

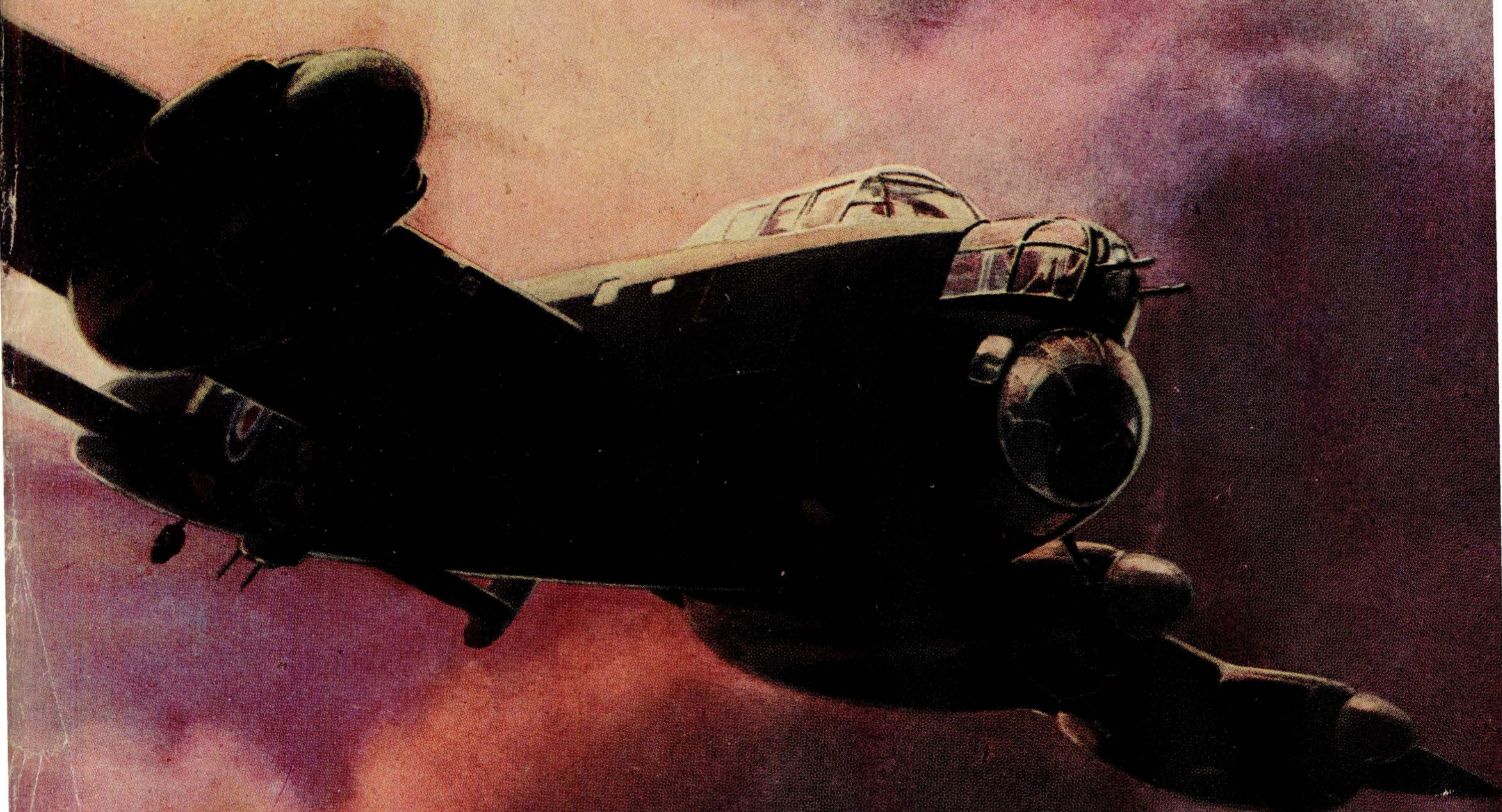
THE AEROPLANE
DECEMBER 10, 1943

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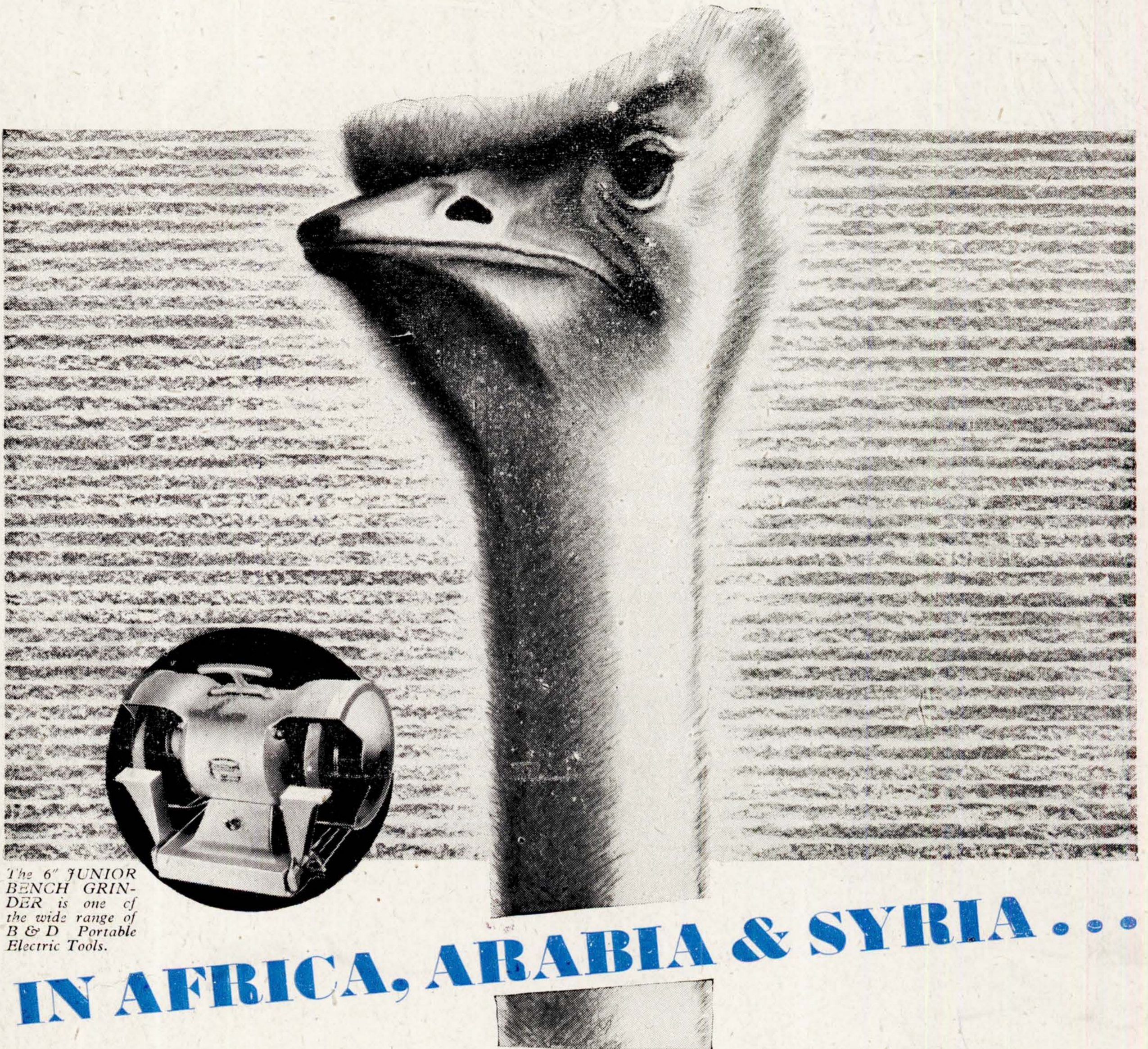
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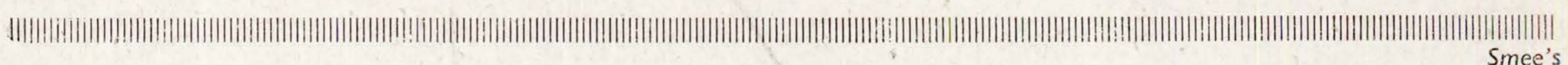
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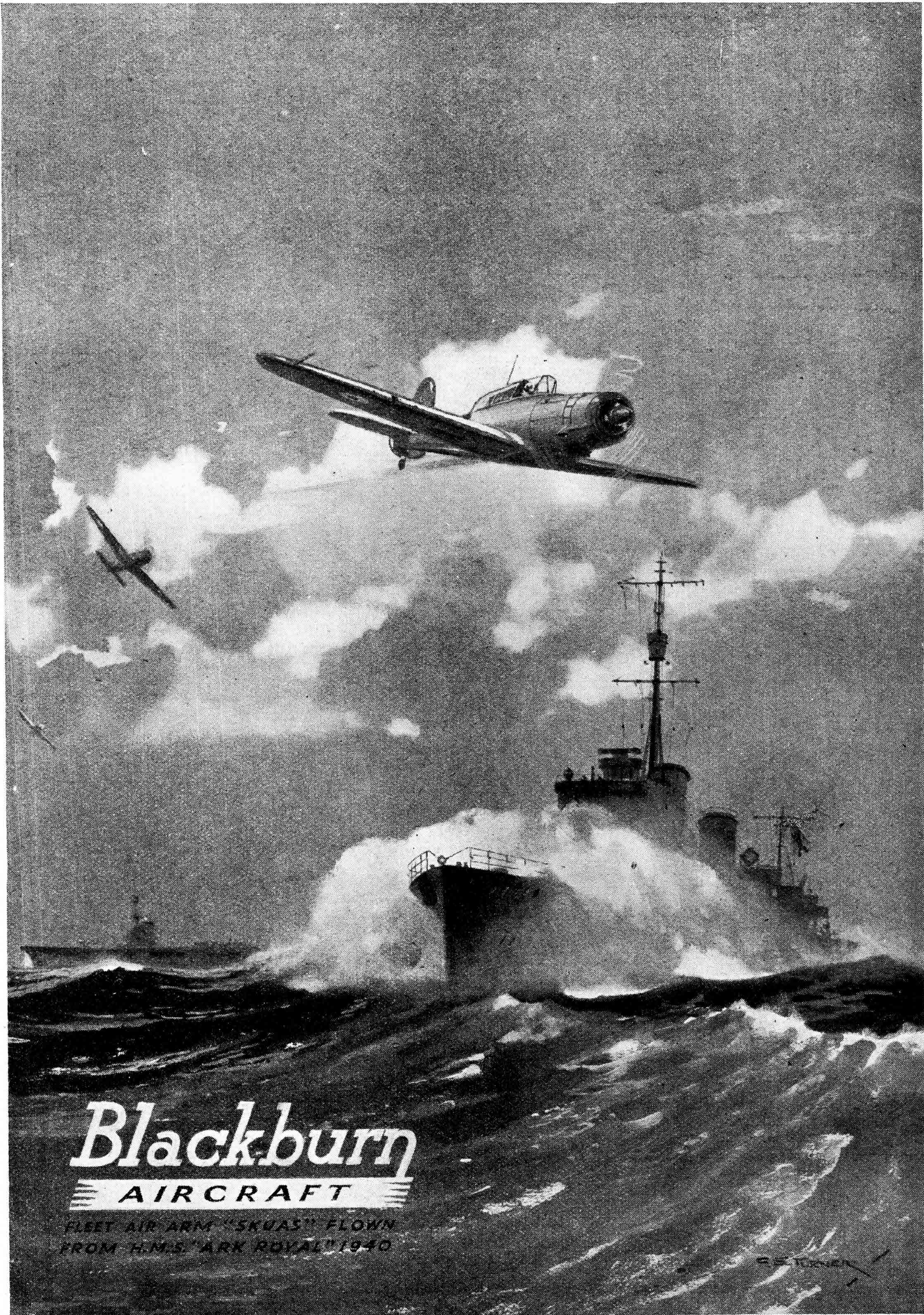
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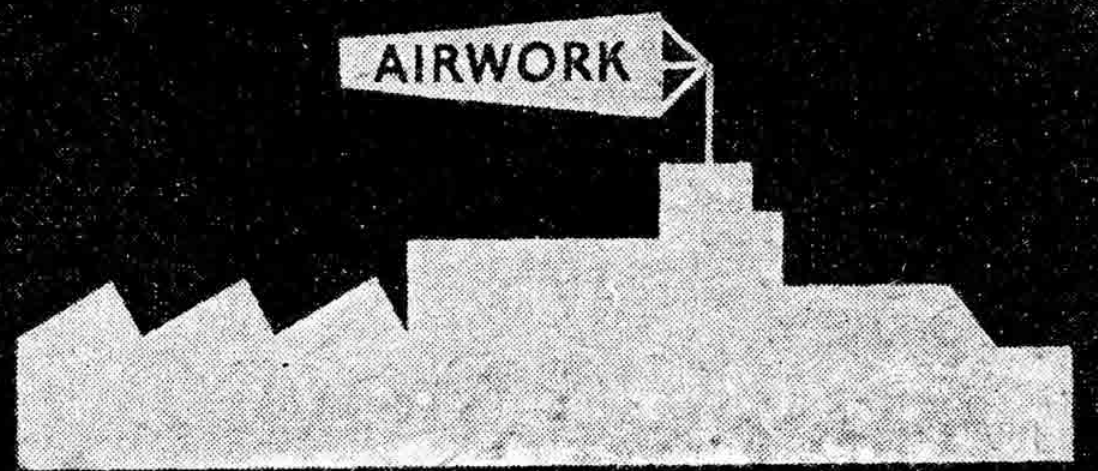
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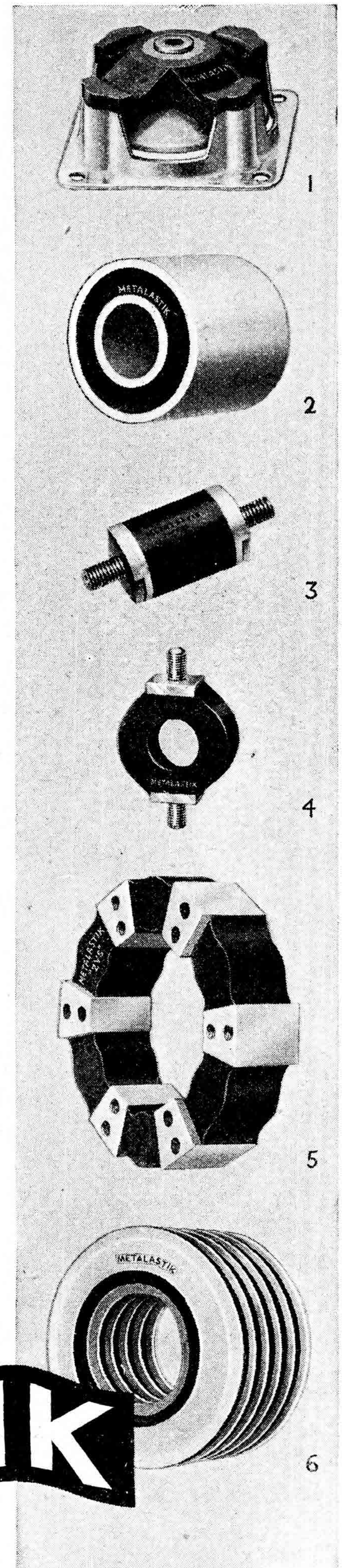
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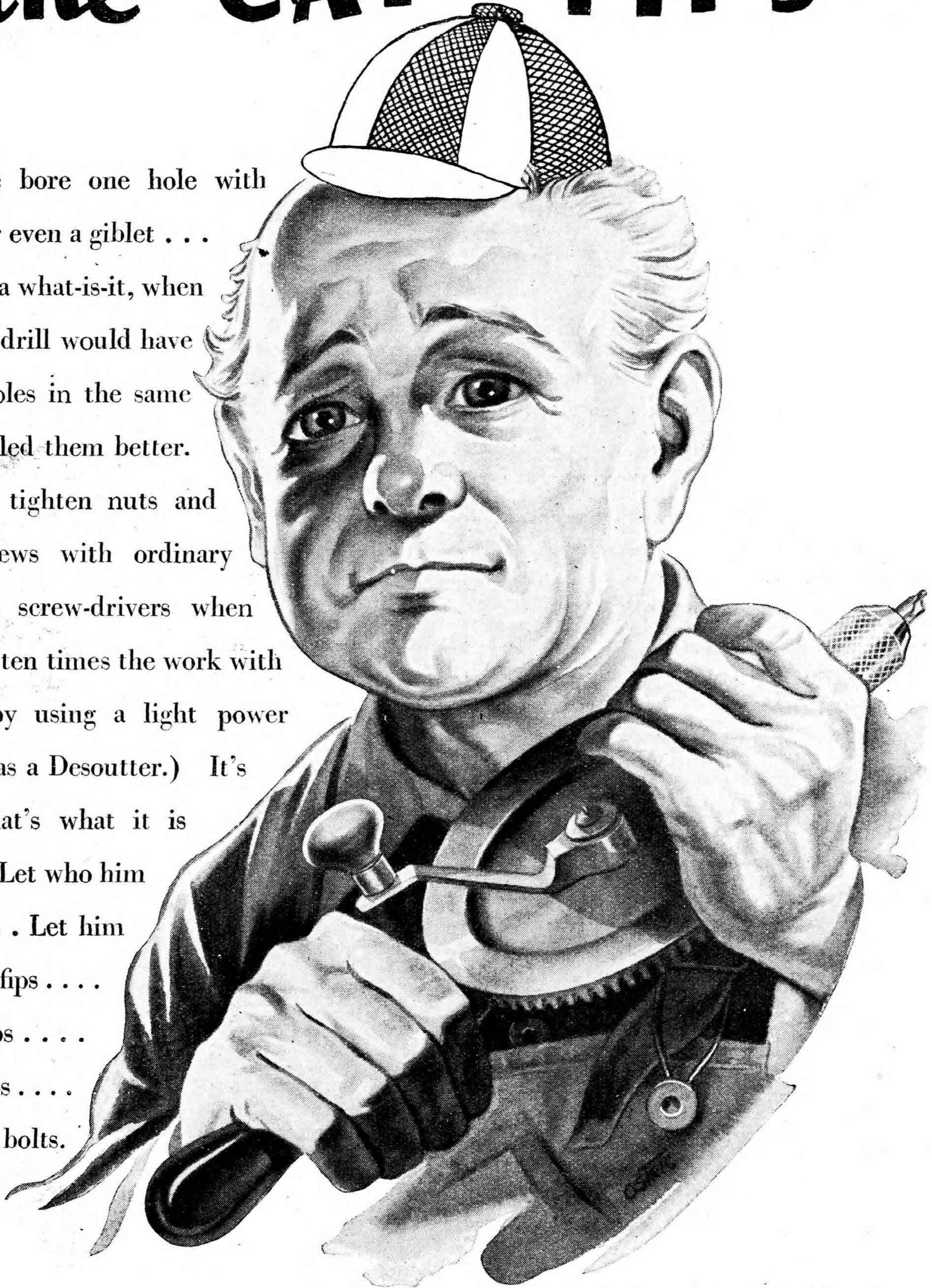
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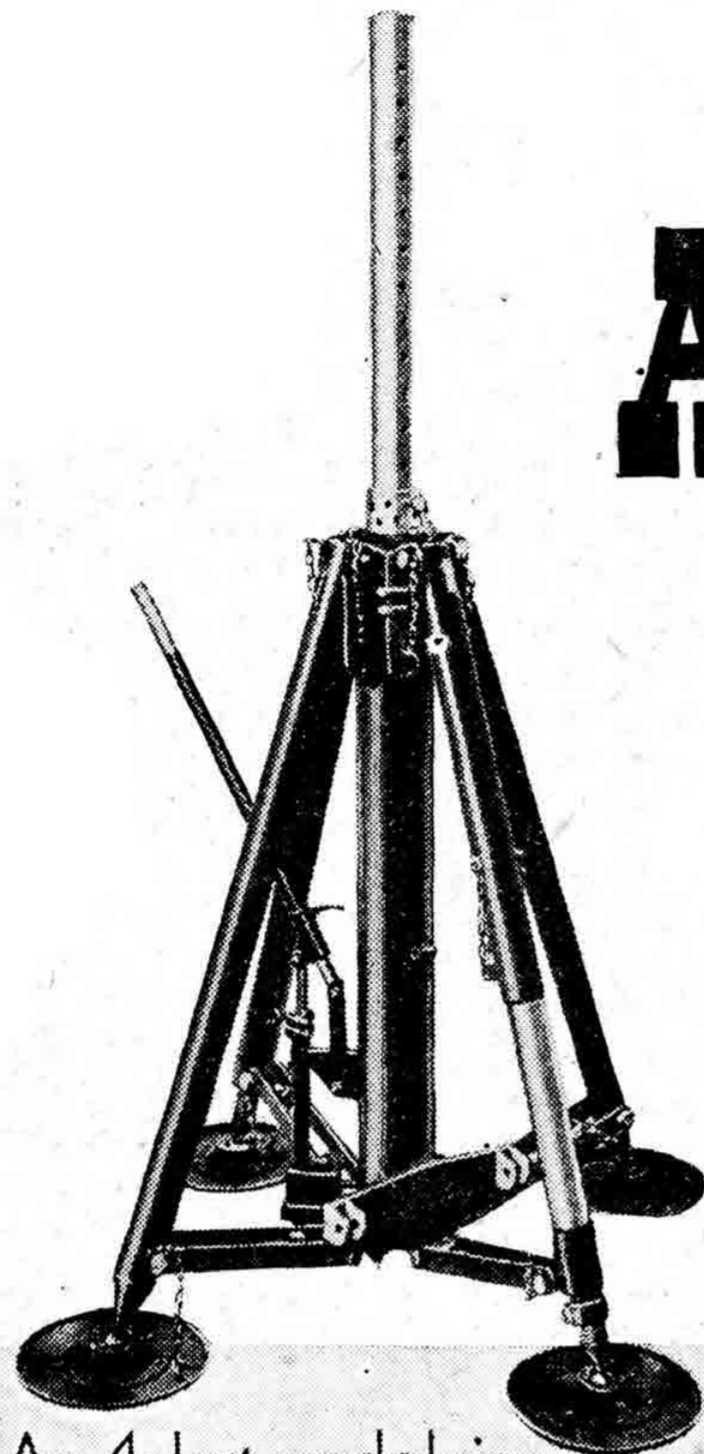
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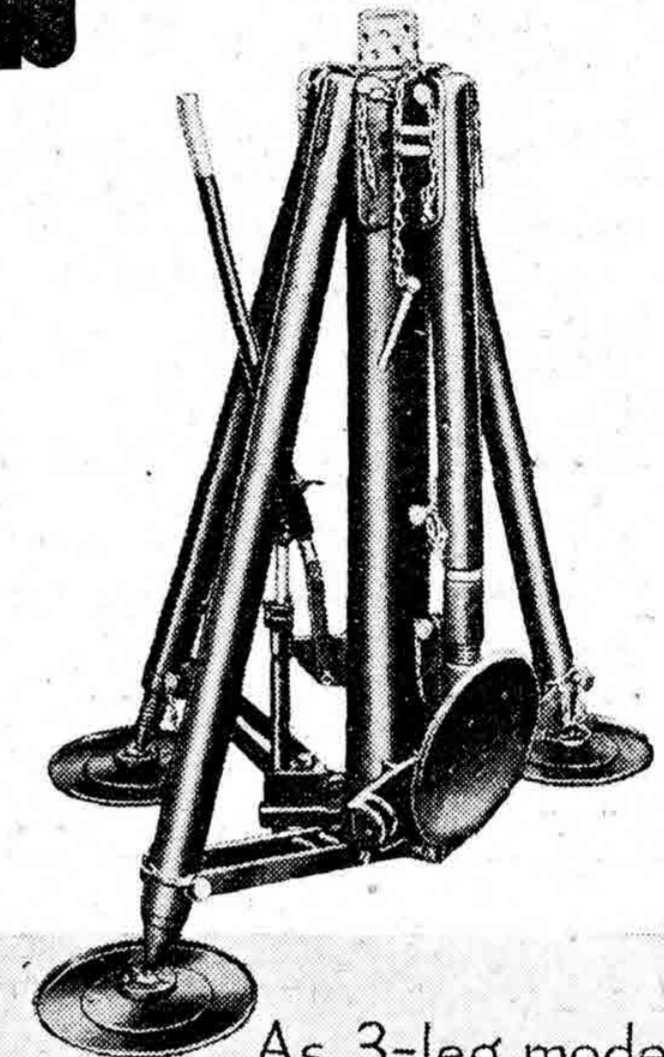
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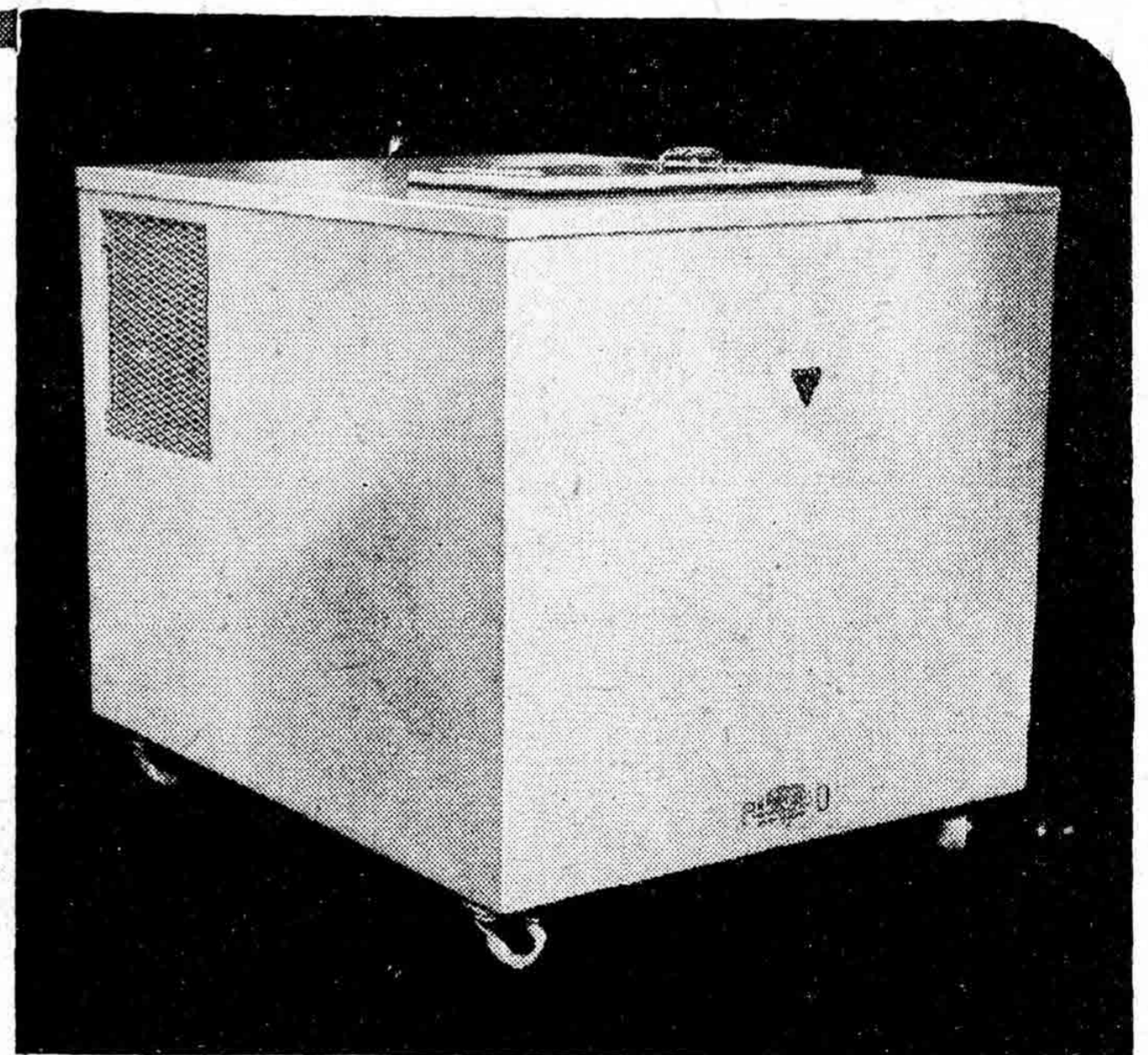
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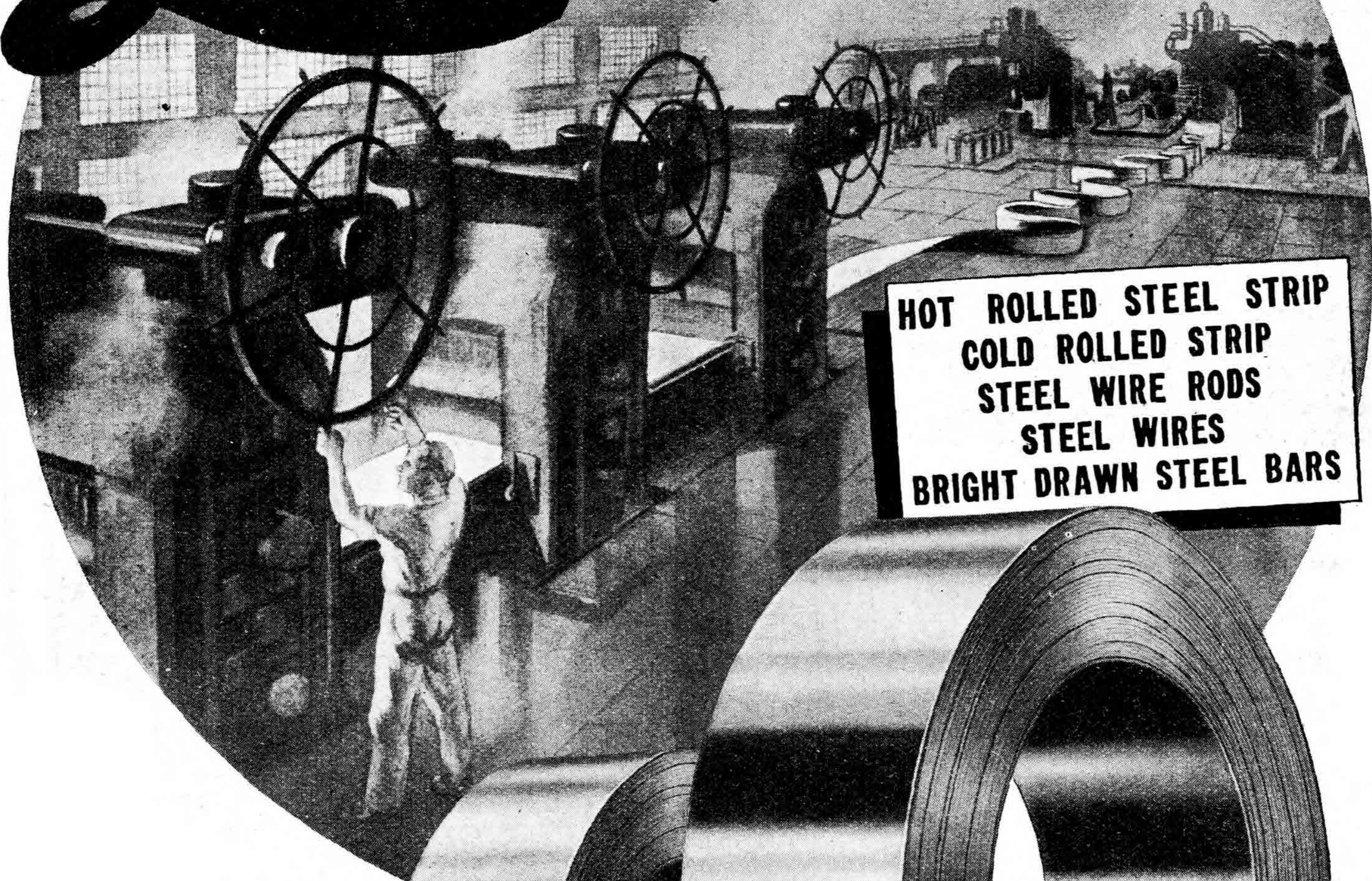
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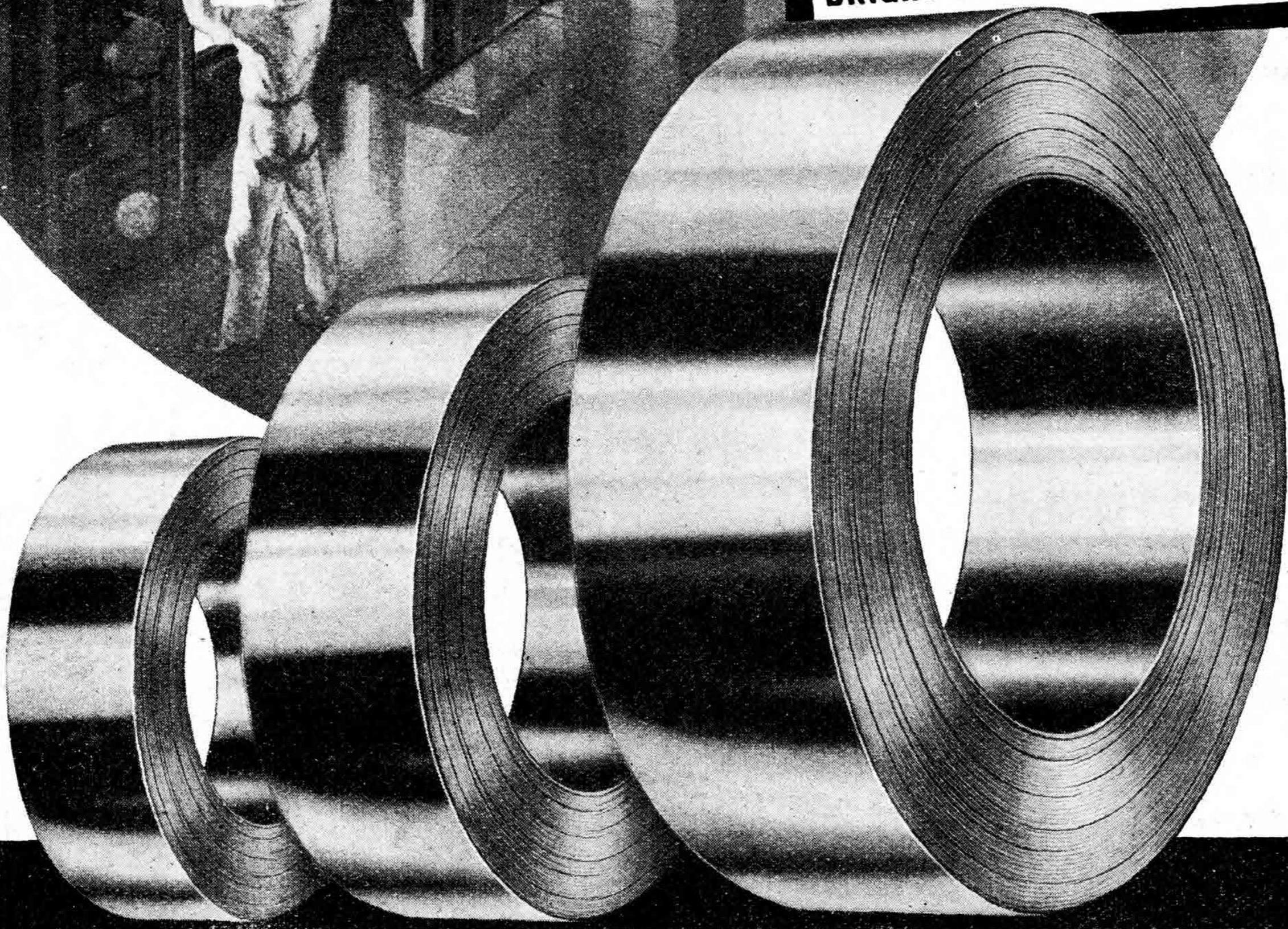
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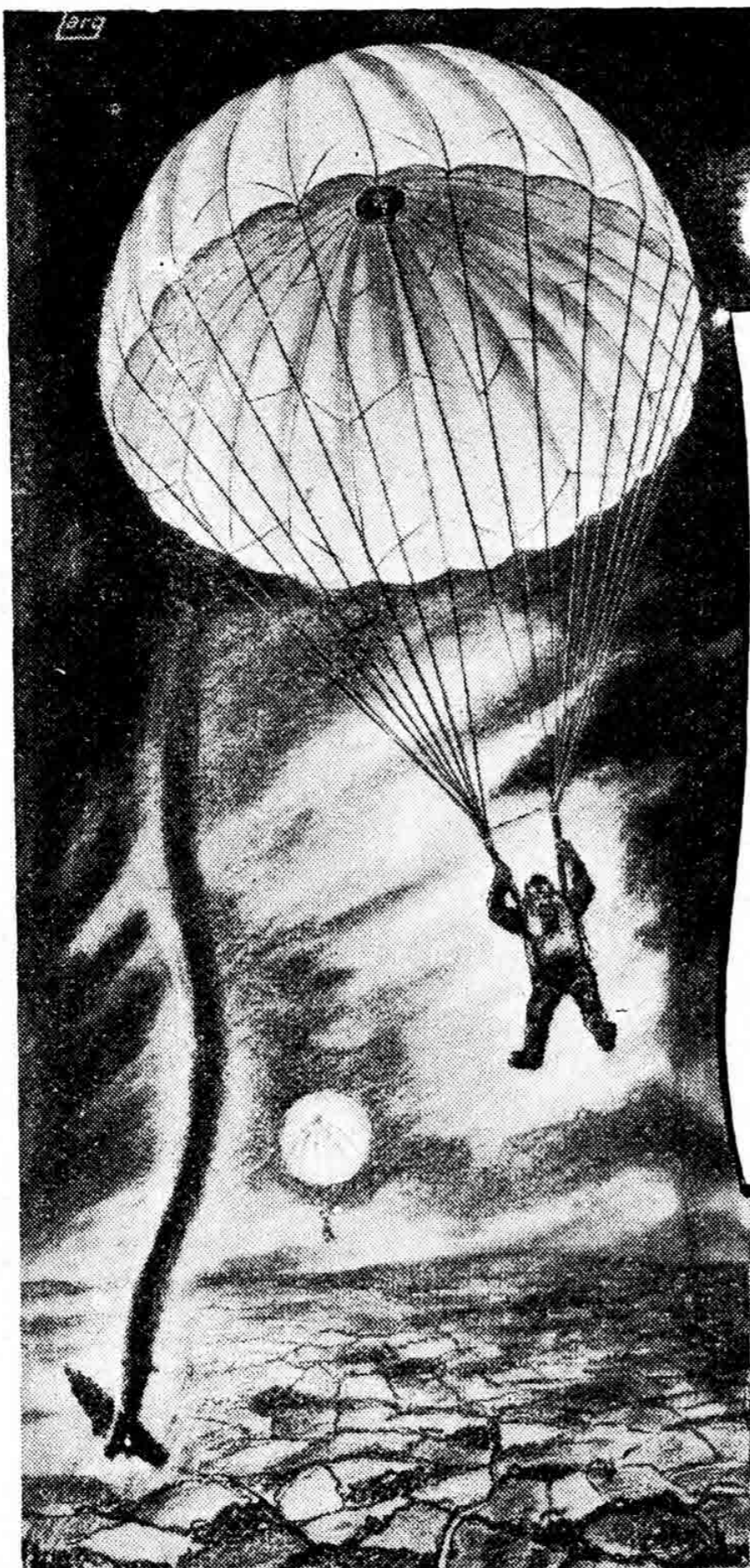
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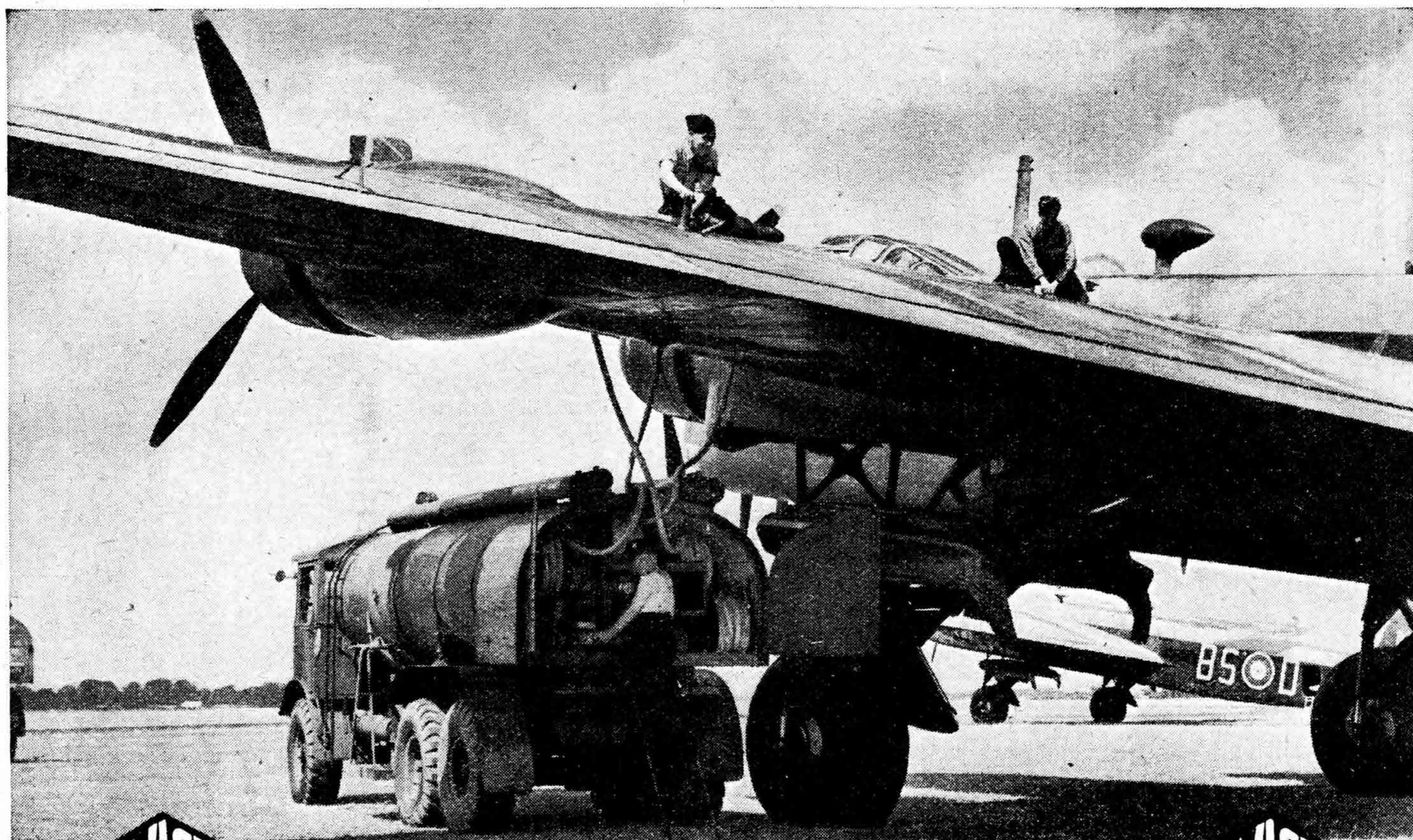
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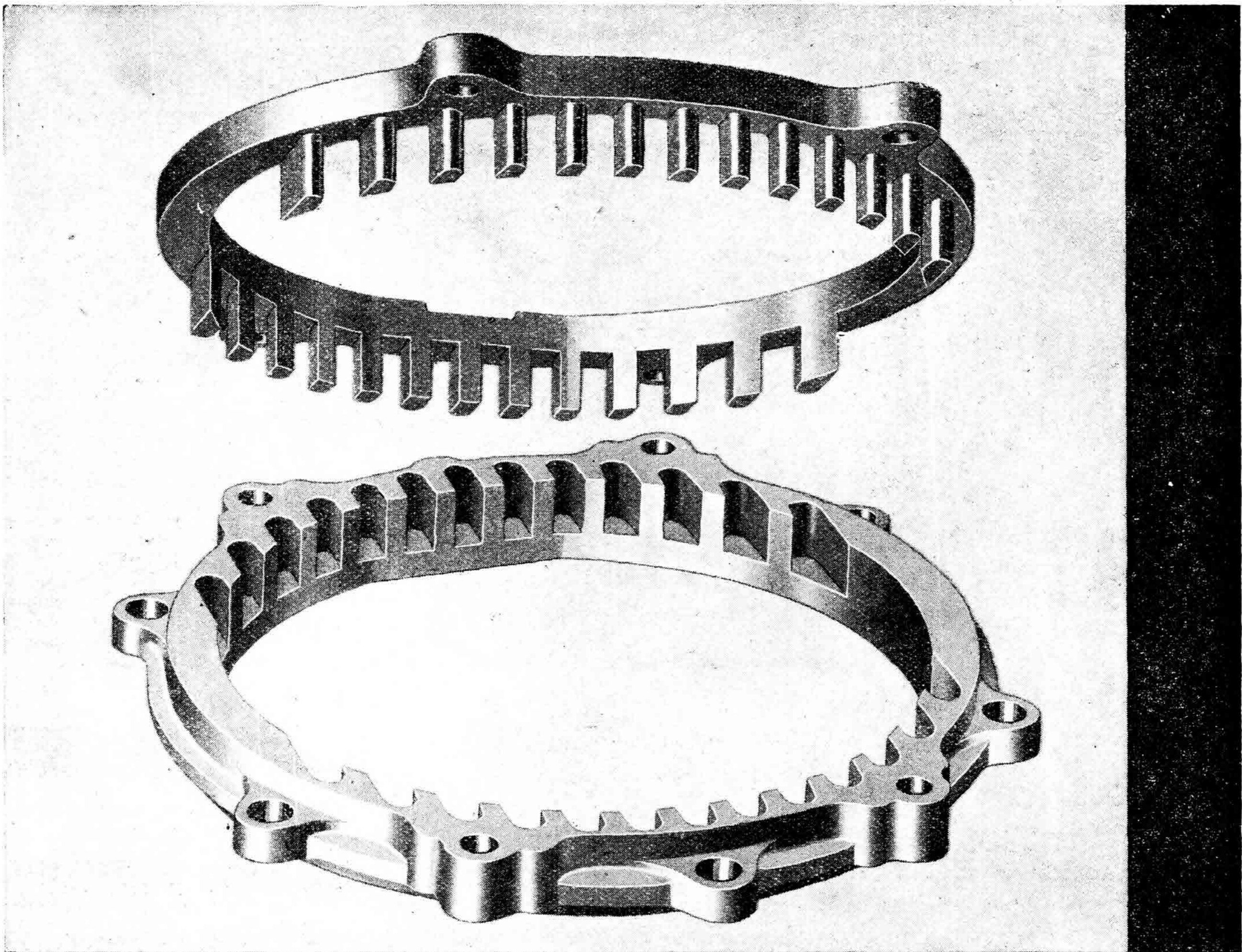
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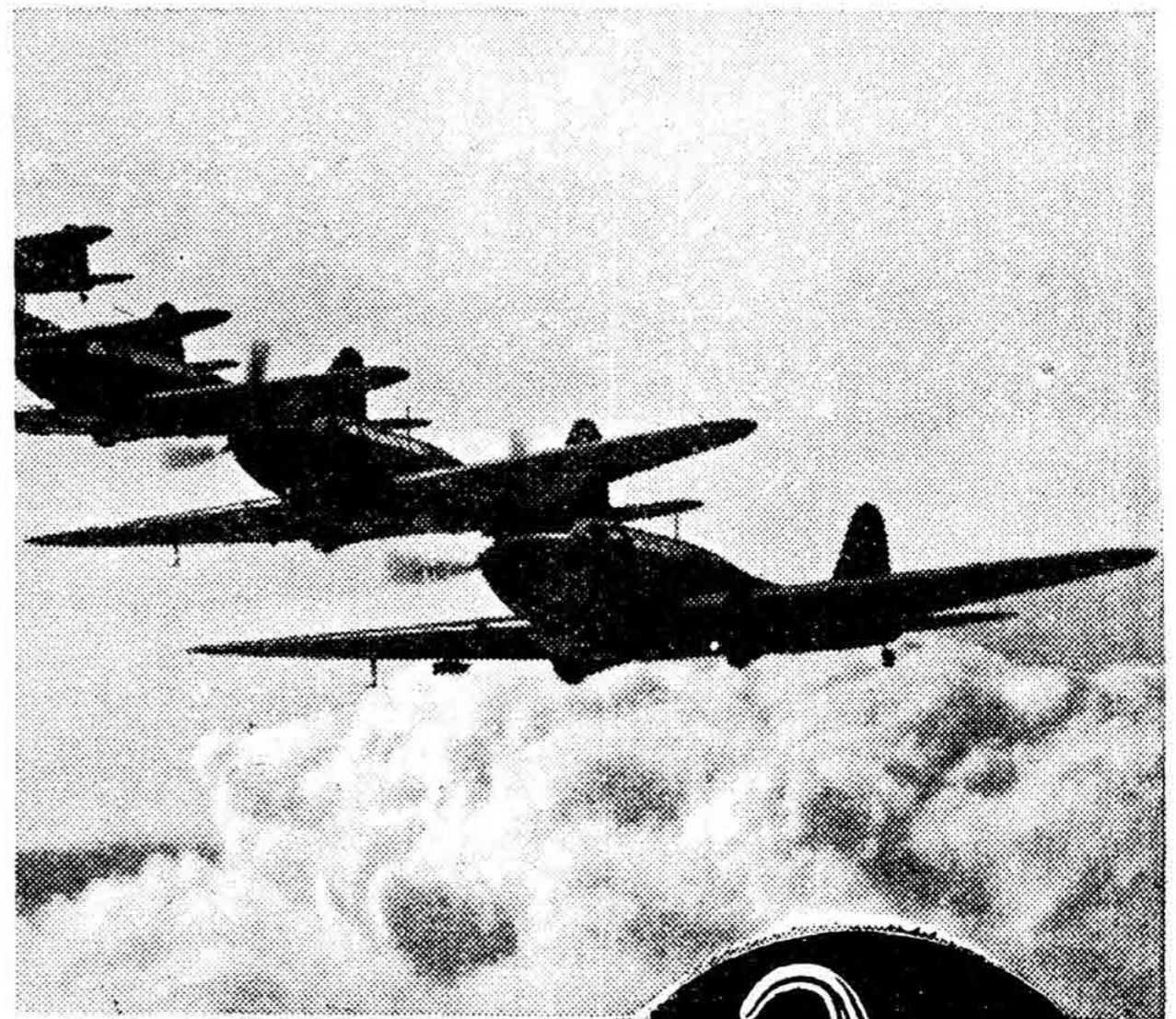
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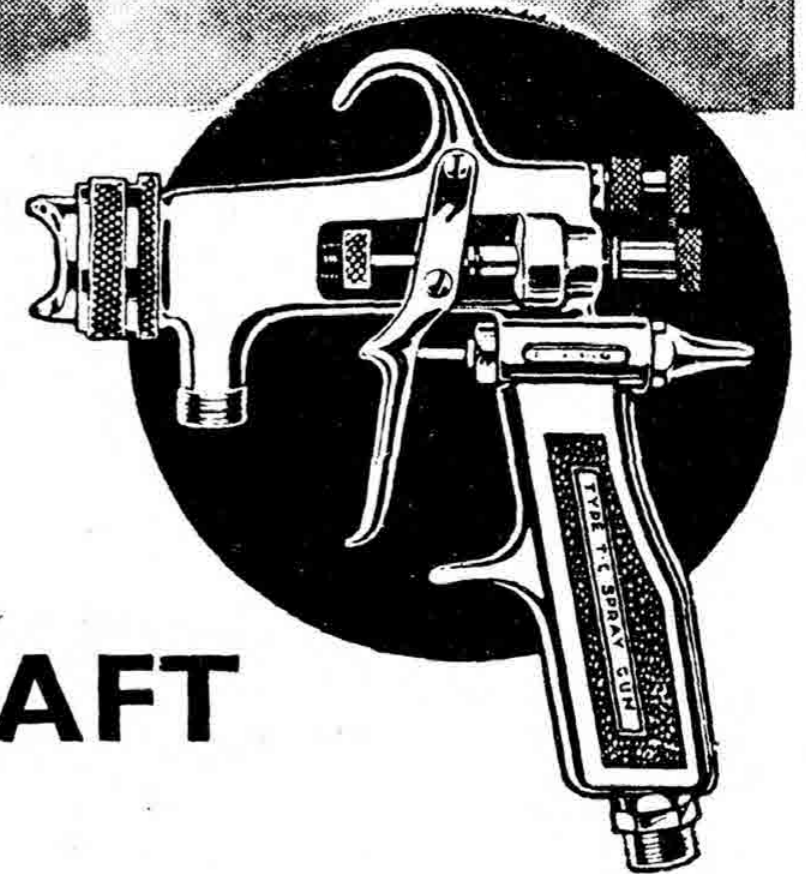
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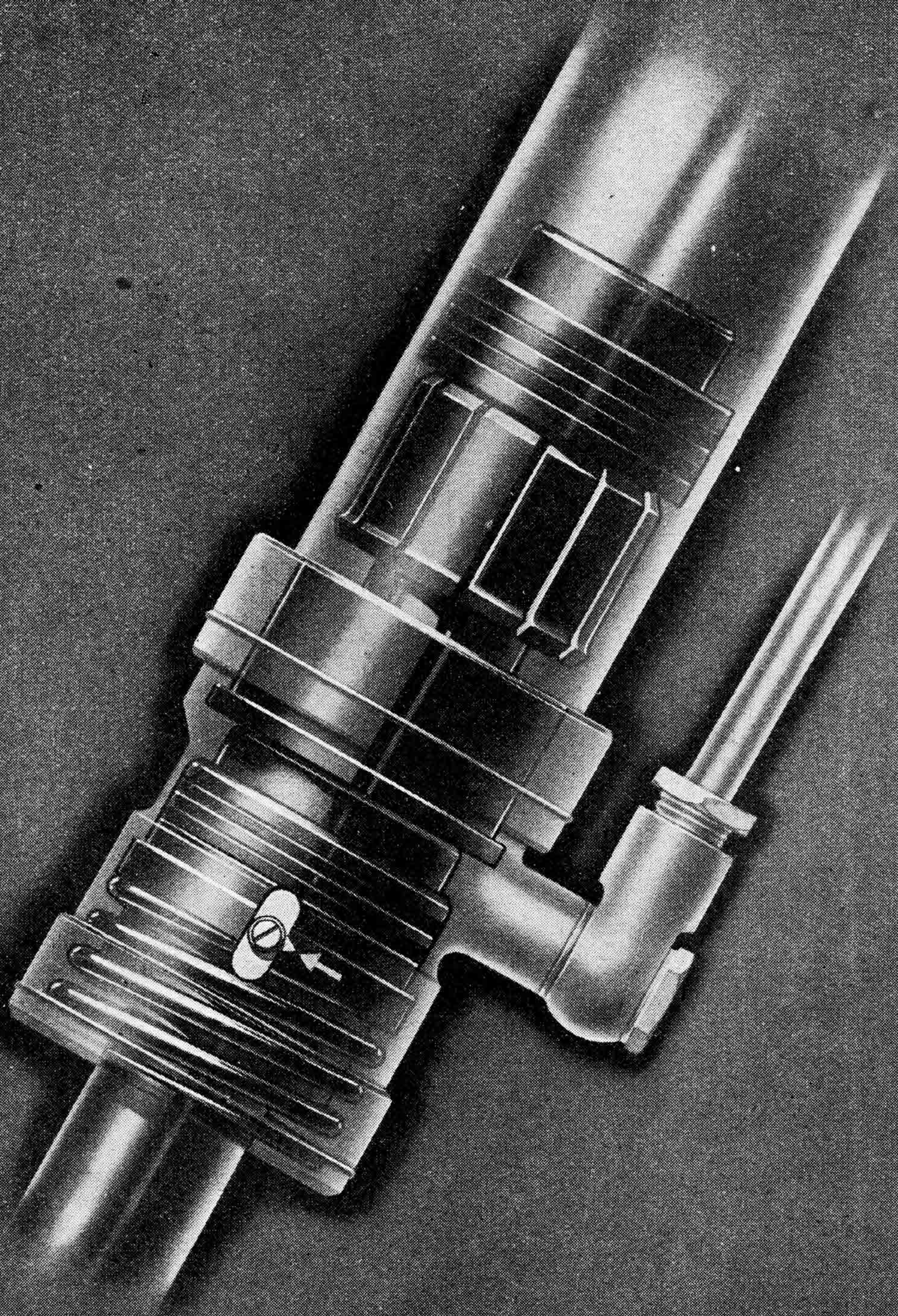
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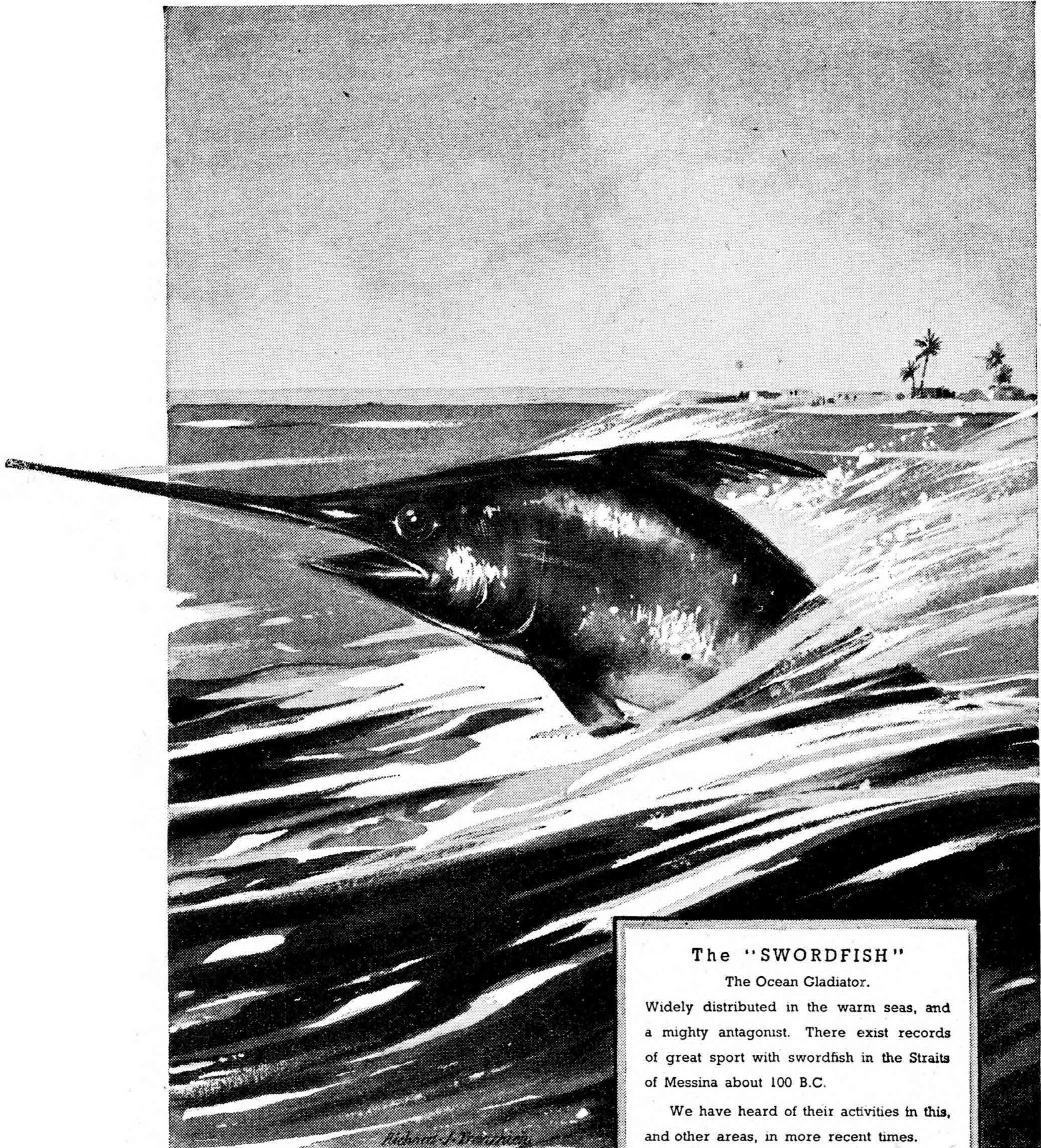
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DECEMBER 10, 1943

VOL. LXV.

AIR-BORNE FORCES

THE LOSS of Kos, Leros, and Samos, chiefly on account of the enemy's use of air-borne forces, again drew attention to the importance of that arm. Not long ago this form of attack was regarded as a stunt, but must now be recognised to have infinite possibilities in many different types of operations.

This country has been slow to appreciate the possibilities of air-borne forces. Nearly 10 years ago pictures were shown of large numbers of parachutists being dropped during manœuvres in Russia. They were treated in Great Britain as a joke or a fake, but not so in Germany. By 1937 parachute battalions were incorporated in the Hermann Göring Regiment of the Luftwaffe and foreigners found it difficult to get anywhere near their training headquarters at Stendhal, outside Berlin. This was well known to our authorities but nothing was done either to provide such troops for our own use or to prepare suitable counter measures.

Germany's attack on the Low Countries, and particularly on Rotterdam, was sufficient proof of the value of paratroops. The lesson was driven home by the invasion of Crete when in addition gliders were used. It became obvious that the Army could not protect our aerodromes without using very large numbers of men with consequent impairment to their training. The paratroop was parent to the Royal Air Force Regiment, though there may have been a long period of gestation. It also became obvious at last that we must have our own air-borne forces, but it was not surprising then to find that, owing to lack of foresight, there was a shortage of suitable aircraft.

At the outbreak of war the Germans had a large number of Ju 52s, used by their civil air lines, which were quite suitable for dropping paratroops. Great Britain had only a few transport aeroplanes and they were required to operate some of the Empire air services for war purposes. Not all our heavy bomber types could be adapted to drop paratroops, and, when it was decided to form an air-borne division, there were insufficient aeroplanes in the whole of Bomber Command. Even training was severely handicapped, and, when in the summer of 1941 it was desired to use paratroops in Army exercises, small parties were dropped as a token force from one or two aircraft and the rest were taken round by lorry and dumped where they should have landed by air.

The position soon improved and the first major operation was the Bruneval raid in February, 1942. That was, however, a small affair compared with the invasion of Sicily when both paratroops and gliders were used in large numbers. It is unwise to say too much about that operation because the enemy still knows little about the strength of the force or where it succeeded and failed. Our air-borne forces caused such

confusion that intelligence officers who interviewed German prisoners were regaled with some most diverting stories.

Gliders form an essential part of an air-borne force since they can take heavier equipment and more ammunition. Light artillery and motor transport can be carried in gliders, but immobility is a serious handicap to an air-borne force once it has landed.

Air-borne forces are liable to become isolated and be mopped-up unless reinforced fairly quickly by an advance on the ground. In Sicily the air-borne forces which were used to take the beach defences in the rear were most successful and were relieved by our invading forces next morning. In a subsequent operation to seize an important bridge on the Catania Plain, our men fought well but ran out of ammunition before they could be relieved.

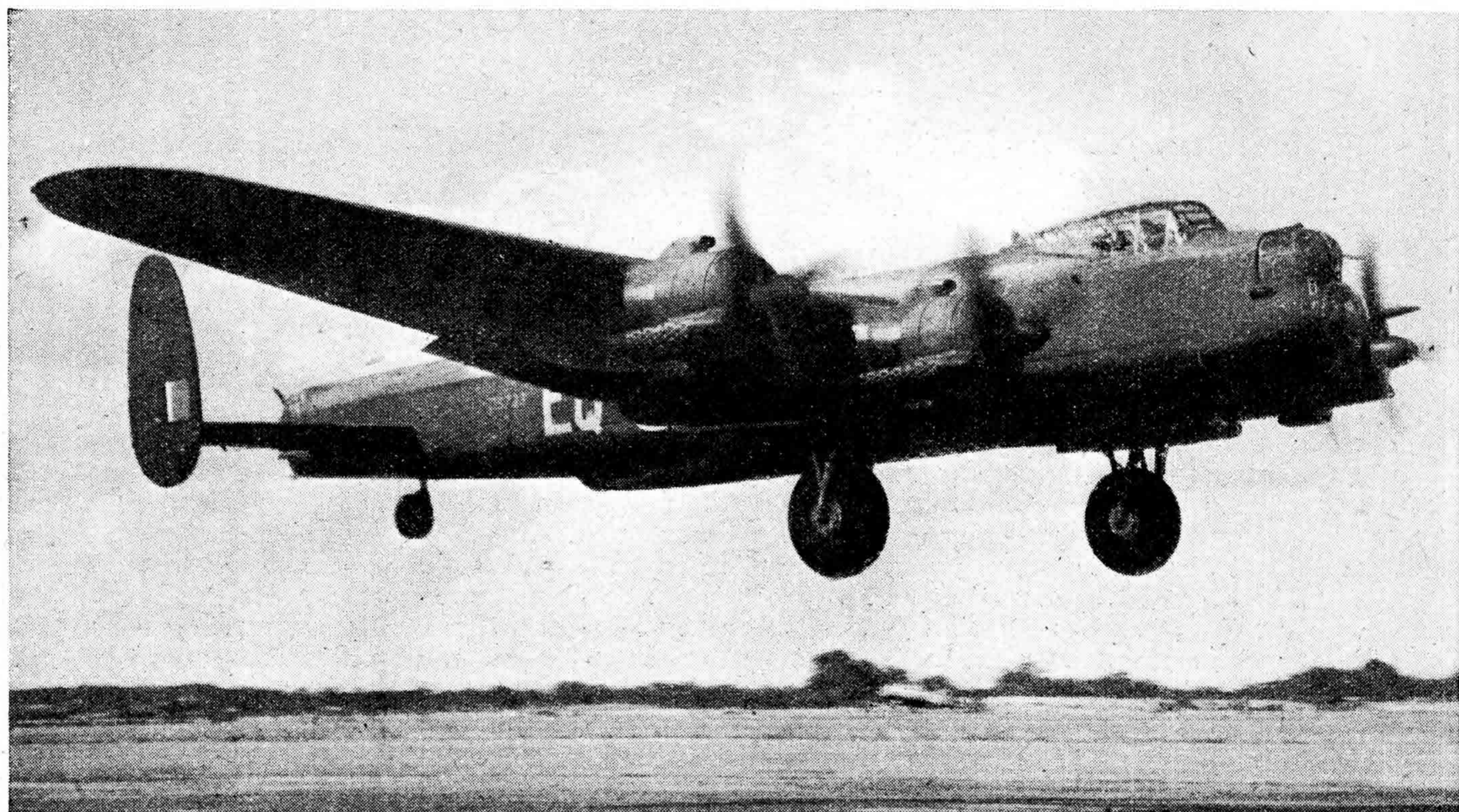
Gliders are most vulnerable not only to attack in the air but also to fire from the ground. Thus, in spite of the increased difficulty of navigation and of putting the force down at the desired place, it is usually advisable for an air-borne attack to be made at night. Paratroops should normally be dropped first to mark out the places for the gliders to land. A glider can land in quite a small space, but if put down on ground which is too rough, even although the crew escape injury, the door may become jammed and prevent rapid egress.

An air-borne attack is an operation of great complexity and needs careful preparation. The action of the air-borne forces must be co-ordinated with the tactical and strategical plan on the ground, but, until the forces have landed, it is essentially an air operation for which the Air Officer Commanding must be entirely responsible. Crews of tug aircraft and glider pilots should have preliminary training together under the conditions in which they will have to operate. For instance, aircraft leaving African bases for the attack on Sicily raised an opaque cloud of dust 30 ft. high into which the glider was towed at an ever increasing speed. The glider pilot had to rely entirely upon his instruments to tell him when to pull the glider off the ground and get above the dust. The air-borne forces have to start from a number of different aerodromes, so that the operation must be very carefully timed.

The A.O.C. alone should decide from his weather reports if the attack can be launched or must be postponed.

We may expect to see air-borne forces play an increasingly important part in the War against both Germany and Japan. More important still may be their value for police duties during the reconstruction of Europe and in the future control of the less civilised parts of the Empire.

MATTERS OF MOMENT



["Aeroplane" photograph]
NIGHT RAIDER.—Avro Lancaster II (four Bristol Hercules radial motors) heavy bombers are now going into operational service with squadrons of R.A.F. Bomber Command. Their increase in power over the Lancaster I and their greater bomb capacity will make them valuable weapons for maintaining the present night-bomber offensive.

Air Affairs in Parliament

ON December 1, in the House of Commons, Mr. Stokes asked the Secretary of State for Air "Whether the policy of limiting objectives of Bomber Command to targets of military importance has, or has not, been changed to the bombing of towns and wide areas in which military targets are situated?" To both this and other questions Sir Archibald Sinclair was emphatic in his reply that there has been no change in the bombing policy.

In answer to other questions the Secretary of State stated: "Berlin is the centre of 12 strategic railways; it is the second largest inland port in Europe; it is connected with the whole canal system of Germany; and in that city are the A.E.G., Siemens, Daimler-Benz, Focke-Wulf, Heinkel and Dornier establishments, and if I were allowed to choose only one target in Germany, the target I would choose would be Berlin."

Sir Archibald Sinclair was pressed further on the subject of bombing policy and Mr. O. E. Simmonds admirably summed up the whole matter in his question "Is it not a fact that these bombings are likely vastly to reduce our military casualties when we invade the Continent of Europe?" to which the Secretary of State replied "Yes, Sir."

Later on, at question time, Sir Archibald Sinclair gave the following statistics: "From Jan. 1, 1943, to 6 a.m. on Nov. 30, 1943, 2,083 British bomber aircraft operating from this country were reported lost over Europe by night and 106 by day. Eight hundred and twenty-nine bombers of the United States Army Air Forces operating from this country were reported lost by day over the same period."

On the subject of remustering of Flight Sergeants in the R.A.F., Mr. John Dugdale asked "Why Flight Sergeants on being found unfit for air crew duties are remustered to general duties with consequent loss of rank and pay?" The Secretary of State for Air replied, "Flight Sergeants and other ranks of airmen air crew who are temporarily withdrawn from flying duties for medical reasons suffer no loss of rank or pay. If, however, they are permanently withdrawn from flying duties for medical reasons they are remustered to ground duties. Provided they have undertaken operational flying duties or the equivalent, they retain their rank and pay is regulated to that of the appropriate ground trade. If, however, the airman has not attained the requisite standard of trade proficiency, a lower rate of pay is applicable until such standard is reached. A lower rate is also applicable when airmen are remustered to trades in which posts have not been established in their ranks. Since airmen on flying duties normally receive promotion more

rapidly than those on ground duties, the retention of both rank and flying rates of pay on remustering to ground duties would create invidious anomalies within the Service."

Sir Archibald Sinclair, in answer to a question by Mr. G. Strauss on the question of facilities for the return to this country of wives of R.A.F. personnel, replied: "Families are placed on a waiting list in accordance with established priority procedure. Passages can, at present, be obtained within a reasonably short time. Officers and men reposted home in advance of their families may remit the greater part of their pay. In case of need, these remittances may be supplemented by special allowances administered locally."

A Matter of History

IN THE BROADCAST of the feature "The Air is Our Concern," Part II on Dec. 3, the story was continued of British Aviation to the present day—from the period of the Royal Air Force Expansion Scheme to the establishment of the Aircraft Factory Group System. In this broadcast, a feature release was made for the first time of the rush work put in by the de Havilland Aircraft Co. just before the Battle of Britain in converting all their two-pitch hydromatic airscrews to constant-speed type.

Messerschmitt Me 109s at that time had a better ceiling than many of our fighters and had an advantage in acceleration and power diving. Two-pitch airscrews had the drawback that, to avoid "over-revving" in the dive, the pilot of a fighter had to throttle back.

On Sunday, June 9, when the Germans were pouring across the Marne, de Havilland's received an official request to convert a Spitfire two-pitch airscrew to constant-speed. This involved the construction of a constant-speed unit, which was ready in four days. This Spitfire was found on trials to have an increase of 7,000 ft. in ceiling, improved manoeuvrability at height, reduced take-off run, and increased rate of climb. This conversion also enabled motor efficiency at height to be fully employed.

On Saturday, June 22, de Havillands received instructions to convert in the field all fighters fitted with two-speed airscrews, with priority for Spitfires. After Squadron conversion, all Spitfires in storage at Maintenance Units with two-speed types had also to be converted and de Havillands made arrangements to ensure that two-thirds of Spitfire production would be constant-speed from then on.

Special parts had to be produced for the constant-speed unit, which consisted of a small shaft drive from the motor, four

external oil pipes, a complete cockpit control with conduit, and other smaller details. No other alteration was required to the existing airscrews.

The Gipsy engine factory, M.R.C. Ltd., and de Havilland's Process Department all contributed to this rush job of vital importance to the technical superiority for which we were striving during the Battle of Britain.

Forty-four days after the test-flight on the first de Havilland converted constant-speed Spitfire more than 800 sets had been produced and the conversion work on all existing "two-speed" Spitfires was complete. Production then commenced on work for conversion units to supply the Supermarine assembly lines. At that time de Havillands also had 400 Hurricane conversion sets in hand. By Aug. 16, no fewer than 1,051 British fighters had acquired greater efficiency by conversion to take a constant-speed airscrew.

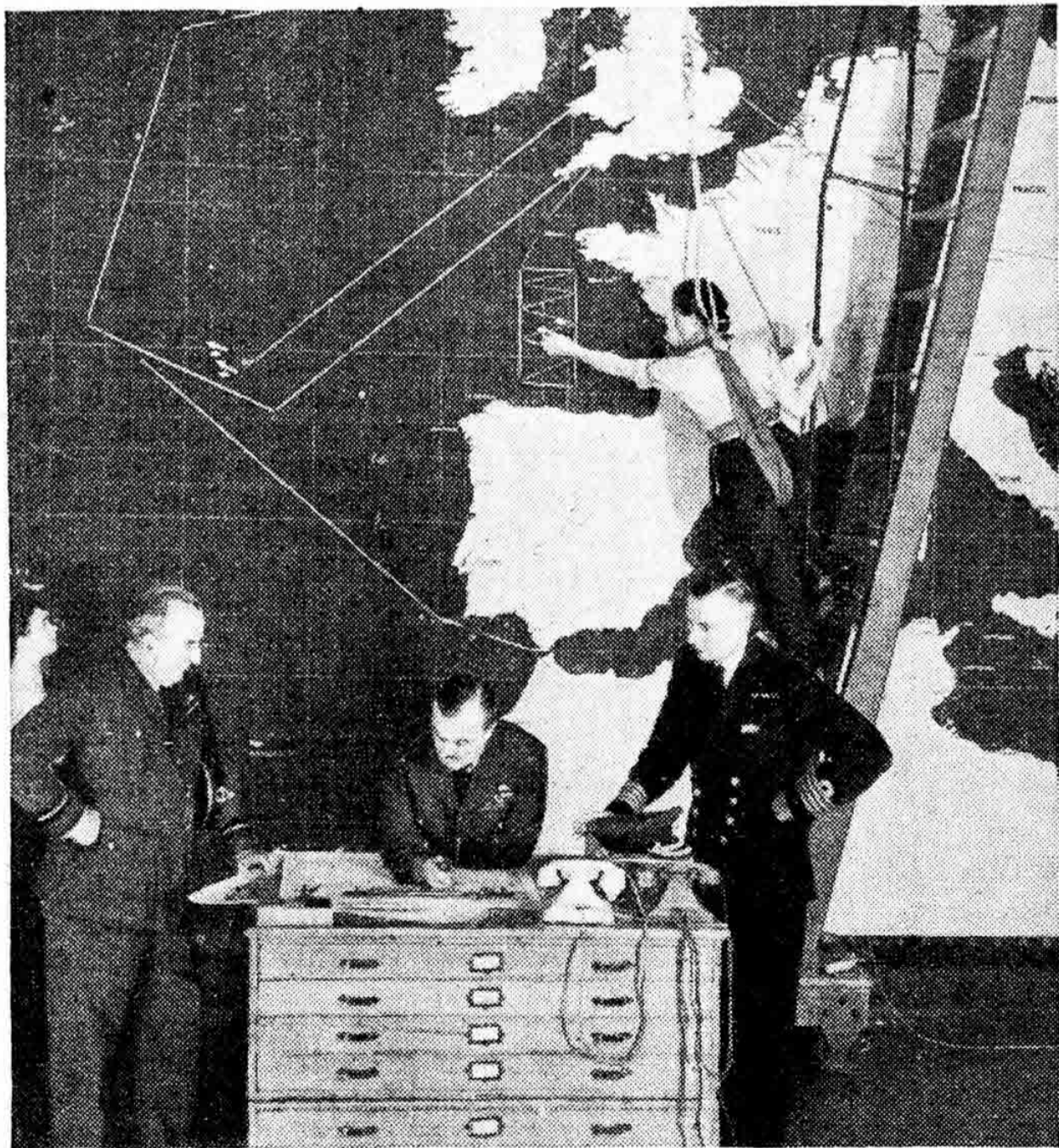
A number of constant-speed airscrews were already in use in fighters during the Battle of France, but they were of another type and at the moment no official figures have been released to show to what extent fighters were available with this technical improvement before de Havillands took their own rush job in hand.

This airscrew conversion was a fine achievement and a feature of it was that de Havillands performed the almost unique feat of getting past "the Committee."

The Sincerest Form?

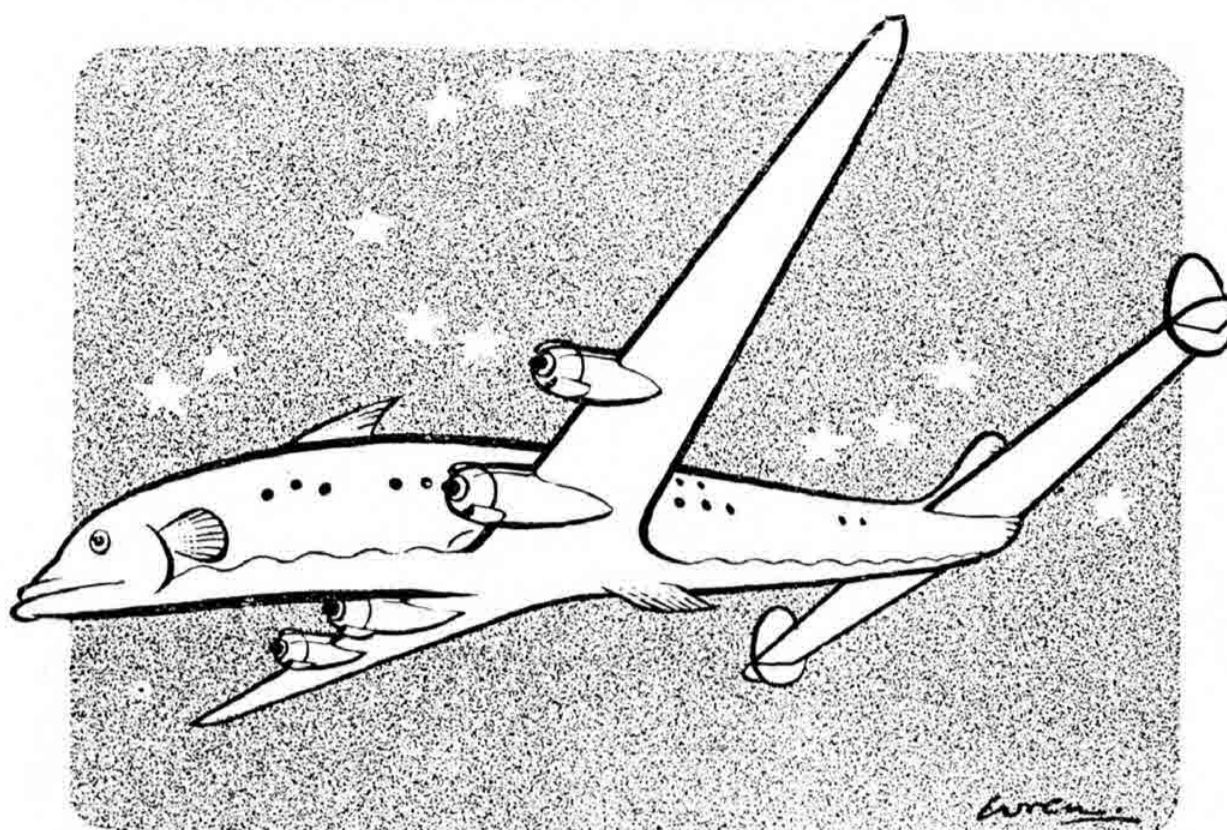
ALTHOUGH official German statements during the past two years have repeatedly claimed that wooden aircraft were inferior to all-metal types, there have been many indications during this period that the Luftwaffe had, in fact, ordered a substantial number of front-line aeroplanes made of wood. This is revealed by the number of advertisements in the publications of the Reich and of the occupied territories asking urgently for wood workers for the German aircraft industry. Another proof was that German technical journals seemed to have given up their antipathy against wooden aircraft. They now review the qualities of wood as constructional material for aeroplanes more favourably than in the past.

Recently, a German radio station mentioned for the first time that the Luftwaffe is going to introduce a single-seat fighter made of wood. It is called the Focke-Wulf "Moskito" and seems to be a development of the Fw 190. This new aeroplane, the type designation of which is unknown at present, is intended for use against the heavy four-motor British and



ATLANTIC OPS.—In Coastal Command Operations Room are seen (left to right) Air Vice-Marshal A. Durston, C.B., A.F.C., Senior Air Staff Officer; Air Marshal Sir John C. Slessor, Commander-in-Chief, Coastal Command, and Capt. D. V. Peyton-Ward, Senior Naval Staff Officer. Behind is the Operations Board, the largest in the World, 30 ft. by 30 ft. The girls who make alterations to the Board are slung from pulleys in the roof for safety.

ODDENTIFICATION—CXL



[Aeroplane Copyright]

New in the galaxy of stars,
Kin to the mighty war god, Mars,
Graced by fins, in number three,
Borne by Cyclone's harmony,
The Constellation,
Carrier of mails and men,
Passengers two score and ten,
Strange but graceful curving spine,
Latest of the Lockheed line,
The Constellation.

(After P. L. Boucher.)

American bombers. According to the radio report, the new Focke-Wulf fighter is equipped with the new Junkers Jumo 213 in-line motor. The test flights of the new machine seem to have been completed, and quantity production is said to be in full swing.

Attempts at Camouflage

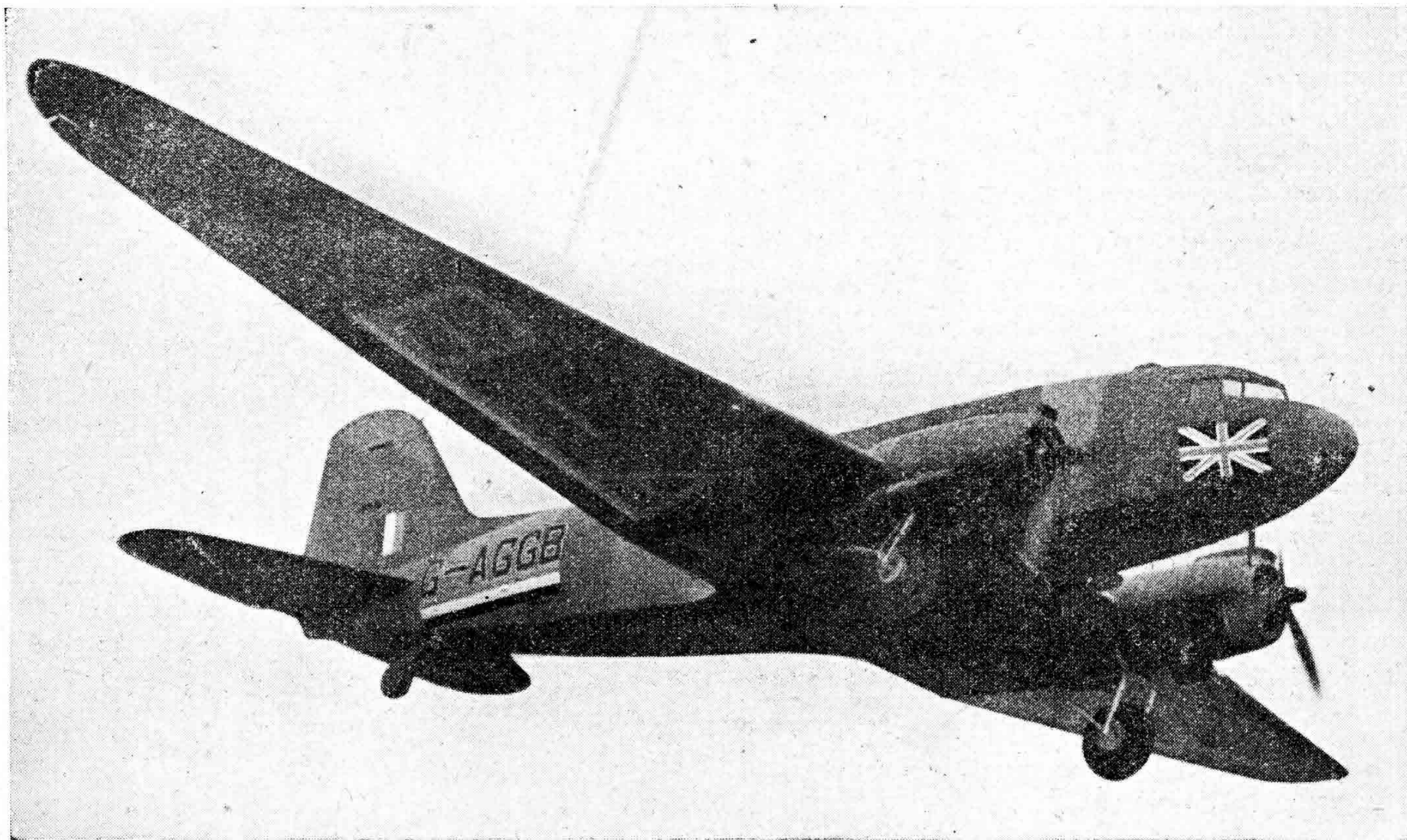
THE BERLIN CORRESPONDENT of a Swedish journal reported recently that none of the millions of people working in the German armament industry will in future be able to disclose any secrets to spies.

The new Minister for Armaments, Speer, who is also in charge of aircraft production, introduced some months ago a new camouflage system. The principle of it is that "those who know something must not realise that they know anything." Thus it will not matter, according to the informants of the Swedish journalist, whether unauthorised persons get hold of new designs, because nobody will understand.

There is no complete design but only details, and the factory leader who produces his detail does not know where the other parts are manufactured. The German authorities have also introduced a new technical language which cannot be understood by anyone who does not belong to the small circle of men who are in the know.

We do not deny that Speer may have succeeded in introducing a new system of camouflage which, on paper, may look absolutely watertight. Whether it will work as well in practice has to be seen. Some time ago, for instance, he introduced a new system which Aircraft Companies have to use when advertising for labour. During the first weeks it was not easy to find out which company was in need of designers or production engineers or which firm advertised for clerks, accountants, or other office personnel, but now it is not difficult to say what Heinkel, Dornier, Messerschmitt, Junkers and so on are needing and, with a certain amount of experience, the trend of German aircraft design and production is not difficult to foretell.

Small technical details, although interesting to know, do not matter so much. They will become known soon after the new weapon has been introduced into service. As to the claim of the German authorities, that a works manager does not know where the other parts of the weapon which he is manufacturing are produced, the informant of the Swedish journalist has overlooked one important factor. That is the mass-migration inside the Reich caused by the Allied air offensive, not only by German nationals, but also by foreign workers. The latter in particular are moved about all over the country, and during their journeys they meet some of their compatriots who work in a factory where either other parts are manufactured or the weapon they are working on is assembled. Minister Speer's new camouflage system seems to be a kind of "secret weapon," another of the kind of which much has been made lately, the only aim of which is to try to stiffen the morale of the German masses.



CIVIL DAKOTA.—“G-AGGB,” one of the British Overseas Airways Corporation’s Douglas C-47 Dakota two-motor civil transports. Used on certain of the BOAC services, some are also operated by K.L.M. with British registration. This particular Dakota, finished in BOAC colours, is equipped with two Pratt and Whitney Twin Wasp SIC3G motors.

New German Air Strategy

AT A RECENT MEETING of the Nazi Party leaders, the Berlin correspondent of a Swedish paper reported, Göring spoke about the preparations and plans of the Luftwaffe for meeting the onslaught of the British and Americans.

According to this report, Göring had obtained permission from Hitler to build up a reserve air force which would be kept for the coming battles, in particular against invasion.

This new air force is said to consist of two-motor fighters, so-called “destroyers,” grouped around four-motored bombers which would form the Luftwaffe’s heavy artillery. The latter are equipped with a rocket starter which “in one second can increase the speed five times.”

Although the armament of this new German four-motor is numerically not as big as that of the Fortress, it is still superior to its American counterpart as it carries, apparently, rocket shells. The “destroyer” formations are equipped with the new twin-motor Messerschmitts which without auxiliary fuel tanks are able to reach Scotland with some 4,000 lb. of bombs. When on escort duty the “destroyers” do not circle around the heavy bombers, but protect them from above as an umbrella.

The most interesting detail of the Swedish journalist’s report, however, is that German aircraft factories building fighters now send completed aeroplanes straight to the front. This indicates that the output of these factories is no longer sufficient to build up reserves.

75 mm. Cannon in Aeroplanes

IT WAS REPORTED last week that Mitchells of the U.S. Army Air Force, operating in the Pacific war zone, carry a 75 mm. cannon. Overcoming recoil problems for a gun of this size is a very remarkable achievement and it is certainly the most formidable weapon yet put into an aeroplane. It may be remembered that the French “75” field gun made history between 1914 and 1918 and was regarded in its day as the World’s best piece of light artillery. The “75” was still in use when the present War broke out and did good work in the opening phase of the campaign in France.

These cannon-carrying Mitchells are reported to have already been in action against Japanese shipping, with devastating results. Many experts in aircraft construction have hitherto considered that the recoil difficulties presented by so large a cannon were insuperable.

U-Boats Destroyed from the Air

IN the leading article for Nov. 19 we complained that the Royal Navy was inclined to be silent on the subject of air or sea responsibility for the sinking of enemy submarines. An Air Ministry communiqué issued on Dec. 5 gives the news that in recent operations in defence of convoys aircraft of Coastal Command and aircraft of the U.S. Navy, operating with Coastal Command, inflicted severe losses on enemy submarines. Over a period of eight days 15 U-boats attacked the convoys and six are known to have been sunk. The aeroplanes mentioned are Consolidated Liberators, Lockheed Hudsons, Vega Venturas, and Short Sunderlands.

“The Volunteer”

FILMS, long or short, produced by or in co-operation with the Ministry of Information are renowned for accuracy and interest. This new film about the Fleet Air Arm is no exception. Through the eyes of an actor, played by Lt. Cdr. (A) Ralph Richardson, R.N.V.R., who becomes a Fleet Air Arm officer upon the outbreak of War, we see how service in the Royal Navy’s Air Arm can affect a man.

The man concerned was employed as Mr. Richardson’s stage dresser. His inefficiency is remarkable until circumstances force him to join up. The effect of discipline gradually becomes obvious as Mr. Richardson, in company with the audience, encounters him from time to time. Eventually, he distinguishes himself in action. The propaganda value of “The Volunteer” is obviously high at a time when the Fleet Air Arm is in need of men.

Many “shots” of life on an aircraft carrier enhance the general interest, and most of the leading F.A.A. machines appear during the film. A Martlet tips on to its airscrew after landing and Seafires are pulled so roughly to a standstill that the audience almost feels the jerk.

Perhaps most interesting of all are the excellent views of The Squirt in action. The Squirt is a device, rather like a catapult, for assisting take-off. A Seafire and a Martlet are literally thrown from a carrier after an apparent run of only a few yards.

Empire Central Flying School

THE EMPIRE CENTRAL FLYING SCHOOL, an offshoot of the Central Flying School, was described in THE AEROPLANE for Sept. 25 and Oct. 2 of 1942. So impressed were we, during a recent visit, by the increased activities and organisation compared with those of last year, that we propose dealing in detail with the subject next week.

THE WAR IN THE AIR

RESOUNDING BLOWS were given to the enemy in every theatre of war last week, and the two great inter-Allied Conferences may be said, without any lapse into wishful thinking, to mark the beginning of the end, however distant or near that end may be.

After another spell of difficult weather, Bomber Command got into its stride again towards the end of the week and on Thursday night, Dec. 2, resumed the attack on Berlin. Those few people who may still be wondering whether such attacks are worth while have their answer in the confused and contradictory German propaganda now being put out both for home consumption and for export. Berlin had received 7,500 tons of high explosive and incendiary bombs in a fortnight when the attack of Dec. 2 terminated. To this may be added another 6,500 tons dropped in previous raids during 1943, making a total of 14,000 tons.

As an example of the grotesque propaganda which is ladled out to the German people with the intention of comforting them, the official German News Agency presented the following picture of this country, on Friday last:—"Fear of German retaliation has seized the population of Britain, and particularly of London. So far, some 200,000 persons have been detained and taken to concentration camps in an effort to prevent panic from spreading."

In the House of Commons last week, the egregious Mr. Stokes put a number of futile questions to the Secretary of State for Air as to a change in policy on the part of Bomber Command. Sir Archibald Sinclair told him that there has been no change of policy, but this did not satisfy Mr. Stokes, who appears to be worried at the thought that some people in Berlin may be getting it in the neck as a side issue of Allied air attacks on very definite targets. These targets happen to be spread all over the city, and it is up to the Berliners to stand firm, as they know perfectly well what is coming to them.

The Air Minister pointed out to Mr. Stokes that Berlin is the centre of 12 strategic railways and the largest inland port in Europe, connected with the whole canal system of Germany. Sir Archibald went on to say that in the city are the A.E.G., Siemens, Daimler-Benz, Focke-Wulf, Heinkel and Dornier establishments. If he were allowed, he said, to choose only one target in Germany, the target would be Berlin.

In Russia the Soviet High Command would appear to have decided upon an immediate clearance of all Germans from White Russia, and half a million troops are said to be engaged

in this task. General Von Kluge's army was falling back rapidly on Zhlobin and Rogachev by Saturday last, under irresistible Soviet pressure.

Winter has set in over all the Northern fronts and the dreaded Russian ski patrols have reappeared, attacking German transport and stragglers. Contrasting with its local weakness in Southern Italy, the Luftwaffe has lately been putting up a stiff defence on many sectors of the line in Russia.

With the prospect of yet another winter campaign on the Eastern Front, German morale seems to be drooping a little and the German Command is said to have sent a strong propaganda unit to White Russia, including military humorists. The troops will presumably "wait for it" and laugh on the word of command, like a B.B.C. studio audience. If this does not cheer them up, nothing will.

In Italy the Eighth and Fifth Armies, with tremendous air support, struggled forward through mud and over mountains at a pace which, if maintained, will get them to Rome in several months' time. Exactly how this magnificent but costly fighting fits in with the grand strategy of the War will appear in due course. At present, its object is somewhat obscure.

The Pacific War continues to go in our favour and great operations, decided upon at the Cairo Conference, may be put into operation there in the very near future. The presence of Marshal Chiang Kai-Shek at the Conference Table in Egypt was, without question, a heavy political blow for Japan. From hysterical outbursts in the Japanese Press, it is clear that Tokyo views the whole affair with disfavour. With regard to the Teheran Conference, it seems likely that one of the first results of this may be an immediate three-way air offensive on Germany.

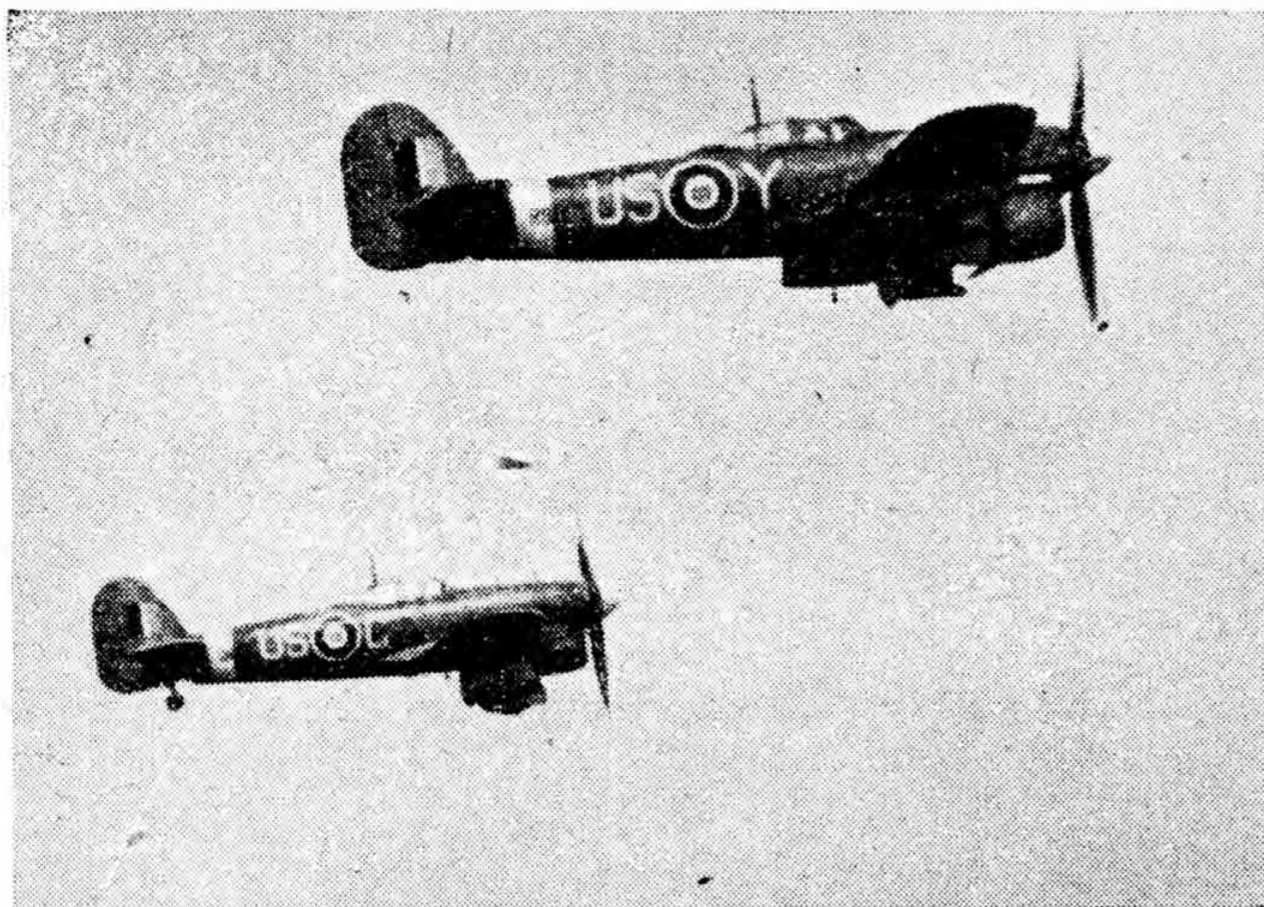
During the week, we received yet another sensational item of information from our Ambassador to the United States. Lord Halifax revealed that in 1918 air bombardment was in its infancy.

Northern Europe

American daylight bombing of targets in Germany continues to supplement the work of R.A.F. Bomber Command in a most satisfying manner. On Monday, Nov. 29, Fortresses went to Bremen again in great strength and made a heavy attack on the port and U-boat building factory. This was their second visit to Bremen in four days. Thirty-five German fighters were



RABAUL RAIDERS.—United States Army Air Force North American B-25 Mitchells attacking the Japanese base at Rabaul in New Britain. Fifteen ships were reported sunk or damaged.



TYPHOON TAKE-OFF.—Two Hawker Typhoon IB single-seat fighters (Napier Sabre motor) "tuck up their toes" as they take-off on an offensive sweep.

claimed as destroyed in this raid and 10 more during other operations over Belgium on the same day. At Chievres aerodrome, 10 miles North-West of Mons, U.S. Marauders caught a number of German bombers on the ground. At least four Ju 88s appeared to receive hits and a fuel dump was set on fire. The Marauders, all of which returned safely, were escorted by R.A.F. Spitfires.

On the following day the American effort was switched to a new target, Solingen, East of Düsseldorf. Solingen was bombed by the Royal Air Force in 1940, but had not been revisited until last week. The city is an important centre of the non-ferrous metal industry and has some of the largest foundries in Europe. Seven German aeroplanes were shot down in the course of this raid, six of them by the Typhoon escort. The Typhoons caught a squadron of Fw 190s about to land and destroyed four, together with a Ju 188 bomber.

Solingen received another pounding on the following day and results appear to have been highly successful. Thirty-three German aeroplanes were shot down during the course of this second operation and in other air fighting over Germany and France. Allied losses were 28 bombers and 14 fighters.

In this second attack on Solingen the Americans encountered exceptionally strong resistance, indicating the value attached by the Germans to this target. Some of the bomber groups fought off persistent attacks by fighters before reaching their objective. One group reported attacks by something like 75 interceptors. Solingen's output of aero-motor parts and other aircraft components is very large indeed, particularly in the case of light-alloy castings.

On the night of Dec. 2, Bomber Command resumed work on their No. 1 target, the capital of Germany. On this occasion air crews fully expected strong opposition, and they certainly encountered it. Flying conditions favoured night fighting and an air battle of intense violence developed, whilst around Berlin itself searchlights and anti-aircraft batteries had been massed to an extent never seen before. Vast numbers of German fighters were in action and they laid a path of flares 50 miles long on the route towards the target.

Constantly varying tactics have been a feature of our great strategic bombing campaign against Germany lately. When attacking Leipzig last Friday night, a feint was made on Berlin. The main force took the direct route towards that city, but turned off to the South shortly before reaching it. Their actual target was Leipzig, where 1,500 tons of bombs were dropped. Mosquitoes following up, continued straight on to Berlin and dropped their bombs there, confusing the German defence. The plan succeeded well and losses were relatively light, in view of the large force engaged. Twenty-three bombers and one fighter failed to return.

The Secretary of State for Air announced last week that during the month of November Bomber Command dropped approximately 13,000 tons of bombs on Germany, and this country received 120 tons in exchange. This represents good trading, and the excellent work of the U.S. Army Eighth Air Force in daylight attacks must also be taken into account.

On Saturday last a striking success was achieved by two Typhoon squadrons on intruder operations over Holland. Encountering 14 Dornier Do 217s, the Typhoons shot down 11 of them without loss to themselves.

Russia

There seems to be no stopping the big Soviet push in the Gomel-Mogilev area and much confusion was reported amongst retreating German units hereabouts. The Red Air Force found a wealth of targets and harassed the enemy continually by

bombing and shooting up transport columns. Down in the south, Red Army operations against Nikopol progressed favourably and it became apparent that the Germans were preparing to evacuate that city. Apostolovo, the big railway junction behind Nikopol, was severely bombed by formations of the Soviet Air Force.

Early last week weather conditions, except in the extreme South, turned thoroughly bad, and belated autumn rains produced the usual wilderness of black mud, but even this did not stop the Russians. Intensive German counter-attacks in the Kiev salient were still held, while to the North General Rossovsky's triumphant armies continued their progress towards Zhlobin and Rogachev. Later in the week the rain turned to snow and frosts set in.

A new Soviet thrust started along the left band of the Pripet, whilst the threat to Mozyr and Kalinkovichi became more pronounced. Red Air Force activity increased, particularly in the heavy bombing of railway centres behind the German lines. Apostolovo, Smyela and Znamenka were constantly pounded.

Towards the end of the week the actual capture of Znamenka appeared likely, for the Russians made a sudden push to take Dmitrovka, which is within artillery range of the vital junction. Only through Znamenka can the German Command switch reserves to the Krivoi Rog fighting from the Kiev salient. Russian Stormoviks were extremely active over all this battle area. During a single day, they destroyed 100 lorries, several tanks and nine dumps of fuel or ammunition.

Italy and Southern Europe

The recent intensive bombing of railway connections between Germany and Italy, through France and by way of the Brenner, may now be seen as a strategic air operation preparatory to the all-out offensive in the Salerno area. Early last week it was reported that the combined efforts of the Allied Air Forces and sabotage by Yugoslav patriots had reduced German rail communications to one line only, running through Postumia from Ljubljana to Trieste and Fiume. Routes through Switzerland still remain open, but over these military traffic is, of course, impossible so long as that country remains neutral.

Any attempt by Germany to subjugate Switzerland at this stage of the War is most unlikely. It would be a costly and difficult task, for the Swiss Army, although small, is tough, well equipped and highly trained in mountain warfare. It is probable, moreover, that neutral Switzerland represents a haven of refuge in the minds of certain German personalities who see a period of unpleasantness looming ahead.

With a view to severing, if possible, Germany's sole remaining railway link, heavy bombers of the North-West African Air Forces attacked the viaduct and tunnel entrance at Dogna, North of Trieste, on Sunday, Nov. 28.

When the present great offensive in Southern Italy began, air crews and ground artillerymen shared the honours in opening a way for a break into and through the enemy line. As the battle started medium bombers flew over all day long in tight formations, while fighter-bombers went in low and dived to machine-gun German troops after releasing their loads. According to eye-witnesses the sky was continually filled with aeroplanes going out or coming back, just as in many of the successful North African engagements.

Army commanders paid unstinted tribute to support given by the Allied Tactical Air Force, describing it as magnificent. A sign of the critical situation in which the Germans found themselves on the second day of the battle was that our air crews discovered transport moving away from the battle area on roads South-West of Pescara. This was the first occasion on which any considerable traffic has been seen there in daytime. Low cloud, unfortunately, prevented a maximum attack on the columns, but Curtiss Warhawks, flying through intense flak, destroyed 16 German trucks and damaged many more. Later on, the Luftwaffe put up a relatively weak reply with fighter-bombers. At the other end of the line, where the Fifth Army was in action, enemy weakness in air counter attack was even more marked. One reason for this may be that the Germans, nervous about prospective Allied landings in the rear of their line, have tied up sections of the Luftwaffe for coast defence.

In the Western Mediterranean, air reconnaissance over Toulon has shown that five French warships, recently refloated by the Germans and under repair, have been sent to the bottom again as a result of the last American heavy bomber raid on Toulon harbour.

On Thursday, Dec. 2, a strong force of American Fortresses attacked submarine pens and construction works in the harbour of Marseilles. It was the first bombing this target had received, and the submarine facilities, under construction for months past, were recently nearing completion.

Allied bombing attacks across the Adriatic on German targets in Dalmatia continued throughout the week.

Far East and Pacific

Following their capture of Sattelburg, Australian troops stormed Bonga, on the Huron peninsula in New Guinea,

early last week. Before the fall of Sattelburg Japanese supplies arrived at Bonga by barge and were transported over land to the fighting line via Wareo. In these operations ground troops were well supported by Mitchells, which bombed and shot up the enemy on his scattered communication trails through the jungle.

Kuanko, another Japanese base, was captured, and by

Saturday last, the Australians were advancing on the only remaining position still held by the enemy in the Huron peninsula.

In the Far East, Hongkong was attacked by American bombers acting in co-operation with the Chinese. One 4,000-ton merchant ship was sunk and two other large vessels heavily damaged.

Diary of the 22nd Week of War

Offensive Operations of the Fighter, Coastal and Bomber Commands of the Royal Air Force and of the U.S. Army Eighth Air Force. From Nov. 28 to Dec. 4, 1943

Sunday, November 28

DAY .. Nothing to report.
NIGHT .. Bomber Command Mosquitoes attacked objectives in W. Germany. Mines were laid in enemy waters.

Monday, November 29

DAY .. U.S.A.A.F. Fortresses, escorted by Thunderbolts and Lightnings, attacked Bremen. Twenty enemy fighters were shot down by the B-17s and 15 by the P-38s and P-47s. U.S.A.A.F. Marauders, escorted by R.A.F., Dominion and Allied Spitfires, attacked the enemy airfield at Chievres (S.W. of Brussels). The Marauders destroyed five enemy fighters and Spitfires shot down another five. Typhoon bombers, with Typhoon escort, bombed the airfield at Moorseele in Belgium and attacked shipping off Brest. Mosquitoes attacked a railway centre in N.W. Germany. In all these operations 13 heavy bombers and 18 fighters were lost.

NIGHT .. Bomber Command Mosquitoes attacked targets in W. Germany and intruders bombed airfields in France and Holland. None was lost.

Tuesday, November 30

DAY .. U.S.A.A.F. Fortresses, escorted by Thunderbolts and Lightnings, attacked Solingen (near Dusseldorf). R.A.F., Dominion and Allied Spitfires and Typhoons which covered the withdrawal of the Fortresses and made supporting sweeps, destroyed six enemy aircraft. The Fortresses destroyed one. Two Fortresses and five fighters were lost. Coastal Command Beaufighters, without loss, attacked a convoy off the Norwegian coast.

NIGHT .. Bomber Command Mosquitoes attacked objectives in W. Germany. Mines were laid in enemy waters.

Wednesday, December 1

DAY .. U.S.A.A.F. Fortresses and Liberators, escorted by Thunderbolts and Lightnings, attacked Solingen (near Dusseldorf). Three enemy fighters were destroyed by the bombers and 20 by the fighters. Spitfires and Typhoons made supporting sweeps and destroyed two enemy fighters. U.S.A.A.F. Marauders, escorted and covered by R.A.F., Dominion and Allied Spitfires, bombed the airfields at Lille-Vendeville (France) and Epinoy and Niergnies (Belgium). Four enemy fighters were destroyed. R.A.F.

Mitchells, with Typhoon escort, attacked a target at Albert (France). Mosquitoes bombed targets in Holland, while other Mosquitoes, escorted by Typhoons, attacked shipping off N. France. Two enemy aircraft were destroyed by the Typhoons, R.A.F. fighters shot down three Ju 88s off Land's End. In all these operations, 27 heavy bombers, one light bomber and 14 fighters were lost. Two fighter pilots safe.

NIGHT .. Mines were laid in enemy waters. Two aircraft were lost.

Thursday, December 2

DAY .. Bostons, Mitchells and Typhoons, escorted and covered by fighters, bombed targets in the Cherbourg peninsula, Not one was lost. One enemy aeroplane was destroyed during slight enemy activity over S.E. England. One Ju 88 was destroyed off Scotland.

NIGHT .. Main target: Berlin. Mosquitoes attacked objectives in W. Germany. Forty-one aircraft were lost.

Friday, December 3

DAY .. Nothing to report.
NIGHT .. Main target: Leipzig. Mosquitoes attacked objectives in Berlin and mines were laid in enemy waters. Intruders attacked airfields over a wide area. Twenty-three bombers and one fighter were lost.

Saturday, December 4

DAY .. Eleven Do 217s were destroyed during an offensive sweep by Typhoons over Holland. Other Typhoons bombed airfields in Belgium. A Mosquito was lost on offensive patrol. Thunderbolt fighter-bombers attacked Gilze Rijen airfield (Holland). Escorting Thunderbolts destroyed three enemy fighters. One Thunderbolt was lost. Other large-scale sweeps were made during the day.

NIGHT .. Bomber Command Mosquitoes attacked objectives in W. Germany. Mines were laid in enemy waters. One aeroplane was lost.

U.S. ARMY EIGHTH AIR FORCE
It will no longer be possible to give U.S. losses and successes separately. This is because of the frequent lumping together of U.S. and British losses and claims in the official communiqués.

ADDITIONAL OPERATIONS
It is now known that Bostons, Mitchells and Typhoon bombers attacked targets in the Pas-de-Calais area and the Cherbourg peninsula on Nov. 25. Spitfires and Typhoons escorted and covered the bombers and carried out supporting sweeps. One enemy aircraft was destroyed. Other Spitfires on offensive patrol attacked targets in Holland and Northern France. Mosquitoes bombed power stations and engine sheds in Normandy, and Whirlwind bombers, escorted by Spitfires, attacked enemy shipping and the docks at Cherbourg. Five aircraft were lost.

AXIS AND ALLIED LOSSES—NOV. 28-DEC. 4, 1943.

Date	Axis (N. Europe)		Axis (Medit.)		Allied (N. Europe)		Allied (Medit.)	
	Aircraft	Personnel	Aircraft	Personnel	Aircraft	Personnel	Aircraft	Personnel
28-11-43	—	—	8	14	—	—	7	23
29-11-43	45	45	2	8	31	148	3	9
30-11-43	7	7	5	11	7	25	3	7
1-12-43	34	44	3	6	44	292*	—	—
2-12-43	2	5	13	19	41	287	—	—
3-12-43	—	—	11	20	24	162	1	1
4-12-43	14	47	6	9	3	10	—	—
Totals	102	148	48	87	150	924	14	40

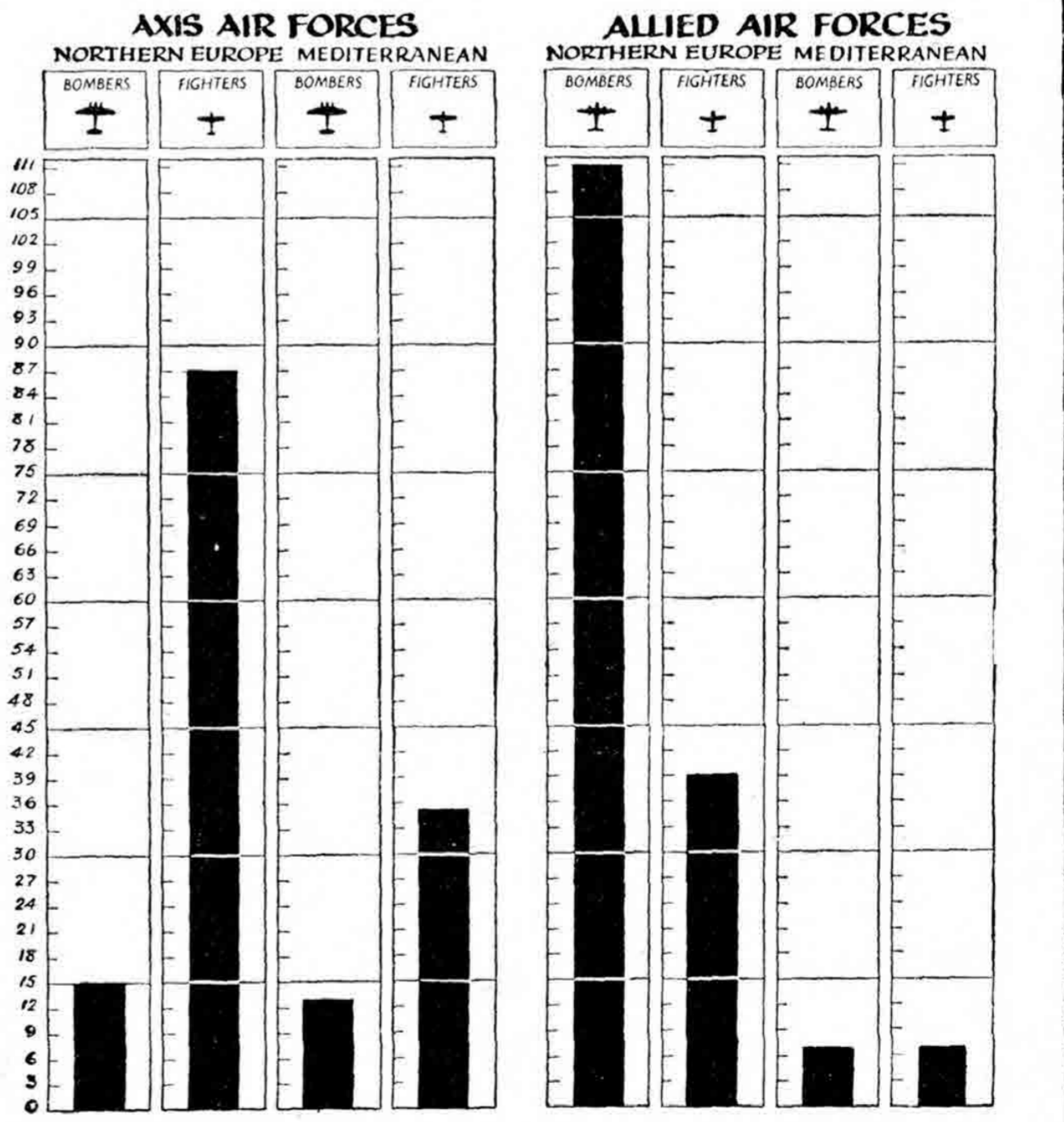
* Does not include pilots saved.

TOTAL LOSSES IN THE AIR WAR* (To dawn, Dec. 5)

	Axis Air Forces	Allied Air Forces
Aircraft destroyed in combat or by A.A. gunfire	18,556	12,597
Personnel	31,042	51,624

* Excluding Russia and the Far East.

THE WEEK'S LOSSES.—Nov. 28 to Dec. 4, 1943



THE WEEK'S LOSSES AT A GLANCE.—Comparative losses in the Air War for the week Nov. 28 to Dec. 4, 1943, inclusive. The chart does not include aeroplanes destroyed on the ground or those destroyed in Russia and the Far East. The figures for Northern Europe are: Axis (daylight offensive) 4 bombers and 11 fighters; (defence by day) 11 bombers and 87 fighters; (night offensive) 44 bombers and 38 fighters; Allied: (daylight offensive) 44 bombers and 1 fighter. The figures for the Mediterranean theatre are: Axis, 13 bombers and 35 fighters; Allied: 7 bombers and 7 fighters. Approximate personnel losses are: Northern Europe: Axis, 148; Allied, 924; Mediterranean theatre: Axis, 87; Allied, 40.

NEWS OF THE WEEK

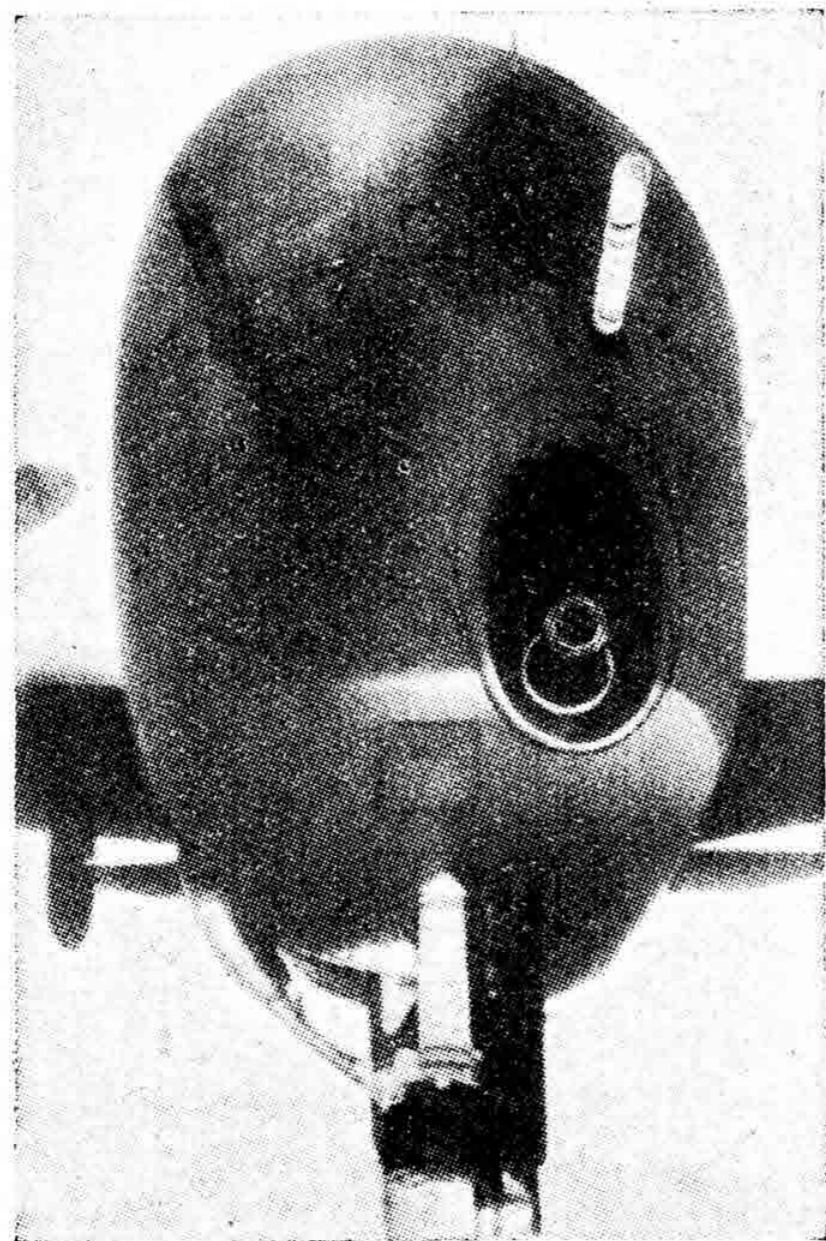
It was announced on Wednesday, Dec. 1, that President Roosevelt, Generalissimo Chiang Kai-shek, and Mr. Churchill had completed a Conference in Cairo. This Conference dealt with military operations against Japan. It was followed, almost immediately, by a second Conference in Teheran announced on Dec. 4, between Roosevelt, Stalin and Churchill, questions discussed on this occasion relating to the War against Germany and also to a wide range of political matters.

The following list has been issued of German and German-occupied towns upon which major attacks have been made by Bomber Command, representing a bomb weight of not less than 500 tons in each raid:—

Berlin	...	10	Gelsenkirchen	...	2
Cologne	...	8	Frankfurt	...	2
Essen...	...	7	Kiel	...	2
Hamburg	...	6	Stettin	...	1
Duisburg	...	6	Saarbrücken	...	1
Mannheim	Lud-	6	Wilhelmshaven	...	1
wigshaven	...	6	Krefeld	...	1
Düsseldorf	...	5	Mülheim	...	1
Nuremberg	...	4	Barmen	...	1
Hanover	...	4	Elberfeld	...	1
Munich	...	3	Aachen	...	1
Stuttgart	...	3	München-Gladbach	...	1
Bochum	...	3	Leipzig	...	1
Kassel	...	3	Peenemünde	...	1
Bremen	...	2	Hagen	...	1
Dortmund	...	2	Modane	...	1

Daylight raids by the U.S. Army Air Force are not included.

The Minister of Aircraft Production, when asked in the House of Commons whether the Aeronautical Research Committee had yet made any report on the possibility of founding a school of



BLOCK BUSTER.—Some North American Mitchell two-motor aeroplanes operating in the Pacific area now include a heavy cannon in their armament for attacking submarines, surface shipping, aeroplanes on aerodromes, and other ground targets. Varying reports from New Guinea give the bore of the new cannon as 75 mm. and 77 mm. Also mounted in the noses of the Mitchells are two 0.50-in. machine-guns.



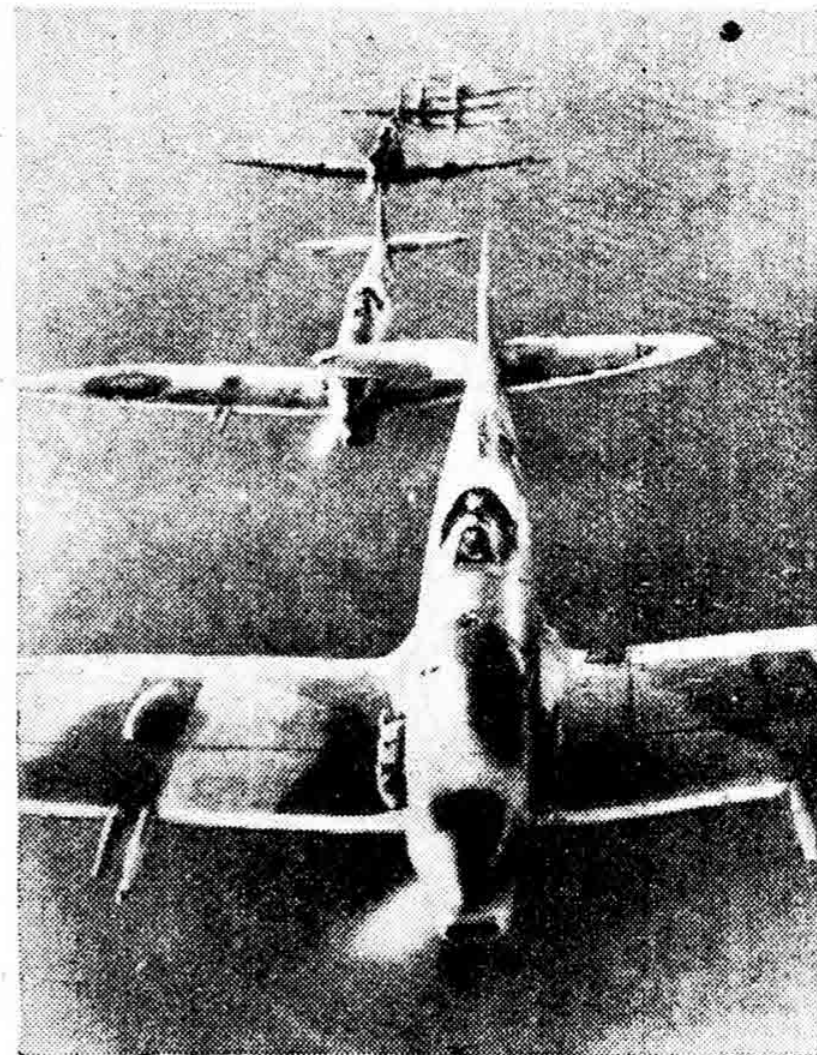
SEASONAL MODIFICATIONS.—Supermarine Spitfires, with the increasing versatility they have shown since the Battle of Britain, have now yielded entirely to the current Christmas-tree urge. These "tropicalised" Spitfire VCs, belonging to a South African squadron, are equipped with four cannon and carry a single 250 lb. bomb beneath the fuselage in place of a long-range fuel tank.

aeronautical science, replied that such a report had been made. The main recommendations of this report, said Sir Stafford Cripps, have been approved in principle by the Government. An Inter-Departmental committee has been set up under the chairmanship of Sir Roy Fedden, to prepare and submit detailed proposals for the establishment of a School of Aeronautical Science within the framework of these recommendations. Asked if he could assure the House that this will be a really practical school and not any academic hot-house, Sir Stafford said that he was sure the Committee would bear that in mind.

A statement by Air Vice-Marshal Isitt, New Zealand Chief of Air Staff, has given the following details about the Royal New Zealand Air Force. Since this War began, New Zealand has sent overseas air crews sufficient, approximately, to man 2,000 bombers and 1,500 fighters. Training organisation has been greatly expanded and the Dominion now provides reconnaissance and attack bomber squadrons, fighter squadrons, flying-boat and patrol boat crews for the Pacific war zone, almost all trained in New Zealand. Before long, dive and torpedo-bomber squadrons will be added to these. Technical and maintenance staffs are also provided, whilst New Zealand continues to contribute to the Empire air training scheme and to the R.A.F.

The Air Ministry states that by making the non-stop flight of 3,100 miles from Montreal to an airport on the West coast of Britain in 11 hours, 35 minutes, Captain Richard Allen has broken all long-distance and trans-Atlantic records. Captain Allen was flying a Consolidated B 24 Liberator on the R.A.F. Transport Command North Atlantic shuttle service for British Overseas Airways Corporation. His time was 21 minutes shorter than the previous best made by Captain M. B. Barclay with an Avro Lancaster on the Canadian Government Atlantic service, operated by Trans-Canada Air Lines.

A demand for a special fighter group to be allotted to the Fourth Air Squadron co-operating with the Swedish Navy has been made by Rear-Admiral Elkstrand, who commands the Swedish coastal fleet. In a report to the Swedish Naval Commander-in-Chief, Admiral Elkland says that this measure is imperative.



Air Commodore Raymond Collishaw, C.B., D.S.O., O.B.E., D.S.C., D.F.C., has retired. Air Commodore Collishaw was a famous Canadian fighter pilot of the last War, during which he was accredited with 68 German aircraft. On retirement, he receives the rank of Air Vice-Marshal. Commissioned in 1916, he served in Belgium, France, Russia, Turkey and Egypt.

Kuno Volmann, a German war reporter, has described a new Soviet transport aeroplane, said to be the largest land-based aeroplane in the World. He says that it can carry assault guns, tanks and fully laden trucks, whilst the size of the machine is such that an entire Ju 52 would be covered by one wing. This Russian transport is described as adequately armed against fighter attack.

Air Commodore Lord Stansgate has been appointed Vice-President of the Economic and Administrative Section of the Control Committee for Italy. This will necessitate the appointment of a new Director of Public Relations at the Air Ministry in London. Pending such an appointment, which will not be made immediately, the duties are being undertaken by Group Captain Lord Willoughby de Broke and C. P. Robertson, the joint Deputy Directors of Public Relations.

It appears that Colonel Walter Elliot, M.P., was in the air before going on it when attending the Edinburgh session of the Brains Trust, held in that city on Nov. 30. He had been attending a dinner of Scottish Aviation Ltd. at Prestwick and could not have made the Edinburgh engagement in time, but for air transport.

A Coastal Command Sunderland on patrol in the Bay of Biscay was recently attacked by eight Ju 88s simultaneously. The crew fought back with such effect that the whole eight were driven off. One was badly damaged and last seen in a vertical dive with black smoke pouring from it. The Ju 88s attacked from all directions and a running fight in and out of cloud went on for half an hour. The second pilot of the Sunderland received three bullet wounds in the arm.

NEWS FROM GERMANY

AFTER THE WAR OF 1914-18, German military and political circles in charge of the armament of the Reich invented the "Stab-in-the-Back" myths. In innumerable books, pamphlets, newspaper articles, and lectures, they set out to convince their compatriots that the Imperial Armed Forces were never defeated in the field, but were stabbed in the back by traitors inside the Reich who had undermined the morale of the civilians, weakened by the privations caused by the "inhuman" blockade of Germany. This misrepresentation of historical facts was invented for two reasons: (1) In order to distract public attention from the military failures of the German Command, and (2) to create the impression that another attempt to wage a new War without petty mistakes might be more successful. Two major aspects in this propaganda campaign are worthy of note: (1) That the military events in the 1914/18 War proved the lack of soldierly qualities of British officers and men, and (2) that because of this deficiency the enemies of the Reich had to use the inhuman weapon of starving the people into submission. All these and many more false claims of the German propagandists were accepted by the masses. The result of this propaganda campaign is the Second World War.

Against this background, enemy propaganda after the raids on Berlin has to be viewed because of many analogies. Two of its principal features are the lauding of the superiority of the German soldier and the great publicity efforts to stop the decline of civilian morale, which they say this time is not attacked by the cutting off of food supplies for women and children, but by a more cruel means—the Anglo-American air terror.

Göbbels's Home Service

The ascendancy of the German soldier has become the "leitmotiv" of all official and unofficial German descriptions of the War. According to them, the only enemy who shows soldierly qualities is the Russian, but he is rated as inferior to his German opponent, who up to date has been able to stem the onslaught of the vastly larger Soviet forces. The reason given by these German reports is that the Russian lacks a proper "Weltanschauung"—military philosophy. The military qualities of the British and Americans they consider negligible. The slow progress of the 5th and 8th Armies against a "handful" of German regiments and the German capture of the Dodecanese in the face of determined resistance on the part of the defenders show that the Allied soldier of 1943 is not better than the one of 1918. Even the "crack" services of Germany's enemies, their Air Forces, are inferior to the Luftwaffe. No member of the Allied Air

Forces has a record equal either to that of Captain Nowotny or Major Rall, who have "destroyed" more than 250 enemy aircraft each, or not even to the score of German fighter pilots with more than 100 air "victories" to their credit. These German experts conclude that the German airmen have overcome the danger of Allied attacks and are inflicting steadily mounting losses on the "air gangsters," who with great difficulty only can replace their losses.

This superiority, enemy propagandists argue, explains the fact that the German armed forces have not suffered any defeat in this War. Stalingrad and North Africa are described as "minor setbacks" without any influence on the outcome of the present struggle. The retreat on the Eastern Front is declared "a disengaging movement of the undefeated." As the majority of the German people have hardly any opportunity of checking the veracity of official claims, and as their power of judgment is not great, they dutifully believe what they are told.

Fire Over Berlin

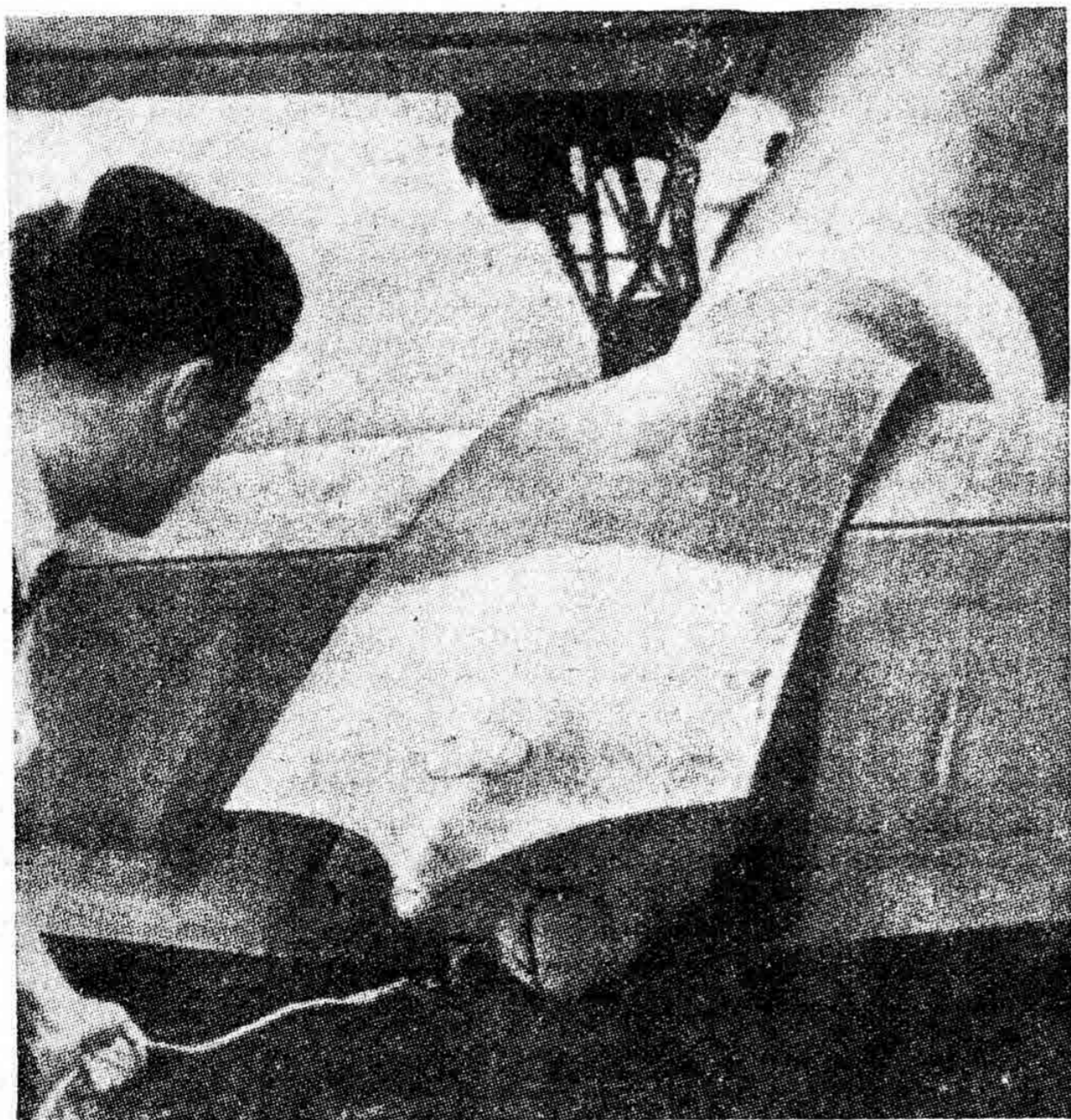
Their broadcast bleats, "Why did the British unleash the air terror against Berlin?" These are the most repeated reasons: The air raids were a substitute for a second front; they cover the failure to fulfil promises of the British Government in other fields, such as better food or improvement of the social conditions; they were inspired by fear of reprisals; they represented an "ersatz" blockade; they were made because the weather favoured the attacker and handicapped the defender. All these explanations, according to German propaganda, provide additional proof of the inferiority of the Allies.

Turning to the other aspect, the morale of the Berliners, a casual observer may accept the enemy claim that the Berliner's morale remained unshaken despite his most severe ordeals. No one doubts that the inhabitants of the German capital may endure as great hardships as their compatriots in the Ruhr. Yet the Germans gave the propaganda game away by overstressing that point. The continuous repetition of that same claim involuntarily reminds one of Hitler's propaganda maxim that every lie, if it is repeated often enough, will be accepted as truth by the masses. Furthermore, recent statements of prominent Nazi and Army leaders also come to mind, stating that the victorious conclusion of the Second World War depends on the will of the German home front to carry on even against the greatest odds. Thus all claims respecting the excellent morale of the Berliners must not be considered as facts, but as appeals to their masses to hold out. This assumption is confirmed by the simultaneous predictions of the terrible fate which the Germans will have to endure should they give in. They will become the objects of "Anglo-American Plutocratic Exploitation." There would never be an opportunity of rebuilding the devastated German towns or of compensation for their personal losses, or of realising all the beautiful plans of reconstruction which the Führer has prepared personally during the past months.

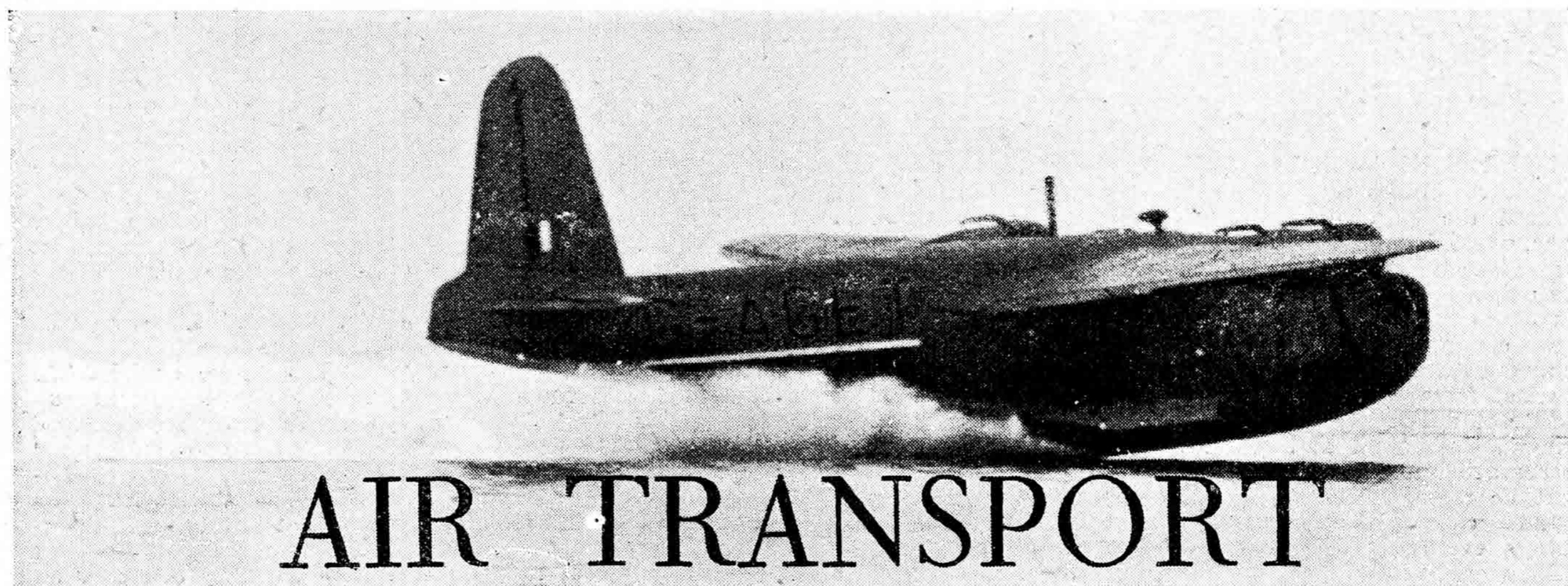
The Junkers—Nazi Snare

Our assumption is further strengthened by the announcements of retaliation. German counter-propaganda has brought to life again the old bogey which in past years has been used so successfully—the secret weapon. All these radio-controlled winged bombs, rocket shells, poison gases, and so on, are well-known ingredients of the "war of nerves." They exist only in the imagination of their inventors, the members of Department II of the Canaris Espionage Bureau. But in the "war of nerves" they act as dual-purpose weapons: to cheer up their own people; to intimidate the enemy. Accumulative effect is obtained, so far as the cheering up is concerned, by representing the slightest sign of uneasiness among the enemies as to the nature of the new weapon as fear. By this means, the Germans try to raise new hopes among their people, to induce them to carry on. Should, however, even this stimulus fail, and the resistance of the home front should break down, then the future leaders of Germany will find no difficulty of cooking up a new "Stab-in-the-Back" myth by playing the old game all over again. The propaganda of the last months, in particular after the raids on Berlin, do not leave any doubt to the student of German history where the foundations for that myth are laid. If the Allies are unable to destroy it once and for all, then a Third World War may be unavoidable.

Will this serial story of German subterfuge affect air matters in the future? The Allied Commission which will disintegrate the German military industries for a second time, must profit from its failures in 1919. Secondly, there must never again be a German "shadow" aircraft industry in "neutral" regions.



PROPELLING PENCIL.—A Dornier 17P with a hook for glider towing. The adjustable tailplane is shown clearly. The fitting of trim tabs seems somewhat superfluous.



SHORT STEPS.—A B.O.A.C. Civil Sunderland III (four 1,010 h.p. Bristol Pegasus XXII motors), taking off with flaps partly extended, and riding on the step. This photograph is of the Sunderland containing Lord Wavell on his flight to India, where he is now Viceroy. The Sunderland III has an entirely redesigned hull with a less pronounced step, giving better hydrodynamic qualities.

Railways and Air Transport

A HIGHLY efficient air service has been maintained throughout the War by Railway Air Services between the mainland and Northern Ireland and various outlying islands off the British coast. Shortage of staff and antiquity of equipment are only two of the many difficulties which have arisen, and the regularity of service which has been maintained bears witness to an organisation which is ripe and ready for a great post-War expansion.

Many of the private air line companies which operated in and around the British Isles before the War, and together supplied the major part of this country's charter requirements, are at present incorporated with Railway Air Services. It seems probable that improved navigation facilities, a multitude of new aerodromes, and a gradual dawning of civil air-consciousness will lead in the future to a greatly increased demand for private hire and charter work. The railways are not interested in this class of business, which they regard as the perquisite of small private companies, enterprising individuals and flying clubs. Their own interests lie in the provision of regular services, where these are justified by the volume of traffic, over those routes which can be more efficiently served by air than by rail and/or sea and road, and which—like the railways themselves—will grow with usage to be regarded as essential public services.

Those routes over which they operate to-day are already established as such, and will benefit in due course from new equipment and greater frequency. Several other routes suggest themselves as certainties for the future; the Channel Islands, for instance, which in normal times command a surprising density of traffic, will without question find their place in the new timetables.

The railways suffer, however, from a not unjustifiable pride in the inland communication system already provided by rail, and their estimate of the potential and "essential" air services within this country are limited. Even the Isle of Wight flight they consider unjustifiable, because an excellent water ferry service exists and only a small time-saving factor is involved. They look askance at the obviously desirable West Coast service connecting Bristol and Liverpool, quoting the lack of public response to this route before the War as a criterion for the future. In fact, between those services which the railways deem "essential" and propose to operate, and the casual air taxi, there seems to be plenty of room for the operation of auxiliary air services by other interests.

With regard to equipment, we need expect nothing startling. The de Havilland Rapide has proved itself a true and trusty servant, and can be very easily replaced by simple modifications to surplus R.A.F. Dominies. Converted DC-3 transports would fill the bill for their larger requirements in the immediate post-War period.

Presumably the individual railway companies concerned will extend their ground services to provide first-class rail connections to those airports from which Railway Air Services will be operating. And judging by the various airport schemes which have recently been outlined it also seems pretty certain that the railway companies will be called upon to run fast trains to and from the future air terminal, or terminals. All of which brings us to a consideration of that wide field of operations which is still so closely wrapped in political obscurity, and it is interesting to note that the railways, like the majority of shipping companies, possess the legal right,

the financial wherewithal, and the desire to enter the international air transport business.

They are also thinking to-day in terms of direct services between this country and every European capital (where they would not suffer the embarrassment of looking down upon the network of their own superlative surface transport system!) operating 25- and 50-seater aircraft incorporating their traditionally excellent cuisine. No detailed plans can be made in this direction, however, until a favourable Government policy is forthcoming.

Transatlantic Air Link Celebration

A DINNER was held at Prestwick on Nov. 29 to mark the third anniversary of the delivery of lease-lend aircraft from the United States by air.

Group Captain the Duke of Hamilton was in the chair.

The first aeroplane to arrive at Prestwick was a Lockheed Hudson, on Nov. 29, 1940. It has been followed by a steady stream of operational aircraft. The true story of the development of Prestwick as a base for aeroplanes flown across the North Atlantic cannot be told now. The aerodrome has a very high fine weather record and has proved most adequate for the job thrust upon it.

Civil Aviation's New Headquarters

THE Director-General of Civil Aviation, Mr. W. P. Hildred, C.B., O.B.E., and his staff have removed from King Charles Street to new offices at Parliament Square House, Whitehall, where the administration branches of the Department of Civil Aviation, previously housed at Bristol, are also installed.

MacAndrews Airways

MACANDREWS AIRWAYS has been registered as a limited company. The subscribers are E. A. McCormack and J. E. Dempsey, of 19, Leadenhall Street, London, E.C. MacAndrews and Co. are shipowners, in which the principal shareholders are the Union Baltic Corporation.

Shipping and Air Lines

THE Coastal and Short Sea Air Group has recently stated that shipping companies who have been engaged in coasting liner trade around Great Britain and in the operation of Great Britain to the Continent shipping lines have agreed to form a separate company to operate passenger and cargo air services over internal and Continental routes. These will come into operation as soon as possible.

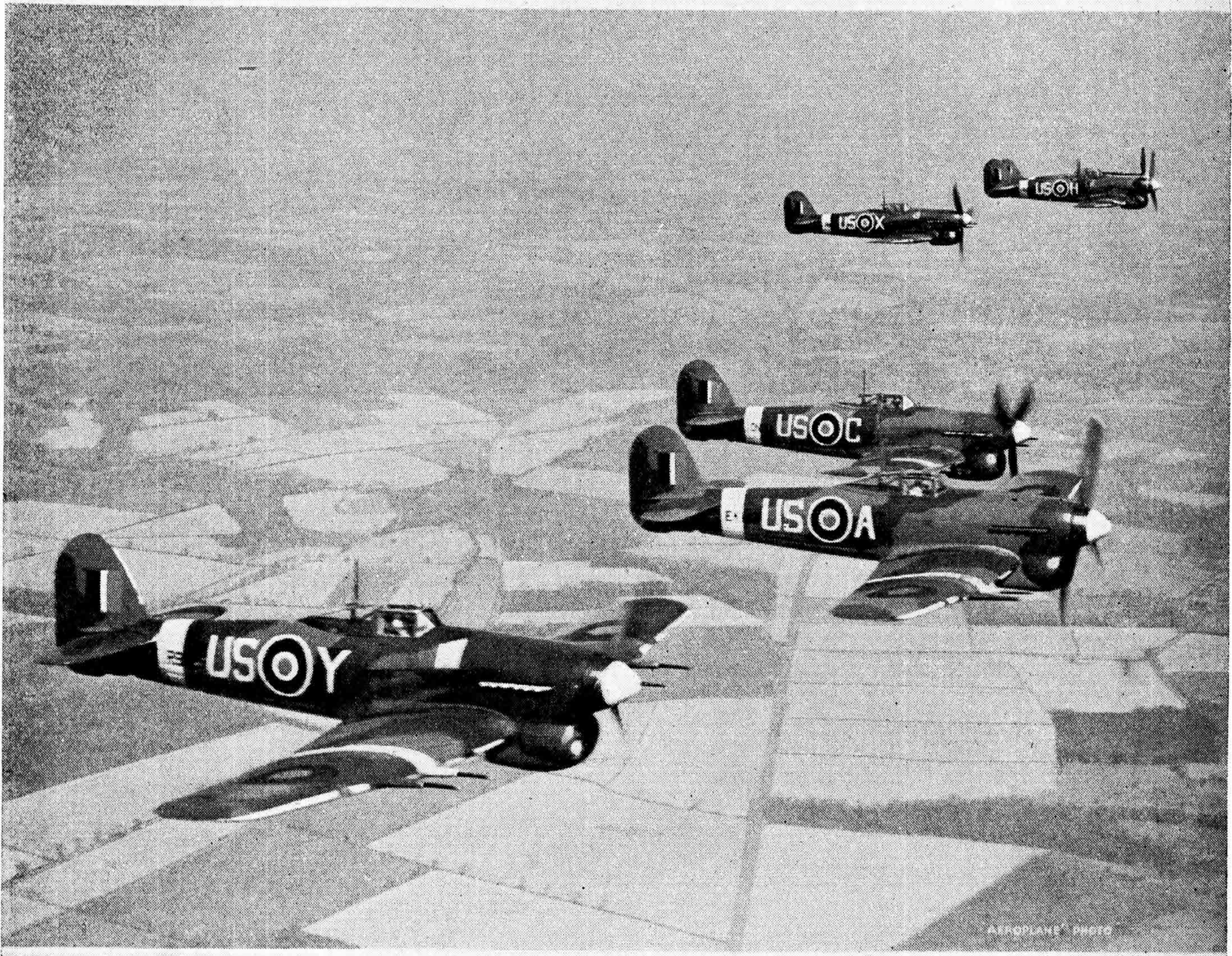
New York Airport

DETAILS have been given of the latest New York airport which is in the process of construction at Idlewild. Runways, suitable for aeroplanes weighing 134 tons, will be constructed. Three will be just over two miles long, two a mile and a half long, and three over one mile and a quarter long. Each runway is 200 ft. in width.

Shipping Company and Air Line

THE COURT OF SESSION in Scotland has granted permission for the Dundee, Perth and Leith Shipping Co., Ltd., to operate air services. The company has now authority to operate air lines whenever the directors consider it expedient.

HAWKER TYPHOON



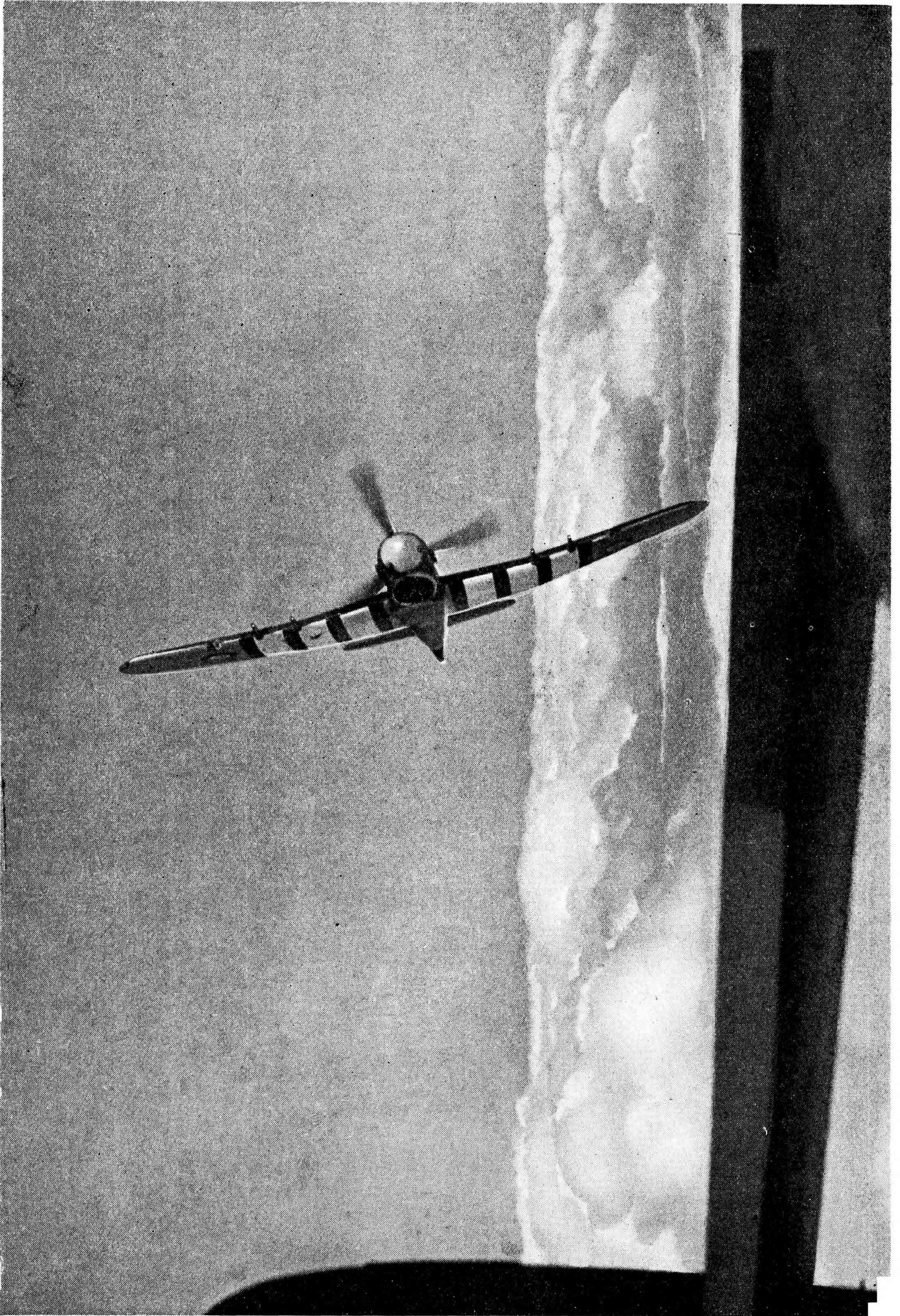
These formidable fighters are fitted with

NAPIER



SABRE

ENGINES



"Achtung Typhoon!" The latest and most formidable fighter in the world bears down on an "enemy" plane. [Achtung Typhoon!]

PORTABLE RUNWAYS

PREPARATION of temporary aerodromes must be a vital factor in any operation of modern warfare. Metal runways were used by the B.E.F. in France during the Winter of 1939/1940. An improved type of metal runway is dealt with here, which will, no doubt, find post-War use in the preparation of satellite aerodromes for civil air transport.

British aerodromes are renowned for their muddy character. A select few boast concrete runways, but many, including most of the smaller fields, become quagmires as mid-Winter approaches. Recently we inspected a portable runway designed, amongst other things, to lessen the effect of mud.

Developed by the British Reinforced Concrete Engineering Co., Ltd., the runway is composed of welded net-like sheets of high tensile steel, manufactured from hard-drawn steel wire. Square mesh track, as it is usually called, is supplied at present in rolls which, when laid, measure about 75 ft. by 7 ft. Clips manufactured from hot rolled mild steel are employed to fasten sections together.

Typical Uses

The square mesh track we viewed was laid on slightly undulating ground in comparatively dry weather. It had been put down originally for experimental purposes and was, therefore, only in use as a taxi track near the aerodrome perimeter. Late Summer and Autumn rains had transformed the site in parts into a waste of thick mud interspersed with extensive pools of water. In the interests of the photographer, we were forced to venture from a dry perimeter track on to this uninviting bog. In spite of a mile walk along the track, our boots were only slightly soiled.

Little imagination is necessary to conjure up uses for square mesh track during and after landing. An interesting point is that vehicles other than aeroplanes find many uses for the track. In modern military campaigns, advanced landing fields are of utmost importance for the maintenance of local, or total, air superiority. Unsuitable areas may become reasonable landing grounds when laid with square mesh runways.

That such a runway should be movable was laid down in the original specification. Clips were developed that could be extracted when the track had served its purpose. With periphery pickets removed, the strips could be re-rolled and transported elsewhere. But rolling by hand produces less compact rolls, and requires more transport space. This requirement is now chiefly ignored and tracks are rarely removed after laying.

"BRC" square mesh track has numerous applications, but one of the most interesting is its use in conjunction with normal concrete runways. To enlarge the effective area of these runways for special operations, rolls of track are laid alongside the concrete. For example, when undertaking a night landing with a damaged aeroplane, a wider runway can increase considerably the chances of a successful landing.

General Description

In spite of the manufacturing company's association with concrete, none is used in the construction of a square mesh runway. A flat site is preferable as the fabric tends to conform to the surface of the ground. It is not intended to



["Aeroplane" photograph]

OVER THE BOG.—A general view of the square mesh taxi track on undrained ground. The track was originally laid in dry weather and has gradually conformed to the contour of the ground.

be a raised net, resting on high ground and bridging all hollows.

Rolls of mesh are laid on a datum line beginning at the left of the site. Clips join adjacent rolls, about 100 being required for each. Pickets secure the perimeter and each end of the runway is picketed into a shallow trench, which is then filled in.

This 3-in. square mesh must not be confused with the wire mesh used for reinforcing concrete. Although the basic material is similar, the runway fabric is electrically welded with precision at all intersections. The 3-in. mesh was adopted after lengthy experiment. Larger square or oblong meshes have proved unsuitable to withstand the strain likely to be encountered in general use. In its present form, heavy bombers can land without any apparent effect on the wire or its attachments.

Laying time is naturally an important consideration in this type of runway. On one occasion, a runway measuring 975 yards by 50 yards was laid, clipped, and picketed in 15 hours only. This was a record but, under conditions of extreme urgency, a large squad of men could improve even on this. Laying time does not include hours spent on surveying or levelling sites.

Saving Tyres

One advantage of this type of runway over previous net types is its lower degree of tyre wear. Great care is taken to ensure the absence of sharp projections that might result in puncturing. Even the clips, though chiefly below the surface of the wire, are produced with blunted edges.

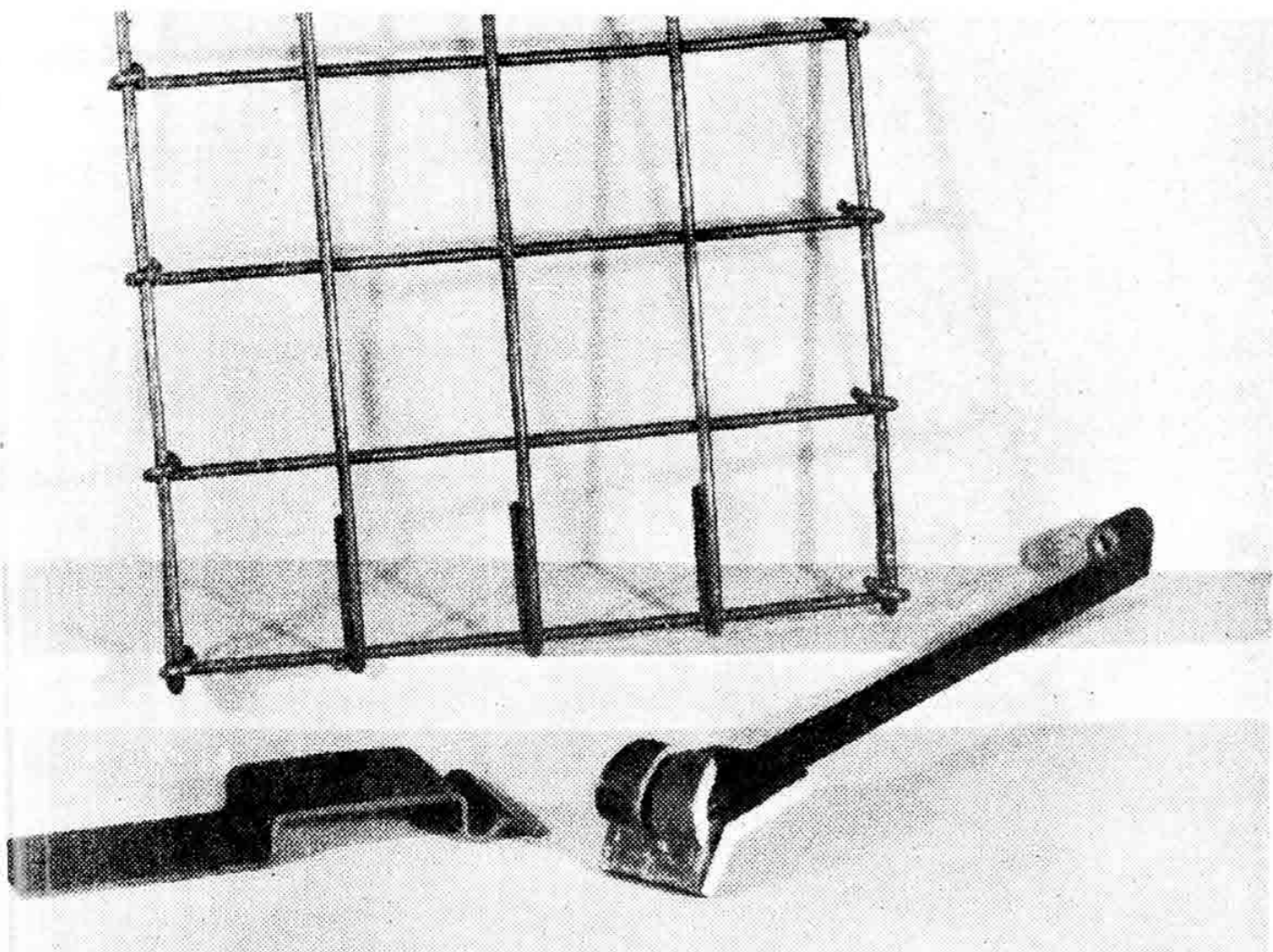
Square mesh runway was laid on a certain small airfield from which fighters were attempting to operate. The pilots were apprehensive, as they feared the landing run might increase with disastrous results. Upon test, the runway was found to decrease the run. This rather suggests that friction and tyre wear may be slightly higher than that of grass.

One of the illustrations shows a simple tool developed recently by the British Reinforced Concrete Engineering Co., Ltd., to turn wire projections on the perimeter of the track, thus eliminating the possibility of puncturing if aeroplanes should run off the sides. A section of track in the background, with its upper surface facing the camera, has been so treated.

Camouflaging of square mesh runways would appear to be of first importance, as the location of landing grounds or aerodromes must be concealed. With this in mind, the original intention was that grass should be allowed to grow over the wire. On permanent fields this is possible and the wire entirely disappears from sight, but on temporary fields the wire must be left on the surface. After exposure to the elements, square mesh track becomes discoloured and merges into the ground when viewed from a short distance. In fact, as we travelled round the perimeter track only a few yards from the wire taxi track, we could scarcely distinguish it from the mud and bare earth of the aerodrome.

TRIMMED EDGES.—Sharp wire projections round the perimeter of square mesh runways are easily turned under, as shown on this section of runway, by the simple BRC tool in the right foreground. Alongside is a standard clip as used at present. With a patch such as that illustrated repairs can be rapidly effected on damaged runways with the sole use of the new tool.

["Aeroplane" photograph]



POST-WAR AIR TRANSPORT, PERHAPS

By C. G. Grey

SO MANY PEOPLE have taken up so much space on paper and so much time in the House of Commons, with so much argument about Air Transport after the War that something ought to be said to debunk a lot of their talk, and to put forward a few practical ideas and to point out some snags.

I should like to stop all this talk about post-war planning, and give all energies to winning the War. We could talk about "afterwards" afterwards. Those who remember the last war will recollect the talk about making England a land fit for heroes to live in, and how we produced a land in which only heroes could live. All the beautiful reforms flopped, including that preposterous League of Nations. And *was* I not abused for abusing the League of Nations in this paper between wars?

To-day one has only to use the word "plan" in any conversation to raise a laugh. We shall do well to remember the implied meaning of that favourite South African phrase "Let us a plan make." There the word "planning" means the same as our word "scheming." And many of the plans for civil aviation are very much schemes for somebody's benefit other than that of the people at large.

Another reason why I object to planning about an unknown and unknowable future is that the best-laid plans of mice and men "gang aft agley," which is good Scots for "go cock-eyed." I believe firmly in the scriptural doctrine that "the first shall be last and the last shall be first," because the chap who starts last sees all the mistakes that have been made by the other chaps. It is much better to "lie powerful doggo," as Kipling said, and say nothing till one can deliver the goods.

A Basic Axiom

Now let us consider some of the facts about post-war civil flying. First of all, here is something for the Trade in this and all other countries to chew on.—There is not an aeroplane in the World to-day which, on my reckoning as the result of 35 years in Aviation, can be called a safe passenger vehicle.—And here is the evidence.

At the end of the annual Wilbur Wright Memorial Lecture given by my old friend, he is quite young really, Professor E. P. Warner, U.S.A., The Right Honourable The Lord Brabazon of Tara, known to most of us as "Brab," said that on the figures given by Professor Warner, calculated on the highly organised U.S. air lines, the safest in the World, air travel is about thirty times as dangerous as rail travel.

People who fake up air transport statistics reckon in terms of passenger-miles; which, if an air line has good luck for a year or so, carrying 25 passengers or so per machine, piles up into astronomical figures. I would rather see the figures for fatal crashes per aircraft-trip, or sortie, as the R.A.F. calls it. The fatal crashes probably happen in bad weather with few people on board.

Anyhow, the first thing to do, if we are going to have any air transport after the War, is to build safe aeroplanes which do not need a two-mile run to take off and do not land at 150 m.p.h., and do not burn up if they crack up.

There is the excuse that there are no man-hours or material to spare for experiments along those lines in war-time. Probably more man-hours are wasted on wild-cat post-War planning than would design and try out a lot of experimental safe aeroplanes. And certainly in our own Experimental and Research Establishments the time which is wasted on futile experiments, known as basic research, might better be applied, as it is in the United States, to *ad hoc* experiments on safe aircraft. But the research people, at any rate in this country, still have that same "Official Mind" against which I have been fighting for all of 30 years.

Anyhow, supposing that our research and experimental people are incapable of producing anything like a safe aeroplane by the end of the War, we may have the consolation of seeing all the belligerent nations cluttered up with tens of thousands of transport planes which we can make quite obsolete by the production of new and efficient and safe passenger aircraft.

An Elementary Truth

And another thing, can you think of anything more absurd than a modern petrol engine? There you have so much potential energy in liquid form in a tin can (which is generally light alloy). You put the liquid through a heavy, elaborate and complicated thing called a carburetter, and force it by an expensive fan into a cylinder, where it pumps a chunk of metal up and down, which whirls a piece of steel up-and-down and round-about like a flail, which twiddles a long crooked piece of steel round-and-round horizontally, which in turn buzzes a whacking great paddle round-and-round, which

screws itself inefficiently through the air and whirls masses of air all over the wings and fuselage and tail-unit of an aeroplane and makes them all still more inefficient than they would be if merely projected through the air.

Added to which, you expend a high percentage of your horse-power in pushing a whole series of radiators through the air to keep the walls of your cylinders cool enough to prevent the chunk of metal in it from sticking, and at the finish you are lucky if you get 25 per cent. or 30 per cent. of the potential energy out of your tin can.

And I can quite see, away ahead, a time when reciprocating engines which use petrol will be looked upon much as a paddle-wheel steamboat would be on the ocean to-day. I am pretty sure that the aircraft of to-morrow will be driven by squirts and not by airscrews.

[Modern radiators have been designed which actually give thrust. The internal combustion motor has a greater efficiency than any other prime mover yet known.—Ed.]

And Who's Going to Run Air Transport?

Another good reason for not wasting time on talking about air transport is that nobody knows the social or political conditions in which air transport will run after the War. Even before the War, and much more during the War, commercial enterprises have been nationalised, merged, telescoped, monopolised, and generally co-operationised or corporatationised until we are near the stage of living in a vast series of chain-stores under a species of Collectivist Capitalism, such as Mr. Walter Duranty envisaged in his brilliant book on Russia, "I Write As I Please."

Every industry seems to be involving, rather than evolving, along those lines. Big businesses swallow little businesses or push them out of business. Then the big businesses get together and form Corporations. And then the Corporations were taken over by the State—as British Overseas Airways, the Boa-constrictor, swallowed all the little air lines, and as the London Passenger Transport Board swallowed all the tubes and the 'buses, until to-day one is not sure whether the London Passenger Transport Board exists for the benefit of London passengers, or whether London passengers exist for the benefit of the London Passenger Transport Board.

At the other end of the scale, one gets Corporations which spring up parthenogenetically, as did the B.B.C., that extreme example of pink wetness, which seems to pervade everything in these days. A friend of mine who writes under the name of "Augur" has invented the beautiful word "Pinkompoop" to describe that sort of person.

For the matter of that, our great Imperial Airways, Ltd., which, under George Woods Humphery, gave us our magnificent Empire air routes to Australia and the Cape, was itself a merger of four other lines. I give full credit to that great Scotsman, Lord Reith, for the sardonic humour which chose the title "Boa" for the Corporation which swallowed it up.

All Civil Aviation will probably be run by a Government Corporation after the War. Obviously private flying cannot be allowed. Apart from that, by the time the Income Tax has gone up to 80 per cent. for everybody who has an income of more than £500 per annum, and the £ sterling will probably have the buying value of a pre-War shilling, nobody will be able to afford private flying. And obviously, if the skies are going to be full of air-liners carrying bureaucrats all over the place, no Government can allow individual pilots to go bumping into their air-liners and killing their uncivil servants.

Whatever Government may be in power after the War—whether the present one or one quite different elected by a triumphant and enlightened People—may decide to run air transport, and all other transports, itself, under a number of Commissioners, or Kommissars, whichever they like to call them. Then, presumably, air transport will be cut adrift from the Fighting Services. But the flying and ground personnel will almost certainly be time-expired short-service men from our Air Force, as most of the civil air transport people were before this War.

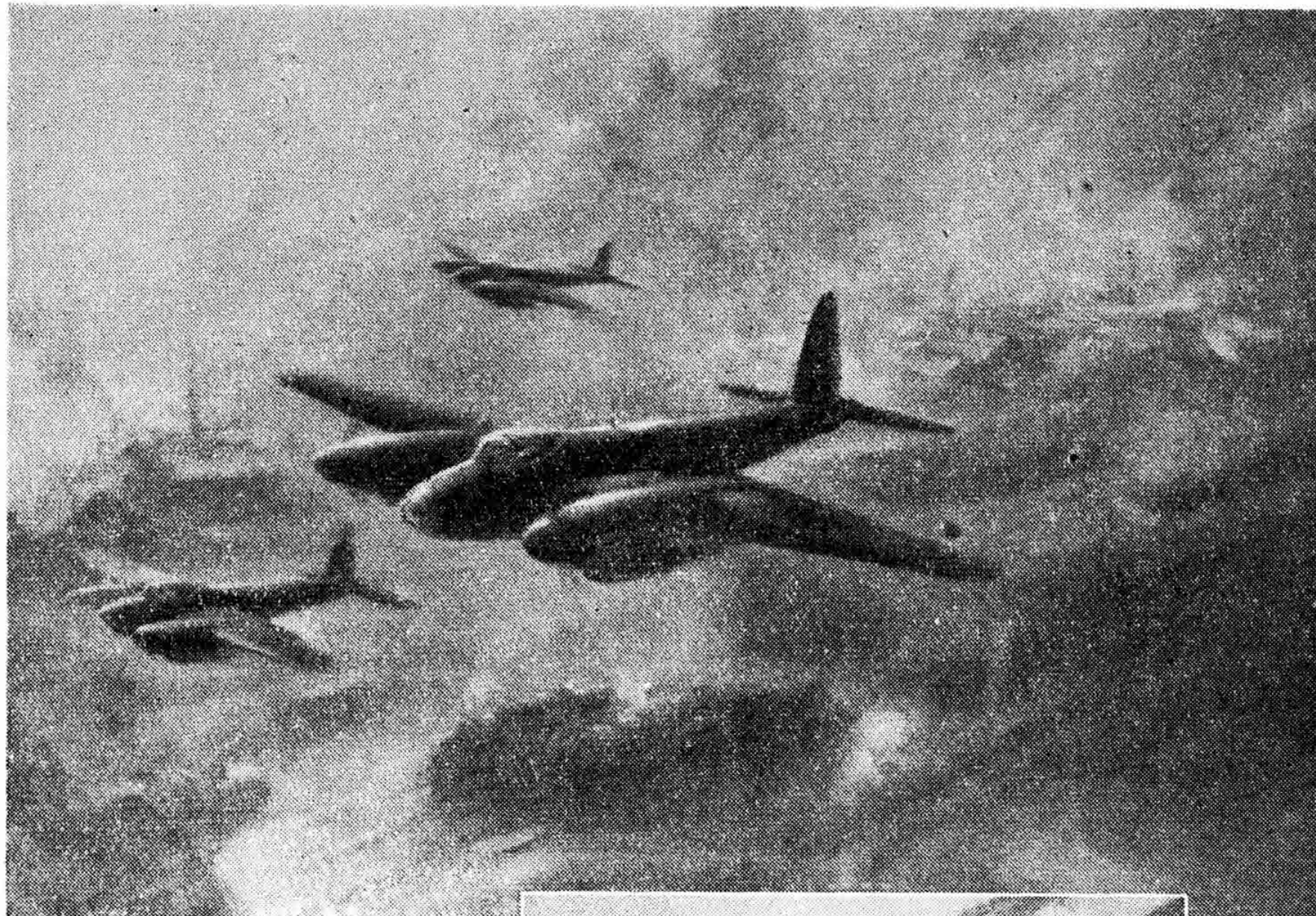
Moreover, if all civil flying is to be run by the State for the State, there cannot be need for a Department of Civil Aviation and all its bureaucrats, as well as a State Air Transport Department. Obviously the Department of Civil Aviation should run air transport itself.

Cut-Throat Competition

In the meantime, while our politicians are talking hot air through their hats, all sorts of scheming is going on by vested interests which evidently assume that our social organisation after the War is going to be just what it was before the War—that is, the good old back-to-the-jungle system of cut-throat competition.

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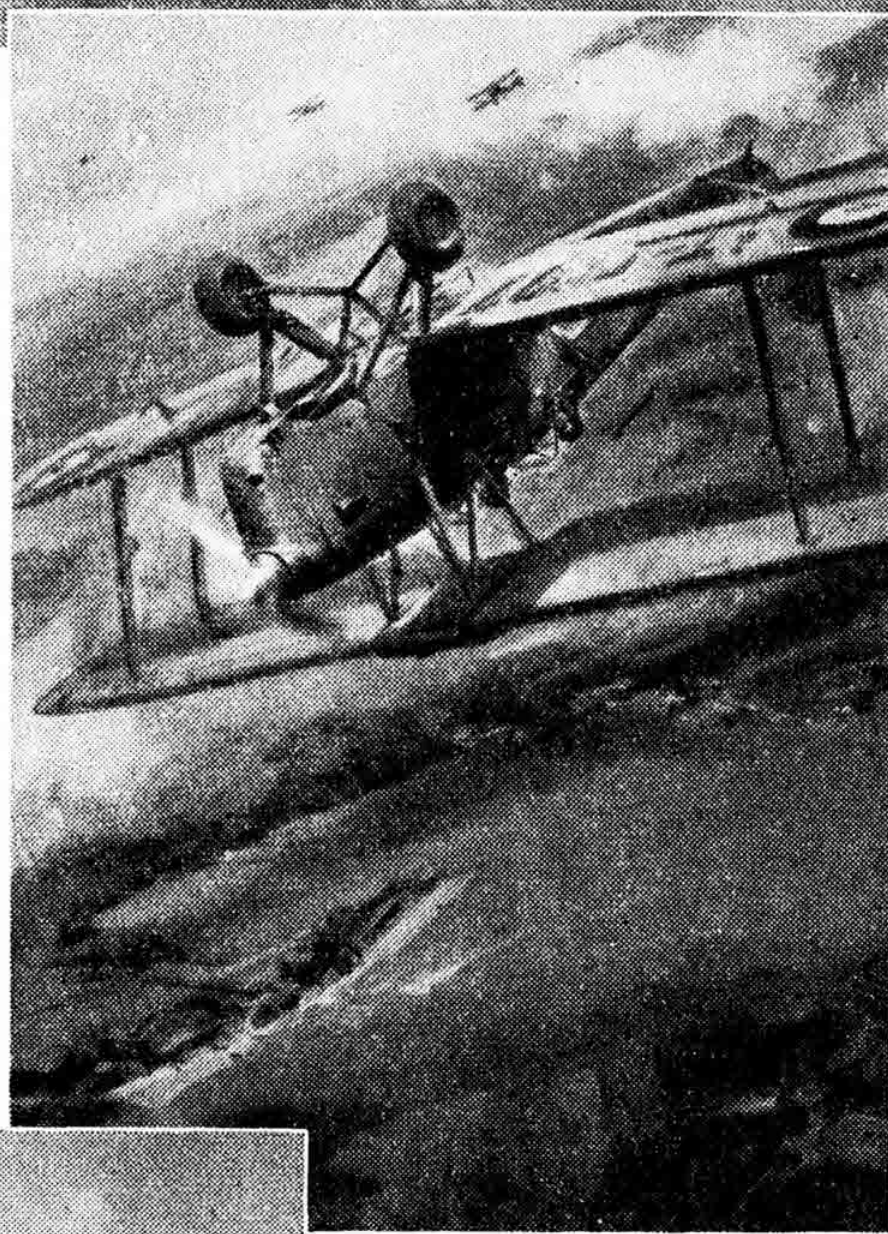
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please)

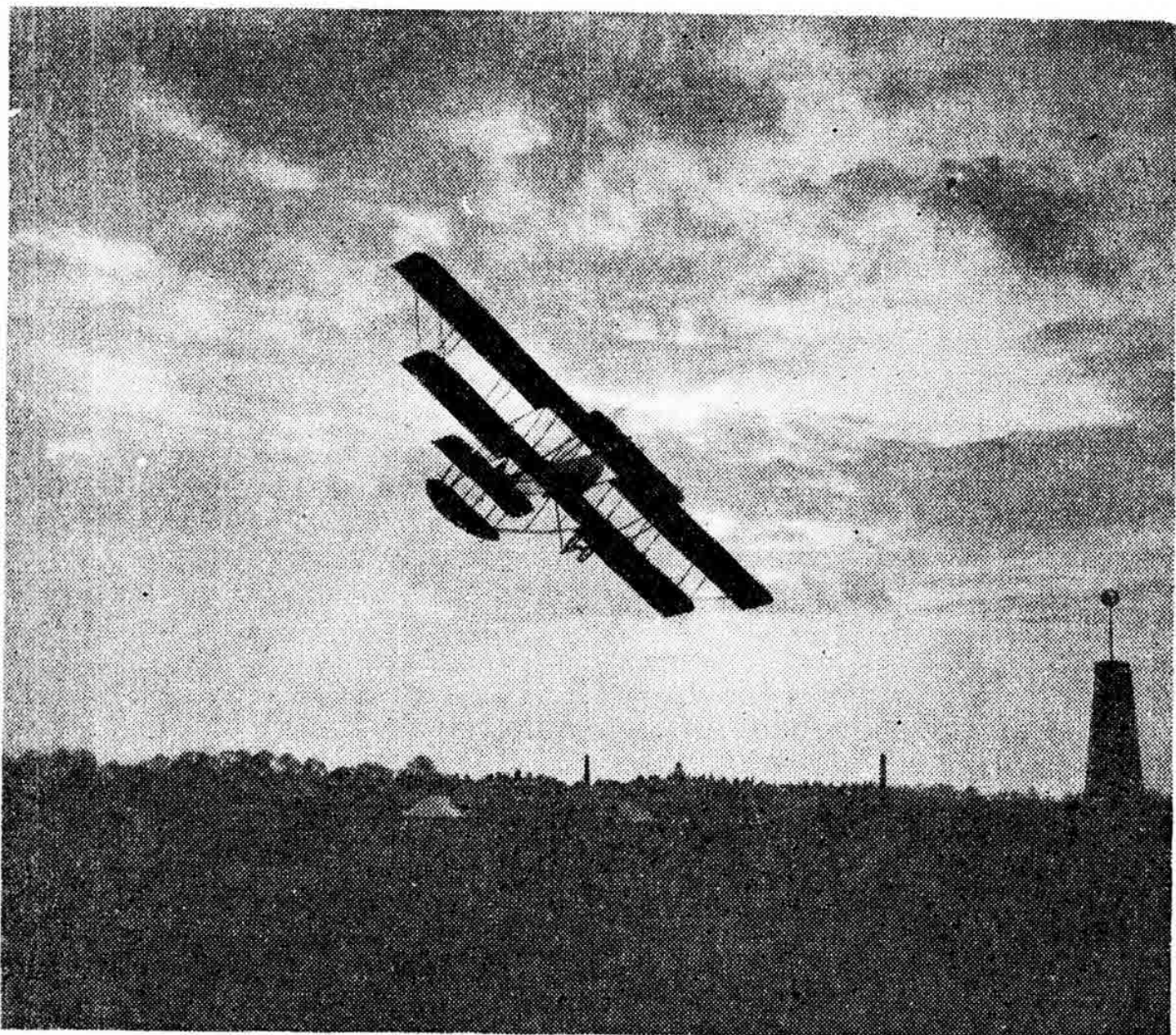


The **LANCASTER**



A. V. [ROE & CO., LIMITE
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and, as such, was possibly responsible for the development of the British private-owner aeroplane into the safest, most luxurious and most economical type in the World. But it was really no sort of a spectacle, except when the handicappers



MORE SHADOWS OF HENDON.—Paul Verrier silhouettes his 1912 Maurice Farman against the setting sun as he banks round a pylon.



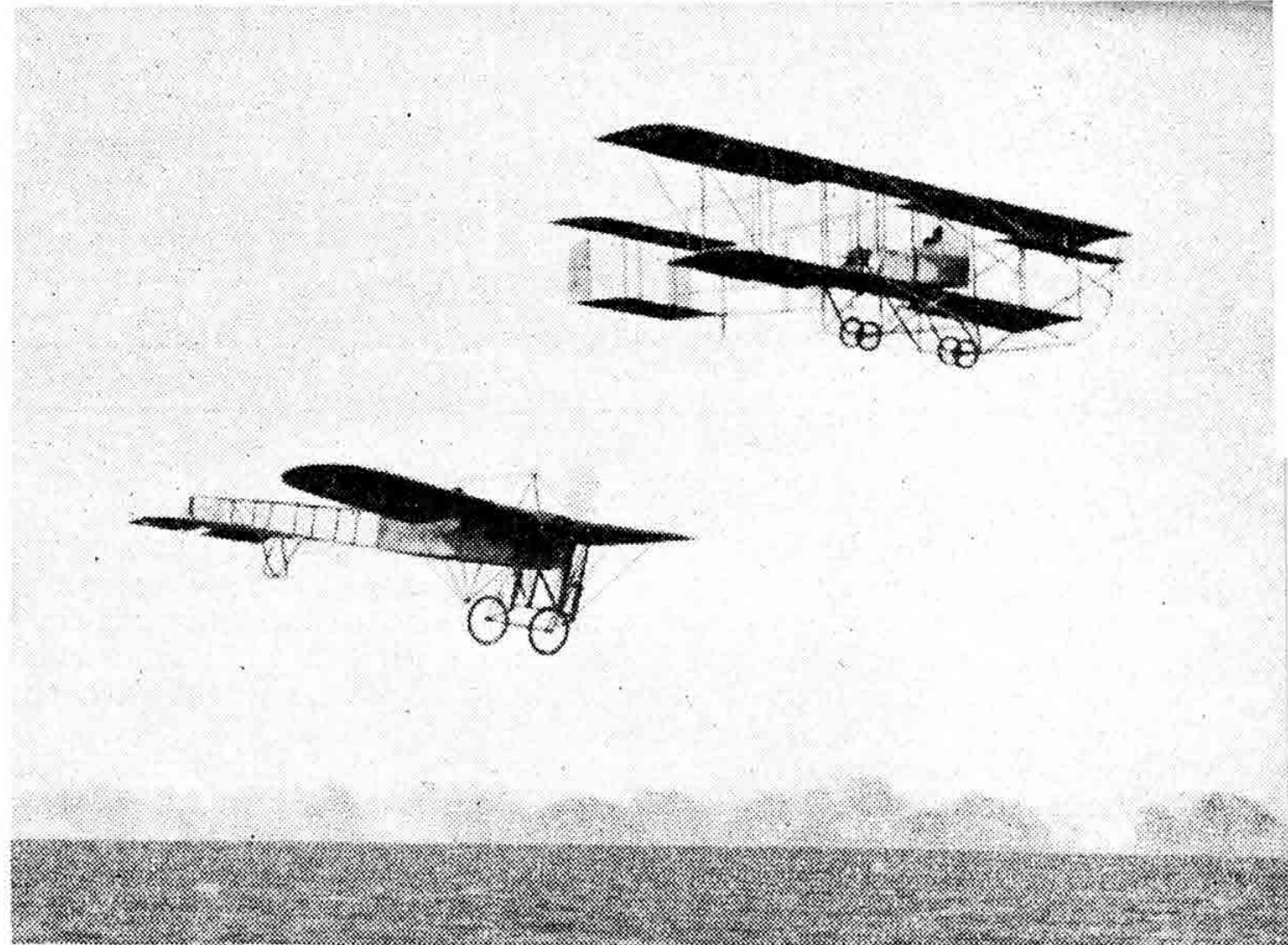
[“Aeroplane” photograph]

EPIC OF HATFIELD.—Alex. Henshaw streaks across the crowd to the finishing line to win the King’s Cup Air Race of 1938. His racer was a Percival Mew Gull (D.H. Gipsy Six) specially hotted-up and streamlined under the direction of Jack Cross. A Percival Vega-Gull stands in the foreground.

had not been caught napping! Race day was more or less a flying-club outing, but the race was by the few, for the few.

Other Events

In America the National Air Races were totally different. In those amazing contests “customs-built” pint-pot racers belted round pylons in a neck-or-nothing speed effort to gain a worth-while prize. Some of the racers were highly dangerous, “backyard” specials which added to rather than detracted from, their undeniable public appeal. More than one U.S. fighter to-day can trace the influence of race-



NECK AND NECK.—A Blériot monoplane “hares” past a Maurice Farman in a pre-last War air race at Hendon. Air racing at Hendon, Brooklands, and other famous aerodromes always drew large crowds like a magnet.

gained knowledge in its make-up. Such races as those for the Grieve Trophy, the Bendix Trophy, and the Thompson Trophy, attracted fast, well-built aeroplanes in competition, and, consequently, American aircraft in both civil and military types, owe much to the National Air Races. The American public, too, had excitements which have never been afforded to the British public since the old Hendon, Bournemouth and Blackpool pre-1914 days. There were crashes, some of them fatal, but those were the risks faced squarely and taken by sporting aviators.

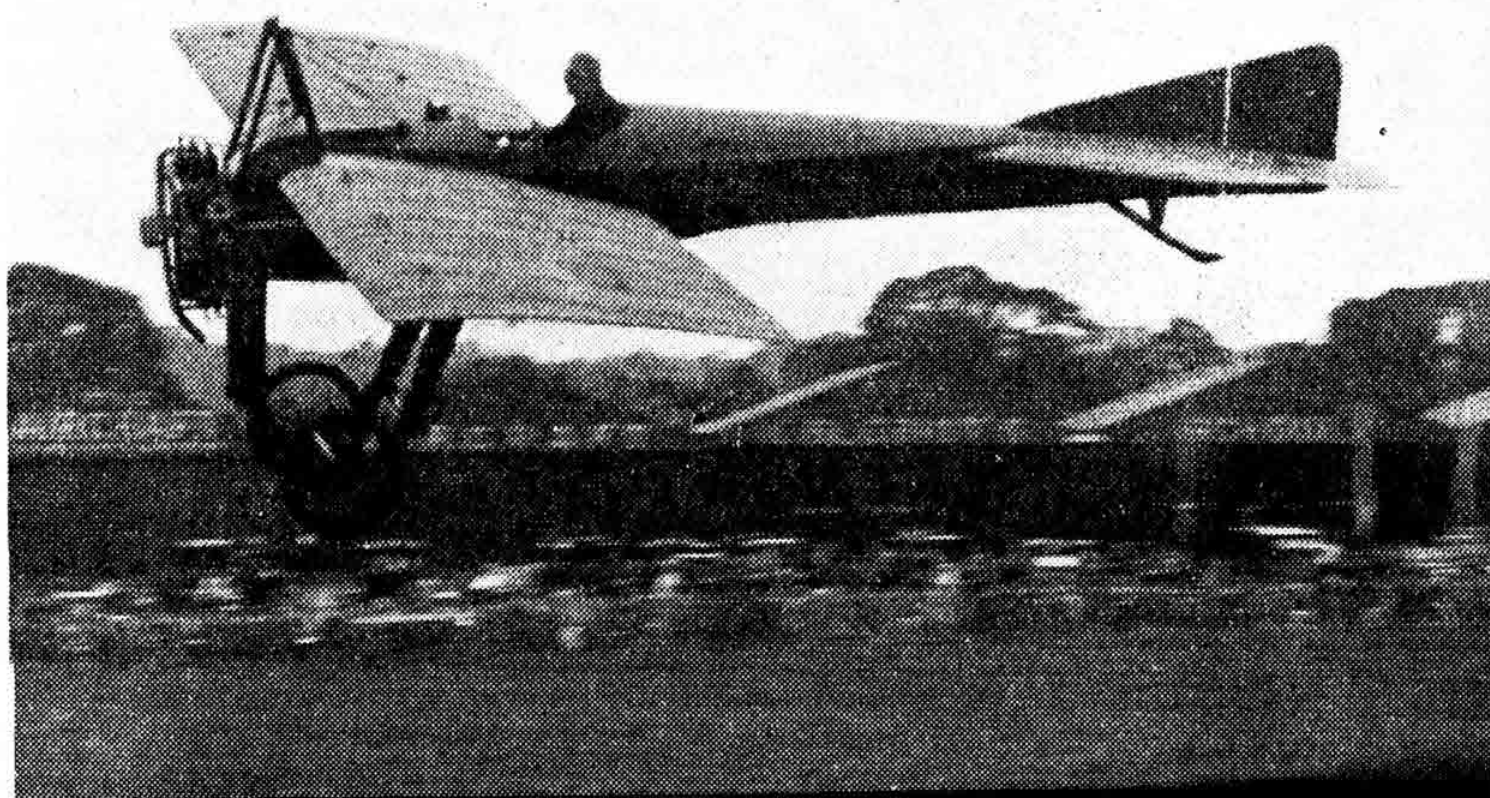
An example of the type of event needed can be found in the motor-road-racing at the Crystal Palace and Donington. The Ulster Grand Prix, the French, German and Italian Grand Prix were all examples of a type of competitive event which, while improving the breed, formed a magnificent spectacle and for which the public was prepared to pay. Those races had their annual crop of disasters, but, almost without exception, the following year’s events were an even bigger Roman Holiday.

The Future

A suggestion, then, to conclude. Let the Royal Aero Club investigate the possibilities of pylon racing anew, as the basis of its post-War sporting events. There should be different classes of race dependent on motor size—either swept volume or horse-power—and the scrapping of handicapping. The possibility of holding a race week with a series of events each day and perhaps a Royal Air Force display at the same period should be investigated. We shall, perhaps, by then be completely socialised with plenty of time on our hands and nothing to do, so a week’s race-watching would while-away the time nicely.

There will, no doubt, be ample material available for the building of “specials,” and plenty of pilots willing to fly anything with wings for commensurate prize-money to make the effort really worth while. Air-racing can be made to pay only if it is financed by the public. And the British public will not put its big hand deep down into its capacious pocket unless it is going to have value for its money.

PYLON’S EYE VIEW IN 1913.—(Below) A photograph of Lt. J. C. Porte, R.N., on a 100 h.p. Deperdussin-Anzani roaring past the photographer dangerously perched on the top of the pylon.



CORRESPONDENCE

Publicity for New Aeroplanes

IN the United States of America, as in many other parts of the World, the releasing of information about a new aeroplane in peace or war is the occasion on which a flood of first-class photographs of the particular new pride in achievement is released and published in order to impress the world with the quality of the new aeroplane.

It would seem reasonable to suppose that this would also hold good in Great Britain, but such is not the case. Recently the most unimaginative photographs were issued by the Ministry of Information on behalf of the Air Ministry of the new Avro York transport. These photographs showed the York on the ground on a wet day with a collection of ladders, and men in shabby raincoats. We know that it rains frequently in this country, but there have most certainly been many days since the York appeared on which good photographs could have been taken. Perhaps this was an unlucky instance, but the first release of photographs of the Stirling, Lancaster, Botha, Fulmar, Whirlwind, Seafire, Beaufighter II, British Overseas Airways Boeing 314s and many others were all of poor quality.

The official publicity people have never shown an overdose of imagination, or too great an ability to appreciate that we are living in the twentieth century, which, among other things, happens to be the age of good publicity, but please let us tell the World that we can and do produce good aeroplanes, and that also we are capable of photographing them and putting them over.

So far we have achieved little but hearty laughter in the commercial advertising trade, especially in the U.S.A. J.S.

The U.S. Daylight Raids

WHEN AT FIRST the Americans began to mention the great success their heavy daylight bombers had in engagements with enemy fighters over Europe, I felt rather incredulous, as these successes seemed to be of a greater degree than those which our own machines had, despite the fact that ours seemed better than the American designs.

Lately, however, my attitude towards American daylight bombing has changed. The fact which I find so remarkable is that in many of their daylight offensives the American bombers have achieved a greater measure of success than the escorting fighters which have accompanied them. For instance, in the great raid on Wilhelmshaven, recently, of the 34 enemy aeroplanes shot down 16 were attributed to escorting Lightnings and Thunderbolts and 18 to the Fortresses and Liberator B-24Hs, with a loss of only five American bombers.

In my opinion there can be little doubt that the Americans are as great masters of daylight bombing as the British are of night bombing. Do the Americans owe their success to the height at which their aeroplanes operate as well as to their armament? The new Liberator B-24H bombers fire guns from six different parts, and their ceiling is no less than the Liberator IIIs, or B-24Ds, as they are known in the U.S. Army.

Furthermore, the U.S. machines can take a great deal of punishment. In a newsreel I have just seen of that great raid carried out recently on Wilhelmshaven, a Liberator was flying back with almost all of its port tailplane shot away, and yet it arrived home safely. The glowing newspaper reports and the spectacular newsreels convey to me striking impressions of American daylight bombing, and what about the new B-29 and B-32 bombers which are on the way? But, for the time being at least, the versatile Mosquito acts as a magnificent British substitute. A. MARTIN.

Flying Frigates

I DON'T THINK you should have been so sharp about "Frigates of the Air" in your review of the Government publication of Fleet Air Arm. To anyone acquainted with the Navy, as the author of the book presumably is, a frigate is a scouting vessel equivalent to cavalry and to interpret the above chapter title as "Flying Windjammers" is to invite ridicule from those who remember that Nelson called his frigates "the eyes of the Fleet."

If you are prepared to offend Naval experts by misunderstanding their terminology you cannot complain of inaccuracies concerning aeronautical matters committed by such people as the producers of the "First of the Few," which you quite rightly tore up into very small strips. METICULOUS.

[A frigate, according to the Oxford Dictionary, is a "warship next in line and equipment to ships of the line, with 28-60 guns on main deck and raised quarter-deck and fore-castle." Now what on earth has all that got to do with an aeroplane?

The reviewer's point is that the Royal Navy is never going to provide itself with a happy, modern and efficient Air Arm until it forgets Lord Nelson and all his works.

The Royal Navy has got to learn to adjust its strategy and time-worn customs to fit modern circumstances and the proved potential value of its Air Arm. Up to the present the tendency has been to try and imagine that Lord Nelson had aeroplanes and so fit them into a traditional Navy.—ED.]

Aircraft Recognition

IN THE INVASION EXERCISES on Oct. 24, in my rôle as a humble private in the Home Guard I had the temerity to report the progress of an Auster which was cruising slowly overhead at what I should judge to be approximately 1,000 ft. When I reported this to the next in authority I could see I was regarded as a near lunatic and, in any case, was not taken seriously.

I personally claim to be able to recognise any aeroplane, the outlines of which are visible or, at any rate, to be able to distinguish whether it is friendly or hostile, with one exception. Recently I saw a squadron of Typhoons at about 200 ft. approaching me, and recognised the "cranked" wing. I realised they were coming in a very unlikely direction for a short-range fighter.

I also claim to be able to recognise "one of ours" after dark. The Rolls-Royce motors of the Mosquito, Beaufighter II, Lancaster and Halifax are distinctive, the motors are notable for volume of sound but the note is the same, and very sweet it is.

The tone of the BMW 801 has only to be heard once to be remembered, whether it is housed by a Focke-Wulf or Dornier, and the Ju 88 can be picked out of the large numbers of our own night bombers when it "intrudes," as it did a few weeks ago. I believe this to be caused by lower revs., which the Germans favour, both of crankshaft and airscrew.

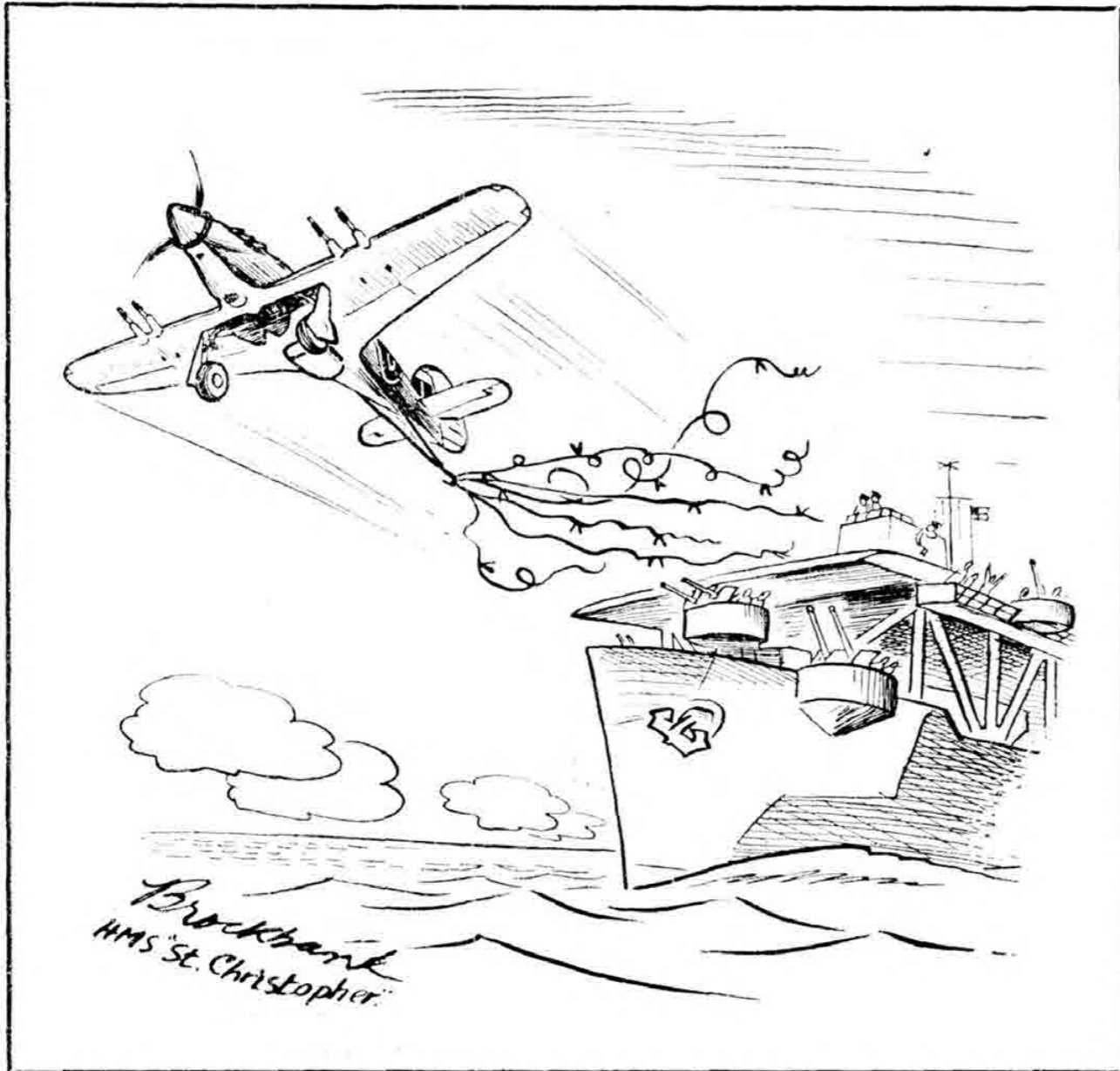
American engines are also easily recognised by sound.

Incidentally, I did not like seeing a Spitfire shot down three times during the film "The Battle of Britain." I can only conclude that this was included as ammunition was probably more important than celluloid in our fighters during that hectic period, and that the shots of the Spitfire were captured and the same incident shown three times. N. V. BRITAIN.

[We rise to such efficiency in the practice of aircraft recognition that the subject, no doubt, will one day be included in the foot soldiers' basic training.—ED.]



(Aeroplane copyright)



Character and the A.T.C.

MR. GREY'S suggestion that the A.T.C. should take in boys of 14 was tried in the early days of the Air Defence Cadet Corps and was found to be very unsatisfactory. There is a world of physical and mental difference between a boy of 14 and one of 18. It is as useless to lump them together in the A.T.C. as it would be to keep them in the same class at school.

Mr. Grey's ideas on the A.T.C. curriculum would have met with the approval of Julius Caesar or Wellington, who used men ("the scum of the earth," Wellington called them) for purposes now the function of machinery. The R.A.F. fighting man has to fight with his brain. "Discipline, self-respect, pride in the King's Service, loyalty to comrades and officers, and sense of duty to God, King and Country," which Mr. Grey thinks should be the curriculum of the A.T.C., are desirable qualities, but they do not enable a man to fly from A to B, to send a message in Morse, to calculate electrical output or to overhaul an engine. On the other hand, the acquisition of these intellectual qualities requires discipline, develops self-respect, loyalty to comrades, and a sense of duty.

What self-respect, sense of duty or loyalty to comrades can a man have if he cannot count beyond ten when his duty and the lives of his comrades demand that he should be able to do so? What sort of discipline is it that cannot discipline the mind to the mastery of a few figures? And what sort of future can we expect when people who ought to know better, statesmen, writers and the elders of the Nation, boast of their inability to count beyond ten, and daily demonstrate their inability to see beyond their noses?

Discipline, loyalty, courage and all the other virtues of the fighting man do not diminish with education and, in fact, cannot even be acquired without some training and instruction. They are to be seen at their best in men who have taken the trouble to learn what they need to know, and what their subordinates need to know. Does Mr. Grey suggest that all our brilliant men are cravens, and all our nitwits great generals?

LEONARD TAYLOR.

The A.T.C. of the Future

ALTHOUGH we all know that many a good man has falsified his age so that he can get into the Army, and occasionally the Navy or the Air Force, when he is under the official limit, I am surprised to see Mr. Alec L. Watson, in your issue of Nov. 26, openly encouraging youngsters of 13 to lie about their ages. I should have thought that one of the very first things to be taught in the A.T.C. would be never to lie, either to save or to serve oneself. The only excuse for lying is to try to save somebody else pain or penalties, when undeserved.

In fact, Mr. Alec L. Watson seems to have rather a poor opinion of our youngsters. Possibly some of them have grown tired of the A.T.C. and its very mild form of discipline, as he suggests, but so few have left for that reason that I cannot see that there is any "grave danger of time and money being wasted on boys who are not really air-minded."

The first two paragraphs of his letter definitely give the impression that A.T.C. youngsters are liars and wasters.

Nevertheless, I agree that much good could be done if still younger boys could be nursed into air-mindedness. But I agree with him that boys of the right sort should be passed into the A.T.C. at 14.

I heartily agree with Mr. A. J. Hughes that the A.T.C. needs strong support by the industrial firms in each district. Labour Superintendents should make a special point of finding out which of their lads in the works are members of pre-entry Service organisations.

I am interested to hear that the officers of the A.T.C. and the Sea Cadets are largely of pre-War non-commissioned rank. Practically every officer I know in the A.T.C. either held a commission in the last War or between wars, or else is a civilian. But I can well believe that Flight Sergeants and Petty Officers of the right type would be very much an acquisition to the A.T.C., especially if they have been drill instructors and disciplinary N.C.O.s and P.O.s.

C. G. GREY.

Freight in the Future

INTERESTING IDEAS devoid of helicoptimism are sketched by Mr. J. Percival Chaplin in his recent article on future air transport, but people travelling by air to save time will not want to lose it again through journeying between airports and cities in motor coaches. Limitations inherent in steering and braking such large vehicles are reflected in the 30 m.p.h. restriction applying even on wide arterial roads. But light-alloy electric railcars possess rapid acceleration to over 100 m.p.h. and can give safe unobstructed all-weather service if operated through shallow cut-and-cover subways over busy centres, and on segregated reservations in suburbs, possibly alongside existing railways or roads.

Where railway companies are unable or unwilling to provide such specialised complementary services, municipal authorities or even air transport concerns themselves may find it necessary to construct and operate their own high-speed light railways. The cost of these might be small compared with that of the modern large airport and the facility shared by passengers, mail and light freight.

C. R. BIZERAY, A.F.R.Ae.S.

Sea and Air Transport

YOUR CONTRIBUTOR who presents "the case for the established air lines" in your issue of Nov. 12 makes two quotations from the Memorandum regarding air transport published by the British Council of Shipping. As a shipping man, I hope, therefore, that you will permit me to make the following comments.

He suggests that to undertake post-War overseas air services without subsidy will be performing a miracle. Well, sir, in a recent public statement Mr. Juan Trippe stated, that before Pearl Harbour Pan-American had decided its programme "for the construction of 50 giant Clippers, each capable of carrying 153 passengers from New York to London in 10 hours at a fare of a hundred dollars." This he said was part of a policy "to carry the average man at what he can afford to pay."

The minimum "off-season" surface fares on the Atlantic were, pre-War:—

At 18 knots: Cabin Class	\$160
At 28 knots: Cabin Class	\$287
	Tourist Class	...	\$155
	Third Class	...	\$105

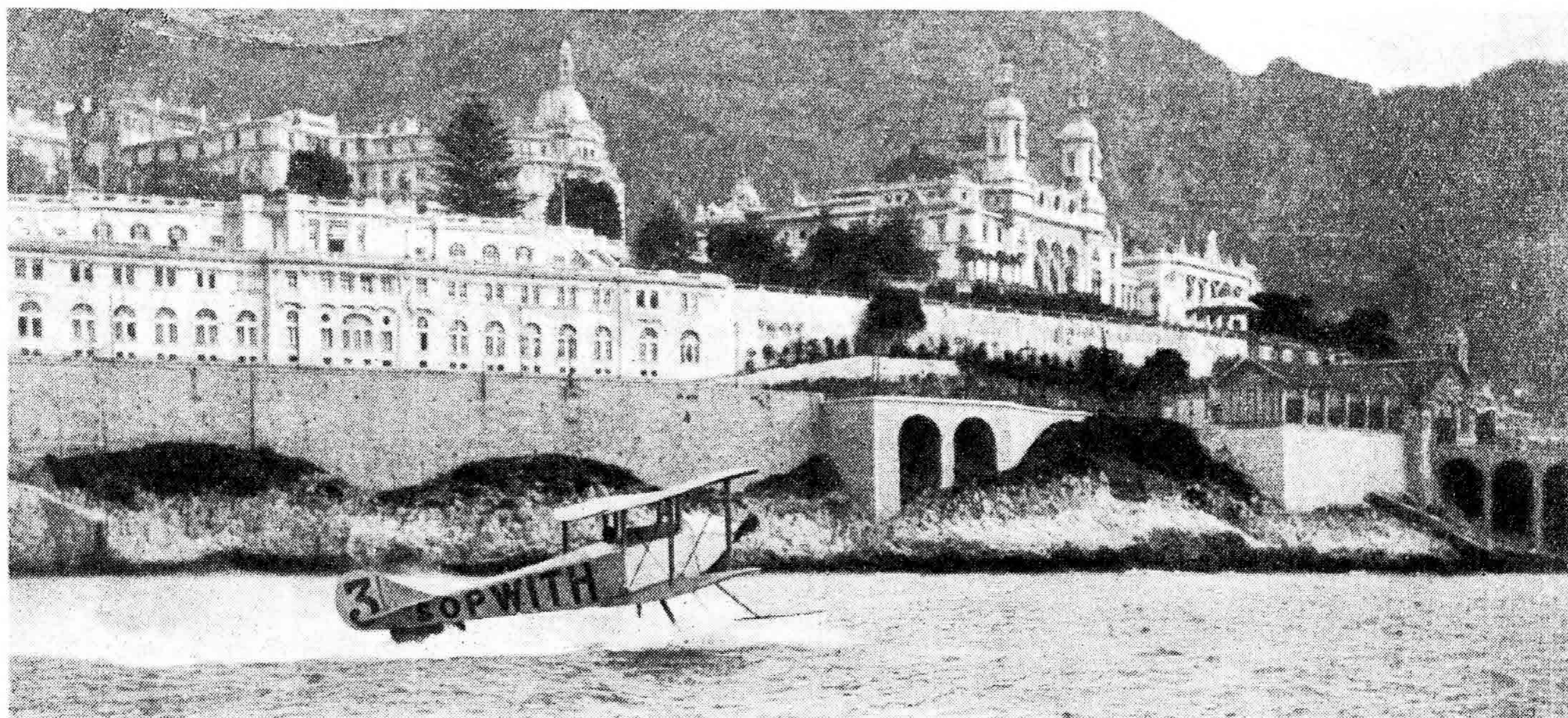
so that a crossing offered at 350 m.p.h. block to block speed for \$100 has a fair claim to be the "miracle" your contributor asks for.

Mr. Trippe's remarks contained no reference whatever to Government assistance. If, however, he meant to imply that he had the United States Congress in his pocket, that \$100 was the figure he had decided to charge, and that the American taxpayer would be instructed by him to meet the resultant loss, then what better example could you have of the type of "arbitrary subsidy," which the British Council of Shipping referred to in the second of the two passages quoted? What possible justification can there be for equating air travel to Third Class sea travel if such a figure is unobtainable on an economic basis? And, if the U.S. Government fixes an arbitrary fare of \$100 at the taxpayers' expense, why should not the Swedish Government retaliate with a fare of \$50, the British with \$25 and the Russians with no fare at all and a personal souvenir thrown in?

Your contributor further says that "the progress of aeronautical achievement during the War has, if anything, increased costs." Dr. Edward Warner's opinion, on the other hand, is exactly the reverse. Unfortunately, I am not personally qualified to discuss air transport costs, but, in view of the conflict between his views and those of acknowledged experts, I am left wondering whether your contributor is qualified either.

R. H. THORNTON.

SIDELIGHTS FROM THE PAST—LXXIV



THE SOPWITH TABLOID SEAPLANE AT MONACO—1914.

THE FIRST VICTORY in any big international race by a British aeroplane, flown by a British pilot, was gained by Mr. Howard Pixton in the Schneider Trophy contest at Monaco on Monday, Apl. 20, 1914.

A special Sopwith Tabloid was mounted on floats and converted into a single-seat racer. The 100 h.p. Gnome Monosoupape nine-cylinder rotary motor had just appeared and was fitted into the Tabloid.

The Sopwith seaplane was launched near Kingston Bridge on Apl. 7, 1914. Thames Conservancy officials objected to the proposed test flying on the stretch above Teddington Lock and accordingly, the next morning, the Sopwith was taken to Richmond, where the Port of London Authority did not object to trials. The Tabloid was launched at Glovers Island and Mr. Pixton took it off for the first flight. It handled beautifully and was fast, although the motor was not running smoothly. Mr. T. O. M. Sopwith was confident that it would put up a good show in the race, but he scarcely expected it to win.

At Monaco, the Tabloid made its first serious flight on Apl. 19, the evening before the race. An airscrew of large diameter and moderate pitch was used, but it allowed the motor to run too fast. A British Integral airscrew of smaller diameter and coarser pitch was accordingly fitted. The fuel capacity was increased to 30 gallons by fitting an extra tank beside the pilot's seat. Several other detail adjustments were made and the tuning was done by Mr. V. Mahl.

Punctually at 8 o'clock next morning, the time set for the opening of the Contest, the Frenchman, Levasseur, took off on a Nieuport monoplane (160 h.p. 14-cylinder Gnome) after a 200 yards run. Next away was Espanet on a similar machine. He made a lightning take-off before the starter had given him the signal. Burri, the Swiss entrant, in an F.B.A. flying-boat (100 h.p. Gnome), was next away. This seaplane had an inherent tendency to porpoise and its take-off was characterised by a series of hops before the machine became airborne.

Pixton, on the Sopwith, started about a quarter of an hour later than the others, roaring "all-out" across the starting line and getting into the air after a run of 60 ft. only.

The rules of the Contest stipulated that two alightings had to be made within the prescribed area during the course of the first lap. Pixton executed these superbly, but the other pilots had difficulty. Burri had to cope with a machine which

bounced like a football every time it came into contact with the water and his efforts caused great excitement.

Pixton's first lap lost him only 17 secs., and his Sopwith now settled down to the business of winning the race. As the British pilot roared round the course he gave full aileron on each turn, banking acutely round the markers at an angle of 70 degrees. The Continental spectators, accustomed to their own machines winning race after race, had never seen such flying and were loud in their praise. Soon they realised that no aeroplane out that day could touch the Sopwith-Pixton combination.

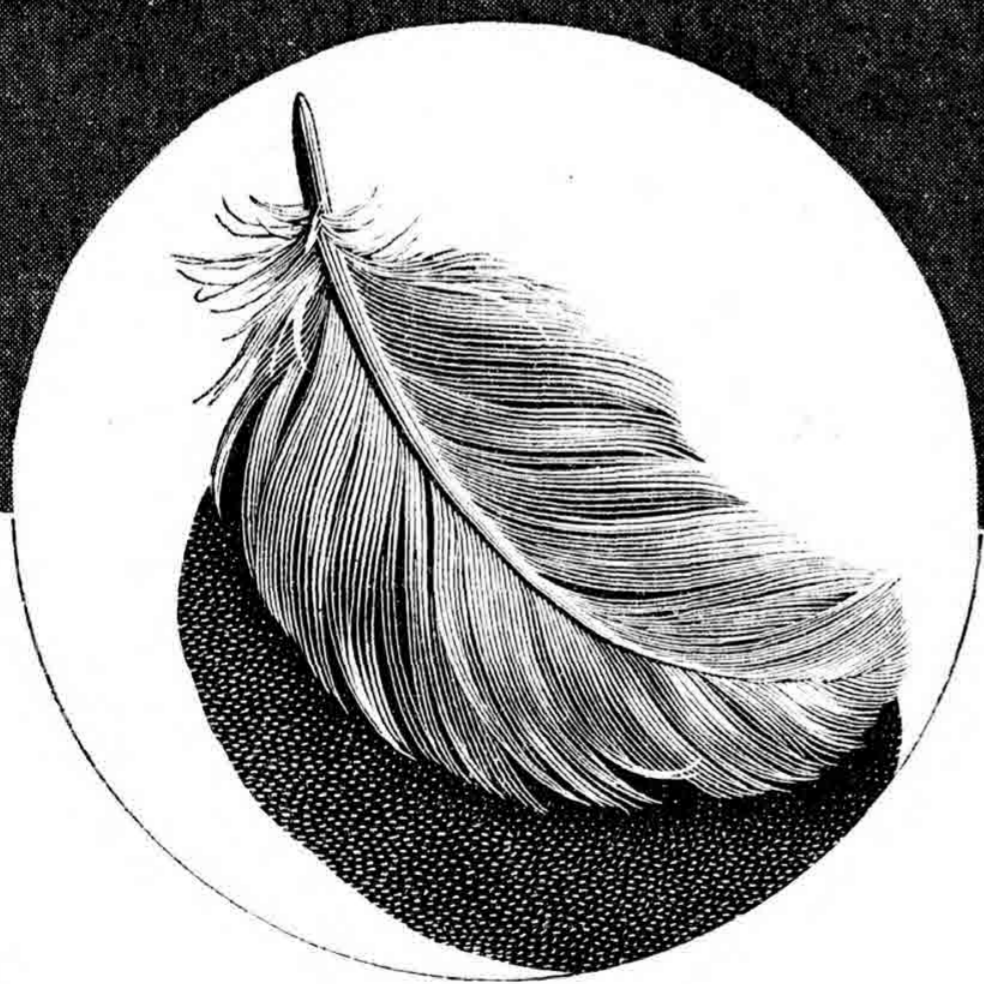
For an hour or so the Sopwith kept buzzing round lap after lap with impressive regularity. The lap times were an example of consistency, not varying more than 5 secs. per lap, but in the 15th lap, the Gnome of the Sopwith began to misfire, the time being 4 mins. 22 secs., about the same as the first lap with its enforced alightings. But Pixton kept going for the rest of the race, although the motor was only running on eight of its nine cylinders. Finally, at the end of the 28th lap, Pixton crossed the finishing line accompanied by the roar of an enthusiastic crowd. His time was 2 hrs. 13½ secs. for the distance of 280 kms., or 174 miles, an average speed of 86.75 m.p.h.

Pixton then opened up his motor and tore round for another two laps at still higher speed. The little Sopwith responded magnificently and broke the World's record for seaplanes with a speed of 92 m.p.h. for a distance of 300 kms.

Meanwhile, other competitors were crawling round. Lord Carbery, the other British competitor, flying a Deperdussin monoplane (160 h.p. 18-cylinder Le Rhone) got off all right, but after alighting in the first lap could not get off again because water had entered his fuel system. Espanet came down and retired after 17 laps, and Levasseur had a similar fate after 18 laps. The rear banks of their 18-cylinder rotary motors were overheating, a common source of trouble. Burri, on the bounding F.B.A. flying-boat, completed 20 laps and then alighted to refuel. He had some trouble in taking off with full tanks, but eventually got off and finished the race.

The rest of the competitors were dismayed by the Sopwith's performance and did not start. Under the rules, the competitors were timed individually and had all day to make an attempt. So the Schneider Trophy came to Britain for the first—but not the last—time.





FEATHERING ON TRAINER AIRCRAFT WITH THE ...

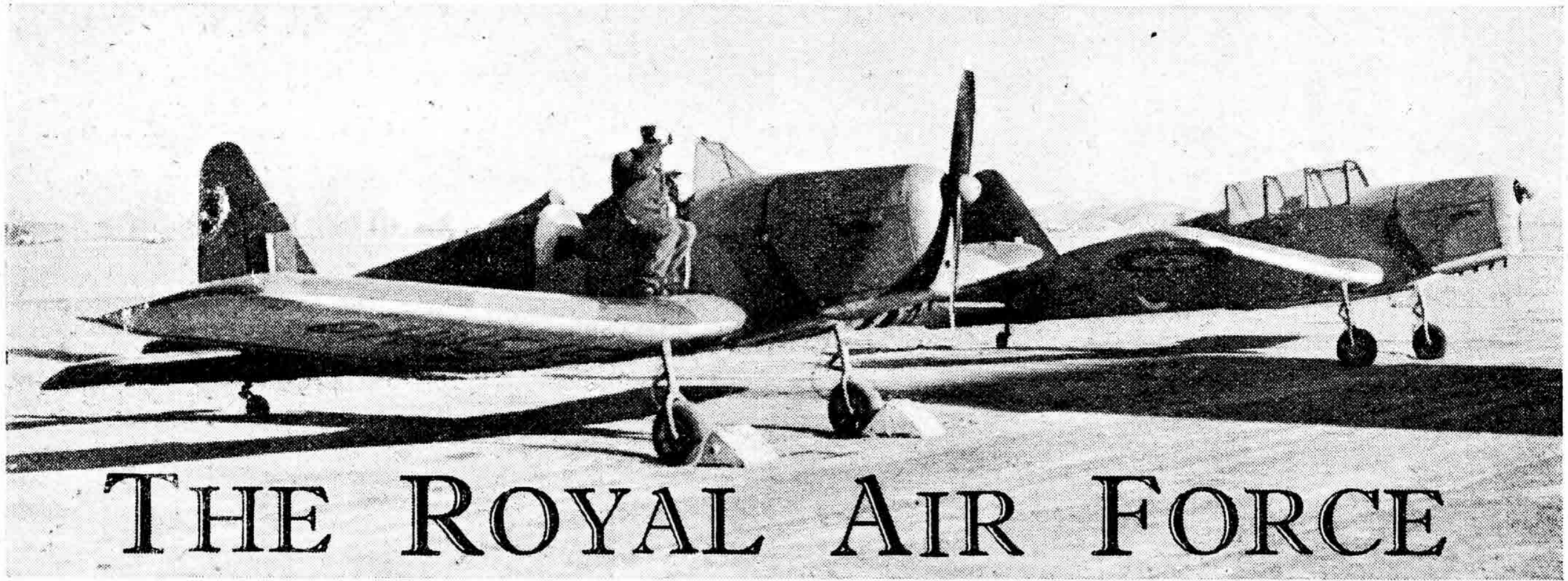
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TWO-BLADE
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H I G H D U T Y A L L O Y S L I M I T E D · S L O U G H 



THE ROYAL AIR FORCE

["Aeroplane" photograph

DE-BAGGING THE TEACHER.—Miles M-18 (150 h.p. Gipsy Major III motor) with the undercarriage fairings removed for ease of maintenance. The rear machine has a coupé top on the twin cockpits.

THE ROLL OF HONOUR

THE 312th, 315th and 316th Casualty Lists were published by the Air Ministry on Nov. 21, 28 and 29. They contain the names of 859 officers and airmen, including those of 305 mentioned in previous lists as missing or missing believed killed and now presumed or reported killed, or died of wounds or injuries received in action or on active service.

The lists include 159 killed in action or on active service, 46 died or died of wounds or injuries received in action or on active service, 25 wounded or injured in action or on active service, and 324 missing or missing believed killed in action or on active service.

The total R.A.F. casualties officially reported since the War began is now 62,464.

The 312th, 315th and 316th Casualty Lists are:—

- | | |
|---|---|
| ROYAL AIR FORCE | |
| Killed in Action | |
| 100649 | Act. S/L K. F. D. MacDonald. |
| 1577036 | Sgt. T. W. Brittain. |
| 1649543 | Sgt. D. R. Coe. |
| 1385039 | Sgt. C. R. K. Fay. |
| 1337997 | Sgt. A. R. J. Gaiger. |
| 45946 | Act. S/L A. T. Maudsley, D.F.C., D.F.M. |
| 1520478 | Sgt. R. Phillips. |
| 1302756 | Sgt. E. T. Potts. |
| 1578088 | Sgt. C. W. Shephard. |
| 129948 | F/O W. T. Hinds. |
| Previously Reported Missing Believed Killed in Action, Now Presumed Killed in Action | |
| 1199430 | Sgt. E. Hartley. |
| 926963 | W.O. H. Holcombe. |
| 1210474 | Sgt. A. E. Holland. |
| 1237646 | Sgt. J. Kirby. |
| 1382436 | Sgt. R. B. MacWilliam. |
| 1379174 | Sgt. R. Shaw. |
| 653935 | Sgt. R. W. Shearon. |
| 1070425 | Sgt. R. McG. Wilson. |
| 523633 | F/Sgt. A. Allan. |
| 968735 | Sgt. L. Barker. |
| 1365781 | Sgt. A. R. Dawson. |
| 1126762 | Sgt. J. Freil. |
| 1501112 | Sgt. R. Heslop. |
| 1318574 | Sgt. G. A. Hyatt. |
| 1314184 | Sgt. R. J. Jenkins. |
| 913390 | Sgt. J. W. C. Kidd. |
| 1440297 | Sgt. K. A. Mills. |
| 656489 | Sgt. P. Moulton. |
| 125563 | P/O R. J. Paul. |
| 1318904 | Sgt. F. Stephens. |
| 1579780 | Sgt. K. J. Teague. |
| 1291773 | Sgt. L. E. Thomas. |
| 1104498 | Sgt. R. Wilson. |
| 1333551 | Sgt. J. G. Wiseman. |
| 121435 | F/O J. M. Bell. |
| 1293131 | Sgt. R. P. Bilham. |
| 125482 | F/O P. D. Boyd. |
| 922835 | Sgt. K. O. Brice. |
| 1052824 | F/Sgt. W. A. Brown. |
| 1334545 | Sgt. R. G. F. Bryant. |
| 1230174 | Sgt. A. B. Burgess. |
| 1033054 | Sgt. W. E. Burns. |
| 1386718 | Sgt. E. W. L. Charlebois. |
| 1242362 | Sgt. M. F. Clements. |
| 46911 | F/O S. Coshall. |
| 45949 | Act. F/L A. Cowie, D.F.M. |
| 1331999 | Sgt. G. Easey. |
| 1118711 | Sgt. K. W. Edwards. |
| 1467789 | Sgt. E. A. Hughes. |
| 1395877 | Sgt. L. J. Humphrey. |
| 655320 | F/Sgt. R. R. Jackson. |
| 1062590 | F/Sgt. E. K. Jones. |
| 623848 | Sgt. H. Kay. |
| 634371 | Sgt. E. G. King. |
| 1511061 | Sgt. J. B. Langley. |
| 126018 | F/O E. Lear. |
| 132735 | P/O H. T. MacDonald. |
| 1214816 | Sgt. W. E. Norman. |
| 1176419 | Sgt. C. A. Pitt. |
| 1079156 | Sgt. L. H. Ransome. |
| 1376950 | Sgt. R. V. Rooke. |
| 1235284 | Sgt. D. J. Smith. |
| 1392394 | Sgt. G. H. Sparkes. |
| 1190385 | Sgt. H. E. Woodruff. |
| Previously Reported Missing, Now Presumed Killed in Action | |
| 1365001 | Sgt. G. C. Adam. |
| 1069523 | F/Sgt. C. Bentley. |
| 1383111 | P/O W. T. O. Chambers. |
| 1199671 | Cpl. R. E. Chandler. |
| 542661 | Sgt. J. Cooper. |
| 47871 | F/O A. Daley, D.F.M. |
| 1006135 | Sgt. T. Dawson. |
| 1013751 | F/Sgt. E. B. Davies. |
| 1338021 | Sgt. P. J. Egan. |
| 976368 | Sgt. R. G. Elkins. |
| 1093768 | Sgt. J. A. J. D. Hatton. |
| 1499347 | A.C.1 H. H. Hutchinson. |
| 577165 | Sgt. L. H. Jenkins. |
| 929936 | Sgt. G. E. Jones. |
| 1559316 | Sgt. A. I. MacKay. |
| 1552454 | Sgt. C. G. H. MacTavish. |
| 995124 | Sgt. E. Milne. |
| 913185 | Sgt. H. Moxon. |
| 102536 | F/O F. A. Parton. |
| 145158 | P/O G. M. Pettigrew. |
| 1238287 | Sgt. W. D. Ramsay. |
| 1380632 | F/Sgt. H. F. R. Stettiner. |
| 1149195 | Sgt. R. T. Williams. |
| 1301560 | Sgt. A. S. Aitchison. |
| 1115097 | Sgt. J. C. Aldred. |
| 1339908 | Sgt. J. H. Bousefield. |
| 1382448 | F/Sgt. L. R. Brettle. |
| 121730 | F/O J. D. Brodie. |
| 1350487 | Sgt. L. A. Buckthorpe. |
| 658415 | Sgt. J. W. C. Clark. |
| 575043 | F/Sgt. B. R. C. Conway. |
| 1067230 | Sgt. A. M. F. Cook. |
| 89395 | F/O R. J. Curtis. |
| 40368 | S/L D. F. W. Darling, D.F.C. |
| 1112193 | Sgt. L. Davies. |
| 659116 | Sgt. H. Dennis. |
| 1052038 | Sgt. E. J. Dollard. |
| 1217917 | Sgt. J. E. Edmeades. |
| 1332970 | Sgt. P. N. Fellowes. |
| 577867 | Sgt. E. J. C. Florey. |
| 115198 | F/O J. E. Foli-Brickley. |
| 972338 | Sgt. R. Frazer. |
| 31412 | P/O S. E. Groves. |
| 120116 | P/O C. R. Hall. |
| 994787 | Sgt. J. Harrison. |
| 1025321 | Sgt. P. C. Harrison. |
| 1290777 | Sgt. E. J. R. Hart. |
| 1174041 | Sgt. N. J. Hill. |
| 117427 | F/O D. J. Hopson. |
| 1191577 | Sgt. C. Hotchkiss. |
| 1416423 | Sgt. F. C. Howe. |
| 1318034 | Sgt. J. W. Humphires. |
| 1238830 | Sgt. S. Hunt. |
| 100520 | Act. F/L R. O. Jones. |
| 1375551 | Sgt. H. Kay. |
| 655875 | Sgt. K. A. S. Keston. |
| 924797 | Sgt. K. G. Lambert. |
| 127921 | P/O W. G. Lee. |

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|-------------------------------------|----------------------------------|
| 1187598 | Sgt. A. M. Limbrick. |
| 611799 | Cpl. G. Love. |
| 338707 | Sgt. T. McCall. |
| 1354651 | Sgt. H. S. McCartney. |
| 109159 | Act. F/L J. McMillan. |
| 1378821 | Sgt. F. R. Marples. |
| 46022 | Act. F/L G. L. Maxton. |
| 1066549 | F/Sgt. E. A. Meadwell. |
| 50188 | P/O G. H. Miller, D.F.M. |
| 1214210 | Sgt. E. Mudd. |
| 120067 | P/O A. J. S. Ollar, D.F.M. |
| 569753 | Sgt. W. H. Parsons. |
| 1201720 | Sgt. C. G. Phillips. |
| 1375794 | Sgt. P. Popoff-Rikovskiy. |
| 1211131 | Sgt. N. Pringle. |
| 1168071 | Sgt. G. F. Roberts. |
| 542705 | F/Sgt. W. J. Semple. |
| 1310678 | Sgt. W. Skinner. |
| 530021 | Sgt. C. D. Smith. |
| 1008971 | Act. F/Sgt. D. Smith. |
| 747706 | W.O. L. Smith. |
| 1612608 | Sgt. D. R. South. |
| 70877 | F/L G. W. Stanhope. |
| 1034269 | F/Sgt. K. C. Taylor. |
| 41081 | Act. S/L P. D. C. Thomas, D.F.C. |
| 702576 | Sgt. J. N. Town. |
| 1318039 | Sgt. W. T. Warren. |
| 1309517 | Sgt. H. V. Watson. |
| 931679 | Sgt. R. G. Weaver. |
| 524645 | W.O. F. Westcott. |
| 142482 | P/O R. A. B. Willmott. |
| 1288645 | Sgt. H. Woodfield. |
| 120667 | P/O R. G. Woods. |
| 116695 | F/O W. Wright. |
| 1194038 | Sgt. W. H. Young. |
| 1585825 | Sgt. A. R. Baker. |
| 626944 | F/Sgt. R. Beavan. |
| 903531 | Sgt. R. M. Bland. |
| 1060870 | Sgt. L. Booth. |
| 1310565 | Sgt. A. L. Brown. |
| 1078040 | Sgt. J. Conroy. |
| 914766 | Sgt. K. B. Cooke. |
| 1586180 | Sgt. A. F. Coppstone. |
| 1394020 | Sgt. E. J. Davey. |
| 142446 | P/O C. H. Davies. |
| 1490509 | Sgt. E. Davies. |
| 129659 | P/O P. A. Davies. |
| 658521 | Sgt. J. A. Fyfe. |
| 1068543 | F/Sgt. K. Firth. |
| 1338242 | F/Sgt. P. W. Garnham. |
| 575290 | Sgt. R. K. Hall. |
| 1002588 | Sgt. S. Heywood. |
| 1314398 | Sgt. J. R. Jeffery. |
| 965184 | Sgt. M. Kleinhorn. |
| 1094107 | Sgt. L. Lamb. |
| 1336386 | Sgt. A. J. C. Lavers. |
| 1230404 | Sgt. G. R. Lewis. |
| 986418 | F/Sgt. F. R. Lewsley. |
| 917233 | Sgt. H. G. Lines. |
| 115129 | F/O H. Lowe. |
| 1105617 | F/Sgt. E. T. McHugh. |
| 127290 | F/O J. L. Metcalfe. |
| 136052 | P/O J. S. Milne. |
| 51800 | P/O F. C. Milton. |
| 920127 | Sgt. M. C. Moody. |
| 1280742 | Sgt. F. Price. |
| 1263952 | Sgt. W. B. Richards. |
| 1066150 | Sgt. W. Rishton. |
| 39472 | Act. S/L A. E. Robinson. |
| 1381145 | F/Sgt. J. Rodgers. |
| 1307696 | Sgt. A. R. Saunders. |
| 1383168 | Sgt. J. H. Sibley. |
| 68186 | F/O A. R. Skone. |
| 1071855 | Sgt. N. B. Q. Steevenson. |
| 1307399 | Sgt. A. V. D. Stinton. |
| 1285297 | Sgt. C. M. Taylor. |
| 1380140 | Sgt. W. E. Waddington. |
| 123044 | F/O W. B. Wells. |
| 1109752 | Sgt. S. Woodhead. |
| 126963 | P/O V. J. Wotton. |
| 1288521 | Sgt. S. A. G. Wraight. |
| 591755 | Sgt. R. Wrightson. |
| Wounded or Injured in Action | |
| 1550270 | Sgt. T. A. Campbell. |
| 1344202 | F/Sgt. J. D. Bulman. |

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|--|----------------------------|
| 778919 | F/Sgt. C. J. Houbert. |
| 135641 | F/O J. McKee. |
| 1011138 | F/Sgt. N. Smyth. |
| 541092 | F/Sgt. C. A. Bonner. |
| 51873 | P/O N. E. R. Miles. |
| Died of Wounds or Injuries Received in Action | |
| 569893 | F/Sgt. D. H. Bareham. |
| 138822 | F/O W. R. Collins. |
| 136708 | F/O J. R. Wilcox. |
| 127988 | F/O A. R. B. Ball. |
| 1112590 | F/Sgt. T. R. Lumsden. |
| 136933 | P/O L. F. Smith, D.F.C. |
| Missing Believed Killed in Action | |
| 1097982 | Sgt. J. Billington. |
| 1418678 | Sgt. D. R. Browne. |
| 115116 | F/O D. J. Carpenter. |
| 1313217 | Sgt. W. E. Caudell. |
| 641113 | Sgt. P. Crow. |
| 1352674 | Sgt. J. Davis. |
| 1365331 | Sgt. W. Findley. |
| 1096827 | Sgt. W. Kidd. |
| 656568 | Sgt. C. H. Macaulay. |
| 1620313 | Sgt. S. Mackrell. |
| 1783085 | Sgt. H. McQuade. |
| 1432779 | Sgt. J. F. Maxwell. |
| 1801861 | Sgt. C. H. A. Warner. |
| 141788 | P/O J. F. Waterman. |
| 130906 | F/O J. Affleck. |
| 129173 | F/O K. A. C. Ayling. |
| 1390065 | Sgt. J. A. Baxter. |
| 1081280 | Sgt. F. J. Brown. |
| 1351516 | F/Sgt. T. C. Foster. |
| 1406740 | Sgt. G. W. Moss. |
| 147954 | P/O F. Norris. |
| 1358508 | Sgt. A. E. G. Price. |
| 1316116 | Sgt. R. A. Sims. |
| 1251253 | F/Sgt. R. W. Staveley. |
| 1398599 | Sgt. F. W. A. Bates. |
| 1811721 | Sgt. A. E. Betts. |
| 656451 | F/Sgt. R. Fall. |
| 1575231 | Sgt. F. M. Freeman. |
| 1315706 | Sgt. R. L. Freeman. |
| 984102 | F/Sgt. T. O. S. McCulloch. |
| 136503 | F/O A. B. Potts. |
| 146332 | F/O A. Rankin. |
| 1601327 | Sgt. M. J. C. Simpson. |
| 155920 | P/O C. H. Spiers. |
| 1335357 | F/Sgt. D. A. Webster. |
| Missing | |
| 131829 | Sgt. W. M. F. Barnett. |
| 1390334 | Sgt. A. R. D. Bedbrook. |
| 1851875 | Sgt. R. E. Belton. |
| 1319079 | Sgt. J. H. Bennett. |
| 648514 | Sgt. K. E. Bright. |
| 151776 | P/O W. G. Brown. |
| 986703 | Sgt. G. B. Buchan. |
| 1391064 | Sgt. E. G. Bull. |
| 540272 | Sgt. W. Burnell. |
| 1345462 | F/Sgt. J. T. Carruthers. |
| 1344908 | Sgt. A. S. Carscadden. |
| 1801923 | Sgt. V. J. Caselton. |
| 649855 | Sgt. J. T. Cawthorne. |
| 1817088 | Sgt. J. S. Clenton. |
| 1605760 | Sgt. B. H. Cockcroft. |
| 1373880 | Sgt. C. J. Cooper. |
| 1394523 | Sgt. R. G. Cooper. |
| 135402 | Act. F/L B. Cottrell. |
| 1335788 | F/Sgt. A. R. Crowther. |
| 1209112 | Sgt. E. V. Dean. |
| 1313004 | Sgt. H. R. Delahay. |
| 987167 | Sgt. D. T. F. Doyle. |
| 1335488 | Sgt. F. J. Edser. |
| 929879 | Sgt. A. W. F. Edwards. |
| 139593 | P/O A. E. Ferguson. |
| 1139038 | Sgt. H. Fisher. |
| 1576515 | Sgt. A. R. Fleming. |
| 1386815 | Sgt. R. V. S. Forsdick. |
| 1375675 | Sgt. K. Gilbey. |
| 1316480 | F/Sgt. C. A. Goddard. |
| 131960 | F/O W. W. Goldberg. |
| 514413 | Sgt. J. Cowap. |
| 1833603 | Sgt. E. C. Harris. |
| 1249131 | Sgt. P. Hinson. |
| 143938 | P/O S. G. Holman. |

647729 Sgt. T. Hoyle.
 1974776 Sgt. G. Innis.
 1181424 Sgt. C. G. James.
 1436993 Sgt. H. I. Jones.
 1359595 Sgt. W. Kershaw.
 1321389 F/Sgt. W. J. King.
 1425942 Sgt. R. O. Lander.
 1145407 Sgt. R. Lawson.
 1522883 Sgt. R. McKeag.
 1390374 Sgt. H. R. Mantle.
 1263045 F/Sgt. W. J. H. Menlove.
 1529124 Sgt. K. A. Metcalf.
 1205347 Sgt. A. Moore.
 1319095 Sgt. R. Nelson.
 1214010 Sgt. E. E. Nicholls.
 1576472 Sgt. J. P. Parsons.
 128913 F/O D. W. Philip.
 1702083 Sgt. W. J. Price.
 1304578 Sgt. G. G. Read.
 1333394 Sgt. J. A. G. Reynolds.
 1058367 Sgt. A. Ridley.
 1393677 Sgt. W. H. Saunders.
 87461 F/L E. D. A. Shepherd.
 141989 P/O H. W. Shinn.
 1314202 Sgt. E. J. Smith.
 1232252 F/Sgt. J. S. Smith.
 1129590 Sgt. W. L. Smith.
 155189 P/O F. E. Somers.
 1128947 Sgt. F. Sumner.
 649134 Sgt. A. Sutcliffe.
 1808747 Sgt. B. F. Trew.
 1453870 Sgt. W. Tucker.
 1318148 Sgt. N. A. Tyreman.
 1377127 Sgt. L. F. Valentine.
 1312274 Sgt. J. J. Waterman.
 33074 S/L R. G. Watson.
 1314153 Sgt. T. Whatley.
 840146 Sgt. F. Watling.
 642532 F/Sgt. G. S. Wilkinson.
 522964 Act. F/Sgt. G. Wilson.
 1213595 Sgt. R. C. Woolnough.
 1380174 F/Sgt. D. W. Anderson.
 909128 Sgt. J. P. Arnold.
 152589 F/O C. J. Barber.
 1321808 Sgt. R. W. Barlow.
 1349635 F/Sgt. A. A. Brown.
 126747 F/O N. H. Carter.
 1035098 Sgt. K. W. Chaplin.
 1270898 Sgt. E. J. Cumming.
 656611 F/Sgt. A. C. Dalton.
 978626 Sgt. D. E. Davies.
 1317605 Sgt. J. A. Dobson.
 122475 F/O P. R. Driver.
 1456665 Sgt. C. B. Edwards.
 139690 F/O R. E. Favier.
 43064 F/L R. W. Ferguson.
 1357875 F/Sgt. L. H. E. Gittins.
 1293003 Sgt. P. J. Gane.
 1281353 Sgt. T. G. Goodwin.
 1605378 Sgt. D. A. P. Guest.
 1601591 Sgt. C. M. Harrison.
 120970 F/O G. Holt.
 1391954 Sgt. P. C. Jones.
 149555 P/O R. D. Large.
 1333112 Sgt. R. E. Lewis.
 654033 Sgt. S. Lloyd.
 125585 F/O R. Lofthouse.
 121205 Act. F/L A. R. A. MacLachlan, D.F.C.
 156914 P/O A. McNair.
 1041441 Sgt. M. Maddison.
 1315293 F/Sgt. R. W. Maggs.
 148178 P/O R. W. F. Munns.
 1074000 Sgt. J. H. Naylor.
 134162 F/O W. S. Neathway.
 121049 F/O E. A. Pery-Knox-Gore.
 1375722 F/Sgt. R. J. Pettit.
 658017 Sgt. B. A. Phillis.
 1270949 Sgt. G. R. Potter.
 1207505 Sgt. A. E. Salt.
 649405 Sgt. H. A. Saunders.
 1268571 Sgt. D. W. Savoy.
 146274 P/O K. G. Sheward.
 983888 Sgt. W. C. Smirk.
 778912 F/Sgt. C. G. Smith.
 1062133 Sgt. D. Smith.
 1538375 Sgt. W. W. Smith.
 135276 F/O P. A. Stevens.
 1804541 Sgt. L. L. Stone.
 1126658 Sgt. E. E. Strong.
 105970 Act. F/L S. W. Taylor.
 142371 P/O H. S. Thew.
 1384314 Sgt. J. Thomas.
 1196636 F/Sgt. K. Timms.
 1233323 Sgt. C. W. Tomlinson.
 659138 Sgt. E. J. A. Trigg.
 1236937 Sgt. F. Trimby.
 1585688 Sgt. D. V. Webb.
 1236806 F/Sgt. G. P. Wilkinson.
 1316300 Sgt. E. L. Wilson.
 1125318 Sgt. R. R. Wilson.
 1386384 Sgt. L. R. Wright.
 1431960 Sgt. L. Allen.
 1586437 Sgt. E. G. W. Barlett.
 1370380 Sgt. P. Barnsley.
 1199609 Sgt. A. R. Bish.
 124323 F/O G. W. Bond.
 124861 Act. F/L A. Booth.
 565708 W.O. A. L. Brigden.
 1391508 Sgt. J. S. Broad.
 1035563 Sgt. T. F. Clements.
 1434270 Sgt. D. Cockerill.
 1105930 F/Sgt. T. K. Cooper.
 114241 F/O A. Crockford.
 139486 F/O P. Crozier.
 144001 P/O S. J. Dudley.
 1583178 Sgt. H. A. Eaton.
 1125263 F/Sgt. N. S. Ewart.
 145174 P/O R. J. Gerrett.
 1385149 Sgt. R. L. Graham.
 60526 Act. S/L R. M. Graham.
 629214 Sgt. J. E. Gray.
 1378112 F/Sgt. B. T. Harvey.
 1812104 Sgt. D. C. Hill.
 123958 F/O J. P. Hutton.
 119126 F/O E. C. Johnson, D.F.C.
 148117 P/O T. D. L. Leslie.
 1174442 Sgt. R. W. A. Lindsey.
 1473499 Sgt. P. W. S. McCartney.
 132757 F/L G. A. Mason.
 1532397 Sgt. J. Milligan.

1377820 Sgt. C. J. D. Moody.
 1220163 Sgt. G. L. Odgers.
 1573298 Sgt. G. Ogden.
 1334242 F/Sgt. M. R. O'Hara.
 89399 F/L H. L. Parry.
 118099 F/O H. G. Paskey.
 118178 F/O C. J. Payne.
 1533893 Sgt. R. J. Renton.
 1530031 F/Sgt. E. Robinson.
 1435981 F/Sgt. G. V. Rogers.
 1355058 Sgt. K. A. Shrewsbury.
 1812351 Sgt. T. Smale.
 1418471 Sgt. G. P. Smith.
 1390791 Act. W.O. S. W. Smith.
 623214 Sgt. M. Stacey.
 915767 F/Sgt. G. L. Taylor.
 37334 W/C J. G. Towle.
 1435515 Sgt. J. Toyne.
 1438521 Sgt. G. Vardy.
 1179993 Sgt. L. Vaughan-Harrison.
 1432829 Sgt. E. Vose.
 1532583 Sgt. C. Westwood.
 1321712 Sgt. R. Wildbore.
 1271145 Sgt. W. C. L. Wood.
 1332301 F/Sgt. L. C. Wollard.
 1452340 Sgt. R. Wray.

Missing Believed Killed on Active Service
 1670732 Sgt. J. Dale.
 131002 F/O J. R. Harrold.
 1554049 Sgt. W. Newton.
 15324 P/O T. A. Pittock.
 1551889 Sgt. W. Shepherd.
 953542 Sgt. F. G. Wells.

Killed on Active Service
 577604 Sgt. A. B. Allen.
 922345 F/Sgt. C. H. Baldwin.
 1137713 Sgt. J. W. Bamber.
 100066 Act. F/L D. De B. Banham.
 55102 P/O R. W. Browne.
 1317750 Sgt. H. J. Burkhard.
 1028120 Sgt. D. Gale.
 1394875 Sgt. J. A. L. Grant.
 1337715 Sgt. D. G. Keith.
 152901 P/O I. C. B. Kenyon.
 1580784 Sgt. W. D. Kershaw.
 1554620 Sgt. N. Kidd.
 1316964 Sgt. L. G. Leatherland.
 1684485 Sgt. J. Leeming.
 1336999 F/Sgt. I. R. MacMillan.
 1622976 L.A.C. V. L. Malley.
 152894 P/O G. J. Mansfield.
 1430576 Sgt. H. Picking.
 129823 P/O A. M. Reith.
 127800 Act. F/L F. J. Robinson.
 49019 F/O R. E. Ryan.
 658623 F/Sgt. W. H. Sellars.
 1367821 Sgt. G. Sweeney.
 122750 F/O K. R. Taylor.
 138055 P/O J. R. Waldron.
 1473130 Sgt. S. W. Whalley.
 46781 F/O A. C. Wilson.
 1515649 Sgt. E. Young.
 132011 F/O G. H. Young.
 143799 P/O A. W. Bailey.
 1382238 W.O. A. R. Bayman.
 151229 P/O D. Beeley.
 1160940 W.O. D. H. Belcham.
 124497 F/O E. Bibby.
 657539 Sgt. L. S. Breley.
 1575830 Sgt. T. Brewin.
 1559073 Sgt. A. F. Brown.

1208264 Sgt. D. A. Brundell.
 142555 P/O M. M. Caplan.
 1569956 Sgt. T. Clelland.
 1338457 Sgt. E. Cook.
 971603 Sgt. W. K. Craig.
 1318163 Sgt. J. A. Crudgington.
 1821749 Sgt. J. G. Curran.
 142071 P/O J. A. Elms.
 1391617 Sgt. A. J. Gamble.
 1438846 Sgt. N. T. Duxbury.
 1349486 F/Sgt. G. Gibson.
 1672421 Sgt. L. Holding.
 1568637 Sgt. J. Hunter.
 145822 P/O T. F. E. Johnson.
 1389676 Sgt. D. A. Lawson.
 655449 F/Sgt. F. Leslie.
 1146785 Sgt. E. L. McCartie.
 1428060 Sgt. C. H. Markham.
 1458928 L.A.C. G. R. Martell.
 1458560 Sgt. K. J. May.
 1316582 Sgt. A. T. Nicholas.
 1313798 F/Sgt. D. H. Owen.
 1880171 A.C.2 W. S. Penfold.
 1049981 L.A.C. A. N. Perrin.
 1271556 Sgt. F. W. Pratt.
 122836 P/O H. G. Price.
 1852089 A.C.2 J. E. Price.
 1094534 L.A.C. T. J. Price.
 1851537 A.C.2 W. J. Ralph.
 1497496 Sgt. F. Reynolds.
 1677382 Sgt. T. G. Roberts.
 1040042 Sgt. W. B. Routledge.
 568875 Sgt. J. K. Smith.
 1119875 A.C.1 R. Tarling.
 1315107 Sgt. A. C. Taylor.
 1028370 Sgt. J. G. Taylor.
 1515448 Sgt. A. Thompson.
 990159 Sgt. I. R. Trower-Foyan.
 1394347 Sgt. H. T. A. Walters.
 1320727 Sgt. E. G. Wilson.
 1567527 L.A.C. G. H. Wilson.
 1492741 Sgt. R. Wilson.
 1653142 Sgt. A. B. G. Williams.
 1396029 L.A.C. R. A. Wood.
 1394300 Sgt. J. D. Arthur.
 1234784 Sgt. K. C. Blanch.
 1457473 Sgt. J. G. Boundy.
 137256 F/O L. A. Buck.
 1602118 Sgt. G. W. Clements.
 1803392 L.A.C. K. W. Coaster.
 1337861 Sgt. R. E. Dolling.
 1554638 Sgt. J. Donnachie.
 151310 F/O J. Gibson.
 1601228 Sgt. J. R. Grimmond.
 1819415 Sgt. J. W. Hallam.
 1388658 Sgt. B. W. Lambert.
 122964 F/O M. W. Moore.
 1064867 L.A.C. S. S. Mowat.
 1034329 Sgt. G. E. Newall.
 1425749 Sgt. L. S. Pennell.
 1518262 Sgt. S. W. Poyntz.
 1399058 Sgt. H. E. Scarborough.
 1162047 Sgt. W. R. J. Spry.

Previously Reported Missing Believed Killed on Active Service, Now Presumed Killed on Active Service
 1313119 Sgt. C. Edwards.
 1387817 Sgt. G. G. Ottley.
 1300008 Sgt. B. H. Parker.
 1230528 Sgt. G. E. Morris.
 1080327 Sgt. T. Robinson.
 74378 P/O W. F. G. Hutchings.

1196248 Sgt. K. Jenner.
 86672 F/L D. Toone.
 1330844 Sgt. J. A. Wade.
 1381018 Sgt. T. F. Blythe.
 132888 P/O P. F. Franklin.
 112764 F/O J. K. A. Pickering.

Wounded or Injured on Active Service
 1180767 Cpl H. A. Buckles.
 1657529 L.A.C. H. K. Dain.
 1332336 F/Sgt. R. H. Field.
 1608989 Sgt. S. R. Williams.
 963293 Cpl. R. Higgitt.
 1397522 L.A.C. D. R. C. Scott.
 1301218 L.A.C. R. S. Wilson.
 635292 Sgt. J. W. Eunson.
 957017 L.A.C. J. B. Hodge.
 1512708 Sgt. L. R. Little.
 1313726 F/Sgt. J. H. Newton.

Died of Wounds or Injuries Received on Active Service
 1010170 L.A.C. W. S. Gardiner.
 1332649 Sgt. G. A. Wareham.

Died on Active Service
 1080435 L.A.C. F. J. Barnes.
 145343 P/O D. R. Ford.
 1675036 A.C.1 E. H. Harrison.
 1498969 L.A.C. C. W. Hopkins.
 328307 Sgt. J. Howie.
 616143 L.A.C. N. Lewis.
 1385201 L.A.C. C. W. Munt.
 540219 Sgt. H. Blundall.
 1627220 A.C.2 A. L. Boswell.
 1387072 Sgt. W. Brister.
 1490075 L.A.C. J. Campbell.
 36801 Sgt. G. W. Cook.
 1701183 A.C.1 R. W. Elson.
 1497524 L.A.C. G. Greenhall.
 644051 Cpl. W. D. Gunn.
 51866 P/O W. R. Hurst.
 1048875 A.C.1 J. T. Middlemiss.
 1532278 A.C.1 W. Morrison.
 566167 W.O. J. Pendry.
 1410738 L.A.C. D. G. Prout.
 1417810 A.C.1 C. J. J. Rees.
 1686198 A.C.2 W. P. M. Regan.
 1550927 Sgt. K. H. Robertson.
 776861 L.A.C. A. Saliba.
 631116 Sgt. W. D. Saunders.
 1101470 Cpl. K. A. Smith.
 1678521 A.C.1 S. J. Smith.
 350937 F/Sgt. J. Smyth.
 1576589 A.C.1 C. T. Stevens.
 577885 L.A.C. J. H. Tomlinson.

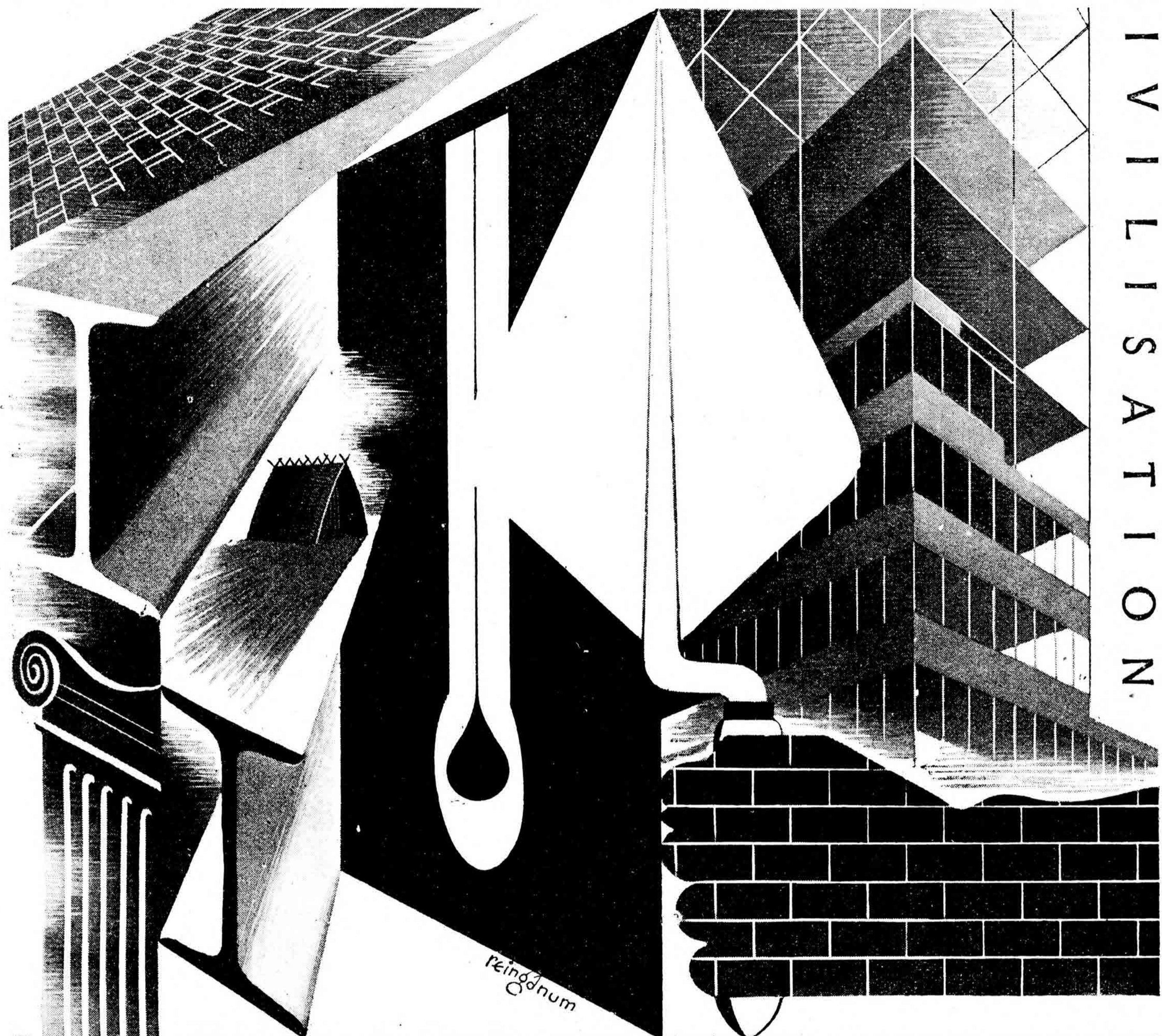
Previously Reported Missing, Now Reported Prisoner of War
 129446 Act. F/L D. R. Bigg.
 657440 Sgt. W. E. Broxup.
 1487782 Sgt. J. Egleston.
 127975 F/O F. A. James.
 1031746 Sgt. M. J. Maloney.
 148132 P/O A. G. Sadler.
 1178476 Sgt. E. H. Stanton.

WOMEN'S AUXILIARY AIR FORCE
Killed on Active Service
 2040538 Sgt. O. M. Morse.
Died on Active Service
 2986 Assist. S.O. J. M. Easton.



CRACK SQUADRON.—Squadron-Leader Lance Wade, D.F.C. and two Bars, with members of his squadron. Squadron-Leader Wade was one of the first few Americans to serve with the Western Desert Air Force. His Spitfires are similar to the Spitfire IX, but with pointed wing tips.

FUNDAMENTALS OF CIVILISATION



No. 4 SHELTER

To possess a habitation is the common instinct of every living creature. Nature displays many marvels of ingenuity and constructive skill only surpassed by man. But the spider still spins its web as it did millions of years ago. Acons of change and development in living organisms have added nothing to the materials of construction used by the birds, beasts, fishes and insects.

The highest product of evolution is man, who acquired reasoning powers which first enabled him to abandon the clammy caves for the warmth and comparative security of a wood and wattle hut. From these dim beginnings he learnt to make bricks from clay ; to hew and carve the stone for temple and cottage. Yet, though he acquired skill to fashion rich architectural gems with greater spans of roof in wood and stone, his shelter was still earthbound.

With the advent of steel his imagination began to soar till now it has become essential to his needs in erecting structures of towering height. The progressive genius of man will find even greater scope in utilising the many forms of steel in the light, airy and spacious edifices for the cities of the future.

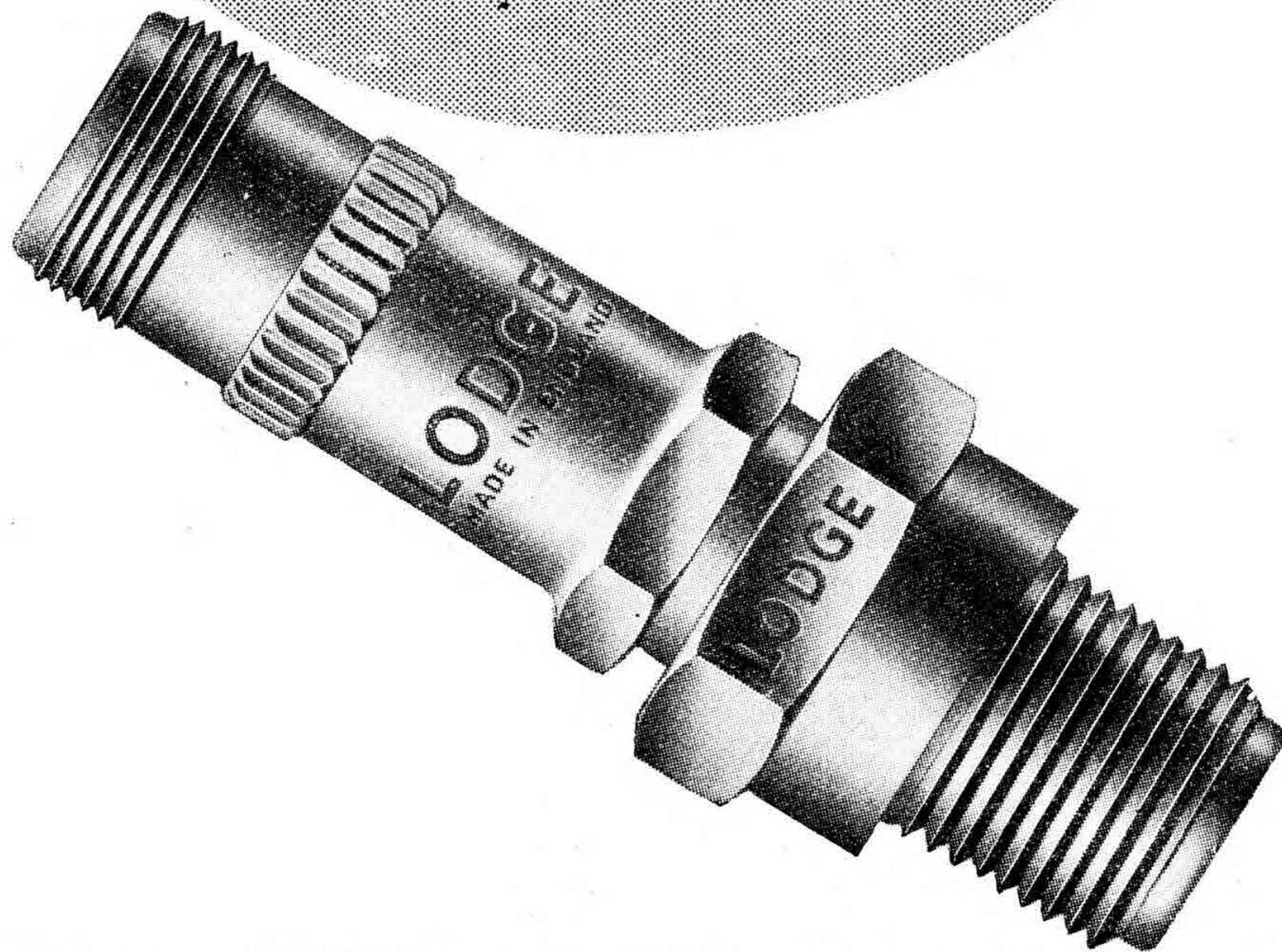


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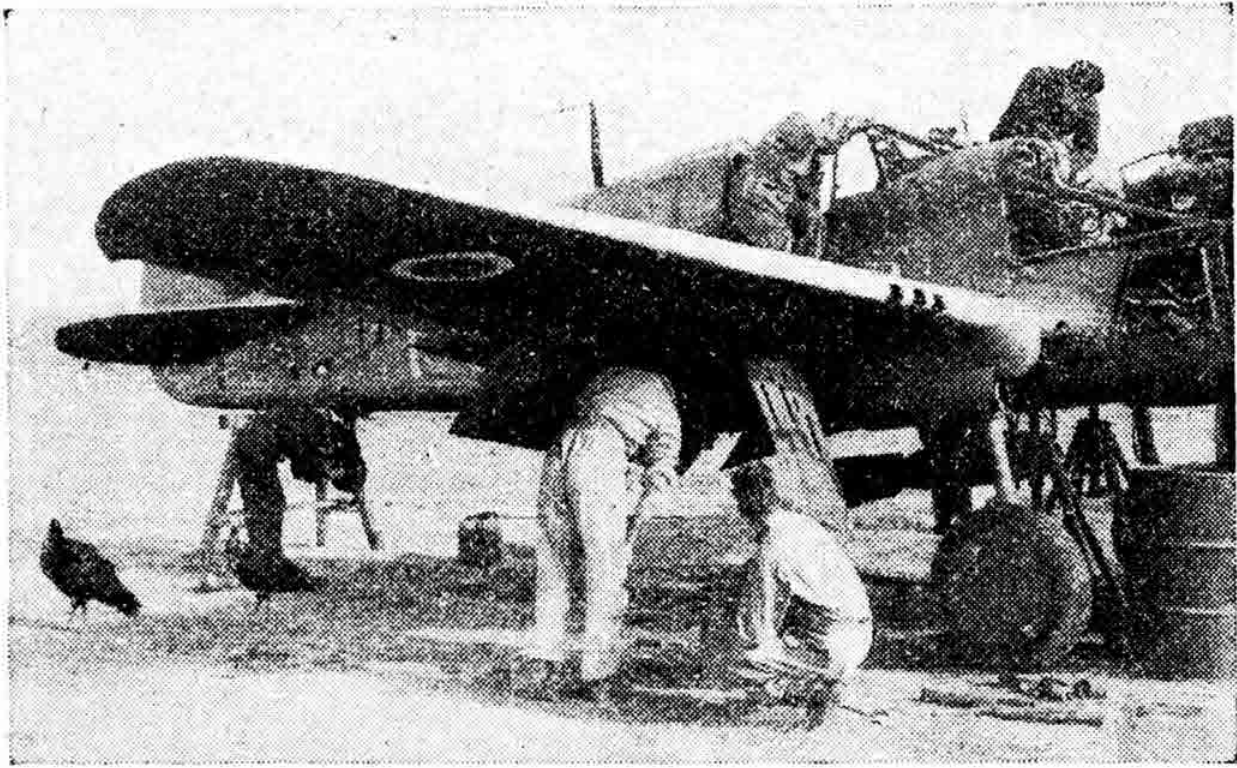
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LODGE

PLUGS

are playing a vital part



BIRDS OF A FEATHER.—A Curtiss Kittyhawk fighter-bomber being serviced at an advanced Italian aerodrome, complete with bomb. The appearance of the fowls in front of the Kittyhawk suggests that they, too, would be better off with some servicing (which they will probably get at Christmas).

ROYAL AUSTRALIAN AIR FORCE

Killed in Action

- Aus 421033 F/Sgt. R. C. Bellingham
- Aus 22930 F/Sgt. H. P. Gordon.
- Aus 409548 F/Sgt. F. D. Holdsworth.
- Aus 413133 F/Sgt. G. W. Murtagh.

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

- Aus 411316 Sgt. R. J. Haire.
- Aus 411084 Sgt. J. V. Conlon.
- Aus 400391 P/O S. C. Methven.

Previously Reported Missing, Now Presumed Killed in Action

- Aus 405676 F/Sgt. P. J. Cramer.
- Aus 402658 F/Lt. T. H. Gordon-Glassford.

- Aus 403586 P/O E. P. Heinrich.
- Aus 402559 Sgt. D. Hood
- Aus 403519 Sgt. A. Knight.
- Aus 411037 F/Sgt. G. J. Matheson.
- Aus 412217 Sgt. H. T. Waddell.
- Aus 406557 Sgt. B. H. Bishop.
- Aus 406812 Sgt. P. R. Mitchell.
- Aus 407873 Sgt. H. A. Phillips.
- Aus 405186 P/O L. E. Reeve.
- Aus 406769 Sgt. A. H. Borrett.
- Aus 401676 P/O F. J. Silk.

Wounded or Injured in Action

- Aus 420656 F/Sgt. C. K. Gilkes.
- Aus 415579 F/Sgt. G. R. Greaves.

Died of Wounds or Injuries Received in Action

- Aus 420596 Sgt. D. E. Reddy.

Missing Believed Killed in Action

- Aus 40597 Sgt. N. E. Bellman.
- Aus 408348 F/Sgt. R. T. Gregory.
- Aus 425514 F/Sgt. B. A. Kelly.
- Aus 416791 F/O S. T. J. Rundle.
- Aus 415291 P/O R. R. Whitaker.
- Aus 412788 Act. F/L J. L. Wilson.
- Aus 415788 F/Sgt. R. B. McPhan.
- Aus 421135 F/Sgt. J. A. Spence.

Missing

- Aus 422121 Sgt. W. E. Bryden
- Aus 414914 F/Sgt. W. J. Browne
- Aus 406772 P/O J. C. Collins.
- Aus 415552 P/O N. H. Denyer.
- Aus 411243 P/O D. L. Dodds.
- Aus 425293 F/Sgt. C. A. Fleisch-Fresser.
- Aus 414238 F/Sgt. E. A. Hill.
- Aus 421540 F/Sgt. D. Livingstone.
- Aus 405864 F/O J. D. Mackay.
- Aus 409732 Sgt. G. V. McMurray.
- Aus 421995 F/Sgt. A. N. Moore.
- Aus 410716 F/Sgt. F. O'Dwyer.
- Aus 409597 F/O L. W. Roper.
- Aus 412714 F/O M. O'M. Shanahan.

- Aus 409485 Act. F/L H. N. Stafford.
- Aus 420322 P/O R. W. Wildman.
- Aus 409443 F/O L. F. Quinton.
- Aus 422330 F/Sgt. F. Weaver.
- Aus 405997 P/O S. V. Brown.
- Aus 404769 F/Sgt. J. G. Collins.
- Aus 421178 F/O D. O. Cull.
- Aus 408585 P/O N. R. Frazer.
- Aus 414359 F/Sgt. J. Marsh.
- Aus 412602 F/Sgt. S. H. May.
- Aus 412175 F/Sgt. J. C. Munro.
- Aus 417409 F/O J. W. Pike.
- Aus 413796 P/O A. T. Richards.
- Aus 413674 P/O J. H. Short.
- Aus 413805 F/O G. H. Waddell.
- Aus 425560 F/Sgt. L. A. Watson.

Killed on Active Service

- Aus 415161 F/Sgt. A. E. Manners.
- Aus 426524 F/Sgt. E. M. Buckby.
- Aus 420337 F/Sgt. R. R. Clegg.
- Aus 401977 F/O L. K. Lindsay.

- Aus 425205 F/Sgt. H. C. O'Neill.
- Aus 409940 F/O H. A. Poulter.
- Aus 403006 Act. S/L S. G. Proudfoot.
- Aus 405885 Sgt. I. H. Shields.
- Aus 406992 F/Sgt. A. W. Buxton.
- Aus 409668 F/Sgt. G. A. J. Daidy.
- Aus 415315 F/Sgt. N. N. Dunn.
- Aus 405052 F/Sgt. R. Frith.
- Aus 424305 Sgt. H. A. Newham.

Previously Reported Missing, Now Presumed Killed on Active Service

- Aus 414548 Sgt. P. J. Fitzgerald.
- Aus 420978 Sgt. J. H. W. McDonagh.
- Aus 412744 Sgt. H. S. Stockbridge.
- Aus 414371 Sgt. S. R. Wright.

Wounded or Injured on Active Service

- Aus 409249 Sgt. F. R. G. Strickland.

Previously Reported Missing, Now Reported Prisoner of War

- Aus 413527 F/Sgt. A. Burton.

ROYAL CANADIAN AIR FORCE

Killed in Action

- R. 114255 F/Sgt. W. H. Allan.
- J. 23301 P/O W. I. St. Johns.
- J. 6941 F/O C. R. Wharram.
- J. 25589 P/O R. W. Wolfe.
- J. 22698 P/O K. B. Begbie.
- R. 147645 Sgt. A. Chibanoff.
- R. 188092 Sgt. H. W. Frost.
- J. 14505 F/O F. V. Webb.

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

- R. 120256 Sgt. J. E. Audy.
- R. 79763 F/Sgt. J. J. B. A. Dugal.

- R. 83127 Sgt. W. C. Forbes.
- J. 17108 P/O J. V. L. Gauthier.
- J. 18551 P/O J. Glassberg.
- R. 92225 F/Sgt. V. R. Henry.
- R. 117657 F/Sgt. J. W. M. E. Lanctin

- J. 15434 F/L F. E. Luxford.
- R. 93277 F/Sgt. W. J. McAlpine.
- R. 73542 Sgt. G. E. McDonald.
- R. 91819 F/Sgt. J. D. White

Previously Reported Missing, Now Presumed Killed in Action

- R. 103626 Sgt. E. A. Applegate.
- J. 17650 P/O M. E. Barker.
- J. 12978 F/O D. E. Bennett.
- J. 17165 P/O J. L. R. Cartier.
- R. 84400 F/Sgt. D. G. Culver.
- R. 95990 Sgt. F. H. De Nevers.
- R. 110336 Sgt. C. B. Finley.
- J. 10829 F/O E. D. Fleishman.
- R. 109221 Sgt. W. E. Foster.
- J. 16414 P/O R. Graham.
- R. 113728 Sgt. P. B. Gustavsen.
- J. 15402 P/O H. G. Harwood.
- R. 95849 Sgt. R. G. Hill.
- R. 88514 F/Sgt. G. T. Hillman.
- R. 134910 Sgt. W. Kwasney.
- R. 142748 Sgt. J. C. Lamond.
- R. 101307 Sgt. H. T. A. Lawson.
- R. 85762 Sgt. H. F. MacArthur.
- J. 13076 F/O J. K. MacDonald.
- J. 4965 Act. F/L J. A. McKinnon

- R. 78960 Sgt. S. B. Robson.
- R. 106599 Sgt. G. G. Sawatzky.
- R. 80198 F/Sgt. H. M. Slezak.
- R. 95344 Sgt. P. Sutherland.
- R. 65251 F/Sgt. R. T. Taylor.
- J. 8634 P/O F. E. Vale.
- R. 102353 F/Sgt. J. O. Way.
- J. 16163 P/O J. W. Beck.
- 10452 F/Sgt. A. L. Croll.
- J. 6851 F/O D. M. Witherspoon.
- R. 76216 Sgt. B. Fisher.
- R. 85440 F/Sgt. H. F. Locke.
- R. 68754 Sgt. F. L. Olsen.
- J. 7464 P/O E. C. Patterson.

Wounded or Injured in Action

- R. 130561 Sgt. C. McD. Gauthier.

Died of Wounds or Injuries Received in Action

- J. 8753 F/O J. C. Miller.

Missing

- R. 182457 Sgt. E. A. Cannon.
- R. 133638 F/Sgt. E. B. Capin.
- J. 11566 F/O P. H. Coates.
- R. 156379 Sgt. R. W. B. Collins.
- R. 77691 Sgt. C. W. Gibbs.
- J. 18200 P/O W. E. Grindley.
- J. 22357 F/O J. M. Lauder.
- R. 58888 Sgt. H. Perry.
- R. 121256 Sgt. H. M. Porteous.
- R. 155739 Sgt. A. F. Todd.
- R. 157548 Sgt. J. R. Trace.
- R. 122275 Sgt. K. D. Wellwood.
- R. 128905 F/Sgt. W. McL. Brown.
- R. 9845 F/Sgt. W. E. Chambers.
- R. 172702 F/Sgt. E. Fedi.
- R. 225311 Sgt. A. V. D. Humphries.
- R. 139779 F/Sgt. R. Moore.
- R. 134468 F/Sgt. L. T. Olmstead.
- R. 136292 Sgt. P. M. Shulman.
- J. 18138 P/O D. E. Stiver.
- R. 190551 Sgt. G. W. Sutherland.
- R. 122133 F/Sgt. D. D. Witts.
- J. 21241 F/O H. E. Davis.
- R. 173933 Sgt. H. L. Douglas.
- R. 138030 Sgt. W. J. B. Ingram.
- R. 116342 F/Sgt. A. B. Jackson.
- R. 108432 F/Sgt. J. A. R. Langlois

- R. 175198 Sgt. J. McDonald.
- R. 146794 F/Sgt. H. C. MacMillan.
- R. 132641 Sgt. C. E. Phillips.
- J. 14205 F/O A. Pitkeahly.
- R. 138354 F/Sgt. J. H. Sills.
- R. 114527 F/Sgt. A. D. Steadman.
- R. 113262 F/Sgt. F. E. Sutherland.
- R. 92996 F/Sgt. J. H. Tovey.

Killed on Active Service

- J. 20595 P/O K. B. Thomas.
- J. 22431 P/O E. L. Ware.
- J. 14110 P/O R. E. Ritscher.
- R. 124636 Sgt. H. J. Hanson.
- J. 13113 P/O R. S. Arnold.
- J. 14649 P/O C. E. Coons.
- J. 20568 P/O L. G. Dunlop.
- J. 22796 F/O V. R. Folkersen.
- R. 69272 W.O. W. J. Loudon.
- J. 17294 P/O J. Low.
- R. 132048 Sgt. S. R. Parker.
- R. 115188 F/Sgt. D. K. Stroud.
- J. 20425 P/O O. K. Main.
- J. 24007 P/O B. E. Brown.
- J. 24533 P/O H. Farrer.

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

- R. 99637 Sgt. M. H. Hargreaves.
- R. 118882 L.A.C. W. A. Allan.
- J. 16744 P/O H. F. Burt-Gerrans.
- R. 87301 Sgt. D. L. Erickson.

Wounded or Injured on Active Service

- R. 97433 W.O. C. T. Mills.

Died of Wounds or Injuries Received on Active Service

- R. 179719 F/Sgt. R. W. Ogston.

Died on Active Service

- R. 170408 L.A.C. J. Pawliuk.
- J. 28498 P/O E. W. Anderson.

Previously Reported Missing, Now Reported Prisoner of War

- J. 17733 P/O E. W. Davidson.

ROYAL NEW ZEALAND AIR FORCE

Killed in Action

- NZ 402866 Act. F/L J. A. Gunn.

- NZ 42361 F/Sgt. G. G. Bell.
- NZ 404607 F/Sgt. W. Jones.

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

- NZ 414657 Sgt. G. B. Marsh
- NZ 413499 P/O V. E. Spain.

Previously Reported Missing, Now Presumed Killed in Action

- NZ 412785 Sgt. I. F. Bailey.
- NZ 411058 Sgt. J. H. Beebe.
- NZ 413408 Sgt. D. H. Gordon.
- NZ 405265 P/O D. Harding-Smith.
- NZ 404013 P/O M. R. Jeffery.
- NZ 413484 Sgt. A. Scott.
- NZ 411474 F/Sgt. J. A. Tovey.
- NZ 413700 F/Sgt. A. J. D. Barton.
- NZ 401256 Act. F/L E. C. Cox, D.F.C.

- NZ 413305 Sgt. P. P. D. Freeman.
- NZ 414678 Sgt. R. E. Redding.
- NZ 411852 P/O F. B. Boaden.
- NZ 415064 Sgt. M. T. Denham.
- NZ 403574 F/Sgt. A. L. Groves.
- NZ 413286 Sgt. S. S. Vinicombe.

Died of Wounds or Injuries Received in Action

- NZ 413912 F/Sgt. J. G. G. Turner.

Missing, Believed Killed in Action

- NZ 416103 P/O M. A. Ericksen.
- NZ 422671 P/O J. Third.

Missing

- NZ 421569 F/O F. T. Brosnahan.
- NZ 413027 Sgt. R. W. Cooke.
- NZ 403620 F/Sgt. G. S. Dougherty.
- NZ 417275 F/O B. F. Edge.
- NZ 403525 W.O. T. H. Hatchard.
- NZ 414630 F/O N. R. S. Humphreys.

- NZ 413087 Sgt. L. H. Kainamu.
- NZ 42461 P/O S. T. Schmidt.
- NZ 417244 F/Sgt. L. A. Squire.
- NZ 417138 P/O E. S. Wilkinson.
- NZ 421312 F/Sgt. D. H. W. Badcock.
- NZ 403617 W.O. A. V. Douglas.
- NZ 421933 F/Sgt. A. H. Holms.
- NZ 417071 P/O E. G. Little.
- NZ 413876 F/O M. Metcalfe.
- NZ 416635 F/Sgt. L. F. Harris.
- NZ 414529 F/Sgt. F. W. Thorstensen.

Killed on Active Service

- NZ 421759 F/Sgt. J. S. Price.

Died on Active Service

- NZ 413618 A.C.I T. M. Scott.

Previously Reported Missing, Now Reported Prisoner of War

- NZ 411092 F/L K. A. Neilson.
- NZ 411608 F/Sgt. E. A. Brown.
- NZ 391573 F/O A. E. Boulton.

SOUTH AFRICAN AIR FORCE

Killed in Action

- 314189 2nd Lt. J. H. Cock.
- 102183 Lt. M. B. Hall.
- 542272 2nd Lt. T. D. A. Leoander.
- 103955 Lt. S. Meijer.

Wounded or Injured in Action

- 102379 Capt. E. A. Endler.

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

- Lt.-Col. M. E. Whitaker.

Died on Active Service

- 15267 Air Mech. R. Bruyns.



BOOTES FOR THE HALIFAX.—Two members of the ground crew place protective oilskin covers over the wheel of a Halifax. The photograph shows clearly the details of the sturdy Messier undercarriage.

ROYAL AIR FORCE AWARDS

Distinguished Service Order

Act Group Captains: John Darwen, D.F.C. (since deceased); W. G. Moseby, D.F.C., R.A.F.V.R., No. 153 Squadron.

Lieutenant Colonels: B. R. McKenzie, S.A.A.F., No. 458 (S.A.A.F.) Squadron; J. A. Williams, D.F.C., S.A.A.F., No. 24 (S.A.A.F.) Squadron.

Act Wing Commanders: R. C. Alabaster, D.F.C., R.A.F.V.R., No. 97 Squadron; M. M. Fleming, D.F.C., R.A.F.O., No. 419 (R.C.A.F.) Squadron.

Act Squadron Leaders: T. M. Channon, R.A.F.V.R., No. 69 Squadron; H. J. Davies, D.F.C., R.A.F.V.R., No. 7 Squadron; J. H. Dunk, D.F.C., R.A.F.V.R., No. 83 Squadron; C. R. A. Forsyth, No. 216 Squadron; Kenna Humby, D.F.C., R.A.F.V.R., No. 199 Squadron; E. E. Rodley, D.F.C., R.A.F.V.R., No. 97 Squadron; J. H. J. Sauvage, D.F.C., No. 97 Squadron; G. D. G. Sells, D.F.C., R.A.F.V.R., No. 83 Squadron; A. B. Smith, D.F.C., R.A.F.V.R., No. 83 Squadron; C. A. J. Smith, D.F.C., R.A.F.V.R., No. 83 Squadron; D. H. Thomas, D.F.M., No. 156 Squadron.

Flight Lieutenant: J. R. Preedy, R.A.F.V.R., No. 101 Squadron.

Act Flight Lieutenants: C. W. B. Kelly, D.F.C., R.N.Z.A.F., No. 156 Squadron; K. H. F. Letford, D.F.C., R.A.F.V.R., No. 207 Squadron; William Raybould, D.F.M., R.A.F.V.R., No. 105 Squadron; G. H. Wilson, D.F.C., R.A.F.V.R., No. 83 Squadron; J. L. Wright, D.F.C., R.N.Z.A.F., No. 156 Squadron.

Flying Officer: R. L. W. Cheek, R.A.F.V.R., No. 40 Squadron.

Military Cross

Act Flight Lieutenant: J. N. Dobbin, R.A.F.V.R.

Bar to Distinguished Flying Cross

Squadron Leader: H. G. Holmes, D.F.C., No. 500 Squadron.

Act Squadron Leader: E. F. J. Odoire, D.F.C., A.F.C., No. 142 Squadron.

Flight Lieutenant: J. S. Morton, D.F.C., A.A.F., No. 219 Squadron.

Captain: Daniel McPherson, D.F.C., S.A.A.F., No. 24 (S.A.A.F.) Squadron.

Flying Officer: R. J. Gillies, D.F.C., R.A.F.V.R., No. 600 Squadron.

Distinguished Flying Cross

Lieutenant Colonel: O. F. Wellington, S.A.A.F., No. 12 (S.A.A.F.) Squadron.

Major: A. C. Jandrell, S.A.A.F., No. 21 (S.A.A.F.) Squadron.

Wing Commander: K. J. Rampling, No. 7 Squadron.

Squadron Leaders: C. P. Barber, No. 70 Squadron; J. R. H. Lewis, R.A.F.O., No. 227 Squadron.

Act Squadron Leader: G. F. Powell, R.A.F.O., No. 47 Squadron.

Flight Lieutenants: Cyril Bailey, R.A.F.V.R., No. 219 Squadron; Richard Bradwell, R.A.F.V.R., No. 108 Squadron; Roy Broadbent, R.A.F.V.R., No. 267 Squadron; J. H. C. Clark, R.A.F.V.R., No. 460 (R.A.A.F.) Squadron; G. E. F. Goode, R.A.F.V.R.; Graham Hunter, R.A.F.V.R., No. 142 Squadron; I. F. McDermott, R.A.F.O., No. 104 Squadron; D. P. Paton, R.A.F.V.R., No. 600 Squadron; Berbard Smith, No. 216 Squadron; D. C. Wilson, R.C.A.F., No. 425 (R.C.A.F.) Squadron.

Act Flight Lieutenants: R. G. Bell, R.C.A.F., No. 221 Squadron; W. H. Earl, R.C.A.F., No. 420 (R.C.A.F.) Squadron; Eric Gittins, R.A.F.V.R., No. 227 Squadron; E. R. Greenacre, R.A.A.F., No. 460 (R.A.A.F.) Squadron; A. F. Gobbie, R.A.F.V.R., No. 57 Squadron; R. N. Gourlie, R.A.F.V.R., No. 420 (R.C.A.F.) Squadron; D. G. Harcourt, R.A.F.V.R., No. 294 Squadron; J. A. Haylock, R.A.A.F., No. 148 Squadron; B. K. Howarth, R.A.A.F., No. 142 Squadron; H. A. Langton, R.A.F.V.R., No. 104 Squadron; G. B. Leddy, R.C.A.F., No. 424 (R.C.A.F.) Squadron; O. A. Phillips, R.A.A.F.; David Ramsey, R.C.A.F., No. 420 (R.C.A.F.) Squadron; J. K. Staunton, R.A.A.F., No. 420 (R.C.A.F.) Squadron.

Flying Officers: K. R. Ames, R.A.F.V.R., No. 61 Squadron; D. V. Appleton, R.A.F.V.R., No. 623 Squadron; V. D. Ardis, R.C.A.F., No. 420 (R.C.A.F.) Squadron; D. G. Baldwin, R.C.A.F., No. 5 (R.C.A.F.) Squadron; H. L. Bevan, R.A.F.V.R., No. 150 Squadron; J. T. Boundy, R.A.F.V.R., No. 225 Squadron; N. D. Cox, R.A.F.V.R., No. 39 Squadron; A. G. Fletcher, R.A.A.F., No. 142 Squadron; A. W. Gadd, R.A.F.V.R., No. 101 Squadron; W. C. Henderson, R.A.F.V.R., No. 108 Squadron; J. R. C. Hoboken, R.A.F.V.R., No. 106 Squadron; A. F. Lancaster, R.A.F.V.R., No. 150 Squadron; J. W. Lauro, R.C.A.F., No. 424 (R.C.A.F.) Squadron; J. F. Lenihan, R.C.A.F., No. 420 (R.C.A.F.) Squadron; J. B. D. Lort, R.A.F.V.R., No. 270 Squadron; W. K. McGregor, R.C.A.F., No. 424 (R.C.A.F.) Squadron; T. C. McNamara, R.A.F.V.R., No. 70 Squadron; R. S. Modera, R.A.F.V.R., No. 227 Squadron; P. S. Newhouse, R.A.F.V.R., No. 600 Squadron; W. S. G. Nutter, R.C.A.F., No. 5 (R.C.A.F.) Squadron; F. A. Randall, R.A.A.F., No. 460 (R.A.A.F.) Squadron; E. L. P. Robinson, R.C.A.F., No. 145 (R.C.A.F.) Squadron; G. J. South, R.A.F.V.R., No. 405 (R.C.A.F.) Squadron; J. L. G. Taschereau, R.C.A.F., No. 425 (R.C.A.F.) Squadron;

Gerald Tate, R.A.F.V.R., No. 600 Squadron; C. A. Watt, R.A.A.F., No. 150 Squadron; R. M. Whitburn, R.A.A.F., No. 117 Squadron.

Pilot Officers: George Basarich, R.C.A.F., No. 114 Squadron; J. A. V. Denton, R.A.F.V.R., No. 158 Squadron; F. C. Derry, R.C.A.F., No. 40 Squadron; E. B. Dungey, R.C.A.F., No. 408 (R.C.A.F.) Squadron; J. K. Easson, R.C.A.F., No. 420 (R.C.A.F.) Squadron; E. F. G. Haddlesey, R.C.A.F., No. 467 (R.A.A.F.) Squadron; W. H. F. G. Hagon, R.A.F.V.R., No. 77 Squadron; I. A. Hibbert, R.A.F.V.R., No. 10 Squadron; J. A. L. Johnson, R.C.A.F., No. 108 Squadron; R. E. MacKenzie, R.C.A.F., No. 420 (R.C.A.F.) Squadron; A. B. Morabito, R.C.A.F., No. 283 Squadron; S. J. Nicolle, R.A.F.V.R., No. 424 Squadron; Donald Nicholls, R.A.F.V.R., No. 158 Squadron; J. J. O'Handley, R.C.A.F., No. 158 Squadron; W. H. Pilet, R.N.Z.A.F., No. 142 Squadron; K. H. Rylie, R.A.F.V.R., No. 57 Squadron; S. G. Stevens, R.A.F.V.R., No. 57 Squadron; D. A. Weatherhill, R.A.F.V.R., No. 158 Squadron.

Lieutenant: R. P. Burl, S.A.A.F., No. 7 (S.A.A.F.) Squadron.

Warrant Officers: E. H. Boutilier, R.C.A.F., No. 115 Squadron; John Burt, No. 37 Squadron; J. T. Darby, R.A.F.V.R., No. 115 Squadron; Dennis Humphries, No. 142 Squadron; C. W. Landale, R.C.A.F., No. 5 (R.C.A.F.) Squadron; E. J. Ledwidge, R.A.F.V.R., No. 46 Squadron; R. O. Lungair, R.C.A.F., No. 408 (R.C.A.F.) Squadron; M. G. Potter, No. 117 Squadron; J. W. Ritchie, R.C.A.F., No. 467 (R.A.A.F.) Squadron; A. W. Simpson, No. 158 Squadron; T. R. Woods, No. 114 Squadron.

Air Force Cross

Squadron Leader: W. G. Pate, R.C.A.F.
Pilot Officer: A. M. James, R.C.A.F.

Conspicuous Gallantry Medal

Flight Sergeant: F. J. Stuart, No. 426 (R.C.A.F.) Squadron.

Sergeant: A. H. Cowham, R.A.F.V.R., No. 57 Squadron.

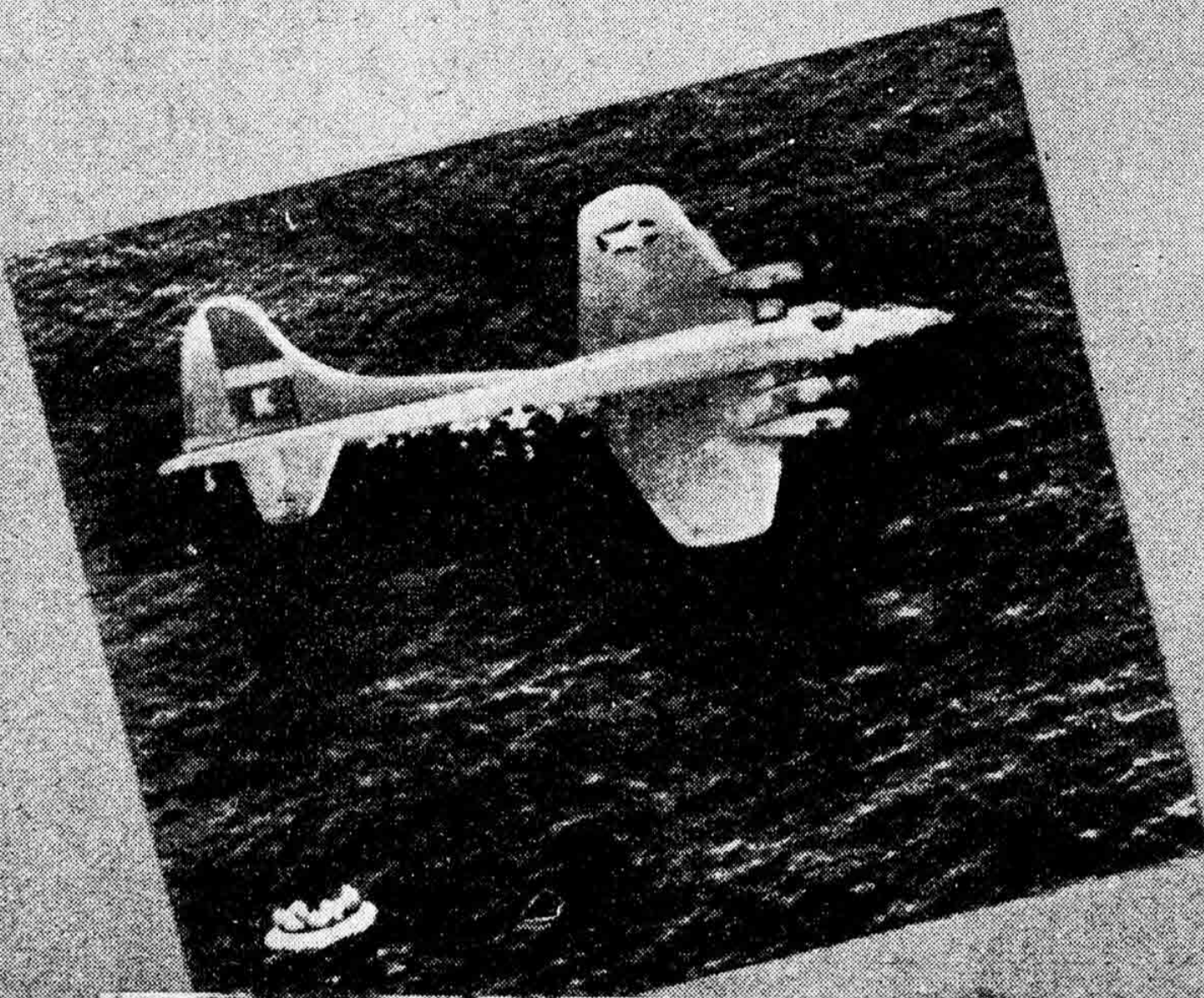
Distinguished Flying Medal

Flight Sergeants: A. T. Bowlby, R.C.A.F., No. 408 (R.C.A.F.) Squadron; W. H. Buckley, R.A.F.V.R., No. 425 (R.C.A.F.) Squadron; T. W. Dimma, R.C.A.F., No. 488 (R.C.A.F.) Squadron; L. H. Gould, R.A.F.V.R., No. 179 Squadron; R. C. Hawkins, R.A.F.V.R., No. 425 (R.C.A.F.) Squadron; Colin Horne, R.A.F.V.R., No. 283 Squadron; M. W. Jackson, R.A.A.F., No. 46 Squadron; (now Pilot Officer) P. B. Jackson, R.A.A.F., No. 102 Squadron; W. C. Jackson, R.C.A.F., No. 420 (R.C.A.F.) Squadron; A. W. Jameson, R.A.F.V.R., No. 142 Squadron; Robert Lockhart, No. 37 Squadron; J. T. Lyons, No. 600 Squadron; Thomas Maher, R.A.F.V.R., No. 150 Squadron; P. D. Mitchell, No. 619 Squadron; (now Pilot Officer) D. H. Parker, R.C.A.F., No. 420 (R.C.A.F.) Squadron; A. J. Sullivan, R.A.F.V.R., No. 150 Squadron; Ronald Thackray, R.A.F.V.R., No. 10 Squadron; W. W. Turley, R.A.F.V.R., No. 52 Squadron; C. M. Wallace, R.N.Z.A.F., No. 467 (R.A.A.F.) Squadron; J. M. Whitelaw, R.A.F.V.R., No. 216 Squadron.

Sergeants: J. D. Aspin, R.A.F.V.R., No. 625 Squadron; D. M. Cornish, R.C.A.F., No. 179 Squadron; Eric Furness, R.A.F.V.R., No. 158 Squadron; K. N. Hicklin, R.A.F.V.R., No. 101 Squadron; A. J. Jakeman, No. 40 Squadron; J. H. Jennings, R.A.F.V.R., No. 10 Squadron; C. H. Lock, R.A.F.V.R., No. 142 Squadron; G. E. G. Lucas, R.A.F.V.R., No. 106 Squadron; L. G. Raymond, R.A.F.V.R., No. 158 Squadron; W. E. Rogers, R.A.F.V.R., No. 115 Squadron; H. H. Sherer, R.A.F.V.R., No. 51 Squadron; H. O. J. Sparks, R.A.F.V.R., No. 207 Squadron; Robert Stott, R.A.F.V.R., No. 101 Squadron; (now Pilot Officer) L. G. Sullivan, R.A.A.F., No. 150 Squadron; D. J. Sykes, R.A.F.V.R., No. 70 Squadron; G. H. Thomson, R.C.A.F., No. 5 (S.A.A.F.) Squadron; I. D. Wallace, R.A.F.V.R.; Harry Wilkes, R.A.F.V.R., No. 150 Squadron.



AUSTER—ARMY—AFRICA.—Removing camouflage netting from a Taylorcraft Auster in North Africa.



Within 50 hours 101 British and American airmen were rescued. More than 200 aircraft took part in the operation of searching by day and night and guarding the dinghies, lifeboats, and launches from enemy interference. Most of the rescues were over 100 miles from England.

The Daily Telegraph, 4.8.43

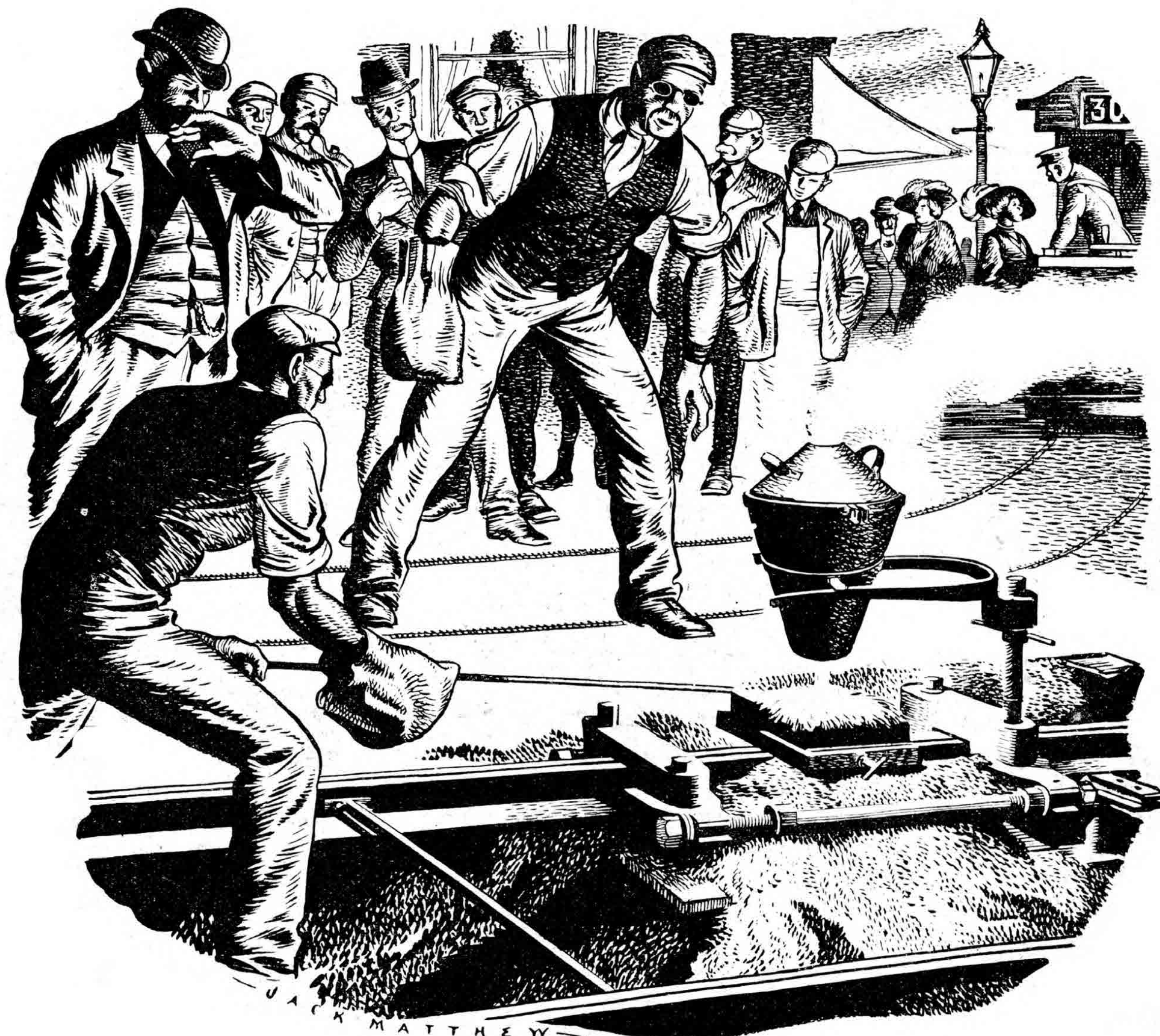


The R.A.F. high speed Air/Sea rescue launch 2551 is one of a large number of this special type of craft built by

THE BRITISH POWER  BOAT COMPANY LTD.

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WELDING 1908. Another amazing advance in the history of 'joining things together.' Today we are in the midst of a new age. The age of Industrial Adhesion in which Bostik Adhesives and Sealing Compounds have a leading role. You know something of the Bostik System of Adhesion, how each grade of Bostik Products has a particular job to do. Sometimes Bostik works alone . . . sometimes it is an active partner in increasing the efficiency and reducing the working time of more conventional methods of jointing. Your experience of how the Bostik Products are behaving on the rigorous proving ground of war, is an indication of the service you

can expect from Bostik when victory is won. So, remember Bostik Adhesives and Sealing Compounds as you plan your post-war programme. Whatever your manufacturing interests of the future, somewhere in your production line there will be a place for Bostik Products — and they will serve you as well in peace as they do in war.

Here is the BOSTIK MAN whom you know so well as representing the Bostik Technical Department. After the war he will still be at your service — to advise you personally on the application of Bostik Products to your particular problem of adhesion in post-war industry.



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B.B. Chemical Co., Ltd., Leicester

EXTRACTS FROM THE LONDON GAZETTE

Air Ministry, June 22, 1943.

ROYAL AIR FORCE VOLUNTEER RESERVE

MEDICAL BRANCH.—To be Flg. Offs. (emergency):—May: J. A. H. Collins, M.R.C.S., L.R.C.P., M.B., B.Ch.; J. McL. Hendry, M.B., Ch.B.; J. S. Hesketh, M.R.C.S., L.R.C.P., M.B., B.Ch., D.R.C.O.G.; J. N. Swanson, M.B., Ch.B. Flt. Lt. E. S. Samuels, M.B., B.Ch., resigns his commn and retains his rank. June.

Amendment.—In notifi. of Dec. 1, 1942, concern. T. K. Haran, L.R.C.P. & S., L.M., for Flg. Off. read Flt. Lt.

DENTAL BRANCH.—To be Flg. Offs. (emergency):—May: A. O. Mack, L.D.S.; Hoshung Mandiwall, M.B., B.S., L.D.S.; W. McG. Morton, L.D.S.; Norman Stark, L.D.S.

CHAPLAINS BRANCH.—To be Chaplains (emergency) with relative rank of Sqn. Ldr.:—May: Rev. G. C. Harding, R. L. C. Perfect, M.A., Rev. B. M. McCafferkey.

To resign their commns.:—June: Rev. G. E. Williams, Rev. H. J. L. Norman.

ROYAL AIR FORCE REGIMENT.—Flg. Off. J. N. Biggs Davison resigns his commn. and retains the rank of Flt. Lt. June.

AUXILIARY AIR FORCE

BALLOON BRANCH.—To be transf. to the Admin. and Spec. Duties Br.:—Sqn. Ldr.: May: H. S. Elton, M.C. Flt. Lt.: June: T. E. Beddard.

ADMINISTRATIVE AND SPECIAL DUTIES BRANCH.—Flt. Lt. (temp.) G. A. Mitchell resigns his commn. and retains his rank. June.

WOMEN'S FORCES

WOMEN'S AUXILIARY AIR FORCE.—To resign their commns.:—Sqn. Off.: June: E. B. A. Spafford. Sec. Offs.: May: I. M. Savin. June: J. Peters, M. I. Leach. Sec. Offs. (prob.): May: M. A. Mould. June: M. D. Ponsford. Asst. Sec. Offs. (prob.): May: L. Abbott, S. P. Williams, V. I. Dent. June: A. C. Boyd, V. M. S. Sugden. Sec. Off. E. V. M. Cook relinquishes her commn. on account of ill-health. June.

Sec. Off. M. I. Morrison relinquishes her commn. on attaining the age limit. June.

Air Ministry, June 25, 1943.

ROYAL AIR FORCE

GENERAL DUTIES BRANCH.—Air Mshl. (temp. Air Ch. Mshl.) Sir Christopher L. Courtney, K.C.B., C.B.E., D.S.O., to be Air Ch. Mshl. June 1.

Air Vice-Mshls. (act. Air Mshls.) to be Air Mshls. (temp.):—June: P. R. M. Drummond, C.B., D.S.O., O.B.E., M.C., J. C. Slessor, C.B., D.S.O., M.C.

Air Cdr. (Act. Air Vice-Mshl.) to be Air Vice-Mshl. (temp.):—June: W. F. MacN. Foster, C.B., C.B.E., D.S.O., D.F.C. (ret.), G. R. Bromet, C.B., C.B.E., D.S.O. (ret.), R. L. G. Marix, C.B., D.S.O., R. B. Mansell, C.B.E., M. B. Frew, C.B., D.S.O., M.C., A.F.C.

Air Cdr. R. V. Goodard, C.B., C.B.E., to be Act. Air Vice-Mshl., Mar., and Air Vice-Mshl. (temp.) June.

Gp. Cpts. to be Air Cdr. (temp.):—June: A. Gray, M.C., J. P. Coleman, A.F.C., O. R. Gayford, C.B.E., D.F.C., A.F.C., K. B. Lloyd, C.B.E., A.F.C., A. R. Churchman, D.F.C. (Sen. Nov. 1, 1942), S. C. Strafford, C.B.E., D.F.C., D. L. Blackford (Sen. Nov. 1, 1942), A. P. Davidson, C.B.E., A. L. A. Perry-Keene, O.B.E., W. A. B. Bowen-Buscarlet, C.B.E., D.F.C., F. J. Fogarty, D.F.C., A.F.C., S. E. Storrar, S. D. Macdonald, D.F.C., T. M. Williams, O.B.E., M.C., D.F.C. (Act. Air Vice-Mshl.), V. E. Groom, O.B.E., D.F.C., J. A. Gray, C.B.E., D.F.C., G.M., E. J. Kingston-McCloughry, C.B.E., D.S.O., D.F.C., W. E. G. Mann, C.B.E., D.F.C., T. C. Traill, O.B.E., D.F.C., J. D. Breakey, D.F.C. (Act. Air Vice-Mshl.), R. Ivelaw-Chapman, C.B.E., D.F.C., A.F.C., L. Darvall, M.C.

Wg. Cdrs. (temp.) granted the rank of Wg. Cdr. (war subs.):—Mar: A. J. W. Geddes, O.B.E. Apl.: P. L. Donkin.

Flg. Offs. to be Flt. Lts. (war subs.):—Apl.: R. T. Langton, D.F.M., B. J. Lovett, G. McPherson, A.F.M., W. B. Berry (2nd Lt. R.A.), C. H. S. Kirkus, D.F.C. (2nd Lt. R.A.), C. W. A. Lyons (2nd Lt. R.A.), L. G. Maclaren, D.F.C. (2nd Lt. R.A.), R. T. Billett (Sen. Apl. 9), P. N. McEvoy, D.F.C., R. G. Galloway, L. C. Giles. May: S. Park, W. S. Chubb.

Flg. Off. A. P. L. Barber to be Flt. Lt. (war subs.) Nov., 1942. (Subs. for notifi. of Feb. 12.)

Plt. Offs. to be Flg. Offs. (war subs.):—Jan.: R. B. Davidson (Lt. R. Scots). Feb.: H. A. Wilton (Lt. R.A.). Mar.: A. C. D. Hines (Lt. (temp. Capt.) King's Own R.).

Plt. Offs. (prob.) to be Flg. Offs. on prob. (war subs.):—Apl., 1942: T. at. Lamb (Sen. Dec. 17, 1941). Oct., 1942: W. E. J. Smart. Jan.: J. D. Bingham, D.F.M. Apl.: T. H. Bowen, D.F.C., J. J. Martin, A. D. Buchanan, A. Barker, N. S. Cooke, S. A. White, K. M. Towle. May: P. W. Fry.

Plt. Off. T. W. Newberry is granted the rank of Flg. Off. (war subs.). Apl., 1942 (Subs. for notifi. of Feb. 5.)

AMENDMENT.—In notifi. of Sept. 18, 1942, concern. Plt. Off. S. D. Way for June read Apl.

TECHNICAL BRANCH.—Air Cdr. (Act. Air Vice-Mshl.) to be Air Vice-Mshl. (temp.):—June: O. G. W. G. Lywood, C.B.E., R. S. Aitken, C.B.E., M.C., A.F.C.

Gp. Cpts. to be Air Cdr. (temp.):—June: R. O. Jones, A.F.C. (Act. Air Vice-Mshl.), J. R. Cassidy, W. E. Theak, A. F. Lang, M.B.E., A.F.C., C. P. Brown, C.B.E., D.F.C.

Flt. Lt. (temp.) J. Goodman is granted the rank of Flt. Lt. (war subs.). Mar.

Plt. Offs. (prob.) to be Flg. Offs. on prob. (war subs.):—Feb. W. J. Pearson. Mar.: V. A. C. Hammond, H. J. Lang, R. F. Shore (Sen. Oct. 16, 1942), L. W. Boswell, E. Collins, K. R.

Crook, S. A. Eastmead, R. A. Freeman, J. H. Hickinbotham, R. H. Madgett, H. Suthers, A. Wakeford, J. Weston, E. W. Armes, V. E. M. Watkins, D.F.M. Apl.: E. W. H. Nourish, P. J. Crowley, T. W. Harper, C. S. Thomas, G. B. Morrell, B. G. Wareham, F. W. Young. May: C. D. Beales, G. F. Bates, K. J. Jenkins, H. Cleasby, A. E. Ashworth R. J. McIn. Spalding, E. A. Blundell (Sen. Jan. 16), C. F. S. Churcher (Sen. Jan. 30), D. G. Creamer (Sen. Jan. 21), L. D. Darby, I. J. De La Plain (Sen. Jan. 21), R. Dimberline (Sen. Jan. 29), J. D. Dodds (Sen. Jan. 31), D. F. Handel (Sen. Jan. 26), A. C. Heggie (Sen. Feb. 2), E. H. Jenkins (Sen. Feb. 3), L. J. Jenkins (Sen. Jan. 31), B. C. Johnson (Sen. Jan. 28), R. N. Kemp (Sen. Dec. 19, 1942), E. G. King (Sen. Jan. 19), J. C. Liddiard (Sen. Jan. 20), R. S. Loveland (Sen. Jan. 14), K. F. McMillan, J. R. Martin (Sen. Jan. 4), A. B. Morrison (Sen. Jan. 31), L. R. Nash (Sen. Jan. 14), W. J. Neve (Sen. Jan. 14), J. Nolan (Sen. Jan. 30), L. R. Old (Sen. Mar. 22), K. Palmer, G. A. Patterson (Sen. Jan. 31), E. W. Pigg (Sen. Jan. 30), W. J. Pope (Sen. Jan. 26), G. H. Ridout (Sen. Jan. 23), I. R. G. Smith (Sen. Feb. 4), R. W. Smith (Sen. Jan. 26), C. G. Stocker (Sen. Feb. 2), H. E. Thorpe (Sen. Jan. 31), J. W. Titterton (Sen. Jan. 28), H. Toogood (Sen. Jan. 16), W. B. Watkins (Sen. Jan. 16), E. E. Weekley (Sen. Jan. 28), R. C. Wyatt (Sen. Jan. 14), L. F. Henwood, W. J. Jay, D. B. Macfarlane, W. Howson, O.B.E., L. E. Hill. June: R. D. Short.

Act. Plt. Off. (prob.) W. C. Bigg to be Plt. Off. (prob.) Jan.

ADMINISTRATIVE AND SPECIAL DUTIES BRANCH.—Plt. Offs. (prob.) to be Flg. Offs. (prob.) war subs.:—Oct., 1942: G. E. Odell (since transf. to the Tech. Br.) (Sen. Sept. 3, 1942). Mar.: E. R. Wills, V. J. Edge, G. Reid, H. G. Walland, A. C. Wyatt (Sen. Feb. 6). Apl.: A. L. Simpson. May: D. F. C. Bracken.

Act. Plt. Off. (prob.) L. V. Cruikshank to be Plt. Off. (prob.) Jan.

EQUIPMENT BRANCH.—Gp. Cpts. to be Air Cdr. (temp.):—June: T. Fawdry, O.B.E., A. Garrity, C.B.E., T. G. Bowler.

Plt. Offs. (prob.) to be Flg. Offs. (prob.) (war subs.):—Apl.: H. L. Woodhouse, A. F. Wait.

ACCOUNTANT BRANCH.—Gp. Cpts. to be Air Cdr. (temp.):—Sept., 1942: J. Rylands, C.B.E. June: H. G. Jones, C.B.E.

Flt. Lt. (temp.) D. R. Yeoman is granted the rank of Flt. Lt. (war subs.). Apl.

Plt. Off. (prob.) R. P. Norris to be Flg. Off. (prob.) (war subs.). Apl.

RESERVE OF AIR FORCE OFFICERS

ADMINISTRATIVE AND SPECIAL DUTIES BRANCH.—Flt. Lt. R. F. Bulstrode is granted the rank of Sqn. Ldr. (war subs.). Apl.

Flt. Lt. (temp.) F. A. B. Fawcett is granted the rank of Flt. Lt. (war subs.). Apl.

Sqn. Ldrs. to be Wg. Cdrs. in class CC:—Feb.: F. M. Greenlees. May: R. M. Creer.

ROYAL AIR FORCE VOLUNTEER RESERVE

GENERAL DUTIES BRANCH.—Flt. Lt. R. C. Symondson, A.F.C., is granted the rank of Sqn. Ldr. (war subs.). Apl.

Flg. Offs. to be Flt. Lts. (war subs.):—Nov., 1942: A. Hughes-Chamberlain, Dec., 1942: G. T. Bartlett. Mar.: R. B. E. Phillips, W. A. Downes. Apl.: P. W. Jamieson, A. C. S. Innes, L. W. Kitchen, C. H. L. James, A. B. E. de Jong, G. B. MacLachlan, P. A. Gikins, L. Hayton, D. A. S. McKay, D.F.M., C. D. Keir, D.F.C. (Sen. Apl. 2), R. J. Alexander, H. Grehan, A. J. Heyworth, T. B. Hughes, V. D. Knox, D. A. Lloyd, J. F. Booth, R. A. D. Brown, E. Goy, R. Atkinson, F. K. Bainbridge, D.F.C. (Sen. Apl. 9). May: J. N. Hubbard, P. E. Daniels, J. W. Nixon, H. E. H. Gillett, H. D. Kelvin, J. A. Mather, S. P. Edghill, K. Greenwood, J. H. Battison, W. J. Lingard. June: W. Barrett, E. N. Foinette, R. A. Pullin, A. W. Green, M. F. Carson, W. J. H. Greenaway.

Flg. Off. J. R. Goldston is granted the rank of Flt. Lt. (war subs.) Oct., 1942.

Flg. Off. A. L. Jukes to be Flt. Lt. (war subs.) July, 1942. (Since transf. to Admin. and Spec. Duties Br.)

Plt. Offs. to be Flg. Offs. (war subs.):—Sept., 1942: J. T. Howdle. Oct., 1942: J. P. McAllen, G. Roberts, B. B. Wickstead, D.F.C., J. A. Moy-Thomas. Nov., 1942: J. K. Dudley, J. K. Haselden. Dec., 1942: A. Neville-Polley. Mar.: H. C. W. Sharp. Apl.: H. L. Bevan.

Plt. Offs. (prob.) to be Flg. Offs. on prob. (war subs.):—Feb., 1942: B. J. Parker, J. G. Westcott. May, 1942: G. D. Binstead. June, 1942: R. T. Bainbridge. July, 1942: R. L. Cicurel. Sept., 1942: C. J. Longmore. Oct., 1942: S. H. J. Elliott, B. C. Fitch, C. J. MacPherson, G. R. Powell. Nov., 1942: R. H. Shepherd, J. H. Tremear, J. L. Cooper, D.F.C. Jan.: R. P. Harding, E. Ashly, H. G. Bernard, J. P. Diaper, J. C. Green. Feb.: E. T. Hodgkinson, P. T. R. Mercer, E. A. Woods. Mar.: M. J. Marc Lagesse, P. Edelstein, J. J. Teare, J. B. McLeod, H. S. Fraser, R. B. Levack, I. F. McLean, L. A. A. MacKilligin, I. R. MacOmie, T. W. Brigden, M. G. Alderton, M. R. S. Mackay, A. L. Pirth. Apl.: C. F. Bush, F. B. Brandwood, C. W. Collingwood, D. E. Adcock, A. P. Ambrose, R. L. Baughan, M. C. Bridges, A. Brodie, K. P. Brunner, P. D. W. Brunt, L. A. Buck, W. F. Callander, P. Carling, L. F. Causley, P. M. Chadwick, J. H. Charnock, W. N. P. Coates, R. C. C. Gregory, S. R. Hay, R. J. Liefoghe, H. C. Ballance, A. K. Broadbent, T. Bennett, M. A. Brown, G. Clark, J. W. G. Beckett, C. G. Bellhouse, B. Bercott, W. V. J. Cole, G. W. A. Austen, W. E. Bailey, A. J. Burnett, R. Almond, D. C. Armstrong,

J. W. Backhouse, R. R. Birchall, J. Wild, P. L. Alford, K. J. Anderson, J. Bowskill, P. J. R. Brocklehurst, G. W. Broughton, F. R. Bruce, A. C. Burn, C. G. Burridge, T. R. Chambers, R. Coleman, S. B. Dalmais, R. Anthony, J. A. Aiken, J. A. Bland, K. S. Butterfield, R. N. Christmas, E. R. Blake, H. Armstrong, S. Astley, D. J. M. Ballingall, J. S. Barker, S. Beckett, W. J. Bushby, N. R. Cann. May: A. I. T. Moir, J. W. Coleman, H. A. L. V. Mitchell, P. Howarth, J. E. Morris.

Act. Plt. Off. (prob.) B. C. II. Ogilvie to be Plt. Off. (prob.) May.

The notifi. of May 21 concern. Plt. Off. J. H. Vincent is cancelled.

AMENDMENTS.—The notifi. of Jan. 8 concern. Plt. Off. C. B. Brown should have appeared under the Gen. Duties Br. instead of the Admin. and Spec. Duties Br.

In notifi. of May 21 concern. Plt. Off. J. R. Forsythe, for Nov., 1942, read May, 1943.

TECHNICAL BRANCH.—Plt. Offs. (prob.) to be Flg. Offs. on prob. (war subs.):—Mar.: H. Fitzpatrick, R. Cox, J. N. Jackson, S. S. King, N. F. Dickinson, T. Harris, J. Trotter, T. R. Lloyd, M. M. Brookes, J. Graham-Matheson, W. Harney, W. E. Thomas. Apl.: K. Hitchcock, G. H. Harnden, E. G. Pitt, J. C. Spencer, H. W. St. J. Wagstaffe, D. V. Wilton, M. M. J. S. Davies, F. W. Proudlove. May: S. W. Harden, L. S. King, W. J. Reid, J. F. S. Williams, F. Wood, A. C. T. Brown (Sen. Jan. 14), C. A. Harwood (Sen. Feb. 4), F. Kitchen, T. C. Parry (Sen. Jan. 20), W. G. Dean, L. W. Melville, A. F. Jeffrey, A. U. Dowell, E. F. Knight, H. T. Leftley, W. C. Marsden, R. M. Singer, R. A. Archer.

BALLOON BRANCH.—Plt. Offs. (prob.) to be Flg. Offs. on prob. (war subs.):—Oct., 1942: J. R. Anderson. Jan.: W. M. Milner (Sen. Oct. 20, 1942), T. St. B. Atkinson (Sen. Jan. 3), W. H. Anderson, J. C. Gurnhill. May: H. J. Bacon.

Act. Plt. Offs. (prob.) to be Plt. Offs. (prob.):—July, 1942: W. H. Anderson (Sen. Jan. 3), C. Hodge (Sen. Jan. 15). Aug., 1942: R. E. Staddon (Sen. Mar. 27, 1942).

ADMINISTRATIVE AND SPECIAL DUTIES BRANCH.—Gp. Capt. A. C. Critchley, C.M.G., C.B.E., D.S.O., to be Air Cdr. (temp.). June.

Flt. Lt. J. S. Stevenson, O.B.E., is granted the rank of Sqn. Ldr. (war subs.). May.

Flt. Lt. R. S. Mudie is granted the rank of Sqn. Ldr. (war subs.). May.

The folg. are granted the rank of Flt. Lt. (war subs.):—Flt. Lts. (temp.): Apl.: W. Whittle. May: R. H. Truman, P. L. Murphy, F. E. Greenwood, A. J. Booth. Flg. Offs.: Apl.: J. E. Kidd. May: G. A. Gillings, W. August, D. Livingston.

The folg. to be hon. Flt. Lts.:—Apl.: Hon. Flg. Off. P. R. Taylor, Hon. Plt. Off. E. Cartmell.

Plt. Offs. (prob.) to be Flg. Offs. (prob.) (war subs.):—June, 1942: J. P. F. Goodchild (Sen. Apl. 28, 1942), O. W. Russ (Sen. May 11, 1942). Oct., 1942: F. W. Blair (Sen. Oct. 1, 1942). Dec., 1942: L. J. Watson. Jan.: J. A. Macdonald, Mar.: C. L. Bayston (Sen. Jan. 12), G. Beach, R. G. Black (Sen. Jan. 14), H. L. Boyd (Sen. Jan. 15), L. C. Ford (Sen. Jan. 7), G. Gates (Sen. Jan. 10), E. Howes (Sen. Jan. 19), M. A. Macdowell (Sen. Jan. 10), E. R. S. Pollock, E. A. Salmon (Sen. Jan. 10), W. A. Schrier, R. J. Warren (Sen. Jan. 13), J. Bocking (Sen. Sept. 6, 1942), C. Conroy (Sen. Jan. 11), J. H. Begg (Sen. Jan. 14), S. G. Dando (Sen. Jan. 17), L. B. Downing (Sen. Jan. 20), L. Ellis (Sen. Jan. 19), A. H. Heath-Bullock (Sen. Jan. 29), A. P. Hilton (Sen. Jan. 19), C. N. Horabin (Sen. Jan. 21), H. Platt (Sen. Jan. 14), E. Prentice (Sen. Jan. 13), H. A. F. Shepherd, C. M. Tait, S. D. Usherwood (Sen. Feb. 10), K. T. Wasley (Sen. Jan. 11), L. C. Keay (Sen. Jan. 11), N. Hatch, C. W. B. Richards, B. W. Purcell (Sen. Mar. 4), D. K. Ellis, R. H. Glanville, A. E. Martin, H. Pitwood, W. Smith, F. P. Allerton (Sen. Jan. 20), J. Deuchars (Sen. Jan. 19), G. D. Digges (Sen. Jan. 21), W. Harper (Sen. Jan. 20), R. A. Hurst (Sen. Jan. 26), L. H. H. Moody (Sen. Jan. 4), T. Naylor (Sen. Jan. 14), W. J. C. Nuthall (Sen. Jan. 21), H. R. Owen, J. S. Price (Sen. Jan. 4), F. M. Richards, M. J. Spiegelhalter, S. B. Warwick (Sen. Jan. 26), A. G. Waits, A. R. Young (Sen. Feb. 2), E. A. Hill, S. Booth-Russell, A. A. L. Mason, R. J. Fisher (Sen. Jan. 10), J. Fowler, A. R. Hogben, H. C. Honey (Sen. Jan. 24), L. T. Miller (Sen. Feb. 2), D. J. Scannell (Sen. Dec. 25), A. Solomons (Sen. Feb. 6), L. A. Timms (Sen. Feb. 4), F. J. Vince (Sen. Jan. 14), E. B. Freckingham, V. I. Creasey, H. F. D. Monk, W. F. H. Paffett, W. F. Taylor, C. H. Turley (Sen. Jan. 6), H. Unkles, G. N. Williams, A. G. Brand (Sen. Nov. 20, 1942), H. B. Beese, W. A. Griffiths (Sen. Jan. 14), J. B. Handyside, D. D. Haslam, R. Hind, L. A. Holder, G. L. Kahn, M. Kissen (Sen. Feb. 5), R. G. Parker (Sen. Jan. 19), M. M. Ross-Field (Sen. Jan. 25), W. Stacey (Sen. Jan. 24), J. Walls, N. M. Browdy. Apl.: T. D. Dunbar, T. R. Ion, K. Gray, A. J. Tracey. May: K. H. O. Delf (Sen. Nov. 25, 1942), A. Potter, A. P. C. Wigan, T. Cowan, L. E. A. Thorn, W. Cook, R. A. Millington, E. Shepherd, T. E. J. Fassam, F. W. Carrard, W. S. Irving, P. Smulian, G. St. V. Thackeray, D. H. Loosmore, H. MacQ. Boyle, A. P. Downie, F. W. Passey, D. Rainbow, C. G. Smith, G. D. Keller. June: D. J. Roe, E. S. Armstrong, G. C. Berriman, W. L. Butler, H. C. M. Christie, R. T. Cook, A. G. Davies, W. B. Firminger, E. Granger, A. E. Tillson.

(The rest of the appointments under this date will be published next week.)

R.A.F. BENEVOLENT FUND
1, SLOANE STREET, S.W.1

AERONAUTICAL ENGINEERING

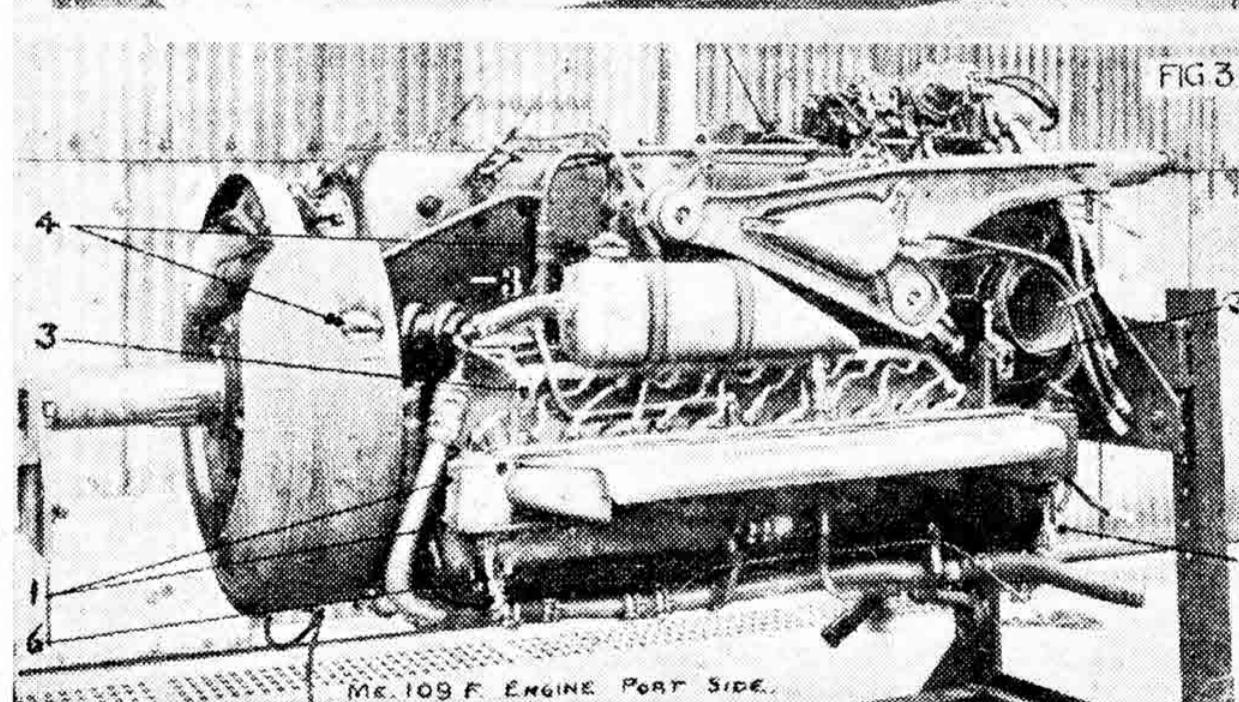
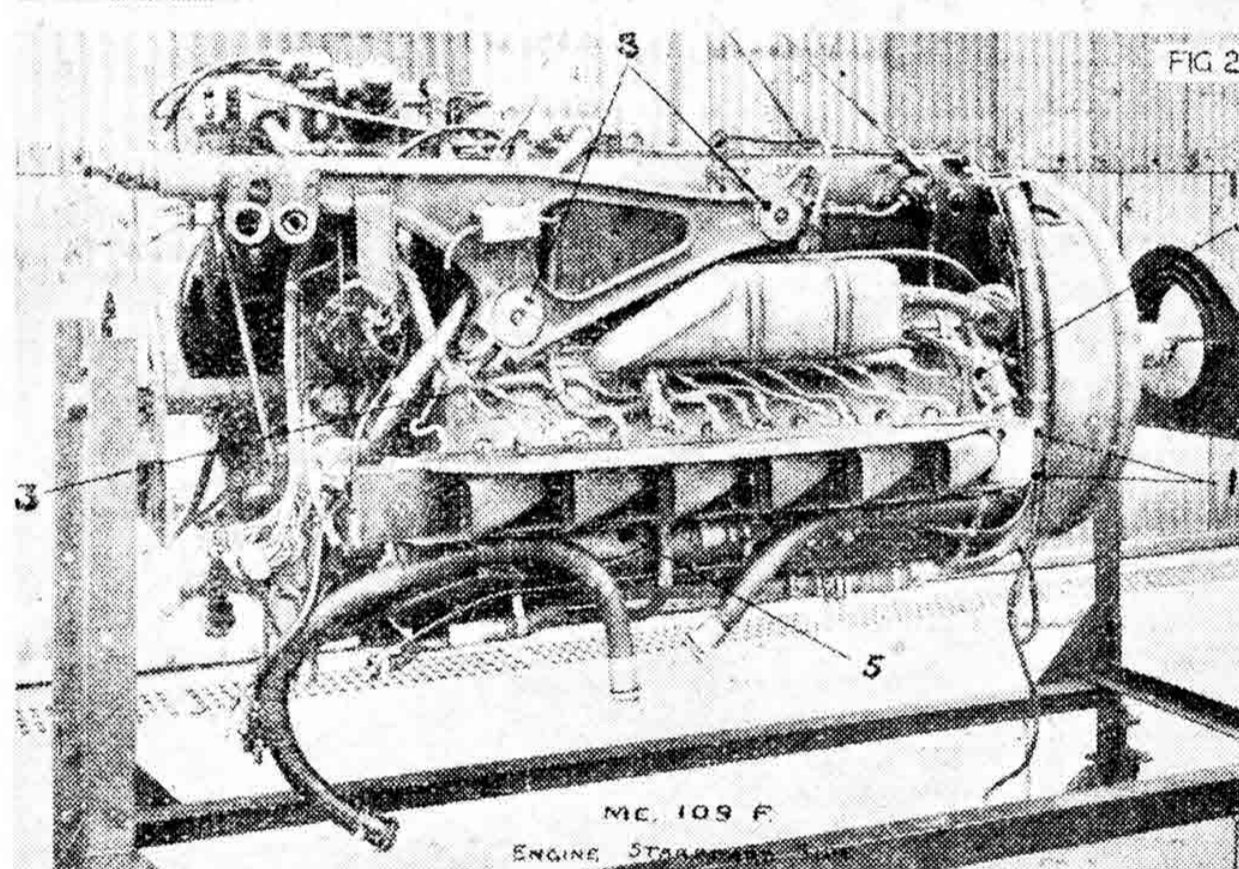
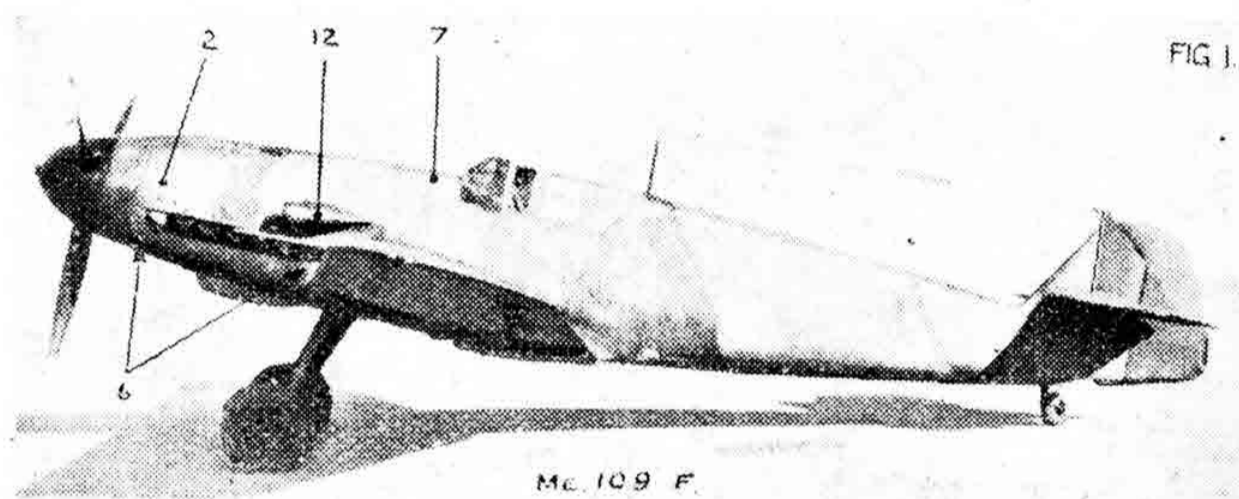
German Cowlings

SOME INTERESTING photographs and descriptions of German motor cowlings have been issued by the Ministry of Aircraft Production. German cowlings are attached directly to the motors and not to the fuselage. This facilitates the removal of a motor complete with its cowling, and permits the motor to vibrate on its rubber mountings independent of the fuselage, without any distortion to the cowling. This system assists rapid removal and replacement and gives the cleanest possible form when assembled.

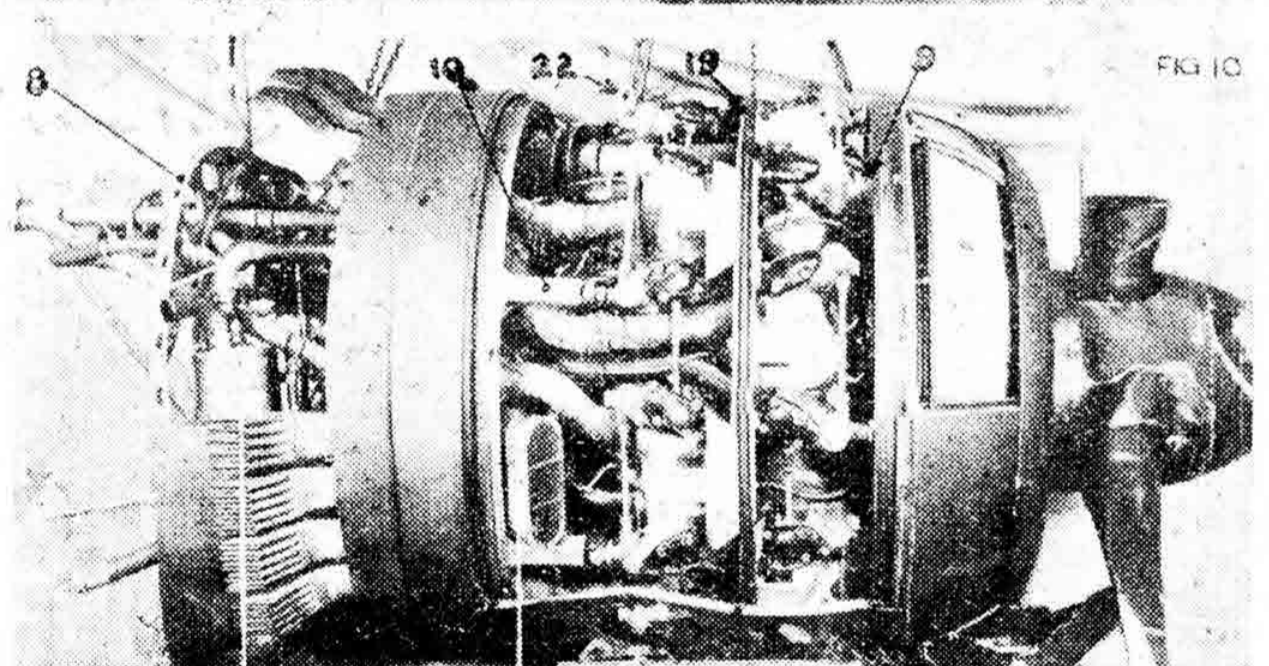
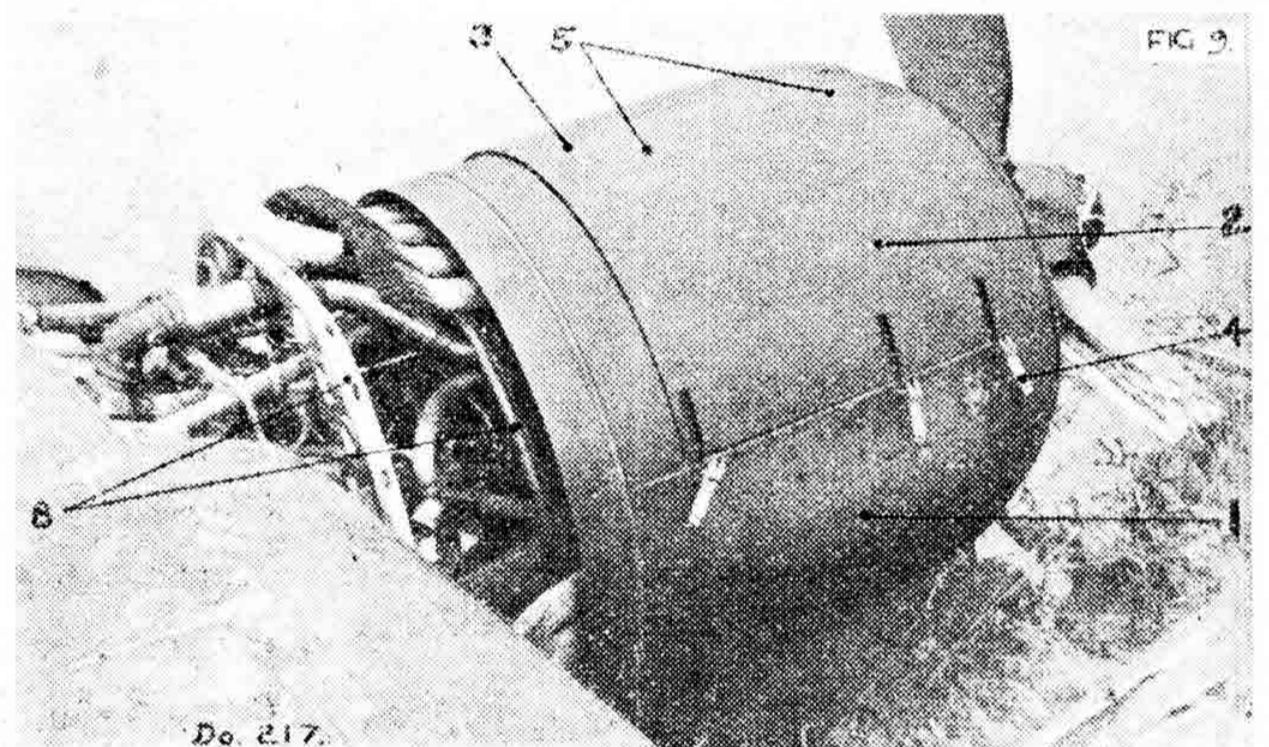
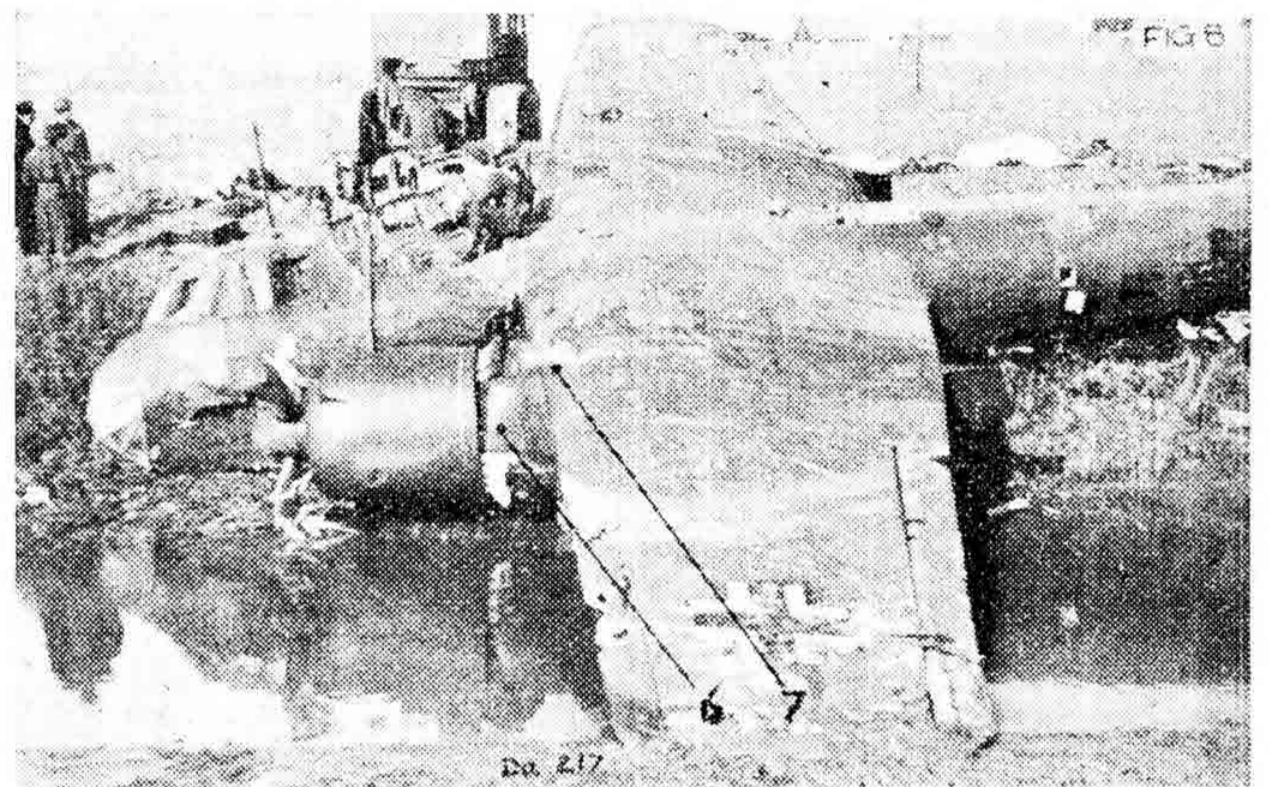
Daimler-Benz Enclosure in Me 109F

The motor is free to vibrate relative to its bearers. Cowling is attached to the exhaust manifold shroud and is in three main parts, the lowest of which carries the oil radiator. An attachment ring made in two sections is located behind the spinner.

A large bonnet hinged at the centre encloses the upper part of the motor. A stay from its hinge is connected by a pin on its forward end to the attachment ring. The bonnet, suitably stiffened, carries on its rear edge a rubber strip which makes a



MESSERSCHMITT COWLING.—Official photographs showing the method of attaching the motor cowling over the DB 601E in the Me 109F. Key to numbering is as follows:—(1) screws for fixing front ring to exhaust shroud; (2) toggle fastener locking bonnet to exhaust shroud; (3) brackets on exhaust shroud engaged by (2); (4) filler caps; (5) loops of skewered hinge, attached to starboard exhaust shroud, carrying bottom section of cowling with oil radiator; (6) toggle fasteners locking bottom cowling on port side; (7) independent cowling over breeches of machine-guns; (8) rubber pads linking crankcase brackets to magnesium cantilever motor bearers and drawn up by bolts; (12) supercharger air intake elbow.



DORNIER COWLING.—More interesting official photographs of German detail practice. The “dead man’s hand” effect of the grouped exhaust ejectors is seen in the middle picture. The key to the numbers is as follows:—(1) cowling side sections; (2) leaf of motorcar-type bonnet; (3) top hinge; (4) toggle fasteners; (5) small doors giving access to motor lifting rings; (6) cowling section attached to nacelle; (7) fairing of cowling into wing; (8) pressed angle rings fitted to motor mountings to hold rear section of motor cowling; (9) pin joints holding sliding gill ring and oil cooler to rocker covers of front cylinders; (10) brackets for holding rear sliding gill ring to rear rocker covers; (19) rubber ring to provide air seal for cowling; (22) rear motor lifting ring.

flexible seal with the fuselage. On the port side is a supercharger air intake duct and a small door giving access to the tank filler. The bonnet is secured to the top of the exhaust manifold shroud by a pair of toggle fasteners.

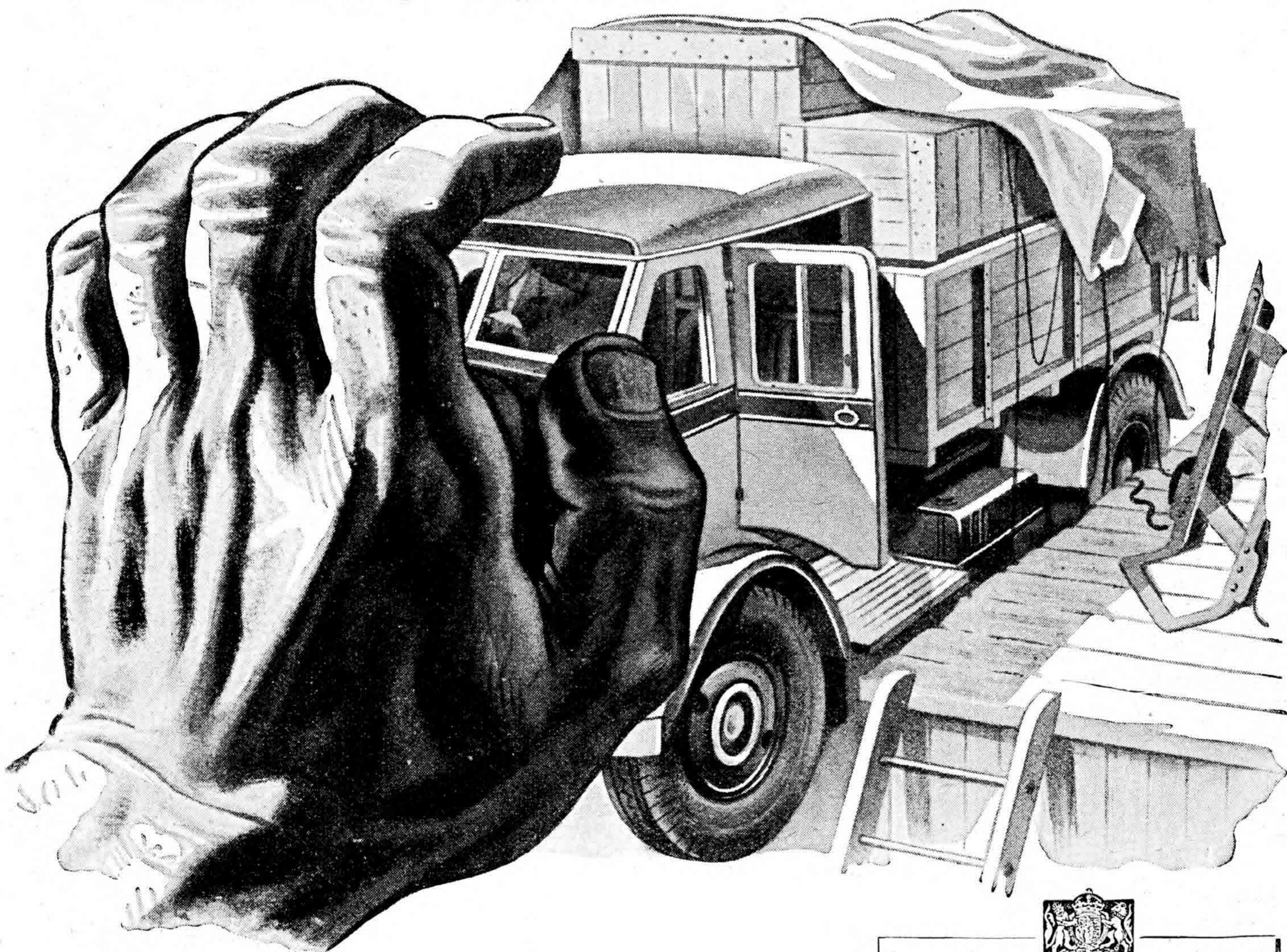
Carrying the oil cooler, the bottom section of the cowling is attached to the lower end of the starboard exhaust shroud by skewer hinges and is fastened by a pair of toggle fasteners. Arranged to starboard, this part of the cowling can be swung down to gain access to the accessories mounted between the cylinder blocks by merely fitting two fasteners.

The panel over the breeches of the machine-guns may be considered as a detachable fuselage covering. The skin plating of the whole cowling unit is about 20 gauge and the bonnet section over the motor weighs about 1.37 lb. sq. ft.

You're holding up more than a LORRY!

It may seem a little thing if a lorry has to wait needlessly for an hour or so, until you are ready to load or unload, or to check a consignment note. But it would seem a big thing, if you were *waiting* for that lorry to bring you some urgently needed goods.

And it seems a bigger thing still, when you remember that the goods are going to the fighting men. Today every lorry in use is on war work. Every extra mile it travels speeds our war effort. Don't keep a vehicle, then, *one minute* longer than you can help.



QUICKER TURNROUND THAN EVER BEFORE

Issued by the Ministry of War Transport

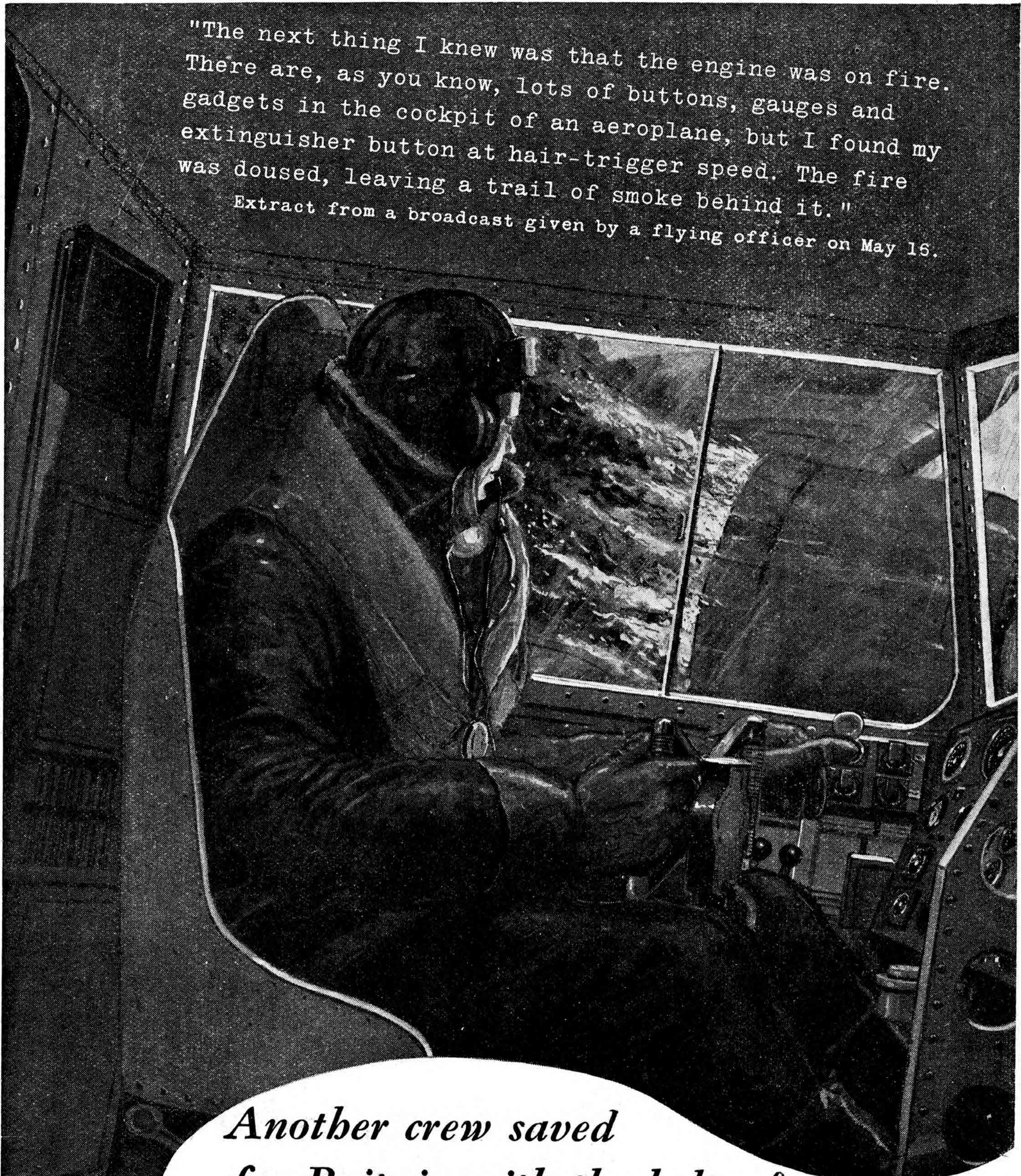


You know your own problems best. Tackle them in your own way. But tackle them now. Plan, encourage ideas, improvise if needs be. Here's a starting-off agenda:

1. CLEAR LABELS AND DOCUMENTS.
2. LABOUR-SAVING DEVICES.
3. WORK IN BLACK-OUT AND AT WEEK-ENDS.
4. OPINIONS OF "MEN WHO DO THE WORK".

"The next thing I knew was that the engine was on fire. There are, as you know, lots of buttons, gauges and gadgets in the cockpit of an aeroplane, but I found my extinguisher button at hair-trigger speed. The fire was doused, leaving a trail of smoke behind it."

Extract from a broadcast given by a flying officer on May 16.



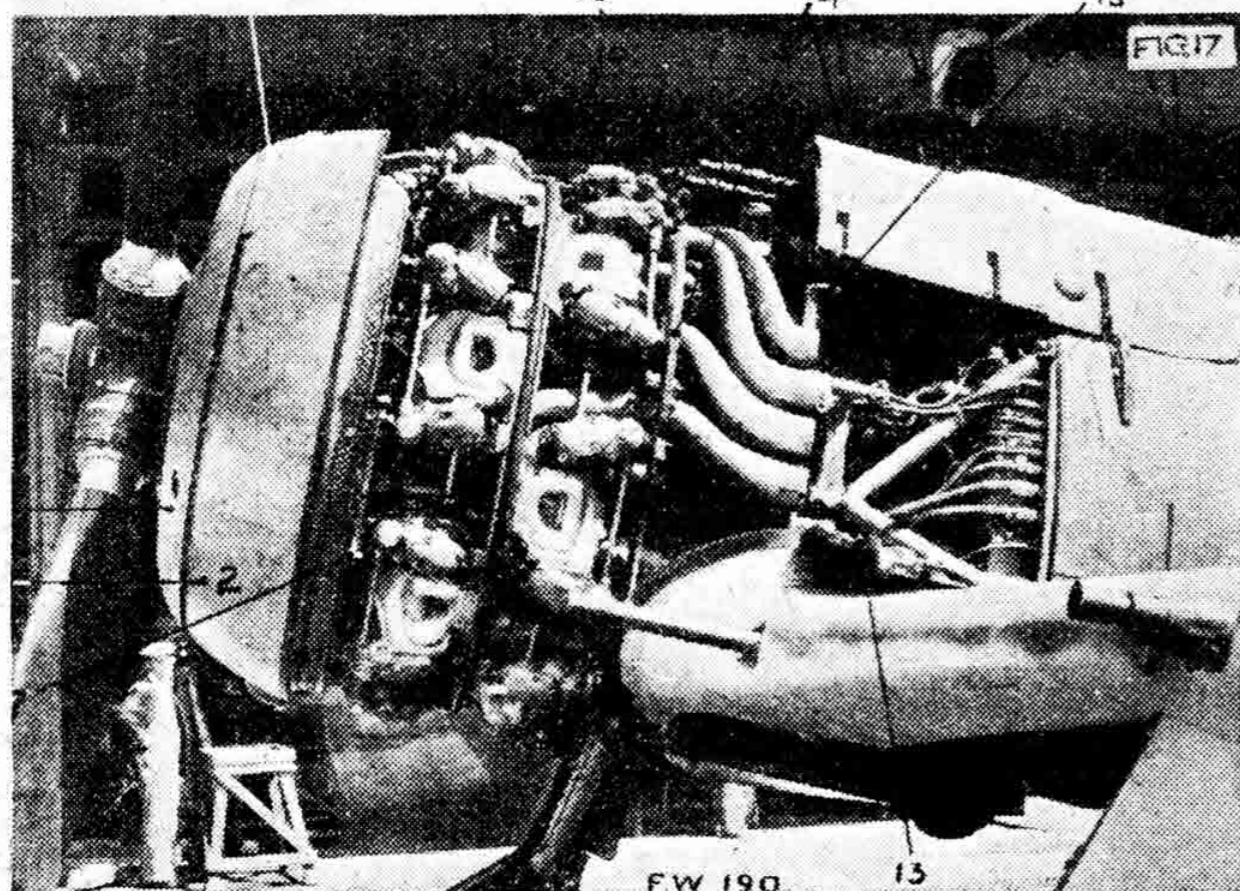
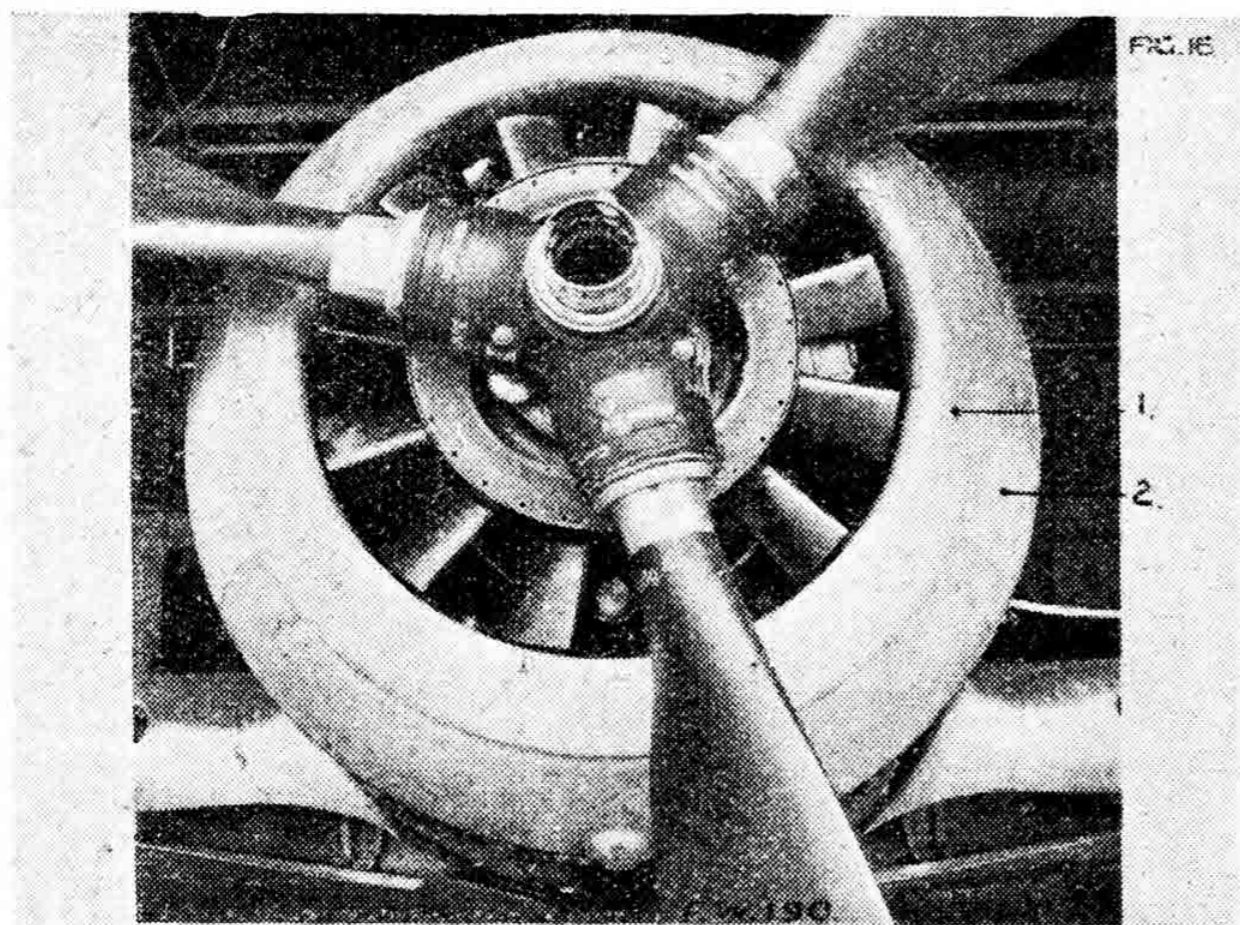
*Another crew saved
for Britain with the help of . . .*

GRAVINER

FIRE-FIGHTING EQUIPMENT

GRAVINER SERVES THE ROYAL AIR FORCE





FOCKE-WULF COWLING.—Details are as follows:—(1 and 2) casing rings of armour plating containing oil reservoir and cooler; (4) rubber-faced sector, one of the supports for the main cowling; (7) brackets on rocker covers for anchoring skewed hinges of cowling; (10) extension bracket mounting prongs to hold top section of cowling adjacent to machine-guns; (13) side door hinged down for inspection; (15) bracket for holding side door when in "up" position.

Two BMW radial motors are carried in underslung nacelles in the Dornier Do 217. The flow of cooling air is assisted by a fan, controlled by a sliding gill. A similar gill controls the air flow through the oil cooler. The front assembly consists of a sliding gill ring and oil cooler and is attached by pin joints to the rocker covers of the front row of cylinders. The rear assembly, carrying the rear sliding gill ring, is attached to brackets by pin joints to the rocker covers of the rear row of cylinders. The gap between these two rings is covered by a readily detachable cowling in four pieces. The motor can be removed from the aeroplane as a complete unit with cowlings and can vibrate relative to the airframe since it is mounted in rubber bushes and all connections are flexible. Between the front and rear ring assemblies the cowling consists of two side sections which are pressed out locally to form blisters enclosing the air intake ducts for the supercharger. Each piece has two lugs on its forward edge which engage with slots in the front ring assembly and spring-loaded bolts at the back engage with the rear ring assembly. Top and bottom of the motor are covered with portions of a motorcar-type bonnet, each consisting of two leaves, and hinged on a narrow centre strip which is secured to the front ring. The leaves of the upper cowling on the BMW 801 are supported, when open, by props; when not in use, these props are clipped inside.

An air seal runs right round the cowling between the two rows of cylinders. It consists of a rubber ring resting in a depression formed on the tops of the cylinder baffle plates. The circumferential rib stiffener presses against this rubber when the cowling is closed, thus forming a seal. The skin of the BMW 801 cowling is of about 20 gauge light-alloy sheets. Each leaf of the two upper sections of the cowling carries two small doors near the hinge, which give access to the motor-lifting rings bolted to the rocker covers. This enables the motors to be removed without opening or undoing the cowling. Behind the exhaust a section of cowling is attached to the nacelle. It consists of a number of sector shape-plates secured by spring fasteners to a pair of pressed angle rings, themselves attached to the steel tubular motor mounting. This section

of the cowling is completed by a fairing, which forms part of the leading edge of the wing.

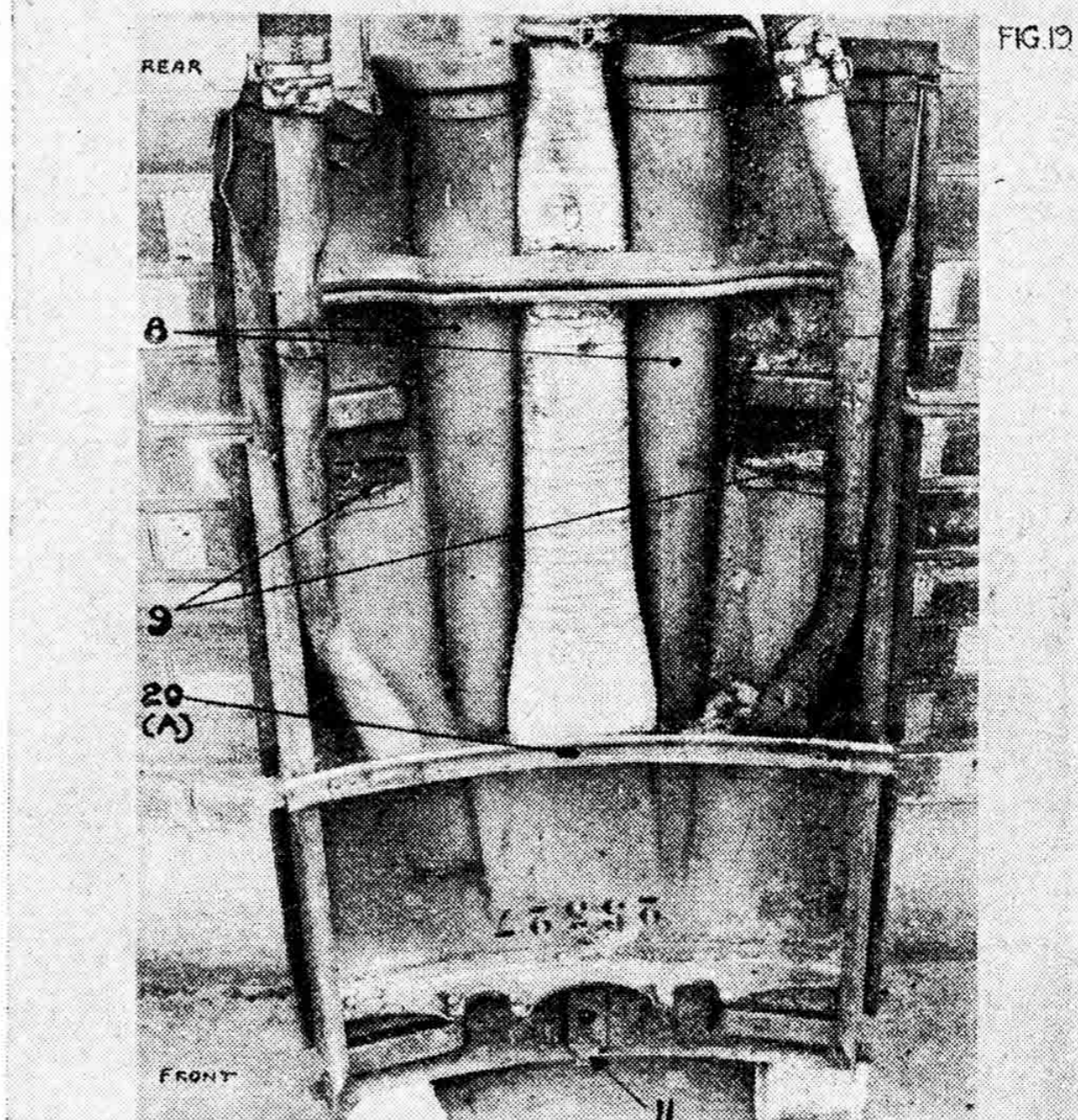
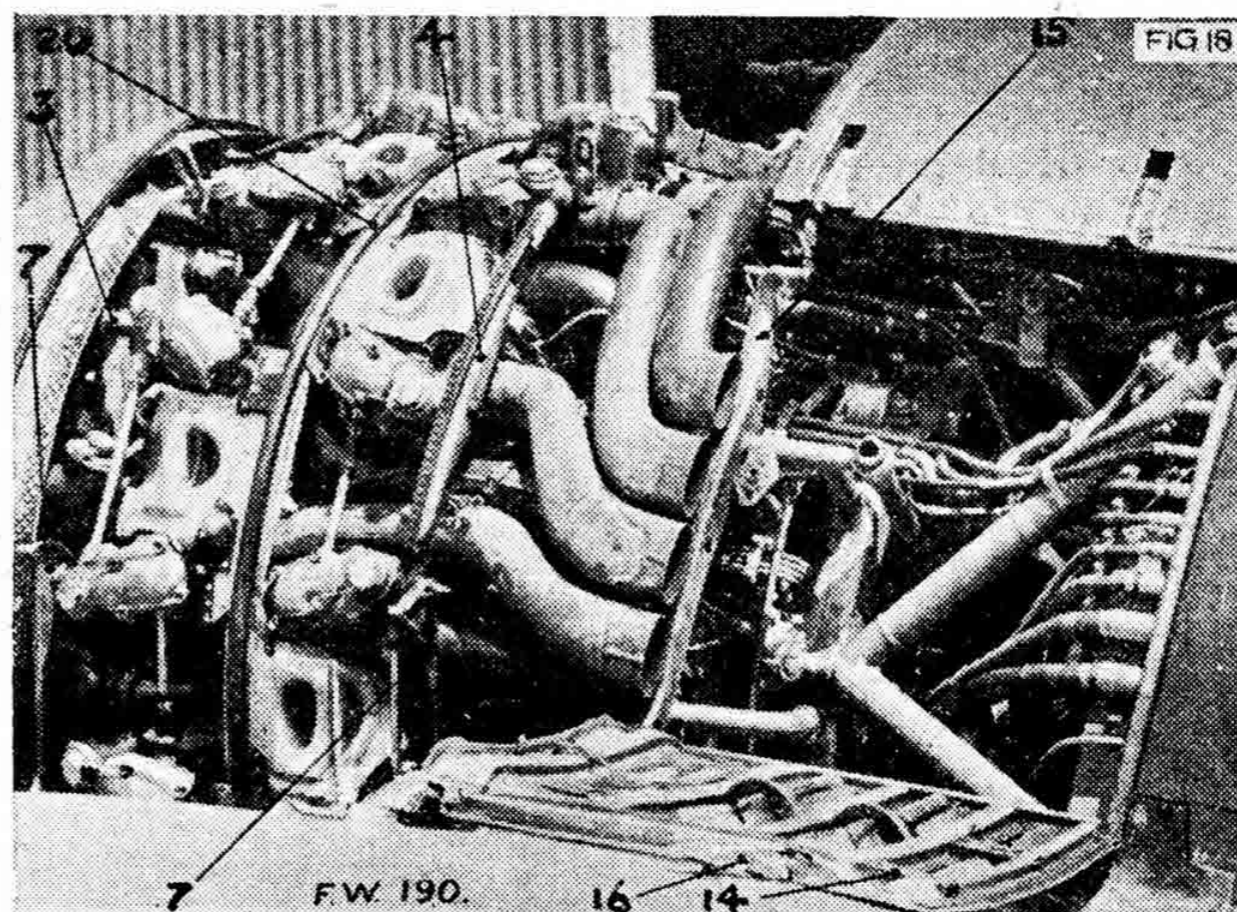
Motor Casing on the Fw 190

Surrounding the fan of the BMW 801 on the Fw 190 is a casing consisting of rings of armour plating containing the oil reservoir and cooler. It is attached by ball joints to the forward rocker covers. To the rear rocker covers are attached rubber-faced sectors which, with a heading of the rear edge of the front armoured casing, form the main cowling supports.

Much of the other detail of the Focke-Wulf cowling follows the general design of that fitted to the same type of motor in the Do 217. In fact, everything points to the development of a standard German power egg, not only for the BMW radial motor, but also another for the Daimler-Benz liquid-cooled series. Interchangeability is thus achieved.

The skin of the Focke-Wulf cowling is again about 20 gauge and its weight is generally about 1.92 lb./sq. ft. The motor cowling assembly, complete with the oil tank, weighs 252 lb.

Fuselage cowling forward is in three pieces and encloses the motor mounting and the machine-guns. There are two side doors, which are a notable feature in the Fw 190 as they incorporate the well-known louvres through which air escapes to form a heat-insulating blanket under the exhaust gases. Over the guns is a bonnet hinged to the base of the windscreen, secured by three toggle fasteners. It has a dimpled double skin, a favourite German method of stiffening metal panels.



FOCKE-WULF COWLING.—These official photographs show (3) ball joint for attachment of front armoured casing to forward row of cylinders; (4) rubber-faced support for main cowling; (7) brackets on rocker covers to hold cowling hinges; (8) machine-gun channels; (9) attachment loops; (11) cowling latch engaging under front armour-plated ring; (14 and 16) latch and toggle for shutting side door, shown hinged down; (15) bracket for supporting gun cowling section at top; (20) rubber sealing ring running right round motor and engaging with channel stiffener (20A) shown in bottom picture of underside of top cowling.

FORTHCOMING EVENTS

Dec. 10

Newcastle-upon-Tyne.—North East Coast Institution of Engineers and Shipbuilders.—Mining Institute.—"The Influence of Production Requirements on the Design of Reciprocating Machinery," by R. E. Strub.—18.00 hrs.

Dec. 13

Enfield.—North London Supervisors' Discussion Group.—Enfield Technical College, Queensway.—Talk, entitled "Production and Its Uses with a Capital U," by Lord Forrester, M.A., F.I.I.A.—19.00 hrs.

Dec. 15

Acton.—The Institute of Welding.—Acton Technical College, W.3.—Informal Discussion.—18.00 hrs.
London.—Royal Aeronautical Society.—Library, 4, Hamilton Place, W.1. Section discussion on the education and training of the aeronautical engineer.—Chairman, Dr. H. Roxbee Cox, F.R.Ae.S.—19.30 hrs.

Dec. 18

London.—Association for Scientific Photography.—H.Q. of the Royal Photographic Society, 16, Princes Gate, London, S.W.7.—Display of Scientific Photographic Apparatus.—14.30 hrs.

A.T.A. Casualty

WE REGRET to announce the death of First Officer Alan Blair Dorrell, of Air Transport Auxiliary, son of Mr. and Mrs. John Dorrell, of Kylemore, Avenue Road, Malvern, Worcs.

Post-war Politics at Turner Lunch

AT the annual luncheon of the Ernest Turner Group, manufacturers of precision electrical instruments and upholstery fabrics, last Saturday, Dec. 4, which this year was held at Grosvenor House, the principal speakers were Sir Frederick Handley Page and Commander R. T. Bower, M.P. Both dwelt upon post-war control of industry and the necessity for maintaining private enterprise, contrasting the drawbacks under management of the Civil Service, who were trained in avoiding responsibility and skill in "passing the buck."

New Patents

APPLICATIONS ACCEPTED

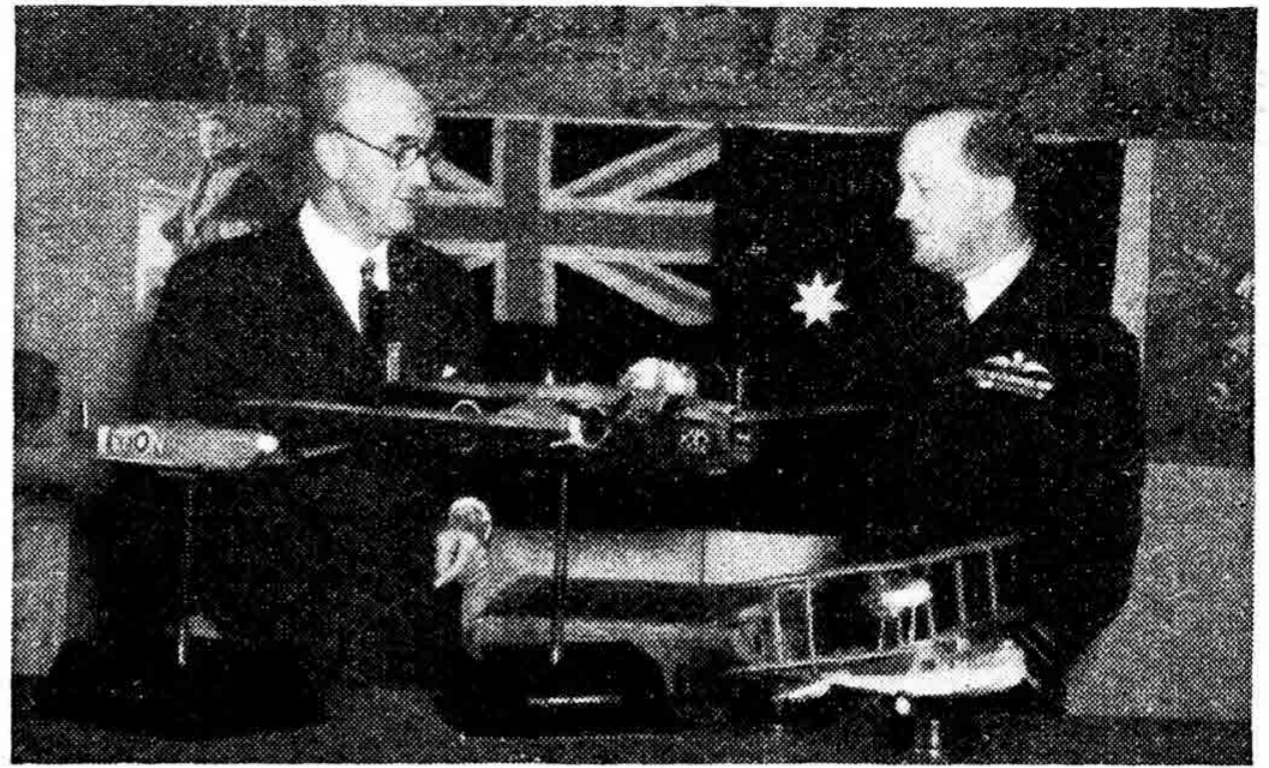
557,257.—Fairey Aviation Co., Ltd., and F. H. Ordidge.—Means for supporting the folding wings of aircraft.—Feb. 29, 1940.
 557,259.—K.A.C., Ltd., and J. Love.—Control mechanism for aeroplanes.—Feb. 3, 1942.
 557,279.—Pressed Steel Co., Ltd., and L. R. Morphew.—Skin-plated frame structures.—Sept. 4, 1943.
 Opposition period expires Jan. 24, 1944.
 Printed specifications available Dec. 9, 1944.

BIRTHS

Bancroft.—On Nov. 29, at Nightingale Nursing Home, Twickenham, Middlesex, to Beryl (*née* Steer), Third Officer W.R.N.S., wife of Sqn. Ldr. Michael Bancroft—a son.
Baxter-Jones.—On Nov. 21, at Wayside Nursing Home, Maidenhead, Berks, to Trudy (*née* Ekliid), wife of 1st Officer V. Richard Baxter-Jones, A.T.A.—a daughter.
Billman.—On Nov. 25, at Oakwood Court, Leatherhead, Surrey, to Sybil, wife of Sqn. Ldr. S. A. Billman, R.A.F.—a son.
Bowley.—On Nov. 23, at 73, Belsize Park Gardens, N.W.5, to Peggy, wife of Wg. Cdr. G. L. Bowley—a daughter.
Bullock.—On Nov. 30, at Penrhyn Nursing Home, Cheltenham, to Hilda (*née* Allen), wife of Sqn. Ldr. Philip Bullock—a son.
Campbell.—On Nov. 23, at the Brunswick Nursing Home, Cambridge, to Elisabeth Joan (*née* Adderley), wife of Sqn. Ldr. A. Colin P. Campbell—a son.
Carlton.—On Nov. 29, at Fairlight, Woodside Park, N.12, to Unity (*née* Ward), wife of Cederic C. Carlton, R.A.F.V.R. (overseas)—twin daughters.
Cartwright.—On Nov. 26, at Maitlands Nursing Home, Pinner, Middlesex, to Mavis Cotterill (*née* Rowson), wife of Sqn. Ldr. Donald Cartwright—a daughter.
Clifford Brown.—On Nov. 27, at the Bromhead Maternity Home, Lincoln, to Barbara (Docker), wife of Sqn. Ldr. R. Clifford Brown, R.A.F.O.—a son.
Climie.—On Nov. 24, at North Oxford Nursing Home, Oxford, to Myra Climie, M.B., B.S. (*née* Sutherland), wife of Sqn. Ldr. J. K. Climie, D.F.C., R.N.Z.A.F.—a son.
Cook.—On Nov. 27, at Westgate Nursing Home, Bridgnorth, Shropshire, to Joyce (*née* Laphorne), wife of Sqn. Ldr. E. G. S. Cook, R.A.F.V.R.—a son.
Constable.—On Nov. 24, at Whincroft Nursing Home, Yelverton, to Dorothy (*née* Fowles), wife of Sqn. Ldr. F. Constable, R.A.F.V.R.—a son.
Davies.—On Nov. 29, at the Brunswick Nursing Home, Cambridge, to Joy (*née* Pond), wife of Flt. Lt. D. Stephen Davies—a daughter.
Dick.—On Nov. 27, at Whitfield, London Road, Sleaford, Lines, to Kay, wife of Wg. Cdr. Ian Lawson Dick, A.A.F.—a son.
Doubrava.—On Nov. 20, at Norwich, to Sheila (*née* Hay), wife of Flt. Lt. J. Doubrava—a daughter.
Fearn.—On Nov. 22, at Stamford, Lines, to Adah Morrison (*née* Blackwood), wife of Sqn. Ldr. R. E. Fearn, R.A.F.V.R., of Stamford and Muswell Hill, N.10—a daughter.
Fenwick.—On Nov. 24, at Newbury House, Newbury, to Ruth (*née* Howard), wife of Sqn. Ldr. Tom Fenwick, R.A.F.V.R.—a daughter.
Gooding.—On Nov. 23, at the Arnison Nursing Home, Molesey, to Peggy (*née* Gatfield), wife of Wg. Cdr. K. H. Gooding, R.A.F.—a son.
Gordon.—On Nov. 27, at Edinburgh, to Hester

PERSONAL NOTICES

(*née* Turnbull), 13 Albert Terr., wife of Sqn. Ldr. W. V. Gordon, R.A.F., of Montreal—a son.
Griffith.—On Nov. 25, at St. Joseph's, Beaconsfield, to Barbara (*née* Reynolds), wife of Major S. C. Griffith, Glider Pilot Regt.—a son.
Guyton.—On Nov. 29, at Bengoe Nursing Home, Hertford, to Nancy (*née* Peel), wife of Flg. Off. J. R. F. Guyton, R.A.F.V.R.—a son.
Hatfield.—On Nov. 15, at Felixstowe, to Leonie (*née* Power), wife of Wg. Cdr. P. R. Hatfield, R.A.F.—a son.
Hetherington.—On Nov. 24, at the Victoria Hospital, Lichfield, to Marjorie (*née* Cahill), wife of Flt. Lt. R. M. Hetherington, D.F.C., R.A.A.F.—a daughter.
Kendrick.—On Nov. 27, at Twyford Nursing Home, Bognor, to Peggy (*née* Sharp), wife of the late Wg. Cdr. J. S. Kendrick—a son.
King.—On Nov. 27, at Parsons Green Nursing Home, to Pamela (*née* Riley), wife of Sub-Lt. (A) E. M. King, R.N.V.R.—a daughter.
Leslie Smith.—On Nov. 26, at the Arnison Nursing Home, Molesey, Surrey, to Marjorie (*née* Dodridge), wife of Sqn. Ldr. A. Leslie Smith—a son.
Magwood.—On Nov. 30, at 85, Fordwych Road, Hampstead, to Pauline (*née* Harvery), wife of Lt. (A) Garth Magwood, R.N.V.R.—a daughter.
Major.—On Nov. 30, at Parchmarhi Nursing Home, Reading, to Doreen (*née* Bunnett), wife of Flt. Lt. K. A. Major—a daughter.
Midlane.—On Nov. 25, at Glencot, Cleveland Road, E.18, to Margaret (*née* d'Azevedo), wife of Plt. Off. E. Midlane, R.A.F.—a son.
Page.—On Nov. 27, at Abiel Nursing Home, Doncaster, to Aldwyth (*née* Lewis), wife of Dr. Lawrence Page, R.A.F.V.R.—a son.
Philpott.—On Nov. 25, at Clanmere Nursing Home, Malvern, to Marie (*née* Griffin), wife of Wg. Cdr. P. T. Philpott, R.A.F.—a daughter.
Read.—On Nov. 19, at Middlesex Hospital, Woolavinton Wing, to Florence, wife of Flg. Off. W. G. (Bill) Read, R.A.F. Regt.—a daughter.
Sayer.—On Nov. 27, at Western Nursing Home, Newcastle-upon-Tyne, to Mona (*née* Robson), Denecroft, Throckley, Newcastle-upon-Tyne, wife of Flg. Off. R. F. Sayer (overseas)—a son.
Sharp.—On Nov. 29, at Maternity Home, Dunfermline, to Catherine Carmichael (Shepherd), wife of Douglas R. Sharp, R.C.A.F.—a son.
Skinner.—On Nov. 28, at Mill Farm, Newton, Notts, to Sybil Mary (*née* Charles), wife of Sqn. Ldr. A. R. (Slip) Skinner, R.A.F.O.—a son.
Templer.—On Nov. 24, at Craig Beuno Nursing Home, Bangor, to Peggy, wife of Flt. Lt. B. Templer—a son.
Thornewill.—On Nov. 26, at Yew Tree Cottage, Franche, Kidderminster, to Sarah (*née* Barrington-Ward), wife of Wg. Cdr. E. W. Thornewill—a daughter.
Waite.—On Nov. 24, at Palm Beach, Florida, to Jessamy, wife of Gp. Capt. R. N. Waite, R.A.F.—a daughter.



A PRESENT FOR AUSTRALIA.—The Royal Australian Air Force Headquarters in London is collecting mementoes of the activities of the R.A.A.F. overseas for inclusion in a National War Museum. This picture shows Major H. R. Kilner, M.C., Chief of the Aircraft Section of Vickers-Armstrongs Ltd., and President of the S.B.A.C., presenting aeroplane models to Air Vice-Marshal H. N. Wrigley, C.B.E., D.F.C., A.F.C., Air Officer Commanding, Royal Australian Air Force, Overseas Headquarters, London.

Addresses

BARIMAR LTD. would like to draw attention to the fact that they changed their address from Holborn to Barimar House, Peterborough Road, Fulham London, S.W.6, two years ago, as they still receive letters addressed to Holborn. From Nov. 29 the temporary head office address of the British Aluminium Co. Ltd. will be Salisbury House, London Wall, London, E.C.2. Telephone: CLerkenwell 3494. The offices at Shrewsbury and at Marlborough Court, Pall Mall, will be closed.

The following are the sources of some of the photographs in this week's issue of THE AEROPLANE:—

The "Daily Mirror" p. 672, S.5.
 Graphic Photo Union: p. 666.
 Keystone Press Agency, Ltd.: pp. 661 bottom, 662, 664 bottom, 679 bottom.
 Topical Press: pp. 659, 672, First Aerial Derby, 673, Farman.

Whelan.—On Nov. 25, at Drayton Emergency Hospital, Norwich, to Valerie, wife of Sqn. Ldr. J. P. F. Whelan, R.A.F., India Command—a son.

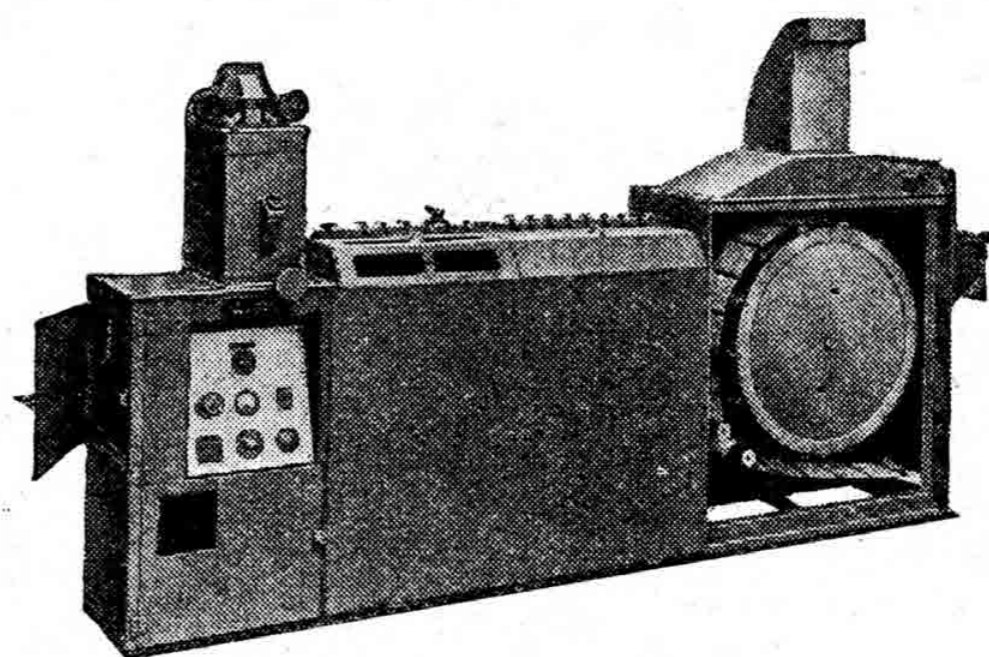
MARRIAGES

Banning-Lover-Rowntree.—On Nov. 27, at St. Andrew's Church, Headington, Sqn. Ldr. G. C. Banning-Lover, A.F.C., elder son of the late Mr. E. G. Banning-Lover and of Mrs. Banning-Lover, of Hale, Cheshire, to Barbara Joan, elder daughter of Lt. Col. and Mrs. H. K. Rowntree, of Headington, Oxford.
Eaton-Clarke-Campbell.—On Nov. 27, at St. Peter's, Vere Street, W.1, Sqn. Ldr. A. Eaton-Clarke, D.F.C., R.A.F., of Johannesburg, to Naomi Mary Campbell, W.R.N.S., second daughter of Sir Gerald and Lady Campbell, Washington, D.C.
Evans-Cohen.—On Nov. 25, at Hendon, Sgt. Plt. Kenneth Evans, younger son of Mrs. M. A. Evans, of 302, Regent's Park Road, N.5, to Amelia, younger daughter of Mr. and Mrs. Alexander Cohen, of 180, Holders Hill Road, Mill Hill, N.W.7.
Hollywood-Liken.—On Nov. 2, in Newtownbreda Presbyterian Church, Belfast, Sub. Lt. (A) Arthur James Hollywood, R.N.V.R., of Bangor, Co. Down, to Mabel Catherine Liken, of Belfast.
Lumsden-de Roeper.—On Dec. 1 at Holy Trinity Church, Prince Consort Road, S.W.7, Flt. Lt. A. S. C. Lumsden, only son of Mr. and Mrs. Alex Lumsden, of 26, Cranley Gardens, S.W.7, to Elisabeth, only daughter of Wg. Cdr. B. P. H. de Roeper, A.F.C., and Mrs. de Roeper, of 14, Queen's Gate, S.W.7.
Moir-Spurway.—On Nov. 27, at St. Andrew's, Nottingham, Sqn. Ldr. D. T. Moir, D.F.C., younger son of Mr. and Mrs. D. T. Moir, of London, to Barbara Dorothy, elder daughter of Major and Mrs. J. E. Spurway, of Woodthorpe, Notts.
Pennington-Leigh-Fuller-Hall.—On Nov. 23, at Kingston-on-Thames, Peter Pennington-Leigh, A.T.A., only son of Cdr. and Mrs. Pennington-Leigh, of the Old Manor House, Weymouth, to Rosemary Lilian Fuller-Hall, A.T.A., elder daughter of Mr. and Mrs. Fuller-Hall, of Long Ditton, Surrey.
Preston-Williams.—On Nov. 6, at St. Mark's Church, Alexandria, Sqn. Ldr. John Eley Preston, R.A.F., elder son of Dr. and Mrs. A. B. Preston, of Abingdon, Berkshire, to Grace Mary Williams, elder daughter of Capt. and Mrs. G. O. Williams, of Alexandria.
Tod-Wright.—On Nov. 30, at St. Columba's Church, Oxford, Flt. Lt. J. Colin Tod, R.A.F., to S./O. Joy Wright, W.A.A.F.
Tooley-Green.—On Nov. 23, at St. Martin's Church, Herne, Lt. Robert William Tooley, R.A., elder son of Mr. and Mrs. H. R. Tooley, of 159, Newbridge Hill, Bath, to Hazel Margaret Harvey Green, W.A.A.F., second daughter of Mr. and Mrs. Walter Green, of Ardnagrena, Dence Park, Herne Bay.



A.T.S. checks up . . .

There aren't many things about the *Williamson Microprinter*, this A.T.S.-girl doesn't know. That, for instance, it produces enlargements by the thousand for microfilm service by air; that it is a wonderfully efficient time and labour-saver. And, as for speeding up the paper work of the War — well, just ask the A.T.S.



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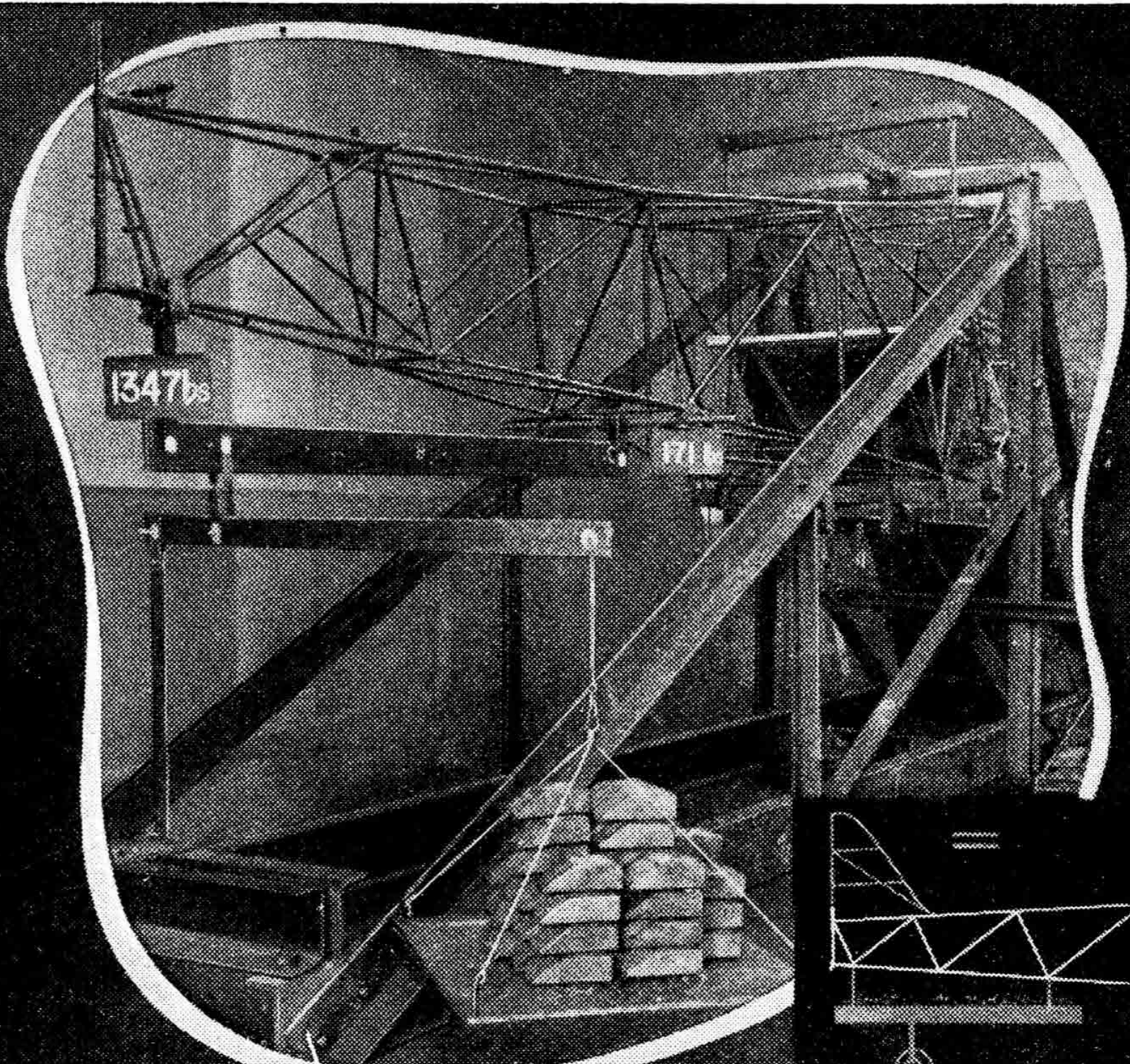
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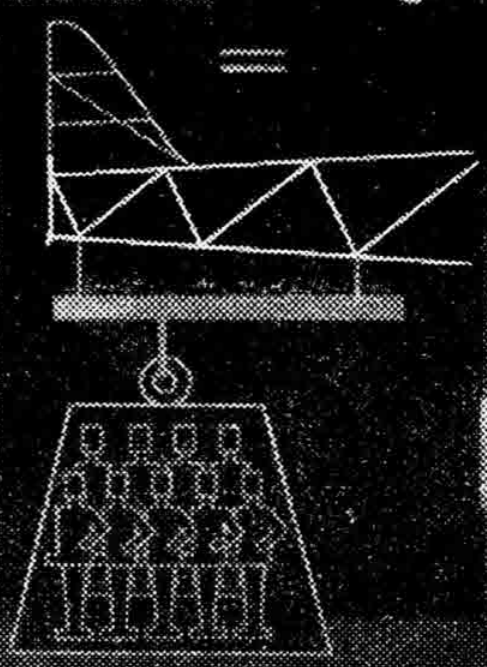
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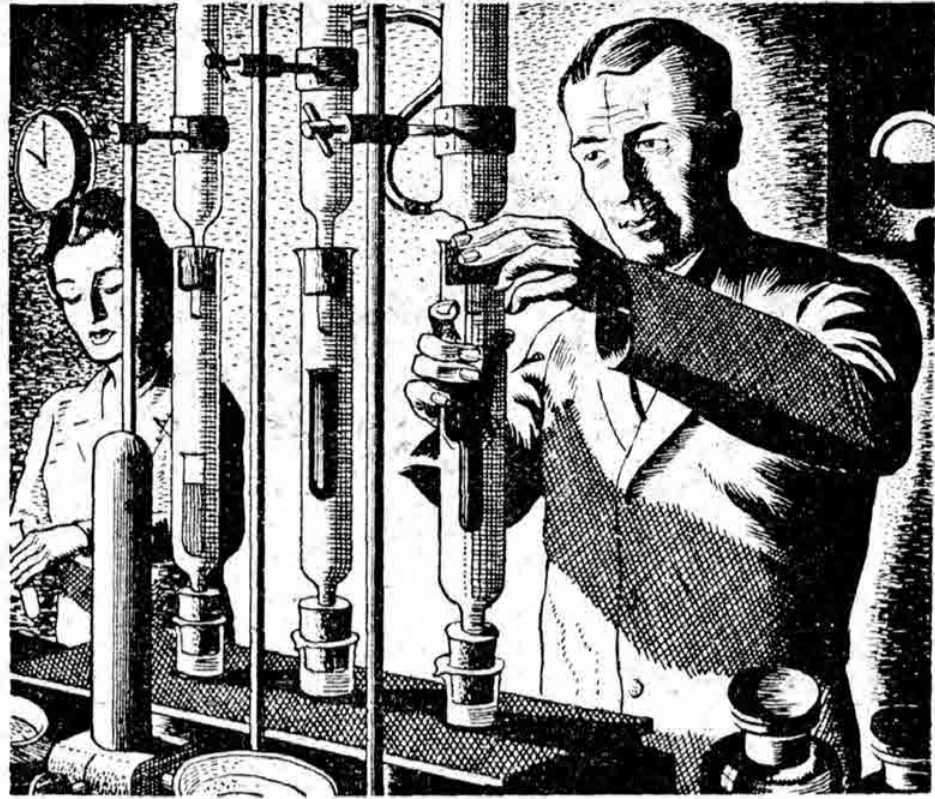
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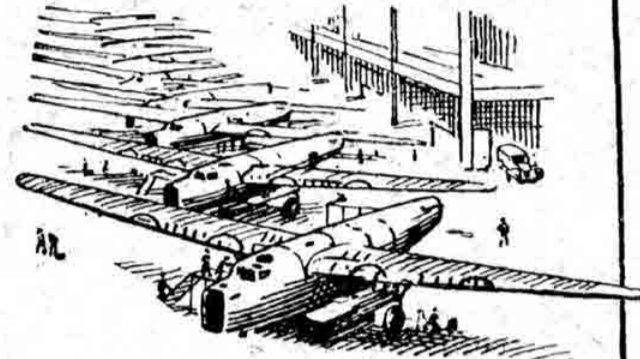
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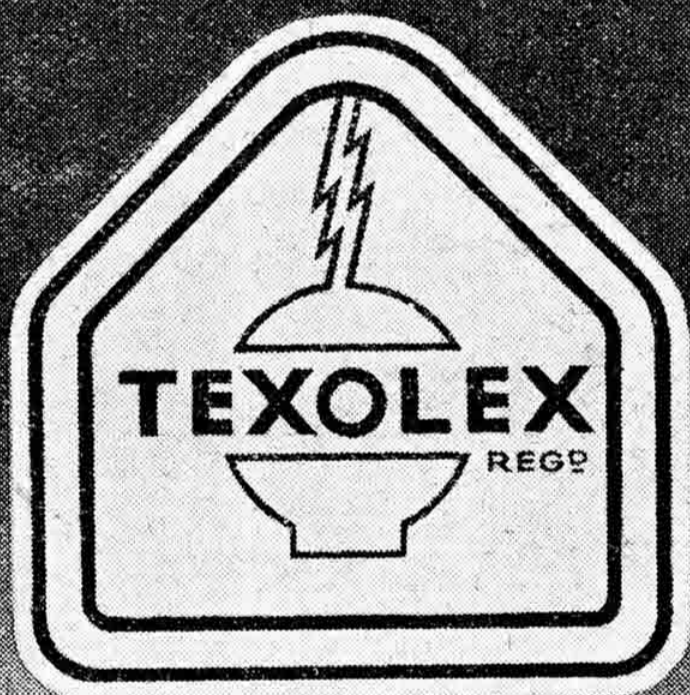
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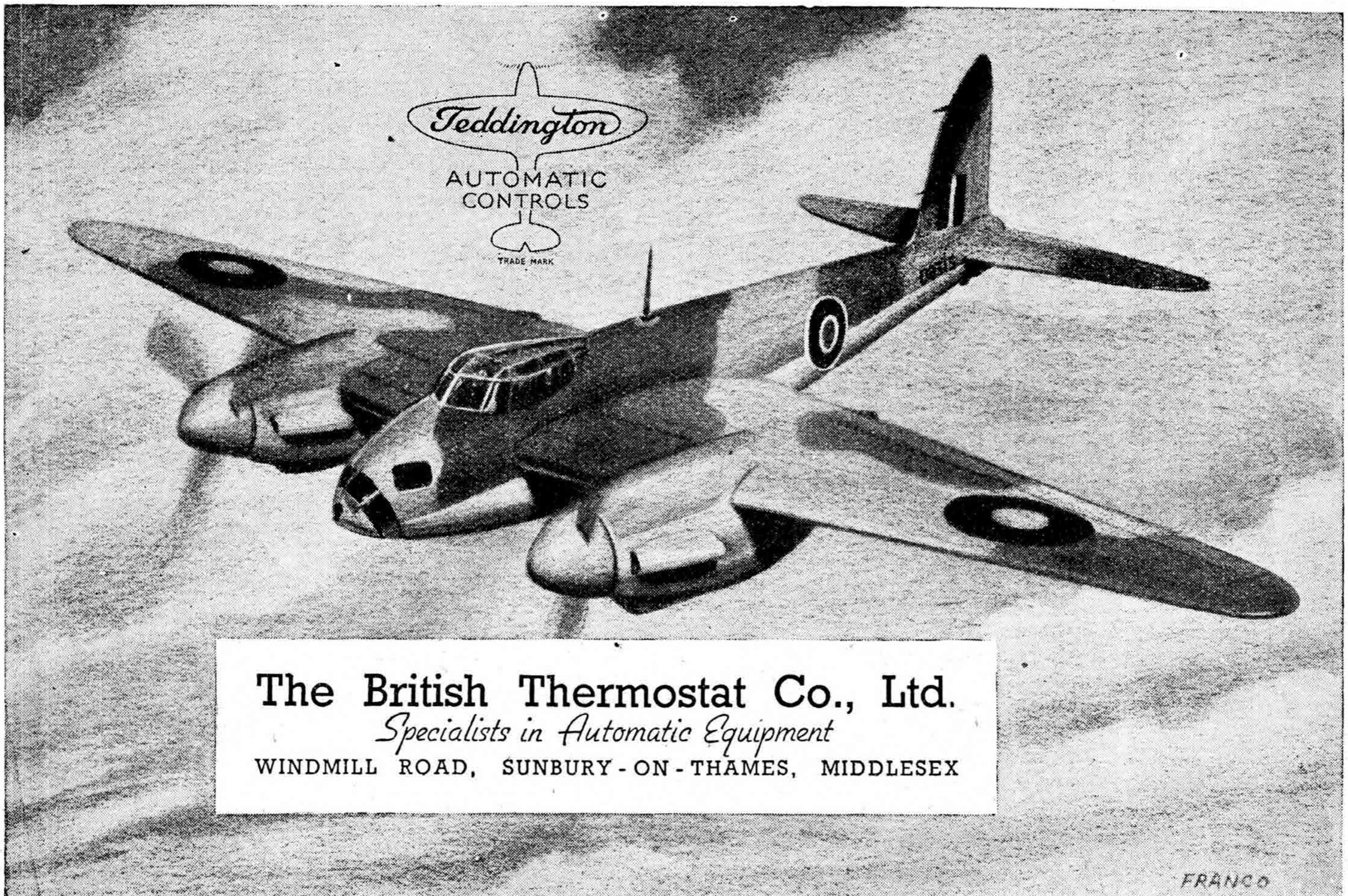
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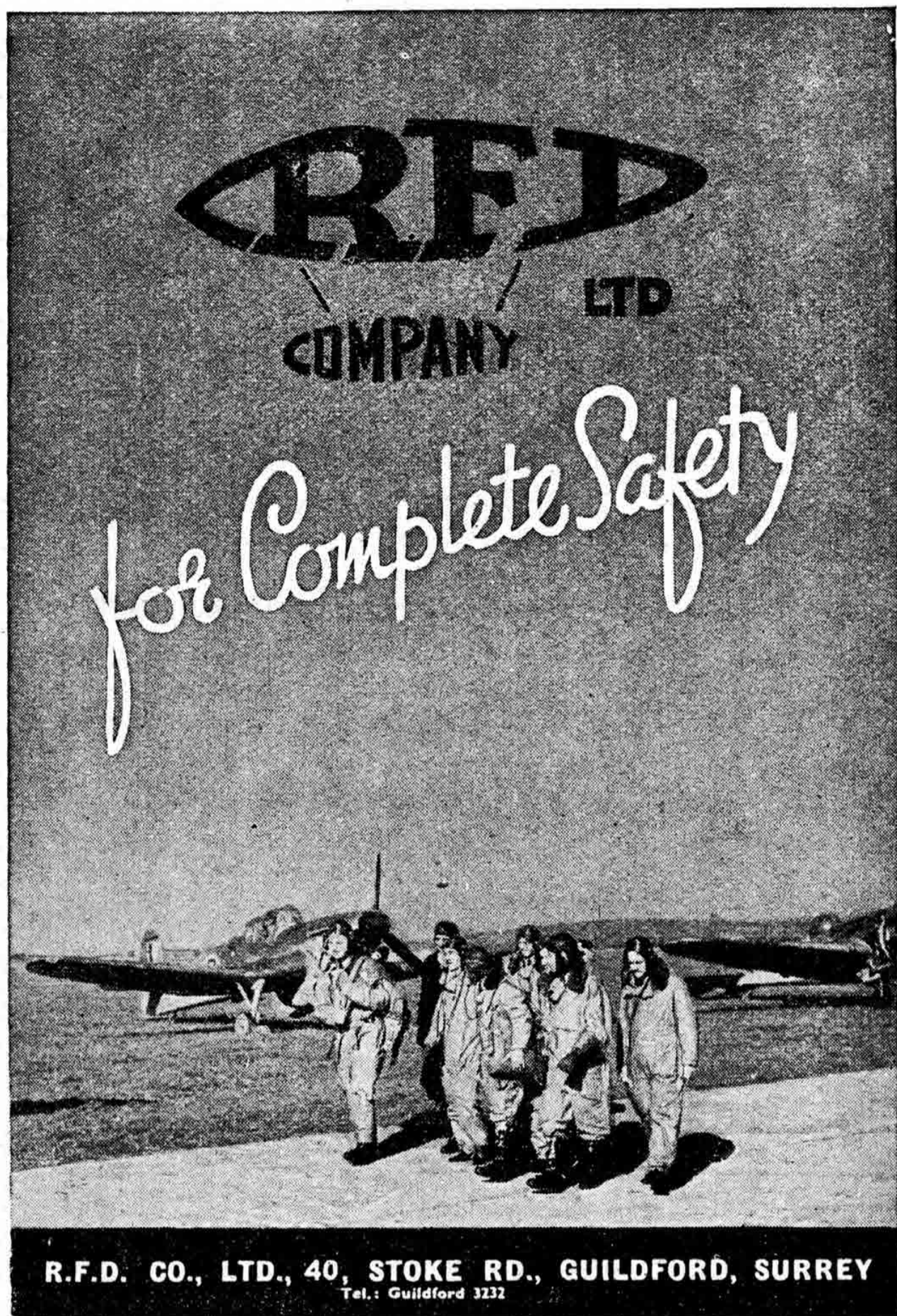


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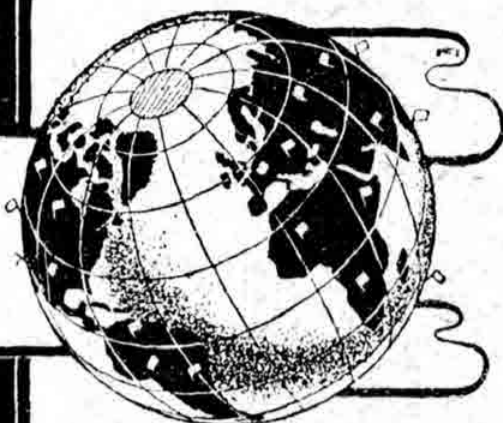
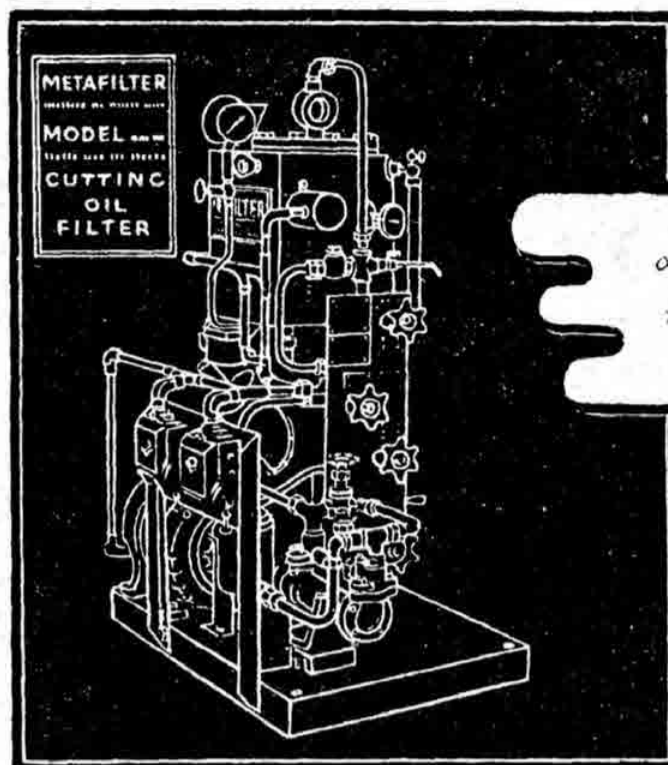


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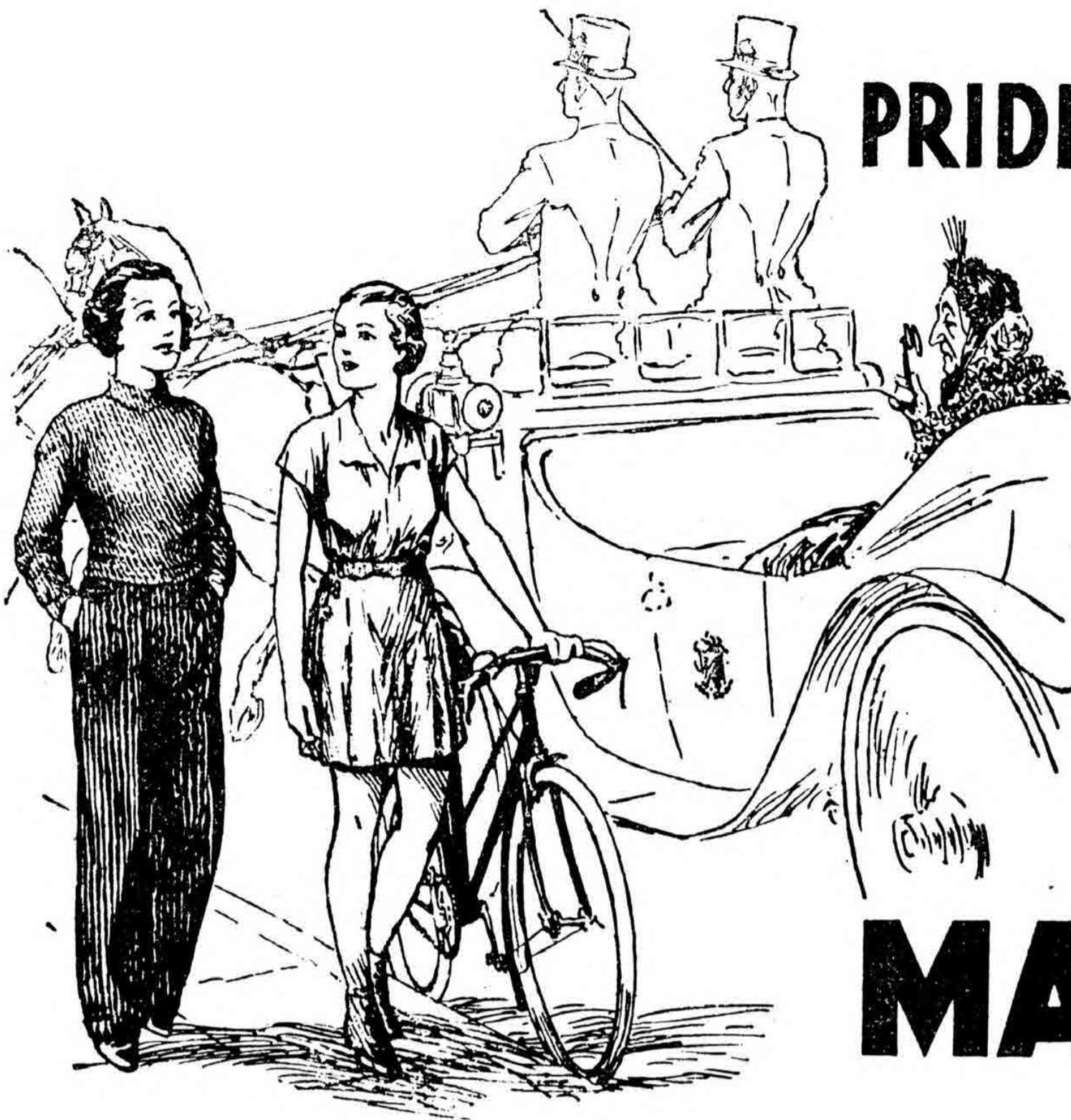
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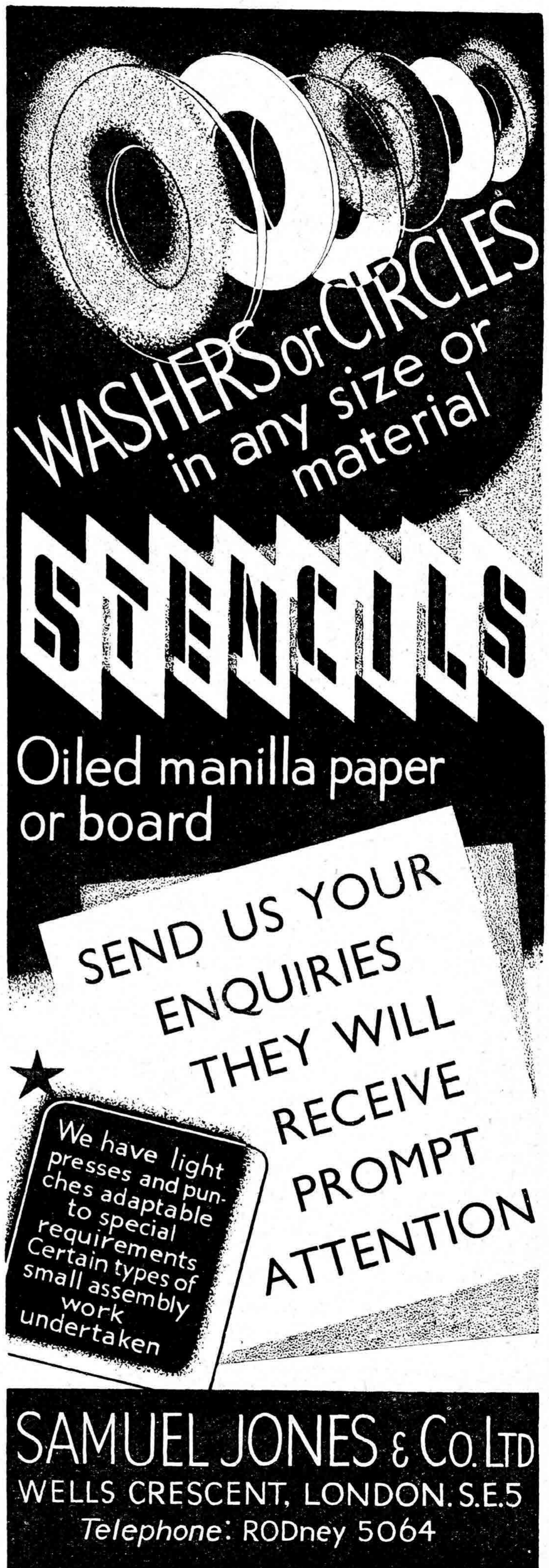


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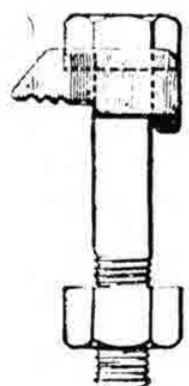
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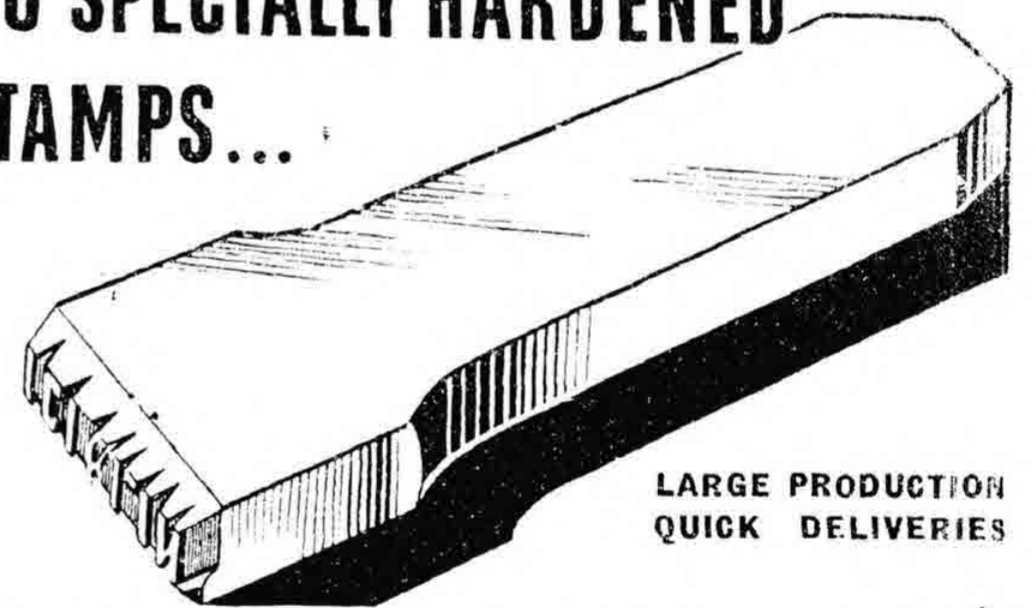
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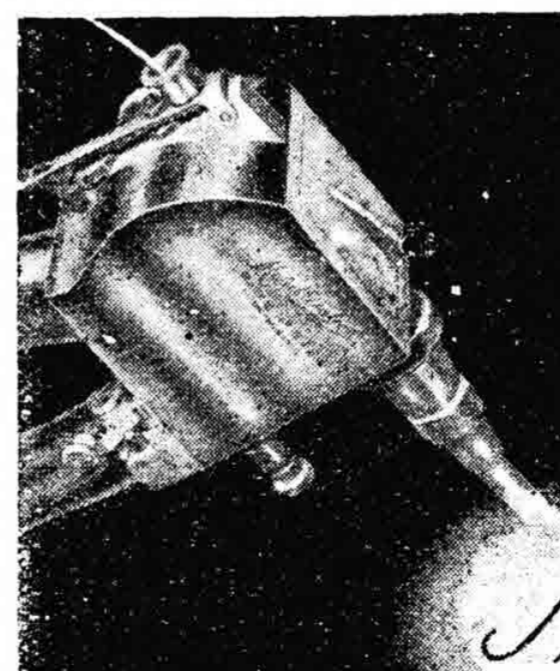
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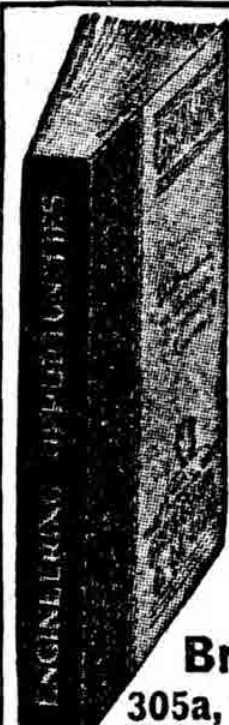
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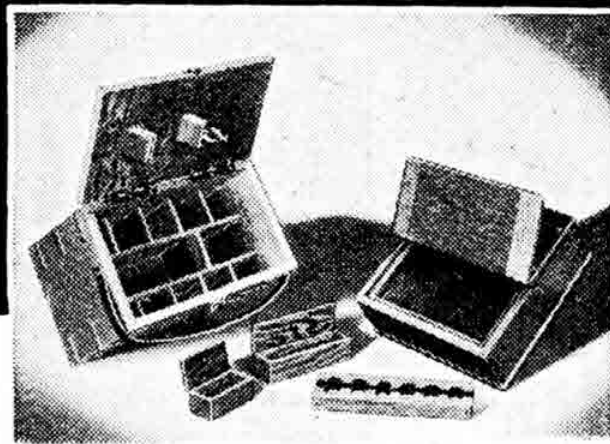
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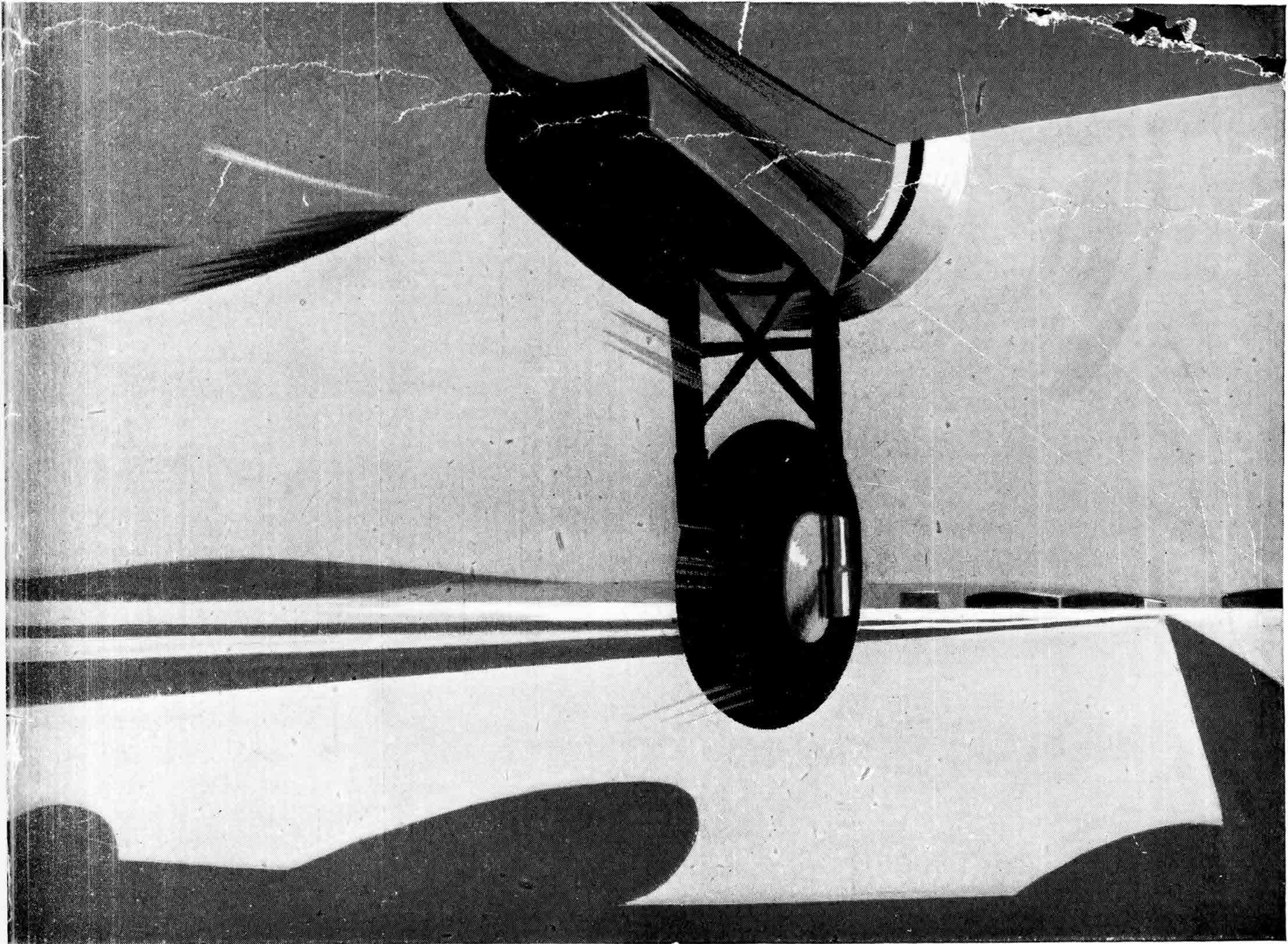
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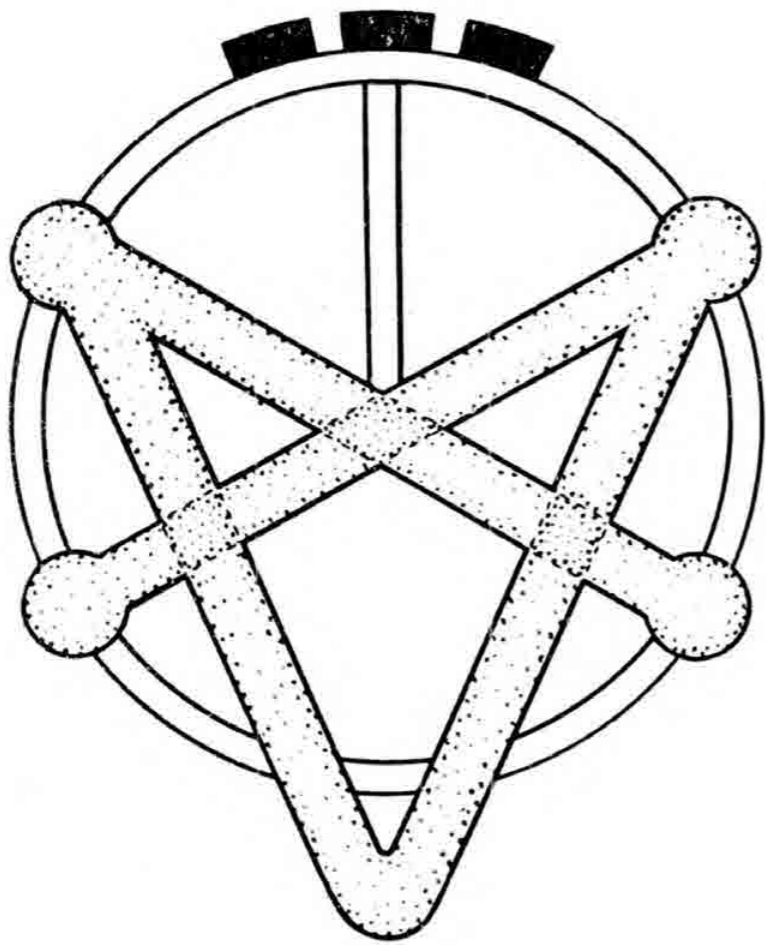
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