PROFILE 224

SUPERMARINE WALRUS & SEAGULL VARIANTS

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Mother: *N146, the Supermarine Seal, the 1921 name for the later military Seagull series. Note the Linton Hope hull form and the simple upward-and-outward (but not fully) retracting main wheels.* (Photo: Supermarine via Air-Britain archives)

Supermarine Walrus I & Seagull V Variants

by David Brown

'The time has come' the Walrus said,
To talk of many things—
Of pusher-screws and "Shagbats"[1]
And strutted, swept-back wings.
I'm an aeronautical wonder
And if that is not enough,
Then I've wheels that I can land on
When the sea's a bit too rough'

E A WREN
After Lewis Carroll

BACKGROUND AND ORIGINS

The first British squadron-service aircraft to incorporate a fully-retractable main undercarriage, completely enclosed crew accommodation, and an all-metal fuselage was, surprisingly, a biplane amphibious flying-boat—the Supermarine Type 236 Seagull V, later named the Walrus Mark I.

Even by the standards of the early 1930s, the prototype Seagull V appeared inelegant when set beside its immediate predecessors, and successor, on Reginald J. Mitchell's drawing board. The sleek lines of the S.4 to S.6B Schneider Trophy racers[2] of 1925–31, or of the 1934 Spitfire[3] were absent. But the advanced engineering—so typical of Mitchell's brilliance—was there to make the Seagull/Walrus series successful beyond the expectations of the original 1929 specification; not only in the boats' designed roles, but also many others which were wished upon them by the exigencies of world-wide war.

For reasons of space, this *Aircraft Profile* is restricted to a description of the Seagull V and Walrus I in naval service and their primary maritime applications. The Royal Air Force and Royal Australian Air Force, among others, used the amphibian with considerable success in an Air/Sea Rescue role. Many Allied (and enemy) airmen owe their lives to the Walruses which braved enemy fighters, coastal batteries, and minefields—to say nothing of the elements—to carry out a morally vital task often with the minimum of acknowledgement.

DESIGN DETAIL

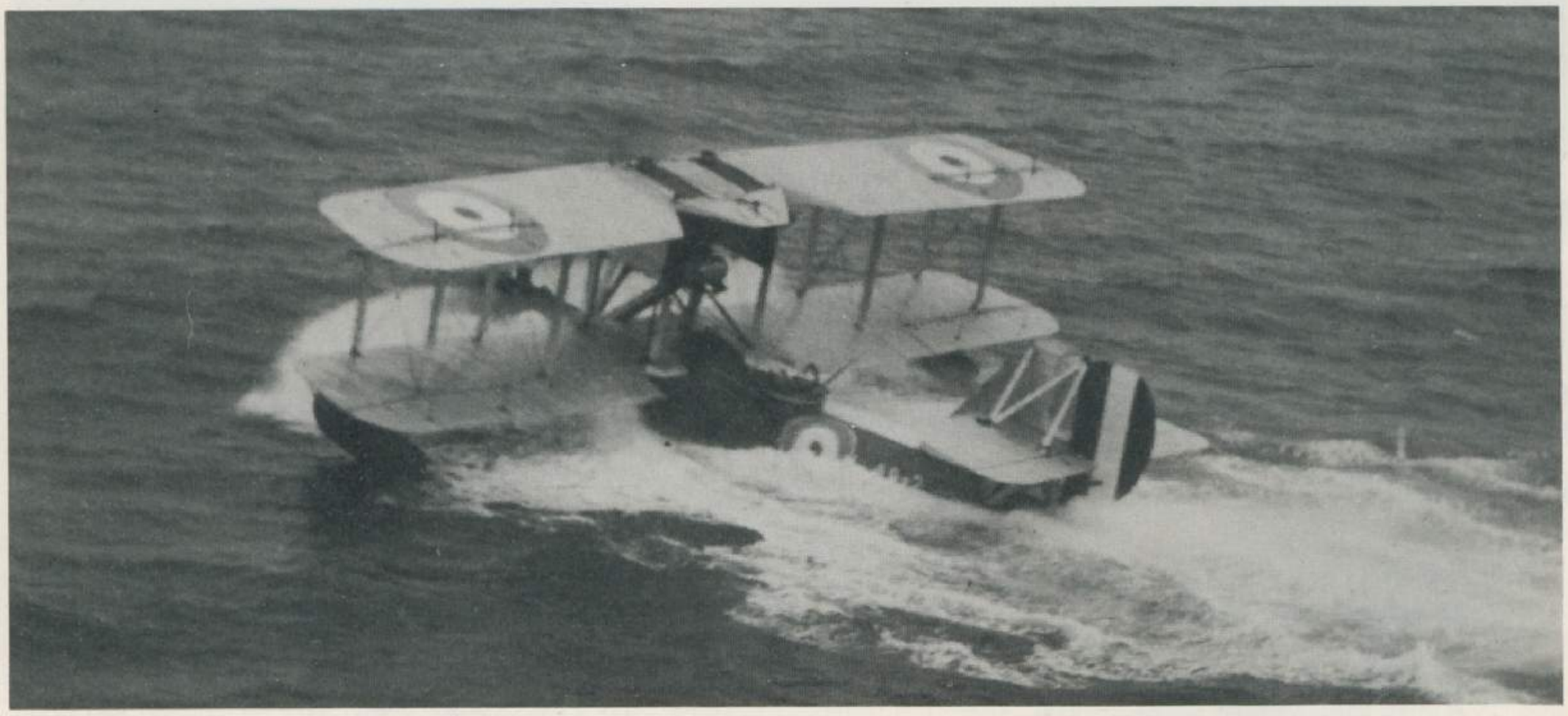
In 1929, the Royal Australian Air Force (R.A.A.F.) drew up the specification for a boat-hulled amphibian for ship-board operation. The aircraft was to have an endurance of four hours, provision for a crew of three, and full equipment to enable it to carry out a variety of reconnaissance, survey, and communications roles. It had to be stressed for catapulting at maximum take-off weight, which was not to exceed 8,050 lb, and it had to be able to operate from the open sea in wave heights of up to six feet. Contemporary non-Australian

[1] "Shagbat": a humorous but undignified naval epithet bestowed on the feathered variety of sea-gull.

[2] Supermarine S.4–S.6B (Profile No. 39/Vol. 2)

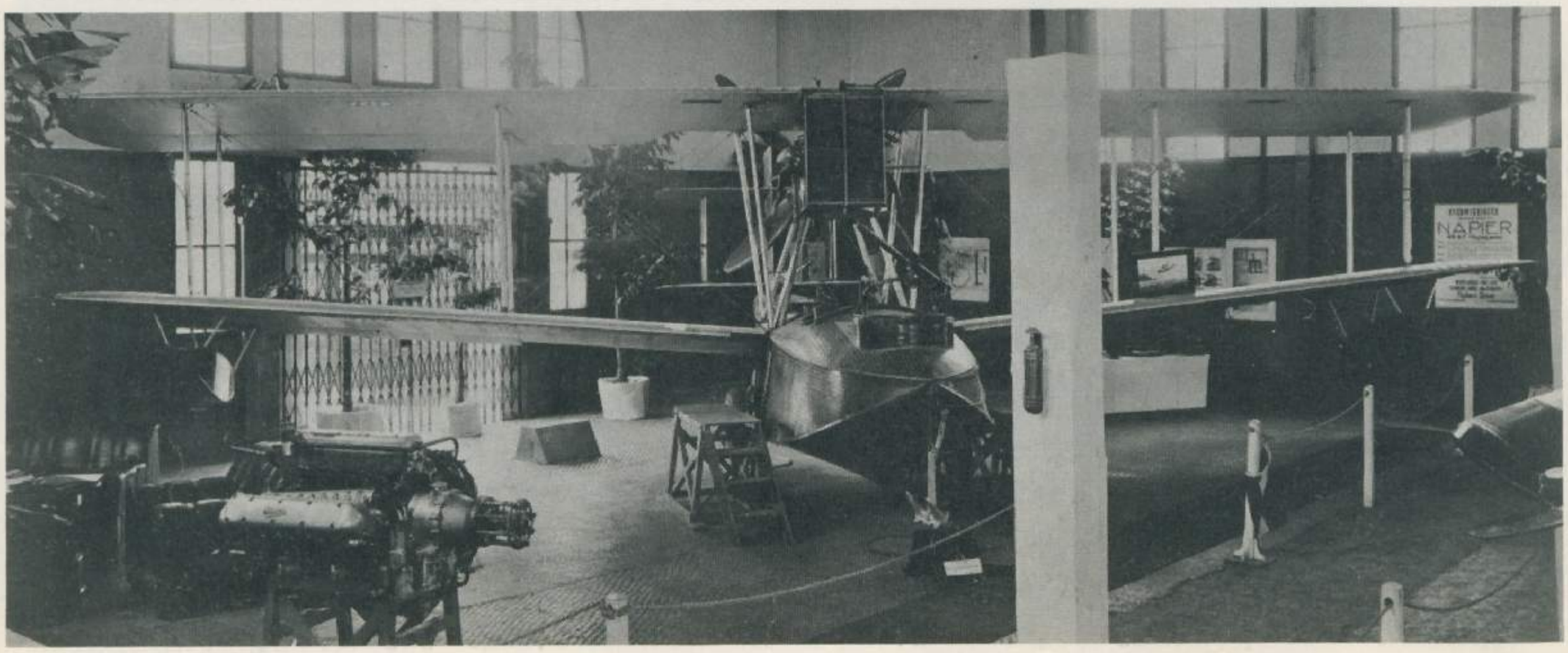
[3] Supermarine Spitfire: Mks. I-II (Profile No. 41/Vol. 2); Mk. V (41/2); Mks. IX & XVI (206/9); Seafire (Merlin) Mks. I-III (221/10)

Father: *Vickers Type 59 Viking III G-EAUK, seen crossing the railway level crossing at Plough Lane, Croydon, in September 1920 (see page 28). Pilot, Captain S. Cockerell. The slab-sided hard-chine hull contrasts with the more aesthetic rotundity of the Seal/Seagull.*
(Photo: Vickers via Air-Britain archives)



Working Mother: *In a flurry of white water, A9–2 takes off from alongside HMAS* Albatross. *The wave-height of about 2 feet (Sea State 2) is about maximum for the operation of the Seagull III, compared with the 6 feet (Sea State 3–4) maximum for the Seagull V/Walrus.*
(Photo: R.A.A.F. via Air-Britain archives)

Seen in an exhibition hall in Java, this Royal Netherlands Navy Viking III shows its clear claim to paternity for the Seagull V/Walrus series: pusher-engine, hard-chine hull, and marked dihedral on the lower mainplanes. An aerodynamic refinement not to be found on its descendants is the drooped leading-edge of the lower mainplanes. (The anchor, if scaled up for a 750-foot carrier, would be nearly 40 feet long.)
(Photo: Air-Britain archives via Charles W. Cain)



"authorities" regarded the specification as impossibly demanding, particularly in its call for exceptional hydrodynamic qualities in a light, short-hulled boat. Yet few services could claim more experience with small boat-amphibians than the R.A.A.F., which had been operating Supermarine Seagull IIIs since 1926.

The Seagull III was the final production model of a series of small single-engine, wooden-hull flying-boats which had originated with the 1915-designed Admiralty Department (AD) 2-seat coastal patrol boat, built under contract by Pemberton-Billing Ltd., of Woolston, Southampton[4]. From the AD boats had been developed the Supermarine Channel, which had in turn showed the way for the development of the Seagull series, which featured a tractor engine installation in place of its progenitors' pushers. Other changes were included, mainly to the design of the flying surfaces, and a simple upward and outward manual main undercarriage retraction system appeared for the first time in the Seagull.

In common with the earlier boats,[5] however, the Seagull retained the Linton Hope broad-beam hull of modified "round-bilge" form.

The Seagull III first appeared in 1921, and was known initially as the Seal. After some modification it was ordered into production for shipboard use during the following year. The only Royal Air Force front-line unit to operate the type was No. 440 Flight aboard HMS *Eagle*, serving in the Home and Mediterranean Fleets between 1923 and 1925. It was not a successful career and the Seagull III became so unpopular in naval circles that the prejudice against small boat-hulled amphibians lasted for 10 years after 440 Flight had been re-equipped with Fairey IIID floatplanes.[6]

The main criticism of the Seagull III was directed at its hydrodynamic performance. The length of take-off run was excessive; its handling qualities were poor on any but the smoothest water. For wheeled operations from the carrier, it lacked the speed and radius of action of the landplanes, all of which could be adapted for floatplane use by the ship's own facilities.

The Royal Australian Navy (R.A.N.), however, had a different role in mind for their Seagulls, nine of which were bought from Supermarine during 1926 and 1927. Operated by No. 101 Flight, RAAF, they flew in support of, and were supported by, HMAS *Moresby*, engaged in hydrographic survey work along the Great Barrier Reef and the coast of Queensland. In January 1929, the seaplane carrier HMAS *Albatross* joined the Australian Fleet and embarked six of the Seagulls. These remained on board until April 1933, when *Albatross* was put into reserve and her aircraft transferred to the heavy cruisers *Australia* and *Canberra*. Lacking a catapult and aircraft capable of being catapulted, the seaplane carrier had operated mainly as a tender in sheltered waters, where the Seagulls' poor waterborne qualities were less inhibiting.

By the time Supermarine was awarded the contract for the replacement aircraft in early 1930, the RAAF and RAN had more experience of small-amphibian open water operations than any other air arm.

SEAGULL V – DESCRIPTION

In November 1928, a year before the RAAF Specification was issued, Vickers-Armstrongs Ltd. absorbed the Supermarine Aviation Works Ltd, the latter becoming the Supermarine Division of Vickers (Aviation) Ltd.[7] The Woolston design office continued to function as a separate entity, and its products retained the Supermarine prefix. Mitchell was thus able to draw upon the wider resources of the Vickers "empire" when he came to initiate design work on the RAAF amphibian.

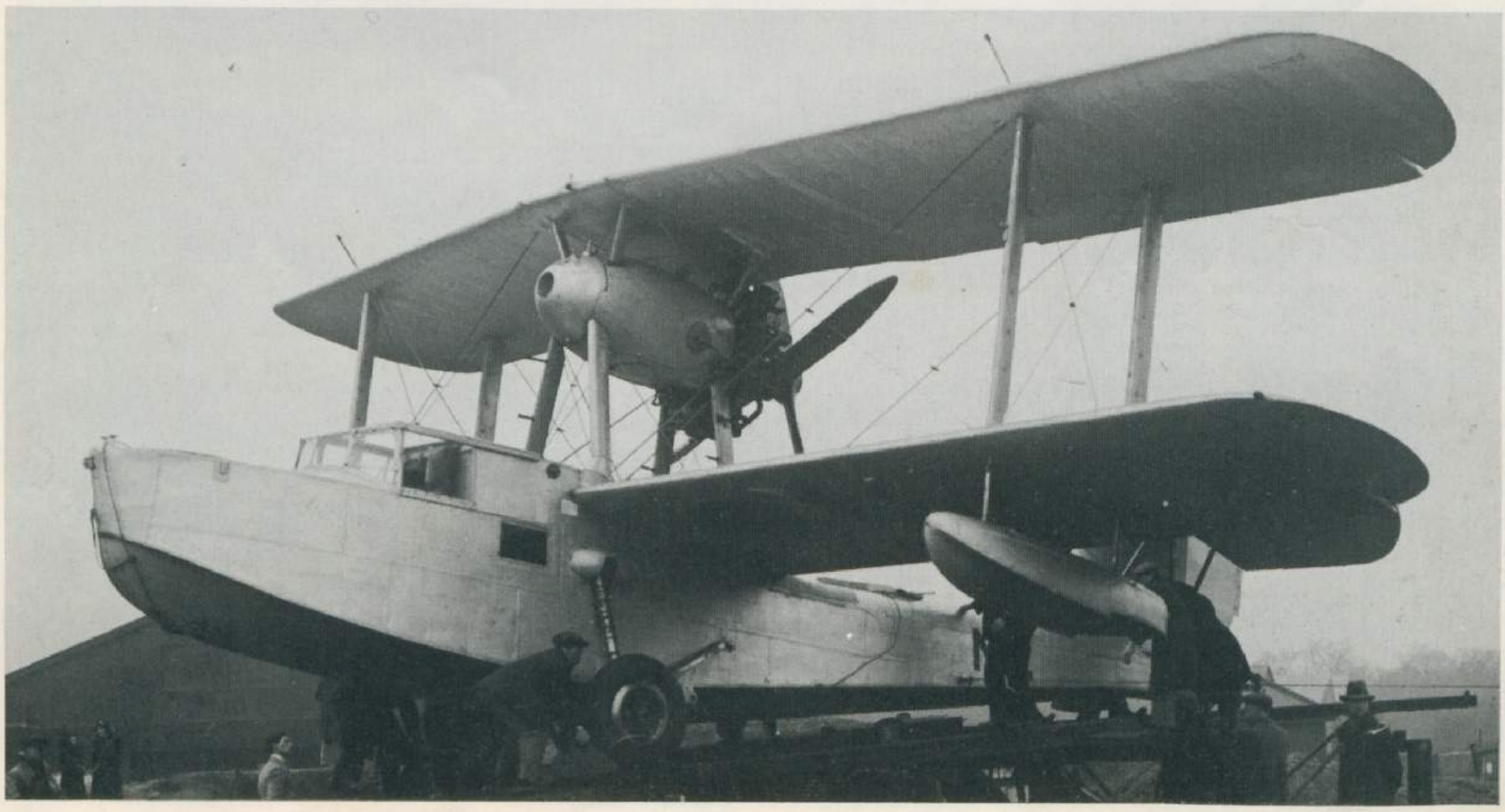
[4] Later in 1916, renamed The Supermarine Aviation Works Ltd.

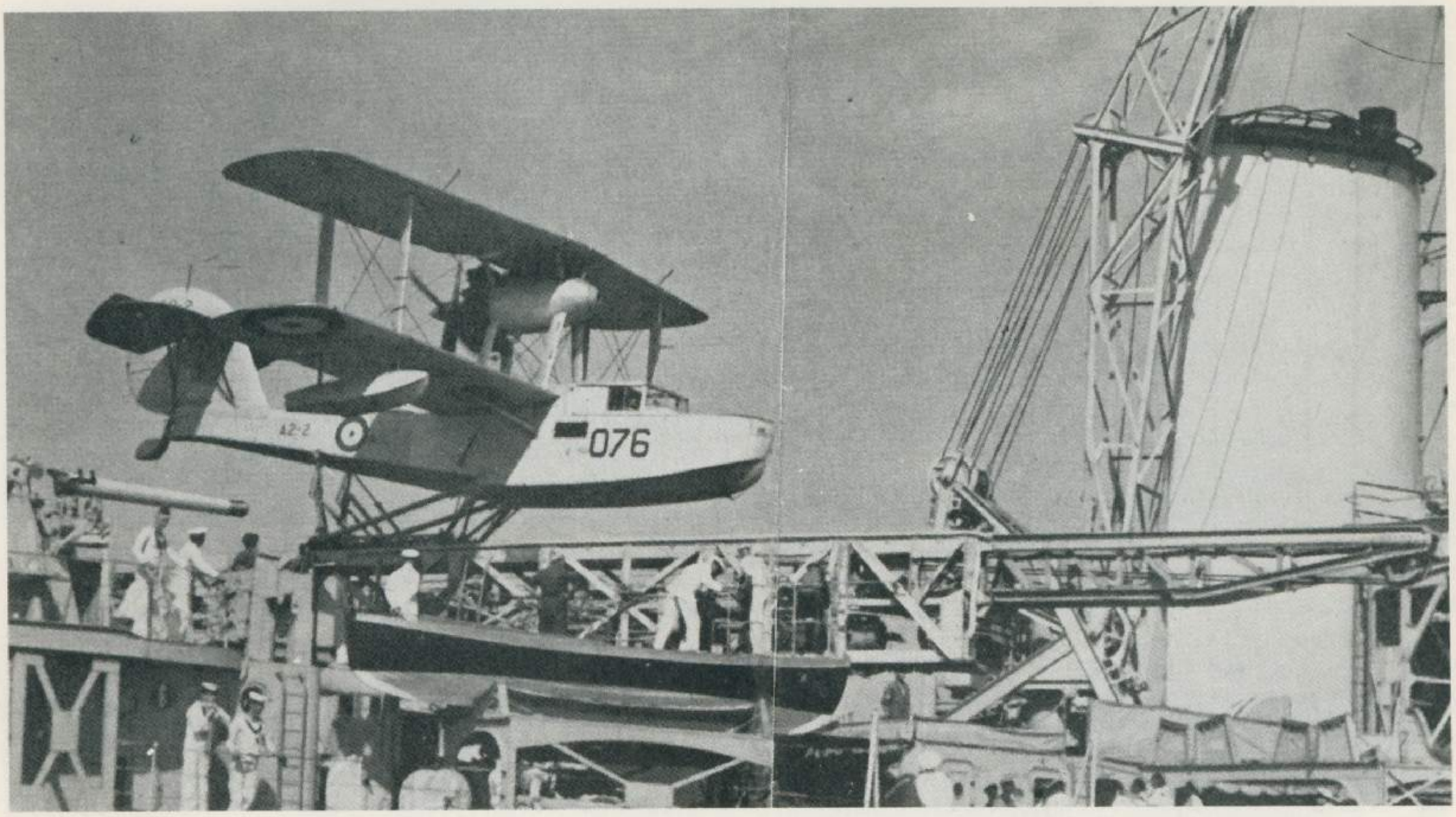
[5] Single-motor small boats included: Sea King I & II; Sea Lion I-III; Competition Amphibian; Sea Eagle; Scarab; Sheldrake.

[6] Fairey III (Profile No. 44/Vol. 2)

[7] Ten years later, in October 1938, what had become The Supermarine Aviation Works (Vickers) Ltd. had a further change of name: Vickers-Armstrongs Ltd. (Aircraft Section) Supermarine Works; giving rise to the long prefix of "Vickers-Armstrongs Supermarine", sometimes shortened to "V.A.S."

Seagull V: *N.2, the prototype, is winched up the ramp and on to the cradle of RAE Farnborough's catapult during the initial "accelerator" trials in January 1934. The rear spool can be seen in front of and below the letter "N", while the forward spool is the web just behind the port main-wheel. The spools were duplicated on the starboard side.* (Photo: Flight International; ref. 13869)





A2–2, the second production Seagull V, is about to be launched from the light cruiser HMAS Perth, *to which it was allocated at the end of 1935.*
(Photo: Fleet Air Arm Museum)

Vickers had made but one essay in the flying boat field. Between 1918 and 1925, Vickers' chief designer R.K. "Rex" Pierson, had designed and progressively developed a single-engine amphibian which had competed with the Seagull series for military and civil orders. The Type 59 Viking III won the 1920 British Air Ministry Trials for amphibians, relegating the Seagull to second place, and went on to see world-wide service in successive production models, in a variety of roles. A total of 36 was built, including military variants for the Royal Canadian Air Force, the Royal Netherlands Navy (for service in the East Indies), and evaluation aircraft for the Imperial Japanese Navy, the US Navy, and the USSR. Two were purchased for the RAF, which employed them in Iraq, but a specially modified Fleet Reconnaissance version—the Venesta—failed to win the competition which resulted in the order for the RAF's Fleet Air Arm Seagull III.

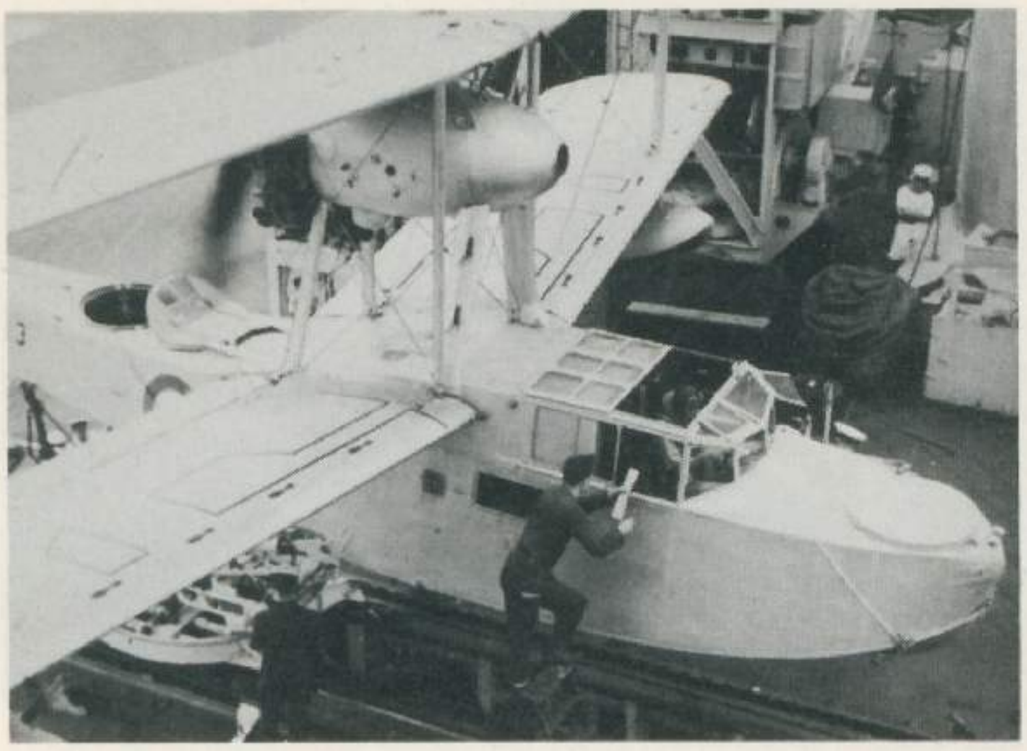
The outstanding feature of the Viking lay in the design of its hull. Of flat-sided "hard-chine" form, it tended to cut through small waves, instead of riding over them, the major disadvantage of the Linton Hope hull, which, with its much greater "wetted" (literally) area, had a marked tendency to "porpoise". The Vickers-Armstrongs shipbuilding concern's hydro-dynamic research establishment traced and eliminated early stability problems with the Viking hull and was able to effect further improvements which were incorporated in the Supermarine Type 236 Seagull V.

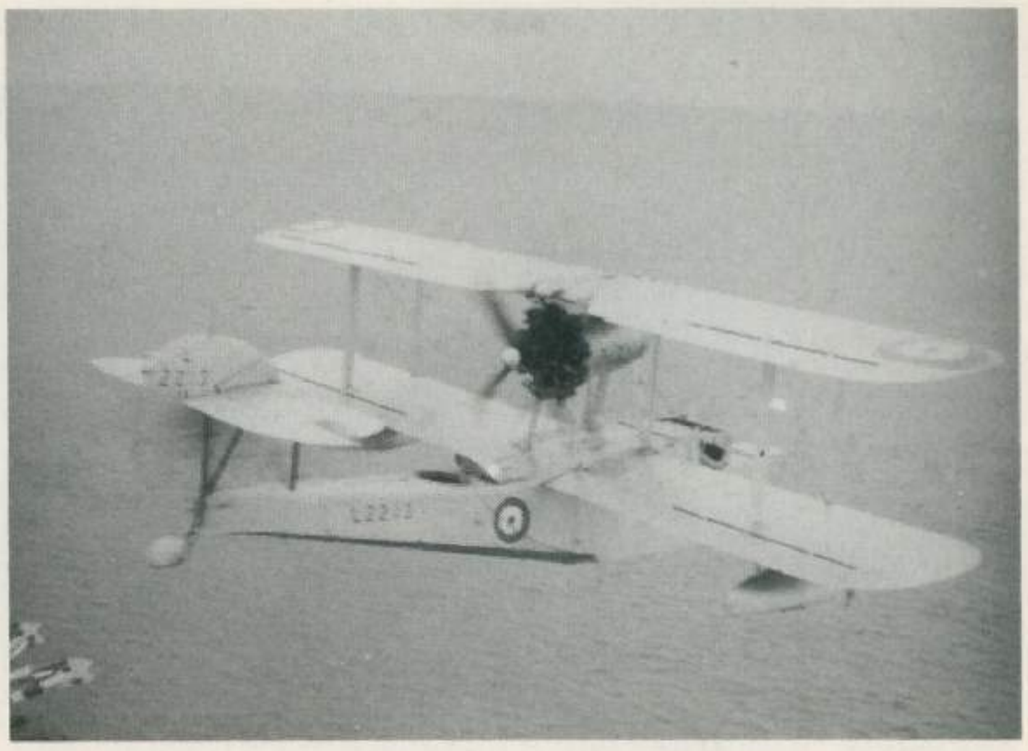
For all its biplane configuration, the Seagull V was a very modern aircraft by the standards of the early 1930s. The enclosed crew accommodation was the first such concession to creature comfort and efficiency to be built into a production aircraft intended for eventual British military service and the fully-retractable main undercarriage was also the first of its kind in a British military aircraft. The metal hull was an innovation of the greatest importance. Experience with the RAAF Seagull IIIs and the RAF Vikings had shown that hull life in semi-tropical conditions was likely to be short in the case of wooden construction, the combinations of heat, humidity and marine growth fouling proving fatal to laminates and their bonding.

Thus the Seagull V was to have an anodised alloy hull, the catapult spools and their reinforcing webs being forged from stainless steel. The wings, although conventional in construction, were to incorporate stainless steel main spars. The metal ailerons were fabric covered, the remainder of the wing was plywood and fabric covered. No aerodynamic flaps featured in the design, but the inboard trailing edge section of each lower wing was to fold upwards and forwards[11] to permit the wing to be folded back. The empennage was also conventional, the fin being integral with the hull and the high-set tailplane externally strut-braced. The metal tailwheel was faired into the water rudder, which was linked with the pilot's rudder pedals for control on the water. Alternative powerplants were to be offered – the air-cooled radial Bristol Pegasus IIM2 or the liquid-cooled inline Rolls-Royce Kestrel. The former, rated at 620 hp for take-off and 630 hp at 6,000 feet, was installed in the early production batches but, as far as is known, no Kestrel installation was attempted.[8] To allow access to the "power-egg" and the leading-edge of the upper mainplane while the engine was running, the pusher installation was selected, with the engine mounted independently between the mainplanes. The short distance between the propeller shaft centre-line and aft fuselage top-decking led to the use of a small-diameter 4-blade propeller to take advantage

[8] In the early 1930s, Mitchell chose two 525 h.p. Kestrel IIIMS for the developed Southampton Mk. IV which renamed Scapa, a 5-crew general-reconnaissance biplane flying-boat.

[11] In the Walrus. The Seagull's flaps folded downwards and forward.





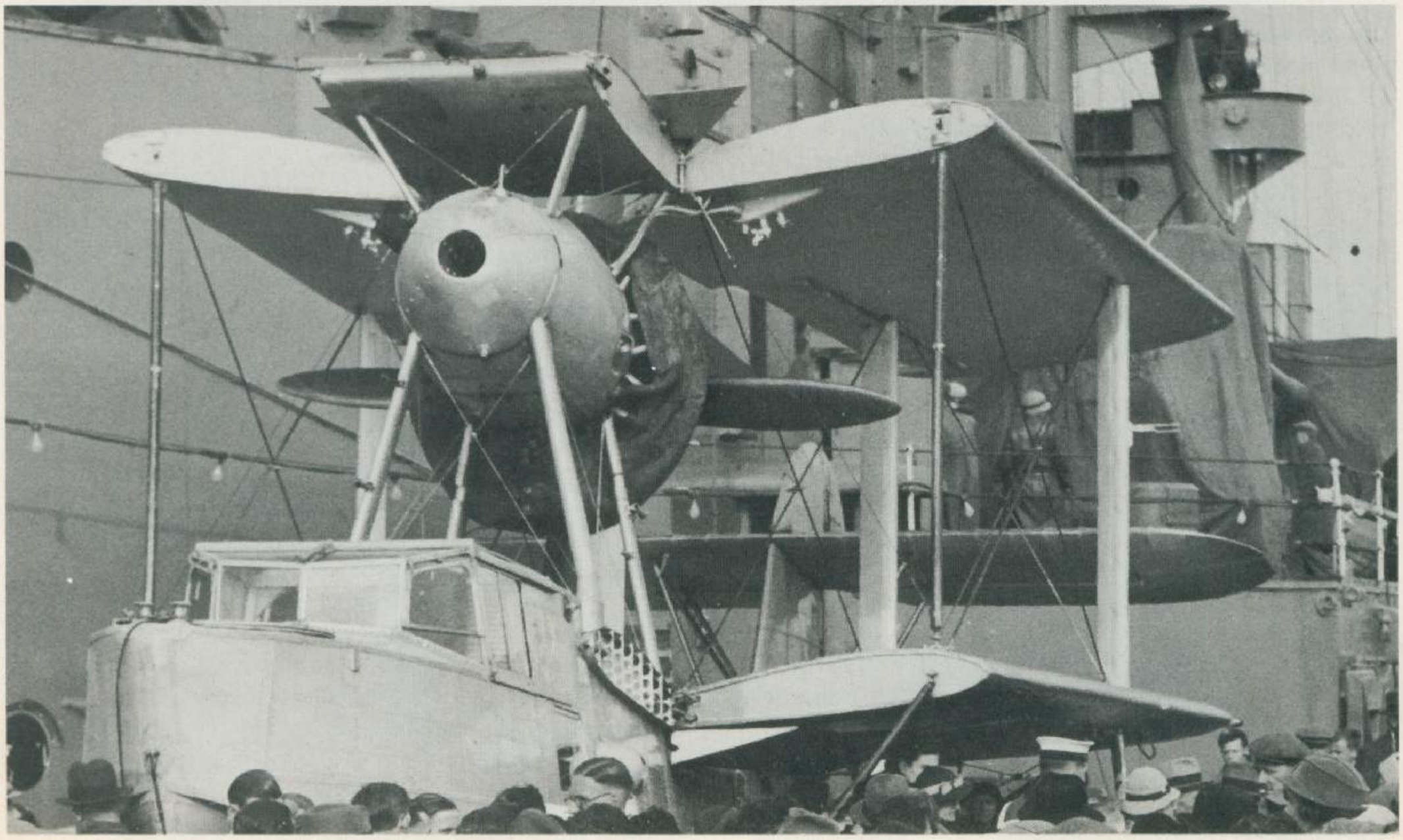
Left "It's all been changed . . . ": *An RAF member of 715 Squadron hands a briefing chit to the pilot of L2213 as it runs up on HMS Cornwall's catapult. Note the turntable trolley on which the aircraft is mounted, permitting launches to be made on either beam. The "Man Friday" marks on the upper surface of the lower mainplanes indicate the area strong enough to bear a man's weight.*
Right *L2213 immediately after launch.*
(T. S. *Courageous*, Canterbury S.C.C.)

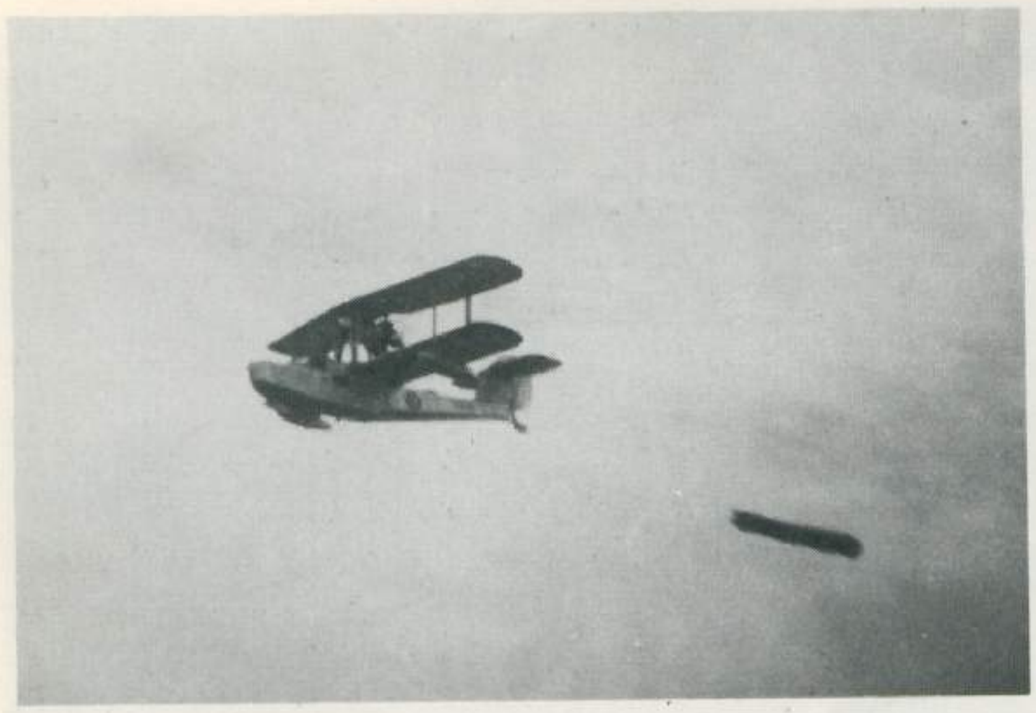
of the available power. The hub was thus only ten feet from the intersection of fin and tailplane and to retain a balanced airflow over the tail surfaces, the entire nacelle was angled to starboard – a more suitable solution in a low-speed aircraft than the more common cambering of fin and rudder.

Fuel was carried in cells in the inboard section of each upper mainplane, normal load being 122 Imperial gallons, with an overload capacity of 155 Imp. gals. The mainplanes folded back about the roots of upper and lower rear spars, the folded span being little greater than that of the tailplane. The interplane jury struts, fitted just outboard of the fold, between the front spars, were load-bearing only when the wings were folded, and in the first prototype and the RAAF Seagulls these were detached prior to flight.

Accommodation was provided for a crew of three – pilot, navigator, and wireless operator/gunner (the latter pair being translated in naval service as Observer and Telegraphist-Air Gunner – or TAG). Normally, the pilot sat alone, with the other two crew members behind and below in a cabin ahead of the leading edge, but dual controls could easily be fitted and the aircraft then used for pilot training. Two open gun positions with Scarff rings were located in the extreme bow and amidships, aft of the trailing edge. Two 0.303-in. light machine-guns – Lewis Gun or Vickers K Gas-operated – comprised the normal defensive armament, although

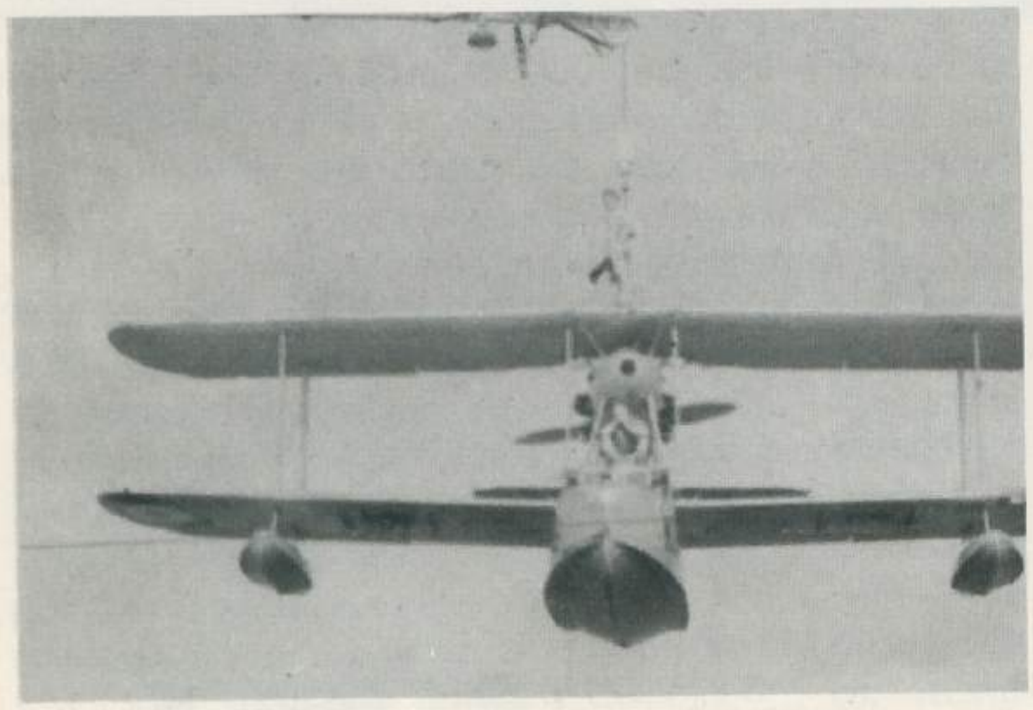
Ship Open to Visitors: *HMAS* Australia's *Seagull V exhibited on "B" gun deck. The wing-fold arrangements can be clearly seen, with the locking latches and pins positioned in line with upper and lower main spars, the removalbe interplane jury struts and the strut between lower mainplane locking latch and undercarriage leg.*
(Photo: Supermarine; ref. 5469/9 via Air-Britain archives)

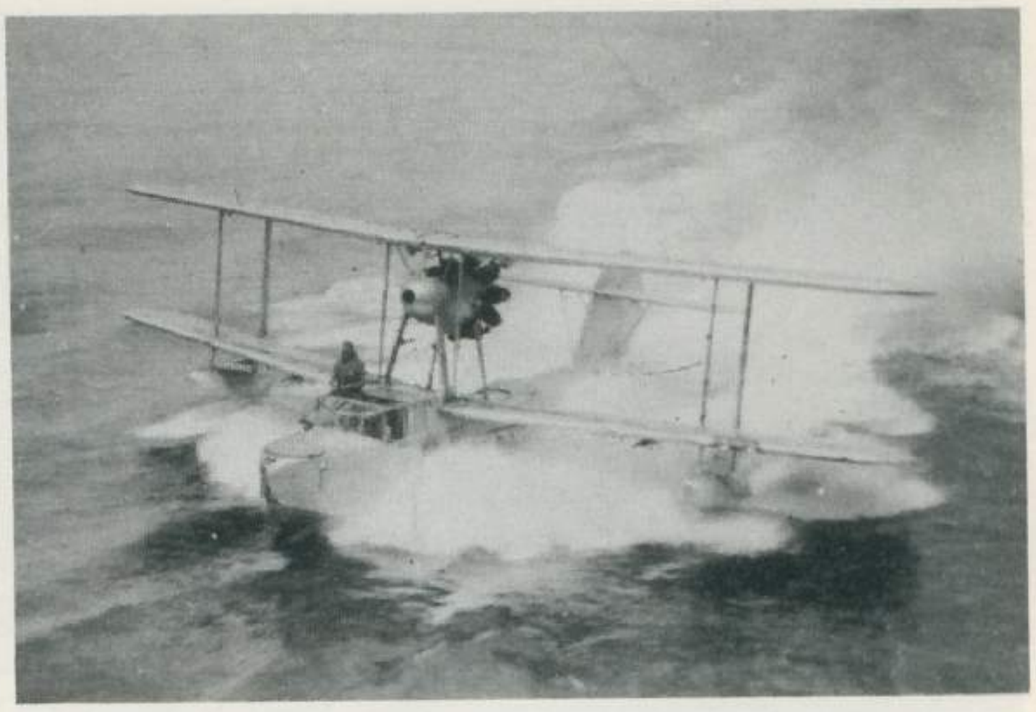




"Up and down, and to and fro": Liverpool's *L2274 towing a banner target for the benefit of the ship's AA armament. The fitting of the towing arm-and-winch was a straightforward matter for the Flight ground crew. The arm projected out of the starboard cabin window, while the winch and cable gear were fitted on the port side of the cabin, displacing the Observer.* (T. S. *Courageous*)

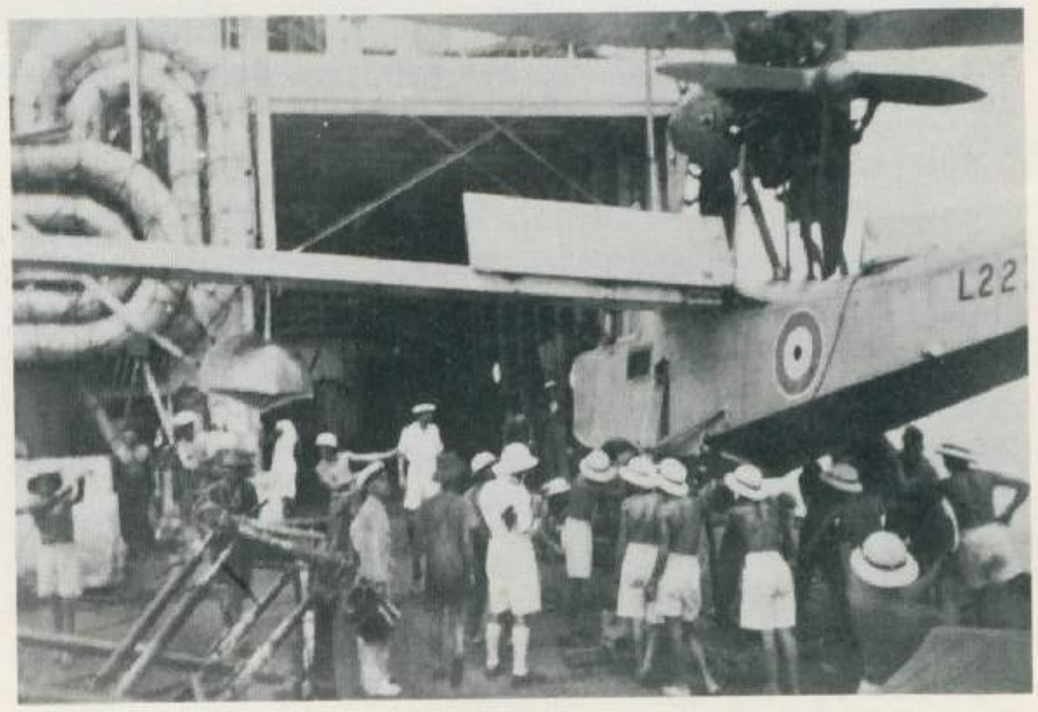
L2213 is swung inboard after landing. Note that the main undercarriage has been removed and the wheel-wells faired over. Operating in the distant waters of the China Station, as Cornwall *was, the cruisers had few airfields to which to disembark their aircraft, and the reduced weight and drag added significantly to the radius of action of the Walrus.*
(T. S. *Courageous*)





L2274 taxies at speed, a crew-member standing beside the pilot prior to climbing up on to the upper mainplane for hooking-on.
(T. S. *Courageous*)

The Walrus is lowered on to a launching trolley prior to the aircraft being manhandled into HMS Liverpool's *starboard hangar. Note that the inboard flaps fold* upwards *on the Walrus, whereas those of the Seagull V fold down to lie flush along the lower surface of the mainplane: as HMAS Australia's Seagull V illustrates on the previous page.*
(Photo: T. S. *Courageous*)



the amidships mounting could be adapted for a twin-yoke fitting. The original weapons load was to consist of four 100-lb. anti-submarine (A/S) bombs, carried below the lower mainplanes between the wheel wells and the stabilising floats, as well as eight 20lb high-explosive bombs on Light Series carriers between the A/S bomb hard-points. Bomb-aiming was either by the pilot, using little more than experience and intuition, or by the Observer using a portable bomb-sight which could be mounted on the starboard side of the bow hatch.

The main aircraft slinging point was in the upper wing centre-section, access being gained by pegs on the outboard sides of the forward nacelle legs. Either the Observer or the TAG mounted to the centre-section after a water landing, secured himself to an eye-bolt in the wing leading-edge – to prevent slipping into the propeller disc – and passed the patent quick-release gear attached to the hook of the crane through the eye of the slinging point. This procedure was straightforward enough in good weather conditions in a calm sea, but in conditions in which the amphibian could, and often did, operate, hooking-on was an occasion for uncomfortable high drama.

The Seagulls built for the RAAF were fitted with Handley Page-Lachmann slats ("slots") in the leading-edges of the upper mainplanes. But, even without these, the aircraft possessed a genuine STOL capability, and they were omitted from the RAF/Royal Navy Walrus variants. An arrester hook was never fitted; nor was one really needed.

SERVICE TRIALS

Prototype construction began in 1930, but the Seagull V was competing with other aircraft for the attentions of Supermarine's Woolston factory work-capacity. Not until the RAAF representatives in the United Kingdom had put considerable pressure on the company and the RAF was construction hastened. Even then the Seagull V did not make its first flight, from Southampton Water, until June 21 1933. Just five days after this event, and following preliminary trials by the manufacturers, the Chief Test Pilot of the Vickers Group, Captain J. F. "Mutt" Summers, took the aircraft, with the provisional registration "N.2", to the Society of British Aircraft Constructors Open Day at Hendon Aerodrome, London. There, on June 26, "Mutt" Summers gave a display of aerobatics which impressed the multitudes and the professionals alike, and which was totally unfitting to the sedate flying-boat image. The Seagull returned to Woolston for the completion of Supermarine's trials and on July 29 it was flown to the Marine Aircraft Experimental Establishment (MAEE), Felixstowe. The next 17

months were passed in testing and trials, ashore and afloat.

The Air Ministry establishments and test pilots established its air and water-borne characteristics, made appropriate criticisms and followed the manufacturer's rectifications with approval. The Royal Navy, acting as a "programme manager" for the Australians, took the aircraft to sea in the battlecruiser *Repulse*, in which N.2 was loaned to No 444 Flight RAF and flown by an all-naval crew – Lieutenants C. John and W. Couchman.[9] This cruise, in early 1934, was followed during the autumn by three weeks aboard the battleship *Valiant*. Landings in 30-knot winds and six-foot waves off the Kyles of Bute demonstrated the Seagull's exceptional hydrodynamic qualities, and the ever-exciting underway recovery was practised, with the ship making up to 13 knots through the rough water.

Little modification was required in the light of the trials. The outboard floats needed a little attention to improve their planing qualities, splash deflectors were fitted to the cabin windows, which were enlarged, and the internal arrangements were altered. As a naval aircraft, it had, in general, impressed the aviation personnel of the Fleet, many of whom had shared the mistrust of the small amphibian, engendered by the Seagull III a full decade before. After a final round of trials at the MAEE, prior to which the Seagull had been allotted the serial K4797, the prototype was handed over to the RAF for Fleet Air Arm service on 1st January 1935.

INTO SERVICE

Highly satisfied with the results of the naval trials, the RAAF ordered 24 Seagull Vs for use as the standard catapult spotter-reconnaissance aircraft for the RAN's *County* and *Leander*-class cruisers, as well as for *Albatross*' squadron. These aircraft entered service during 1935 and 1936, the first – A2–1 – embarking in HMAS *Australia* in June 1935. A few joined their ships in the UK, but the majority were shipped direct to Point Cook, Victoria, where they formed the main equipment of No 1 Seaplane Training Flight, RAAF, later renumbered as No 5 Squadron RAAF and moved to Richmond, NSW.

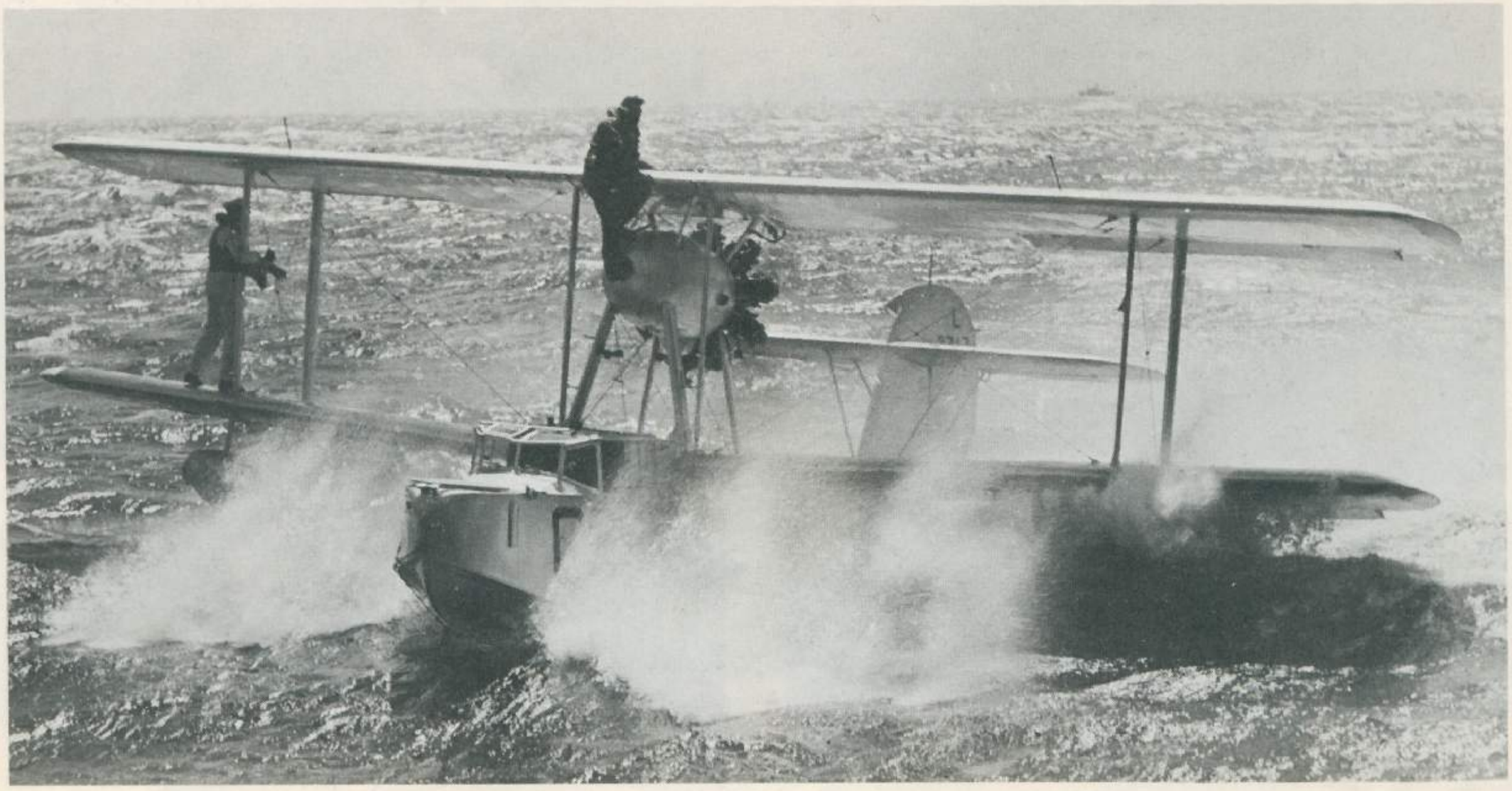
Not until May 1935 was an order placed on behalf of the Royal Navy. The Air Ministry had been lukewarm in its interest, mainly because it wished to avoid multiplicity of types in service. But the good waterborne qualities of the Seagull V, in comparison with the outgoing Fairey Seal and Hawker Osprey, and the recently ordered Swordfish and Seafox, was the deciding factor. The amphibian may have lacked the performance and load-carrying capabilities of the twin-float seaplanes, but it had a much more rugged structure and would stand up to the wear and tear of detached service away from sophisticated maintenance facilities far better than the converted landplane types.

In May 1935, 12 aircraft were ordered to Spec. 2/35, and a new name was found for the Seagull V – the "Walrus". Before the year was out, a further 36 aircraft had been ordered, in three batches. The *County*-class cruisers were to be modified to operate Walruses, and a new class, the *Towns*, of which eight had been ordered by 1935, had their "aviation arrangements" configured specifically for the type.

Meanwhile K4797, still known as a Seagull, had been gainfully employed since January 9, 1935. Embarked in the battleship *Nelson* with 444 Flight RAF, it was used as a latter-day "Admiral's Barge" for the Commander-in-Chief, Home Fleet – until October 4, 1935. On this day what many regarded as inevitable occurred; a pilot landed the Seagull with its wheels down . . . on the waters of Portland Harbour. To make matters worse, the C-in-C, Sir Roger Backhouse, was aboard the aircraft. Miraculously, all three occupants survived the accident with minor injuries; even the Seagull was

[9] Subsequently Admiral of the Fleet Sir Caspar John, G.C.B.; and Admiral Sir Walter Couchman, K.C.B., C.V.O., D.S.O., O.B.E.

In contrast with the calm seas enjoyed by the China Station flights, Southampton*'s L2317 taxies through sunny but choppy North Atlantic waters in July 1939. The TAG awaits the Thomas Grab while the Observer hangs onto the starboard interplane strut; this balancing act was often necessary in rough water, as the combination of torque and asymmetric thrust led to the port stabilising float "digging in" and increasing the already-considerable physical strain on the pilot.* (Photo: Air-Britain archives via Charles W. Cain)



rescued from the shallow water and, rebuilt as a Walrus, returned to front-line service some months later. Following this accident, an undercarriage warning horn was incorporated in the design – the first known application of this "aide-memoire".

EXPANSION – 1936–39

By the end of 1936, nine ships had recieved varying numbers (one to three) of Walruses, and as new cruisers were added to the Fleet and older units modernised the Walrus became, at least numerically, the second most important type in naval front-line service. By August 1939, 26 shipboard flights with the Fleet possessed between them exactly 45 Walruses, while the five RAN cruisers each had one Seagull V embarked.

During the three years, considerable experience had been gained in operating the amphibians, in all parts of the world, ranging from mountain lakes in the Andes to the Yangtse at Shanghai. Limited experience of Walrus operations in wartime operations was gained by *County* and *Town*-class cruisers serving with the Home and Mediterranean Fleets on Neutrality Patrols during the Spanish Civil War. Between 1937 and 1939, several of the ships used their aircraft to search for blockade-runners attacked, or claiming to have been attacked, by the forces of the warring factions.

FULL-SCALE PRODUCTION – WOOLSTON & COWES

The original three-phase order for 48 aircraft was overtaken before the end of 1936 by a single order for 168 aircraft in the "L"[10] series. These aircraft began to appear in 1937, and differed from the Seagull V and the "K" series in being powered by the up-rated Pegasus VI, which offered 775 hp for take-off, and 750 hp at 4,700 feet. Six of these later Walruses were exported – three to Eire and three to New Zealand and a further export order was for two Seagull Vs for the Argentine Navy, for their new training cruiser *Argentina,* built at Barrow and bearing a family resemblance to the Royal Navy's *Towns*.

[10] The author's list of serial numbers appears under "Seagull V and Walrus I Production Details" on page 47—Editor.

Colour illustrations

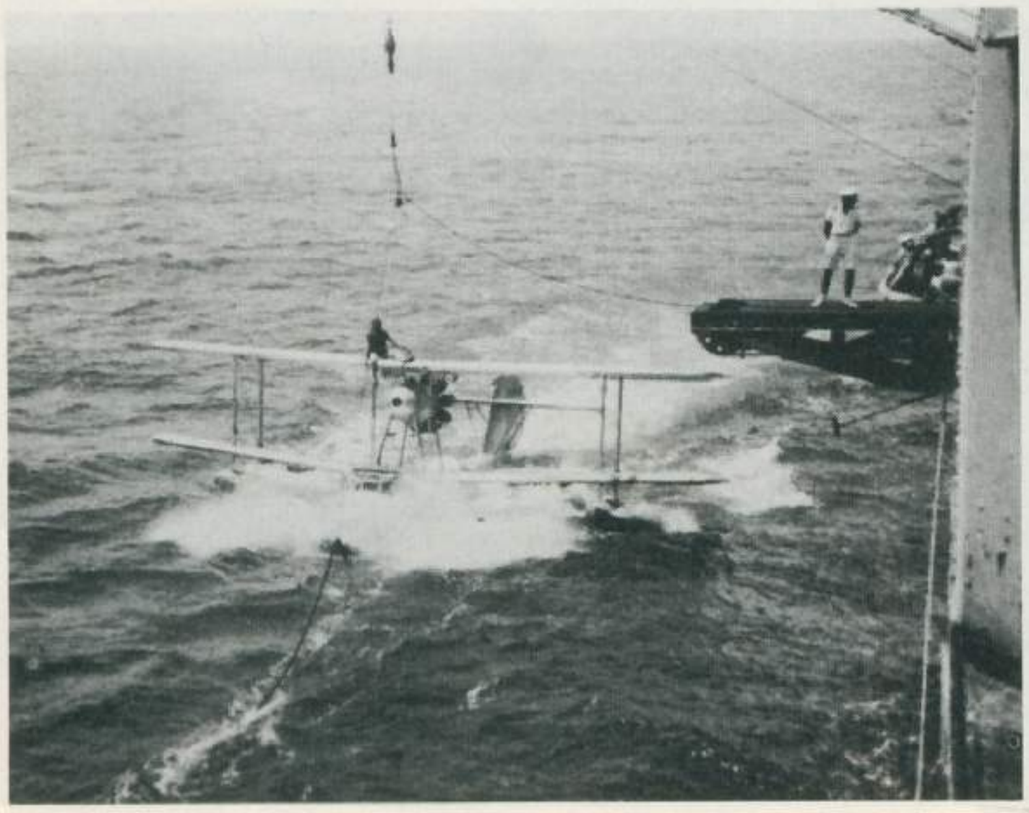
1. The second production Seagull V, embarked in HMAS *Sydney* in November 1935.
2. HMS *Birmingham,* Fourth Cruiser Squadron, East Indies and China Station—1938–1940.
3. HMS *Belfast,* 18th Cruiser Squadron, Home Fleet—1943.

The final pre-war order was for 50 aircraft in the "P" range, but immediately after the outbreak of War, larger orders were placed, in several batches, not only with Supermarine, but, predominantly, with Saunders-Roe Ltd, whose factory was at Cowes, on the Isle of Wight. The latter firm had gained considerable experience of metal-hulled flying-boat construction with the RAF's Saro London – a design contemporary of the Seagull V – and after Supermarine had completed 15 Walruses with "R" serials during 1940, the sub-contractor continued to produce the type while the parent firm concentrated on fighter production.

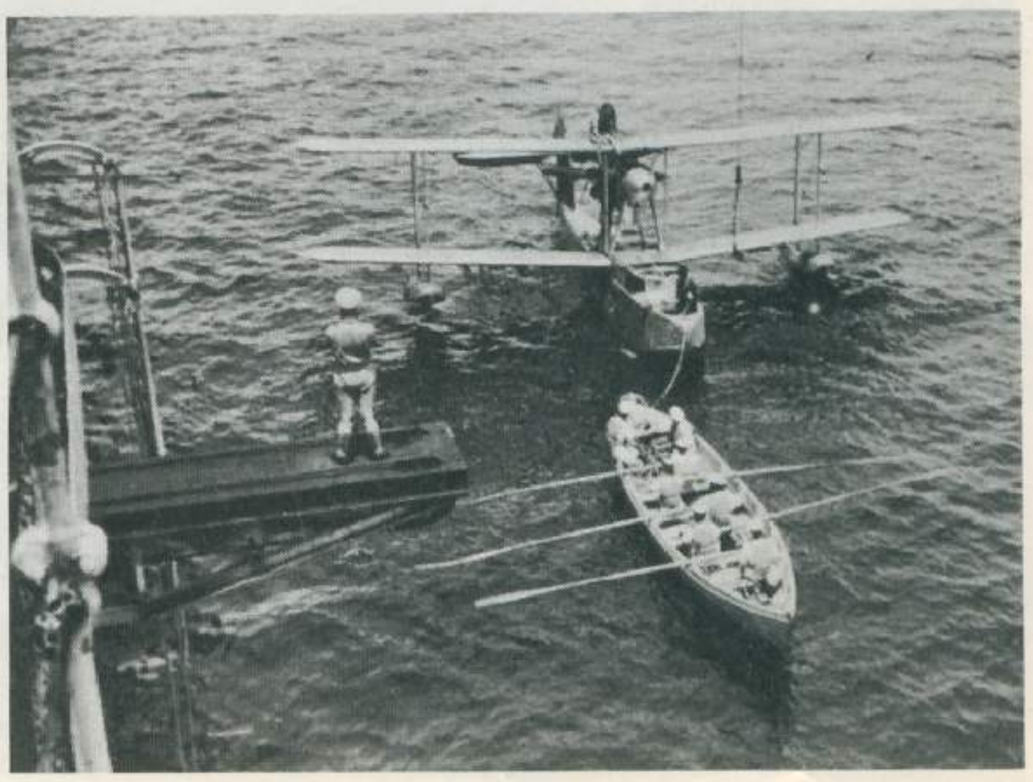
A few minor production modifications were made to the Walrus I by Saro, but the most significant change, as far as the aircrew were concerned, was the substitution of a pneumatic tyre on an alloy tail wheel for the original all-metal wheel. This may have been a minor change as far as the builders were concerned, but to the aircrews, accustomed to the din experienced when landing on a metalled runway in a reverberating enclosed hull "with the delightful acoustic qualities of a bucket being struck by a stick", the change was most welcome.

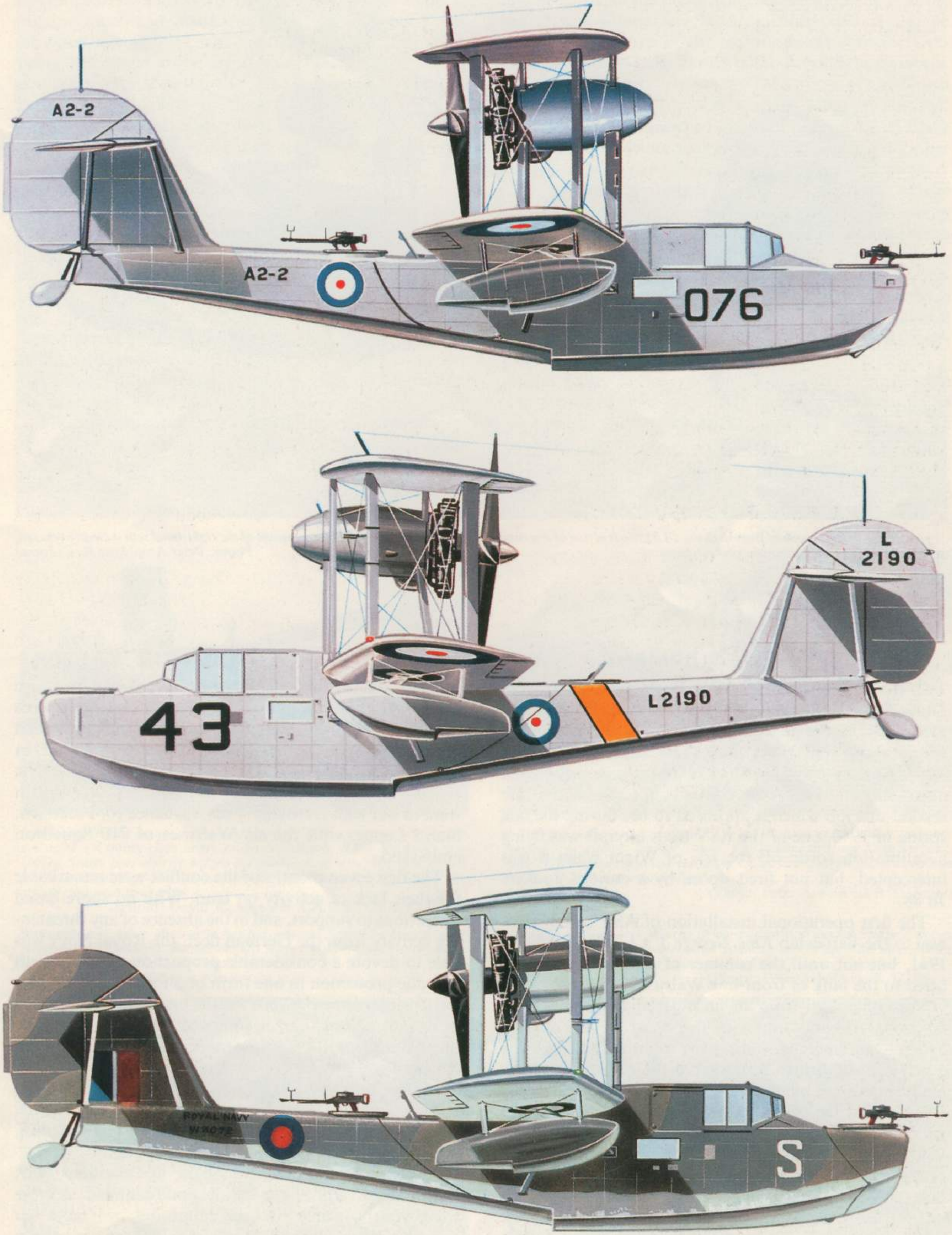
Saro went on, during 1941, to develop and build the wooden-hulled Walrus II, but by the time that production of the Mark I finished at the end of that year, the firm had delivered 270 metal-hulled Walruses to add to the 281 built by Supermarine.

L2260 taxies up to the Thomas Grab—the patent quick-release (and attachment) gear—suspended from the crane of an unknown Town*-class light cruiser.* (Photo: Peter Arnold via R. C. Jones)



Ancient & Modern: *Its engine stopped, this Walrus is towed up to the port side of a* Town*-class cruiser by the sea-boat—a pulling whaler—whose empty falls can be seen immediately aft of the extended catapult track.* (Photo: Peter Arnold via R. C. Jones)

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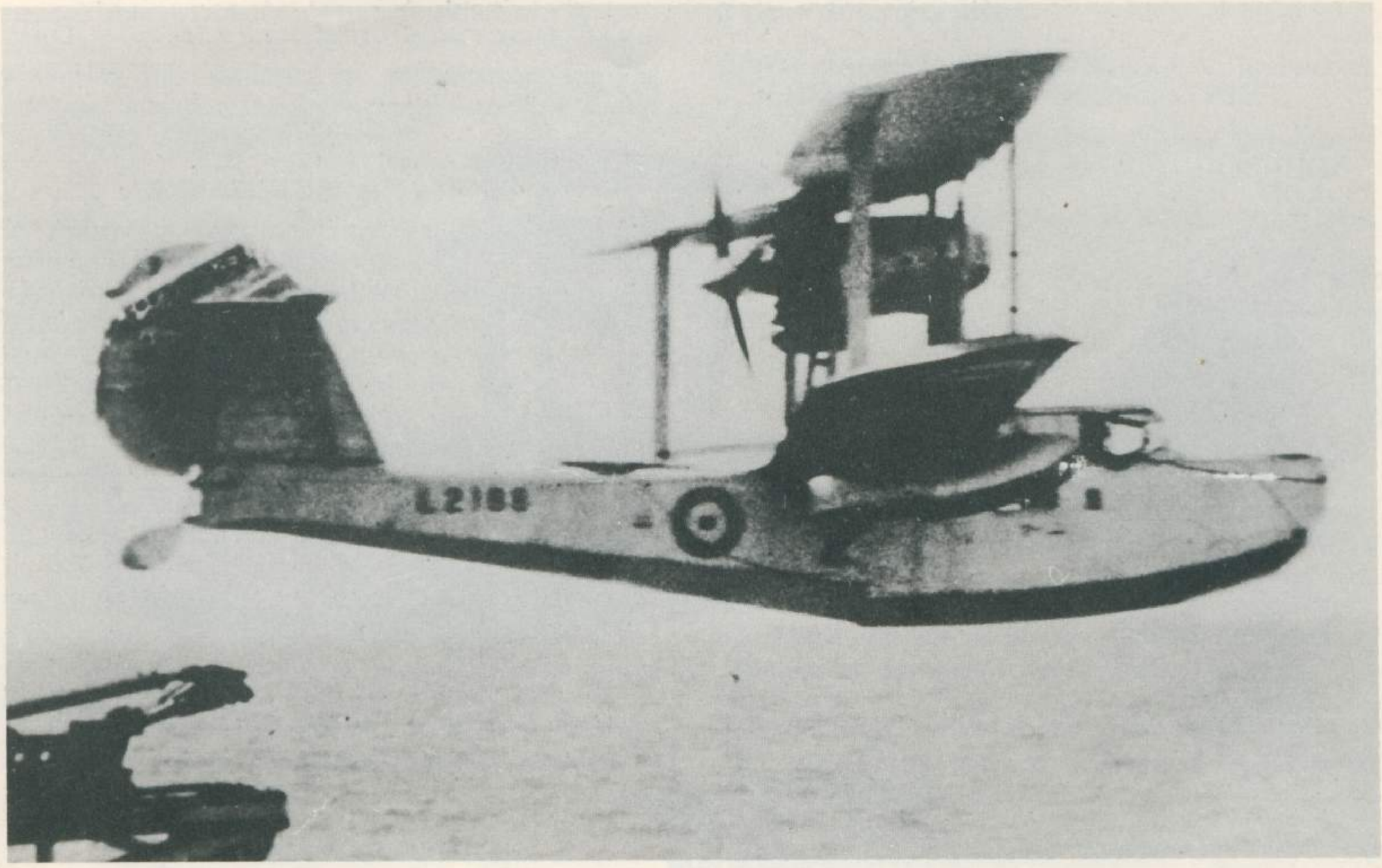


A poor-quality photograph of Birmingham's *L2189 a fraction of a second after leaving the catapult. The occupant of the right-hand seat is clearly relaxed, with his arm stretched along the cockpit coaming.* (Photo: Peter Arnold via R. C. Jones)

SPECIAL EQUIPMENT

Two trials "fits" installed in Walruses deserve mention. During the autumn of 1939, a pair of them joined a Swordfish at the RN Air Station, Lee-on-Solent for special radio trials; they were there fitted with the first Air-to-Surface-Vessel (ASV) radar sets to be installed in naval aircraft. This trials role was not always the safe second-line job which it appeared to be: during the late spring of 1940, one of the ASV trials aircraft was flying a calibration sortie off the Isle of Wight when it was intercepted, but not fired upon, by a curious Junkers Ju 88.

The first operational installation of ASV in a Walrus was to the battleship *King George V*'s L2336, in March 1941, but not until the summer of 1942 was the radar fitted to the bulk of front-line Walruses.

The other "fit" was an improvised mounting for a 20-mm Oerlikon cannon in the bows of L2271. The E-boat had emerged, during the months following the evacuation of British forces from the continent, as the major nocturnal menace to coastal shipping, and it was thought that the combination of the slow-flying Walrus with the shell-firing weapon, used in co-operation with RN Coastal Forces, would provide an answer to the problem. Evaluation during the autumn of 1940 showed that the Walrus was a stable firing platform, but that the muzzle flash during night firing was sufficient for the pilot, aiming by means of a ring-and-bead sight, to lose sight of even an illuminated target after the first few rounds had been fired. There were hardly sufficient Walruses for naval needs, and the cannon were urgently required by the RAF, so the idea was shelved.

WORLD WAR 2 – COMBAT CAREER

In addition to the cruiser flights, Walruses were also embarked in one monitor—*Terror*—and in the seaplane carrier *Albatross* at the outbreak of War. *Albatross* had been taken over by the Royal Navy a year before, in part-exchange for the RAN's *Leanders*, and on 31st August 1939—four days before the French and British went to war with Germany—she was sailed for Freetown, Sierra Leone, with the six Walruses of 710 Squadron embarked.

The first seven months of the conflict were remarkable for their lack of activity on land. With no shore-based operations to support, and in the absence of any threatening activity from the German fleet, the Royal Navy was able to devote a considerable proportion of its strength to trade protection in one form or another. The cruisers were primarily responsible for the protection of shipping in distant waters, and it followed that their Walruses (in all but a handful of ships) saw extensive service during the hunt for surface raiders and blockade runners. All available aircraft carriers were also out sweeping the oceans, and HMS *Ark Royal*, operating in the Central and South Atlantic, had embarked two Walruses, attached to 810 Squadron.

At the Battle of the River Plate, in December 1939, both *Exeter* and the New Zealand-manned *Achilles* were Walrus ships, but the latter did not have her aircraft embarked, and *Exeter* was obliged to jettison hers (K8341 & 8343) after she had been hit and set on fire by 11in shells. Valuable as the aircraft might be in action, if they were not launched in good time then their fuel could jeopardise the safety of the ship. Time and

again, valuable but potentially lethal aircraft had to be thrown away—literally, not only by the Royal Navy, but also by other navies with seaplane-equipped ships.

The peak of activity by the German surface raiders, regular units and auxiliaries, and their supply ships occurred during 1941, the high point of the campaign being the single sortie by *Bismarck* in May. Walrus-equipped ships were on the scene at every stage of the hunt for and killing of the battleship, but *Suffolk*'s one aircraft was damaged by a gust before it could be launched, *Prince of Wales* had to jettison one of hers after she came into action with *Bismarck*, and by the time that *King George V*, *Sheffield*, *Renown*, and *Dorsetshire* caught up with the quarry, the weather was too foul for recovery.

Between March and December 1941, Walruses from nine cruiser flights played an active part in the destruction of eight and the capture of three auxiliary raiders and supply ships. On the other side of the coin, L2177 was embarked in HMAS *Sydney* when the light cruiser fell in with, and was destroyed by, the raider *Kormoran;* the latter did not escape, for she was set on fire during the brief action and had to be abandoned.

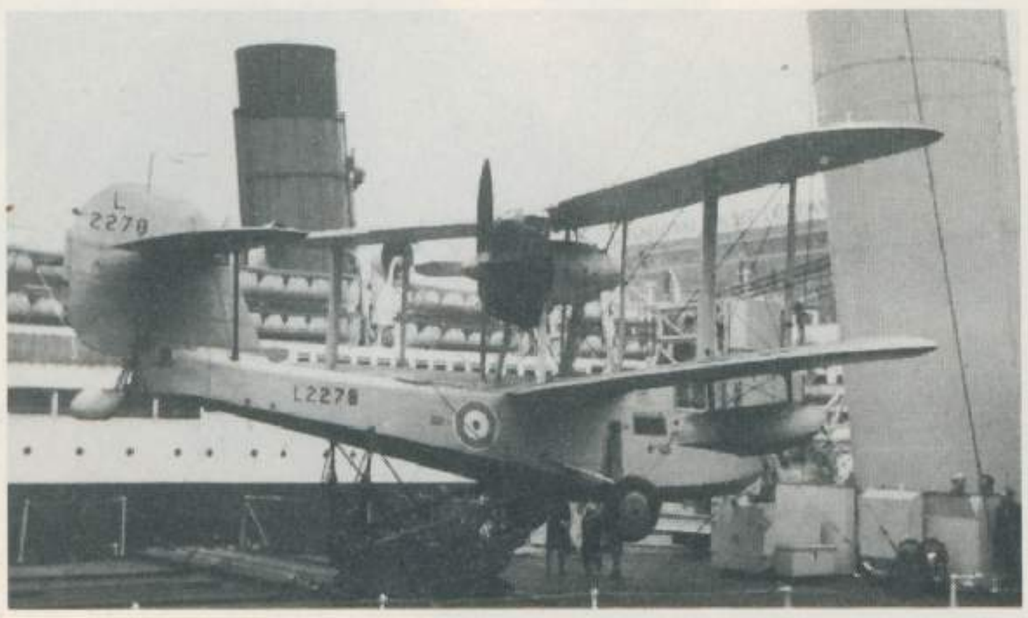
The raider menace died away during 1942, and during the following year, the escort carriers began to appear and their aircraft were able to take over the task of ocean escort and searches.

THE WALRUS WITH THE FLEET

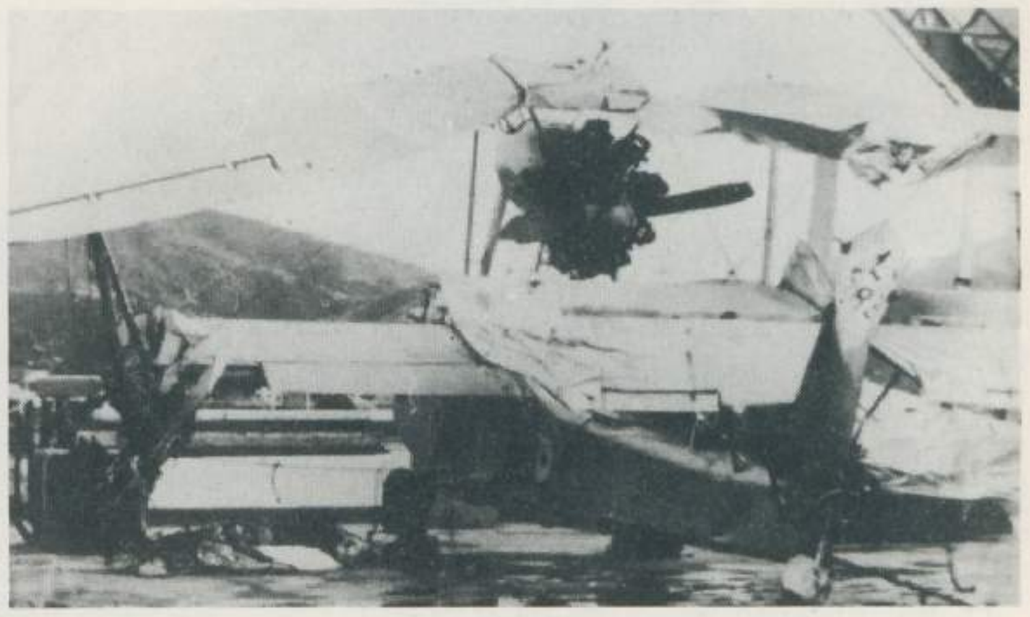
"Action Observation"—shadowing the enemy and spotting for the guns of the Fleet during an engagement, had been one of the major roles foreseen for the Walrus, but it was comparatively infrequently that it was so employed. In none of the major actions with the Germans or Italians—the Battles of the River Plate, Calabria, Cape Spartivento, "*Bismarck*", Matapan, or the North Cape, did the Walrus play a significant part. Indeed, they were only launched during the battles of Cape Spartivento (*Renown* and *Manchester*—27th November 1940) and Matapan (*Gloucester*—28th March 1941).

It was during inshore operations—support of the Army, amphibious assaults, bombardments of enemy positions—that the Walrus' talents were really shown in their best light. Additionally, they flew endless anti-submarine patrols (ASPs) when the Fleet was at sea, releasing carrier aircraft for search and strike, and were used for special tasks—clarifying confused tactical dispositions and movements, or liaising between independent or scattered forces.

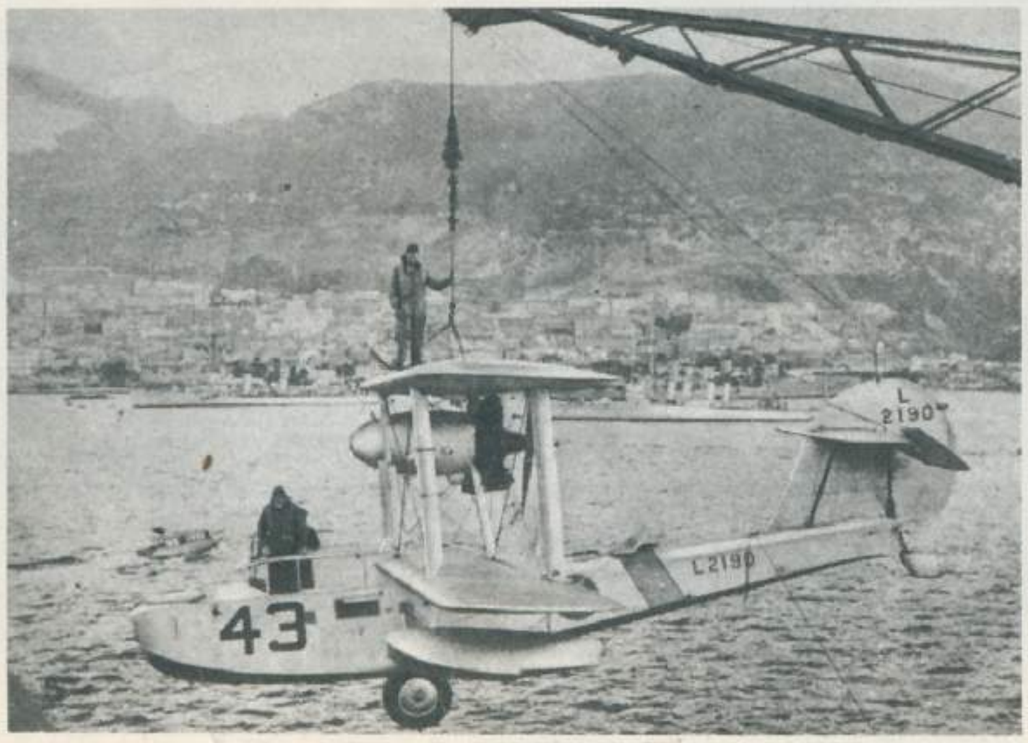
The many facets of the Walrus' usefulness were demonstrated to the full during the Norwegian campaign of April to June 1940. So valuable did the services of the ships' flights prove in a theatre of war where shore airfields were so few, but sheltered stretches of water so abundant, that a special squadron—701—was formed



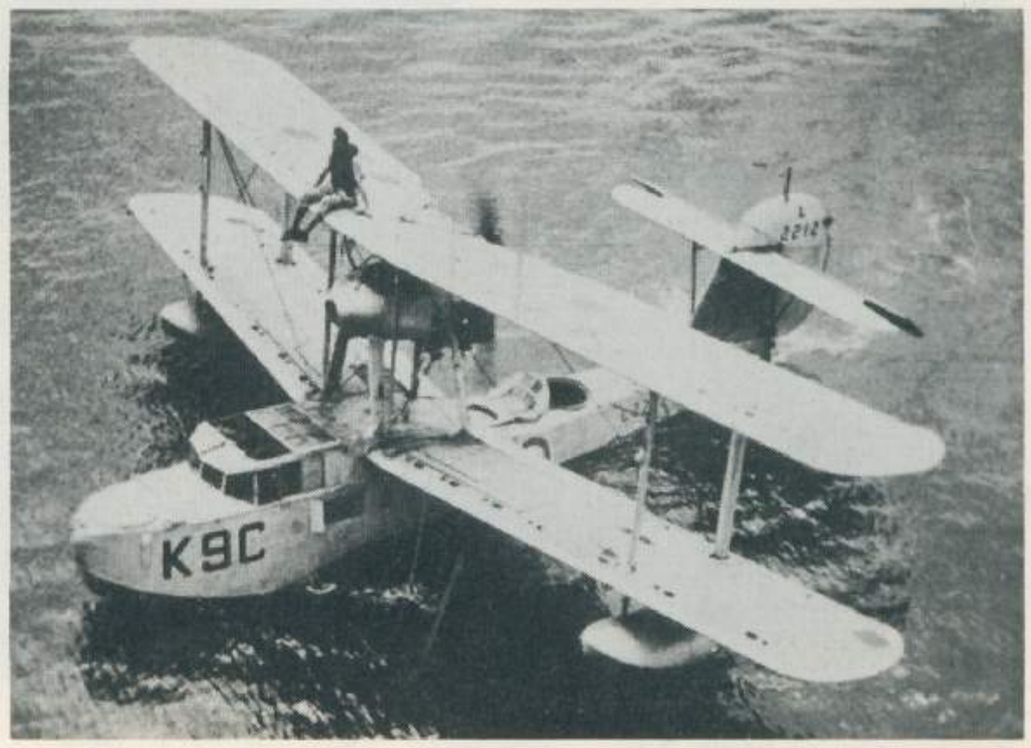
Launching trolley turned to face forward, L2278 is put on view during a visit by a County*-class heavy cruiser (probably HMS* Berwick*) to a United States port shortly before the outbreak of war. The two sets of tracks leading aft to the hangars can be distinguished to the left of the athwartships catapult track.*
(Photo: David W. Menard, A.A.H.S., via R. C. Jones)



L2189 in a rather sadder attitude: During the summer of 1939, it "ground-looped" (or, rather, "water-looped") on landing in Hong Kong harbour. Damaged beyond the resources of the China Station's seaplane Squadron —715—L2189 was cannibalised.
(Photo: Peter Arnold via R. C. Jones)



Birmingham*'s other Walrus is hoisted inboard against a backdrop of Hong Kong (Victoria). Behind the US Navy "4-piper" destroyer can be seen an Australian* Leander*-class cruiser.*
(Photo: Air-Britain archives via Charles W. Cain)



An undercarriage-less Walrus of an unidentified second-line unit taxies at slow speed on calm water prior to being picked up. This aircraft has the wind/water deflectors fitted ahead of the Observer's window.
(Photo: Peter Arnold via R. C. Jones)

HMS *Glouc*
Royal Navy
during the
phase of the
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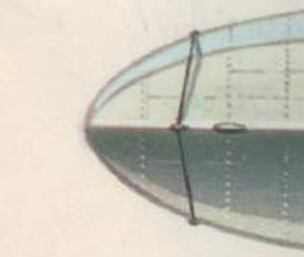
the Duchess



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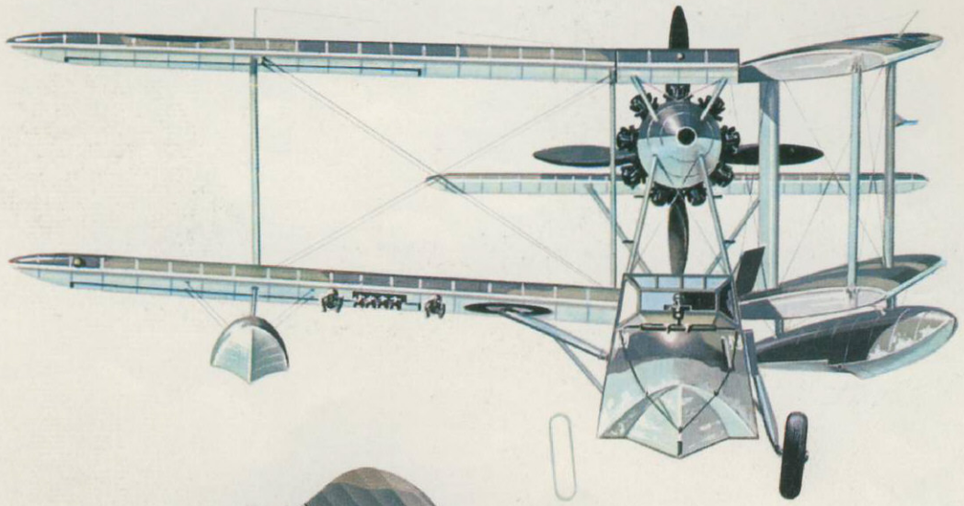
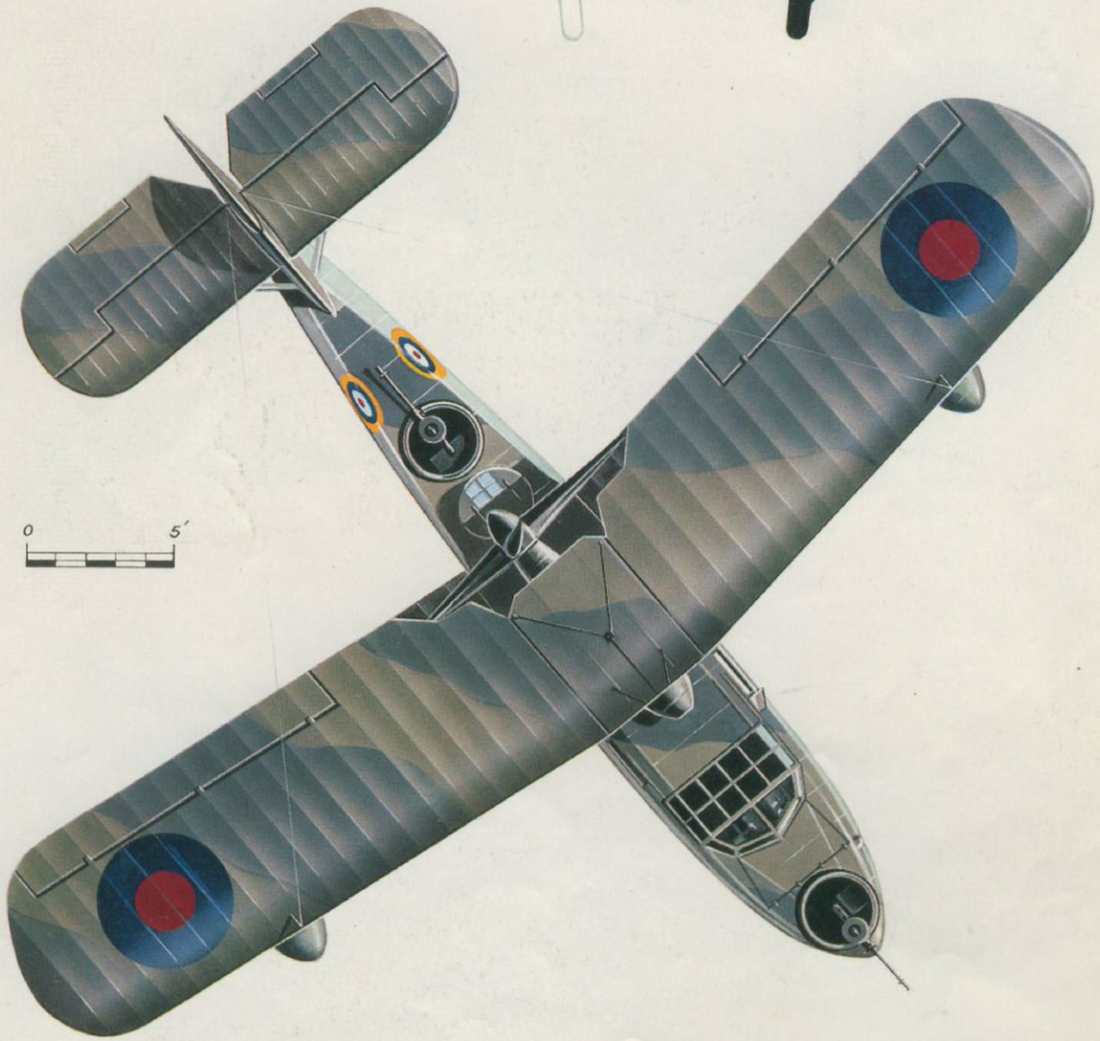
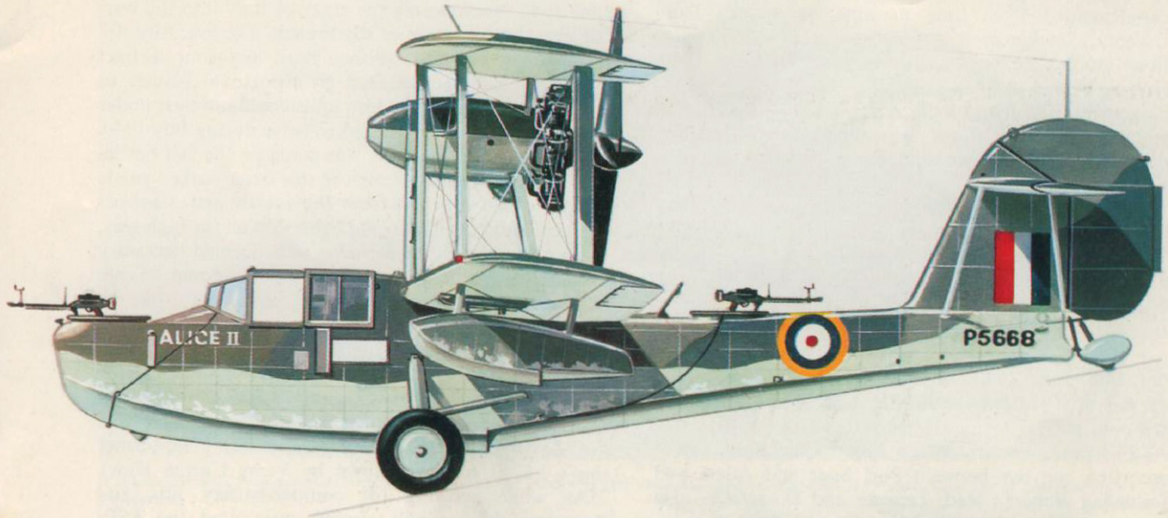
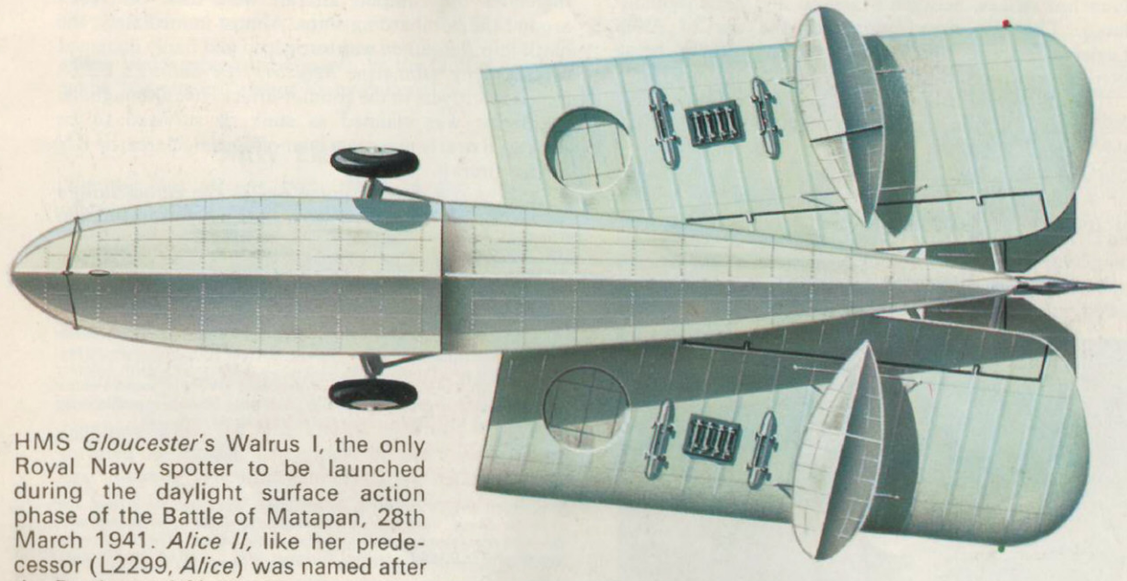
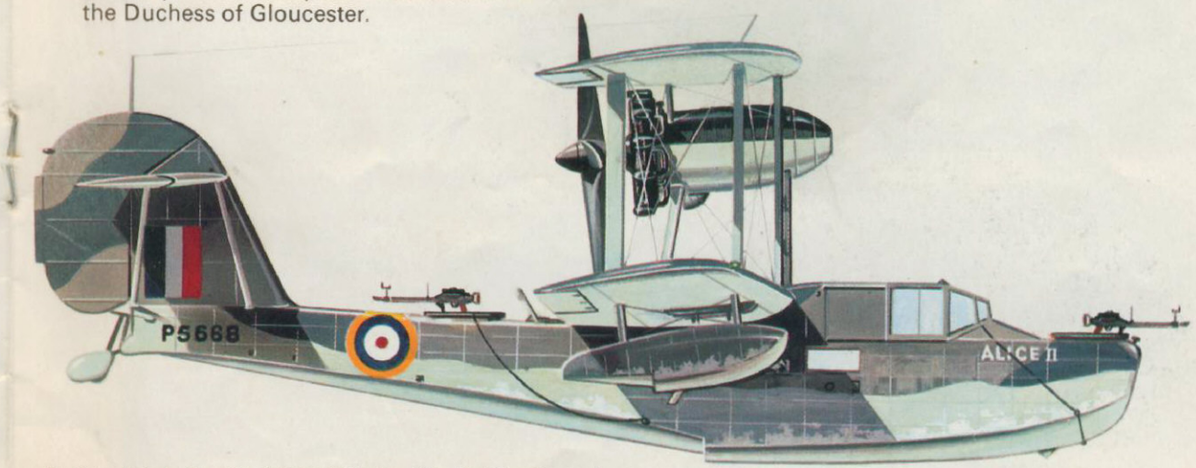


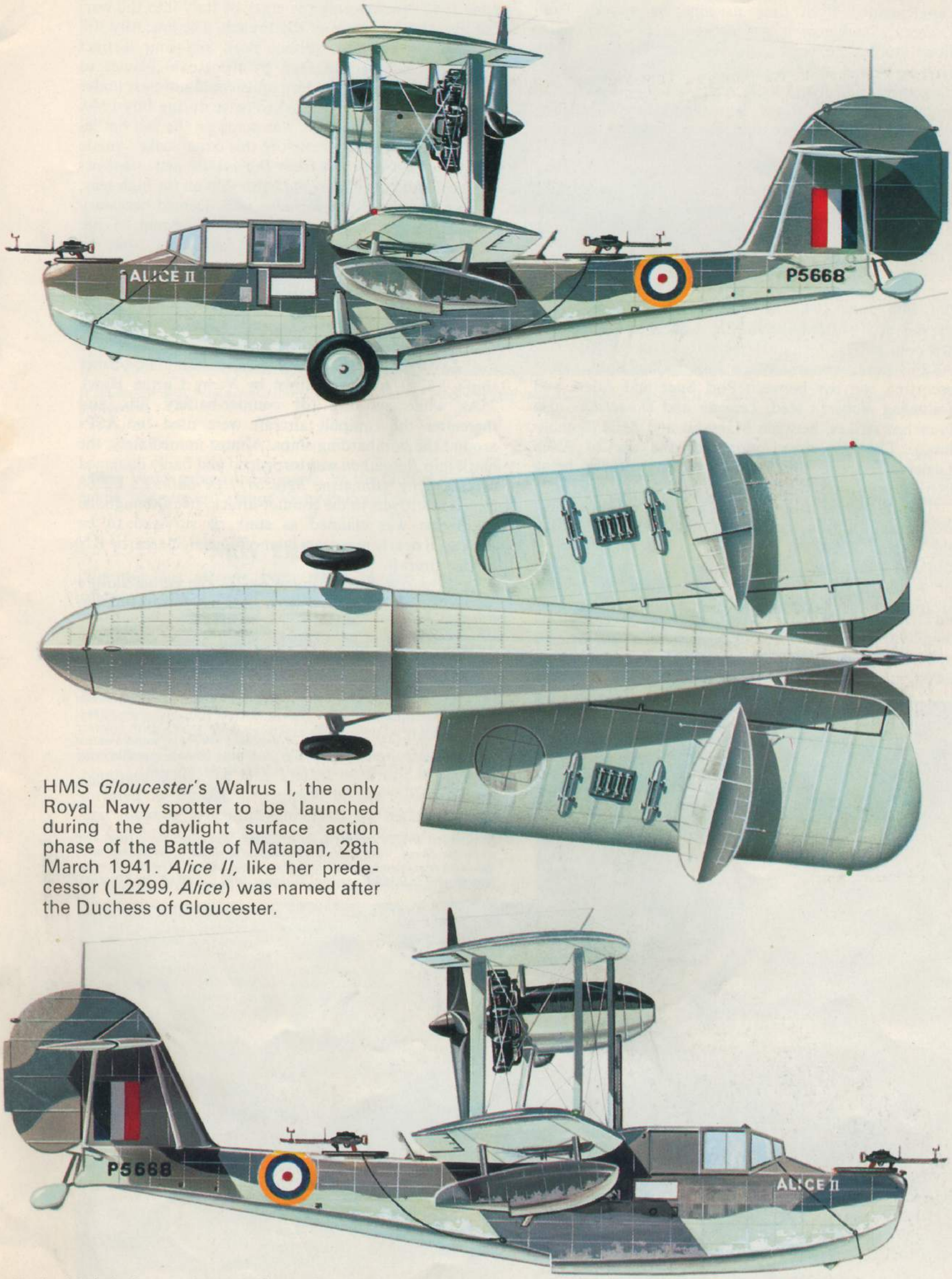






HMS *Gloucester*'s Walrus I, the only Royal Navy spotter to be launched during the daylight surface action phase of the Battle of Matapan, 28th March 1941. *Alice II*, like her predecessor (L2299, *Alice*) was named after the Duchess of Gloucester.





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and based at Harstad. The six Walruses of this squadron, supplemented from time to time by aircraft from *Glasgow*, *Southampton*, and *Effingham*, flew 250 operational sorties between 19th May and 7th June 1940, ferrying Allied military personnel, carrying out reconnaissances, and flying local ASPs. The finale, prior to embarking in *Ark Royal*, was a strike on an enemy-occupied village by five aircraft, all of which returned undamaged.

Only one of 701 Squadron's aircraft was lost—sunk at its moorings by splinters from a near-miss bomb. Two days earlier, on 18th May, *Devonshire*'s aircraft had been shot down by a Heinkel He 111 over Melangen Fjord—the first such Walrus casualty.

WALRUS STRIKES

On 14th June 1940—eight days after 701's morale-raising strike—HMAS *Hobart* used her "stand-off" weapon, L2321, to harass the Italians in the Red Sea. At this time, cruisers on the East Indies Station were escorting convoys between Port Suez and Aden, and following *Hobart's* lead, *Leander* and *Dorsetshire* also launched strikes, between Massawa and Zeila (Somaliland). The last-named pioneered the use of 250lb General Purpose bombs, all previous attacks being delivered with 100lb A/S bombs and 20lb HE bombs.

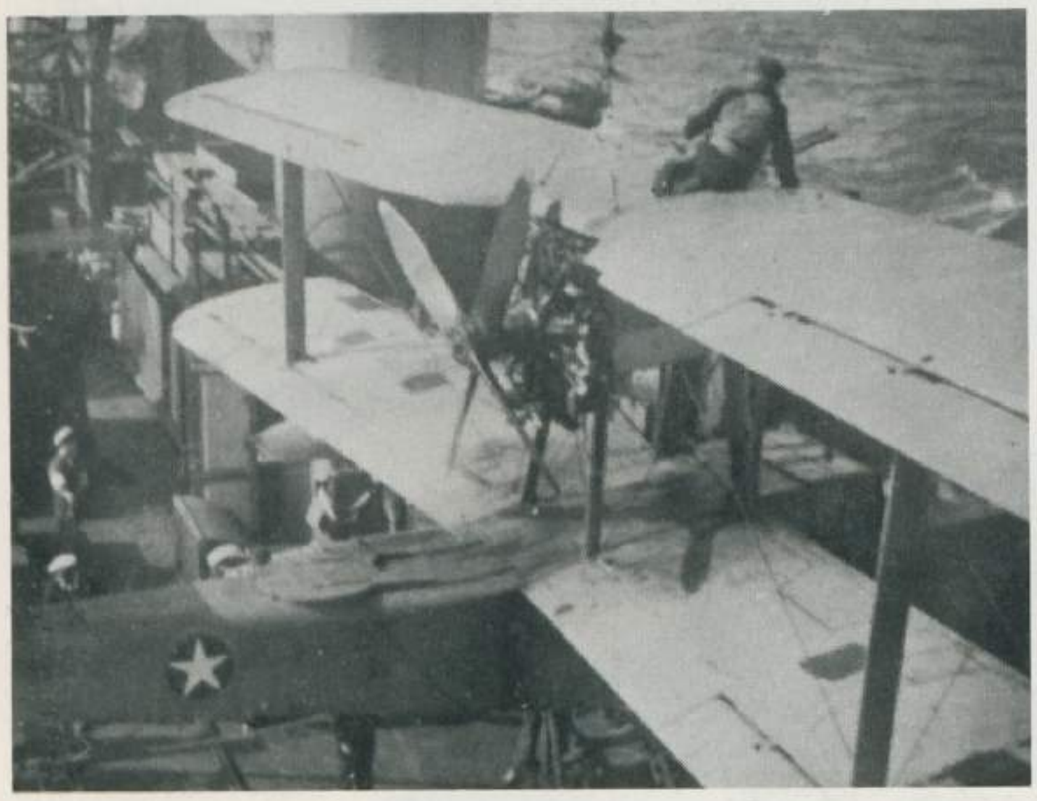
Targets varied from a beached submarine (which was missed) to troops caught in the open, and although the weight of bombs amounted to little more than a ton and a half, the general shortage of aircraft—Allied or Axis—in this forgotten corner made all demonstrations of air power of inestimable morale value.

OLD FRIENDS

June 1940 saw not only the entry of Italy into the war, but also the departure of the French. The late Ally still possessed a powerful surface fleet, and four distinct operations were undertaken by the Royal Navies to ensure that the more modern units could not pass under Axis control. Oran was attacked twice during July 1940, and a damaging air attack was made on the fast battleship *Richelieu* at Dakar. Before this latter strike—made by Swordfish, Walruses from *Dorsetshire* and *Albatross* had been used to shadow the battleship on the high seas.

A second attack on *Richelieu* was deemed necessary as the Admiralty was unaware of the extent of her damage. Accordingly, on 24th September 1940, a powerful force began to deliver air strikes and ship bombardments against the defences and shipping at Dakar. The battleship HMS *Barham* and three *County* class cruisers had five Walruses embarked between them and the aircraft from *Australia* and *Devonshire* were used to good effect during 24th and 25th. The former ship's L2247 was shot down by Vichy Curtiss Hawk 75As while spotting for counter-battery fire, and thereafter the catapult aircraft were used for ASPs around the bombarding ships. Almost immediately, the battleship *Resolution* was torpedoed and badly damaged by the Vichy submarine *Beveziers; Devonshire*'s L2268 joined destroyers in the counter-attack, but although the submarine was claimed as sunk, it survived to be destroyed nearly two years later off Diego Suarez, by RN carrier aircraft.

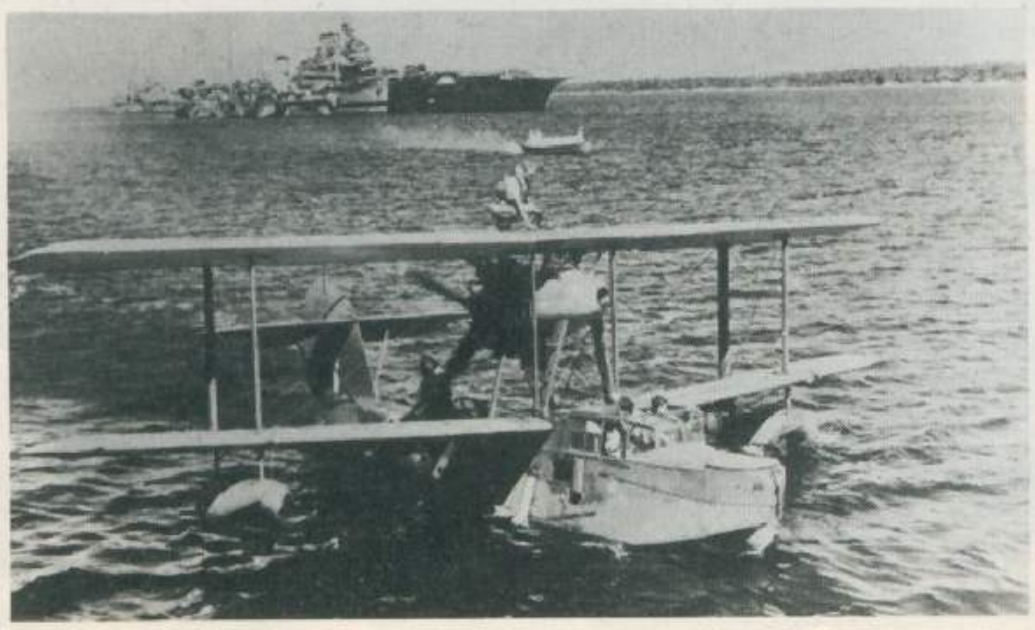
Devonshire's aircraft made up for the earlier failure on 9th November 1940, when it shared in the destruction

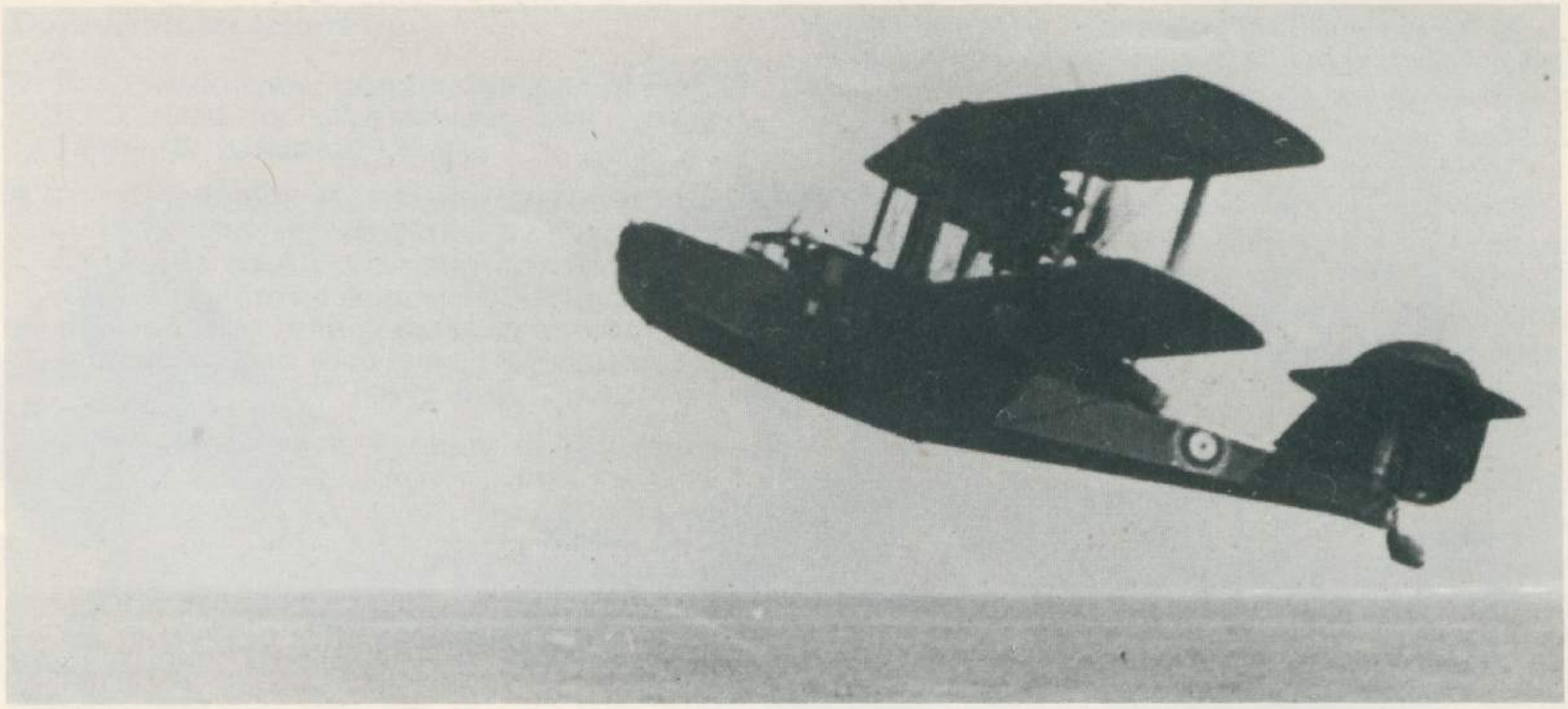


"Warpaint". *Out of place in this Profile, but illustrating the Operation "Torch" star as applied to the Walrus, is HMS* Cumberland's *P9561, the eighth Mark II, seen being lowered on to the trolley after recovery during the North African invasion in November 1942. Few wooden-hulled Mark IIs went to sea operationally, one other known example being* King George V's *Z1811, embarked briefly during early 1943.*
(F. A. A. Museum)

Bottom left *W2774 returns to the battleship* Warspite *after a local ASP in Indian Ocean waters. Note: depth-charge under lower mainplanes; the extra crew-member, and main wheels now "down". The carrier in the background is HMS* Illustrious. *Summer 1942.* (F. A. A. Museum)

Below *"C" of 700 (Mediterranean) Squadron at Fayid, in the Suez Canal Zone, prior to the fitting of ASV radar in the spring of 1942, but with the brackets on the interplane struts and the sockets in the leading edge of the upper mainplane. The full serial is indistinguishable, but the last three digits are —44G, from which it may be inferred that the aircraft has at least some of the internal ASV equipment.*
(Photo: via "Air-Britain Digest")





A catapult Walrus in an unusual attitude after launch. The starboard wing strut and upper leading-edge ASV aerials can just be observed in this 1942 photograph. (F. A. A. Museum)

of the Vichy submarine *Poncelet*, in the Gulf of Guinea, while "tidying up" minor Vichy colonial outposts.

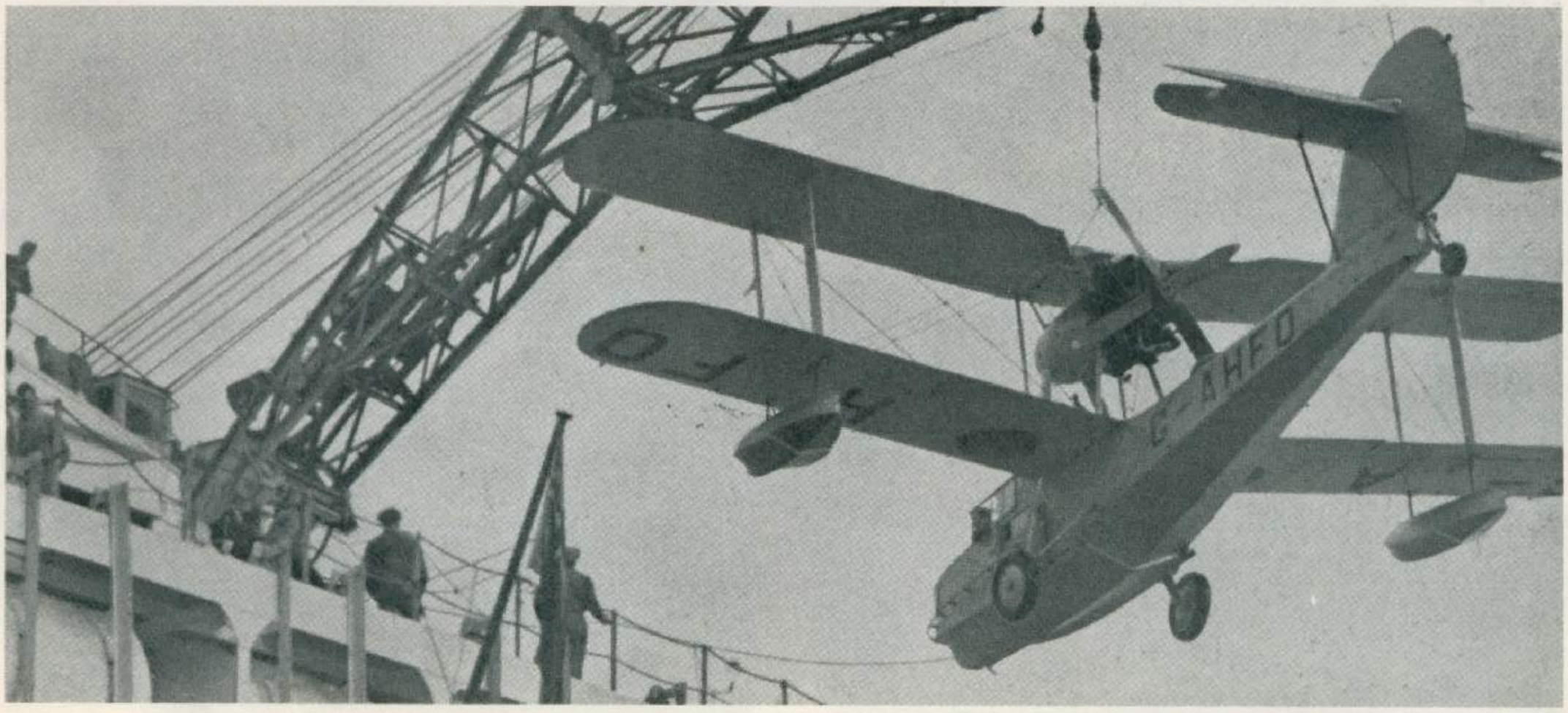
NEW ENEMIES

Mention has already been made of the "Red Sea offensive" by the cruiser Walruses. In the Mediterranean two independent Royal Navy commands were actively taking the war to the Italians. In the Eastern Basin, the Mediterranean Fleet gradually built up strength from July 1940, and by the end of the year, in addition to its two carriers, it possessed one battleship and seven cruisers equipped with a total of 14 embarked Walruses.

From 21st June until 4th September 1940, the Walruses (and Seagull Vs) spotted for a number of destructive bombardments, the best known of which were those directed at Bardia, in support of the Allied Army's first advance. When not embarked, the flights operated from Aboukir, near Alexandria, on local ASP missions. From October 1940, when the Italians invaded Greece, flights were sent ashore to Maleme in Crete to fly local patrols around Suda Bay. *Glasgow, Perth, Sydney, Gloucester* and *York* all provided at least one aircraft from time to time, and it was the first-named's Walrus which "enjoyed" the only incident: on 22nd January 1941, it was "bounced" by a Fiat C.R.42 fighter. This biplane fighter made four passes before being driven off by the Walrus' guns and AA from an armed trawler. The only damage sustained by the Walrus was four bullet holes in the upper mainplane.

The arrival of the Luftwaffe in Sicily and Libya totally altered the naval/air balance of power. In a series of reverses, punctuated by a few brilliant successes, the Mediterranean Fleet lost four cruisers sunk and two seriously damaged by air attack, as well as one cruiser and one battleship sunk, and two other capital ships

Walrus I, G-AHFO Snark *being winched aboard the whaling factory ship* S.S. Balaena *for spotting duties in the Antarctic.*



53.S.19

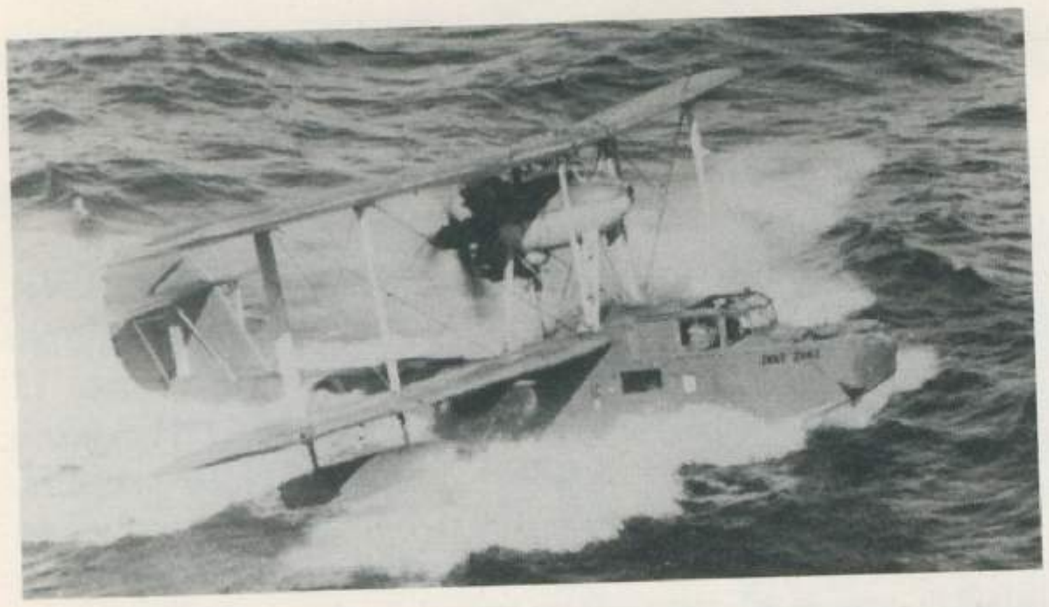
P

ROYAL NAVY
W3065

BOOJUM

UNITED WHALERS LTD LONDON
Ex H.M.S. Balaena

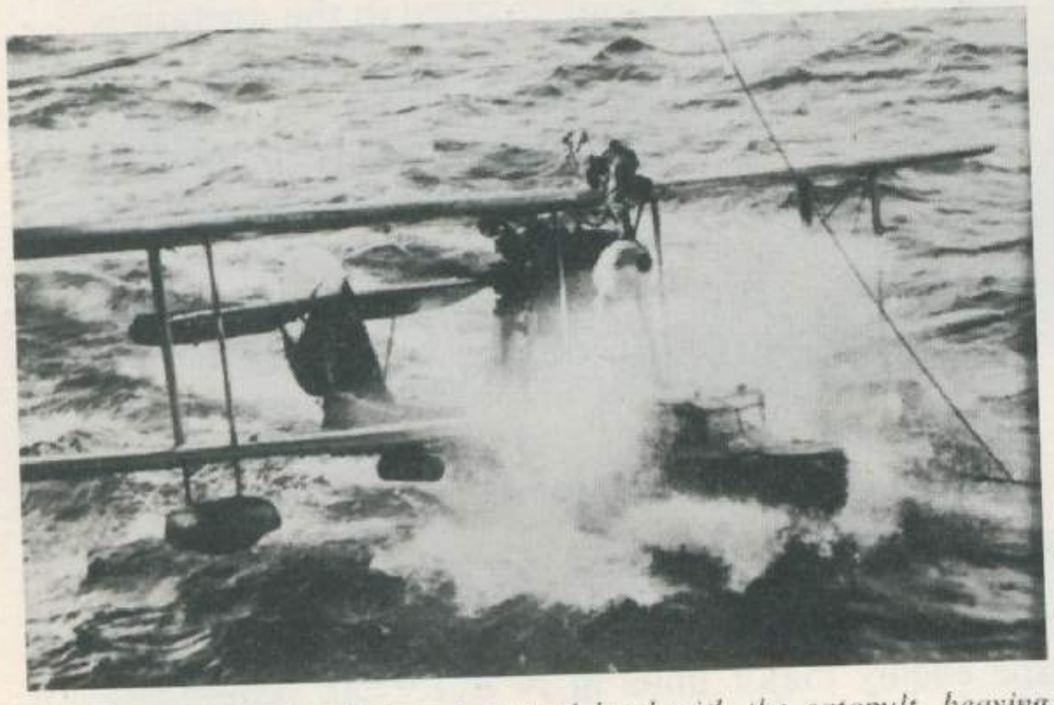
G-AHFL



An HMS Suffolk *recovery sequence. Recovery 1: "Just Jake" taxies up the port side of the cruiser, the crewman preparing to climb out to start the ritual.*

Recovery 2: The bow rope attached to a towing boom swung out from the ship, the crewman climbs on to the engine nacelle and secures himself to the leading edge of the wing. The aircraft is now being towed by the ship, with its engine still running.

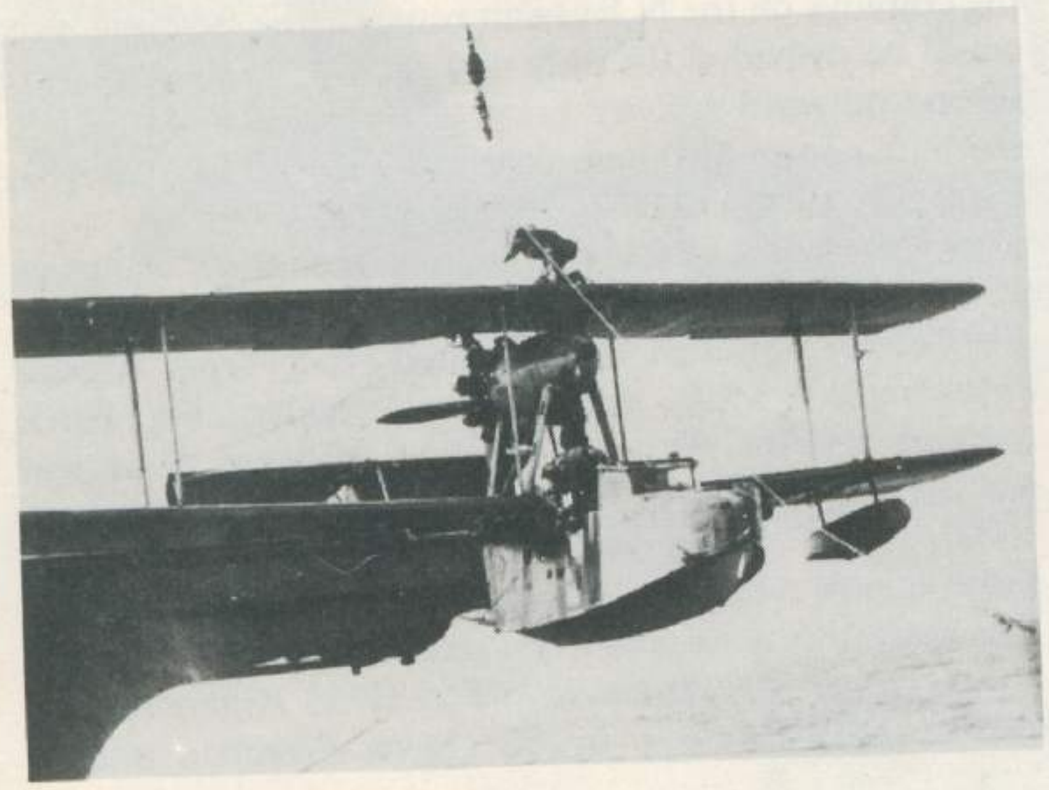
Recovery 3: Secured, the crewman climbs out of reach of the spray. The Grab is just visible at the edge of the picture, to his left.

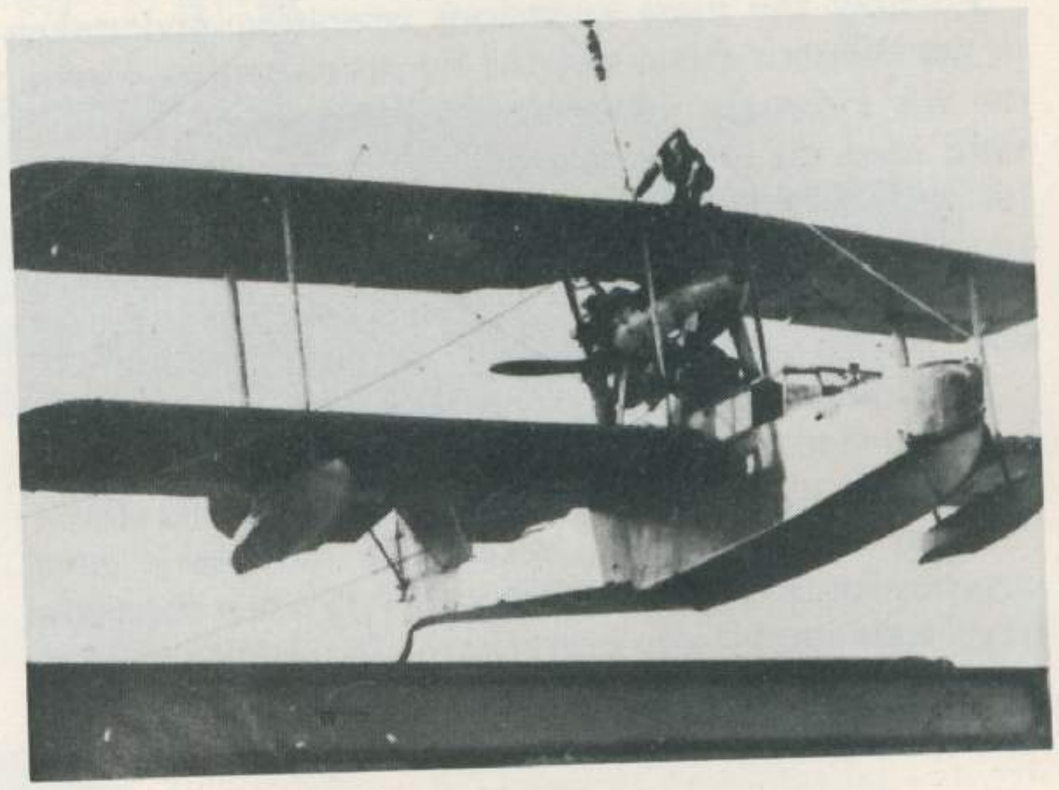


Recovery 4: As the Walrus is raised level with the catapult, heaving lines are thrown across and secured to steady the aircraft as it is swung inboard. The crewman catches one as the pilot secures another.

Recovery 5: "Just Jake" is swung inboard, pilot and crewman assisting the handling party on the forward lines.

(Photos: All F. A. A. Museum)





arrived at Archangel, where it was landed and abandoned on the quayside, where it disintegrated during the next Russian winter.

DECLINE

By the beginning of 1943, the end was in sight for the catapult aircraft in the Royal Navy. It was no longer necessary for engagements at sea, where radar could now give an accurate range for the opening of fire and could provide corrections by detecting the shell splashes. For shore bombardments, anti-aircraft defences in Europe made the spotting task suicidal for aircraft with less than fighter-class performance, as the US Navy was to discover when it lost several Chance Vought OS2U Kingfishers during the invasion of Sicily in July 1943. Thereafter, spotting for major amphibious assault bombardments in Europe was carried out by fighters—Spitfires, Seafires, North American P-51A Mustangs, and Grumman Hellcats and Wildcats.

The opportunity to remove up to 30 tons of highly volatile AvGas and the inflammable aircraft was gladly taken, and the space thus made available was used for the fitting of additional automatic AA weapons, while the hangars (where fitted) were used to accomodate the enlarged ships' companies.

"Amphibious Boat Reconnaissance" (A.B.R.) training ceased in April 1943. There after, Walrus pilots were trained as they were required for specific duties. The last Royal Navy units to retain their Walruses were the battleships *Duke of York* and *Rodney*, and the cruiser *Belfast*. By the beginning of March 1944 all the catapult flights were at last disembarked.

FINAL FRAGMENTS

The Walrus had not yet done with the sea. The escort carrier *Fencer* had embarked one in October 1943 when she had covered the occupation of Lagens airfield in the Azores, and in September 1944, HMS *Emperor*

embarked another for Air/Sea Rescue duties in the Aegean. This aircraft was also used, in November 1944, to spot for the bombardment of Milos Island by the battleship *King George V*—the last known use of the Walrus in its designed role.

Two Walruses embarked in *Victorious* at the end of 1944, for ASR duties with the British Pacific Fleet, and they rescued a dozen or so aircrew during the operations off the Sakishima Gunto and Kyushu, flown by RAAF pilots with naval crewmen.

In the Bay of Bengal, 1700 Squadron was providing single-aircraft detachments for the escort carriers engaged in operations against the Japanese in Burma and Sumatra. From mid-May 1945, at least one carrier in each force had a Walrus embarked, for ASR work. Like 1700, 1701 Squadron had also been intended to be equipped with the Supermarine Sea Otter, but the RAF in the Far East was given priority and in any event, the Walrus' successor was not yet cleared for deck landing. No 1701 Squadron was based at Manus, in the Admiralty Islands and provided detachments for the escort carrier *Ruler*, and the Light Fleet carriers *Venerable* and *Glory*, before moving to Hong Kong in September 1945, as part of the liberating garrison force. The two Light Fleets retained their aircraft, flown by volunteer Barracuda pilots, until the end of 1945—the last of their kind to be embarked in any of HM Ships.

ROYAL AUSTRALIAN NAVY

Prior to the outbreak of war with Japan in December 1941, the RAN's cruisers were heavily committed in many of the Atlantic and Mediterranean operations. To provide local shipping protection in the East Indies and SW Pacific islands, two Armed Merchant Cruisers—*Manoora* and *Westralia*—were deployed, both with a single Seagull V as part of its armament. As tension increased in the Far East, the RAN cruisers and the two ships of the New Zealand Division of the RN were brought closer to Australasia. *Sydney* was sunk a month before the beginning of the new war, but the others took their place in the Allied Fleets. *Perth* was lost in the Battle of the Java Sea in February 1942, *Australia* and *Hobart* played their part in the Battle of the Coral Sea during the following May, and in August *Canberra*, with P5715 embarked, was sunk at the Battle of Savo Island. This brought the total of British and Commonwealth Walrus-equipped ships to two capital ships and six cruisers sunk in the Far East between November 1941 and August 1942.

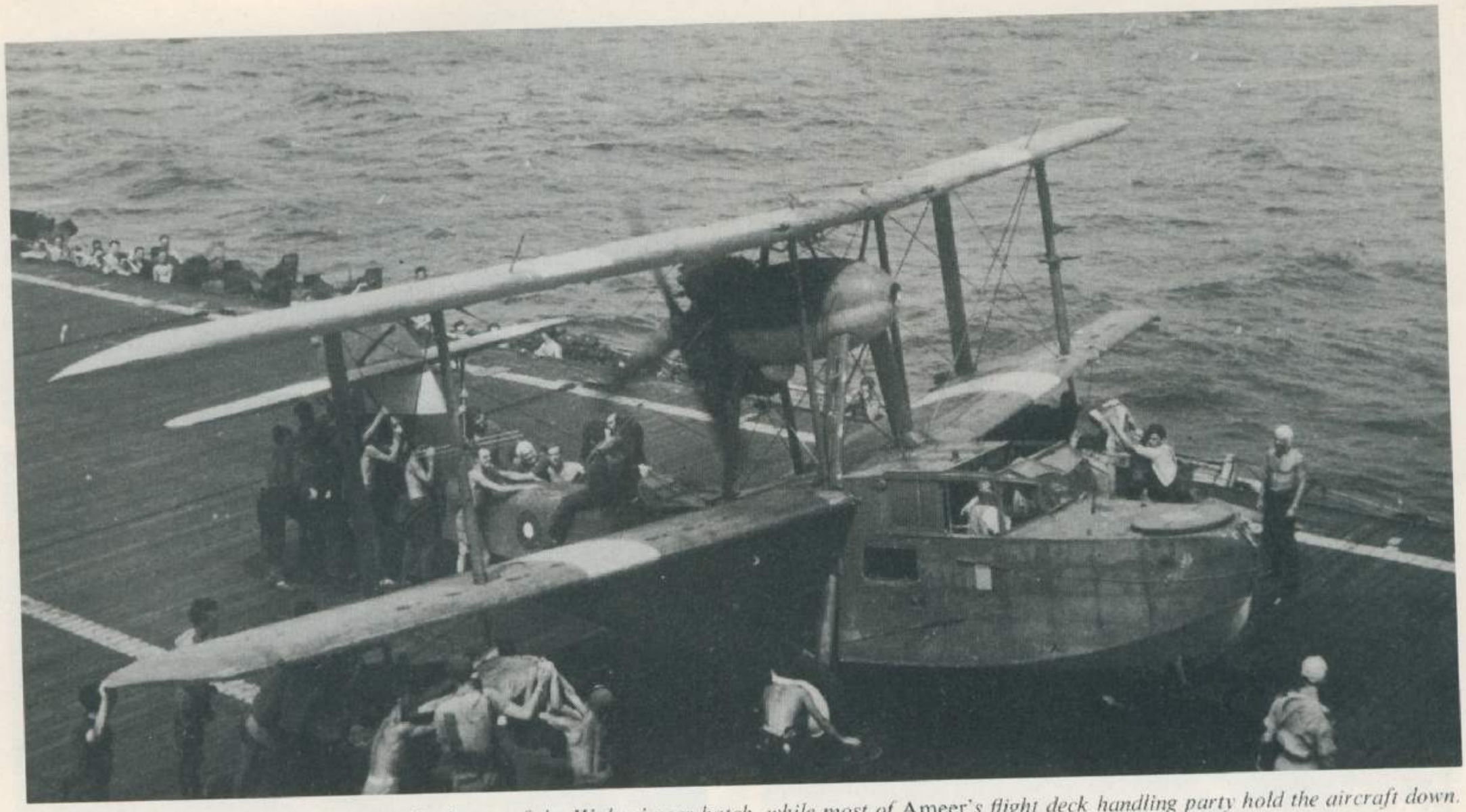
By mid-1943, only HMAS *Australia* still retained her flight, not losing her aviation arrangements until the end of 1944—the last cruiser but one to retain an amphibian spotter. The RAAF, which had provided pilots and ground-crews for the flights, continued to use the Seagulls and the Walruses which had been provided as replacements for early losses, in the training and rescue roles.

SHORE-BASED PATROLS

Mention has already been made of the *ad hoc* local patrols flown by disembarked Walruses of *Force H* and the Mediterranean Fleet. In Home Waters this shore-based A/S task was more formalised, with Home Fleet ships' flights flying patrols from RN Air Station Hatston, as part of the overall RAF Coastal Command patrol pattern. 700 Squadron—the headquarters unit—was flying eight four-hour sorties around the Orkneys daily by April 1940, making the first attack on a U-boat on 10th of that month. After the end of the Norwegian campaign, 700 (Hatston) was established at eight Walrus for local ASP missions, reducing to six aircraft in August, when a new Flight was established at Sullom Voe, in the Shetlands. All 12 aircraft were from ships' flights, and their deployment to the island bases was interspersed by embarked duty in the N Atlantic and Arctic.

No 701 Squadron, on their return from Norway in mid-June 1940, were promptly dispatched to Iceland aboard the carrier *Argus*, and they remained there, the only established A/S air component until the end of October, when they were relieved by the Fairey Battles of No 98 Squadron, RAF. HMS *Argus* brought 701 back to Hatston, where they re-equipped before heading for a rather less remote outpost—Stornoway in the Hebrides, there to fly convoy escort sorties in addition to their local patrols.

Lieutenant (A) F Lawrence RNVR lands Emperor*'s 1700 Squadron Walrus aboard HMS* Ameer *on July 8 1945, after rescuing an 896 Squadron's Hellcat pilot from the water only 200 yards off Japanese-held Car Nicobar.* (Captain E. G. Brown RN)



Sub Lieutenant (A) R Gregory RNVR climbs out of the Walrus' rear hatch, while most of Ameer*'s flight deck handling party hold the aircraft down. Note the SEAC identification bands and plain blue and white roundels on an otherwise considerably weatherbeaten finish.*
(Captain E. G. Brown RN)

The Sullom Voe and Stornoway units continued to operate until June 1941, when both were withdrawn. RAF Coastal Command at last possessed sufficient patrol aircraft to cover these areas unaided, but the availability of the reliable Walrus throughout the winter and spring of 1940–1 had tided the defences over and reduced the gaps in the A/S air cover in coastal waters.

Latterly based at Twatt, 700 (Hatston) flew its close-cover patrols off the Orkneys until 24th March 1944, when the Squadron was disbanded with the passing of the catapult flights.

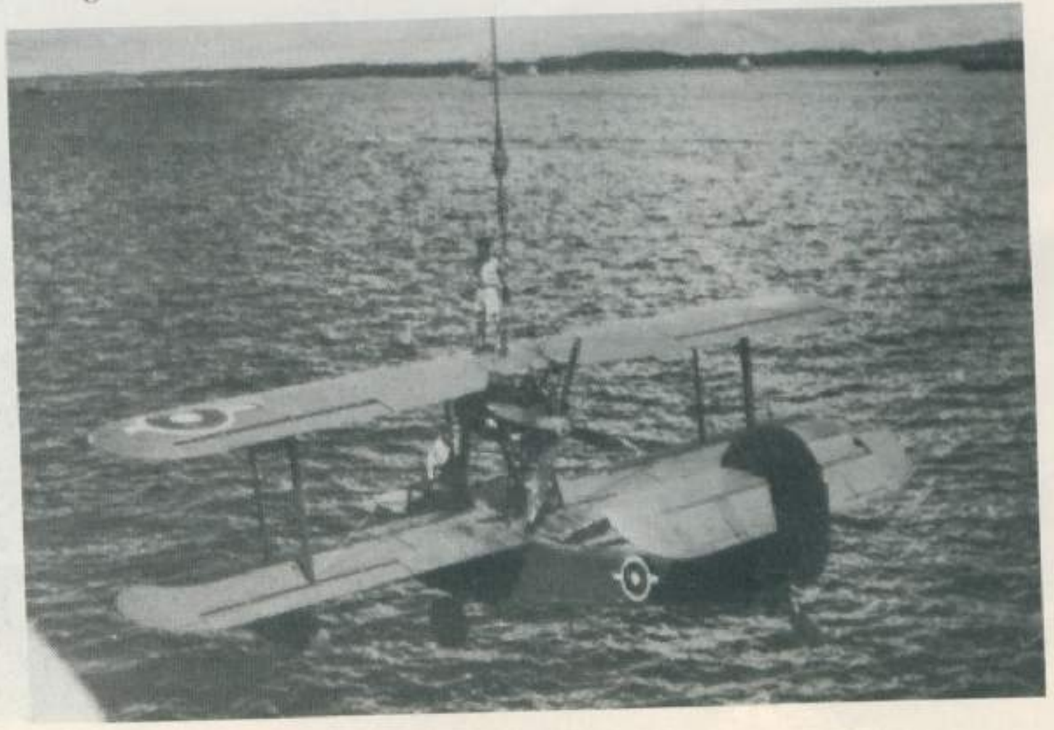
MEDITERRANEAN ASPs

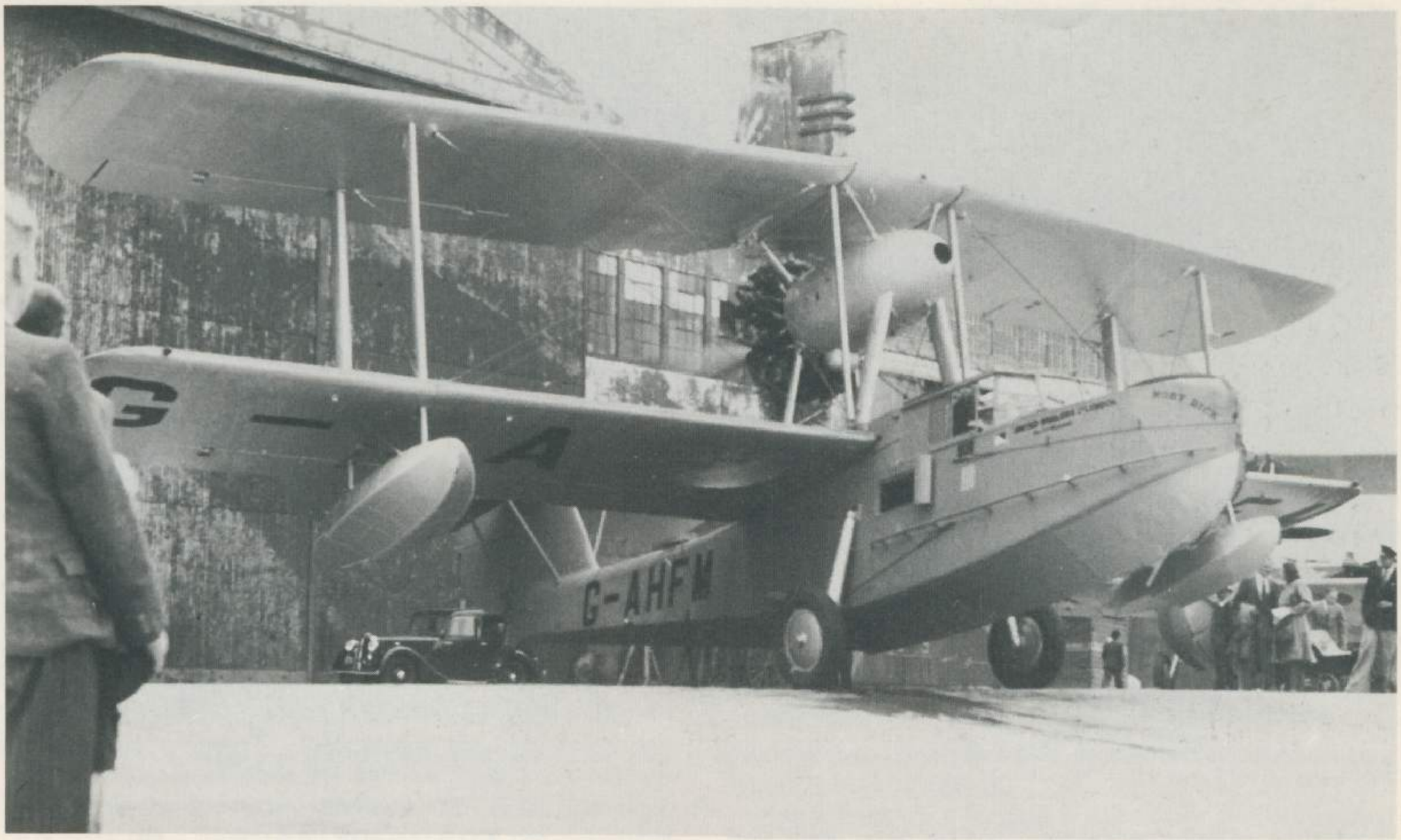
After the loss and disabling of so many Mediterranean Fleet ships during 1941, seven of their Walruses were based at Aboukir under the control of Middle East Air Force's No 201 (Naval Co-operation) Group, flying local patrols off Alexandria and escorting convoys off the Egyptian coast. On occasion the Walruses were used to fly essential stores into beleaguered Tobruk, landing at night in the harbour and returning with casualties from the garrison.

From March 1942, one Walrus was sent forward into the Western Desert as part of the MEAF Air/Sea Rescue Flight, where it remained while six other aircraft, half of which were equipped with ASV radar, left Aboukir for Beirut, where they became known as 700 (Levant) Squadron. Redesignated 701 Squadron on 1st August 1942, the Walruses operated from various harbours between the Egyptian and Turkish borders, flying day and night search and escort missions until 15th August 1943, when the lack of U-boat activity in the Eastern Mediterranean led to their redundancy.

In the meantime, 701 shared in the destruction of

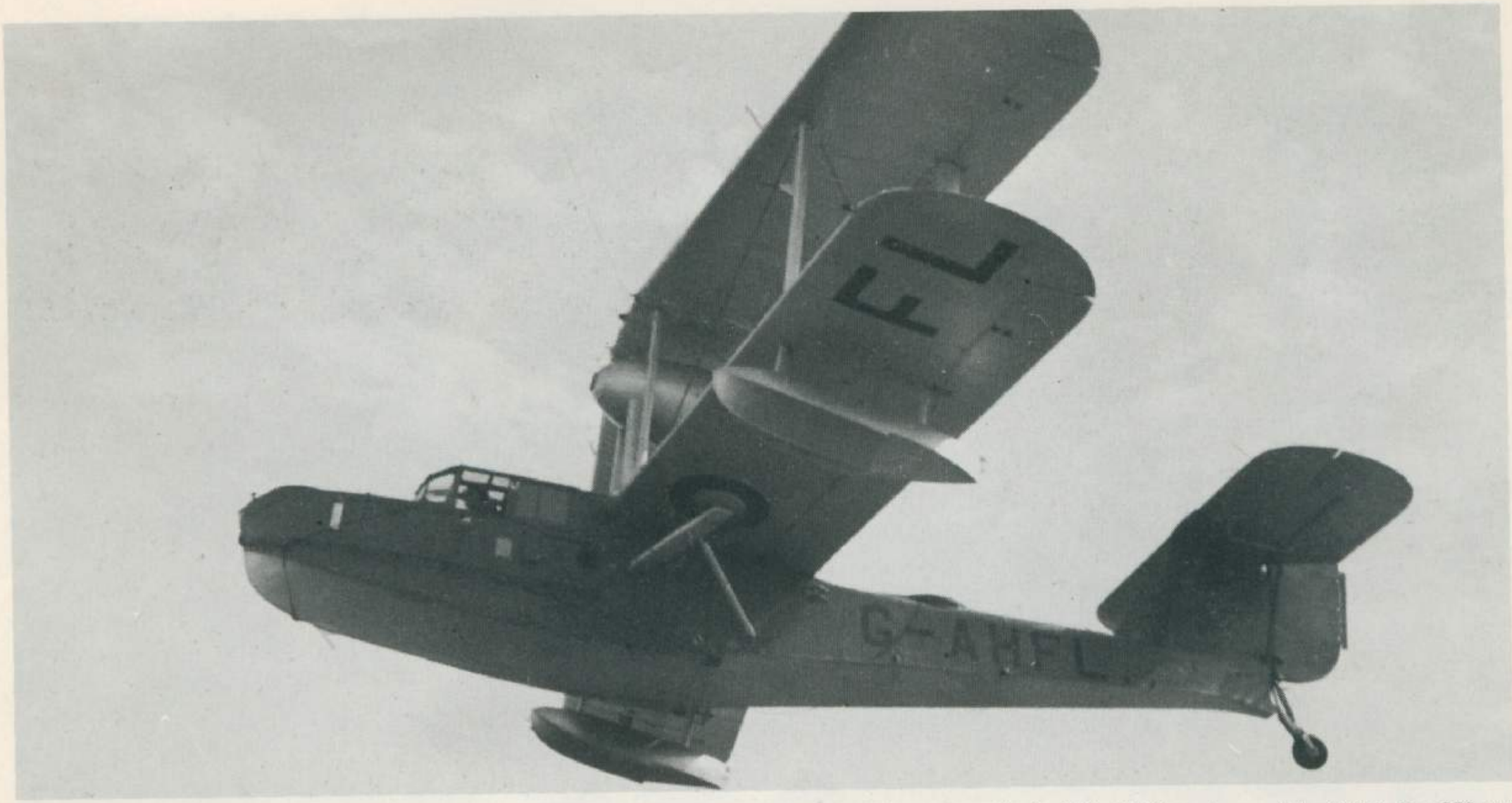
Left *HMS* Emperor*'s rescue Walrus flies past the escort carrier* Khedive *during operations in the Aegean in September 1944.* Right *HMS* Venerable *hoists her Walrus aboard from the waters of Seeadler Harbour, Manus, in mid-August 1945. The aircraft, of 1701 Squadron, based at the Mobile Naval Air Base, Ponam, possesses a remarkable variation on the U.S. South-West Pacific-type markings adopted and modified by the British Pacific Fleet. Here, the bars on both sides of the fuselage roundel are too small and apparently unedged, whereas the port upper mainplane marking is unsymmetrical, the outboard bar being short and unedged, whereas the inboard bar is of normal size and edged.*
(F. A. A. Museum)





The last of the "Whaling Walruses" front-line team, G-AHFM, Moby Dick *runs up on the slipway at Cowes following the naming ceremony. This aircraft, like the other aircraft intended for SS* Balaena *is fitted with the grab-rails featured on RAF rescue Walruses. As W3070,* Moby Dick *had been embarked in the battleship HMS* Anson *during 1942–3.*
(Photo: Henry Berney Air-Britain)

G-AFHO Snark *is "launched" at Cowes, Isle of Wight, on July 20 1946. The aircraft had previously served with, among other units, 764 Squadron at Pembroke Dock, Wales.*
(Photo: Henry Berney, Air-Britain)



G-AHFL Boojum *had enjoyed a varied career before refurbishing for United Whalers Ltd, serving with the RN's 700 Squadron and the RAF's Nos 275 and 276 Squadrons as L2246.* (Photo: Henry Berney Air-Britain)

the Italian submarine *Ondina* on 11th July 1942, Sub Lieutenant D. K. Jordan RNVR co-operating with two South African A/S whalers, and it had been "in at the death" when *Perla* was captured and *Scire* was sunk, in July and August 1942, respectively.

At the other end of the Mediterranean, 700 (Algiers) Squadron was formed on 8th November 1942, to undertake coastal patrols from the former Vichy seaplane base at Arzeu, protecting the mass of invasion shipping. One aircraft took part in the destruction of U-331, together with a pair of RAF Lockheed Hudsons and an over-enthusiastic Albacore from HMS *Formidable* which torpedoed the U-boat after it had surrendered. Gibraltar also boasted a 700 Squadron detachment until the spring of 1943, but 700 (Algiers) lasted until May, disbanding only when the Axis Armies had been driven out of N Africa. The Walruses of the two units, together with reserve aircraft were handed over to the RAF for rescue duties, 25 being transferred between February and August 1943 as well as nine transferred to the Free French Navy *Flottille* 4S in April 1943.

Another view of VH-ALB, showing the two small windows added during its passenger-carrying career; one is aft of the original window, in line with the wheel-well, and the second is the very small window below the midships hatch. (F. A. A. Museum)

TRAINING TASK

Besides the squadrons in the islands, the only Walrus units in the United Kingdom were engaged in training or miscellaneous second-line tasks. Nos 754, 764 and 765 Squadrons, at Lee-on-Solent, Sandbanks (Poole Harbour), the Lawrenny Ferry (Pembroke), undertook the basic training, seaplane training, and advanced and crew training, while newly-formed flights worked-up at Lee while their ships were completed or underwent repairs. Many coastal air stations also had Walruses on strength for odd jobs, including station ASR.

Abroad, Walruses were based at Royal Canadian NAS Yarmouth, Nova Scotia for TAG training, and at RNAS Piarco, Trinidad, for Observer training. The latter station also provided aircraft for local A/S patrols and a detachment at St Lucia kept an eye on the Vichy warships laid up at Martinique. Various Fleet Requirements Units throughout the Allied command also possessed Walruses, for target-towing as well as for various odd jobs to which its "maid-of-all-work" capability well lent itself.

A dilapidated VH-ALB prior to rebuilding for the Sydney-London leg of the 1969 BP Air Race (taken at Camden, near Sydney). Built in 1935 as A2-4, it was badly damaged in September 1940, as a result of gun blast damage while on HMAS Perth's *catapult. Withdrawn from embarked service, it was employed on training and miscellaneous duties until the late 1940s, when it was sold commercially.* (W. F. Butler via F. A. A. Museum)

POST-WAR: SERVICE AND CIVILIAN

By 1946, the Walrus had disappeared from Royal Navy units. It continued to serve with the Royal Canadian Navy, which had been given a dozen or so which had been left at Yarmouth and the Flying Training School at Kingston, Ontario. The French *Aéronavale* also acquired a number, which served with *Flottille* 53.S, training flying boat pilots at Hourtin. The longest lived service Walruses were those of the Argentine Navy, which continued to operate a pair from the cruiser *Argentina* until at least 1958—according to *"Jane's Fighting Ships"*.

Shortly after the War a number of Walrus Is and Seagull Vs were sold to civil operators, its potential for operations in undeveloped areas having been amply demonstrated. Of particular interest were those sold in 1946 to United Whalers Ltd, of London, for use from their new whale-factory ship *Balaena*, which was fitted with a catapult taken from the old seaplane carrier HMS *Pegasus*, as well as a seaplane crane.

Five Walrus Is and one Walrus II were purchased, three of which formed the "first team". One of the spare aircraft—G-AHFN, which had been L2336 and served aboard *King George V*—took part in the 1946 Folkstone Aero Trophy Race while the *Balaena* flight was working-up. Flown by the team manager, Mr John Grierson, 'FN won the Trophy on 31st August, at the creditable average speed of 121 mph. The embarked aircraft were all appropriately named: G-AHFL was "*Boojum*", 'FM was "*Moby Dick*" and 'FO was "*Snark*".

The Walruses enjoyed a successful season during the winter of 1946/47, but the prejudices against such a modern method of whale-hunting were deep-rooted, and this season's work represented the only such venture in Antarctica. United Whalers sold "Boojum" to Vestlandske Luftfartsskelskap, already operating one Walrus as an air taxi and freight aircraft from the fjords and lakes of North Norway. Most of the remainder were scrapped at Cowes during 1950.

Amphibious Airways of Rabaul bought two Seagull Vs and two Walrus Is from the RAAF in 1947, and one of each type was used for charter flying in the New Britain and Solomons areas for charter, air ambulance and government ASR flying, with licences to carry no fewer than ten passengers in addition to two crew. These two aircraft soldiered on until 1954—a fine tribute to the design and construction of the metal-hulled amphibian.

This is what "struck-off-change" can mean. Two of the yellow "Whaling Walruses"—G-AHEM Moby Dick *and 'HFO* Snark *—on the scrap dump at Cowes (Somerton) Aerodrome, Summer 1950. Lower main-plane mounting shows clearly.*

(Photo: L. F. Sarjeant, Air-Britain)

The last flying representative of the breed was the fourth production Seagull V: VH-ALB, ex-A2–4, passed through a number of hands, flying in New Guinea and along the Barrier Reef on sight-seeing sorties up to 1962. Thereafter, it was grounded until 1969, when it was refurbished and entered in the Sydney-London leg of the UK-Australia Civil Air Race. It reached an Indonesian island before coming to grief, receiving minor damage in landing and then suffering more severe damage in a subsequent gale. It is now back in Australia, where it may be rebuilt.

Apart from this Seagull V, the only Walrus known to be accessible to the public is that held by the Fleet Air Arm Museum, at RN Air Station Yeovilton. Rebuilt by the Aircraft Artificer Apprentices at RN Air Station Arbroath, it was handed over to the Museum in 1969. If any reader is passing down the A.303 through Somerset, between April and September, a stop would be well worthwhile, just for the sake of the Walrus.

SEAGULL V & WALRUS I PRODUCTION DETAILS

Seagull V: Total of 1+ 26
Prototype K4797
Production A2-1 to A2-24, plus two for Armada Republica Argentina

Walrus I (Supermarine): Total of 281
No prototype; K5772–K5783; K8338–K8345; K8537–K8564; L2169–L2336; P5646–P5670; P5696–P5720; R6543–R6557.

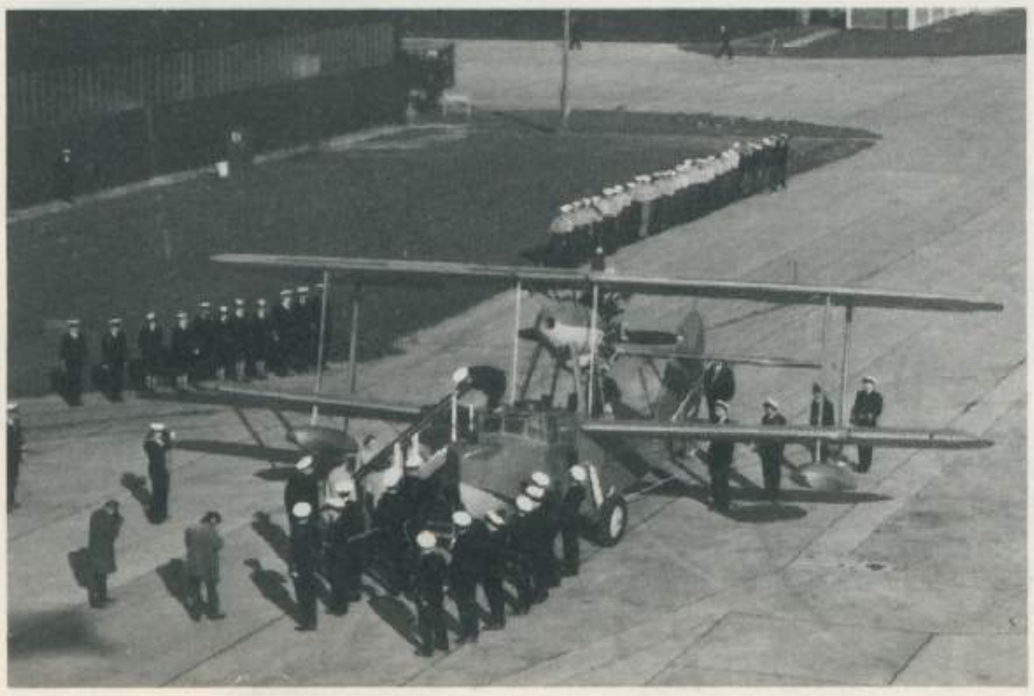
Saunders-Roe: Total of 270
R6582–R6591; W2670–W2689; W2700–W2729; W2731–W2760; W2766–W2798; W3005–W3009; W3011–W3046; W3048–W3050; W3062–W3075; W3077; W3079–W3101; X9460–X9484; X9498–X9532; X9554–X9558.

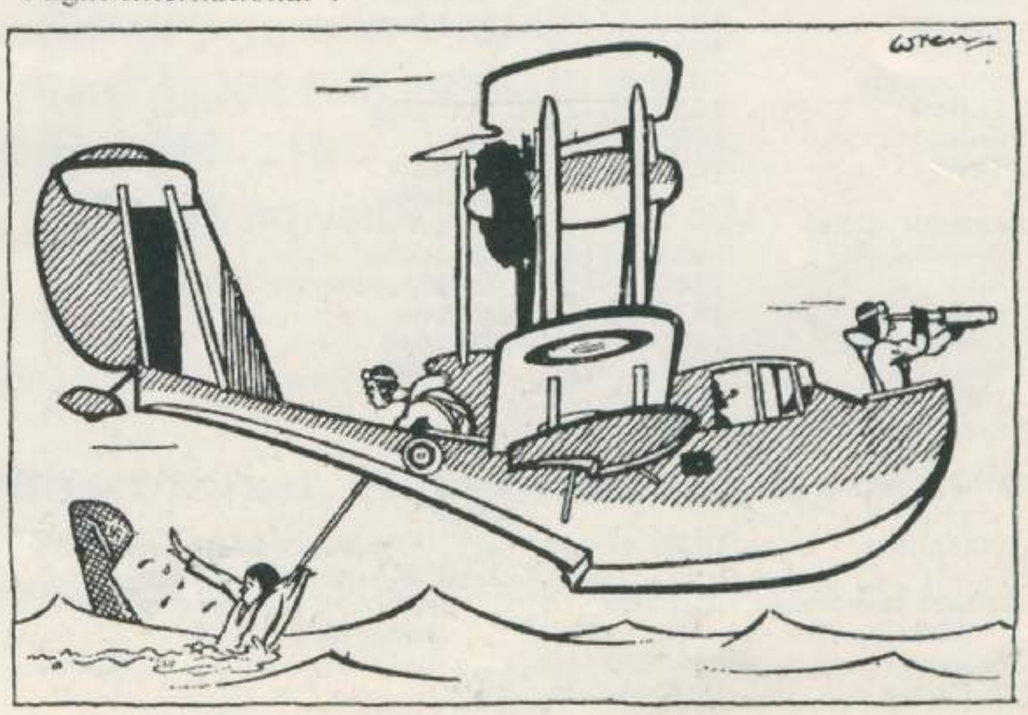
ROYAL NAVY WALRUS UNITS
(whole or part establishment)

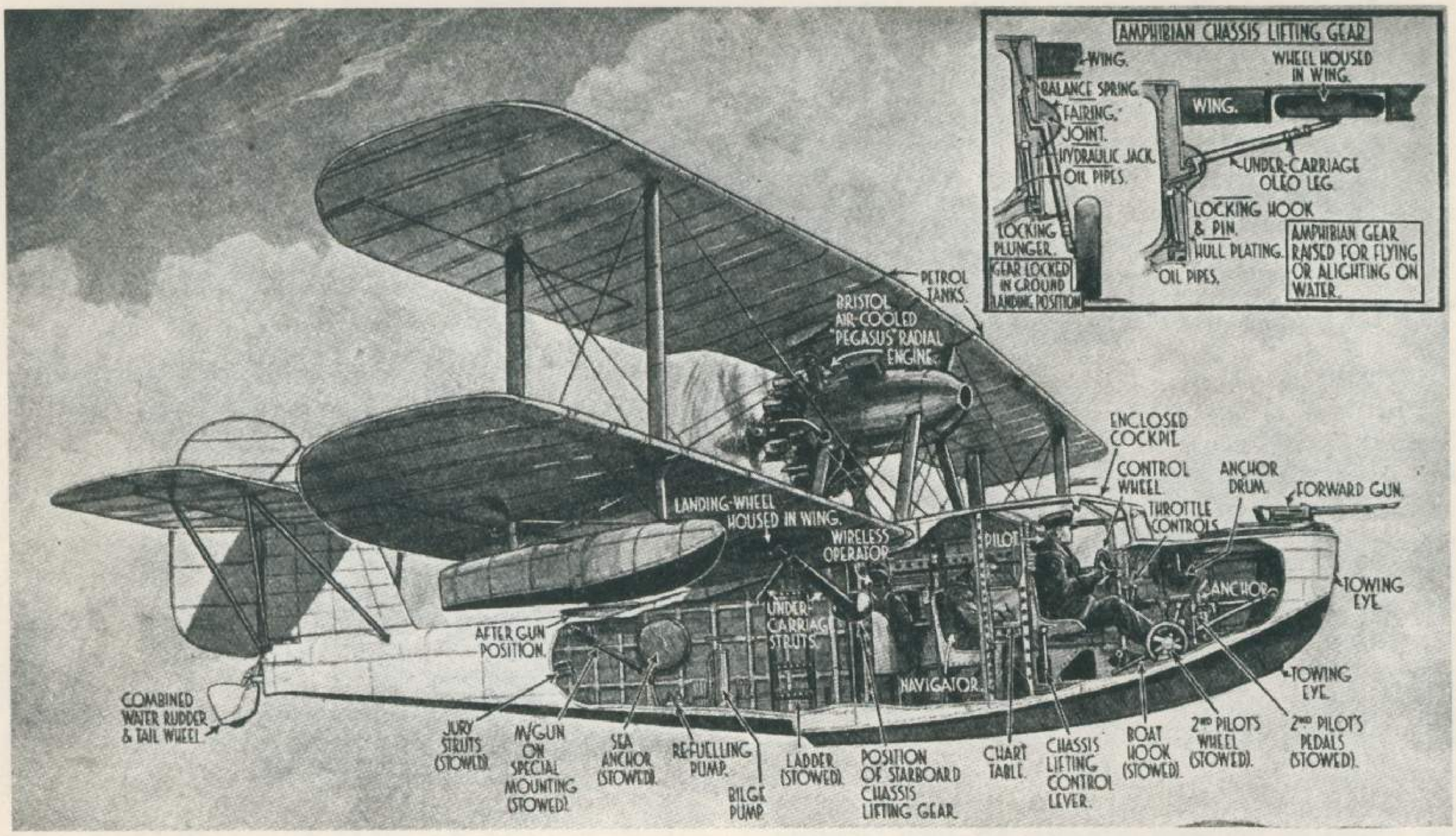
Squadrons 700:—1940–4, HQ unit for all ship-based Walrus flights; **701:** 1940–1 & '42–43, shore-based patrols; **702:** 1935–40, HMS *Nelson;* **710:** 1939–43, HMS *Albatross*—S Atlantic & Indian Ocean; **711:** 1936–40, Mediterranean Fleet cruisers; **712:** 1938–40, Home Fleet cruisers; **714:** 1938–40, East Indies Fleet cruisers; **715:** 1937–40, China

Parodying Lewis Carroll, A. E. "Chris" Wren summed up the visual and design qualities of the Supermarine Type 236 Walrus in one of his wartime "Oddentification" rhymes (see page 25). The caricature series appeared week-by-week in the (now-defunct) magazine, "The Aeroplane", *and the cartoon is reproduced by courtesy of Chris Wren and* "Flight International".

The last Walrus: L2310 is presented to the Fleet Air Arm Museum, RNAS Yeovilton, 1969. (Photo: F. A. A. Museum)







A contemporary G. H. Davis cutaway drawing of the Seagull V. The lower "towing eye" is in fact a strong-point for the Hein Mat seaplane recovery gear.
(Courtesy Vickers (Aviation) Ltd. via Air-Britain archives)

Station; **718:** 1936–40, America & W Indies cruisers; **720:** 1937–40, New Zealand Division; **737:** 1943, ABR Training (Dunino); **743:** 1943–5, TAG Training, (Yarmouth NS); **749:** 1941–5, Observer Training (Piarco); **754:** 1940–4, "O" Training (Lee-on-Solent & Arbroath); **764:** 1940–3, Pilot Training (Lee & Lawrenny Ferry); **765:** 1940–3, "P" Training (Lee & Sandbanks); **773:** 1940–4, FRU Bermuda; **777:** 1941–4, FRU, Freetown & local ASPs; **779:** 1941–5, FRU & ASP Gibraltar & Taranto; **789:** 1942–5, FRU Capetown; **810:** 1939–40, *Ark Royal*; **820:** 1940, *Ark Royal*—Norway; **1700:** 1945, ASR East Indies; **1701:** 1945, ASR Manus & Hong Kong.
(Note: FRU =Fleet Requirements Unit)

SHIPS FITTED FOR AND WITH WALRUS/SEAGULL—1939–45

Battleships & Battlecruisers

Anson	1942–3	(2)	†Queen Elizabeth	1940–1	(2)
*Barham	1940–1	(1)	Renown	1940–3	(2)
Duke of York	1941–4	(2)	*Repulse	1941	(2)
Howe	1941–3	(2)	Rodney	1940–4	(1)
King George V	1940–3	(2)	Valiant	1942	(2)
Malaya	1941–2	(2)	Warspite	1942	(2)
*Prince of Wales	1941	(2)	†Resolution	1941–2	(1)

Monitor

*Terror	1939	(1)

Seaplane Carrier (HMAS)

Albatross	1939–43	(6 +3 IR)

Cruisers

County–*Class*

Australia (RAN)	1939–44	(1)
Berwick	1939–42	(3/2)
*Canberra (RAN)	1939–42	(1)
*Cornwall	1939–42	(3/2)
Cumberland	1939–43	(2)
Devonshire	1939–43	(1)
*Dorsetshire	1939–42	(1)
*Exeter	1939–42	(2)
Kent	1939–42	(1)
London	1940–43	(2)
Norfolk	1939–43	(1)
Shropshire	1939–43	(1)
Suffolk	1939–43	(2)
Sussex	1939–43	(1)
*York	1939–41	(1)

Leander–*Class*

Archilles (NZ)	1939–43	(1)
Ajax	1940	(1)
Hobart (RAN)	1939–43	(1)
Leander (NZ)	1939–43	(1)
*Neptune	1941	(1)
*Perth (RAN)	1939–42	(1)
*Sydney (RAN)	1939–40	(1)

Improved Birmingham–*Class* (1921)

*Effingham	1939–41	(1)

Armed Merchant Cruisers (RAN)

Manoora	1940–42	(1)
Westralia	1940–42	(1)

Town–*Class*

Belfast	1939, 1942–4	(2)
Birmingham	1939–43	(2)
*Edinburgh	1939–42	(2)
Glasgow	1939–43	(2)
*Gloucester	1939–41	(3/2)
†Liverpool	1939–41	(3/2)
*Manchester	1939–42	(3/2)
Newcastle	1939–43	(2)
Sheffield	1939–43	(2)
*Southampton	1939–41	(2)

Colony–*Class*

Bermuda	1942–3	(2)
*Fiji	1940–1	(2)
Gambia	1942–3	(2)
Jamaica	1942–38	(2)
†Kenya	1940–2	(2)
Mauritius	1940–3	(2)
Newfoundland	1942–3	(2)
†Nigeria	1940–2	(2)
*Trinidad	1941–2	(2)
Uganda	1942–3	(2)

Notes:
a. * indicates that ship was sunk
b. † indicates that aircraft was removed following severe battle damage.

WALRUS MARK I – PARTICULARS

Dimensions
Span: 45 ft 10 in (Folded 17 ft 6 in); Length: 38 ft; Height: 16 ft 10 in; Undercarriage Track: 7 ft 7 in.

Weights
Empty: 4,900 lb; Maximum for unrestricted flying: 7,200 lb; Maximum for take-off and straight and level flying: 8,050 lb.

Powerplant
One Bristol Pegasus VI: 775 hp for take-off, 750 hp at 4,750 ft; consumption: 31 Imperial gallons of *c*.87-octane fuel per hour at 6,750 ft.

Performance
Max Speed at 4,750 ft: 135 mph (with ASV and weapons load—124 mph); Patrol Speed at 6,750 ft: 98 mph; Absolute range: 512 statute miles; Radius of Action, armed and with 30% reserves: 165 st. miles; Service Ceiling: 17,100 ft; Climb (Time to Height): to 5,000 ft—5 mins 30 secs, to 10,000 ft—13 mins 27 secs, to 15,000 ft—28 mins 2 secs.

Armament
Guns: 2 or 3 0.303-in. Vickers K or Lewis, flexible. *Bombs:* 2 × 250 lb + 8 ×20 lb, or 2 × 250 lb + 4 × 40 lb., or 6 × 100 lb A/S., or 2 × 380 lb Mk VII Depth Charges and marine markers.

Series Editor: CHARLES W. CAIN

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The author wishes to thank at least a few of the many helpers for their assistance in providing information and illustrations concerning the naval career of the Seagull V and Walrus I. In particular: Lt. Cdr. M. C. S. Apps RN; Captain E. G. Brown RN (Retd); R. C. Jones; A Raven; A. J. Ward, and, particularly, to Lt. Cdr. L. A. Cox RN (Retd), the Curator of the Fleet Air Arm Museum, whose extensive first-hand experience of the Walrus provided a wealth of detail. Thanks also to Air-Britain members and its archives and to the International Plastic Modellers Society for their colour-scheme information on the Aéronavale Walrus. Although, strangely enough, little has been written about the life and times of the Seagull/Walrus, readers wishing for a less-impersonal (but nonetheless well-detailed) account, there is a singular exception: that of "The Supermarine Walrus", written by G. W. R. Nicholl and published by Foulis (London, 1966).

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