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THE SOPWITH PUP . . .

was the withdrawal to Calais of No. 66 Squadron on June 21st, 1917, at the same time as No. 56 (S.E.5) Squadron was sent to England for the same purpose. These moves were made as a result of the public demand for improved defence of the London area after the daylight raid on June 13th, made by fourteen Gothas, but the withdrawal of these two fighting squadrons during the Battle of Messines was severely felt on the Western Front. However, No. 66 Squadron was sent back to its normal duties on July 6th, 1917, after a more or less uneventful sojourn at Calais. The squadron was not told until too late of the raid of July 4th and missed the Gothas returning from Harwich, but five R.N.A.S. Pups from Dunkirk met the enemy about 30 miles N.W. of Ostend. F/Cdr. A. M. Shook and F/Sub-Lt. S. E. Ellis were both rewarded by seeing their targets fall emitting smoke. On the day after Nos. 56 and 66 Squadrons rejoined the B.E.F., the Godias again raided London in daylight. On July 10th, No. 46 Squadron flew its Pups to Sutton's Farm, Essex, for Home Defence duties, and did not return to France until August 30th. Its return to the B.E.F. was made possible by the creation of three new Home Defence squadrons, two of which were equipped with Pups. These were No. 112 Squadron, formed at Throwley on July 30th, and No. 61, formed at Roch-ford on August 2nd, 1917.
No. 61's Pups were in action on August 12th, when they pursued ten Godias which had bombed Rochford, Leigh, West-cliff and Southend, but the bombers had too great a lead over the defenders and such combats as took place were brief and indecisive. One of the Gothas was shot down by an R.N.A.S. Pup from Walmer, flown by F/L. H. S. Kerby.
Some of the Home Defence Pups were fitted with the 100 h.p. Gnome Monosoupape engine, which improved the rate of climb considerably and added 1,000ft to the machine's ceiling. These Pups could usually be distinguished by their "horse-shoe" engine cowlings, the lower portion of which was removed to facilitate die escape of the exhaust gases. Many attempts were made to fit a forward-firing Lewis gun on the upper wing of the H.D. Pups, but with no more success than No. 54 Squadron enjoyed with die same idea.

The Pup displayed much of the same type of versatility which distinguished its illustrious descendant, the Hawker Hurricane, in the recent war. The Pup went to sea in many forms and in many ships. The Sopwith Baby seaplanes had proved to be ineffective as an anti-Zeppelin weapon, and in February, 1917, die Grand Fleet Aircraft Committee recommended that the Baby seaplanes carried by H.M.S. Campania should be replaced by Sopwith Pups. This was agreed to, and a few Pups were sent to die ship for experimental work. Seaplanes had flown off Campania's deck, using detachable wheels under their floats and a special runway to hold the tail up at die normal flying attitude at the beginning of the take-off run. For the use of the Pups this latter device was developed into an elevated grooved tubeway, and became known as the tail guide trestle. Pups also replaced Babies in the Manxman, a former Isle of Man steamer which had been converted into a seaplane carrier. The Manxman had four Pups, and die Furious, a converted large light cruiser com-missioned as an aircraft carrier in July, 1917, had five.
A more remarkable development was the flying of Pups from special platforms on light cruisers. The first of these was mounted above the conning tower and forecasde gun of die Yarmouth, and gave a run of no more than twenty feet. Surely no greater tribute could be paid to the Pup's flying characteristics. The first take-off, in a felt wind of 20 knots, was made by Fit. Cdr. F. J. Rutland in June, 1917, and the success of tiiis trial led to die decision to fit flying-off decks to one ship in each light cruiser squadron: the ships selected were the Caledon, die Dublin, die Cordelia, and the Cassandra. Emphasis was laid on the usefulness of ship-borne fighters on August 21st, 1917, when die Yarmouth, complete with Pup, was escorting mine-layers off the Danish coast. A Zeppelin, die L.23, appeared at about 5.30 a.m., and an hour later, when the airship had been lured farther away from her base, Fit. Sub-Lt. B. A. Smart took off from the Yarmouth and climbed until he was 1,500ft above die Zeppelin. He attacked in a dive which brought him to within twenty yards of his adversary: the L.23 burst into flames and burned fiercely until its remains fell into the sea. Smart ditched his Pup near the Prince, and was picked up. His machine was lost.

F/Cdr. Rutland also pioneered anodier form of shipboard take-off later in 1917. It had been suggested by Lt. Cdr. C. H. B. Gowan that aeroplanes could be flown off a rotatable platform which could be turned into the felt wind widiout necessitating a change in the ship's course. A ship's gun turret offered a ready-made turntable, and experiments were carried out in die battle cruiser Repulse. A sloping platform was built on "B" turret, and a special tail guide trestle as used in the Campania ensured tiiat the aeroplane was held in flying position.

FLIGHT

Rutland made the first take-off in a Pup on October 1st, 1917, in a felt wind of 31J m.p.h., widi the turret trained 42 deg on die starboard bow, and repeated this performance from the battle cruiser's after turret on October 9th.

Experiments were also carried out widi aircraft catapults. The U.S. Navy had been using catapults since 1912, and had tiiree ships fitted with this launching device by 1916. It was not until diat year, however, that tenders were invited for die construction of a British catapult. The specification required die catapult to be capable of launching an aeroplane weighing 2\ tons at 60 m.ph. with an acceleration not exceeding 2.5g in a distance of 60ft. Two examples were built, each using compressed air. The first, designed by R. F. Carey, was tested with a Sopwidi Pup at Hendon in October, 1917. Neither type of catapult proved to be a success, however, and die experiments were abandoned.

The Pups which were flown from ships had air bags in the rear portion of the fuselage, but diese were not over-effective. On April 29th, 1917, F/Cdr. Rudand was lucky to be rescued after ditching his Pup near the Danish coast. He had flown off from the Manxman on an anti-Zeppelin patrol but compass trouble had caused him to lose his parent ship. The Pup floated for only twenty minutes, and Rudand was rescued by fishermen. He was released as a shipwrecked mariner, and rejoined die Manxman at the end of May.
Improved flotation gear was developed at Port Victoria, much
of the work being carried out by S/Cdr. H. R. Busteed. Cylindrical air bags were fitted under die forward spars of the lower wings of a Pup and when deflated lay flat against die underside of the wing, where they had no appreciable effect on die machine's performance. Inflation was by compressed air from a standard compressed-air starting bottie. The first Pup to be fitted with die gear had a jettisonable undercarriage which was released before touching down. When the aeroplane struck the water on the first attempt die fabric was ripped off the under-side of die fuselage and die machine turned over. To prevent a recurrence of this trouble a hydrovane was fitted between the undercarriage strut attachment points just below the fuselage, and a sheet of duralumin was fitted at a negative angle on the tail-skid in order to keep die tail down widi die machine in die water. Thus modified, the machine was successfully ditched several times and remained afloat for some hours.

Pups fitted widi air bags were used by a special fighter flight of the R.NAS. which was established in the middle of May, 1917, for die protection of merchant vessels in the Downs. This flight was located at Walmer.
Obviously, ditching was die most wasteful way of concluding

A Pup with 100 h p. Gndme Monosoupape engins. (Below) An experimental
Pup, fitted with a sprung skid undercarriage.