

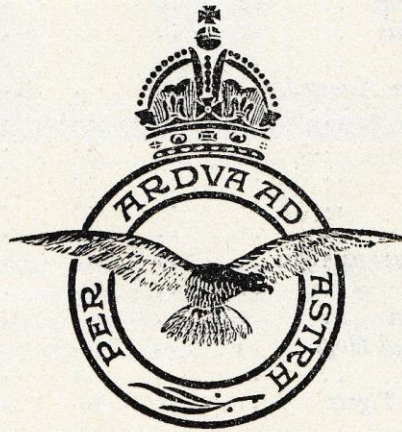
The Haltonian Magazine and the Daedalus

Volume 4 No. 2

Christmas 1932

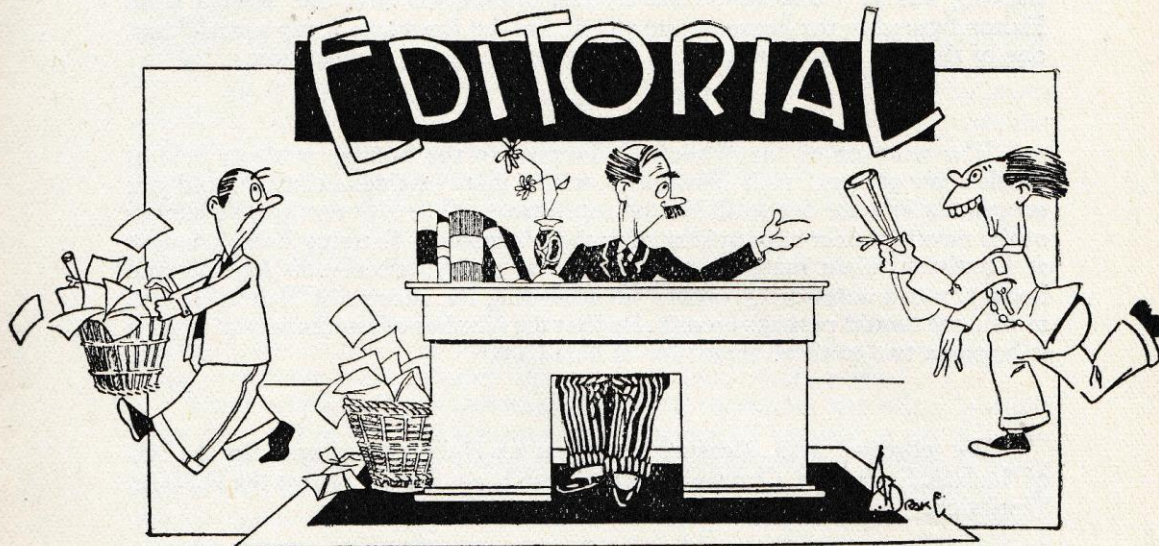
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THE
HALTON MAGAZINE
AND THE
DAEDALUS



VOL. IV, No. 2

CHRISTMAS 1932



ALTHOUGH perhaps there is little outward sign of change, Halton came back after the summer leave considerably smaller in numbers than it had been. We understand that the process of contraction is not quite finished yet, and that next term we shall have only about 1,500 aircraft apprentices under training.

* * * * *

Rumour has it that a change of command in No. 1 Wing is pending, Wing Commander H. J. F. Hunter, M.C., *p.s.a.*, having completed the normal three years' tenure of the appointment. We are glad to be able to include Wing Commander Hunter's photograph as a frontispiece, and are sure that all ranks who have served under him will be delighted to have it. He will be missed at Halton, not only as Commander of No. 1 Wing, or as the mainstay of the Dramatic Society, but also as an outstanding athlete in station and service sports. We wish him the best of luck in his new appointment when it comes along.

* * * * *

Although a photograph of Lieut.-Colonel A. F. S. Caldwell, C.B.E., D.S.O., M.A., whose resignation of the appointment of Principal Education Officer took effect at the end of August last, was given in the last number of *The Halton Magazine*, we are delighted to be able to give another one in the present number (facing page 33). Whatever defects the previous photograph may have had, we think all who know him will agree that the present one does express something of Colonel Caldwell's strength of character and force of personality.

* * * * *

Our congratulations are offered to Mr. J. Fox, M.Sc., A.M.I.Mech.E., Education Officer grade III, on the award by the University of London of the degree of Doctor of Philosophy (Ph.D.) in Engineering.

In sport the winter season is yet young, but the past few months have been by no means uneventful. The R.A.F. Swimming Championships (including five cups) were won by Halton immediately after summer leave, when training was at a discount. Six aircraft apprentices and one airman from Halton figured in the Service team which met the Navy and Army a week later, one of the apprentices beating all comers in the diving competition.

* * * * *

The winning of the Wakefield Trophy, in the boxing contests held at Henlow on 9th and 10th November, was a first-class achievement, and our congratulations are due to all Halton contestants. The visit on 19th November of the naval artificer apprentices from the Mechanical Training Establishment at Chatham, when matches were played at rugby, association football and hockey, was a noteworthy event. In recording the success of Halton in each match, we should perhaps record also that the number of apprentices at Halton is between two to three times that at Chatham.

* * * * *

We observe with pleasure that three ex-Haltonians played for the XV of the R.A.F. College, Cranwell, in their match last month against the R.M.A., Woolwich.

* * * * *

It is a pleasure to record that several ex-aircraft apprentices from Halton have recently been awarded a "Distinguished Pass" on passing out of Flying Training Schools as sergeant pilots:—T. W. L. Slovin (11th), E. F. E. Barnard (11th), A. E. Carpenter (4th), G. P. Hall (10th), A. W. B. Barrett (11th), V. E. Maxwell (4th), P. C. Price (11th), E. H. Francis (4th), and L. B. Noyes (14th).

* * * * *

The last number of the *Halton Magazine* had gone to press before the September 1929 (20th) Entry had finally passed out, but we cannot omit to record our congratulations to J. E. Kirk and R. G. Yaxley on obtaining cadetships. We wish them the success they thoroughly deserve.

* * * * *

It is with sincere regret that we bid farewell to the January 1930 (21st) Entry, which has upheld the tradition established by the twenty entries which have gone before. We have no misgivings that the "21st," when they arrive at their several destinations throughout the Service, will be a credit to their old training school. Our best wishes go with them.

Obituary

It was with profound regret that news reached us of the death of the only son of Group Captain J. R. Walkey, the senior C. of E. Padre. The sincere sympathies of all personnel in the Command are extended to Group Captain Walkey and his family in their great sorrow.

Visit to the Works of Messrs. Handley Page, Ltd.

MR. F. HANDLEY PAGE, C.B.E., F.R.Ae.S., is an electrical engineer who in 1906 turned his attention keenly to aviation, and in 1908 founded the first company in Great Britain for the design and construction of aircraft. In 1909 he built works at Barking, and in 1912 built much larger works at Cricklewood. He attained fame as the designer and constructor of twin-engined bombers, of which nearly a thousand were ordered during the War. In more recent years, although he has been building even bigger aeroplanes he has attained a second and greater fame as the originator of the slotted wing.

During his early years of struggle as well as in his years of success, Mr. Handley Page has been ready to help other enthusiasts in the study of flight: as when, on January 24th, 1929, he addressed the Halton Aero Club on the subject of the Slotted Wing.

Handley Page aircraft have achieved many notable flights. One H.P. O/400 twin-engined bomber flew early in 1917 from England to Mudros, in the Ægean, another flew to Palestine in 1918, while in 1919 the four-engined V/1500, flew from England to India, to take part in the Afghan War.

The works at Cricklewood cover a corner site of four and a half acres, bounded on two sides by the Rolls-Royce works and the Armstrong Siddeley works. In November 1929, the aerodrome at Cricklewood, adjacent to the works, was sold for building purposes. In place of it, the firm bought 160 acres at Colney Street, Radlett, Hertfordshire; this aerodrome is particularly useful because it is outside the London fog boundary.

A tour of the works leaves one amazed at the results which the accumulated ingenuity of metal workers here achieves. Main structural members of fuselages are of steel. Where the steel employed is not stainless, it is cadmium-plated. Wings and tail units are of duralumin construction, anodically treated and painted. For production work all jigs are of steel, though wooden jigs are still used on experimental jobs. The superiority of the steel jig is obvious. Its shape is more permanent, both because it is harder, and because wood shrinks and warps with time; it is more accurate in its dimensions as it is easier to work steel to the thousandth of an inch than to work wood to the hundredth; again, steel is not so clumsy as wood, so that more details can be catered for. Thus in the jig for wing ribs, beside the steel plate carrying the usual stops and guides, there is a second steel plate which encloses the whole job and checks its levels; and both these flanking steel plates are pierced with scores of holes to allow of the insertion and correct placing of rivets and bolts. The accuracy of the steel jig ensures complete interchangeability of parts.

A 20 H.P. engine works an air compressor from which pipes lead air at 100 lbs per sq. inch pressure to all parts of the works. The process of compression raises the air to a temperature of some 180° F., but of course it rapidly loses this heat. The loss of pressure in transit is only 5 per cent. This compressed air works the paint sprays, dope sprays, sand blast, the air jets for cleaning, and the rivetters. All rivets are of duralumin.

The rivetter is a quaint contrivance, something like a large Colt pistol without a trigger. A steel punch projects very slightly from the muzzle. When this projection is placed against any object, a small pressure causes it to release the compressed air, a little of which escapes downwards past the knuckles. The punch silently moves forward about a fifth of an inch with tremendous force. There is no impact, and no recoil is felt.

The compressed air system is probably cheaper to instal and to run than electricity : it is safer and noiseless, whereas the electric rivetter is ear-splitting.

An interesting exhibit was a saw of about 18 ins. diameter, which cut through a three-inch bar of stainless steel in about half-a-minute. Its teeth, with horizontal cutting edges, are like adzes, alternately staggered left and right, with radial grooves for the chips to slide clear. By making 160 r.p.m. it can cut through a six inch bar in one minute. The last mechanism which I was shown for cutting stainless steel depended chiefly on its speed, but this saw had a cutting speed of only two to twelve feet per second.

The firm have developed their own method of rolling duralumin sheet into channel sections and also that for giving longitudinal curvature.

Two Handley Page machines which are well-known to our Service readers are the "Clive" a twin-engined all-metal troop carrier for seventeen fully armed troops, and the "Hinaidi," a twin-engined all-metal night bomber which has a bomb carrying capacity of fifteen hundred pounds.

Turning to the photographs, those numbered 3, 4, 5, 6 and 8 all deal with the same machine, the Handley Page Four-Engined Air Liner, known briefly as "H.P. 42". Eight of this type were constructed, four being used on the London-Paris service, and four on the Cairo-Karachi service of Imperial Airways. The outstanding facts of this machine are :—Span 130 ft., length 89 ft. 9 ins., height 27 ft., all-up weight 13 tons, of which nearly 4 tons is paying load, total H.P. 2,200, cruising speed 105 m.p.h., top speed 127 m.p.h. On October 18th, 1932, the Hengist, one of this type, covered the 225 miles from Croydon to Le Bourget, the Paris airport, in 85 minutes.

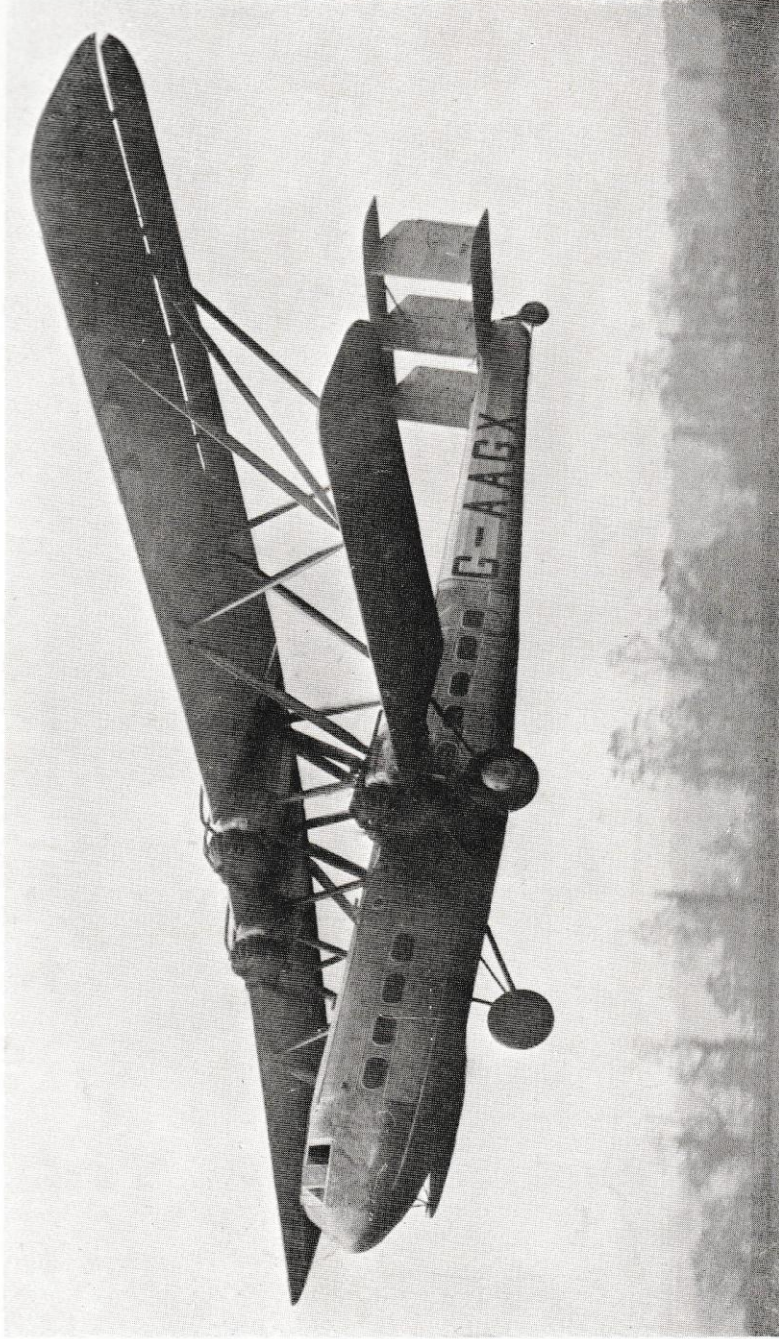
This craft has many important features besides hugeness. It is well streamlined. Secondly, noise and vibration have been reduced to a minimum by the following steps. (a) The central part of the fuselage, which is in the vertical plane of the wings (and is therefore most afflicted by vibration and noise of the engines and propellers, which are carried on the wings) is given over to the corridor, refreshment bar, lavatories, gas starter, freight, luggage and mail. (b) The two passenger saloons, carrying eighteen in front, and twenty in rear, have sound-proof walls. (c) All exhaust outlets are so placed as to be screened from the fuselage by wing surface. (d) The abolition of flying and landing wires has cut out a lot of vibration and has produced a structure more rigid than is usual : incidentally wires in flight have a high frequency of vibration, and landing wires have an amplitude of as much as an inch on large machines, greatly adding to head resistance.

Thirdly, comfort is further considered : the high butt-end of the lower wings next the fuselage allows passengers a good view downwards as well as fore and aft. Ventilation is good without draughts ; and there is 76 cubic feet of space for each passenger, which is more than double the allowance on the ordinary road bus.

Fourthly, maximum safety is assured. If one engine fails, the craft can not only fly on the other three, but even climb at 260 ft. per minute. This is the largest commercial aircraft fitted with automatic wing tip slots. It is interesting to note that the ailerons are of the slotted type developed by this firm. The pilot, right on the nose, has an ideally good field of view.

Much more could be said of the H.P. 42, which is a representative Handley Page product.

A paragraph must be given to the Gugnunc, which is shown in photograph 7. This was originally built for the Guggenheim competition in the United States. It stalls at an incidence of 20° with a lift coefficient of 1.06. Its top speed is 112½ m.p.h., and its lowest speed 33½ m.p.h. At the last three Royal Air Force Displays, the Gugnunc has paraded with the Autogyro and the Pterodactyl. While its performance puts it in their abnormal class, it



3. The Handley Page 42 in flight. The long fuselage and the unusually rigid wing structure are notable features.

has a most orthodox appearance. Its wing tip slots are of the usual type, but its long central slot is in combination with a rear flap, all being automatic.

Most of our readers are familiar with the principle of the slot, but these sketches will serve to introduce it to those who are not. The shaded wing section is shown in three positions. In the second position (slot still closed) the "mackerel-back" shows eddies which not only spoil the clean flow, but add to the resistance by clinging to the wing. In the third position, the open slot has restored the lines of flow to the profile of the wing, blotting out the eddies, and enabling the flow of air to continue in the downward direction in which the wing had begun to divert it, for it is a fundamental principle of flight that a wing can only lift an aeroplane by driving air downwards. In other words, at big angles of incidence the lift can only be maintained by preventing the eddies shown in the second position by the open slot as shown in the third position. Thus at big angles, past the normal stall, the slot decreases resistance and increases lift, postponing the stall.

The slot has been used for three distinct and different purposes:—

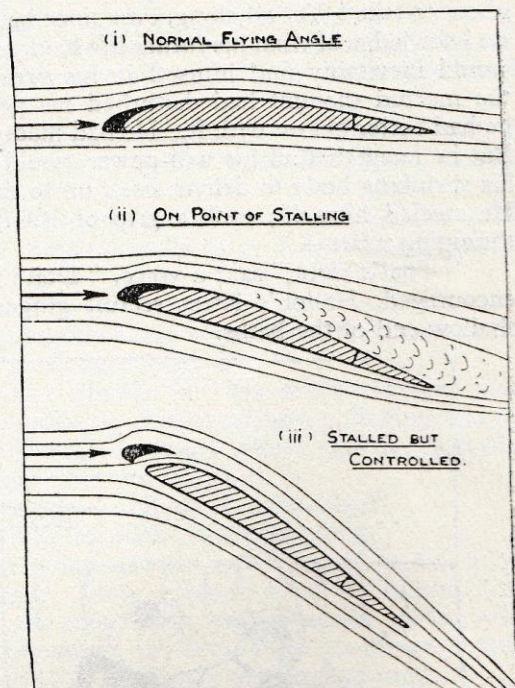
1. For increasing lateral stability by having the slot fitted on the wing tips, such as that which is standardised in the R.A.F.

2. By having the slot on the wing tips with an interceptor, which is a small plate operated by the ailerons, but working in conjunction with the slot, so that the lift on the upgoing wing is automatically destroyed when the aileron is raised, which brings the interceptor into action. By this means increased lateral control in the region of the stall is obtained.

3. By having a front slot fitted to the leading edge of the wing the entire span of the aircraft, interconnected to a flap, thus increasing the lift of the aircraft, which has the beneficial effect of increasing the speed range of the aircraft, and of enabling the pilot to vary the gliding angle through a greater range.

The British Government paid £100,000 to Messrs. Handley Page Ltd. for the use of all patents covering the slotted wing and its future improvements; and Sir Samuel Hoare, when Secretary of State for Air, announced that slots would be fitted to all Service aircraft.

Messrs. Handley Page have lent the blocks to illustrate this article. I am indebted to their General Manager, Sqdn.-Ldr. T. H. England, D.S.O., A.F.C., the test pilot, Capt. J. B. L. Cordes, the Works Manager, Mr. Hamilton, and to Mr. G. C. D. Russell, in charge of the wind tunnel, all of whom, without stint, gave their time and efforts to making my visit a success.



L. C.

The "Short" Six-Engined Military Boat Seaplane

THIS craft, known briefly as the R 6/28, is on the Part Publication List of the Air Ministry; hence information concerning it is strictly limited to the following:—

The R 6/28 is intended for long range bombing and reconnaissance. It is the largest flying boat ever built in Great Britain, and is insured for £100,000. Both its planes are of 120 ft. span. The total height is 30 ft. 4 in., and the overall length is 89 ft. 6 in. The maximum weight is 70,000 lb., that is 31½ tons.

The engines are six Rolls-Royce "Buzzard" III M.S. geared to a ratio 0.477, each having at sea-level a normal output of 820 B.H.P. (2,000 r.p.m.), and a maximum output of 930 B.H.P. (at 2,300 r.p.m.).

The hull, which has distinctly handsome lines, is of stainless steel, with two steps. There are four gunpits; one in the bows, two in staggered positions between wings and tail, and one aft of the tail. There is ample housing, even on a long lease, for the two pilots, the navigator, bomb-aimers, machine-gunners and others, up to a total personnel of ten.

The biplane wings are fabric-covered with duralumin ribs, the inter-plane struts of stainless steel all being vertical. The two outer pairs of struts continue below the lower plane and carry the duralumin wing floats. Petrol tanks are in the upper wing. Ailerons are Frise type.

The six engines are in tandem pairs on three of the five pairs of inter-plane struts. The tractor and pusher airscrews in a tandem turn in contrary directions.

The tail piece has one large rudder with a servo rudder attached, and, in addition to the large central fin, two smaller ones, which are carried through the tail-plane, and can be trimmed by the pilot to counterbalance the effect of failure of a side engine.

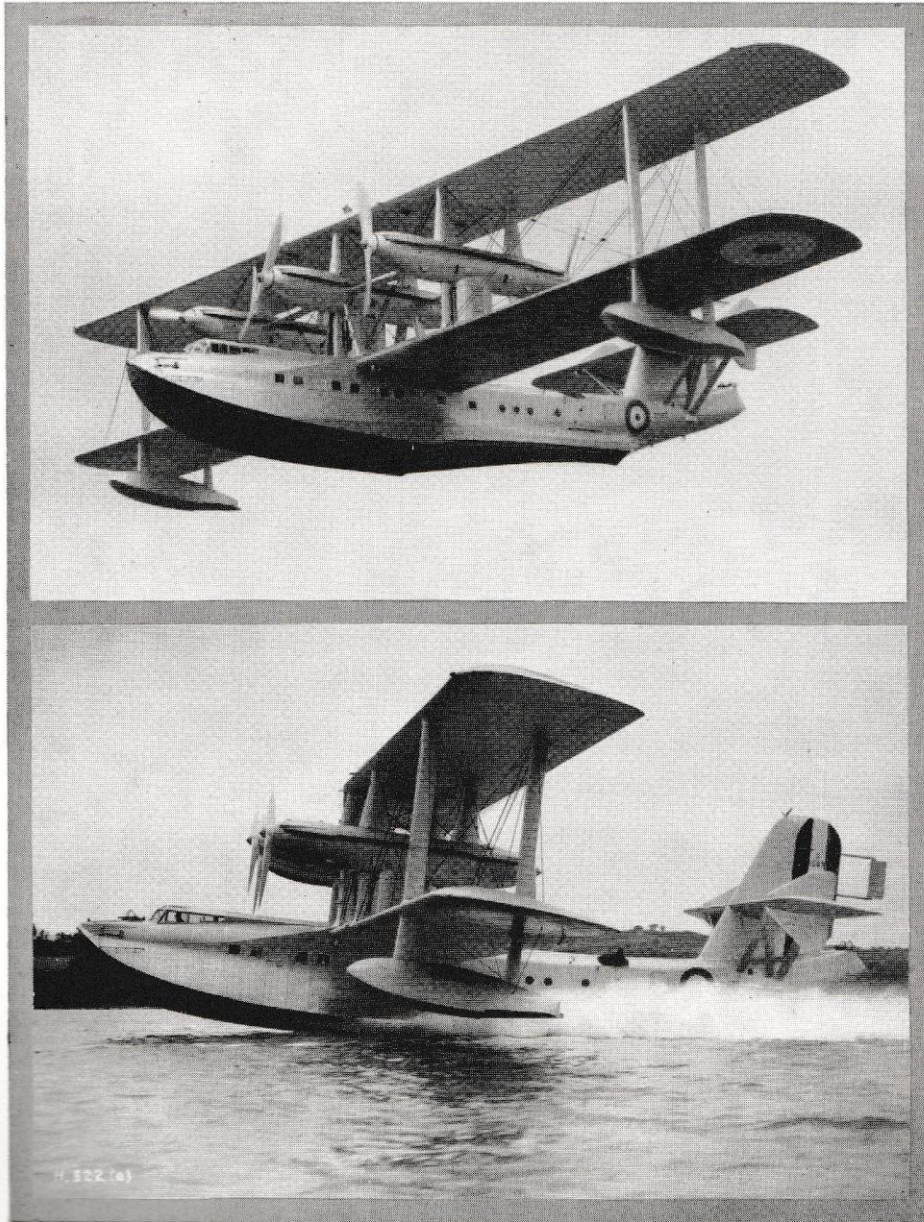
The equipment includes a hatchway in the top of the hull, a spare engine, a derrick for hoisting it, wireless kit, and collapsible dinghies.

Performance is very satisfactory. At the Press trial on July 11th last, in a 20 m.p.h. wind, engines were all started up from cold in 4½ minutes. She was taxied in a circle of 100 yards radius, and then took off with a run of under thirteen seconds. She was flown "hands-off" in level flight; she went past at about 65 m.p.h. and then later at about 130 m.p.h. She climbed to about 2,000 feet, and landed gently "on a mark."

Her top weight of 70,000 lb. may be compared with the 29,000 lb. of the Iris, and the 118,000 lb. of the Do-X. In manoeuvrability, in quick take-off, and in useful load, she appears to be superior to the Do-X, though it must be remembered that during the trial described in the previous paragraph there was probably a total weight of 23 tons only.

We are indebted to Messrs. Short Bros. for the two photographs of R 6/28, showing the craft both taxiing and in flight.

L. C.



The "Short" Six-Engine Military Boat Seaplane

To face p. 16.



Man in Front Cockpit: "Now I've put the machine into a 'spin' what do I do next?"

Man in Second Cockpit: "Hanged if I know unless it's jump. I thought you were the instructor!"

Mater's Day at Halton

By A.A. 568 . . . 's MOTHER.

AT last the great day arrives. Mother has learnt by heart the instructions contained in a dozen letters: he has told her everything, she cannot possibly go wrong. She catches an early 'bus filled with other mothers and finally is deposited at the cross-roads she has heard so much about.

She remembers the little map in the corner of the last letter but one, and moves off without hesitation in the direction of the right barracks. The sight of a small army of A.A.'s momentarily unnerves her but she answers brightly, when questioned by one of them, and is soon being escorted to No. 9. She keeps very quiet. She's been warned not to ask silly questions: Bill might be "chipped" about it later. She feels a little shy though, being gazed at by spectators in dozens of windows, and the remarks do seem to carry across the square.

She scans the windows for Bill's face. Ah! There is a handkerchief fluttering, a face disappears that must be Bill. Up he dashes and with a curt, "Thanks, old man," dismisses the escort. This is a very trying moment for Mother, she's inclined to be "sloppy," but she has learnt her lesson and behaves in the approved casual manner.

"Had a good journey, Mater?"

"Yes, Bill, very pleasant."

"Dad and Jim all right?"

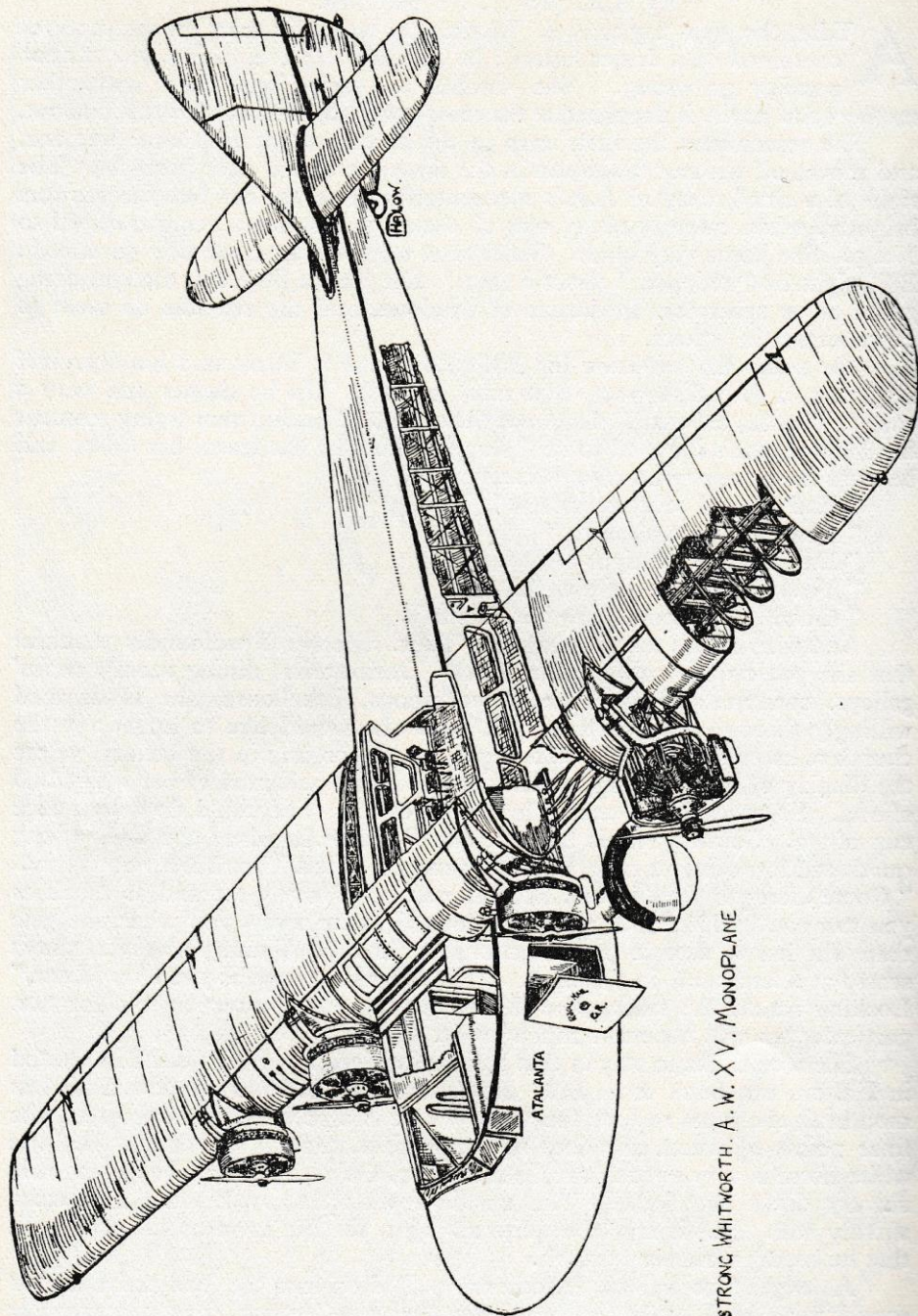
"Yes! They are quite well."

"Good! Now come, see our room."

And then begins the grand Halton Tour. Mother is profoundly thankful that she put on her comfortable shoes. Dormitories, dining rooms, cooks' galleys, swimming bath, church, workshops, bakehouse, she is dragged willingly through each in turn. In some she would like to linger: in the church to listen to the A.A. who is playing the organ; in the bakery, where the display of mass baking makes her feel rather ashamed of her individual efforts. So much bread makes her think of tea. She could do with a nice cup of tea. So away she is taken to the N.A.A.F.I., where she finds a long queue and lots of silver cups, but little prospect of tea. But Bill is not worried. "Come along to the 'drome, Mother, you get a lovely tea and as much as you can eat." The 'drome seems a long distance away, and when she gets there she has to sample the attractions of the fair. Finally, however, she is seated at a long table in a hangar. "Have as many cups as you like, Mater." Looking round the tables, she thinks that the caterer responsible for that particular tea will not make much profit.

She would like to stay in that hangar for a while. She is quite interested in Halton, but more so in Bill. But as soon as Bill has swallowed his last mouthful, she must resume the tour. There is a polo match in progress, the finer points of which she does not appreciate, though she thinks the little white horse is very sweet. As she moves on, the pipes make her feel a little shivery down the spine. The upside-down flying makes her feel more shivery still. But it must be quite all right, for Bill is so accustomed to it that he hardly troubles to watch.

At length 6.30 arrives. Mother is tucked up into the 'bus and wrapped round with rugs. She feels a little "sloppy" again, but courageously restrains herself. A sharp salute and she is away on her hundred and fifty miles ride. She has looked forward to to-day for weeks and now it is all over. He seems very happy though, and she can imagine what he is doing better, now that she has seen Halton. But she feels so tired, perhaps she will sleep a little as she journeys over Salisbury Plain.



ARMSTRONG-WHITWORTH. A. W. X. V. MONOPLANE

No. 1 Apprentices Wing

20TH ENTRY PASSING OUT, JULY 1932.

The following list of awards was offered by the Air Ministry :—

GRAND AGGREGATE.—1st Prize : 563591 Cpl. App. Treves, S. L., Met. Rigg; 2nd Prize : 563834 L.A.A. Armstrong, F. V., Met./Rigg.

EDUCATIONAL SUBJECTS.—563591 Cpl. App. Treves, S. L.

FITTER AERO ENGINE.—1st Prize : 563513 A.A. Muirhead, I. J.; 2nd Prize : 563438 L.A.A. Carr, W. J.; 563500 L.A.A. Ellender, A. B.

METAL RIGGER.—1st Prize : 563591 Cpl. App. Treves, S. L.; 2nd Prize : 563834 L.A.A. Armstrong, F. V.

COPPERSMITHS AND FITTER ARMOURER (Combined) : 564001 A.A. Plank, E. D., Coppersmith.

The Lord Wakefield Scholarship was awarded to 563601 Cpl. App. Yaxley, R. G., Fitter A.E.

CADETSHIPS.—Cadetships were awarded to 563601 Cpl. App. Yaxley, R. G., Fitter A.E.; 563563 L.A.A. Kirk, J. E., Met. Rigger.

ELLIOTT MEMORIAL PRIZE.—The Elliott Memorial Prize was awarded to 563704 L.A.A. Bushell, J. M., Fitter A.E.

20TH ENTRY PASSING OUT RESULTS.

| | F.A.E. | M.R. | Arm. | Cop. | TOTAL |
|--------------|--------|------|------|------|-------|
| L.A.C. | 24 | 23 | 5 | 3 | 55 |
| A.C.1 | 136 | 142 | 39 | 9 | 326 |
| A.C.2 | 73 | 37 | 13 | 2 | 125 |
| Failed | — | 1 | — | — | 1 |

WORKSHOP NOTES.

The September 1929 Entry passed out last July. This Entry, although having few really brilliant A.A.'s, was hard working and very keen. Over 80 per cent. of the Entry passed out as L.A.C.'s or A.C.1's. This was a very creditable result, as the practical test devised by the C.T.T.B. was possibly the hardest ever set.

Considerable changes have taken place in Workshops. All Entries are now working to the same syllabus. A system of "specialist" and "class" instructors has been introduced. Classes now move from shop to shop accompanied by their own class instructor. The specialist instructor remains with his department and is actually responsible for the instruction given.

Next year we shall be in for a very strenuous time, as both the July and December passing out Entries come from this Wing. They are both of a very good standard, and we are hoping for a large percentage of L.A.C.'s.

It is hoped that in future every Apprentice will get the chance of a flight. This will take place during the aerodrome course. In their keenness Apprentices should not forget that only certain places on an aeroplane are designed to carry their weight as they get into the cockpit!

SPORTS NOTES.

SOCCER.—The Inter-flight League and Squadron knock-out competitions are bringing to light some useful talent. All players are keen and up to concert pitch. We hope again to win the B.K. Soccer, and H.Q. Squadron are doing very well in the Command Airmen's League.