

Hunter's Moon

The first Leigh Light attack

Operating an aircraft fitted with an anti-submarine spotlight could be difficult and dangerous — but what was it like to be on the receiving end, in a submarine under attack? **ROY NESBIT** concludes his account of RAF Coastal Command's first successful use of the Leigh Light against enemy submarines in World War Two



One of the first pictures of the new weapon to be released, this shows a Leigh Light beneath the starboard wing of a Coastal Command Liberator under test at night in 1944. The aircraft is illuminated by the powerful 22/24in carbon-arc searchlight, selected by Sqn Ldr "Sammy" Leigh as the basis of the Leigh Light.

The crew of the *Luigi Torelli*, depth-charged by Sqn Ldr Jeaffreson Greswell of 172 Sqn in the early hours of June 4, 1942 (see last month's issue), were experienced submariners. The vessel had already completed seven war cruises from Bordeaux, after passing through the Strait of Gibraltar on September 8, 1940. All these had been in the Atlantic, during which six merchant ships had been torpedoed and sunk. The submarine had been subjected to two depth-charge attacks by Allied warships and was damaged on one of these occasions, but had been able to return safely to Bordeaux.

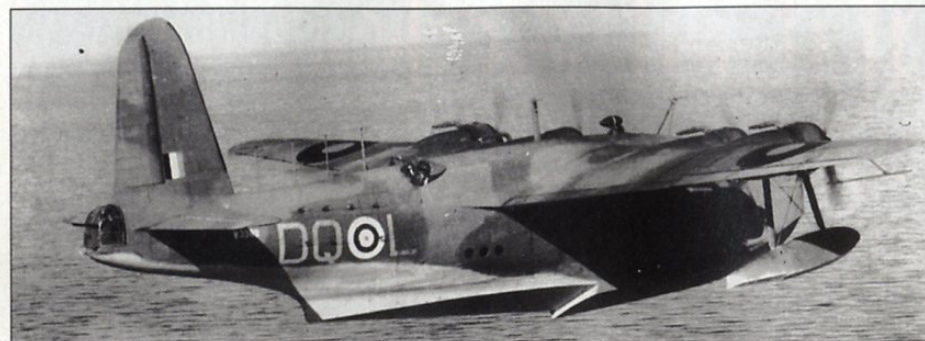
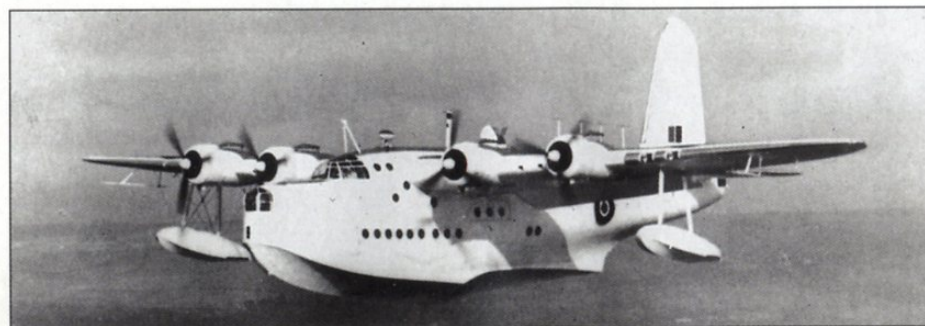
Summaries of these cruises are available in the Official

History of the Italian Navy during the Second World War. All of these volumes, written in clear Italian which is easy to translate, are available in the Imperial War Museum. In addition there is a distinguished Italian naval officer who was serving as a young navigation officer in the *Luigi Torelli* at the time, and has provided a first-hand and detailed account. This is *Ammiraglio di Squadra* (Vice-Admiral) Girolamo Fantoni, who was a *Sottotenente di Vascello* (Sub-Lieutenant) in June 1942.

The departure of the two submarines from La Pallice was one day behind schedule, owing to bad weather. They were overloaded with fuel and torpedoes, and alternated between sailing submerged and on the surface. During the dark and moonless

night of June 3–4 the broad wake of the *Luigi Torelli* created a bright phosphorescent foam.

The Italians were not aware of the ASV radar or the Leigh Light in RAF aircraft. They saw the brilliant light immediately it was switched on, but could not understand it. Those on the bridge thought that it might be some sort of freak reflection from the phosphorescence in their wake, and the commander ordered a reduction in speed. On the second occasion it was thought that the light came from a German aircraft, and recognition flares were fired to give the colours of the day. The depth charges, followed by the gunfire from the rear turret, came as a most unpleasant shock and surprise.



TOP A Short Sunderland III, with which 10 Sqn RAAF was equipped in 1942, along with Sunderland IIs. Both marks had the same engines, but the Mk III had a dorsal turret and the main step in the hull was faired to reduce aerodynamic drag.

ABOVE Sunderland II W3989 of 228 Sqn, representing the other mark of Sunderland operated by 10 Sqn in 1942.



"The depth charges straddled the submarine and exploded under the hull, almost lifting the vessel out of the water in a sea of foam"

ABOVE A stick of depth charges explodes across the *Luigi Torelli* soon after 0712hr June 7, 1942.

LEFT The *Luigi Torelli* at Bordeaux on October 5, 1940, after its first war cruise in the Atlantic.

The explosions took place on either side of the hull, each resulting in a colossal blast. The commander, Tenente di Vascello Augusto Migliorini, was the last but one to leave the conning tower. He was on the ladder, ready to give the order to dive, when one of the explosions blew the hook off the ring holding the hatch open and caused it to close itself, leaving the boatswain above. The

to attend to the stricken submarine. The commander ordered air to be pumped into the ballast tanks and dumped fuel overboard. A fire near the forward batteries, which was giving off chlorine gas and smoke, was isolated by closing watertight doors. This also closed off the wireless station, while many other stations were seriously damaged. It was also necessary to flood the ammunition store, which was near the fire.

There was no electrical power to service the rudder or the gyro compass, and the magnetic compass had become useless. However, the crew got the diesel

engines working again and the commander decided to head for the Spanish coast, steering by the stars and a hand

control to the rudder. The fire had been put out by the time the coast came in view, and also electricity had been restored from the diesel engines instead of the batteries. The commander therefore decided to turn east for Bordeaux, but the submarine entered a thick bank of fog and ran aground on some submerged rocks off Erbosa Island, near Cape Penas, causing more damage to the hull.

The Spanish helped by towing the submarine off during the next evening, using the tug *Atlas*, the trawler *Panxon* and two fishing vessels. She then sailed on one engine to the small port of Aviles and berthed on a nearby sandbank. The crew worked feverishly to make her seaworthy, plugging holes with quick-drying cement and pumping air into the forward



ABOVE A Wellington XII of 172 Sqn off the Taw Estuary in August 1943. This type had the retractable Leigh Light as well as ASV radar in a chin radome instead of the aerial array above the fuselage.

"The Italians saw the brilliant light immediately it was switched on, but could not understand it"

diesel engines were still running, and sucked up the air within the hull before petering out themselves. The vacuum affected breathing and made hearing almost impossible. There was pitch darkness and the submarine floated bow-heavy and motionless.

When pressure from compensating valves enabled the men to open the hatch, the boatswain was able to report the machine-gunning by the RAF. At the same time, immediate action was taken



RIGHT Sqn Ldr A.W. Southall DSO DFC (centre) briefs crews of 521 Sqn late in the war, when it flew B-17s on met flights. Southall was posted from 217 Sqn to the new Coastal Command Development Unit in December 1940. He took part in the trials and captained one of the four 172 Sqn Wellington VIIIs which flew the first Leigh Light operational sorties on June 3-4, 1942.

compartments while keeping the watertight doors closed. The Italians asked the Spanish authorities to allow the submarine to stay for a few days, but were told she would be interned if they remained beyond midnight on June 6. Thus the submarine left half an hour before this deadline, although still unable to submerge. She turned along the Spanish coast, just outside territorial waters, heading back to France. Meanwhile, her presence at Aviles had been observed by RAF air reconnaissance.

At 0125hr on June 7, about two hours after the *Luigi Torelli* left Aviles, Short Sunderland II W3994 of 10 (RAAF) Sqn, flown by Plt Off T.A. Egerton, took off from Mount Batten in South Devon and

headed for the north coast of Spain. It was followed half an hour later by Sunderland III W4019, flown by Flt Lt E.St C. Yeoman. Egerton was the first to reach the submarine, when it was north of Santander. His crew sighted it at 0712hr, five miles away, when flying at 1,500ft.

Egerton came down to low level and attacked, dropping a stick of eight depth charges while his gunners fired from their turrets. At the same time, the *Luigi Torelli* zigzagged and opened fire with its 100mm deck gun and two 13mm machine-guns, while other crew members fired sub-machine-guns and rifles. The Sunderland was hit and two crew members were wounded by shell splinters.

The depth charges straddled the sub-

marine and exploded under the hull, almost lifting the vessel out of the water in a sea of foam. Once again, it did not sink. Damage to the rudder prevented further manoeuvring, while most of those on the deck had been wounded. Egerton sent a message to base: "Have attacked U-boat. Estimate nil hits". He then circled and attacked again with gunfire, but at 0740hr saw another Sunderland approaching.

The travails of the *Luigi Torelli* were not over. Flt Lt Yeoman was flying along the Spanish coast when the first Sunderland was spotted. Three minutes later the stationary submarine was sighted six miles distant, and Yeoman went into the attack. But the gunners on the *Luigi Torelli* opened fire as he approached, and hit the aircraft's tail many times. Nevertheless, Yeoman attacked at low level, dropping seven depth charges from 80ft while his gunners opened fire. Then a shell hit the hull of the flying-boat and wounded a crew member. The eighth depth charge hung up and was jettisoned.

By this time both Sunderlands were short of fuel, and headed for home. But Yeoman's aircraft was attacked soon afterwards by an Arado seaplane, which made off after an exchange of gunfire.

Incredibly, the *Luigi Torelli* survived this third stick of depth charges, although it was partly flooded and took on a heavy list. Several men had been blown into the sea. The 100mm gun had been sheared off its mountings, one machine-gun blown overboard and the other



LEFT A Consolidated Liberator VI at St Eval, Cornwall, with a nacelle-type Leigh Light under its starboard wing.



damaged. The compressor was in a flooded stern compartment, and no air could be pumped into damaged areas. The rudder was jammed to one side and useless. Yet men in the sea were rescued while others managed to get the diesel engines working. Steering with these, Migliorini headed for the port of Santander, only a few miles away. The vessel was escorted into the port by the coastguard vessel *Uad Martin*, assisted by two fishing vessels.

The wreck of a submarine entered this haven at midday, flying its battle flag and with all available crew members lined up on deck. Nine wounded were taken to the Casa de Salud Valdecilla hospital, and the naval commander of the port, *Capitan de Navio* (Capt) Alfredo Nardis, indicated a sandbank where the submarine could beach. After accomplishing this, the uninjured but exhausted crew members went ashore and were billeted in a hotel. They received very

friendly assistance from the authorities and the townspeople.

Of course, the relentless RAF was aware of the presence of the *Luigi Torelli* in Santander. The beached submarine was photographed at 1850hr on the following day, June 8, by a Lockheed Hudson of 53 Sqn flown from St Eval by Wg Cdr James A. Leggate.

The Italian crew laboured to make their vessel seaworthy again. About 20 of them were sent back to Bordeaux and replaced by a few specialist workers from the Italian base. The vessel was towed into dry

dock, where holes in the hull were blocked up and the diesel engines and rudder restored to working order. But the batteries had been destroyed and the submarine could not submerge, and it had no means of defending itself. Nardis insisted that it must be rendered completely incapable of escaping, but he was partly mollified when told that the fuel tanks were empty. Unknown to him, one of the water tanks contained about 12 tonnes of fuel.

Diplomatic wrangles over the fate of the submarine continued. The British protested about Spanish connivance, and the Italians protested about violations of Spanish territorial waters by the British and requested that the submarine be allowed to leave port. Nardis awaited a decision by *el Caudillo*, General Francisco Franco, but meanwhile insisted that the submarine be moved from dry dock to a place at the back of the port where it would be under secure guard. Accord-



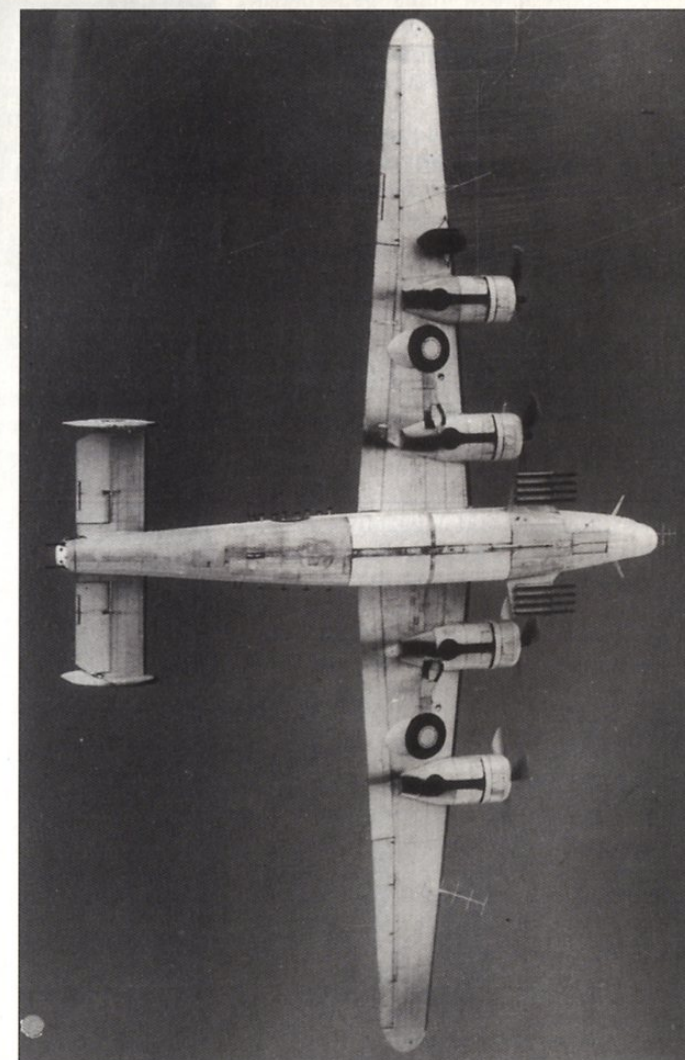
“The relentless RAF was aware of the presence of the *Luigi Torelli* in Santander. The beached submarine was photographed at 1850hr on June 8 by a Lockheed Hudson of 53 Sqn”

ingly, at 1710hr on July 14, the dry dock was flooded and two Spanish tugs began to tow it out, with a Spanish naval engineer and one of the pilots from Santander on board. The coastguard vessel *Uad Martin* stood by, and the British consul watched from the dock.

Migliorini asked if he could swing the magnetic compass for deviation, and this was agreed. The tow at the bow was released to enable the submarine to turn through 360°, but the naval commander's second-in-command, *Capitan di Corbeta* (Lt-Cdr) Lorenzo Sanfeliu, boarded the vessel when she started her engines. When the stern faced the dock, the Italian boatswain hacked through the second cable with an axe and the *Luigi Torelli* left at full speed, with three infuriated Spaniards on board and *Uad Martin* in pursuit but unable to close the gap. The Spaniards were soon transferred to the tunnyman *San Jose No 4* and the submarine headed for Bordeaux, where it arrived in the late afternoon of the following day.

The other Italian submarine attacked by the Vickers Wellington flown by Sqn Ldr Greswell of 172 Sqn on June 4 was the *Morosini*. It is unlikely to have been damaged severely by machine-gun fire, for it completed its duties in the Caribbean. However, something unexplained happened to the vessel, for it disappeared after making a last transmission at 1415hr on August 8, when approaching the French coast on the last leg of its war cruise. The loss does not

ABOVE Consolidated Catalina IVA JX574 of 210 Sqn, fitted with a Leigh Light under the starboard wing, while operating from Sullom Voe in the Shetlands during 1944.



RIGHT Liberator V BZ880/G, seen here with its Leigh Light conspicuously displayed under its starboard wing, served with 86 and 311 Sqs and then went to 1674 Flight. It overshot and suffered a collapsed undercarriage at Aldergrove on April 22, 1945.

seem to coincide with any attack made by Allied aircraft or naval units. One may hazard a guess that it struck a mine on its final approach, but there can be no certainty about this.

Meanwhile, 172 Sqn gradually built up to full strength and continued with Leigh Light operations, making several attacks before a first kill on July 6, 1942. This was achieved soon after 0445hr by a Wellington VIII flown by an American serving in the RAF, Plt Off Wiley B. Howell, which sank the Type IXC U-boat U-502 commanded by *Kapitänleutnant* (Lieutenant-Commander) Jürgen von Rosensteil, which was returning to Lorient from a war cruise to the Caribbean. There were no survivors.

By this time the Germans and the Italians had become aware of the new weapon being used against them. It was regarded as a real menace, and referred

“The new weapon was regarded as a real menace, and referred to as *das verdammte Licht* by the German U-boat men”

to as “*das verdammte Licht*” by the German U-boat men. German scientists began to develop countermeasures in the form of a radar receiver, but meanwhile U-boats were forced to cross the Bay of Biscay submerged. The brunt of the Leigh Light coverage over these waters was borne by 172 Sqn until May 1943, but eventually four more Wellington squadrons were equipped with the invention. It was also fitted as a nacelle-type light under the wings of the aircraft of two Consolidated Catalina squadrons, the first in March 1943, although there is no record of any sinkings at night with these aircraft. Six Consolidated B-24 Liberator squadrons were equipped with the nacelle-type Leigh Light, the first in October 1943, and these achieved a number of sinkings.

The Catalinas and Liberators could cover the former “Atlantic Gap”, where U-boats had created such havoc with Allied convoys. By the end of the war Leigh Light aircraft had attacked 218 U-boats at night, sunk 27 of them and damaged another 31. This was not without sacrifices, for 135 Wellingtons and 87 Liberators were lost in the squadrons for various reasons.

■ The author would like to thank Vice-Admiral Girolamo Fantoni in Italy and Air Cdre Jeaffreson H. Greswell for their considerable help in writing this article and for the provision of photographs. Welcome additional help with research was received from Juan Carlos Salgado in Spain.

Postscript

The hunters and the hunted



Some of the crew members of the Italian submarines. In the front row, wearing a white cap, is Sottotenente di Vascello Girolamo Fantoni, who was a navigation officer in the *Luigi Torelli*.

Perhaps one of the major achievements of the Leigh Light was to force U-boats to the surface during daylight hours in order to recharge their batteries, resulting in a dramatic increase in sightings and sinkings in these periods.

The Coastal Command Development Unit continued its work. It carried out trials on more effective forms of ASV, advanced navigational aids, blind flying and landing systems, improved aerial torpedoes, rocket projectiles, the six-pounder gun fitted in Mosquitoes, and even Coastal Command's version of the bouncing bomb, which was never used operationally. During the course of the war it moved from Ballykelly to Tain, then to Dale and then to Angle. Its last move was to Thorney Island on January 1, 1945, when it was renamed the Air-Sea Warfare Development Unit. This continued until May 1948.

The *Luigi Torelli* did not operate again in Atlantic waters, even after extensive repairs. Seven Italian submarines in Bordeaux were converted into transports following a conference between Hitler and Dönitz on February 8, 1943, with the intention of helping to beat the sea blockade imposed by the Allies. Under the command of Tenente di

Vascello Unrico Gropallo, the *Luigi Torelli* left Le Verdon on June 16, bound for Singapore and carrying 130 tonnes of mercury, special steel bars, 20mm ammunition, a 500kg aerial bomb, three Italian specialists and two engineers, one of whom was German and the other Japanese. The commander was under orders to bring back 150 tonnes of rubber and 50 of tin. The submarine arrived at Singapore on August 27.

Italy surrendered on September 7 and the vessel was taken over by the Germans, operating from Singapore as UIT-25. When Germany surrendered, it became RO-504 of the Japanese Navy. It was captured by the Americans and scuttled in 1946.

Girolamo Fantoni resumed his career in the Italian navy after the war, and eventually became the Italian Military Representative at NATO Headquarters in Brussels, with the rank of vice-admiral. Jeaffreson Greswell went on to command 179 Sqn, equipped with Leigh Light Wellingtons, and then served in No 18 Group's headquarters at Pitreavie. He was awarded the DFC, the DSO, the CBE and the CB, before retiring in July 1968. They have been in friendly communication since 1975, recognising in each other qualities that they admire.

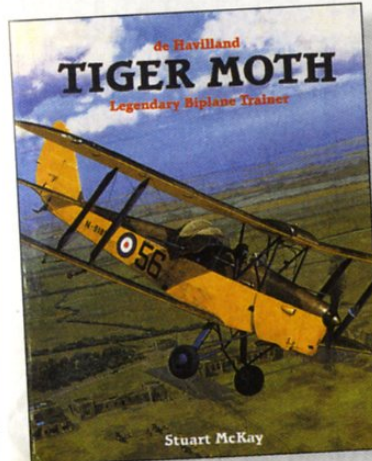
Stuart McKay's Tiger Moth is painted in the same style as Capt Geoffrey de Havilland's personal D.H.60G Moth G-AAAA.



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QUESTION . . .

Where does the de Havilland Moth Club hold its annual Rally?

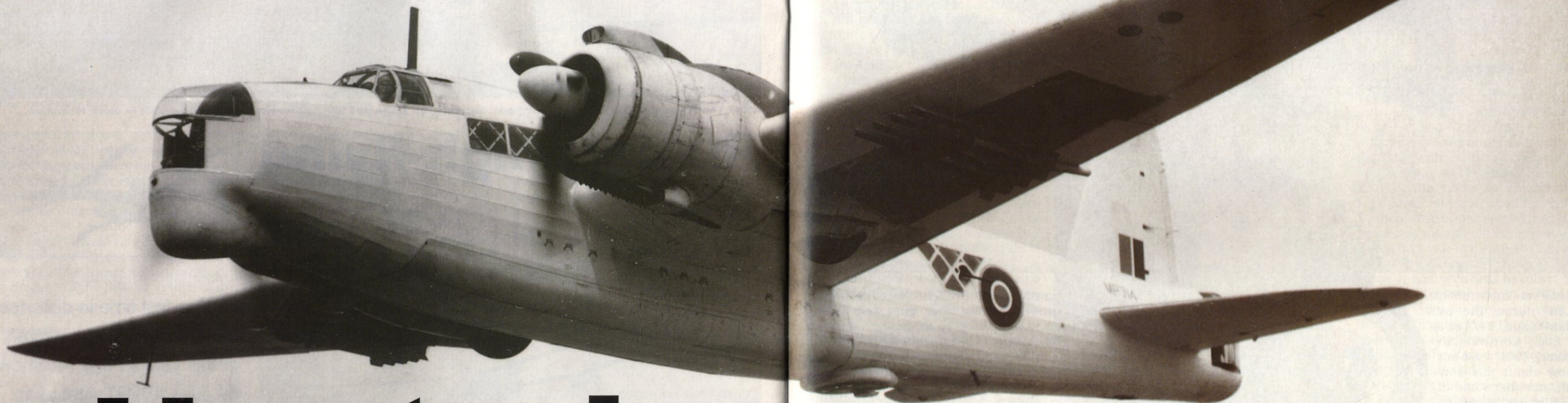
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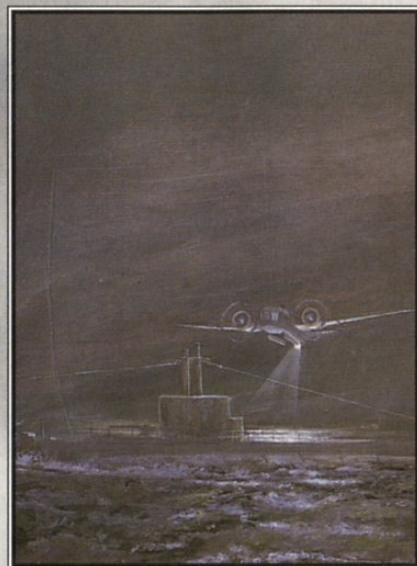
Unencumbered by rear-fuselage aerial arrays, the later Leigh Light Wellingtons GR.XII and GR.XIV were much "cleaner" than the Mk VIII. This is Mk XIV MP714 under test, its potency enhanced by the addition of clutches of four rocket projectiles beneath each wing. The Leigh Light was lowered from the circular ventral fairing just aft of the wing.



Hunter's Moon

The first Leigh Light attack

RIGHT The first attack using a Leigh Light took place in the early morning of June 4, 1942, when Vickers Wellington VIII ES986 of 172 Sqn, flown by Sqn Ldr Jeaffreson H. Greswell from Chivenor, North Devon, illuminated and then depth-charged the Italian submarine *Luigi Torelli*. The event is depicted here in J.S. Bailie's painting "Sea Eagle".



The tricky task of locating and destroying enemy submarines in darkness at night was greatly aided by the Leigh Light, which came on the scene in 1941. Its development, adoption and first successful use in anger form the theme of a two-part feature by RAF historian and former Coastal Command Bristol Beaufort navigator **ROY NESBIT**

The Leigh Light has entered aviation history as one of the most potent and effective inventions adopted by the RAF in its campaign against enemy submarines. Less well-known is the unit which took over the development of the device and ultimately brought it to operational readiness. This was the Coastal Command Development Unit (CCDU), which was formed on November 22, 1940, at Carew Cheriton, in Wales, to solve some of the Command's problems. These had increased enormously after Germany's limited access to the North Sea had been extended to one which stretched from the North Cape of Norway to the Franco-Spanish border.

By this time Coastal Command controlled only about 500 aircraft. Some of these were on the strength of No

1 Photographic Reconnaissance Unit, or were Swordfish of the Fleet Air Arm under the Command's control. Many of the others were unsuitable for some of the new tasks they faced, such as the obsolescent Saunders-Roe London and Supermarine Stranraer flying-boats, or the Avro Ansons which had insufficient range and bomb-carrying capacity. Even the Bristol Blenheims were not wholly suitable for anti-shipping attacks. Moreover, much of the equipment and weaponry in the aircraft was outdated and inadequate.

Fortunately British science came to the aid of Coastal Command. In addition, highly skilled flying and ground personnel were ready to carry out Service trials on new instruments and work out the best methods of employing them in operational squadrons.

Sqn Ldr Jeaffreson H. Greswell lands Bristol Beaufort I N1174 of the Coastal Command Development Unit at Carew Cheriton in February 1941. This aircraft continued in service until April 12, 1943, being written off after swinging on take-off while it was on the strength of No 5 Operational Training Unit, Long Kesh.



Little was known about the CCDU during the war. When I joined 217 Sqn at St Eval, Cornwall, in January 1941, I did not know about this new unit, nor that some of its founder members had been posted from our Bristol Beaufort squadron. These were Wg Cdr Lawrence P. "Auntie" Moore, who became the first CO, Sqn Ldr Jeaffreson H. Greswell, who took over as flight commander, Plt Off Arthur W. Southall, and several skilled ground personnel. The initial equipment of the CCDU was merely a de Havilland D.H.87 Hornet Moth, an Anson and a Beaufort, but these were

"Sammy Leigh was busy trying to convince the Air Ministry that the best way to illuminate submarines at night was to fit a Royal Navy 22/24in carbon arc searchlight in a Wellington"

soon topped up with an Armstrong Whitworth Whitley and a Lockheed Hudson; Vickers Wellingtons followed later. The first task of the new unit was the further development of the highly secret air-to-surface-vessel (ASV) radar, without which other instruments would have been ineffective. This had already passed

through its first phase, the Mk I, which was not successful in locating submarines. The more powerful and sensitive Mk II had been developed by the Telecommunications Research Establishment (TRE) at Swanage, and was tested by the CCDU for operational use. Meanwhile, Squadron Leader Humphrey de Verde "Sammy" Leigh, a pilot in Coastal Command Headquarters whose experience of anti-submarine work went back to the First World War, was busy trying to convince the Air Ministry that the best way to illuminate submarines at night was to fit a Royal Navy 22/24in carbon arc searchlight in a Wellington. His view prevailed, but only after rival schemes had been proposed and examined. The prototype Leigh Light Wellington, P9223, was converted by Vickers at its Brooklands factory. This was a directional wireless installation (DWI) Wellington, one of those fitted with an enormous hoop for exploding magnetic mines (see *The Basketweave Bomber*, September 1986 *Aeroplane*). The work of conversion began in March 1941, after a searchlight had been installed in a retractable "dustbin" turret. The controls for this turret were positioned in a

transparent nose which replaced the front turret. The "handlebar" grips were similar to those used by air gunners, giving the narrow 4° beam of the searchlight a sideways and vertical movement. This also provided an allowance for drift and target speed, for there was no time to manoeuvre and approach directly upwind or downwind, or to work out a target



ABOVE Squadron Leader Humphrey de Verde "Sammy" Leigh, the inventor of the Leigh Light which bears his name, photographed in 1942.

heading, as a submarine could crash-dive in 30sec. Two dials indicated the direction of the beam to port or starboard, enabling it to be set before the light was switched on.

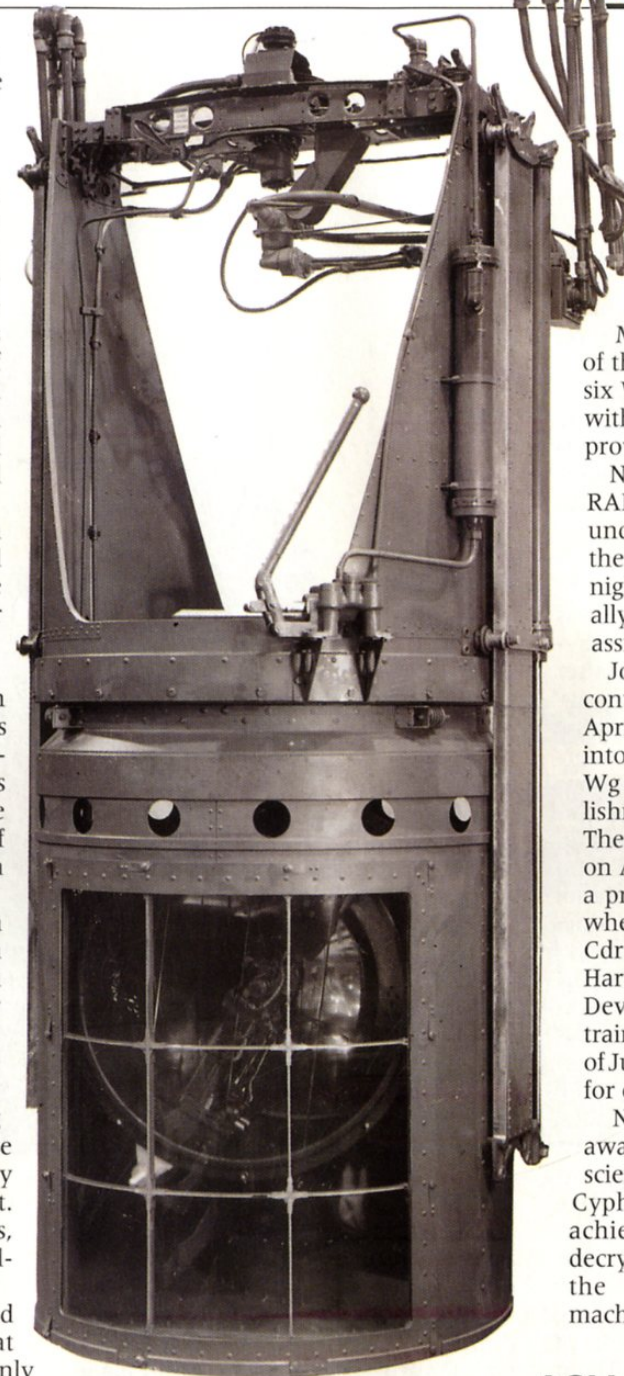
The electrical generating system was powered by the Ford V8 engine already used in the DWI Wellington. Fitted amidships, this ran a dynamo which weighed a hefty 7cwt. The Leigh Light had the disadvantages that it was very hot and also gave off asphyxiating fumes. Leigh solved these problems by ducting air through a fairing underneath the fuselage and fitting a rotating cowl which directed the fumes rearwards.

On April 24, 1941, P9223 was flown to Limavady, Londonderry, for initial trials, equipped with ASV and the Leigh Light. On May 4, 1941, after some initial disappointments, it successfully illuminated Royal Navy submarine H-31 from 2,000ft, with Sqn Ldr Leigh operating the controls in the nose. All seemed ready for large-scale production, but the matter was held up for two months while the C-in-C of Coastal Command, Air Chief Marshal Sir Philip B. Joubert de la Ferté, considered a rival device.

Nevertheless, both Sqn Ldr Leigh and the CCDU continued trials with this Leigh Light Wellington, which was flown to Carew Cheriton on May 6, 1941. These began ten days later, using Govan Light Vessel as a target. The first attempt was successful, flying at a height of 1,200ft, switching on the searchlight two miles from the target and traversing it alternately about 20° to starboard and then to port. Each cycle took about four seconds, the searchlight being depressed gradually as the range closed.

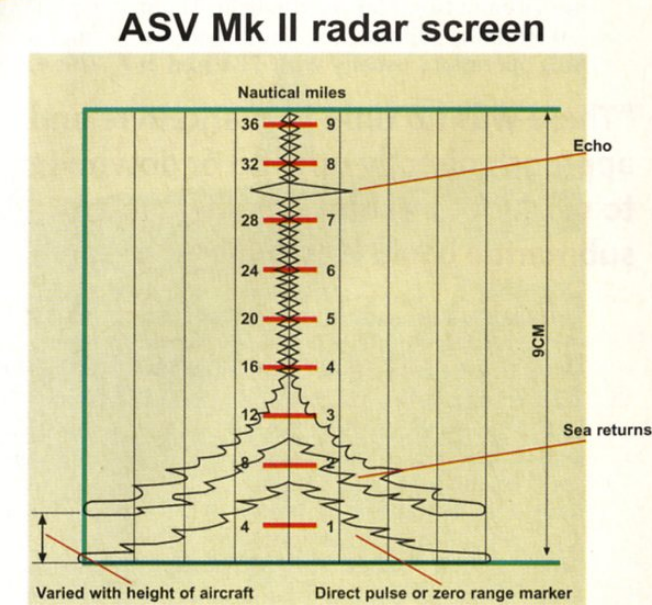
As the trials continued it was found preferable to make the approach at 250ft and traverse the searchlight only about 10° to each side. Also, the heavy generating system was replaced by seven 12V batteries fitted in the centre bomb bay and charged by the engines. Although these weighed far less than the dynamo, they restricted the bomb load to four depth charges instead of the standard six. Each outer bomb bay carried a 140gal overload tank. The batteries could maintain the light for about 6min before exhaustion, but otherwise the light remained fully charged if not switched on for more than three half-minute periods per hour.

With a full war load, no front turret and the Leigh Light aft of the c.g., the Wellington was tail-heavy. It was also underpowered with two 1,000 h.p. Bristol Pegasus XVIII radial engines, so take-offs could be hazardous. Moreover, the propellers were non-feathering, so the



ABOVE The Leigh Light installation in a turret to be fitted to a DWI Wellington. This photograph was taken on January 26, 1941, by Parnall Aircraft of Tolworth, Surrey.

RIGHT This example of the signal presented on the visual screen of an ASV Mk II radar set shows an object ahead, picked up slightly to starboard by the forward aerials. The instrument could be switched to short range (mile intervals), medium range (four-mile intervals) or long range (ten-mile intervals), as shown on the vertical scale. Maximum range was about 90 miles.



aircraft could not remain airborne on one engine.

It was evident that precise flying and co-ordination by the crew were essential for the successful operation of the device.

The CCDU completed its trials in December 1941, moving to Ballykelly on the 6th of that month. In the interim the Air

Ministry approved the installation of the Leigh Light and ASV Mark II in six Wellingtons, known as Mark VIII, with another 30 to be allotted if the first proved effective on operations.

Number 1417 Flight was formed at RAF Chivenor on January 18, 1942, under Sqn Ldr Greswell. The first of the new machines arrived about a fortnight later, and the force was eventually built up to six. The crews trained assiduously in their tasks.

Joubert pressed for more speed and continuity with further aircraft, and on April 4, 1942, 1417 Flight was expanded into 172 Sqn, under the command of Wg Cdr John B. Russell, with an establishment of 20 Leigh Light Wellingtons. These new aircraft did not arrive, and on April 13 one of the original six lost a propeller during a flight to St Eval, where it had been sent to collect Wg Cdr Russell. It crashed into a cliff near Hartland Point on the north coast of Devon, killing the crew. Nevertheless, training was complete by the beginning of June, and the other crews were ready for operational work.

Nobody in the new squadron was aware that British mathematicians and scientists at the Government Code and Cypher School at Bletchley Park had achieved an astonishing success in decrypting enemy signals sent through the seemingly infallible Enigma machine. This was a secret known only

RIGHT One of the earlier types used by Coastal Command was the Avro Anson. These Anson Is of 220 Sqn were used for general reconnaissance from August 1936 to November 1939, when the unit converted to Hudsons, which had somewhat longer legs.

to a select few at the highest level. In the RAF it was generally believed that "men in bowler hats" were responsible for intelligence, fed by information from secret agents in the enemy camp. Yet by mid-1942, from decryption of the Kriegsmarine's Home Waters Enigma, the Admiralty's Operations Intelligence Centre knew the dates when enemy submarines were due to leave their ports and the dates they returned.

Although at this stage these signals yielded nothing about locations of submarines while on their war cruises, it was well-known that the vessels often travelled on the surface at night soon after leaving their ports, when they were powered by diesel engines and recharged the batteries which propelled them underwater. Thus the Leigh Light Wellingtons might catch them unawares during a vulnerable period in the Bay of Biscay, within range of RAF bases in Cornwall and Devon. In the previous 12 months Coastal Command had sunk only one submarine, and that was not in the Bay of Biscay.

Many naval historians overlook the part played by Italian submarines in the Battle of the Atlantic during the early years of the war, preferring to concentrate on the activities of German U-boats. Yet the Italian submarine force was formidable. Soon after Italy declared war against Britain and France on June 10, 1940, her Supreme Command decided to reinforce Germany's U-boats with submarines normally based in Italian ports. These managed to pass through the Strait of Gibraltar and form a major fleet at Bordeaux, being named "Betason" (Beta for the initial of the city and "som" for *sommergibili*). About 30 Italian submarines took part in this operation, usually with 11 based at

and unescorted off American east coasts.

In the following spring, Betasom arranged an increase in departures for the eastern Atlantic. On May 25, 1942, two submarines left Bordeaux and sailed down the Gironde estuary to the additional base of La Pallice, where they made final preparations for their war cruises. These were the *Luigi Torelli* of 1,036 tons, commanded by *Tenente di Vascello* (Lieutenant) Count Augusto Migliorini, and the *Morosini* of 941 tons, commanded by *Tenente di Vascello* Francesco d'Alessandro. In the afternoon of June 2, 1942, they left La Pallice for the area of the West Indies. They soon separated and headed for different destinations. Although detailed records do not exist, it is certain that the Admiralty was aware of their times of sailing.

On June 3, 1942, four crews of 172 Sqn at Chivenor were briefed for the first Leigh Light operation in the presence of Air Vice-Marshal G.R. Bromet, the Air Officer Commanding No 19 Group. Only four

aircraft were available, the fifth having had a wing damaged by a petrol bowser. These took off in succession between 2033hr and 2054hr, under the captaincies of Flt Lt A.W. Southall, Plt Off F. Blackmore, Wg Cdr J.B. Russell and Sqn Ldr J.H. Greswell. They set course from the Scilly Islands and swept the Bay of Biscay at about 2,000ft, on fan-shaped patrols, as far as the north coast of Spain.

Each crew consisted of two pilots, a navigator and three wireless operator/air gunners. The latter manned the ASV, wireless and tail turret, but changed places every 20min to ensure that concentration on the ASV radar screen was as intense as possible.

It was a dark night with no moon. The first three Wellingtons landed back at Chivenor between 0511hr and 0520hr, having found nothing more exciting than

RIGHT Probably because the Leigh Light in the rear fuselage made the Wellington Mk VIII tail-heavy, T2977 was fitted with one in an experimental nose installation. This configuration was not adopted, however.

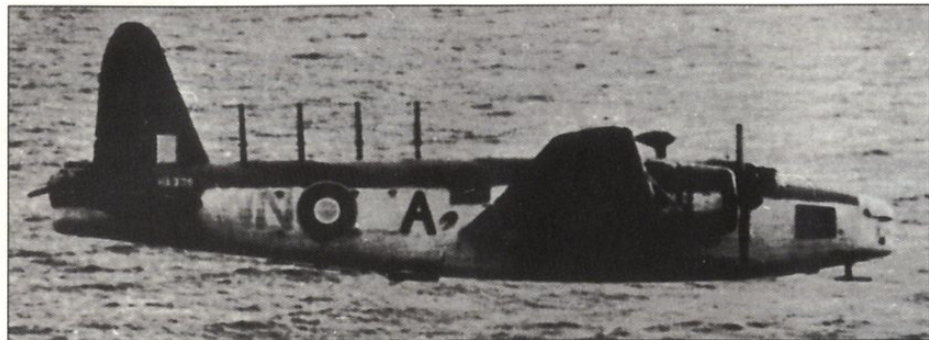


"There was no time to manoeuvre and approach directly upwind or downwind, or to work out a target heading, as a submarine could crash-dive in 30sec"

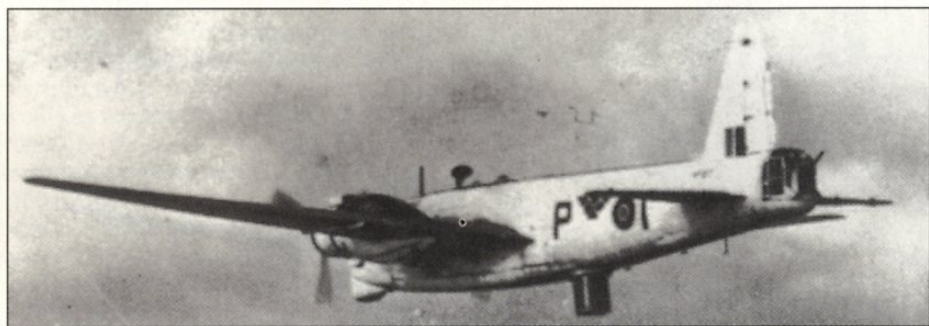
Bordeaux at any one time. Of course, Betasom came under the orders of commander of the Kriegsmarine, Admiral Karl Dönitz, for its war cruises.

The Italian submarines scored numerous successes, particularly after the USA entered the war on December 7, 1941. This was the period known by the German maritime commanders as the "happy time", when Allied merchant vessels were sailing independently





ABOVE Wellington Mk VIII HX379 flies low over the sea on October 28, 1942, with its Leigh Light retracted. This mark had ASV Mk II, as evidenced by the aerial array on top of the rear fuselage. This aircraft was delivered to 172 Sqn at Chivenor in June 1942, but was transferred to 179 Sqn when it formed at Wick the following September. It was ditched near Gibraltar on May 3, 1943, and sank.



ABOVE A Leigh Light lowered in a "dustbin" turret in a Wellington Mk XIV of 172 Sqn, believed to be HF187. This mark of the famous bomber was powered by Bristol Hercules XVII engines and carried an ASV Mk III radar, with a chin radome instead of the aerial array fitted on the fuselage of the first Leigh Light Wellington, the Mk VIII.

a few fishing vessels and a single merchant vessel. But Greswell, in Wellington ES9861/F, opened the score for 172 Sqn. Shortly after 0200hr, about 60 nautical miles north-west of Cape Peñas on the north coast of Spain, the radar operator was using the forward aerials when he reported a contact about 5½ miles to port. Greswell called for action stations, turned to port and began to descend while

the crew went into the drill they had practised many times. The navigator, Plt Off S.J. Pooley, lowered the Leigh Light. The second pilot, Plt Off A.W.R. Triggs RAAF, moved into the nose and grasped the controls of the light. Looking intently at his radar screen, the operator gave positions and directions over the intercom. Greswell came down to 250ft on the altimeter and the light was switched on three-quarters of a mile from the target.

Nothing appeared in the beam, but both Triggs and Greswell spotted a large submarine disappearing under the port wing, too late for an immediate attack. It was impossible to identify the type, but it was the Luigi Torelli.

Greswell realised immediately what had gone wrong. His altimeter had been set to the barometric pressure at Chivenor, and this was no longer correct in different weather conditions further to the south. The light had been switched on at about 400ft instead of 250ft, and they had overshot the target. He reset the altimeter by visual reference to the submarine, turned to port and came down to 250ft for another attack, though he thought the vessel might have crash-dived. To his amazement, coloured flares

rose in the sky, giving him an exact position of the target but causing him to wonder whether it could be friendly. There was a hurried discussion with the crew before he remembered that Royal Navy submarines did not fire flares but burned coloured candles on the sea for recognition purposes.

The homing procedure worked perfectly on the second occasion. Greswell opened the bomb doors and the light illuminated the submarine. A stick of four Mk 8 Torpex depth charges, each weighing 296lb and fitted with a pistol set to explode at a depth of 25ft, fell at 35ft intervals across the submarine from very low level. The tail gunner saw the plumes as they exploded, and opened fire at the conning tower. Then the target disappeared in the darkness.

Greswell headed for home, but the night's activities were not yet over. About 60 miles north-north-west of the first attack there was another ASV contact. This was followed by a precise homing and a second submarine was illuminated. She was the *Morosini*, also on the surface. However, with no depth charges left the crew could only open machine-gun fire. Greswell circled for about 10min and his rear gunner made two such attacks. It was then time to continue the homeward flight, and they landed at Chivenor at 0557hr, 7hr after taking off.

There was much satisfaction in 172 Sqn. All the theorising, the experimenting and the long months of training had paid off. One of the crew members of the successful Wellington had reason to be particularly gratified. This was the navigator, Plt Off S.J. Pooley, for he was the young scientist who had invented Torpex, the explosive used in depth charges for the first occasion. It was 30 per cent more powerful than the Amatol used previously.

"The light illuminated the submarine. A stick of four Mk 8 Torpex depth charges fell at 35ft intervals across the submarine from very low level"

The Air Ministry had considered that Pooley was too valuable to risk his life, but he had insisted on a posting to an operational squadron.

The future of the Leigh Light seemed assured, but at this stage the members of the squadron did not realise that the Wellington flown by Sqn Ldr Greswell had attacked the only two enemy submarines in the Bay of Biscay during the night of June 3-4, 1942. They did not know the identity of these submarines, nor what had happened to them afterwards.

Next month: What it was like to be on the receiving end



ABOVE Wing Commander Jeaffreson H. Greswell, photographed in 1944.

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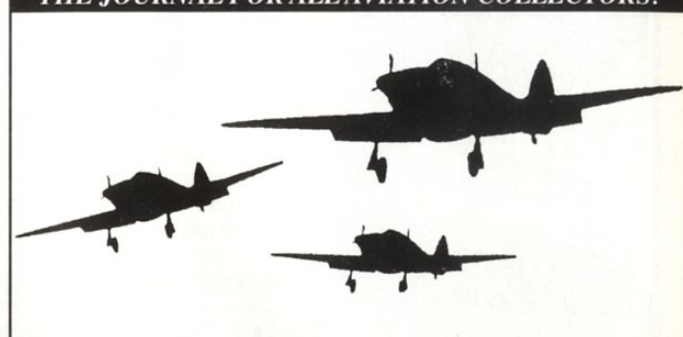
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