfacing), followed by the nightmare of landing on a pitching, rolling deck which, with the forward motion, followed a corkscrew pattern. Brand's crew never saw a U-boat.

Maximum speed was 70 knots owing to the (fixed) fine-pitch of the propeller to enable them to take off.
RATOG (Rocket Assisted Take-Off Gear) was sometimes used in low winds to help lift the heavily fuel and weapon laden Swordfish take off. RATOG comprised a rocket on either side of the fuselage by the wings fired by the pilot. The perpetual damp meant that sometimes one or both rockets did not ignite, leaving the pilot fighting to avoid swerving off the port side or into the island to starboard, or staggering off the bow and using the 30 foot drop to gain extra speed.

On one patrol during their first crossing Brand noticed a locking handle on the leading edge of the folding starboard wing was vibrating towards to unlock position. The folded position back alongside the fuselage would cover the cockpits, preventing a bale-out, and the aircraft would spiral to the sea.

Bill, the observer, said without discussion or hesitation that he would attend to it. He removed his parachute, climbed over the pilot and down to the wing by cutting footholds in the fuselage. Bill inched his way to the locking handle, kicked it into the 'lock' positions and lashed it firmly with a bootlace. Brand's subsequent recommendation for a medal for Bill was rejected on the grounds that it was a case of self-preservation.

On a later crossing there was a further acts of heroism (or just self-preservation) by Brand and Bill. When a Swordfish was badly damaged it was stripped of anything re-usable and the remainder pushed over the side. Larger pieces of salvage were lashed to an open platform ('the graveyard') below the rear of the flight deck.

On one occasion all three Swordfish were damaged beyond use. Brand suggested there may be enough usable parts between them to build a 'new' plane. On surveying what was re-usable this was agreed and with great ingenuity the work began, none more than when it came to fitting the propeller on the open rolling, pitching deck.

As the work progressed Brand became increasingly anxious about the first flight since, as it was his idea, he was naturally assumed to be the test pilot. He insisted on flying alone but Bill, his observer, outranked him by two weeks seniority and ordered Brand to take him as well; fortunately as it happened.

The riggers declared the plane full checked and ready for flight. As it took off Brand realised that the tail lifted unusually quickly and he had problems holding the propeller off the deck. Too late to abort and with one foot on the instrument panel to help haul the stick back the plane dropped over the bow. With the wheels skimmed the wave Brand told Bill to hold tight for ditching.

Bill replied, "Don't ditch! I'm going aft"; and the adverse trim began to ease. When Brand could glance back he saw the observer astride the fuselage at the tail grimly holding on to a handhold he had cut in the tail fin. At full throttle and tail-high Brand managed to catch the fourth (and last) arrester wire as a providential wave lifted the bow.

Examination showed that full trim back on the cockpit control wheel equated to full forward at the tail thorough lack of proper adjustment. On correction another pilot took the plane up and it was fine.

In the awful cold of an Atlantic winters the prop-wash in the open cockpits cut like a knife. Brand wore:

- Pyjamas, silk then woollen long johns, long sleeve vests, woollen roll neck sweater, battle-dress jacket & trousers, one inch thick quilted kapok flying suit, Irvin jacket & trousers of sheepskin leather (but no electrical heating through lack of power). Then:
- Leather helmet padded goggles, silk then woollen gloves plus leather gauntlets, woollen/silk scarf.
- On the feet: wool socks, long oiled-wool sea-boot stockings & fur-lined flying boots.

So cold was Brand after a two hour patrol that his ground crew constructed sheer-legs on lockable wheels to position a block and tackle with a big hook above his cockpit. A strop looped under the armpits and through his parachute harness enabled him to be winched out and down 11 feet like a knight in armour.

Were the MAC ships & Swordfish effective?

The main practical objective was to deter U-boats from surfacing to charge their batteries and to travel much faster. On the Atlantic convoys the Swordfish did not find or sink a U-boat but it is believed their convoys suffered low losses (Brand claims none but others disagree).

Apparently at one briefing of Merchant skippers they cheered when they heard that a MAC ship would be part of their escort. I am sure that they were a morale-booster in desperate and frightening times, and that they also provided a deterrent. They certainly did everything that human courage and skill could achieve in the most difficult and dangerous of circumstances.

It is worth looking for a moment at the experience of the Russian convoys where Swordfish flew off bigger Escort Carriers:

"In August 1944, Swordfish IIs operating from the escort carriers Vindex and Striker as part of the Murmansk convoy JW.59 took on a wolf-pack of nine U-boats attempting to attack the convoy. One U-boat was sunk, another damaged; the defence was so energetic that none of the ships in the convoy was sunk. When the carriers escorted a return convoy back from Russia, no U-boats attempted to attack it."

After the war

The sacrifice did not end. Brand's courageous Observer Bill Thomson, who had twice saved Brand's life, died a few years after the war attempting to rescue a stranger, a student climber whose panic took both to their deaths. Bill left a widow and two children.

Johnny Hopkins, the irrepressible Telegraphist Air Gunner, had joined the FAA when under 16. After VE Day he was demobbed, too old to be an apprentice, unskilled, and too young to earn a man's wage. Unable to support his widowed mother, who was in poor health, he tried to kill both her and himself.

Johnny was certified and confined in an asylum; after sometimes violent attempts to escape he was subjected to a pre-frontal leucotomy. This severed the front lobes of his brain and removed his personality, character and memory; he did not recognise Brand or Bill in their separate visits.

Stanley Brand continued to fly until his mid 70s. He must have been about 84 when Roy Dyer heard him speak on his wartime experiences in 2007.