

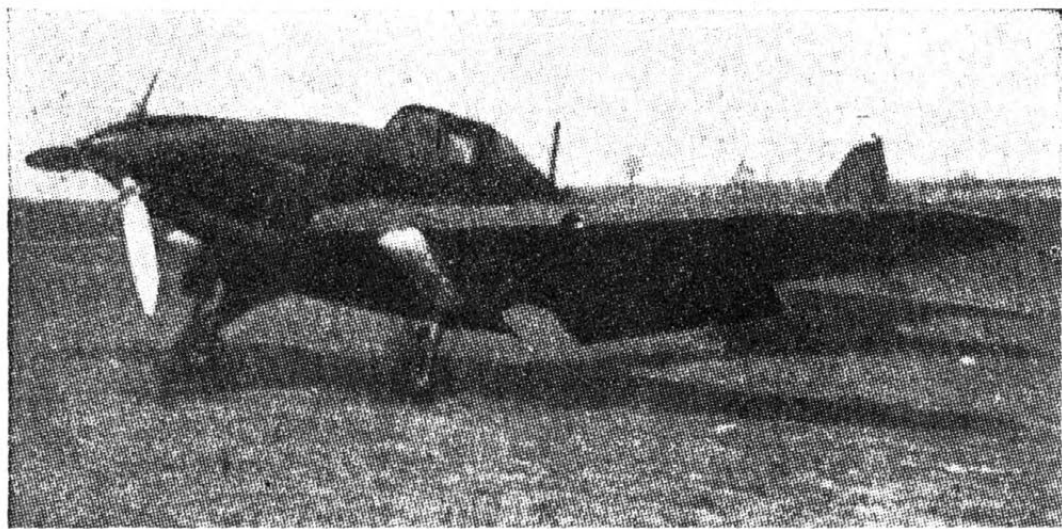
The Vulnerable Aircraft Carrier

AIRCRAFT CARRIERS are vulnerable craft. The suspicion evoked by the high percentage of loss among British aircraft carriers is confirmed by the still higher rate of loss of the Japanese in the engagements off Midway Island and in the Coral Sea and by the United States loss of the Lexington. The Japanese had one carrier sunk in the Coral Sea and four off Midway. In the two-and-a-half years of the War, the British have lost four. To reply that all the British and most of the Japanese carriers were sunk by land-based aircraft is to evade the main point. One immediate check on that line of argument is the fact that the Lexington was damaged by carrier-borne aircraft—so badly damaged that she blew up later.

In sea warfare beyond the range of shore-based bombers, the carrier is theoretically capable of protecting herself by a combination of fighters, artillery and manoeuvre against enemy air attack. The loss of the Lexington seems to deny the theory; and the reason is easy to find. The Japanese were stronger in carriers than the Americans. Fighters have relatively short duration and a mere novice in air warfare would know the value of delaying his main attack on a carrier until the fighters were about to "land on" and both opposition and evasion were consequently reduced to the minimum. At some time in a sea battle the carrier is always likely to become a fairly easy target.

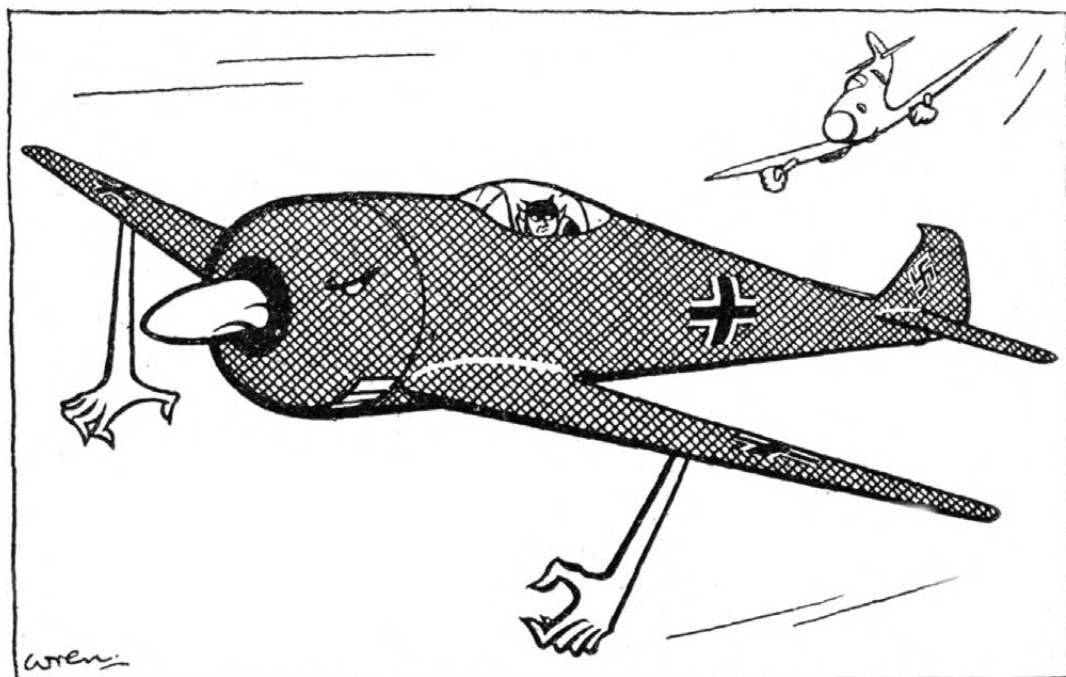
The real test of the carrier's power of self-defence will only come if the Americans and the Japanese should eventually fight a big sea battle out of range of land. And if the Japanese continue to fritter away their carrier strength in such dangerous invasion work they will be outmatched in carriers when the true trial of strength takes place. The carrier is always in the dilemma of having to choose between fighters for protection and bombers for offence. The inevitable compromise may gain or lose in effectiveness by the quality of the air reconnaissance on which the wise employment of the available aircraft depends. Knowledge of the enemy's movements at sea is more important than ever it was, because of the speed at which a situation critical for the carrier and therefore for the reconnaissance system of a whole fleet may develop.

So serious would be the loss of air support to a fleet at sea that reliance on a single carrier is apparently no longer to be thought of. The multiplication of carriers in the Japanese fleets off Midway Island is not necessarily proof that the Japanese hold this view, for the Japanese intention was to use those carriers as forward bases for bombers and fighters to support an invasion; but one result of that battle will probably be to create a demand that an ocean fleet shall be supplied with at least one extra carrier for which the bombers must search before the battleships, cruisers and destroyers can close in and use their guns. Indeed, unless the big ships soon succeed in engaging each other in the Pacific, there would seem to be grounds for prescribing a whole fleet of aircraft carriers as the desired



RUSSIAN FIGHTER-BOMBER.—The Russian single-seat fighter, the Stormovik, called JL 2 by the Germans, which has had great success on the Eastern front. It is armed with two cannon and two machine-guns, eight bombs of 50 kg. under the wings, and a large number of 5 and 10-kg. bombs.

ODDENTIFICATION—LXIV



Strange, is it not, how Nazi evil
In outward form can be perceived—
The "One-Nine-O's" a nasty devil,
Compound of badness unrelieved,
The blackguard scowl, a covert leer,
But underneath, a hidden fear—
"Beware, O Hun! Your time is near!!"

able answer to Japanese naval strength. Then a massive air defence could go hand in hand with heavy air offence against surface vessels.

One other important conclusion which has emerged from the Midway battle is that pattern bombing is still a power in operations against ships. The prowess of the dive bomber has been a little too often and a lot too loudly proclaimed. Much too rarely has there been testimony like that of the naval officer who took part in the fighting off the Norwegian coast in 1940. He estimated that only one bomb in every 560 found its mark in those days. The odds may have shortened a good deal since then, but they are still quite long and the American Army bombers off Midway helped to restore the balance by showing that a bombing pattern properly arranged cannot be escaped by any normal manoeuvre of a ship.

Said Col. Walter J. Sweeney, the leader of a squadron of Flying Fortresses which hit a Japanese carrier: "If we can get enough aeroplanes for attacks like these, nothing can escape us, since we can lay bombs in patterns which no ship can avoid." To that should be added the remark that no Fortresses were lost in that attack. The devotees of the dive bomber will be wise to allow themselves second thoughts.

An American "Miracle"

WE HAVE OFTEN been given to understand that mass production in the U.S.A. just happens like other natural phenomena, such as dawn and the milk.

Striking confirmation of this belief at the home of mass production, the Ford Works, is given in a message to the "Yorkshire Post" from its American correspondent. He relates how he "stood beside Mr. Henry Ford, Mr. Charles E. Lorenson and Mr. Charles A. Lindbergh staring with bulging eyes at the first flood of aerial battleships as workmen flitted round it in re-enacting the American miracle of mass production.

"Ford no doubt chuckled to himself as he recalled the gloomy predictions of veteran aircraft producers when he announced that he would mass produce bombers."

But see how he has done it. The "Special Representative" has been let into the secret. He writes:—

"Man hours have been slashed by as much as 100 per cent. It is the first miracle of aircraft mass production—a miracle as fantastic and unbelievable as mass production itself."

It is all that. Now that Ford is apparently growing bombers by themselves victory cannot be far ahead. Truly the Lord helps those who help themselves.

**SAVE YOUR WASTE PAPER
IT'S A MUNITION OF WAR**

The Royal Aeronautical Society

MR. ARTHUR GOUGE, B.Sc., F.R.Ae.S., has been elected President of the Royal Aeronautical Society for the year 1942-43. The new Vice Presidents are Mr. E. F. Relf, F.R.S., A.R.C.Sc., F.R.Ae.S., Superintendent of the Aerodynamics Department, National Physical Laboratory, and Dr. H. Roxbee-Cox, F.R.Ae.S., Deputy Director of Scientific Research at the Ministry of Aircraft Production. These appointments will take effect from Oct. 1, 1942.

The election of Mr. Gouge to the highest office of the Society is a tribute to the intrinsic merit of a man who has been as modest as he is industrious and successful. Happy the man who need not advertise himself because his products speak for him; thrice fortunate the man whose thirst for knowledge is matched by the opportunities for acquiring and applying it. Mr. Gouge went to the firm of Short Bros. as a mechanic in 1915. For many years now he has been the firm's Chief Designer. The Empire flying-boat and the Sunderland—the two outstanding flying-boats of their day—and the Stirling, the first of the R.A.F. new generation of heavy bombers, were designed under his inspiration and direction.

Like the firm, into which he has fitted so naturally, Mr. Gouge has never seemed to be impressed with the size or magnificence of the work he was doing. His is the temperament which regards endeavour as both a duty and a privilege. Slowly and without flourish, he acquired his knowledge, at the night school, in the experimental shop, from the pilots and operators, by his own observation and by the diligent solution of problems as they presented themselves. That was the way of the three famous brothers who first employed him and introduced him to the fascinating task of compounding aerodynamics, hydrodynamics and engineering in the service of a new art.

He makes light of his achievements and is the readier to acknowledge the work of his team than to admit his directing share in the designing triumphs of his firm. The successes have been too marked to be denied. In conception alone, great things must of necessity be placed to his credit and yet there are some grounds for Mr. Gouge's own modest version of fine designs as being the product of ingenious improvisation to overcome successive difficulties. In the Empire boat, for instance, a daring reduction in the beam of the hull to save weight and improve performance was made, by laborious experiment, into a complete success. In the design of the rolling flaps to help take-off and reduce landing speed, there was another flash of aerodynamic inspiration rendered in terms of good engineering.

What Mr. Gouge never attempts to remind his friends is that liberties can only be taken in design by those who have mastered all the fruits of experiment and experience. He brings to the Chair of the Royal Aeronautical Society a great fund of sound knowledge, a persisting openness of mind and an unflinching scientific inquisitiveness. He brings no dogmatism to his high office, but he should bring the stimulus of the dogged student who has contributed nearly as much as he has acquired.

Royal Observer Corps Commandant

THE AIR MINISTRY has announced the appointment of Group Captain G. H. Ambler, O.B.E., A.F.C., as Commandant of the Royal Observer Corps, in succession to Air Commodore A. D. Warrington-Morris, C.M.G., O.B.E. (retired), who had held the post since 1936.



Group Captain Ambler will hold the acting rank of Air Commodore. He is a member of a well-known Yorkshire family and an active pilot of the Yorkshire Aeroplane Club. He is 38.

His work in the Royal Air Force has been mainly with Nos. 608 (North Riding) and 609 (West Riding) Squadrons, A.A.F. In July, 1940, he was awarded the A.F.C. for "great devotion to duty and exceptional powers as a leader." He received the O.B.E. in 1941, when serving as a Sector Commander at an R.A.F. Station.

Air Commodore Warrington-Morris entered the Royal Navy in 1899, and transferred to the Royal Air Force in 1918. He was a specialist in Signals and obtained international honours in Rugby football. He was mentioned in dispatches in the Autumn of 1940 following the daylight air attacks on this country, in which the Observer Corps under his command played an inconspicuous but vital part. The prefix "Royal" was conferred on the Corps for this work by His Majesty—an unusual honour in the middle of a war.

Japanese Aeroplane Types

SO THAT a separation of the more important Japanese aircraft can be made in the series published each week in THE AEROPLANE the following appear to be the principal operational types of the Japanese Air Forces:—

ARMY	NAVY
Fighters	Fighters
Kawasaki S-98	Mitsubishi S-00
Nakajima S-97	Mitsubishi S-97
	Mitsubishi S-96-2
Light Bombers	Medium Bomber
Potez KB-01 (Potez 63)	Mitsubishi B-96-1 Otori
Mitsubishi KB-98	Heavy Bomber
Karigane III	Mitsubishi OB-96-4
Mitsubishi KB-98	Torpedo-Bombers
Karigane IIM	Nakajima G-97-2
Kawasaki KB-97	Nakajima G-96
Heavy Bombers	Dive Bombers
Mitsubishi OB-98	Aichi K 99
Mitsubishi OB-97	Mitsubishi K 96
Kawasaki OB-97	Reconnaissance Floatplanes
	Aichi KT-98
	Aichi KT-97
	Kawanishi KT-94
	Nakajima KT-95
Transports	Flying-boats
Mitsubishi MC-20	Consolidated H 98
Nakajima AT	Kawanishi H 97
Junkers Y-95 (Ju 52/3m)	

A New "Secret Weapon"

GERMANY has not, apparently, exhausted her capacity for conjuring up new and dreadful weapons of warfare. The latest and most deadly is the anti-aircraft mine. Full particulars of this devastating device (about which the utmost secrecy is being preserved) have been given in Portuguese newspapers on information supplied by the official Spanish news agency Havas-OFI.

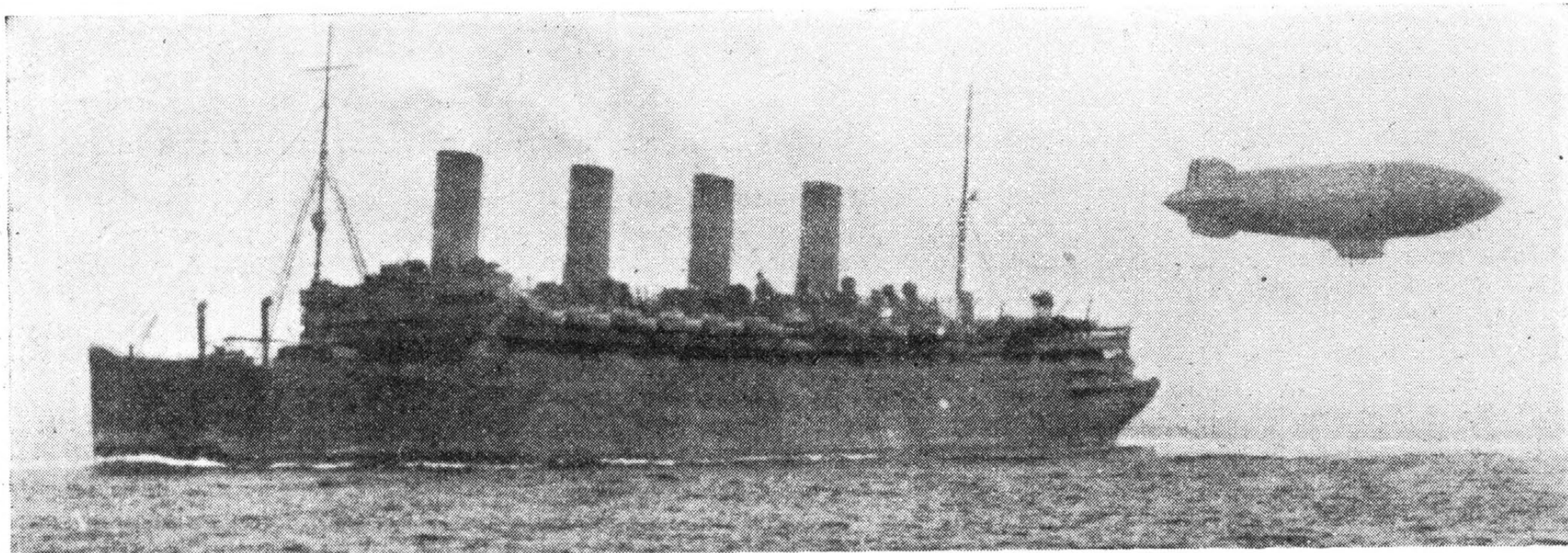
The mine is fired from a gun like an ordinary shell. At a predetermined height an explosion releases the mine and its parachute and it only remains for an enemy bomber to fly into the contraption to complete the full cycle of operations. If, after ten minutes, no bomber has flown foul of the thing, it automatically renders itself harmless and does not explode on contact with the ground.

The amount of detail given in the news agency report suggests that the anti-aircraft mine was tried and found wanting.

AIR IDENTITIES—VI



Major Henry Arnold
Chief of the U.S. Army Air Forces



A WATCHING EYE.—A U.S. Navy blimp on guard over a convoy off the Atlantic coast of North America, to which area the German U boat offensive has largely been transferred.

Diary of the Week

Offensive Operations by the Fighter, Coastal and Bomber Commands of the R.A.F. From June 7 to 13, 1942.

Sunday, June 7

NIGHT .. Aeroplanes of Fighter Command attacked enemy aerodromes and other targets in Holland and Northern France. Aeroplanes of Coastal Command attacked shipping off the Frisian Islands and hit a medium-sized vessel amidships.

Monday, June 8

DAY .. Escorted Bostons, during large-scale offensive operations by Fighter Command, attacked the docks and other objectives at Bruges. Four enemy fighters were destroyed. Six R.A.F. fighters were lost, but two of the pilots were rescued from the Channel. One Ju 88 shot down off the S.W. Coast of England by R.A.F. fighters shortly before dark.

NIGHT .. Main targets, industrial districts in the Ruhr. Docks at Dieppe and enemy aerodromes in the Low Countries also bombed. Aeroplanes of Fighter Command attacked aerodromes and railway objectives in Northern France and Holland. An aeroplane of Coastal Command destroyed a Blohm und Voss Ha 140 seaplane over the North Sea. 18 R.A.F. bombers lost. One enemy bomber destroyed over Great Britain.

Tuesday, June 9

DAY .. Small force of Spitfires blew up and sank German R Boat, off the coast of Holland.

Wednesday, June 10

DAY .. One Focke-Wulf Fw 190 shot down by Spitfires over the Channel. Escorted Bostons attacked the aerodrome at Lannion. Two Fw 190s destroyed by fighter escort. One Boston lost. One Ju 88 shot down off the South-west Coast of England shortly before dark.

NIGHT .. Enemy aerodromes in the Low Countries, and a power station and railway objectives in Northern France bombed and machine-gunned by aeroplanes of Fighter Command. One enemy raider destroyed over Great Britain. Two Junkers Ju 88s shot down by naval escorts to coastal convoys.

Thursday, June 11

DAY .. One enemy bomber shot down into the sea off the East Coast of England.

NIGHT .. Two Lockheed Hudsons of Coastal Command bombed and hit two enemy vessels off the Dutch Coast.

Friday, June 12

DAY .. Bombs dropped at several points in Germany during armed reconnaissance by Bomber Command. Offensive operations by Spitfires, in which a gasholder at Le Tréport harbour was set on fire.

Saturday, June 13

DAY .. Spitfires attacked gasholders, industrial targets and enemy communications in Northern France.

GERMAN, ITALIAN AND BRITISH LOSSES—JUNE 7-13, 1942

Date	Axis (N. Europe)		Axis (Near East)		R.A.F. (N. Europe)		R.A.F. (Near East)	
	Machines	Personnel	Machines	Personnel	Machines	Personnel	Machines	Personnel
7-6-42	—	—	7	13	—	—	5	5
8-6-42	7	19	6	13	24	116‡	9	11
9-6-42	—	—	5	5	—	—	1	4
10-6-42	7	22	4	6	1	3	3	—
11-6-42	1	4	7	11	—	—	4	7
12-6-42	—	—	13	22	—	—	10	15
13-6-42	—	—	8	14	—	—	7	8
Totals	15	45	50	84	25	119	39	50*

‡ Excludes 2 pilots saved. * Excludes 16 pilots saved.

TOTAL LOSSES IN THE AIR WAR* (To dawn, June 14).

	Axis Air Forces	Imperial Air Forces
Machines destroyed in combat or by A.A. gunfire	8,799	5,175
Personnel	23,679	15,410

* Excludes Russia and the Far East.

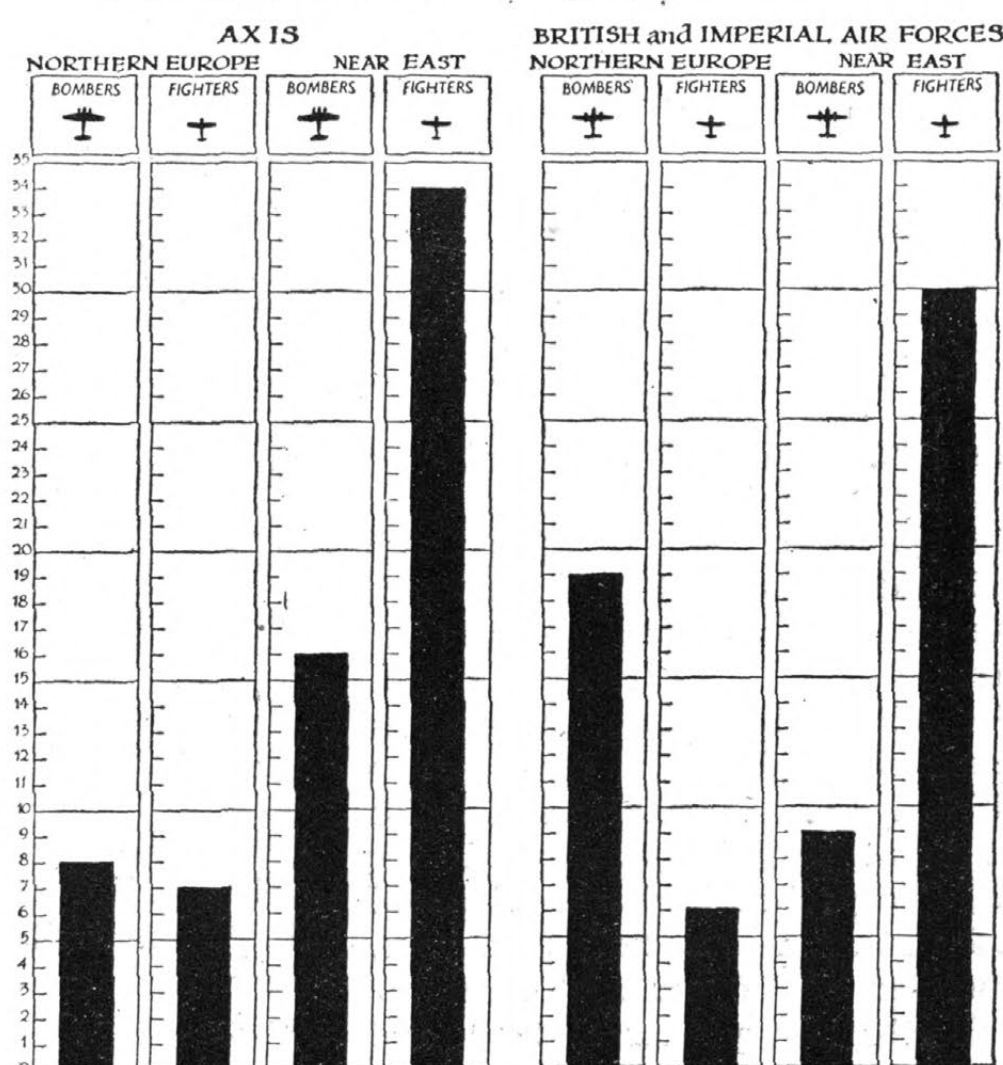
NAVAL SUCCESS IN THE MEDITERRANEAN

An Admiralty communiqué issued on June 11 reported the destruction of a Messerschmitt Me 109 by a naval motor launch in the Mediterranean. No date was given.

CIVILIAN AIR RAID CASUALTIES

Enemy air raids on the United Kingdom during May caused the deaths of 399 civilians and serious injury to a further 425. These figures bring the number of civilians killed in air raids since September, 1940, to 42,818 and the number injured to 54,669.

THE WEEK'S LOSSES—June 7 to 13, 1942



THE WEEK'S LOSSES AT A GLANCE.—Comparative losses in the Air War for the week June 7 to 13, 1942, inclusive. The chart does not include aeroplanes destroyed in Russia and the Far East or those destroyed on the ground. The comparative losses are: Northern Europe: Axis (daylight offensive) 3 bombers and 1 fighter; (night offensive) 5 bombers; (defence by day) 6 fighters. British (daylight offensive) 1 bomber and 6 fighters; (night offensive) 18 bombers. The losses in the Near East were: Axis, 16 bombers and 34 fighters; British, 9 bombers and 30 fighters. Approximate personnel losses suffered by the respective Air Forces were: Northern Europe: Axis, 45, British, 119; Near East: Axis, 84; British, 50.

NEWS OF THE WEEK

AN ANGLO-RUSSIAN TREATY of Alliance which is to remain in force for 20 years and which provides for full collaboration between the two countries, both during and after the War, was announced on June 11. The Treaty was signed in London on May 26 by M. Molotov, People's Commissar for Foreign Affairs, and Mr. Eden, Foreign Secretary. Full understanding was reached with regard to the urgent task of creating a second front in Europe in 1942, and there were also discussions on the question of further improving the supplies of aeroplanes, tanks and other war material to be sent from Great Britain to the Soviet Union. M. Molotov flew from Russia to Great Britain in a Soviet bomber for the signing of the Treaty, then flew to the U.S.A. for a similar agreement, and returned to Great Britain before flying back to Russia. He covered about 10,000 miles by air on his journeys.

June 14 was celebrated as United Nations' Day in all the free countries of the World.

Lord Swinton, Secretary of State for Air from 1935 to 1938, was appointed Minister Resident of Cabinet Rank in West Africa, on June 9.

British and American Air Force units were announced in Chungking on June 9 to have arrived in China.

A Combined Production and Resources Board, consisting of Mr. Donald Nelson and Mr. Oliver Lyttelton, has been established to combine the production programmes of the U.S.A. and Great Britain into a single integrated programme. The Board will work in collaboration with the Combined Chiefs of Staff to meet the changing military requirements of the War. This announcement was made on June 9.

The production of aircraft in Great Britain has increased 100 per cent. above the rate achieved during the last quarter of 1940. This statement was made by Mr. Oliver Lyttelton, Minister of Production, during a broadcast in the U.S.A. on June 10. He stated also that Great Britain was producing tanks, "jeeps" and other mechanised vehicles at the rate of 257,000 a year, an increase of 350 per cent. over the rate for the last quarter of 1940; and that big guns were being produced at the rate of 40,000 a year.

The Garrison of Bir Hakeim was withdrawn on the night of June 10-11 by order of General Ritchie after the Free French forces there had fought off large-scale Axis attacks for 16 days.

In the two years since Italy entered the War—June 11, 1940, to June 11,

1942—Malta has destroyed 590 Axis aeroplanes, probably destroyed 231 and damaged another 546. During that period 997 civilians were killed in air raids on the island.

Japanese forces have made a small-scale landing at Attu, the most Western of the Aleutian Islands of Alaska, and in Kiska Harbour in the Rat Island Group. Operations were stated by the U.S.A. on June 14 to be continuing, although U.S. Army and Navy aircraft attacks had forced the Japanese to retire from the "populated regions" of the islands.

The Grumman TBF-1 the Avenger, a new U.S. Naval Air Service torpedo bomber, was stated on June 14 to have been used in the Midway naval battle. The Avenger is said to have gone into service four months after the first of this type was test flown. An order for 241 for the U.S. Navy was placed in September, 1940.

Four American Consolidated B-24 (Liberator) bombers of the U.S. Army forced-landed in Turkey on June 12, three at Ankara and one at Arifiye, near Diarbekir. The 28 airmen have been interned. Reports from Turkey say that the American machines are believed to have been flying either from Great Britain to Egypt and to have lost their way, or that they were making a raid from Egypt to Constantza or Ploesti in Rumania, or to Sevastopol, when they were attacked by enemy fighters.

A non-stop flight from Australia to Colombo, a distance of approximately 2,800 miles, was recently made by two Consolidated Catalinas flown by naval pilots of the Netherlands East Indies. This announcement was made on June 11 by the Netherlands Indies Information Service in Australia.

The Duke of Gloucester is visiting India, following his tour of the Middle East, and is doing most of his travelling by air.

The U.S. Navy is to train pilots at the rate of 2,500 a month by the end of this year, compared with 600 a month at the beginning of the War.

The first Messerschmitt to fly over American territory was due to land at New York on June 16. It was shot down over Great Britain, reconditioned, and sent to the U.S.A. to take part with Supermarine Spitfires, Bristol Beaufighters and American types in a war-savings campaign.

Turkey is building up the nucleus of an aircraft industry and is also expected to start building aero engines. The first aeroplane to be built entirely by Turkish labour and

material was reported on June 8 to have been given its trial flight before members of the Turkish Aeronautical Society. Factories at Eit Mesud are said to be building trainer aeroplanes.

The U.S. aircraft-carrier Lexington was announced on June 11 to have been lost during the battle of the Coral Sea in May.

Sweden is reported to have squadrons of dive bombers stationed at aerodromes throughout the country.

Service

THEIR MAJESTIES THE KING AND QUEEN visited three stations of Bomber Command of the R.A.F. on June 12. They met pilots and air crews who had taken part in the mass attack on Cologne and the maintenance crews were also presented to them. During their visit the King and Queen inspected Short Stirlings and at Group Headquarters they saw photographs taken after the raids on Cologne, Lübeck and Rostock. They were conducted on their tour by Air Vice-Marshal J. E. A. Baldwin.

Polish crews to the number of 101—about 600 men—took part in the large-scale operations on Cologne and the Ruhr with the R.A.F. Sir Archibald Sinclair gave this information in a letter to General Sikorski in which he said that the R.A.F. was grateful "to you and to Poland for these redoubtable squadrons."

"Air-Sea Rescue" is the title of a booklet describing the work of the Air-Sea Rescue Service which was published on June 12 by the Ministry of Information on behalf of the Air Ministry. The cost of the booklet is 6d.

In less than 18 months the A.T.C. has enrolled 200,000 cadets. This figure was given on June 15.

During May 57 separate daylight attacks were made by Fighter Command of the R.A.F., including 15 in which Bostons of Bomber Command or Hurricane-bombers were escorted to targets in the occupied territories.

A new type of flying suit which incorporates a rubber dinghy and a life-saving jacket is being tested and may be issued to R.A.F. pilots and air crews. The material is said to be waterproof, wind-resisting and fire-proof.

Wing Commander M. L. Robinson, D.S.O., D.F.C., was reported missing on June 9 from a Channel sweep.

Major Andrew Duncan, D.F.C., of the S.A.A.F., was reported missing half an hour after he had been given command of a South African Fighter Squadron on May 31.



**The period
between overhaul of
CHEETAH IX & X
ENGINES
has been increased
to 1200 hours**

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ARMSTRONG SIDDELEY MOTORS LTD. BRANCH OF HAWKER SIDDELEY AIRCRAFT CO. LTD.

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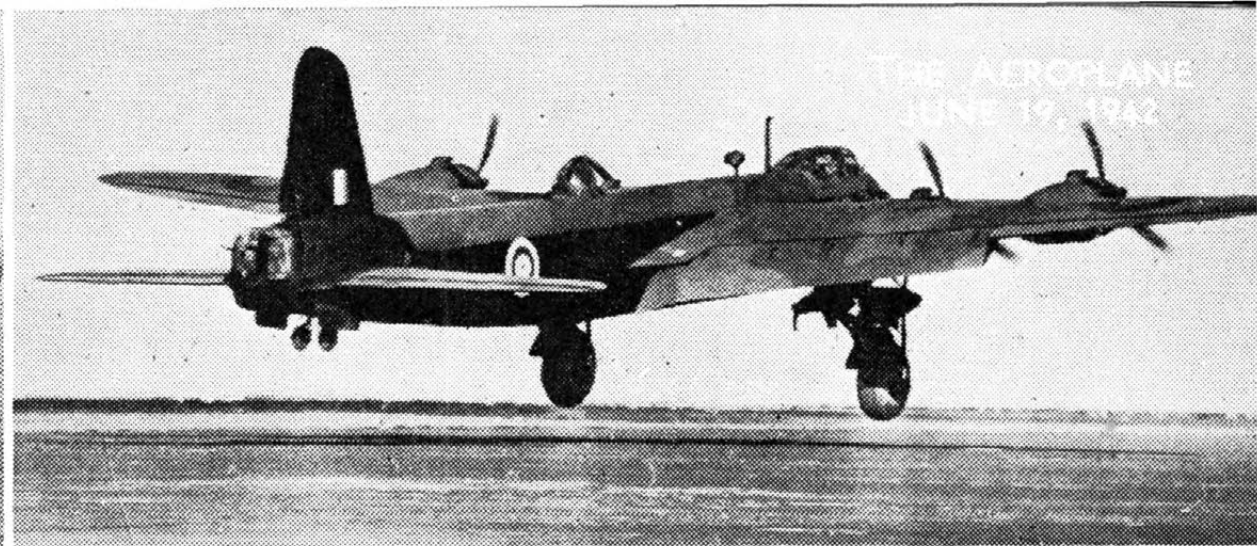
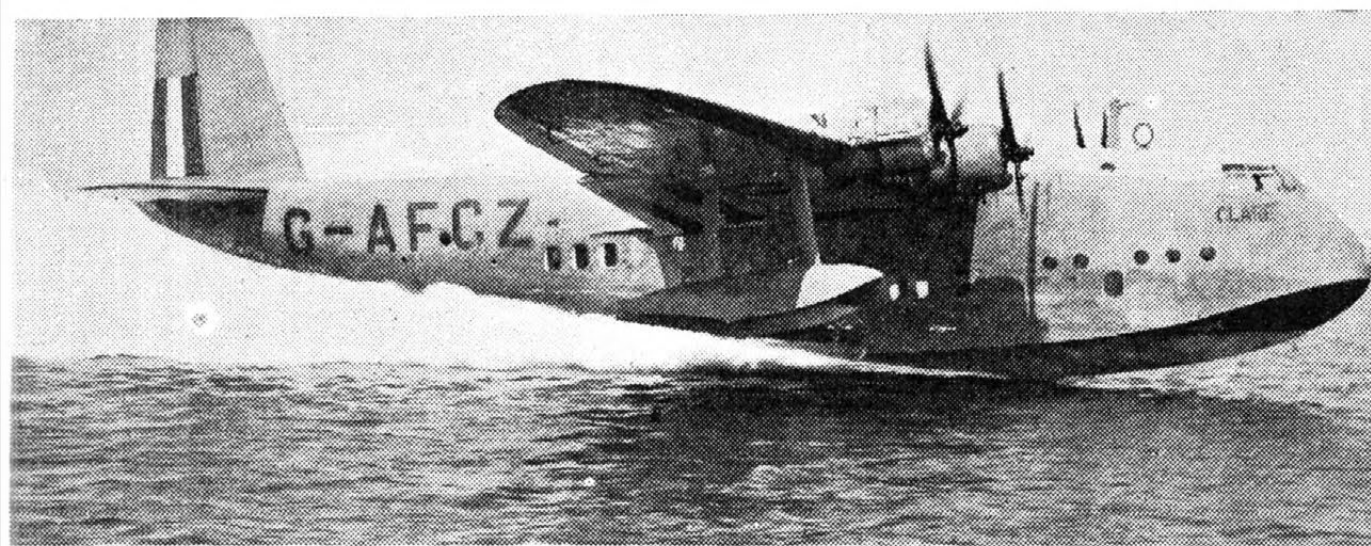
WHEREAS TO-DAY!...

• • • whereas to-day, Gentlemen, our position as "Kings of the Cold" is challenged . . . no longer are we the undisputed leaders in the field of cold-resisting clothing! Human ingenuity has overtaken us and it is now part of the air crews' everyday life to don their Irvinsuits and carry on their jobs, warm and comfortable, in temperatures even as low as sixty below. The Irvinsuit has our admiration and envy.

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SHORT HEAVYWEIGHTS.—Two of Mr. Gouge's most recent and most successful designs, the Short Empire flying-boat (left) and the Short Stirling bomber (right). The Gouge area-increasing flaps can be distinguished on both machines.

“I AM AN AIRCRAFT DESIGNER”—VI

By A. Gouge

A Talk Broadcast on the Forces Programme of the B.B.C. on Monday, June 1, 1942



Mr. Arthur Gouge,
B.Sc. (Lond.), F.R.Ae.S.,
Chief Designer,
Short Bros. (Rochester
and Bedford), Ltd.

in charge of design by Mr. Oswald Short and I've been Chief Designer ever since.

Those are the facts of my career. Now for the job itself. I'm often asked "How do you set about designing?" Many people seem to think that an aircraft designer sits in a sort of studio and sketches out pictures of aircraft and then passes them on to other people to make. The real facts are very different. An aeroplane is the result of an immense amount of team work. The requirements to be satisfied are supplied by the Air Ministry and the various technical staffs. These requirements are examined by the Chief Designer and passed on to the various assistants to study. In some ways, perhaps, they cannot be met and they are therefore modified and some variation put up to the Air Staff. Finally the outline is agreed. Then the real work starts. A full-size mock-up (or model) is usually made in wood and cardboard so that all concerned may be able to see what the full-size aircraft will look like. Many discussions and conferences are held on this mock-up before every instrument and gadget is correctly placed. The mock-up is invaluable, too, for seeing that the pilot's view and the bomb aimer's view will be just right. Once the experts are satisfied that the mock-up represents the best that can be done the details of the various sections of the aircraft are designed under an assistant designer, who co-ordinates the efforts of the various specialists. Scale models are made and tested at the Government research stations, much valuable criticism and advice obtained and, in the case of a flying-boat, the hull form is tested in a tank for resistance and stability.

Finally the job is done. Perhaps you would be interested in the thoughts and feelings of a designer on the occasion of the first flight of a new aircraft. The great day has arrived—the machine is going to fly. For weeks past you have been watching everything that has gone on—your weight expert has poked his head round the door of the office and told you how much heavier the machine is than it should be. The chief assistant has told you that that nebulous thing, the centre of gravity (the c.g., as we call it), which was so carefully pinned down, has slipped aft. (This is important and rather like a child being born with its heart in the wrong place, necessitating a surgical operation if it is too far misplaced.) You have, however, doctored things up to your satisfaction.

Just before the first flight, the Chief Test Pilot has a conference with you and brings up several things that had been overlooked. These are attended to. The aircraft is launched or rushed out on the aerodrome—engines have been run and everything is ready. Finally, the wind, or tide, is right. The pilot takes his seat in the cockpit with his skeleton crew. He opens the throttle and runs the engines up in turn. The chocks are pulled away, or the mooring is slipped and he taxis away. He turns, he opens up. You see this by the flash of the exhaust long before you hear it. He's taking off—no he isn't—he has turned again—you wonder what's wrong—

nothing; he wants a little more room. He opens out again—now he's taking off—no he isn't—yes he is—he's coming towards you—he's off the ground—he's going to put it down again—no, he's going up—he's twenty feet up—fifty feet—he's putting the flaps in, he passes overhead two hundred feet up—he goes out of sight behind the hangars—there he is; he's making a circuit—he's coming in to land—you know if he does this something will be wrong, but you are making a mistake; he's simply making a circuit of the aerodrome—he goes behind the hills in the distance—now you think he has force-landed on the other side of the hills, but you are wrong again—he returns and does a fast run above the aerodrome and you heave a sigh of relief for he wouldn't have done that had there been anything seriously wrong. He finally lands and gives the "thumbs up" signal. Many details may want adjusting, but in general the aircraft is O.K.

Years afterwards, when you learn that a Sunderland has landed on the open sea and rescued the crew of a ship and that some 65 people were taken aboard, you think about these first flights and wonder where the c.g. wandered to under these circumstances. Or when you see that a Stirling returns from a raid over enemy territory with half its tailplane gone you realise that some of your worries on the test flight were unnecessary.

The last two aircraft, the designs of which I have directed, are the well-known Sunderland and Stirling.

The Sunderland is a large reconnaissance flying-boat. The design of this craft was largely based on its forerunner, the civil Empire flying-boat. At the beginning of this War the Sunderland was probably the most heavily armed of all our military aircraft, as the Germans found to their cost when they attempted to attack them over the North Sea.

The Stirling is a large land machine—the first bomber to be built by Short Brothers since the last War. It was one of the first machines to be designed and constructed for the heavy bomber policy of the Air Staff. I am glad to say that the record of the Stirling up to the moment is equal to its flying-boat counterparts.

A modern aircraft takes a long time to design and produce, and get into operation, and it is often felt that we should be able to go twice as fast as we do. But given the complexity of the work, the slowness cannot be helped. Actually, the proof that the whole scheme is not so bad is before your eyes at the moment. I don't think this country need be ashamed of what it has produced in the way of aircraft, and when all is written I think it will be found that the Battle of Britain, for instance, was won in the years before the War by the very fine work put in by the Air Staff in those days, coupled with the work done in the design offices. All the machines which took part in the Battle of Britain were conceived at least four years before and had the conception been wrong the Battle of Britain could not have been won. The same holds true for large bombers and for big flying-boats. There is a moral in this. We must not sacrifice everything for just the immediate future.

In spite of all the seriousness of the War, there have been some amusing incidents. Let me end by telling you about one which happened to one of our Stirling bombers. While carrying out the daily inspection following a raid on Germany one of the maintenance crew heard a noise in the tailplane. When they investigated they found four young rabbits, which must have hidden in the tailplane three days previously, when it had been removed and left in the open for some small repair. Those four small rabbits had lived for three days without food or water. They had taken part in two bomb raids over the Ruhr (a good deal of the time at 14,000-15,000 ft.—without oxygen!) and they were still quite lively when found on the fourth day. Three of them were released near the spot from whence they came and the other was taken into the Mess for a drink. It must, I think, be the only rabbit mascot that ever took part in two bomb raids.

Civil Aviation in War-time Canada

A full but not verbatim report of an address given by Mr. C. H. ("Punch") Dickins, Vice-President and General Manager, Canadian Pacific Air Lines, at Montreal, on April 29, 1942.

CANADA'S WAR PROGRAMME travels faster because of civil aviation. Already about 80 per cent. of flying on our domestic air lines is on defence work. Civilian flyers established the first Observer and Flying Training Schools in the British Commonwealth Air Training Scheme and are to-day turning out observer-navigators in this billion dollar air university at an ever-increasing rate. Many Canadian pilots also are serving as Officers in the Air Force, or civilian administrators, pilots or radio operators in vital war air transport agencies such as the overseas ferry services of Britain and the United States. The ground facilities and navigational aids so necessary for air operations were also in readiness when war broke out, as a result of a decade of development by the Department of Transport, civilian flying clubs and commercial air lines.

Civilian aviation in Canada has thus been responsible for laying a very large part of the foundation on which the present war air effort has been built. After the last War, the Canadian Air Force continued for years largely on civilian operations and with a very limited budget and personnel. In many cases the relatively small civilian commercial companies absorbed Service personnel, whose flying experience would have been otherwise lost to the country. These civilian operators and bush pilots, in the face of great operating problems, and with little financial support, kept aviation alive until the Government faced the problem of rebuilding the Air Force to meet the threat which came upon us in 1939.

The struggle with problems of aircraft construction, training of personnel, airport development and lighting, Winter treatment of snow on runways, the organisation of a weather-reporting service and, finally, the incorporation of clubs and commercial operators into the very body of the British Commonwealth Air Training Plan, constitutes a contribution towards Empire defence of which every Canadian can well be proud. Without the solid foundation provided by civil aviation, the operation of the Air Training Plan in Canada might well have been seriously delayed.

The important place held by civilian aviation after War began was not the result of a sudden and sensational spurt of activity but rather the outgrowth of long planning. The Air Board Act was passed in June, 1919, providing for the regulation of civil aeronautics—a field of Government regulation in which Canada led the world—and thus was born Canada's commercial air business. In addition, the Canadian Pacific secured a charter from Parliament in March, 1919, giving it the right to own and operate aircraft within and without Canada, an act that focused the public eye on the future possibilities of the civil air industry.

Forestry, mapping, aerial photography patrols, came into being and air mail was studied although it was considered too costly at this time. The discovery of crude oil at Fort Norman in the North-west Territories in 1921 resulted in the first major attempt to operate air transport in the North. Next the scene shifted East and the Laurentide Air Services was formed in Quebec in 1922, and two years later this Company operated the first regular passenger and freight commercial air service in Canada.

With the growth of mining activities new air companies sprang up almost overnight throughout Canada, and thus from modest beginnings in 1922 commercial aviation progressed rapidly until, at the outbreak of war, around 20 million pounds of air freight was being flown annually in the Dominion, a total which chalked up the World's record for Canada.

For more than a decade bush flying held the stage in Canada.



ON CANADA'S LAKE CHAIN.—A Barkley Grow, with floats, belonging to the United Air Services Ltd., moored on Brazeau Lake, Sunwata Mountains, on one of the Northern routes operated from Edmonton. Much of the flying in the North is done on floats in Summer for alighting on the lakes, and on skis in the Winter. Now that a chain of new aerodromes to Alaska has been built, all-the-year-round operations on wheels may be possible on some routes.

The great Western and North-western areas were cracked open by the aeroplane. In most of these remote areas the airway was the only way. It was a period of rather hectic growth, and perhaps, at times, there was more enthusiasm than profit. It was a business in which the word competition had much more than an academic meaning and, unfortunately, many operators cut both rates and their own throats. However, no factor had had a greater effect in the expansion of our mining industry than the adoption of air transport, and these pioneers established great new primary industries and carried civilisation to the remotest parts of the Dominion.

Turning from pioneer flying in the remote areas to the urban field, we come face to face with the development of the rather unique institution known as civilian flying clubs. This movement was started in Canada about 1928 and was modelled on the British scheme. Clubs were established at 23 points across the nation and 22 of these are operating to-day and performing a most creditable piece of work in the training of Air Force personnel in elementary flying and training schools connected with the Air Training Plan.

In addition to turning out approximately 3,000 civilian pilots since their inception up to the outbreak of war, these clubs have also done a great deal of training work and, in the 10 years preceding the War, issued 5,500 licences to all types of pilots and 1,300 to engineers. Clearly the work of the flying clubs created a nucleus of well-trained flying personnel of inestimable value when war was declared. And last, but not least, these flying clubs kept alive the spirit of flying in Canada when public interest in military operations had reached a low ebb.

The next step forward in the growth of Canadian aviation came in 1937, when the dream of the preceding decade came true with the formation of a transcontinental air line. While preliminary flying had been done on the Prairie air mail and air express circuit by private companies such as Canadian Airways, pioneered by the late James A. Richardson between 1928-32, this original development work on the Canadian coast-to-coast air route was regrettably brought to a sudden stop in March, 1932, when economy resulted in the cancellation of air mail contracts.

The growth of the publicly owned transcontinental system has been rapid and in 1941 Canada's Atlantic and Pacific Coasts were linked with daily transcontinental air services comparable with any in the World.

Peculiarly enough, the depression helped to erect the foundation of a later transcontinental service, for the Department of Transport, in an unexcelled example of far-sighted Government planning, utilised relief labour for building a string of airports across Canada. This chain of airfields—one almost every 100 miles between the Atlantic and the Pacific—proved to be the route of the future transcontinental airway and, while built for civil needs, was immensely valuable when the crisis came for war purposes. Without these fields, which the Department of Transport laid out in a well-defined long-range programme, the elementary training and Air Observer Schools of the British Empire Air Training Scheme would have been greatly retarded in their growth and operations.

The interest which the Canadian Pacific had shown by acquiring its air transport charter back in 1919 gained an added meaning in 1940-41, when the Canadian Pacific took over the control of 10 north-south feeder air lines stretching from the St. Lawrence to the Pacific and northward to the



A FOREST PATCH.—An emergency landing ground on one of the Western sections of the air route across Canada operated by Trans-Canada Air Lines.

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2. A JOB OF WORK TO BE DONE—Defiants en route to Dunkirk, May, 1940.
3. LOOKING FOR TROUBLE—Spitfires in the Battle of Britain.
4. SUNDERLANDS ON CONVOY PATROL.
5. OVER THE TARGET—Weather favours the Blenheims.
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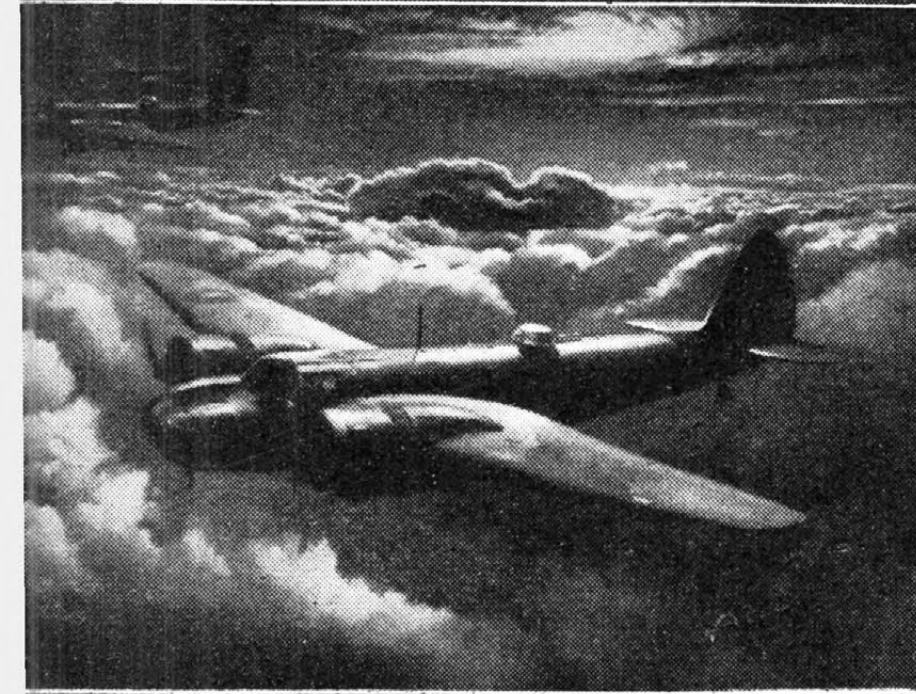
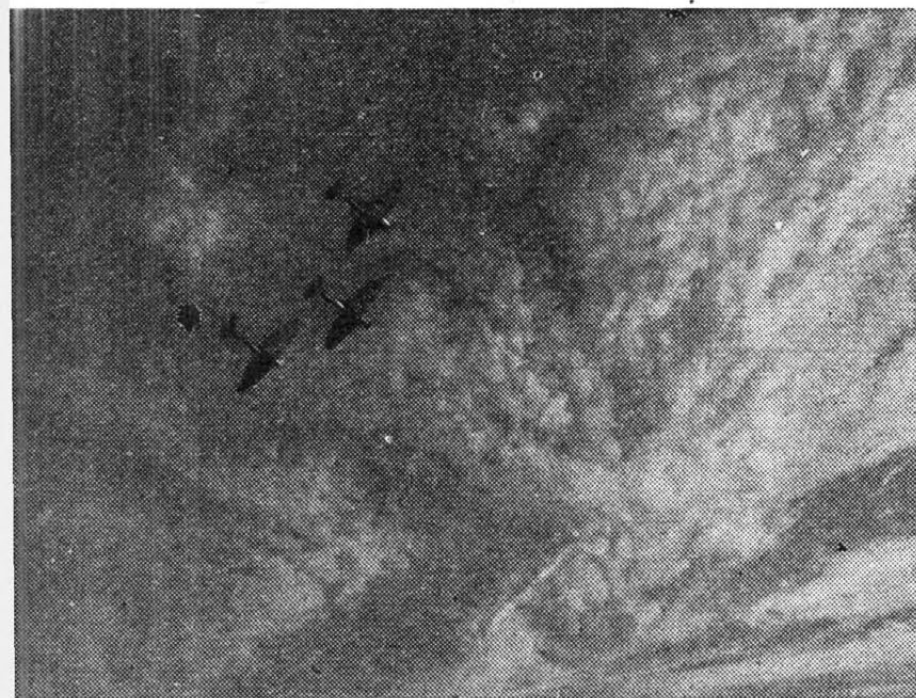
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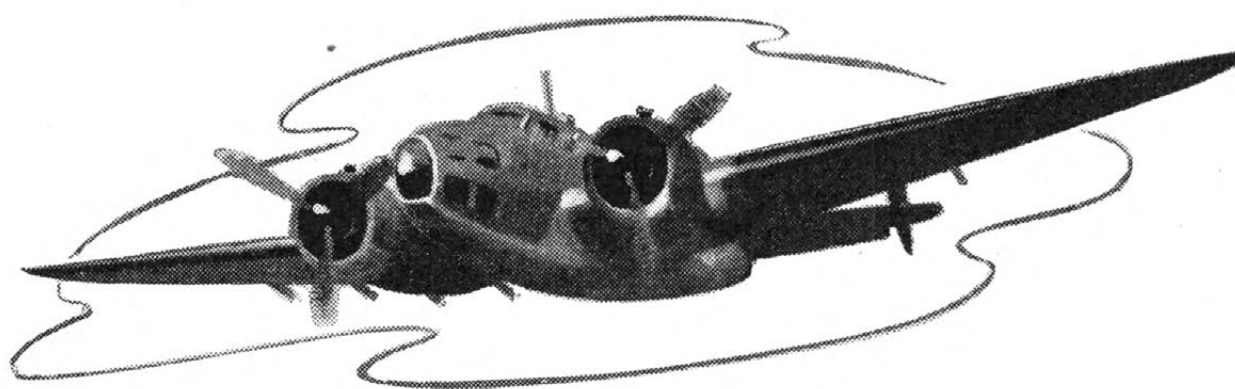
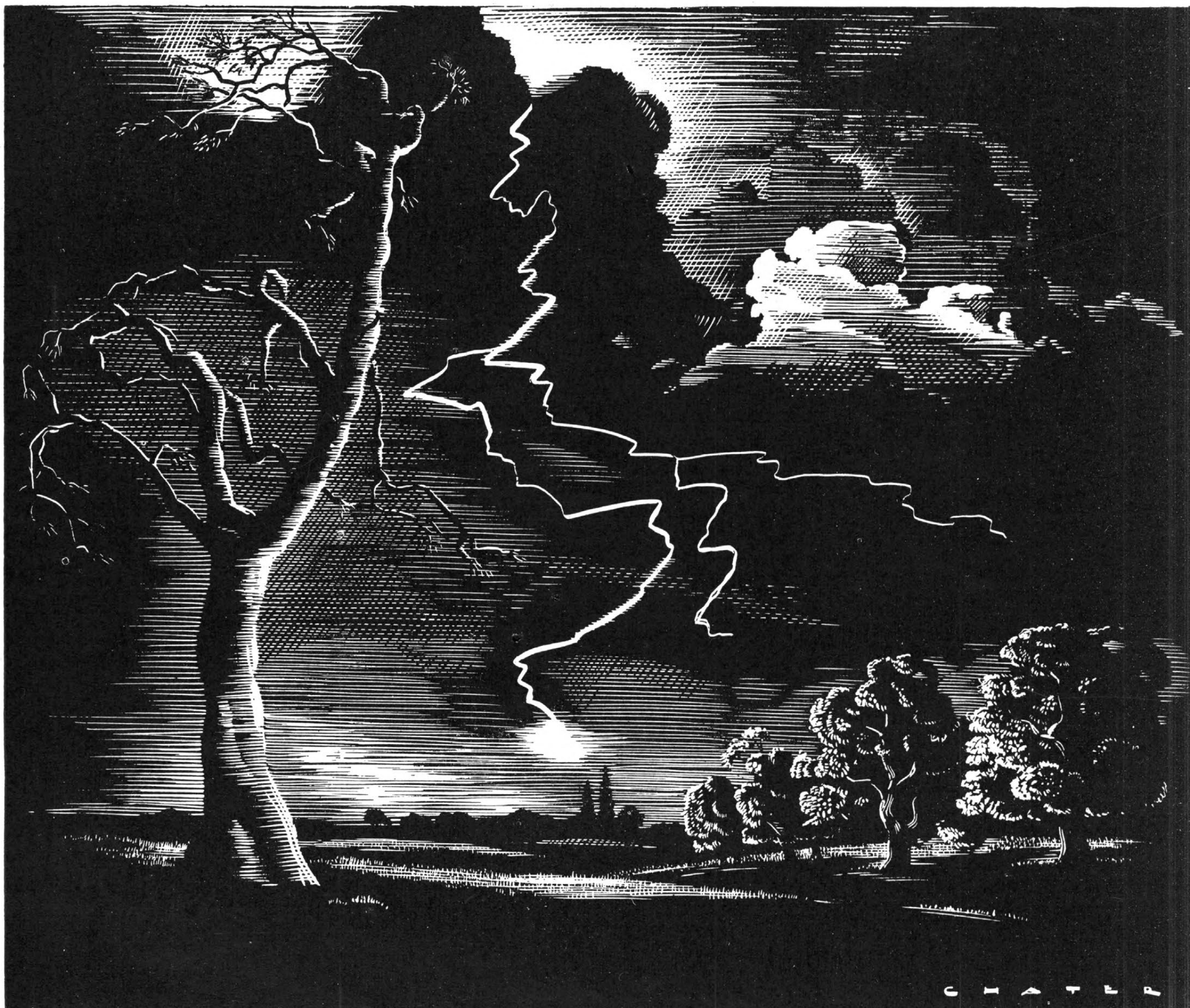
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using the same technique as the Fokker pilots, generally aimed his aeroplane at the target before opening fire. The gun was not yet rigidly mounted to the airframe, but this development soon followed. In the D.H.2 the gun could be moved within small limits, but its pilots rapidly developed the technique of aiming the whole aeroplane instead of just the gun by itself. The D.H.2 played an important part in the final defeat of the Fokker Monoplane.

A type similar to the D.H.2, with the same armament, was produced shortly afterwards by the Royal Aircraft Factory. Known as the F.E.8, it was used for a time on the Western Front and was the last "pusher" fighter to be used in action. Later pusher fighters were built, notably by the Vickers Company, but did not go into production. The pusher was too handicapped to survive in competition with the tractor fighter after gun-synchronising gears had been developed.

Although the Fokker E.1 was the first aeroplane with an interrupter gear, guns had previously been arranged to fire forward on certain Allied types with tractor airscrews. To make this possible, deflector plates were fitted to the airscrew and these prevented damage from bullets that might hit the rotating blades. This system was not entirely satisfactory, but the French pilots Eugene Gilbert and Roland Garros achieved a number of successes by this means with two Morane monoplanes mounting Hotchkiss machine-guns. Garros was eventually forced down in Germany and it was only after Anthony Fokker, who was working for the Germans, had seen the French gear that he evolved the first interrupter.

The R.N.A.S. tried deflector plates on a Sopwith Tabloid early in the War, but it was not until the Sopwith 1½-Strutter two-seat fighter appeared in May, 1916, that we had a real tractor fighter in this country.

The 1½-Strutter had a Vickers gun firing forward and a single Lewis on the rear cockpit. The front gun was operated by the British Scarff-Dibovski synchronising gear, which was unlike the Fokker interrupter in that it fired the gun at prescribed intervals and did not interrupt its automatic firing, as in the German system.

Although the Scarff-Dibovski was the first gear to be extensively used, it had actually been preceded by the Challenger gear, built by Vickers, which was tried out on the Western Front on a Bristol "D" Scout early in 1916.

The Scarff-Dibovski system was not to last long, nor were any of the other contemporary firing gears, such as the Sopwith-Kauper and the Arsiad. They were superseded by the Constantinesco synchronising gear, which employed hydraulic instead of mechanical means to fire the gun and soon proved its superiority.

These gears were all designed to operate the Vickers gun because the Lewis had proved mechanically unsuitable. The Vickers at that time was fed by a 250-rounds belt instead of the 47-rounds drum of the Lewis and this also made it more useful as a fixed weapon. A Lewis synchronising gear, the Alkan, was tried in the R.F.C., but it was less successful than the Vickers and was dropped.

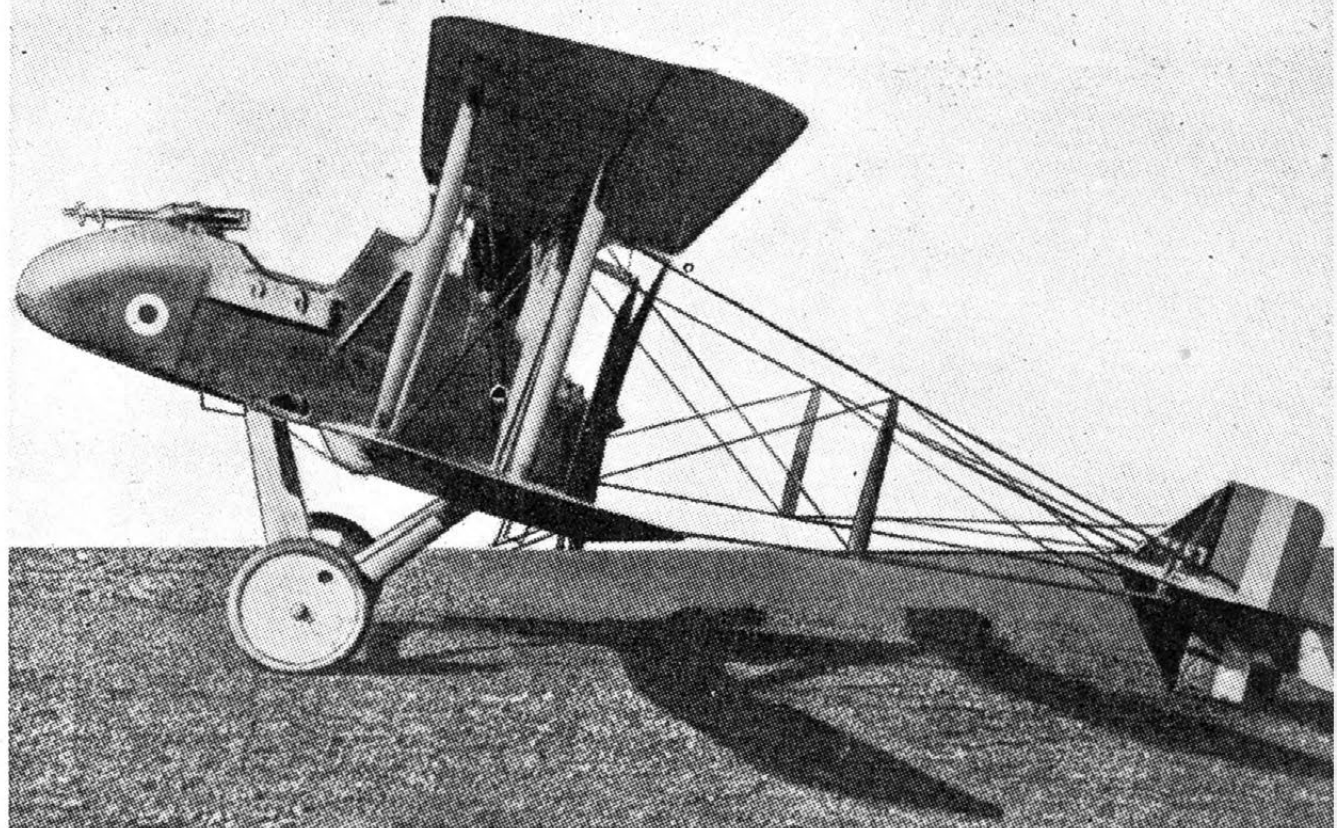
The Constantinesco-Vickers combination which came into use in 1917, first for one fixed gun and later for two mounted side-by-side, was destined to remain the standard armament in fighters for nearly 20 years. It was not until the unsynchronised multi-Browning installations came into use in the late 1930s that it was finally superseded.

At this point it will be convenient to consider the evolution of defensive guns on aeroplanes as opposed to the fixed forward-firing installations which are, strictly speaking, offensive weapons. The Sopwith 1½-Strutter not only introduced the first fixed guns on British tractor aeroplanes but it also mounted a rear gun on a new form of universal mounting—the Scarff No. 2 Ring Mounting which had been invented by the same Warrant Officer Scarff, R.N.A.S., who helped to design the Scarff-Dibovski synchronising gear.

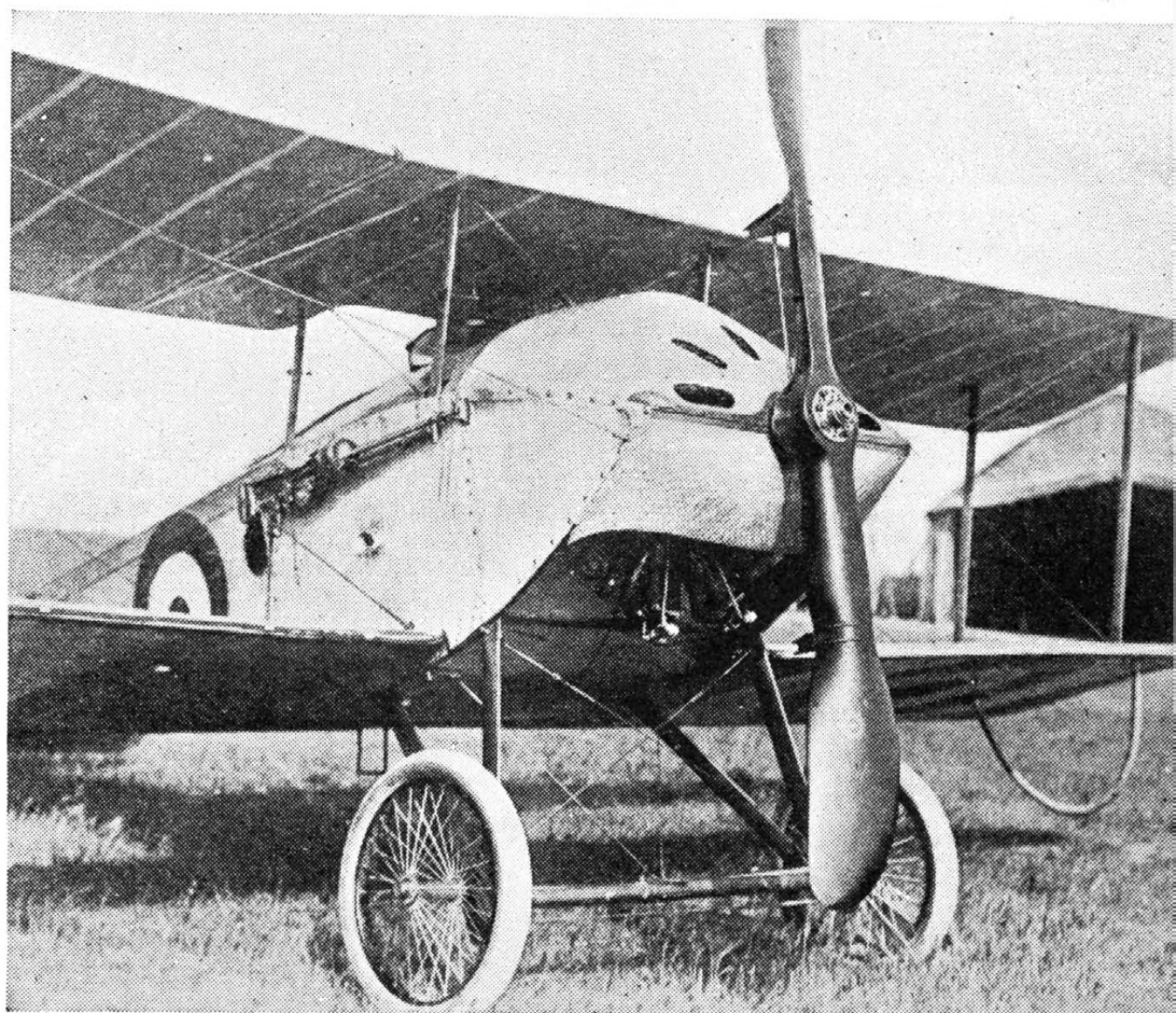
Previous to the introduction of the 1½-Strutter, Scarff had developed two earlier forms of defensive mounting, namely, the Socket and Pillar Mounting and the No. 1 Ring Mounting. Both these were used to a limited extent and were the first serious attempts in any country to provide a "free" gun mounting. The Scarff No. 2 Mounting at first took one Lewis gun. Later it was modified to take two, but in this form was not very successful, for if one gun jammed the mounting slewed round under the action of the other. To overcome this difficulty an improved mounting known as the Scarff No. 6 to take two Lewis guns was in production at the time of the Armistice.

The Scarff ring mounting had a most important influence on air fighting because it greatly increased the efficiency of defensive guns. As a result, two-seat fighters became possible and this class of aeroplane, starting with the 1½-Strutter and reaching its peak of effectiveness in the Bristol Fighter, achieved great success in the latter part of the 1914-18 War. More important still, the Scarff mounting made possible effective defensive gun positions on the many types of bomber that began to appear at about this time.

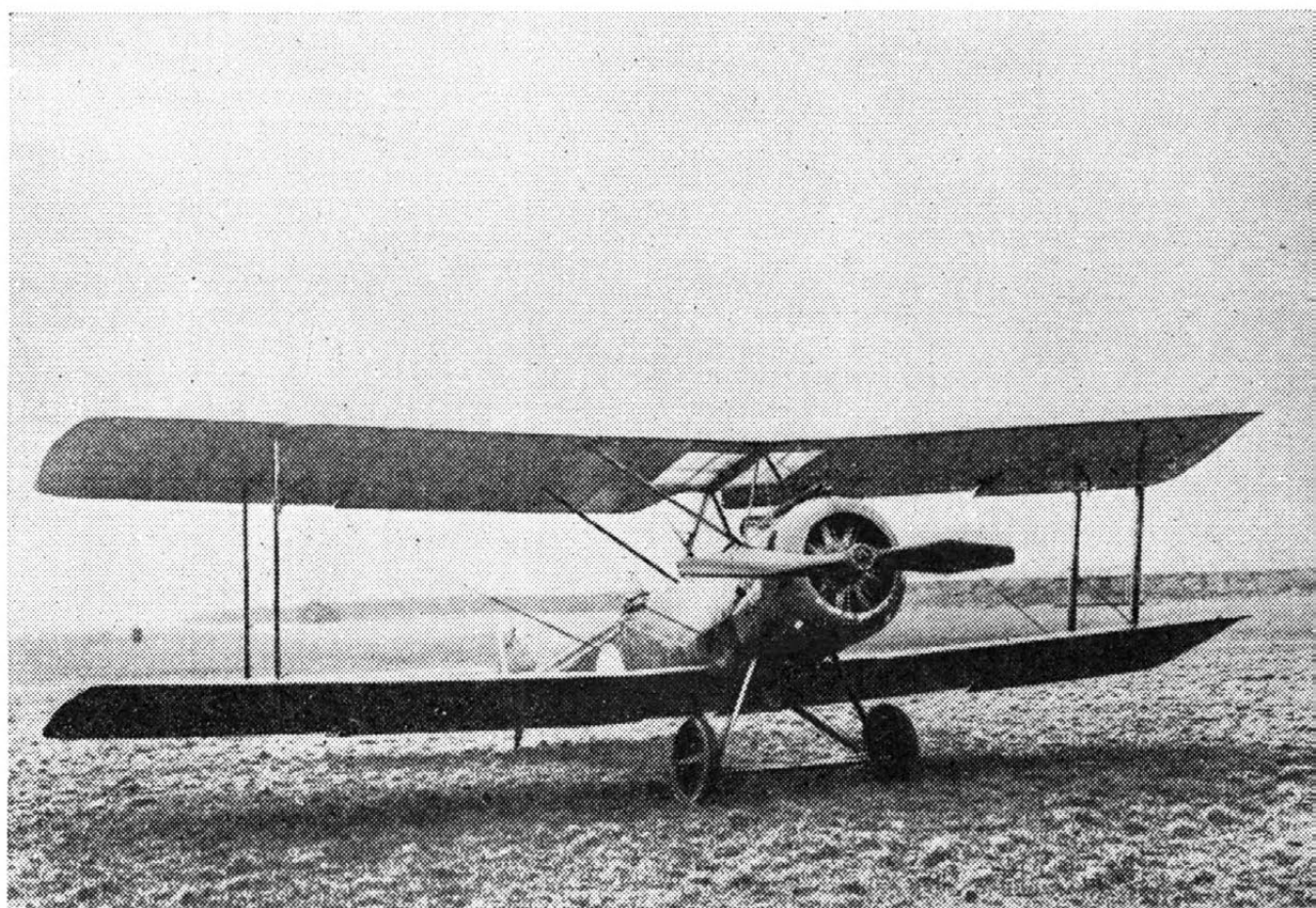
(To be continued)



The F.E. 8 of 1916, was a similar design to the D.H.2 produced by the Royal Aircraft Factory. This aeroplane was the last pusher fighter used on the Western Front.



The Sopwith Tabloid, with an experimental gun mounting used by the Royal Naval Air Service early in the Great War. The gun was unsynchronised, but deflector plates were fitted to the airscrew to prevent bullets from damaging it.



The Sopwith 1½ Strutter, the first two-seat fighter, named on account of its peculiar interplane bracing, mounted two machine-guns. One, a Vickers, was synchronised and fired forward, and the other, a Lewis, was on a movable mounting on the rear cockpit.

THE ROYAL AIR FORCE

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The Roll of Honour

THE ONE HUNDRED-AND-THIRTY-SIXTH Casualty List was published by the Air Ministry on June 9. It contains 260 names of R.A.F. personnel, including those of 110 previously reported. Of those, two missing are now prisoners, 98 missing believed killed or missing in action are now reported or presumed killed, one wounded on active service has now died of wounds, and nine missing believed killed on active service are now reported or presumed killed.

The List includes four wounded in action, seven missing believed killed, and 90 missing. On active service 11 are missing, 15 have been killed, four wounded, and 19 have died.

The total of R.A.F. casualties officially reported since the War began is now 25,304.

The One Hundred-and-Thirty-sixth Casualty List is:—

Previously Reported Missing Believed Killed in Action, Now Presumed Killed in Action

932367 Sgt. J. R. B. Adams.
547973 Sgt. E. S. Ayton.
1169503 Sgt. H. Baker.
1016939 Sgt. J. W. Cadman.
1166185 Sgt. A. W. Deere.
1163235 Sgt. A. H. Higgs.
1286290 Sgt. P. A. Ingram.
902521 F/Sgt. L. W. Jaggard.
916283 Sgt. R. W. Jenkins.
111325 P/O D. S. Martin.
106056 P/O H. J. Parker.
37982 S/L L. H. W. Parkin.
1379640 Sgt. F. Pearson.
1378026 Sgt. W. J. Poulton.
564392 W.O. T. Purdy.
78754 F/O C. B. Randall.
67593 P/O J. H. Rodgers.
552093 F/Sgt. S. R. Samways.
655186 Sgt. D. J. Sandlin.
43553 F/O J. M. H. Sargent.
90246 Act. W/C D. R. Scott.
84332 P/O R. G. Scott.
960672 Sgt. A. D. E. St. C. Smithe.
1055980 Sgt. C. H. Stokell.
751851 Sgt. P. F. Swain.
580630 F/Sgt. J. D. Timms.
936068 Sgt. A. Waterworth.
993807 Sgt. W. Whittam.
1375311 Sgt. G. E. Wilkinson.
1381723 Sgt. S. Williams.

Previously Reported Missing, Now Presumed Killed in Action

960514 Sgt. C. W. Allen.
1109200 Sgt. J. J. Ashurst.
1180907 Sgt. H. R. Barnett.
754397 Sgt. J. W. Bell.
759315 Sgt. R. Boucher.
985637 Sgt. D. C. Cameron.
101503 Act. S/L F. R. H. Charney, D.F.C.
929677 Sgt. G. D. Colville.
60081 P/O P. Farragut.
61924 P/O H. S. Fenlaw.
1164381 Sgt. R. L. Fittell.
88477 P/O W. F. Foster.
900198 Sgt. R. P. S. Grenfell.
1280514 Sgt. G. E. Hann.
976863 Sgt. D. R. Harris.
914086 Sgt. F. S. R. Heard.
948679 Sgt. M. C. Hind.
1179658 Sgt. S. C. Hodge.
1053361 Sgt. S. Jones.
977633 Sgt. G. G. King.
80119 P/O L. P. Kolitz.
104492 P/O G. M. McCombe.
1378011 Sgt. S. A. Maguire.
1109620 Sgt. B. D. Meagher.
748613 F/Sgt. H. Menary.
992922 Sgt. J. Nightingale.
1162363 Sgt. C. H. B. Page.

747878 F/Sgt. E. R. Palmer.
922185 Sgt. D. G. Peppler.
968128 Sgt. A. Pont.
984451 Sgt. S. Porteous.
650686 F/Sgt. R. L. Robinson.
1100625 Sgt. T. W. Robson.
1104087 Sgt. A. W. Rowan.
963441 Sgt. E. K. Saul.
758034 Sgt. K. C. Shearing.
62336 P/O M. H. Sherley-Price.
911524 Sgt. H. B. T. Smith.
778253 Sgt. I. A. Spence-Ross.
922331 Sgt. T. V. Steele.
1381648 Sgt. M. A. Stratton.
755409 Sgt. H. F. Tomkins.
107513 P/O G. S. Turner.
41758 F/O N. W. Walders.
924137 Sgt. G. T. Webb.
754875 Sgt. C. E. White.
755436 F/Sgt. K. J. Wilkie.
755764 Sgt. F. H. Worledge.

Previously Reported Missing Believed Killed in Action, Now Reported Killed in Action

1360577 Sgt. G. McIntyre.

Previously Reported Missing, Now Reported Killed in Action

115561 P/O W. Duncan.
33468 Act. F/L J. A. Harries.

Wounded or Injured in Action

84983 F/O T. H. C. Allison.
612358 Cpl. P. J. Sadd.
1310535 Sgt. C. J. Saul.

Missing Believed Killed in Action

37713 Act. W/C S. McC. Boal, D.F.C.
102555 P/O R. E. Bush.
102112 P/O G. C. Day.
1007103 Sgt. R. C. May.
575840 Sgt. R. G. A. Richards.
43127 Act. S/L F. D. Webster, D.F.C.

Missing

1256129 Sgt. S. R. J. Ainger.
83702 F/O J. B. Ayer.
69491 P/O J. H. A. Baker.
917462 Sgt. J. C. L. Banks.
1006781 Sgt. R. W. B. Brown.
1336129 Sgt. C. F. Bryant.
1381147 Sgt. R. P. Cale.
903072 Sgt. H. Cartwright.
1153963 Sgt. K. R. Clark.
953786 Sgt. J. S. Clarke.
1187096 Sgt. H. E. Cruze.
1375137 Sgt. C. F. Curtis.
109511 P/O R. W. Dargavel.
741375 F/Sgt. L. Davis.
923344 Sgt. J. R. Dodd.
570100 Sgt. L. K. Eagle.
1175893 Sgt. W. B. Eastwood.

42052 F/L J. H. Edwards.
109522 P/O G. Featherstone.
651415 F/Sgt. T. Flanagan.
1232290 Sgt. P. A. Foster.
996595 Sgt. H. I. Fraser.
83301 F/O B. J. Fyson.
89327 F/O G. M. Gee.
64861 P/O D. Geffene.
1169619 Sgt. R. G. Giddings.
968335 F/Sgt. J. T. Graham.
915076 Sgt. M. Griffiths.
1379662 Sgt. R. Grisdale.
948242 Sgt. A. Hague.
1200462 Sgt. E. A. Hall.
1102753 Sgt. W. Hall.
1176650 Sgt. A. A. S. F. Harris.
1356436 Sgt. D. Henderson.
643397 Sgt. G. Jackson.
748630 F/Sgt. M. A. Jones.
630368 F/Sgt. S. Jones.
67617 P/O R. Langley.
751040 Sgt. A. Lees.
104588 P/O S. B. Leney.
106509 P/O B. F. Mays.
1205877 Sgt. F. H. Miller.
109475 P/O C. Newell Jones.
926585 Sgt. L. R. M. Norris.
1312845 Sgt. M. O'Brien.
1376124 Sgt. H. F. Pocock.
1182222 Sgt. B. T. Randall.
1053676 Sgt. R. C. Roberts.
37300 Act. W/C M. L. Robinson, D.S.O., D.F.C.

60772 Act. F/L A. C. Stevens-Fox.
1056817 Sgt. D. E. S. Sydney-Smith.

904947 F/Sgt. D. S. Thomas.
76019 F/L T. H. Tozer.
755032 F/Sgt. R. A. J. Trevillan.
915640 F/Sgt. A. R. Vint.
985888 Sgt. J. Waddell.
1100114 Sgt. D. P. Walmsley.
66580 P/O J. E. Ward.
995862 F/Sgt. T. Watson.
567428 Act. F/Sgt. H. S. Wheatley.
1265550 Sgt. E. P. Wright.

Missing Believed Killed on Active Service

1017872 A.C.1 G. Baines.
1141853 A.C.1 W. Fisher.
618535 A.C.1 R. Grierson.
971724 Cpl. H. Kin.
1314070 A.C.1 E. J. Lee.
1269209 L.A.C. G. H. R. Leverington.
1315240 A.C.1 A. R. Manchip.
1059690 L.A.C. L. H. Quinn.
1236550 A.C.1 W. G. Titherington.
1204590 A.C.1 H. Whatmore.
572591 Cpl. A. T. Woodman.

Killed on Active Service

89636 F/O H. C. Babington.
1064457 Sgt. G. Cant.
655734 Sgt. R. J. Coates.
112289 P/O J. P. Considine.
1191592 Sgt. E. G. Cooke.
109073 P/O J. P. N. Findlay.
106050 P/O G. C. Giras.
1006782 Sgt. E. Hunter.
85659 F/O D. H. Jeffery.
47659 P/O J. C. Jones.
1270510 L.A.C. G. Mallam.
1059394 Sgt. A. S. Moggach.

Previously Reported Missing Believed Killed on Active Service, Now Presumed Killed on Active Service

64894 P/O D. A. F. Allmond.
994248 A.C.1 J. K. Kidd.
1370937 A.C.2 G. Kidd.
39339 Act. S/L P. C. Rolt.
930931 A.C.2 S. O. Wainwright.

Previously Reported Missing Believed Killed on Active Service, Now Reported Killed on Active Service

925545 Sgt. N. F. T. Brown.

Wounded or Injured on Active Service

115426 P/O R. H. Orlebar.

Previously Reported Wounded or Injured on Active Service, Now Reported Died of Wounds or Injuries Received on Active Service

539546 Cpl. R. Peters.

Died on Active Service

1299000 A.C.2 M. P. Belcher.
1284342 A.C.1 F. S. H. Bullen.
966720 A.C.1 J. Casey.
933670 L.A.C. W. C. Chambers.
950664 L.A.C. T. Croft.
1431988 A.C.2 R. Gee.
522881 Cpl. W. H. Gilbert.
1528358 A.C.2 E. A. Green.
1260185 A.C.2 R. H. Hadley.
976281 L.A.C. J. McDonald.
1104557 Sgt. W. R. Mullett.
933693 A.C.1 J. F. Read.
646652 Cpl. B. C. Roper.
215549 L.A.C. L. F. Sparks.
1258348 A.C.2 H. F. G. Whatley.
1332684 A.C.2 G. L. S. Whichello.
613954 Cpl. W. J. Wisedale.

Previously Reported Missing, Now Reported Prisoner of War

1193465 Sgt. P. W. Lowe.

W.A.A.F.

Died on Active Service

420029 L.A.C.W. D. E. Smith.
2005985 A.C.W.2 D. S. Winter.

ROYAL AUSTRALIAN AIR FORCE

Previously Reported Missing Believed Killed in Action, Now Presumed Killed in Action

Aus.400028 Sgt. I. M. Ince.
Aus.400122 Sgt. J. H. Pott.
Aus.402540 P/O D. A. Ray.

Previously Reported Missing, Now Presumed Killed in Action

Aus.404226 P/O J. L. Asprey.
Aus.400222 P/O J. W. Greening

Missing

Aus.402726 Sgt. A. B. Burgess.
Aus.404564 Sgt. S. L. Green.
Aus.404585 Sgt. C. A. V. Hartley.
Aus.402376 Sgt. J. E. Maloney.
Aus.400306 Sgt. R. Marshall.
Aus.402611 Sgt. H. E. Rowley.
Aus.408165 Sgt. R. E. Waters.
Aus.400301 Sgt. C. F. Woodburn.
Aus.402629 P/O H. N. Young.

ROYAL CANADIAN AIR FORCE

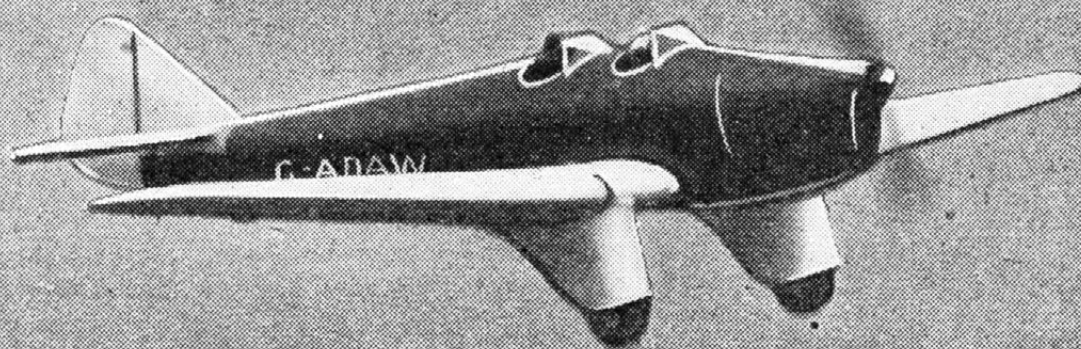
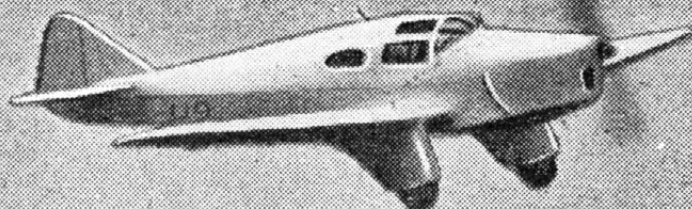
Previously Reported Missing Believed Killed in Action, Now Presumed Killed in Action

J.6846 P/O K. S. Davies.
J.8609 P/O R. D. Fairbairn.
J.5918 P/O W. F. Hull.

Previously Reported Missing, Now Presumed Killed in Action

J.15032 P/O W. H. Davidson.
R.62717 Sgt. W. K. Hunting.

Milestones 1934/5



MILES 'MERLIN'
MILES 'FALCON'
MILES 'HAWK MAJOR'

Stages in the development of a reputation

AFTER the success of the Hawk in 1933 had justified the designers' belief in the low-wing monoplane, other aeroplanes quickly followed. They were the first British aeroplanes to standardise split flaps, which provided full control at very slow landing speeds.

HAWK MAJOR Two-seater (bottom). — The prototype of this famous plane, fitted with a Gipsy III engine, was flown by Tommy Rose in the 1934 King's Cup Race, gaining a popular second. MacGregor and Walker flew a Hawk Major from England to Australia in five days, fifteen hours, a single-engine record that stands to-day.

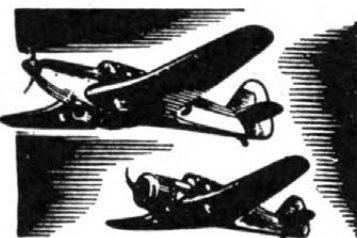
FALCON Four-seater (centre). — This was the designers' first real cabin aeroplane, but in all other respects was similar to the Hawk Major. Fitted with a Gipsy VI engine, a Falcon was piloted to victory by Tommy Rose in the 1935

King's Cup Race. Two Hawk Trainers also secured second and third places. A Miles Aircraft Sparrowhawk completed an outstanding day by winning the speed prize, and was first to finish, although unplaced on handicap time.

MERLIN Five-seater (top). — Built to the specification of Birkett Airways to carry a pilot, four passengers and luggage with a 200-h.p. engine, this aeroplane, developed from the Falcon, was soon flying on regular services at home and abroad.

It was during this period that Phillips & Powis Aircraft, Ltd., became a public company.

The experience behind Miles Aircraft design was then devoted to the building of Service aircraft, a policy which resulted in the now-famous Miles Master — fast advanced Monoplane Trainer for the Monoplane Pilots of the R.A.F.



Give generously to
**The Royal Air Force
Benevolent Fund**

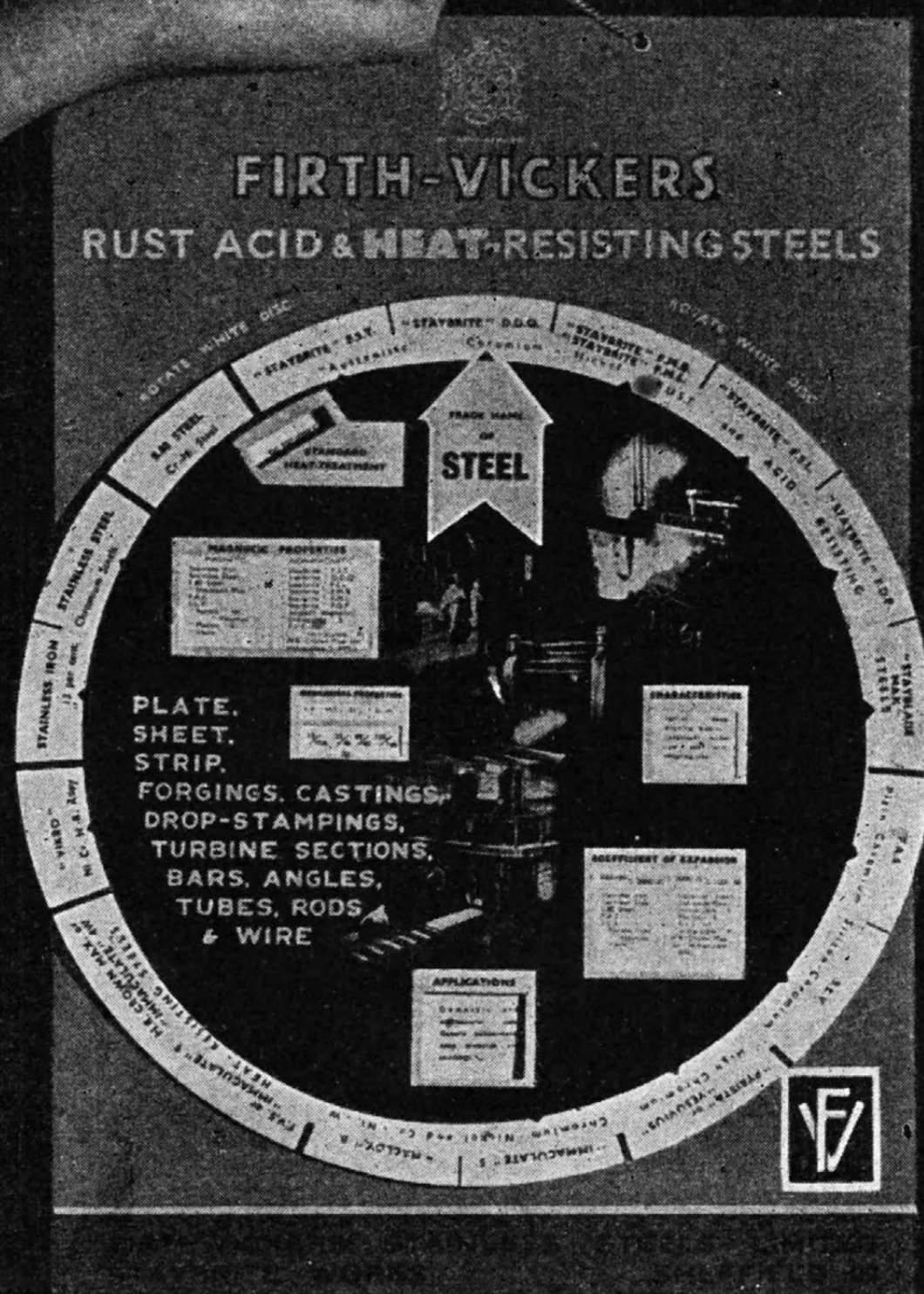
Miles

A I R C R A F T

CONSTRUCTED BY PHILLIPS & POWIS AIRCRAFT LIMITED, SOMEWHERE IN ENGLAND

» M A S T E R S O F T H E A I R «

(M2)



It would be a simple matter to describe the chart shown above, and give elaborate instructions for moving the disc to obtain immediate and useful technical information on all Firth-Vickers Stainless Steels.

Far better, however, would it be for you to allow us to send one to you. May we do so?

Owing to the large demand we are at present greatly restricted as regards the purposes for which these steels can be supplied.

FIRTH-VICKERS STAINLESS STEELS LTD

SHEFFIELD

R.57938 Sgt. J. L. B. Martin.
R.68123 Sgt. S. E. Rowed.
R.77339 Sgt. W. Turley.
C.1371 F/O C. A. B. Wallace.
R.53699 Sgt. J. F. Wolff.

Previously Reported Missing Believed Killed in Action, Now Reported Killed in Action

J.4885 P/O T. G. Cottier.

Missing Believed Killed in Action
J.15144 P/O W. F. McCarthy.

Missing

R.54303 Sgt. A. A. Bussell.
J.15244 P/O J. D. A. Foley.
R.68080 F/Sgt. H. R. Franklin.
R.64633 F/Sgt. W. M. Fraser.
R.62704 F/Sgt. G. G. Giroux.
R.69157 Sgt. A. R. Henman.
R.79805 Sgt. N. A. Leckie.
J.6847 P/O H. M. Lowry.
R.66181 F/Sgt. H. W. Lundy.
R.54041 W.O. D. A. McCann.
R.80124 F/Sgt. J. O. H. Nevill.
J.15207 P/O H. R. Strouts.

Killed on Active Service

R.84371 Sgt. R. T. Edwards.
J.8976 P/O R. L. Keniston.

Previously Reported Missing Believed Killed on Active Service, Now Presumed Killed on Active Service
J.5316 P/O G. D. Gilmour.

Previously Reported Missing Believed Killed on Active Service, Now Reported Killed on Active Service
J.8201 P/O R. N. Wycherley.

Wounded or Injured on Active Service

R.97614 Sgt. H. J. Cossentine.

ROYAL NEW ZEALAND AIR FORCE

Previously Reported Missing, Now Presumed Killed in Action

NZ.401761 Sgt. K. C. M. Miller.

Missing

NZ.403419 P/O N. R. Blenden.
NZ.402543 P/O E. F. Chandier.
NZ.411392 P/O T. T. Fox.
NZ.403547 Sgt. D. A. S. Hamilton.
NZ.403457 F/Sgt. R. E. Knoblock.
NZ.404936 Sgt. W. J. Paterson.

Killed on Active Service

NZ.404088 Sgt. B. A. Neill.

Previously Reported Missing Believed Killed on Active Service, Now Presumed Killed on Active Service

NZ.404409 Sgt. J. A. Johnston.

Wounded or Injured on Active Service

NZ.404113 Sgt. J. D. Ackerman.

Previously Reported Missing, Now Reported Prisoner of War

NZ.405477 Sgt. B. W. Spence.

SOUTH AFRICAN AIR FORCE

Wounded or Injured in Action

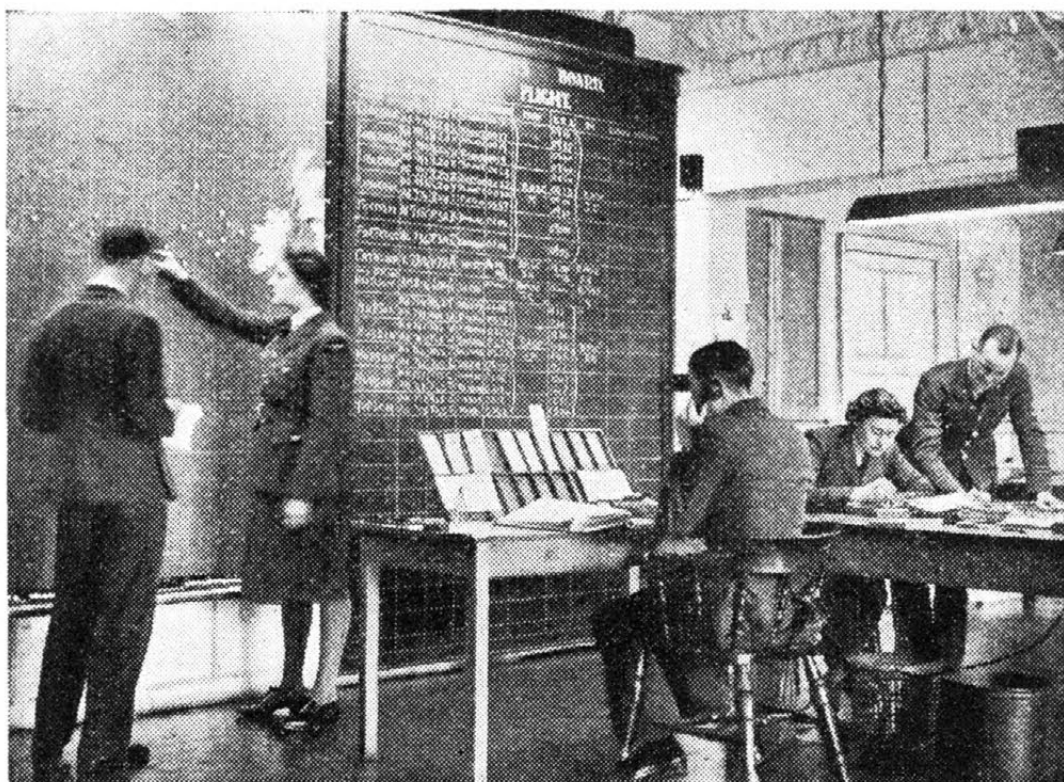
103366 Lt. W. Langerman.

Missing

103333 2nd Lt. G. Donaldson.
103491 Lt. J. W. Van-Niererk.

Wounded or Injured on Active Service

96039 Air/Mech. U. Sacks.



PLOTTING THEM ACROSS.—The Operations Room of the R.A.F. Ferry Command where the hour-by-hour progress of the bombers crossing the Atlantic is plotted. The airman and the aircraftwoman on the left are marking positions on the map and the large blackboard records the type of bomber, the name of its pilot, the time it took-off and the E.T.A. (estimated time of arrival) at a base. Consolidated Liberators are operating regular services across the Atlantic returning the pilots to Canada and in the opposite direction bringing freight to Great Britain.

Royal Air Force Awards

HIS MAJESTY THE KING has approved the following awards for gallantry in flying operations against the enemy, including sorties over France, intruder sorties, fighter operations over Malta and attacks on enemy shipping and convoys:—

Distinguished Service Order

Squadron Leader A. M. Murphy, D.F.C.—No. 161 Squadron.

Bar to the Distinguished Flying Cross

Act. Wing Commander F. D. S. Scott-Malden, D.F.C., R.A.F.V.R.
Act. Wing Commander B. R. O'B. Hoare, D.F.C., R.A.F.O.—No. 23 Squadron.

Distinguished Flying Cross

Act. Squadron Leader S. B. Grant.—No. 249 Squadron.
Flight Lieutenant H. L. North.—No. 457 (R.A.A.F.) Squadron (since missing).
Act. Flight Lieut. H. A. S. Johnston, R.A.F.V.R.—No. 126 Squadron.
Act. Flight Lieut. W. A. Laurie, R.A.F.V.R.—No. 222 Squadron.
Act. Flight Lieut. W. G. Lockhart, R.A.F.V.R.—No. 161 Squadron.
Flying Officer G. A. F. Buchanan, R.A.F.V.R.—No. 249 Squadron.
Pilot Officer L. P. Griffith, R.N.Z.A.F.—No. 485 (N.Z.) Squadron.
Pilot Officer P. A. Nash.—No. 249 Squadron (since died).
Pilot Officer E. F. Paige, R.C.A.F.—No. 407 (R.C.A.F.) Squadron.
Pilot Officer J. E. Peck, R.A.F.V.R.—No. 126 Squadron.
Pilot Officer Leslie Scorer, R.A.F.V.R.—No. 602 Squadron.
Pilot Officer R. F. Tilley, R.C.A.F.—No. 126 Squadron.
Pilot Officer P. H. Watson, R.A.A.F.—No. 457 (R.A.A.F.) Squadron.

Distinguished Flying Medal

Flight Sergeant C. A. Livingstone.—No. 608 Squadron.
Flight Sergeant A. R. Robson, R.N.Z.A.F.—No. 485 (N.Z.) Squadron.
Sergeant A. P. Goldsmith, R.A.A.F.—No. 126 Squadron.

The following awards are to members of the crew of a Lancaster which took part in the daylight raid on Augsburg, and which reached and bombed its target, though the Lancaster was damaged soon after crossing the enemy coast and had to make a forced landing after bombing the target:—

Distinguished Flying Cross

Flying Officer A. J. Garwell, R.A.F.V.R.—No. 44 (Rhodesia) Squadron.
Warrant Officer F. S. Kirke, D.F.M., R.N.Z.A.F.—No. 44 (Rhodesia) Squadron.

Distinguished Flying Medal

Sergeant Laurence Dardo.—No. 44 (Rhodesia) Squadron.
Sergeant James Watson.—No. 44 (Rhodesia) Squadron.

The following awards have been approved for courage and gallantry on the ground, including service at Malta during continuous air raids, for bomb disposal work, rescue work at home and in the Middle East, extinguishing fires, for bravery under fire, and courage during a Japanese attack in New Britain:—

M.B.E. (Mil.)

Warrant Officer E. G. Riseborough.

George Medal

Act. Squadron Leader Robert Hill, M.B., Ch.B., R.A.F.V.R.
Act. Flight Lieut. E. L. Williams.
Sergeant F. G. Higgs, R.A.A.F.
Sergeant J. F. Waite, R.A.F.V.R.
Corporal Hugh Clawson.
Leading Aircraftman C. J. Boarman.
Leading Aircraftman Hyman Sumray.
Leading Aircraftman E. M. Mitchison.

British Empire Medal (Mil.)

Flight Sergeant Leslie Bastable.
Flight Sergeant James Battersby, R.A.F.V.R.
Flight Sergeant (now Warrant Officer) Frank Hanford.
Flight Sergeant J. J. Townsend.
Act. Flight Sergeant J. J. H. Harding.
Act. Flight Sergeant H. S. Stammwitz.
Sergeant (now Pilot Officer) I. G. Padden, R.A.F.V.R.
Corporal Thomas Barkas.
Leading Aircraftman Reginald Boddy.
Leading Aircraftman E. J. Clarke.
Leading Aircraftman H. B. Venn.
Leading Aircraftman J. H. Whitehorn.
Leading Aircraftman Alexander Williamson.

R.A.F. BENEVOLENT FUND

1, SLOANE STREET, S.W.1

The Birthday Honours

THE following appointments and awards to R.A.F. officers and personnel were included in His Majesty's Birthday Honours List, published on June 11:—

G.C.B.

Air Chief Marshal:—
Sir Charles F. A. Portal, K.C.B., D.S.O., M.C.

K.C.B.

Air Marshals:—
J. T. Babington, C.B., C.B.E., D.S.O.
J. S. T. Bradley, C.B.E.

Act. Air Marshal:—

A. T. Harris, C.B., O.B.E., A.F.C.

C.B.

Air Vice-Marshal:—
J. O. Andrews, D.S.O., M.C.
J. J. Breen, O.B.E.
Malcolm Henderson, C.I.E., D.S.O.
R. H. M. S. Saundby, M.C., D.F.C., A.F.C.

Act. Air Vice-Marshal:—

Douglas Colyer, D.F.C.
Albert Durston, A.F.C.
R. S. Sorley, O.B.E., D.S.C., D.F.C.

Air Commodores:—

J. W. Baker, M.C., D.F.C.
W. F. Dickson, D.S.O., O.B.E., A.F.C.

Act. Air Commodore:—

J. W. Jones.

K.B.E.

Air Marshal:—
B. E. Sutton, C.B., D.S.O., O.B.E., M.C.

Air Vice-Marshal:—

H. R. Nicholl, C.B., C.B.E.

C.B.E.

Air Vice-Marshal:—
Ronald Graham, D.S.O., D.S.C., D.F.C.

Act. Air Vice-Marshal:—

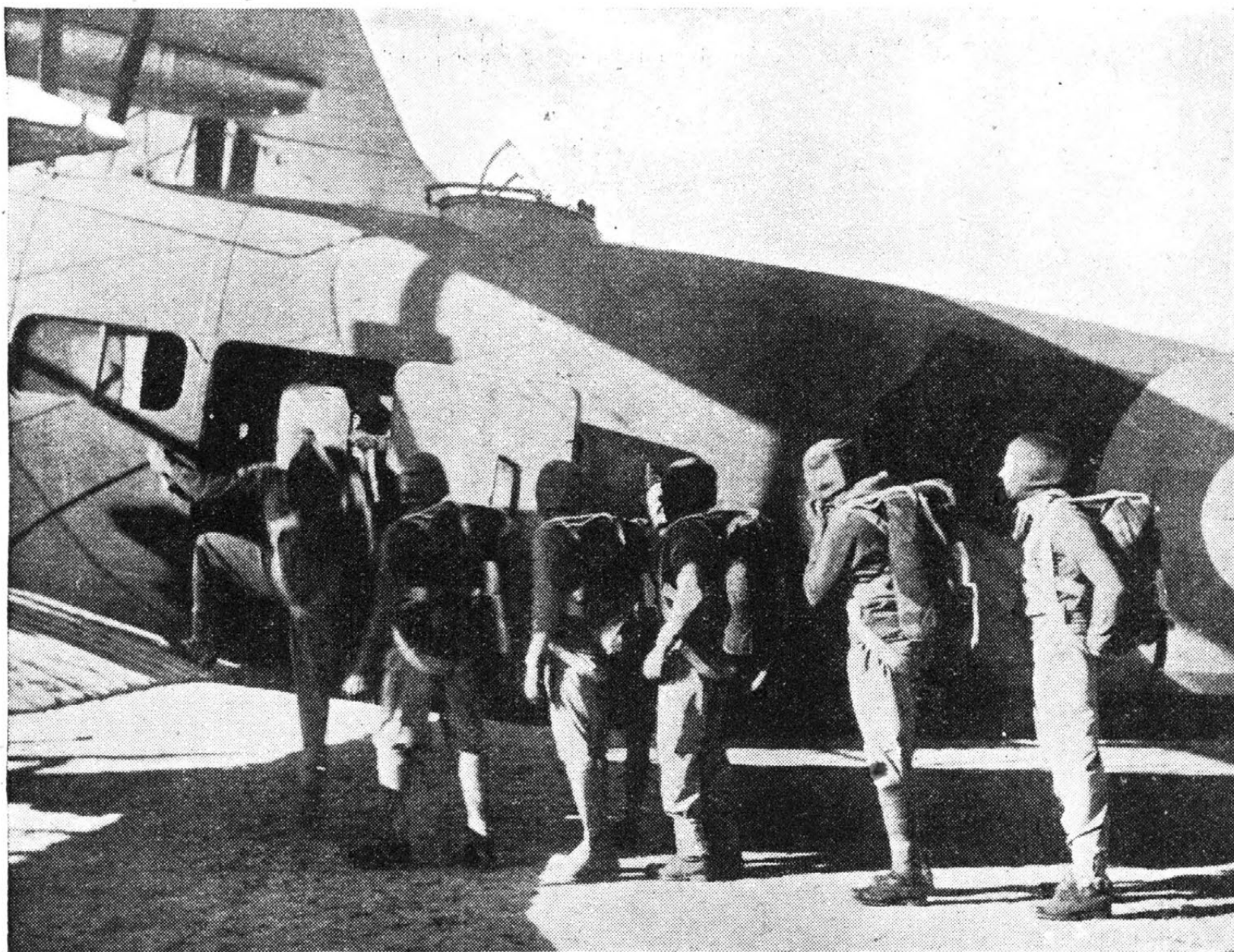
Alan Lees, D.S.O., A.F.C.
R. D. Oxlend, O.B.E.
H. E. P. Wigglesworth, D.S.C.

Air Commodores:—

W. J. B. Curtis, O.B.E.
Andrew Grant, M.B.E., M.B., Ch.B., D.P.H.
Bernard McEntegart.
P. H. Mackworth, D.F.C.
R. B. Mansell, O.B.E.
A. P. M. Sanders.

Group Capt:—

H. I. T. Beardsworth.
Arthur Garrity.



AN OLD DOG AND NEW TRICKS.—A Vickers Valentia in India now used for training parachute troops.

H. G. Jones.
C. S. Wiggins, R.A.A.F.
G. S. Hodson, A.F.C.,
R.N.Z.A.F.

Act. Group Capt.:—
A. V. Harvey, A.A.F.
H. L. Patch.

O.B.E.

Act. Group Capt.:—
L. R. S. Freestone.
Wing Commanders:—
F. G. Brockman, M.B.E.,
R.A.F.O.
Joe Davison.
W. G. H. Ewing.
C. J. P. Flood.
E. C. Kidd, A.F.C., A.F.M.
(now *Act. Group Capt.*).
H. E. Nowell (now *Group Capt.*).
K. J. McIntyre.
H. W. Marlow, A.F.C.
W. P. G. Pretty.
L. J. Stickley, D.F.C.,
R.A.F.O.

F. C. Sturgiss.
J. A. Tester.
Michael Watson.
J. G. W. Weston (now *Act. Group Capt.*).
C. H. Chapman Woollven,
M.C. (now *Act. Group Capt.*).
Act. Wing Commanders:—
W. J. S. Barnard, M.B.E.
A. H. Beach, R.A.F.V.R.
Alfred Clifton.
F. F. Fulton, R.A.F.V.R.
N. T. Goodwin, R.A.F.V.R.
W. E. W. Grieve.
T. A. Scarff.

Squadron Leaders:—
B. G. Carfoot.
H. H. Laurie.

Act. Squadron Leaders:—
W. H. Bigg, R.A.F.O.
Hubert Dinwoodie, M.C.,
R.A.F.V.R.
H. Z. Foreman.
John Gallie.
R. F. G. Lea, A.A.F.R.O.
T. U. Pollitt.

Wing Commander:—
J. R. Balmer, R.A.A.F.

Act. Wing Commander:—
C. J. N. Leleu, R.A.A.F.

M.B.E.

Act. Squadron Leaders:—
G. P. O'Loughlin, R.A.A.F.
J. A. Power, R.A.A.F.

Flight Lieuts.:—
O. E. Bartlett.
J. B. Currie, D.C.M.
Charles Fenn, R.A.F.O.
G. E. G. Grindlay, R.A.F.V.R.
D. M. Jannaway.
E. G. Pole, R.A.F.V.R.
W. H. R. Reader, R.A.F.V.R.
G. R. Wiltcher.
D. E. Grigg, R.N.Z.A.F.

Act. Flight Lieuts.:—
W. S. Baddeley, R.A.F.V.R.
(now *Act. Squadron Leader*).
P. G. Coleman.
D. C. Davies, R.A.F.V.R.
N. K. Dyson, R.A.F.V.R.
J. H. Holland, R.A.F.V.R.
E. R. S. Joce.
C. W. Morle, R.A.F.V.R.
J. L. Newton, M.M.
G. L. O'Hanlon.
David Patterson, R.A.F.V.R.
E. J. Prail.
J. S. Rowlands, R.A.F.V.R.

Captain:—
C. W. Lippiatt, S.A.A.F.

Flying Officers:—
A. G. Alsop, R.A.F.V.R.
W. W. Cornish.
R. T. W. Evans.
E. C. Seeley.
Garbet Westcott, R.A.F.V.R.

Act. Flying Officers:—
L. W. Percival.
Frederick Walker.
F. J. Walters.

Pilot Officer:—
E. B. White, R.A.A.F.

Warrant Officers:—
George Bannister.
A. H. Bell.
Richard Carruthers.
H. R. Green.
Ernest Pouard.
John Purkiss.
T. L. Reeves.
P. J. Soper.
R. W. Toole.
A. F. Townsend.
Henry Watson.

Sister:—
Letitia Jones, P.M.R.A.F.N.S.

Flight Officer:

C. M. Colbeck-Davis,
W.A.A.F.

PRINCESS MARY'S ROYAL AIR FORCE NURSING SERVICE

A.R.R.C. (Second Class)

Act. Senior Sisters:—
Hilda Adams.
E. W. Griffiths.
J. M. Mallalieu.
J. W. Rogers.
E. M. Tilbrook.
R. M. Whyte.

Sister:—
Mary McCallum.

MILITARY CROSS

Flight Lieut.:—
A. G. Douglas.

BAR TO A.F.C.

Wing Commander:—
J. W. McGuire, A.F.C. (since
died.)

A.F.C.

Group Captain:—
P. C. Livingston, O.B.E.
Wing Commanders:—
J. C. Macdonald, D.F.C.
H. P. Simpson, M.M., A.F.M.
W. P. Whitworth.
R. H. Young.
D. W. Baird, R.N.Z.A.F.

Act. Wing Commander:—
R. H. Winfield.
W. R. Garrett, R.A.A.F.

Squadron Leaders:—
H. B. Bell-Syer, R.A.F.O.
C. W. Bromley.
H. G. Goddard, D.F.C.,
R.A.F.V.R.

H. J. F. Le Good.
W. E. L. Lewis.
B. G. Meharg, R.A.F.O.
R. J. Sage.
I. G. Statham, R.A.F.V.R.
J. R. Tobin.
E. W. Cooper, R.A.A.F.
C. R. Gurney, R.A.A.F. (since
died.)

W. G. Leer, R.A.A.F.
Act. Squadron Leaders:—
E. B. Bright.
W. R. Greenslade.
K. C. Roberts, R.A.F.O.
R. S. Sikes, R.A.F.O.

Frank Neale, R.A.A.F.
Harry Plumridge, R.A.A.F.

Flight Lieuts.:

T. R. Burne.
J. M. Ennis.
A. G. Hall, R.A.F.O.
O. V. Holmes, R.A.F.V.R.
T. H. A. Llewellyn,
R.A.F.V.R.
A. O. Moffet.
E. W. Tacon, D.F.C.
J. L. Grey, R.A.A.F.
G. E. Hemsworth, R.A.A.F.
M. V. Mather, R.A.A.F.
E. B. Firth, R.N.Z.A.F.

Act. Flight Lieuts.:

R. G. Addy, R.A.F.V.R.
I. B. Butler, R.A.F.V.R.
G. A. Clarke.
J. J. Flack, R.A.F.V.R.
W. A. A. Read, R.A.F.V.R.
H. W. Ward, R.A.F.V.R.

Flying Officers:

P. A. Kleboe, R.A.F.V.R.
N. J. Wheeler, R.A.F.V.R.
Clifford Wright.

Pilot Officers:

Jack Archer.
A. A. Rollo.
R. A. Studd.

Warrant Officers:

L. S. Millen, D.F.M.,
R.A.F.V.R.
W. G. Ross.
J. E. Sunderland.

A.F.M.

Flight Sergeants:

J. R. J. Belson, R.A.F.V.R.
R. W. Birchall, R.A.F.V.R.
J. R. Emmerson, R.A.F.V.R.
W. H. L. Grant (now *Warrant Officer*).
J. E. Sainsbury.
R. D. Stirk.

Sergeants:

Lewis Larsen.
T. S. White, R.A.F.V.R.
N. A. Boddington, R.A.A.F.
A. A. Hodder, R.N.Z.A.F.

Corporal:

A. P. S. Fimister.
J. S. Lyall, R.A.A.F.

B.E.M.

Flight Sergeants:

G. J. W. Abraham.
T. W. Atkinson.
E. W. Belgrove.
Harold Blackburn.
L. E. Cowan, D.F.M.
Henry Forrest.
W. J. Graham.
R. L. Hoey.
I. N. Jones.
E. H. Leonard.
H. J. Moule.
C. T. Nicholls.
F. T. Salmon.
Frederick Smith.
Norman Watson.

Sergeants:

W. R. Jones.
H. K. Pask.

Corporals:

R. E. Butler, A.A.F.
M. J. Edmonds.
Kelita Hall.
A. O. Molson.
William Paul.
D. A. Purser.

Leading Aircraftmen:

Harry Beesley.
Horace Burke.
James Murphy.
Robert Stenhouse.

Aircraftman, 1st Class:

D. R. B. Browning.

Flight Sergeants:

I. L. Millett, W.A.A.F.
J. M. Shannon, W.A.A.F.

Leading Aircraftwoman:

D. M. Nichol, W.A.A.F.

MENTIONED IN DESPATCHES

Air Marshal:

R. M. Drummond, C.B.,
C.B.E., D.S.O. M.C. (Act.).

THE TITANINE RECOGNITION SERIES, NUMBER ELEVEN.

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from the "Aeroplane" booklets
of Recognition Tests.



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Titanine advertisements, consist-
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aircraft identification.

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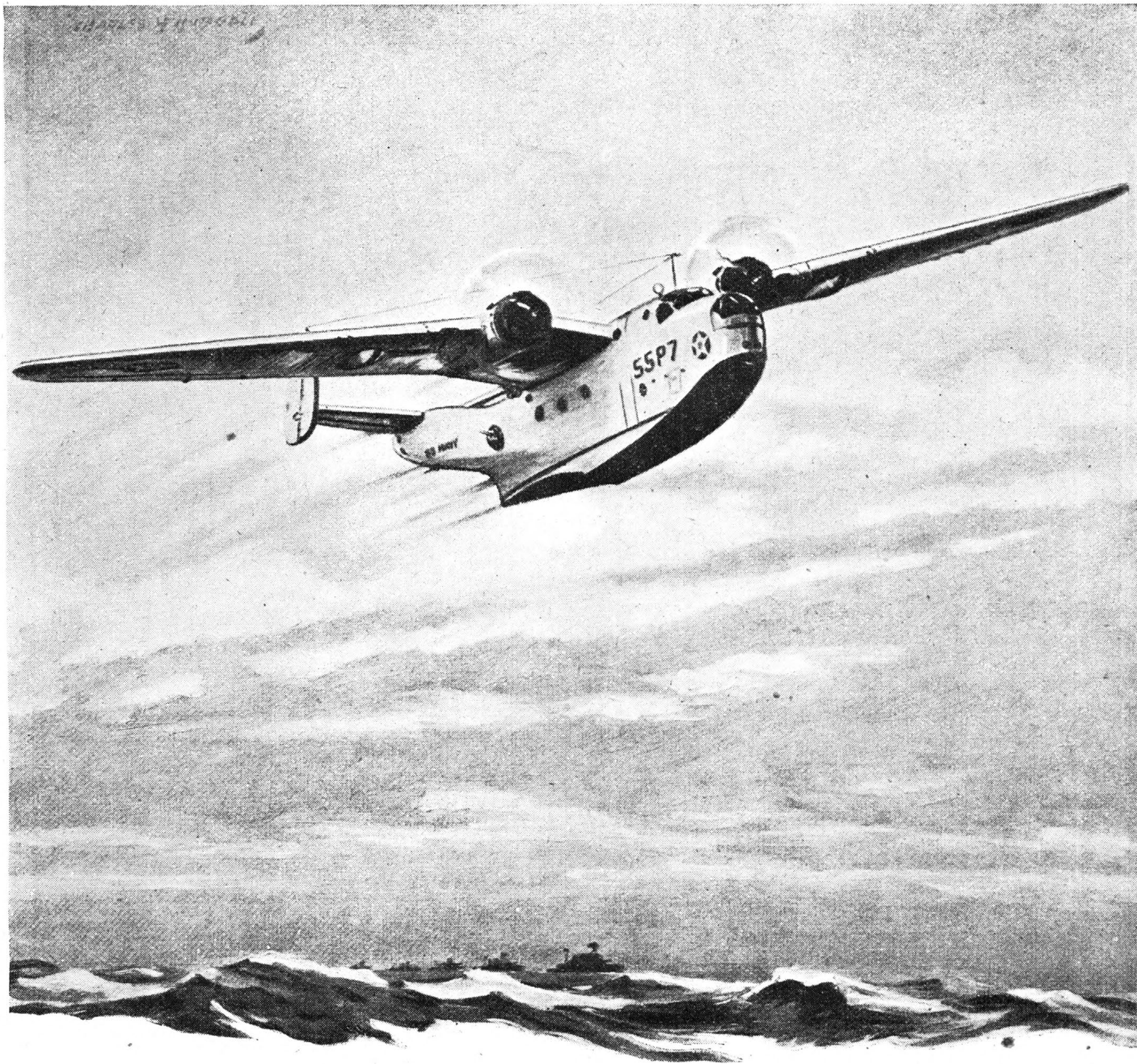
but that is only a small part of the story. We could not maintain our standard of production if only key operations were done well. Our engineers are trained to be the world's best snag-hunters. It is positively uncanny to see them follow the scent of a snag through a pile of blue-prints, but once the job is on the line there is not a single redundant movement of hand, tool or material. Everything is progressive and Time is beaten from the start, for we regard the minutes that pass on the factory clocks as material factors in our production. Like the metal we handle—minutes and seconds are there to be used without waste.

METALAIR

HEAD OFFICE TELEPHONE: WOKINGHAM 819 and 754

*Quality
plus
Design*

SMITH'S
AIRCRAFT
INSTRUMENTS



LONG-RANGE PATROL BOMBERS like the U.S. Navy's Martin **Mariners** are playing a vital part in helping keep open the sealanes. More than 40,000 men at Martin's now are concentrating on quantity production of three major bomber types: **Mariners** for the U.S. Navy, **Baltimores** for the R.A.F., and **Marauders** for both the U.S. Army and the R.A.F.

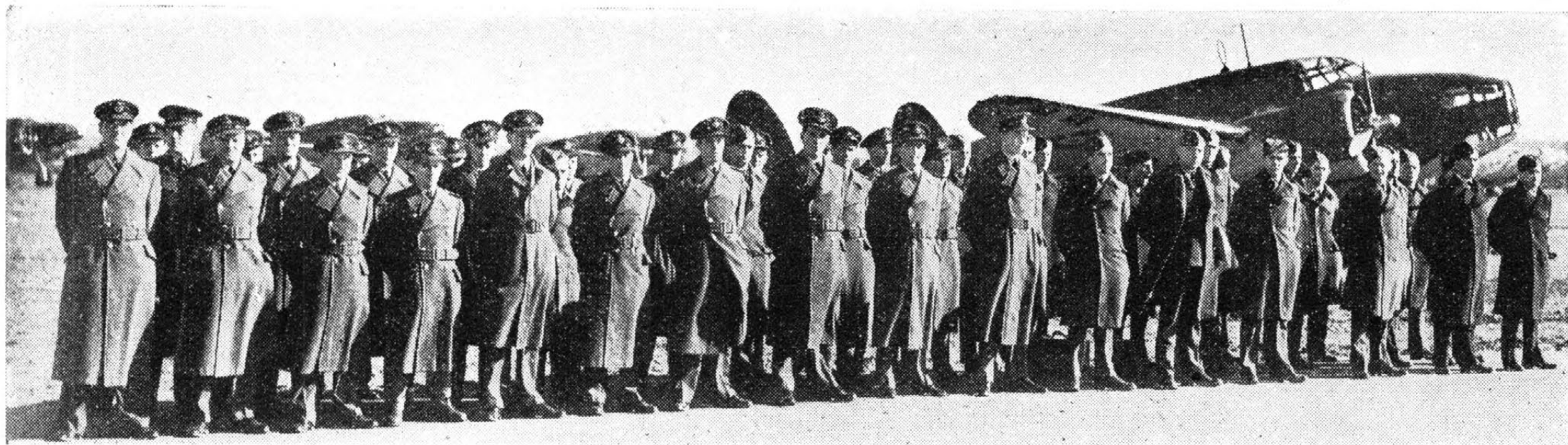
THE GLENN L. MARTIN COMPANY, BALTIMORE, MARYLAND, U.S.A.

Martin
AIRCRAFT

Builders of Dependable



Aircraft Since 1909



FLYING ACROSS.—Many of the bombers ferried across the Atlantic to Great Britain are now flown by crews trained under the British Commonwealth Air Training Plan. The photograph shows some of the crews on their arrival at a British base.

Air Vice-Marshals:—

A. Coningham, C.B., D.S.O.,
M.C., A.F.C., D.F.C.
G. Pirie, C.B.E., M.C., D.F.C.
G. G. Dawson, C.B.E. (Act.).
L. Slatter, C.B., O.B.E.,
D.S.C., D.F.C. (Act.).
H. E. P. Wigglesworth,
D.F.C. (Act.).

Air Commodores:—

L. O. Brown, C.B.E., D.F.C.,
A.F.C.
C. B. Cooke.
T. W. Elmhirst, A.F.C.
E. D. Johnson, A.F.C.
T. J. Kelly, M.C., M.D. B.Ch.
R. L. G. Marix, C.B., D.S.O.
H. B. Russell, D.F.C., A.F.C.
K. L. Boswell (Act.).
K. C. Buss, O.B.E. (Act.).
L. L. MacLean, M.C. (Act.).
M. L. Taylor, A.F.C. (Act.).
H. S. P. Walmsley, O.B.E.,
M.C., D.F.C. (Act.).

Group Captains:—

C. D. Adams, O.B.E.
W. J. M. Akerman.
D. F. W. Atcherley, D.F.C.
R. L. R. Atcherley, O.B.E.,
A.F.C.
J. A. Boret, O.B.E., M.C.,
A.F.C.
H. A. Evans-Evans.
J. S. T. Fall, D.F.C., A.F.C.
D. M. Fleming.
J. A. Gray, D.F.C., G.M.
G. D. Harvey, D.F.C.
R. B. Jordan, D.F.C.
C. L. Lea-Cox.
F. B. Ludlow, O.B.E., M.C.
A. W. B. McDonald, A.F.C.
P. E. Maitland, M.V.O.,
A.F.C.
G. S. Marshall, O.B.E.,
K.H.P.
N. C. Ogilvie-Forbes.
V. S. Parker, D.F.C., A.F.C.
N. S. Paynter.
C. B. R. Pelly, M.C.
A. J. Rankin, O.B.E., A.F.C.
B. H. C. Russell.
J. Silvester.
V. R. Smith, M.R.C.S.,
L.R.C.P.
W. E. Theak.
J. W. Turton-Jones.
G. O. Venn.
C. E. Williamson-Jones,
D.F.C.
D. H. F. Barnett, D.F.C.
(Act.).
C. D. C. Boyce (Act.).
R. W. P. Collings, A.F.C.
(Act.).
H. A. Constantine (Act.).
H. W. Corner, A.F.C., M.D.,
Ch.B., M.R.C.P. (Act.).
M. B. Hamilton (Act.).
H. D. Jackman (Act.).
G. T. Jarman, D.S.O., D.F.C.
(Act.).
L. E. Jarman, D.F.C. (Act.).
R. Kellett, D.F.C., A.F.C.
(Act.).
W. H. Kyle, D.F.C. (Act.).
H. D. McGregor, D.S.O.
(Act.).
H. L. Messiter (Act.).

M. W. Nolan (Act.).
F. E. Nuttall, O.B.E., (Act.).
C. J. S. O'Malley, M.B.,
M.R.C.S., B.S., L.R.C.P. (Act.).
A. H. Owen, M.C. (Act.).
W. E. V. Richards (Act.).
J. G. Russell (Act.).
W. C. Sheen, D.S.O. (Act.).

Wing Commanders:—

H. V. Alloway.
G. N. Amison.
C. E. Aston.
C. E. J. Baines.
C. W. Baker.
K. S. Batchelor, D.F.C.,
R.A.F.O.
L. W. C. Bower.
D. H. Brinton, R.A.F.V.R.
R. J. Burns.
E. S. Butler, O.B.E.
I. R. Campbell - Orde,
A.A.F.R.O.
G. A. L. Cheate.
J. Constable-Roberts.
H. I. Dabinett.
L. D. Dadswell.
E. A. Douglas-Jones.
J. F. H. Du Boulay, D.F.C.
B. E. Emery, D.S.O., A.F.C.
D. R. Evans.
H. A. Fenton.
F. W. Foster, D.F.C., D.S.M.
W. L. Freebody, A.F.C.
W. S. Gardner, D.F.C.
G. T. Gilbert.
J. R. Gillman, R.A.F.O.
R. W. L. Glenn.
G. W. P. Grant, R.A.F.O.
F. O. Hall.
A. E. Harbot, M.B.E.
J. Harston.
H. E. Hills, A.A.F.
T. W. Hodgson.
W. H. Husbands.
D. P. D. G. Kelly.
R. L. Kippenberger.
G. W. McAleer, M.B., Ch.B.,
D.T.M. and H.
J. E. McComb, D.F.C., A.A.F.
J. M. Mackenzie.
J. R. MacLachlan.
M. M. McMullen.
H. L. Maxwell, D.S.O.
V. E. Maxwell.
C. H. Mitchell.
C. C. Merton.
J. C. Neely, B.M., B.Ch.
(Oxon), M.R.C.S., L.R.C.P.,
D.O.M.S., D.O.M.A.
M. K. D. Porter.
P. B. L. Potter, M.D., D.P.H.,
Ch.P., D.T.M. and H.
A. G. Powell.
J. B. Russell.
R. S. Ryan.
C. F. Sarsby.
G. I. L. Saye, O.B.E., A.F.C.
The Rev. R. N. Shapley, M.C.
G. N. Simon.
P. Slocombe.
A. M. Smith.
K. B. E. Smith, D.S.O.
J. M. Southwell.
W. L. Stedman.
E. H. Stevens, A.A.F.
H. M. Styles, D.S.O.
T. R. Vickers, D.S.O.
F. S. Wakeham.

C. T. Weir.
F. L. White.
E. H. Whiteley, D.F.C.
C. F. C. Wright, D.F.C.
P. G. Wykeham-Barnes,
D.F.C.
C. S. Wynne-Eyton, D.S.O.
G. E. Basham, M.B.E. (Act.).
P. E. Perryman (Act.).
S. H. Bird (Act.), R.A.F.V.R.
S. M. Boal, D.F.C. (Act.).
J. R. T. Bradford (Act.),
A.A.F.R.O.
W. F. Bryanton (Act.),
R.A.F.V.R.
J. C. Claydon (Act.).
J. D. D. Collier, D.F.C.
(Act.).
W. D. David, D.F.C. (Act.).
G. W. P. Davidson (Act.),
R.A.F.V.R.
I. M. Davies (Act.),
R.A.F.V.R.
W. A. L. Davis (Act.).
P. A. Gilchrist (Act.).
A. D. Isemonger (Act.).
L. A. Jackson (Act.).
P. S. Jackson-Taylor (Act.).
F. F. James (Act.),
R.A.F.V.R.
E. H. MacDonald, M.B.E.
(Act.).
J. H. Marks, D.S.O., D.F.C.,
(Act.).
C. V. Mears (Act.).
G. D. Middleton (Act.).
C. I. Orr-Ewing (Act.),
R.A.F.V.R.
J. H. Over (Act.).
A. D. Page (Act.).
R. E. Ridgeway (Act.).
L. R. Ridley (Act.).
A. A. D. Sevastopulo (Act.).
R.A.F.V.R.
A. H. Smythe, D.F.C., A.F.C.
(Act.).
R. H. Spencer (Act.),
R.A.F.V.R.
C. L. Stubbs (Act.),
R.A.F.V.R.
F. W. Todd (Act.).
G. S. Waller (Act.),
R.A.F.V.R.
R. F. Wilson (Act.).
W. C. F. A. Wilson, O.B.E.
(Act.), R.A.F.V.R.
S. G. Wise, D.F.C. (Act.).
F. Workman, M.C. (Act.),
R.A.F.V.R.
C. D. Candy, R.A.A.F.
T. C. Curnow, R.A.A.F.
P. Y. Davoud (Act.),
R.C.A.F.

Lieut.-Col., S.A.A.F.:—

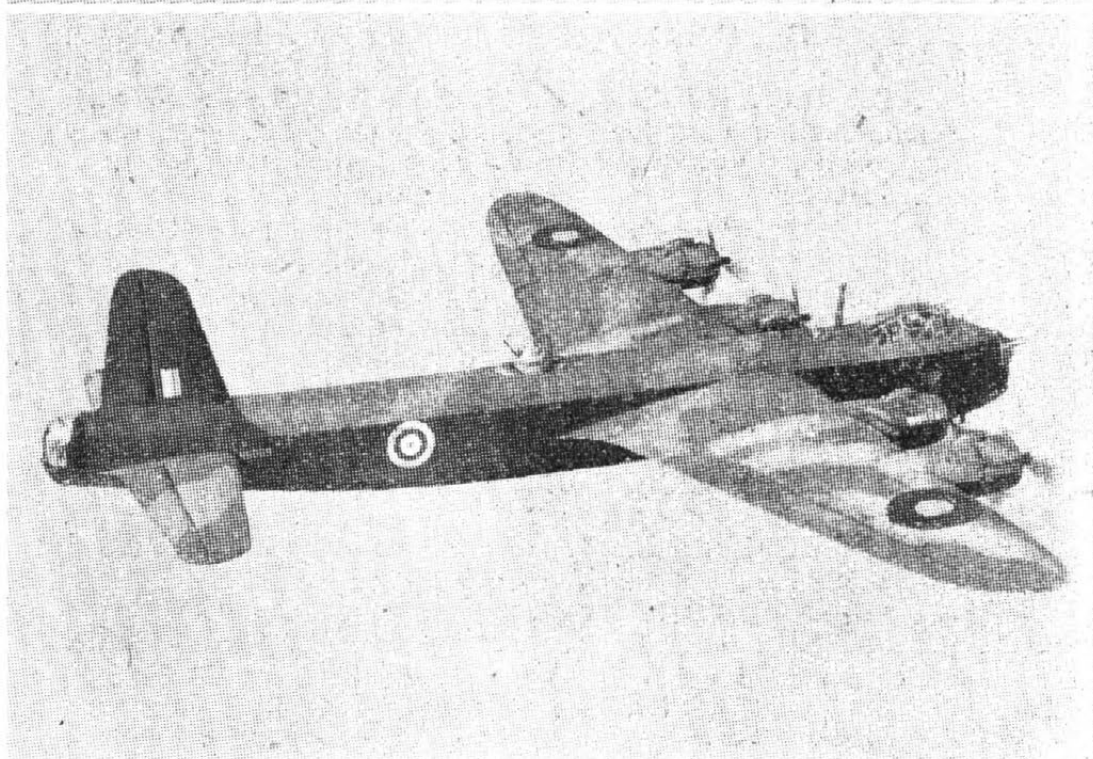
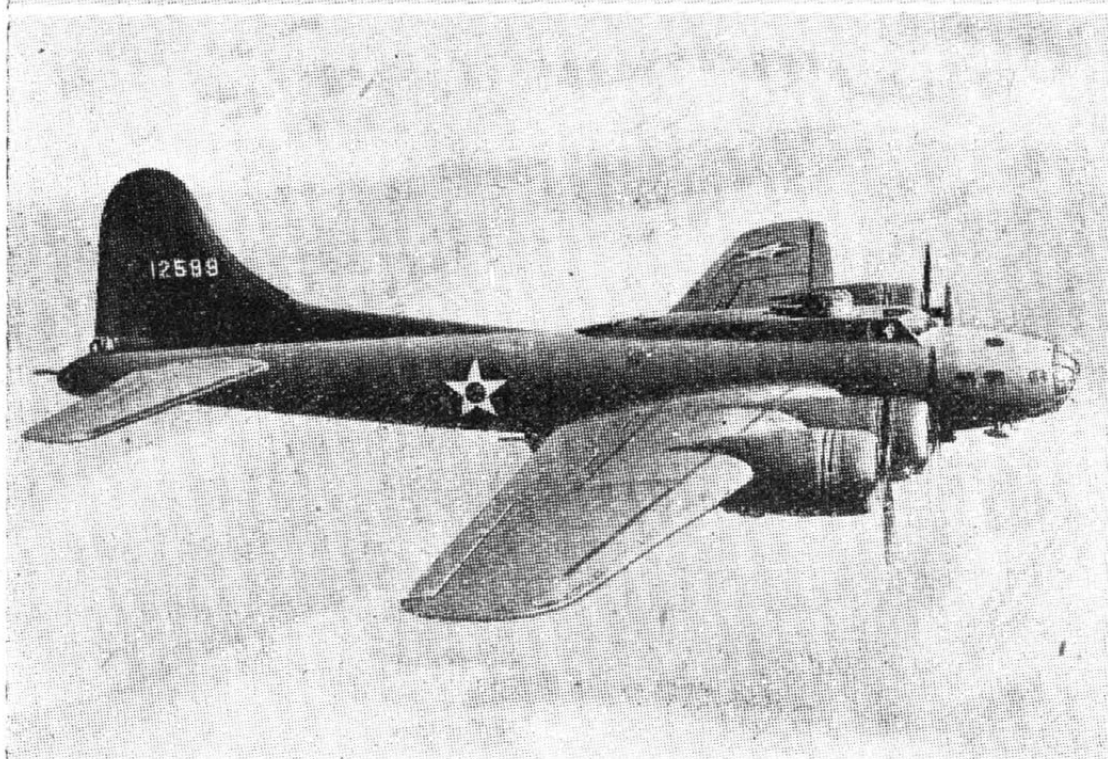
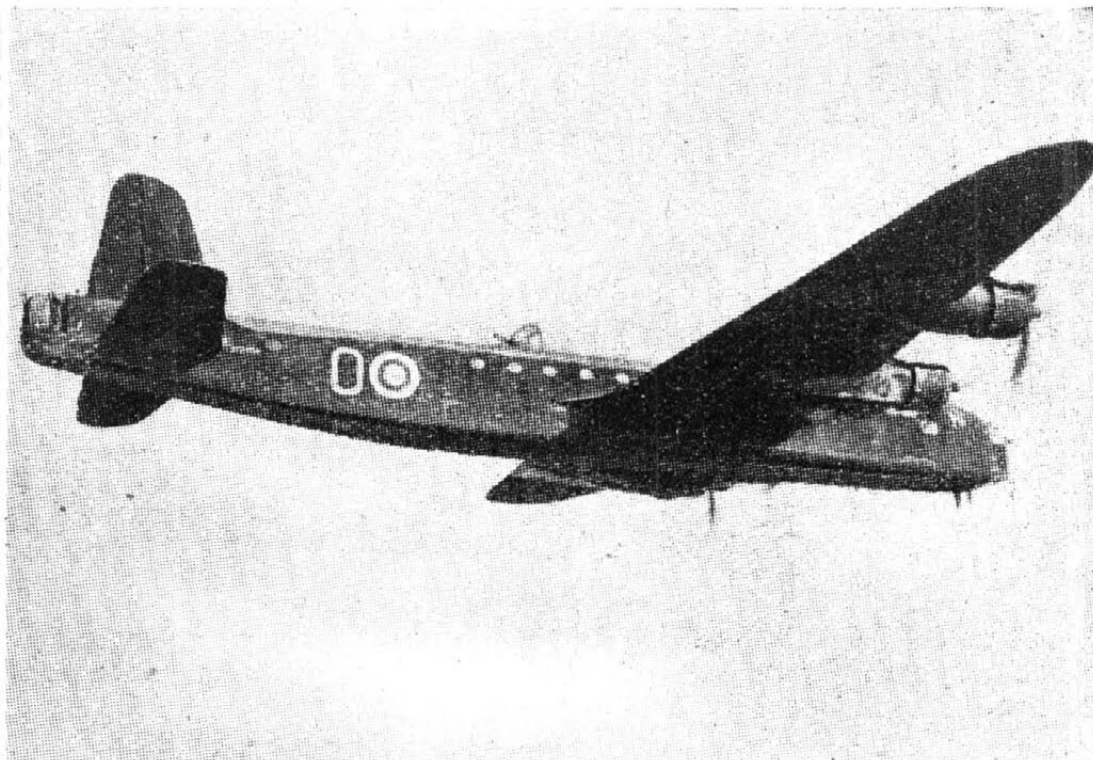
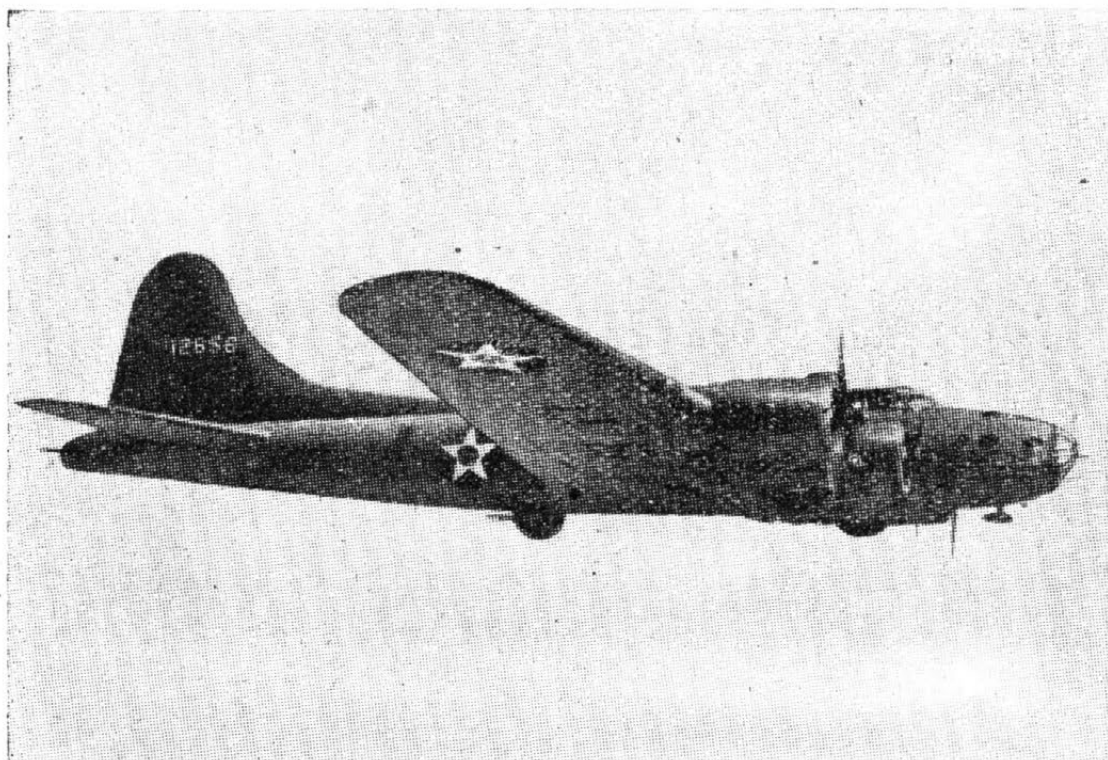
L. A. Wilmoth, D.F.C.

Squadron Leaders:—

R. F. Aitken.
G. W. B. Austin, A.A.F.
T. W. la B. Bamford.
R. S. Barbour, R.A.F.V.R.
G. C. Bartlett.
S. G. Beaumont, A.A.F.
E. V. N. Bell, A.A.F.
L. V. Bennett.
K. H. Blair, D.F.C.
G. R. Brady.
A. H. Brown.
T. D. Calnan.

J. N. G. Carter, R.A.F.O.
J. G. Day.
C. H. Deakin.
M. Dean.
D. J. Devitt.
P. S. Dundas.
N. F. Eagleton, D.F.C.
H. C. F. Ellis.
F. J. W. Firth, R.A.F.V.R.
G. Forrest, R.A.F.V.R.
R. V. B. Franklyn.
G. D. D. Gammack.
H. Gedde.
E. P. P. Gibbs, D.F.C.
K. H. Gooding.
P. Green, A.A.F.
P. Griffiths.
J. C. Hall, D.F.C. (since
Missing).
D. St. C. L. Henderson,
R.A.F.V.R.
W. N. Hibbert.
P. W. Hill.
D. W. S. Ireland, R.A.F.O.
L. A. Jessop, D.F.C.,
R.A.F.V.R.
The Rev. R. P. P. Johnston,
R.A.F.V.R.
J. W. E. Leighton.
H. F. Levell.
P. E. Lewis.
E. J. Little, D.F.C.
M. J. Loudon, D.F.C.
R. C. O. Lovelock.
J. C. MacKintosh.
McD. B. Manson.
J. W. Marsden.
T. O. Marshall.
H. A. May, M.B.E.
V. Mercer-Smith, R.A.F.V.R.
F. G. Mogg, M.R.C.S.,
L.R.C.P., A.A.F.
P. L. B. Morgan.
The Rev. F. D. Morley, B.D.
The Rev. A. J. Pearman,
R.A.F.V.R.
J. M. N. Pike, D.F.C.
V. T. Powell, F.R.C.S. (E),
M.R.C.S., L.R.C.P. (Lond.).
J. A. Pring, M.B.E.,
R.A.F.V.R.
E. A. Rabbitts.
I. G. Richmond, D.F.C.
A. Rintoul, A.A.F.
L. Ritson.
J. R. S. Romanes, D.F.C.
R. J. Sansom.
G. L. Seabrook.
W. H. Shaw.
F. H. Shutt.
A. H. Simmonds.
J. E. J. Sing, D.F.C.
D. G. Singleton.
K. P. Smales, D.F.C.
R. C. T. Speir, R.A.F.V.R.
A. L. Taylor, D.F.C.
R. B. Thomson, A.A.F.
E. C. C. Tomkins, D.F.C.
The Rev. E. C. H. Tribbeck,
R.A.F.V.R.
J. W. D. Wardale, A.A.F.
R. P. Whitehead.
C. E. G. Wickham, M.B.,
B.S., M.R.C.S., L.R.C.P.
E. A. Williamson, R.A.F.O.

(The rest of the names in the Honours
List will be published next week.)



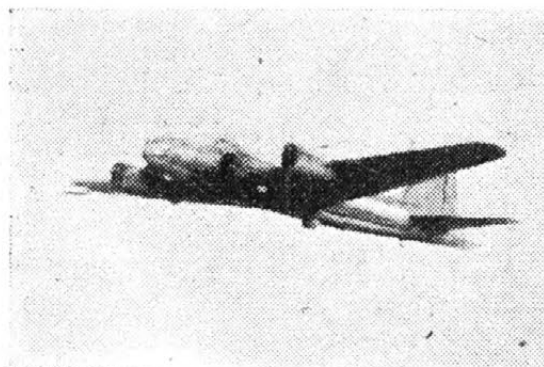
DETAILED ANALYSIS.—The points by which the subjects of the previous recognition problems can be identified are illustrated in the photographs and drawings above of the Boeing B-17E, The Fortress II (left) and the Short Stirling I (right) and on the opposite page.

THE BOEING B-17E, the Fortress II (four 1,365 h.p. Wright Cyclone motors), and the Short Stirling I (four 1,595 h.p. Bristol Hercules XI motors) were the subjects of the previous recognition tests.

This is a useful comparison, for the two types represent the largest bombers used by the United States Army Air Forces and the Royal Air Force respectively.

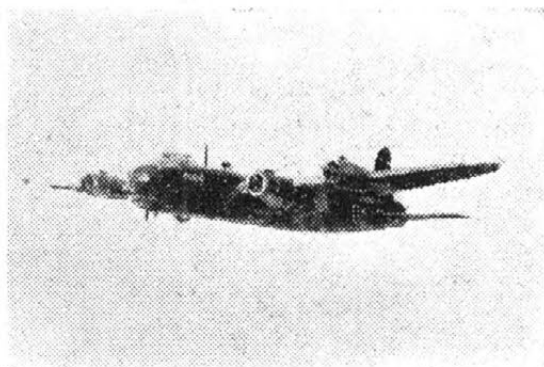
The difference in their "sit" is brought out in the views given. The Stirling has a slightly nose-up attitude when flying level, whereas the Fortress flies normally in a slightly nose-down attitude. The Fortress II has a much

Aircraft Recognition



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PREVIOUS PROBLEMS.—(Left) a Fortress II



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and (right) a Short Stirling.

higher aspect ratio and is four feet greater in span, although several tons lighter in weight than the Stirling.

The position and shape of the control cabins differ greatly and the round small-sectioned fuselage of the American aeroplane is quite a contrast to the long box-like body of the British type.

The Fortress II has a long "back-bone" fin which sweeps up to the curved peak and tapered trailing edge of the rudder.

The Stirling, on the other hand, has the characteristic tall fin and rudder of the Short family, made so familiar by the Empire and Sunderland flying-boats.



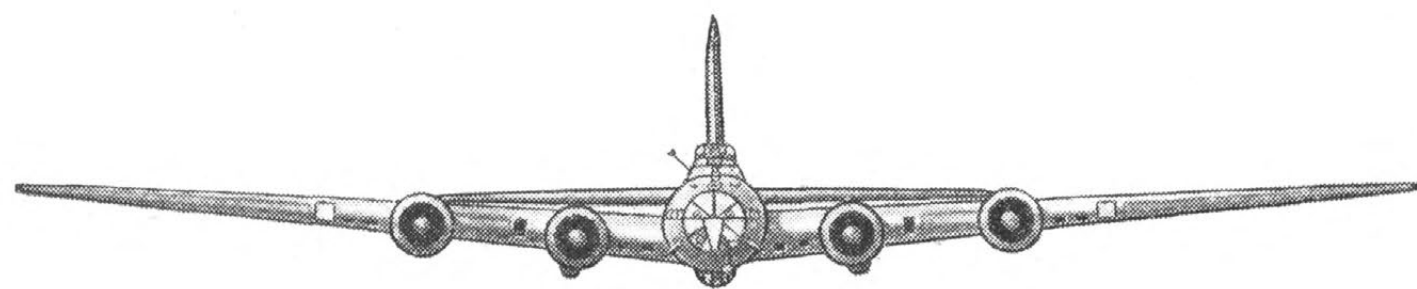
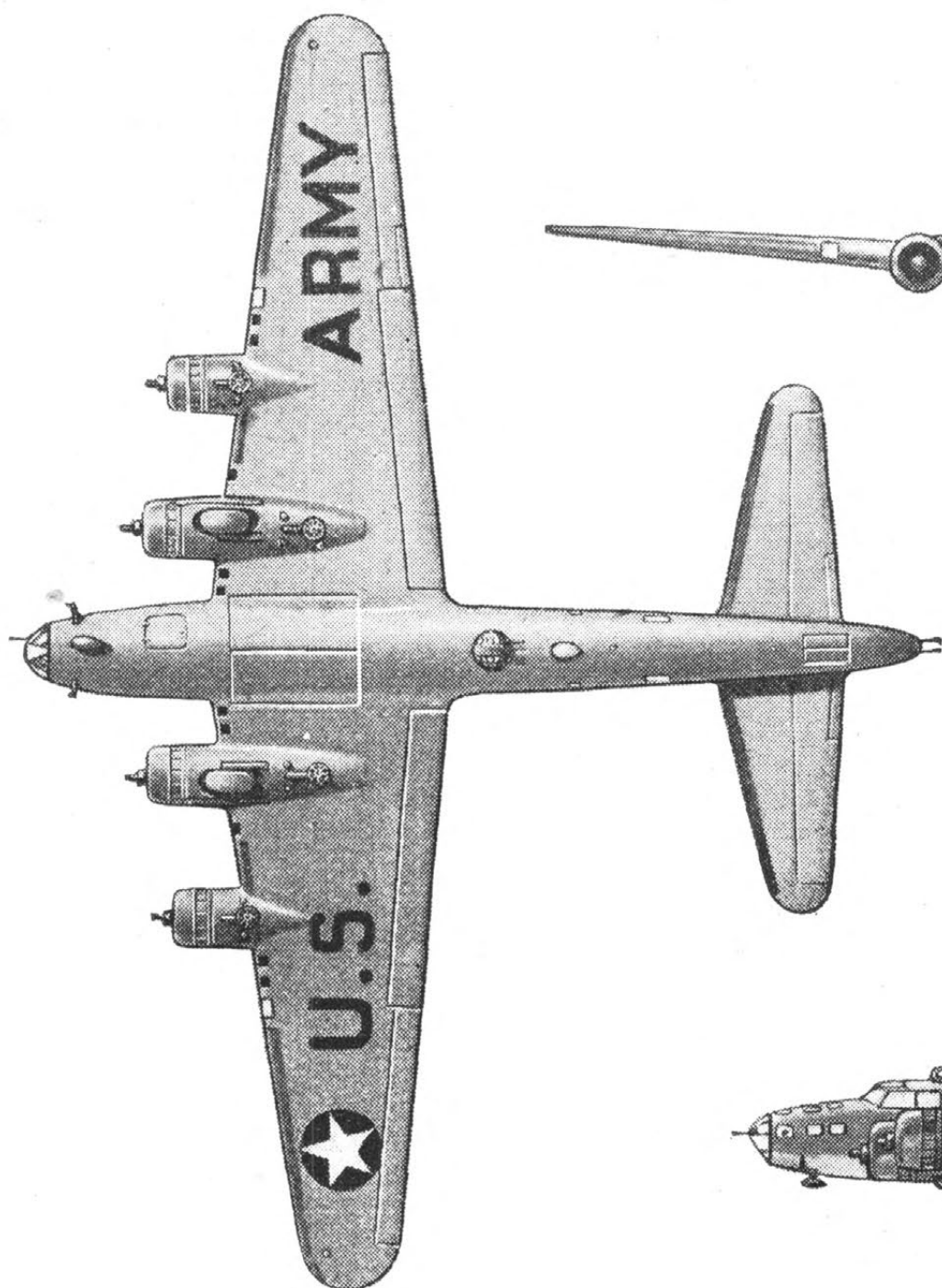
227



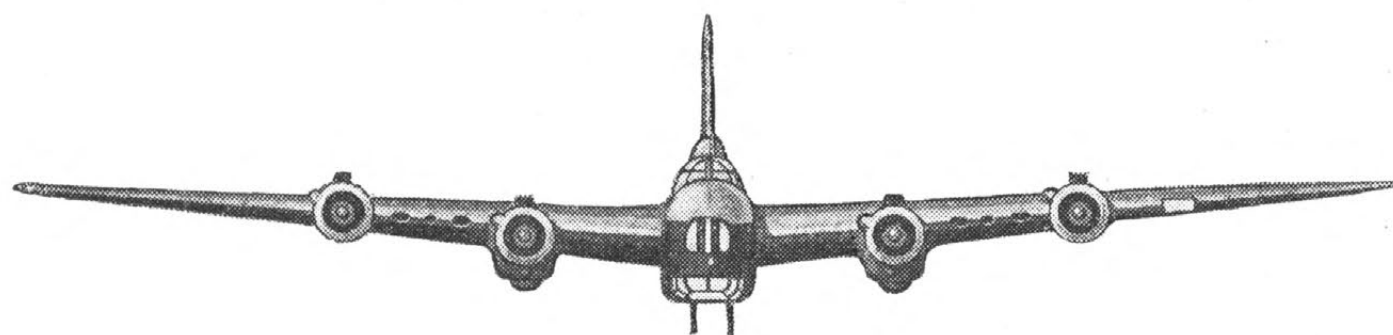
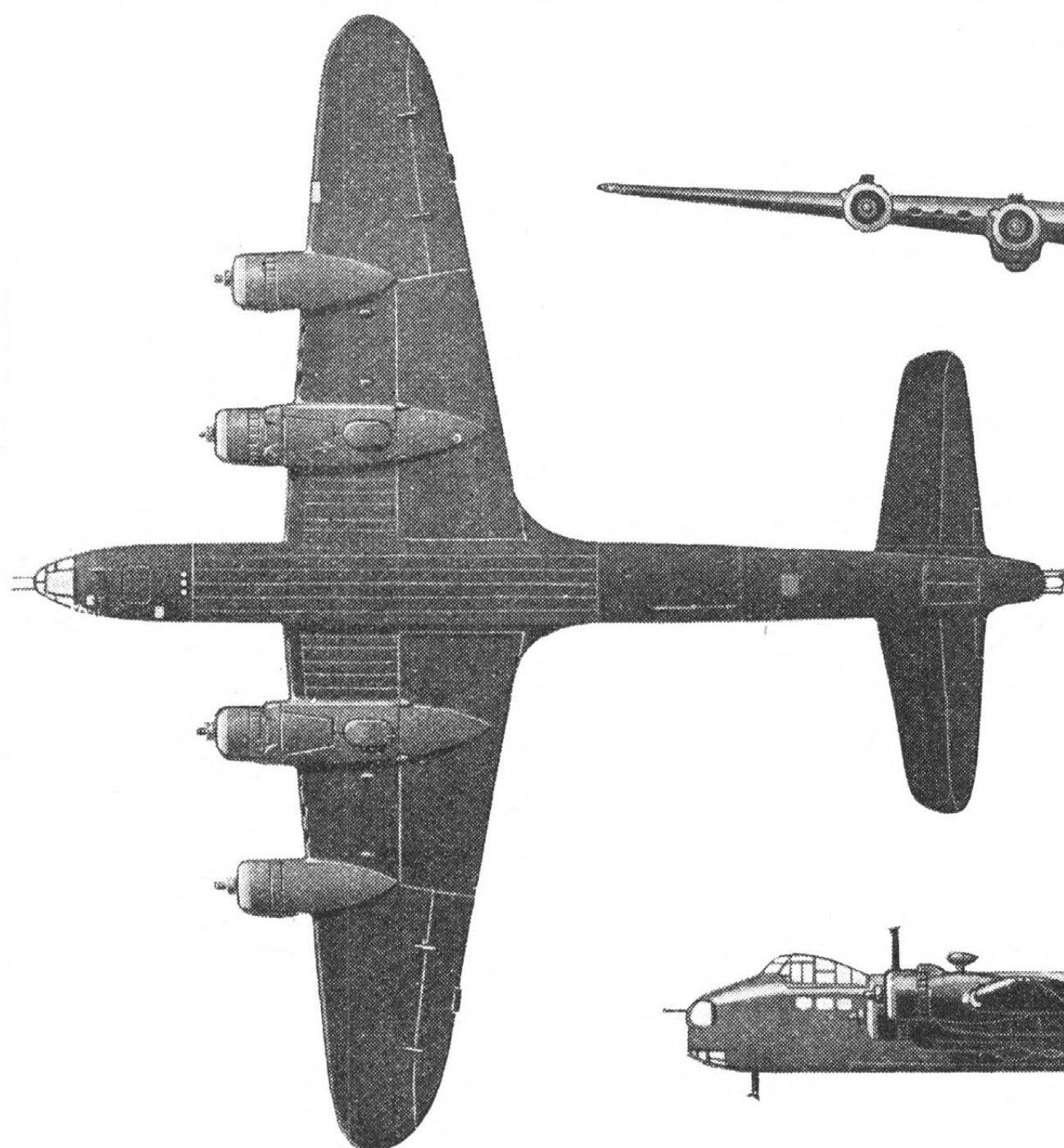
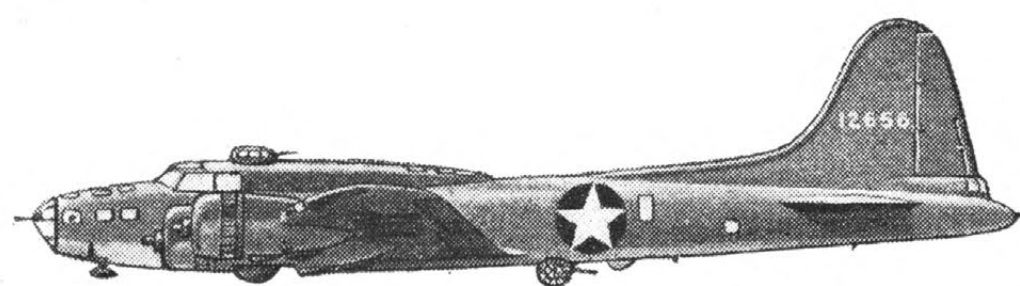
228

FOR IDENTIFICATION CXIV.—Two more photographs to give practice in the recognition of Allied and enemy aeroplanes. What they are and notes on their characteristics will be published with two more photographs on July 3. When the page is viewed at a distance of 1 ft. both aeroplanes are represented as flying at a height of about 600 ft. at a distance of 200 yds.

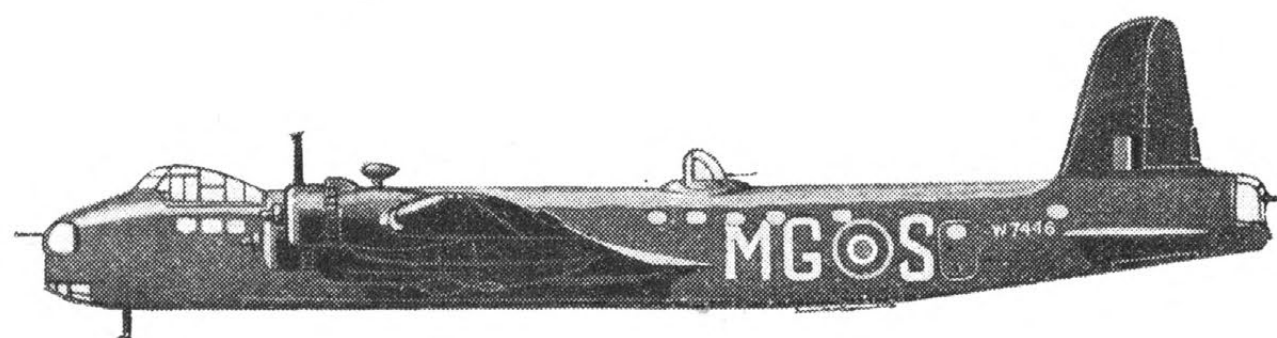
AIRCRAFT RECOGNITION



THE
BOEING B-17E
THE FORTRESS II



THE
SHORT S.29
THE STIRLING I



AIR TRANSPORT



BIG BROTHER.—The Curtiss C-46, the Commando, the military version of the Curtiss CW-20 St. Louis. The C-46 is in service with the U.S. Army as a troop and supply carrier, and was first named the Condor III.

American Export in Operation

American Export Air Lines began operating regular services across the Atlantic this week. There will be two services a week until July when another service will be added. The three Vought Sikorsky VS-44-A flying-boats have been delivered and have already made preliminary survey flights across the Atlantic route.

American Export has opened a London office at 120, Pall Mall, S.W.1.

With the Ferry Command

G. J. POWELL, formerly of the British Overseas Airways Corporation, and now a Group Captain, has been appointed Senior Air Staff Officer of the R.A.F. Ferry Command in succession to C. H. Dickins who has returned to the C.P.R. Air Lines.

Group Capt. Powell served with the R.A.F. from 1926 until 1930, when he transferred to the R.A.F. Reserve and joined Imperial Airways. He commanded the Empire flying-boat Cambria on the Atlantic crossings in 1937 and, before joining the Atlantic Ferry Command, was in charge of British Airways' stations at Newfoundland and Bermuda.

Sofia-Bucharest Again

THREE ROUND SERVICES a week are being operated between Sofia and Bucharest by the Rumanian Air Transport Company, L.A.R.E.S. The Company used to operate a daily service between Bucharest, Sofia, Salonika, and Athens, but this was suspended early in 1941, and Deutsche Luft Hansa increased its service between Sofia and Bucharest to twice daily. There is no information as to whether D.L.H. is still operating this route or if the thrice-weekly services of L.A.R.E.S. are supplementary or relief services for D.L.H.

Escape from Norway

WING COMMANDER D. C. T. BENNETT, who was reported missing at the end of April after a raid on Trondheim, is now safely back in England. Reports from Sweden on May 4 that five R.A.F. men had escaped from Norway after being brought down and captured by the Germans gave cause for hope that Wing Commander D. C. T. Bennett might be the officer who led his crew across the mountains and forests of Norway. When it can be told, his story of that escape should make fascinating reading. Meanwhile, we hope he will have no further adventures.

A London Airport

A CENTRAL AIRPORT for London, probably on one of the blitzed areas, is reported to be receiving consideration in the post-War reconstruction schemes of the Government.

Such a proposal would be welcomed by everyone interested in air transport. Space for an airport large enough to cope with all the air traffic that the post-War era will bring would be impossible in the centre of London. The most practical system would probably be to use some of the huge aerodromes which have been built in various parts of the country for bomber operations during the War as the main terminals for services from different parts of the World, with fast connecting ferry services to an airport in the middle of London and to other parts of the country.

Another suggestion which has been revived is that one of the big London railway stations should be covered over. Whichever plan is adopted we hope that the air line companies with practical experience of handling passenger and freight traffic in large quantities will be consulted before definite plans are made. An idea which may seem excellent from the architect's point of view may be completely impracticable from the operator's.

That the Government should be considering such a project as an airport in the centre of London, a plan which has been dreamed of for some years, is one of the most encouraging signs for the future of air transport.

Airgraphs to Canada

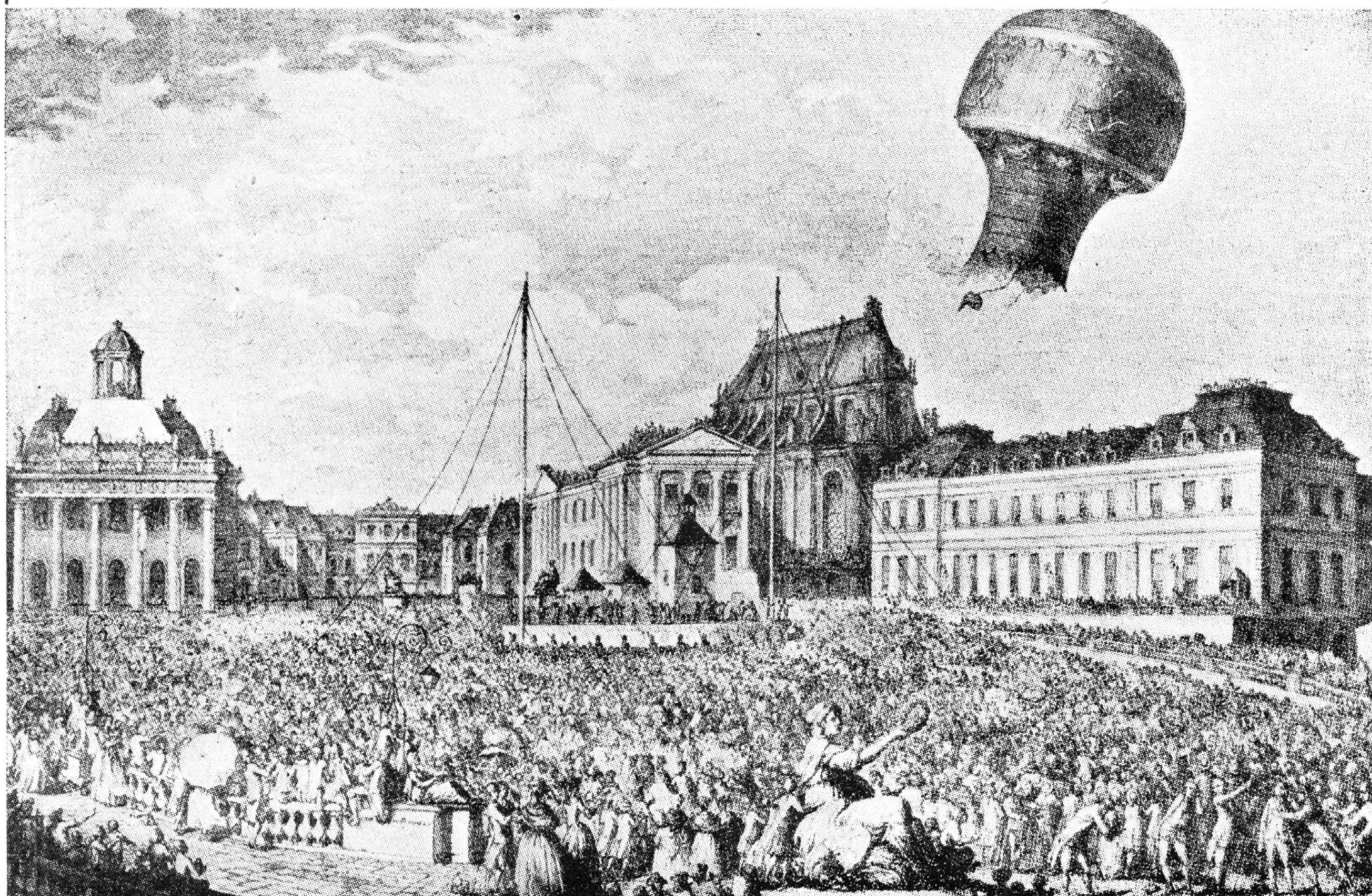
AIRGRAPHS to and from children evacuated to Canada, and presumably the United States, are expected to be available within the next few weeks. The charge for the Airgraph from Great Britain will be eightpence, the usual charge for all civilian Airgraphs.

Mails for Prisoners in Japan

EFFORTS are apparently being made to establish air mail services for military and civil prisoners in Japanese territories. Japan's attitude to the proposal is not known yet, but so far it has refused all efforts to establish facilities for prisoners.

Russia is reported to have given permission for mail to go through Soviet territories. An alternative route would obviously be to the Burma borders. If Japan does agree to the service British and American aeroplanes will probably carry the mails.

SIDELIGHTS FROM THE PAST—XXIX



THE ASCENT OF A "MONTGOLFIÈRE" AT VERSAILLES, SEPTEMBER 19, 1783.

THE FIRST lighter-than-air craft capable of ascent, and the first successful balloon, was invented by the brothers Joseph and Etienne Montgolfier in 1783. Though their balloons were shortly superseded by hydrogen-filled balloons, the Montgolfiers can claim the credit for the first ascent made by living animals, and the first to be made by a man.

The Montgolfier brothers were paper-makers at Annonay, near Lyons (France). Their first experiments were made in November, 1782, with small paper bags inflated with hot air. Later that year they built a bag of silk of approximately 40 cu. ft. capacity under which they burned paper. They continued their experiments out of doors, using a fire of wool and straw.

On June 5, 1783, they gave their first public demonstration at Annonay with a spherical balloon of some 23,430 cu. ft. It was made of linen, the sections being joined by buttons, and it had a paper lining. It rose to about 6,000 ft.

On Sept. 19, 1783, before Louis XVI and the Court of France at Versailles, they launched into the air three living animals, a sheep, a cock, and a duck, which were encaged in a wicker basket suspended beneath the balloon.

The animals ascended to a height of about 1,500 ft. and descended safely in the Forest of Vaucresson after covering about a mile-and-a-half in eight minutes.

The experiment with the animals was made to discover whether the "rarefied" atmosphere would harm them. The only damage was to the wing of the cock, caused by a kick from the sheep.

The Montgolfiers continued their experiments, continually making larger balloons. The biggest had a capacity of 23,000 cu. metres. The first human ascent was made on Nov. 21, 1783, by M. Pilâtre de Rozier in a Montgolfier balloon with the Marquis d'Arlandes as passenger. That is a story in itself.

An interesting point is that until 1785 the success of the Montgolfier balloons, which were called "Montgolfières," was ascribed to an unknown gas believed to be produced by the fires of wool and straw and which was called "Montgolfier's gas." Not for some time was it discovered that heat alone gave the balloon buoyancy.

The illustration above shows the ascent of the Montgolfière with the cock, the sheep, and the duck from Versailles on Sept. 19, 1783. One of the features of the Montgolfières was the gaudy decoration of the envelopes.

SPORTING MEMORIES—XCVI

IN 1934 a British version of the well-known German Klemm light aeroplane, which had been introduced to England about four years before, was built by the British Klemm Aeroplane



The British Klemm Swallow (75 h.p. Salmson)—1934.

Co. Ltd. at Hanworth. The British Klemm was called the Swallow and had all the qualities of the German Klemm as well as many improvements, including folding wings.

The Swallow was noted for its slow landing speed, quick take-off and climb, reluctance to spin and quick recovery from the stall. It was powered by either the 75 h.p. British Salmson A.D.9R or 85 h.p. Pobjoy Cataract motors. With the Salmson the top speed was 102 m.p.h. and with the Pobjoy 110 m.p.h.

In 1935 the British Klemm Company changed its name to the British Aircraft Manufacturing Company and a new model of the Swallow with entirely new control surfaces was built.

The first Swallow, G-ACMZ, was first flown on Feb. 21, 1934, with a Salmson motor, but was fitted later with a Pobjoy Cataract II. It is still on the Civil Register.