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Proprietors:
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Managing Director:
ROLAND E. DANGERFIELD

Head Office:
BOWLING GREEN LANE,
LONDON, E.C.1
Telephone: TERminus 3636

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AIR UMBRELLA

SEVERAL military critics have recently written that, when the invasion takes place in Northern Europe, an "Air Umbrella" will be essential to success. We do not know who coined that term, but it is most unfortunate, for it implies the antithesis to the correct employment of air power. If it means anything, it denotes putting a screen of fighters over the heads of the troops to prevent their being attacked from the air. We hope that the army is not being taught that air power will be misemployed in that way.

The first task of the air forces when used in support of an army should be to obtain mastery in the air. That having been done, aircraft can unhindered turn their attention to ground targets. This method was followed in both the successful German campaigns and, by us, in North Africa, Sicily, and Italy. In Italy, the method of employing our fighters may have conveyed the impression of an "Air Umbrella," but only because there were no hostile aircraft. The fighters cruised about trying to find an enemy to attack in the air while the light bombers and fighter-bombers attacked enemy troops and transports without opposition except from very heavy A.A. fire.

Constant attacks on road and rail transport must have rendered transport of supplies to the German forces most difficult. Nevertheless, our army has been making very slow progress, and a contemporary, trying to find an excuse, suggested that it had been receiving less effective support from the air than the Luftwaffe had been able to give to the German army. We can only assume that the official reports have been completely ignored. In every one of them the General in command of the operation has paid the highest tribute to the most effective support he has received from the air. Another contemporary which specialises in air matters produced the unusual theory that bombing in support of the army is less effective in the hills than in the plains. We had always believed the exact opposite to be the fact. The airman prays for an opportunity to find a target in a defile. In open country where troops and transport can scatter off the road air attack, apart from its moral effect, can do little more than impose delay. This, of course, applies to troops on the move. Troops which are firmly established in position are not suitable targets for the normal method of air attack either by dive bomber, light bomber, or fighter-bomber. They have little to fear from the lighter type of bomb and with their own A.A. weapons should be able to take a heavy toll of the attackers. Air Chief Marshal Sir Arthur Tedder appreciated that, when it was necessary for the air arm to blast ground forces out of an established position, the use of a great weight of the biggest type of bomb was advisable. Such a method has been used with good

effect upon occasion and has come to be known as the "Tedder Carpet," but it is quite different from what is usually known as air support for the army.

Military critics are naturally reluctant to lay any blame for the army's lack of success on the army itself and try to find a scapegoat. The Air Force has usually been blamed, but in Italy the weather has also been made responsible. The weather has been awful and we have been shown pictures of our troops wading through the flooded Sangro and other streams. It is difficult not to compare them with the way in which the Russians stormed across the Dnieper, a far more formidable obstacle. The truth is that since it got away from desert conditions our army has been undeniably sticky. We have no doubt that Mr. Churchill inquired closely into the reasons during his Mediterranean visit and we know that the C.I.G.S. went to Italy to see for himself. Judging by Mr. Eden's report to Parliament on his return, the results of the inquiry were not very reassuring.

It has been argued that there is no great need for rapid progress in Italy and, since the Italians capitulated, no great value in capturing Rome. The strategic plan cannot be that the army should fight its way up through Italy and then be given the task of scaling the Alps. But the acquisition of aerodromes from which to deliver heavy attacks on the industrial areas in Austria and Southern Germany might have most important results. This is the reason for our impatience. Every day, every week, every month that those factories escape heavy attack, they are turning out weapons which can be used to prolong the war.

Victory will not finally be ours until our armies are in occupation of German soil. Hitler has been boasting of his "Festung" of Europe and has been paying great attention to the erection of fortifications to make it as difficult as possible. The Russians have been making great progress but are still a long way from Germany. An advance into Germany by way of Italy, the Balkans, or even Southern France must inevitably take a long time. An invasion of Northern Europe may be quicker but depends upon the amount of resistance the German army is able to offer, and the best means of breaking down that resistance is by bombing Germany's war industry.

Thus allied strategy should aim at providing air bases as quickly as possible from which the heaviest possible scale of bombing attack can be delivered at German industry. The army is responsible for getting forward to seize and hold the necessary air bases. It must be given every assistance by the air force, but not by means of an "Air Umbrella."

MATTERS OF MOMENT

Allied Invasion Commands

THE NAMES of the officers to command the Allied forces for the forthcoming invasion of Europe and liberation of occupied countries were announced from 10, Downing Street, and the White House in Washington on Dec. 24.

General Dwight D. Eisenhower is to be Supreme Allied Commander of the British and United States Expeditionary Forces operating from the United Kingdom for the liberation of Europe.

General Sir Henry Maitland Wilson is to be Supreme Allied Commander in the Mediterranean.

General Sir Harold Alexander is to be Commander-in-Chief of the Allied Armies in Italy.

General Sir Bernard Montgomery is to be Commander-in-Chief of the British Group of Armies under General Eisenhower.

General Carl Spaatz is to command the American Strategic Bombing Force operating against Germany.

On Dec. 27 Air Chief Marshal Sir Arthur William Tedder, G.C.B., was named as Deputy Supreme Commander under General Eisenhower.

This is the first time that an Air Force officer has been appointed to such an important strategical command and indicates that, in the opinions of leaders of

in 1919. During 1918 and 1919 he was serving in Egypt and was mentioned three times in despatches. From 1922 to 1923 he commanded No. 207 Squadron in Constantinople; 1923-1924 the Royal Naval Staff College; 1924-1926 commanded No. 2 Flying Training School; 1926-1927 on the Directing Staff of the R.A.F. Staff College; 1929-1931 commanded the Air Armament School at Eastchurch; 1932-1933 Director of Training at the Air Ministry; 1934-1936 Air Officer Commanding in the Far East; 1938-1940 Director-General of Research and Development at the Air Ministry; and 1940-1941 Deputy Air Officer Commanding-in-Chief in the Middle East. Since Feb. 17, 1943, he has been Air Officer Commanding-in-Chief, Mediterranean Command.

Air Chief Marshal Tedder is the author of "The Navy of the Restoration," published in 1915.

Major-General Carl Spaatz, D.F.C., D.S.C., was appointed in July, 1942, to the command of the United States Air Forces in the European Theatre of Operations, and held this appointment until early in 1943, when he left Great Britain to take up command in North Africa.

He is 52 and has been connected with aviation since he was 25. It was in 1916 that he first flew, when he joined the aviation section of the U.S. Signal Corps. He was one of the first American



General Eisenhower.

the Allied Nations, Sir Arthur Tedder is the leading air strategist of the present day. Air Chief Marshal Tedder is 53 years of age and was educated at Whitgift and Magdalene College, Cambridge, where he took a B.A.

After a few years in the Colonial Service, including a period in Fiji, Sir Arthur Tedder was commissioned in the Dorset Regiment in 1913 and was seconded to the Royal Flying Corps in 1916. He received a permanent commission in the R.A.F.

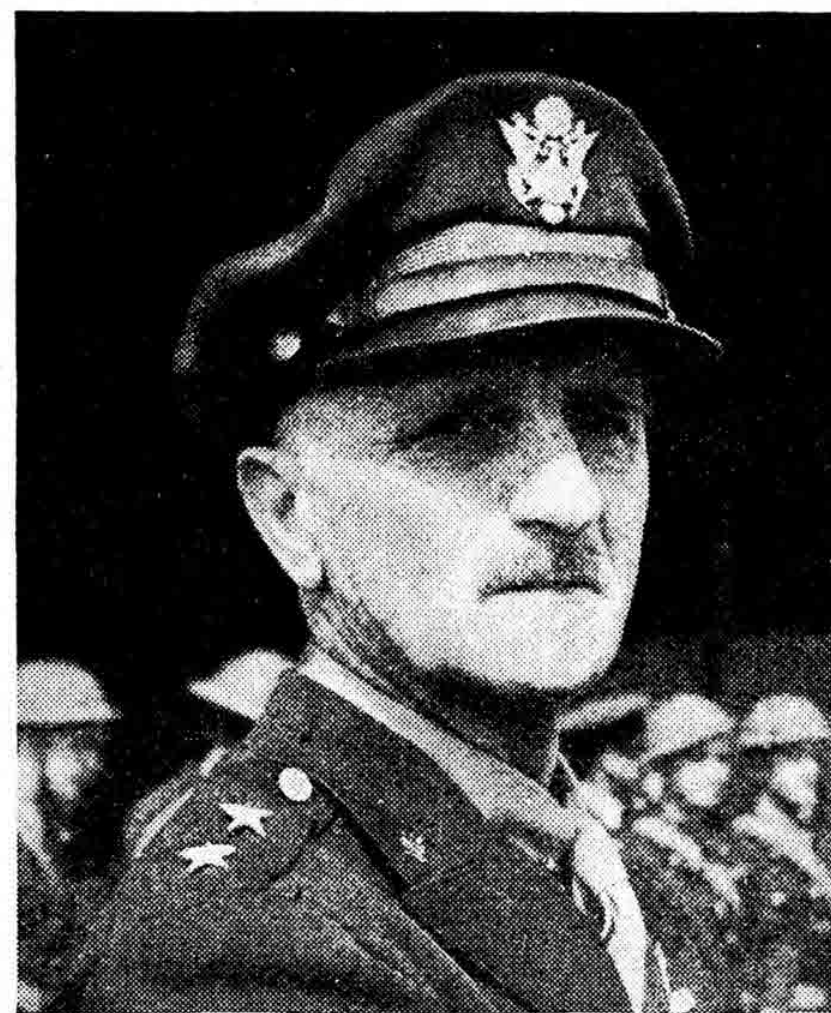
pilots to go overseas in the World War of 1914-1918, and while overseas he commanded the largest U.S. flying training school in France.

During the Battle of Britain he was in Great Britain as an official observer.

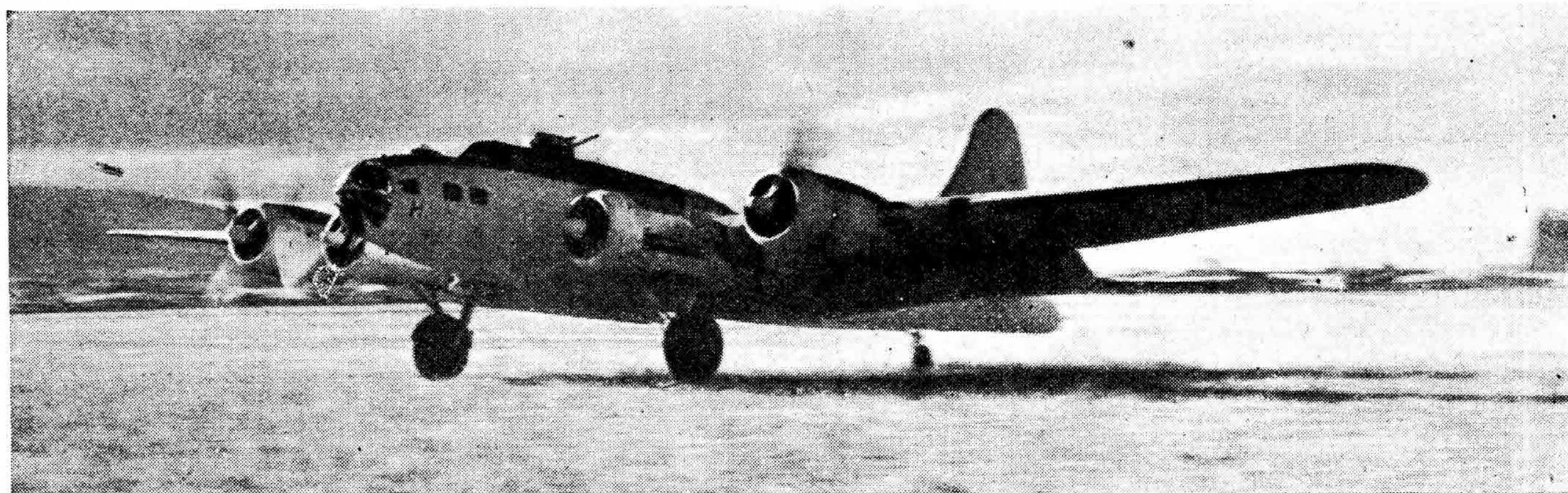
Major-General Spaatz takes up his new command from North Africa where he commanded the North-West African Air Force from the time of the Allied invasion. He then came under the command of Air Chief Marshal Sir Arthur Tedder.



Air Chief Marshal Sir A. W. Tedder, G.C.B.

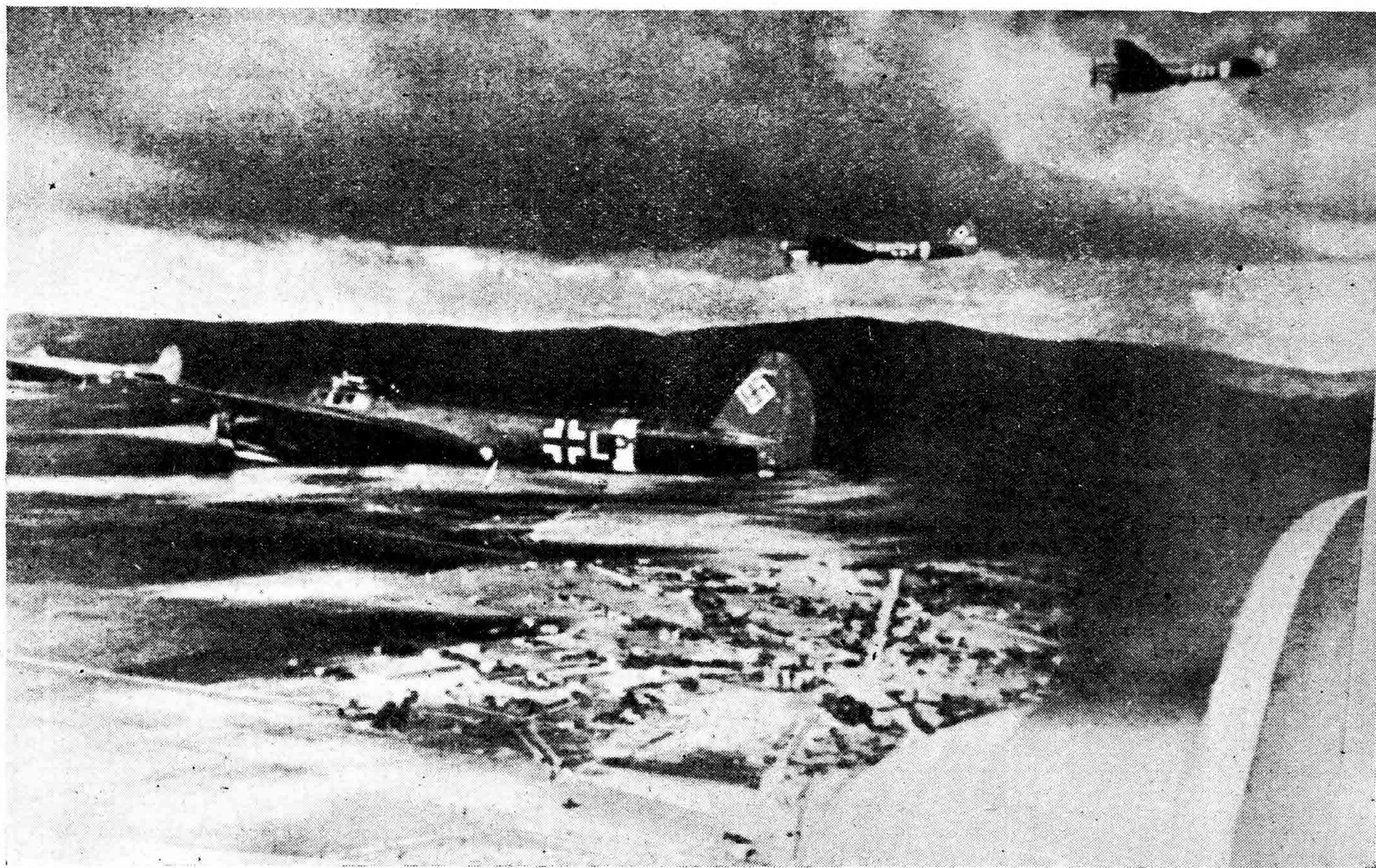


Major-General Carl Spaatz, D.F.C., D.S.C.



UNSINKABLE CARRIER—Additional air protection for Allied South-bound convoys is now available through the lease of the Azores by Portugal to Great Britain. Fortress IIs of Coastal Command are the predominant type operating from these bases. The one illustrated above is taking off on patrol. An interesting point is the absence of the ventral turret.

THE WAR IN THE AIR



FUNFZEHN-FINGEREN.—A formation of Ju 88's, which, according to the German caption, are seen passing the Greek mainland after attacking Allied positions in the Mediterranean.

THE YEAR is ending in an atmosphere of confidence and suppressed excitement. Success in the Atlantic war against submarines during recent months has been of great value in speeding preparations for the Grand Assault on Hitler's Europe. Our three-to-one superiority in the air, revealed by Air Marshal Sir Richard Peck in a broadcast review, will certainly be exceeded in the near future; but, in any case, it is a far cry from the ten-to-one-against ratio of Battle of Britain days.

In every theatre the war in the air goes in favour of the United Nations and everywhere we are on the offensive, the strength of which is particularly marked in air operations from this country. Berlin received 1,000 tons of bombs for the loss of 17 aircraft, and more than 2,000 Allied aeroplanes plastered the French coast with high explosives in broad daylight, not only without loss, but practically unopposed.

With regard to the unspecified military objectives in Northern France which received such a generous shower of Christmas crackers, daily newspapers have been busy suggesting that the targets are secret rocket batteries. This guess is quite possibly as wide of the mark as the secret rockets are likely to be, if and when they are fired. Those who talk glibly of 10-ton rockets with a range of 120 miles appear to forget that instruments of this kind cannot be experimented with in private. Rockets make a noise, and even a half-ton rocket would be bound to attract attention on a trial shot.

The attack on Augsburg from the South is significant of the advantage we have gained by establishing heavy bomber bases in the Mediterranean area. This attack was the deepest penetration of Southern Germany yet achieved from that direction. Augsburg, a target of exceptional importance, has been bombed by day once before, on April 17, 1942, by aircraft based in this country. That particular attack was a magnificent feat of arms. Twelve Lancasters set out on the 600-mile run, flying across Europe almost at tree-top level. Eight of them reached Augsburg and bombed the M.A.N. Diesel engine works with devastating results.

The advantage in distance on a return trip from the South is, at present, slight, as our nearest heavy bomber base in Italy is about 500 miles from Augsburg, but the real gain in this two-way attack on Germany lies in the intolerable strain put on Luftwaffe defence dispositions. American air crews return-

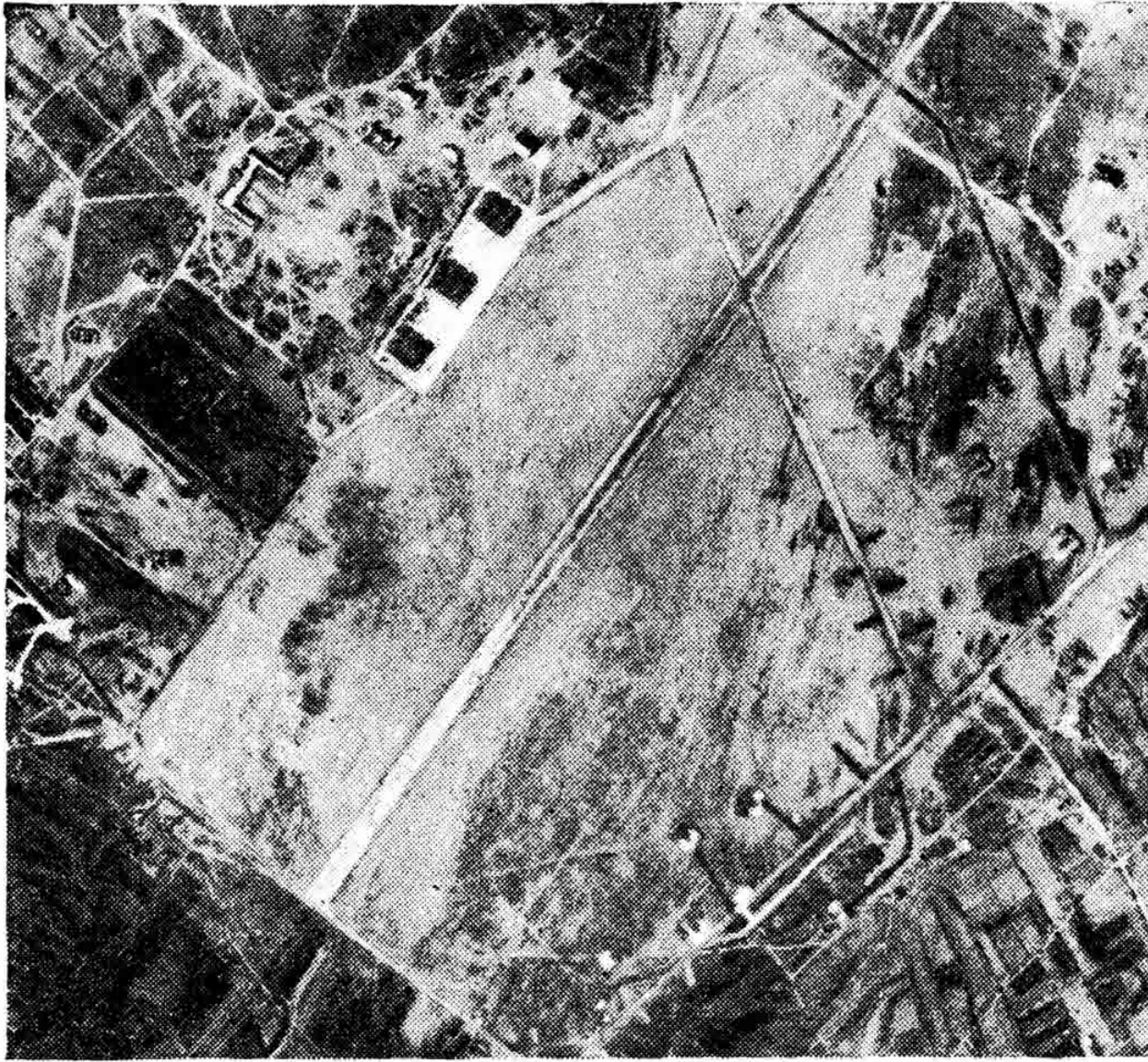
ing from the Augsburg raid stated that more than 50 German fighters came up to meet them in the neighbourhood of the target. That represents 50 which might have been operating on the Western front. During the week a most impressive interim report was issued of the damage inflicted on Berlin in recent attacks. Destruction in engineering, armament and electrical works, as well as chemical and general industries, has been on a large scale, but much still remains to be done owing to the great area of the city.

The week-end brought a spate of good news. In Russia, von Manstein's long and hard-fought offensive in the Kiev salient ended in complete disaster for his Army; in Arctic waters the Scharnhorst was sunk off North Cape. Here in England, Mr. Herbert Morrison sent a Christmas message to all members of the Civil Defence services and to Fire Guards, a gesture slightly reminiscent of those good wishes expressed by the Workhouse Master on Christmas Day.

Northern Europe

The week started well, with improved operational weather, of which both Bomber Command and the U.S. Eighth Army Air Force took immediate advantage. On Monday, Dec. 20, American Fortresses and Liberators attacked Bremen during the day and dropped 1,200 tons of bombs on the port and industrial areas, with special attention to the railway network of that city. More than 500 bombers took part in this attack and they were escorted by the largest formation of U.S. long-range fighters ever sent out from England. Photographic reconnaissance carried out later on the same day showed enormous damage in the target areas. Twenty-one enemy fighters were reported as shot down by the bombers during the attack. U.S. fighters destroyed another 19, while R.A.F. and Dominion Fighters destroyed two more. American Marauders on the same day in great strength went for unspecified targets in Northern France.

When darkness fell, Bomber Command got going with a tremendous attack on Frankfurt, in the course of which well over 2,000 tons of high explosives and incendiaries were dropped. Frankfurt was a most important centre of chemical and armament industries, but it can now be little more than a heap of rubble. The city had already been bombed with such good effect that it figured on Bomber Command's list of



ELEUSIAN FIELD.—The Eleusis aerodrome outside Athens before it was raided.

German towns needing one more full-scale, concentrated attack to put them completely out of action.

While Frankfurt was receiving the coup de grâce, a secondary, but nevertheless heavy, attack dealt with what remained of Mannheim-Ludwigshaven, and Mosquitoes bombed objectives in Western Germany and Belgium in diversionary raids. Forty-two aircraft were lost in these operations.

The following morning, Dec. 21, conditions remained good and very heavy daylight attacks were made on military installations in the Pas de Calais area by formations of the U.S.A.A.F. and R.A.F., many hundreds of aircraft being engaged in these operations. Excellent results were reported, a great weight of high explosives fell in the target areas and eight enemy aircraft were shot down by the escorting fighters. All the bombers returned safely and air crew members described the results of this attack as exceptionally good.

This attack on the Pas de Calais area was continued day in and day out, thousands of tons of bombs being dropped, but no particular targets were mentioned with the exception of a big, huddled camp at Etaples.

In the early hours of Friday morning, Dec. 24, Bomber Command got busy again on Berlin, to make sure that the city should have a merry Christmas. One thousand tons of bombs were dropped in this heavy attack and losses were light, as only 17 of the large force of bombers employed failed to return.

The destruction already caused in the German capital is enormous, but it will soon become worse as this systematic pounding continues. Looking out, not on the Feast of Stephen, but slightly in advance of it, a German news-agency commentator remarked in a radio broadcast: "Many soldiers on Christmas leave from the Eastern Front will find the homeland greatly changed."

On Friday, Dec. 24, the U.S. Army Eighth Air Force set up a record in daylight bombing operations. More than 2,000 aircraft were operating over Northern France during that day, 1,300 bombers taking part in one sortie. R.A.F. and Dominion fighters accompanied the bombers, but encountered practically no opposition.

Italy and Southern Europe

In Southern Italy, our ragged line from sea to sea has remained set, and although General Montgomery again predicts an imminent march on Rome, prospects of this do not, on the surface, look any brighter. The weather seems to have been, if possible, worse than ever, and air activity during last week was on a restricted scale. Operations against enemy shipping in the Aegean were carried out by day and by night. Bad conditions made observation of results very difficult, but a number of small ships attempting to supply the enemy-occupied islands received hits from R.A.F. and U.S.A.A.F. bombers. Salamis dockyard in Southern Greece was attacked and many bursts were seen in the target area. Two German aircraft, a Junkers Ju 88 and a Heinkel He 115, were destroyed.

Fighters and fighter-bombers carried out sorties in atrocious weather over the Rome area and also off the coast of Yugoslavia. Enemy ground positions were attacked and communications disrupted, motor vehicles and railway rolling stock

being hit and destroyed. Terracina was again bombed by our aircraft.

On the ground, in Italy, the port of Ortona was partly occupied and our line at the Adriatic end advanced by rather less than half a mile. At certain points inland the advance penetrated farther, but, taking the campaign as a whole, prospects of a real break-through appeared to be remote.

Russia

A most significant feature of the Soviet offensive in White Russia, which continued to develop well, was the tremendous air support given to ground troops in their steady advance. Russian aircraft production is now obviously able to cope with the wastage which is bound to occur on a 2,000-mile front and the Red Air Force appears to be reaching the same superiority over the Luftwaffe already enjoyed by the Allies in Western Europe.

The great push progressed rapidly during the early part of the week, but slowed down later as German resistance stiffened. German troops are fighting desperately to stem the Soviet flood, as indeed they must, for this offensive is the most dangerous that Germany has yet faced in the Russian war. Luftwaffe reinforcements arrived in surprising strength and air battles developed on a vast scale. The Germans attempted ground straffing with massed formations of aircraft, but the Red armies, backed by mighty reserves, closed in steadily on Vitebsk and Polotsk.

When the present Russian offensive penetrates into Latvia and Northern Poland, as it seems likely to do in the very near future, a general retreat involving the relief of Leningrad will be forced upon the Germans. Should they attempt to hold on too long, vast armies may be trapped against the Baltic coast.

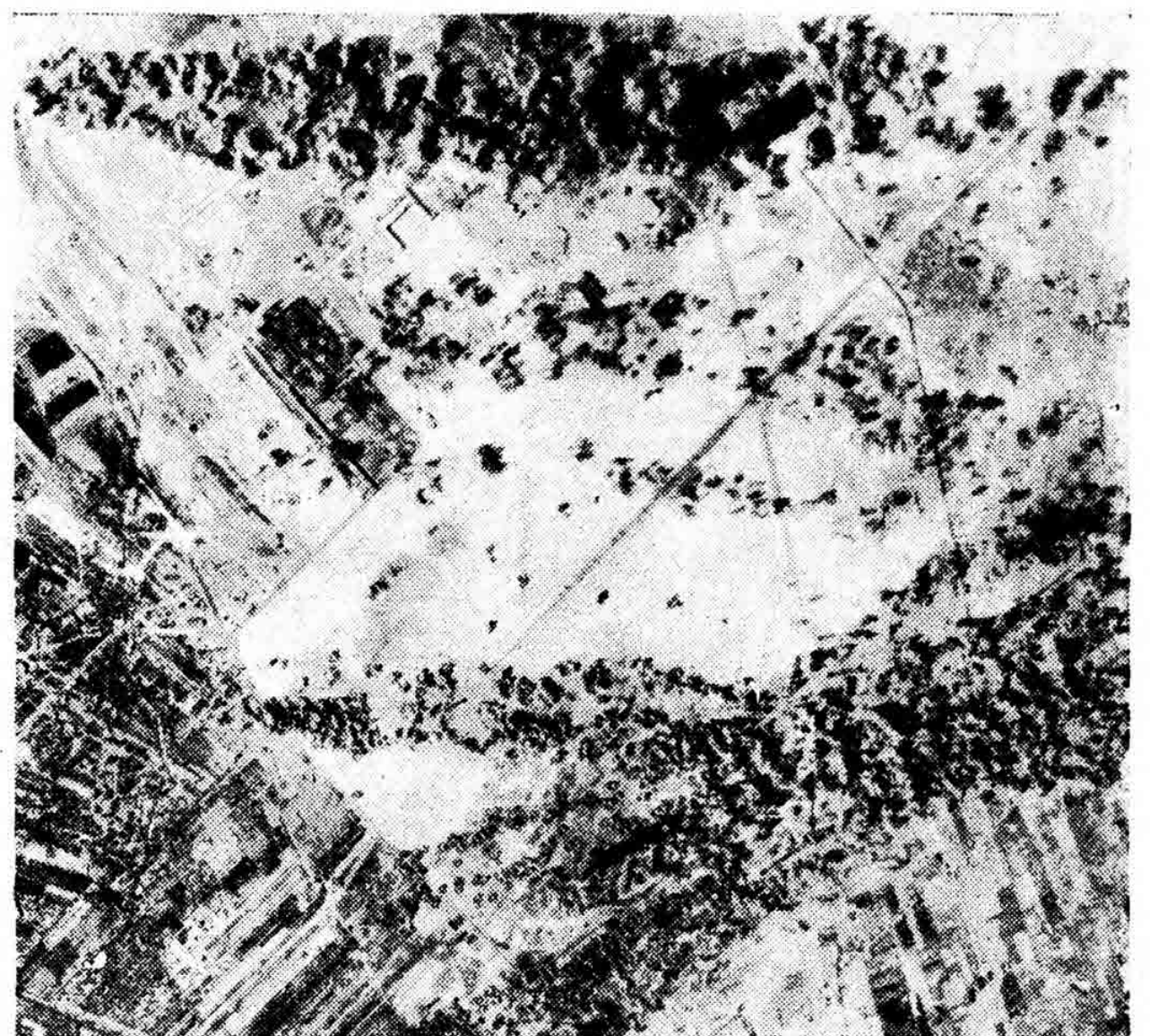
The week-end brought news of an overwhelming Soviet victory in the Kiev salient. After a slow and costly advance lasting nearly two months, von Manstein's army, which had been halted, was suddenly driven back for a distance of 25 miles, on a front of 70 miles. The parallel with Ludendorff's final effort in France during the Great War is thus brought even closer. The Battle of Amiens on Aug. 8, 1918, when 14,000 prisoners were taken and the Germans driven back 10 miles, was not regarded at that moment as more than an important local victory.

It was, nevertheless, the beginning of the end, and that end came just about 90 days later.

Far East and Pacific

In the first long-range raid since the formation of an Eastern Air Command, Allied heavy bombers attacked objectives in Bangkok on the night of Dec. 19-20. A strong formation of U.S. bombers attacked the docks, while units of the R.A.F. bombed the arsenal area. In Southern Burma widespread attacks have been carried out, the R.A.F. operating by night and the Americans by day. Targets from Akyab to Henzada on the railway South of Prome were bombed on four successive nights, while in daylight U.S. heavy and medium bombers hit oil installations at Chauk and Yenangyaun, starting large fires.

R.A.F. fighters made repeated and successful attacks on rail, road and river traffic. In northern Burma American fighter-



AFTERMATH.—The Eleusis aerodrome surrounded by bursts made by fragmentation bombs dropped from Boeing Fortresses on Dec. 8.

NEWS FROM GERMANY

FIELD MARSHAL KESSELRING'S appeal to the German soldiers in Italy to "expend ammunition sparingly" is not an isolated case. Similar appeals have been made in the past by German Army Commanders in other theatres of War. Kesselring's appeal is a significant illustration of the primary two weaknesses of the Nazi war machine: the shortage of man power and the insufficient productive capacity of the War industry. The shortage of man power was caused by the heavy losses of the Wehrmacht during the past two years and in order to maintain the fire power of the depleting fighting units the German High Command has been forced to raise the proportion of quick-firing weapons. These weapons, such as the machine-gun S.42 and the six-barrelled rocket gun, require greater quantities of ammunition. Allied air superiority on all fronts has also made increasingly heavy demands on German works manufacturing Anti-Aircraft shells. When the German High Command accepted these new weapons as standard equipment, the industrial capacities of the Reich and the occupied countries were considered adequate to maintain a continuous flow of supplies. The allied air forces, however, upset all German calculations. This is the deeper meaning of Marshal Kesselring's appeal, which is a clear contradiction of the many German claims that allied air raids on Germany have caused only superficial damage to the country's industrial capacity.

There are many examples of direct damage to German industrial plants during the past year; in particular to works of the German aircraft industry. Bremen (Weser Works), Kassel (Fieseler), Regensburg and Wiener Neustadt (Messerschmitt), Marienburg and Anklam (Focke Wulf), Oschersleben (Ago), Warnemuende (Arago), and Berlin, Mannheim, Nuernberg (Daimler-Benz) are the best known of the many aircraft targets in the Reich. Of the German-controlled aeronautical works in the occupied territories, the Potez works, Renault at Billancourt, and Gnome et Rhone at Le Mans have been damaged. At the Fokker plant at Amsterdam (gliders) more than half the buildings were affected by allied bombs. Advertisements asking for unskilled personnel for "very urgent" work (duration; two to three weeks) indicate that clearing-up and repair work has to be completed as quickly as possible. Sudden demands for great numbers of carpenters and builders were noticed in the Press of a district which had been blitzed a day or two previously. In many cases the wording and the code number of the advertisements did not leave any doubt that they were inserted by the aircraft company of the raided locality. The fact that some aircraft plants were rebuilt, although situated in "the front line" (inside the range of allied escort fighters) indicates that the Luftwaffe must rely for its supplies on the individual plant, which proves, as in the case of the Weser Works, Bremen, building Ju 87, that there are no additional manufacturing capacities anywhere in other parts of the Reich which may be increased to make good the damage to the Bremen plant. The destruction of Focke-Wulf's assembly plant at Marienburg, which had reached top production only a short while before the raid, represents a crippling blow to the output of Fw 190s, which had suffered previously from heavy attacks on the Fieseler factory in Kassel.

Indirect Damage

Indirect damage has been done to works manufacturing components for airframes and motors, equipment and instruments. Since the beginning of the air offensive, the Germans distributed the building of components among a great number of small workshops all over the town or the district where the assembly plant was situated. Reliable reports from inside Germany indicate that during the raids on Hamburg and Berlin some 8,000 small workshops manufacturing components for Me 109s, Fw 190s, BMW and DB motors, and for aircraft instruments were destroyed. Of large component works, the Anklam plant (Fw 190) and one Fieseler factory at Kassel (also Fw 190) may be named. Damage to the Schweinsfurt factory, which was reported to have seriously affected the production of roller bearings, must be mentioned, although a great proportion of the factory's installations was put underground before the present war. Also of considerable indirect influence on aircraft output were the raids on the VDM airscrew plant at Frankfurt-Heddernheim. The report that, because of the damage inflicted on this works, the Luftwaffe is experiencing shortage of airscrews is hardly convincing, as the VDM set up several factories in the East and South-East of Germany during the past few years.

Damage to the machine-tool industry is of indirect importance. In normal times, the life of a machine tool, calculated on a one-shift working day, is roughly nine years. In war-time, with three shifts a day, with less facilities for maintenance, its life is hardly more than three years. As the

principal German armament works (this applies also to most of the aircraft plants) were re-tooled in 1939 and 1940, the time has come when replacements of worn-out equipment are of vital importance. Yet the shortage of machine tools (with the exception of lathes) is so great that, despite a fairly substantial reserve in the occupied territories, the re-tooling of even the most important plants has to be adjourned. Since allied bombers paid special attention to the plants manufacturing machine tools (of which thousands were destroyed in raids on armament works), the heavy demands cannot be fulfilled. Machine-tool factories which have been the main suppliers for the aircraft industry are the Schiess A.G. in Düsseldorf, the principal manufacturer of heavy machine tools, and those in Remscheid. The Schiess A.G. factory was destroyed three times and rebuilt, which indicates that there is no additional capacity outside Düsseldorf.

The supply of raw materials and half-fabricated articles has also suffered in the present year. Krupp and the Vereinigte Stahlwerke, supplying the aircraft industry with steel or steel products, such as crankshafts, were destroyed almost entirely. Of light metal works, the Duerener Metallwerke A.G. at Dueren, the Spandau branch, and the Nordisk Lettmetall plant at Herøya in Norway were the three most important ones which suffered damage. Rubber supplies were severely crippled by the attacks on Huls and on the Continental A.G. in Hanover, which supplied about 67 per cent. of all German aero tyres.

Man-hour Loss

Loss of man-hours has greatly contributed to the decline of armament output. Here, again, an exact number of the man-hours lost cannot be estimated, but some of the major factors can be listed. First is the destruction of the factories. Between the last raid on Berlin (in the night of Dec. 16 to 17) and the following Sunday some 15 million man-hours were estimated to have been lost alone by the destruction of plants. On the basis of 200,000 man-hours for one heavy bomber, 75 bombers were lost. The next factor is the destruction of living accommodation. The Germans have introduced a special term for it. They call it "Wohnraumblockade". How far the "Wohnraumblockade" affects the industrial output can be shown by the simple fact that the destruction of the flat of a workman is equal to the loss of between three and six working days. The magnitude of the loss of man-hours because of the destruction of dwellings can be concluded from the fact that in Berlin almost half a million flats were either destroyed or made uninhabitable after the recent raids. In the West of Germany great numbers of workers did not return to their work at the end of the first week after they had been bombed out, but had to be requested by advertisements in the papers of the individual districts to report for duty.

Air-raid warnings have been responsible for a high loss of man-hours. Work in the Berlin area and the surrounding industrial districts stopped for about two hours, equal to some three million working hours. In addition to this loss, the stoppage of work in factories on the route of the bombers, as well as in the area which may become the target of feint attacks, must be reckoned. A Swedish paper, reporting the raid on Berlin (Dec. 16-17), stated that Cologne, Frankfurt, Mainz, Kassel, Leipzig, and Hanover had been the targets for such mock attacks.

Furthermore, great numbers of man-hours are lost through clearing-up and repair work; some 200,000 skilled workmen from other parts of Germany, in addition to several times this number of soldiers and prisoners of War, had to work in the Ruhr for some months before the worst damage was repaired. Then the Royal Air Force returned and the work had to be started all over again.

Finally, production is adversely affected by calling up factory workers for the fire brigades, for duty on the Anti-Aircraft guns, and for assistance to the police. The average German workman who has finished his shift in the factory can hardly find time to relax and recuperate from the strenuous work. The bad effect on his "working morale" is widely discussed, even in the Nazi Press.

The dispersal of important armament factories all over the Reich has increased the importance of a well-running transport system. Yet German papers do not leave any doubt that the difficulties of reaching this ideal have become almost unsurmountable. In addition, Germany had prepared her rolling stock insufficiently for war-time tasks; bombing has still further increased these difficulties. The German State Railways, before the War proud of their marvellous organisation, are no longer able to give any guarantee of regularity.

Lack of labour and of productive capacities are the two principal weaknesses of the Nazi war machine. Both have been considerably increased during the present year.

AIR TRANSPORT

Tell the World

WADING THROUGH a recent edition of the American heavyweight "Aviation" (500 pages all-up-weight), searching for reading matter among the advertisements to which 75 per cent. of the paper is devoted, we were rewarded with the following gem:—"On reading our numerous English contemporaries we were struck by the constant plugging for superiority for British aircraft in every category, for every purpose. In fact, some of the plugs would have done credit to a Hollywood press agent. Wasn't it an Englishman fellow named Shakespeare, we believe, who said something about methinks the lady doth protest too much."

In the same month an article appeared in "World Review" written by Mr. Hudson Fysh, Managing Director of Qantas, who recently returned to Australia after a visit to this country. The theme of Mr. Fysh's article was that it is high time Great Britain stopped hiding her light under a bushel and told the World what she is doing. "Since I have been in England," wrote Mr. Fysh, "I have seen and heard some of the most amazing things. There is the extraordinary Mosquito, for instance. . . ." "In Australia, where our aviation journals are full of U.S.A. air material, a year of urging to obtain even the simplest photographs of British aircraft from the authorities has proved unavailing." "Anyone coming to England after passing through the U.S.A. (and also Canada) and seeing the great outpouring of 'air age' publicity there, cannot fail to be struck forcibly by the absence of it in Great Britain, and by the spectacle of a World-wide organisation like British Overseas Airways, which has done a magnificent job in the War under extreme difficulties, being denied even a single line of publicity anywhere except for a few Press reports." "This article is intended to show the need throughout the Empire for propaganda, education and information in regard to British air transport and British achievement in the air."

Lord Bennett evidently has the same ideas on the subject. He said recently to an English audience: "I sometimes think you are less proud of what you have done than any people who have accomplished great things in the World on record, and never have you had any greater cause to be proud than you have to-day."

All this seems to boil down to the fact that, far from blowing our own trumpet as "Aviation" suggests, we are rather taking it too much for granted that the excellence of British products and achievement are well known throughout the World and that there is no need to shout about it, and indeed that we consider it to be bad taste to do so.

The first elementary principle of advertising is that however well known your product may be you can never afford to stop publicising it. If you do so, as long as the other fellow continues to plug his product, the World will forget about yours and be more interested in his.

That is in fact just what is happening all over the World to-day. People who come to this country to see for themselves are literally amazed to find out the full story behind the achievements of British aviation. This applies equally to British exploits as to the aircraft in which they are performed. Read any newspaper or magazine in the British Empire or in neutral countries and you will soon understand why people know all about American aircraft and achievements, but do not fully appreciate the significance of British products until they actually come to this country.

What are the reasons for this state of affairs, and what can be done to remedy it? The first thing for the authorities in this country to realise is that the rest of the World is experiencing about the largest deluge of United States aeronautical information since the Flood. Unless we do likewise, in our own way, the World will think that Great Britain is not interested in the future of aviation. If news, details and sometimes photographs of new British types appear in foreign magazines while we remain silent about them, a great deal of the gilt is taken off the gingerbread. We seem to be extremely reticent about our new aeroplanes. When we are producing magnificent types like the Lancaster and Mosquito it is appalling to think of the recommendation for British products squandered by our failure to give, immediately they are released, the news, details and photographs on the largest possible World-wide scale. We know the arguments about security, but we have a shrewd feeling that often there is quite an appreciable time lag between the first opportunity for a hand-out and the time it actually takes place. Every day wasted at this stage is a loss to the reputation of British industry.

Compared to the constant flow of information put out by the Americans about their Air Transport Command, many

people hardly know of the existence of our own R.A.F. Transport Command, although it has been functioning for the best part of a year and doing a prodigious job of work.

The fact that the Avro York is the first British civil aeroplane to be designed and produced since 1939, and that it is a very good aeroplane, provided an excellent opportunity for British propaganda. Once again a chance was missed. Performance figures have been withheld, permission to make inside drawings and photographs has been withheld. When Mr. Churchill first flew the Atlantic, the Boeing Clipper in which he flew was given plenty of publicity, but the York aircraft used in recent months by important British personages have not been mentioned.

British Overseas Airways, since 1939, has been compelled to suffer, at its stations all over the World, the sight of a publicity blaze from Pan-American Airways and other U.S. air lines. The Americans are allowed, and indeed they are encouraged and subsidised by the American Government to plug both past, present and the future of American air transport. B.O.A.C. is not allowed to indulge in any publicity. It's all very well to say that if they did they would be spending the taxpayer's money, but this argument applies equally to all other prestige advertising being done. Are not the railways and most of the major industries in this country to-day working entirely for the Government? And world-wide publicity about British air transport services and plans for the future will repay the taxpayer in the end because national air lines are going to be one of the most important advertisements for national products in the future. The United States realise this and are concentrating on the subject for all they are worth. In October, 1942, they formed an office of Air Transport Information. They run exhibitions, they push out films, they are educating the public to think of the future primarily in terms of the aeroplane. "Airways to Peace," their new March of Time film shortly to be released, and "Victory Through Air Power" demonstrate the two different bearings the aeroplane has on the future of mankind.

We hope Lord Beaverbrook in his new post will do everything he can to launch a British air education campaign, fully backed by the Government, and will see that it penetrates throughout the British Empire. The first target could be the production of half a dozen short air transport films, for Empire-wide mass distribution, to show to a now completely uninformed public that air communication is a vital factor for the future cohesion of the British Commonwealth. These could be shown at all news cinemas and as "shorts" at the principal cinemas. We should certainly not miss some of the frightful "shorts" with which we are regaled at present.

U.K.-Australia Air Route

THE RE-ESTABLISHMENT of the air link between this country and Australia, broken by the Japanese invasion, has been accomplished by Qantas Empire Airways by the inauguration of a non-stop trans-ocean service between Perth, Western Australia, and Ceylon. This flight is well over 3,000 miles. Owing to the large quantity of fuel needed, there is only space for a small quantity of mail and a very limited number of passengers. For sheer dogged determination to maintain air communications between Great Britain and Australia the chief credit is due to Qantas. They started to plan the re-establishment of this route the day it was broken and they have never ceased to press for aircraft to be made available for this purpose. As it is they now have only a small number, and considering the vast frequency of air services which have for the last two years been run across the Pacific connecting Australia and the United States it would seem politically to be a very important thing that many more and much larger aircraft and crews should be made available for the England-Australia air route. Soon Qantas are to extend the service from Ceylon to Karachi.

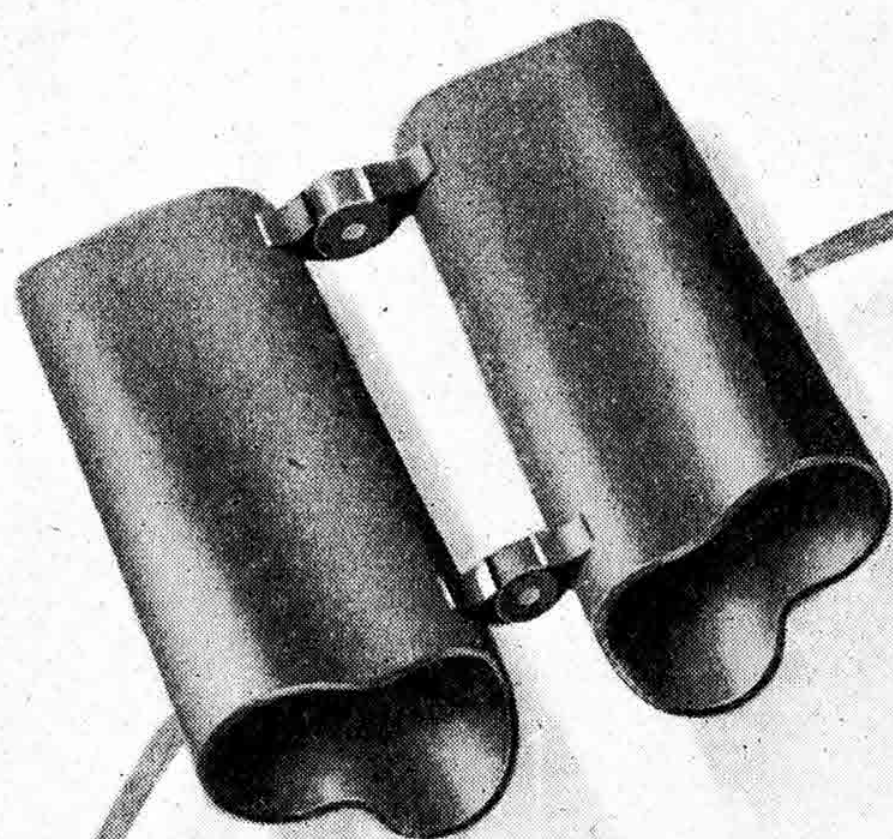
This event serves to remind us of that emergency Empire route between East Africa and Western Australia via the Seychelles, the Chagos and the Cocos Islands which THE AEROPLANE constantly in the past advocated should be developed. The maximum non-stop distance which would have to be flown on this route would be half the distance now being flown between Perth and Ceylon and consequently it would be possible to carry cargoes of much greater loads. If this route had been developed our link with Australia need never have been broken, and the feeling which has grown up in Australia as a result of this break that Australia is entirely dependent on America for its air transport communications with the outside World would not have been engendered.

Raid on Le Creusot

by Lancaster Heavy Bombers



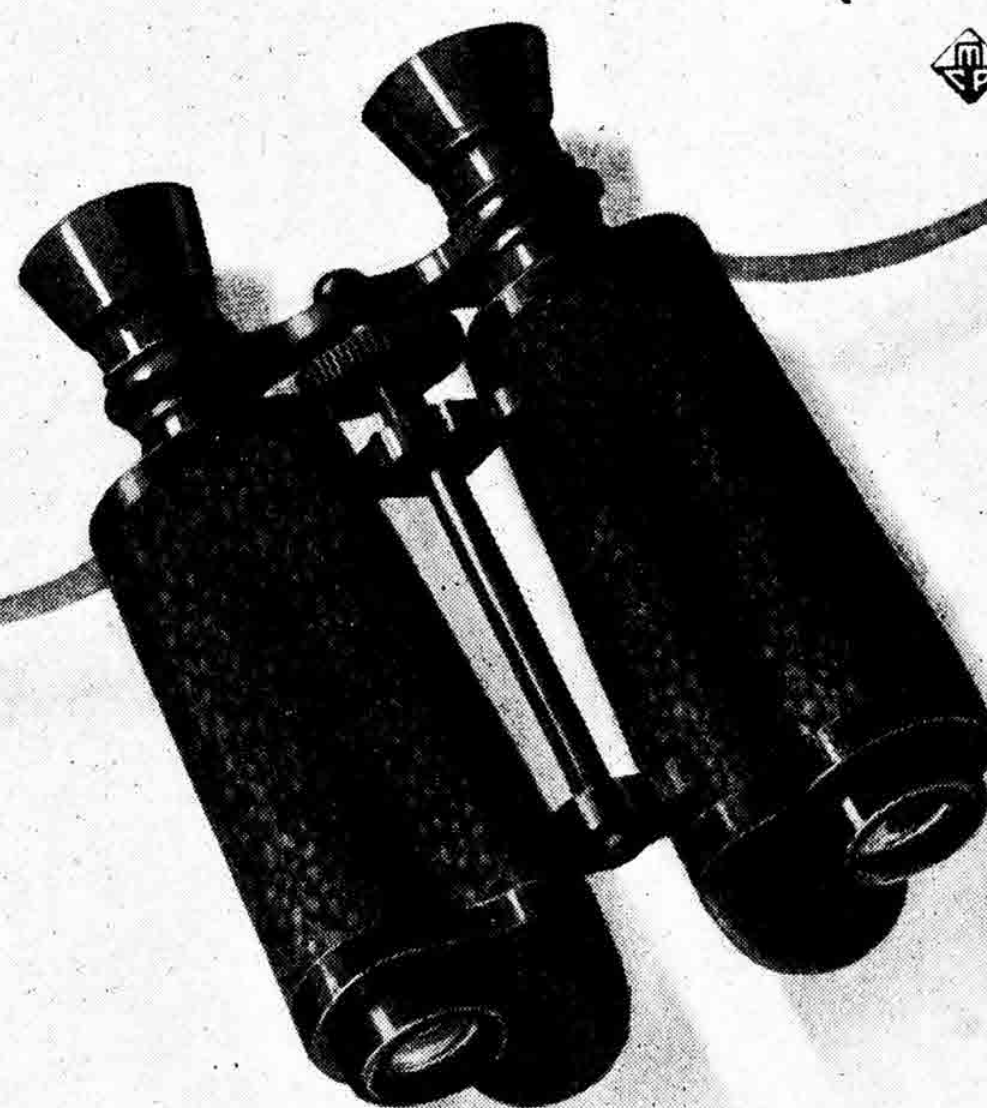
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Sweden Plans Big

SVENSK INTERKONTINENTAL LUFTTRAFIK A.B. (S.I.L.A.), the new air line formed to carry the Swedish air flag to all parts of the World after the War, has announced ambitious plans. Their first long-distance service will be to New York via Newfoundland, calling intermediately either at Iceland or Ireland. Mr. Carl Florman and Mr. K. H. Larsson, who is Chief Engineer of A.B.A., the Swedish domestic air line, have been in the United States negotiating on behalf of S.I.L.A. for the purchase of four-motored aircraft. No doubt they are arranging for forward delivery, for it seems doubtful if America will be in a position to release such types for some time to come; they are all urgently needed by the Allies for the War. S.I.L.A. reckons that, given modern aeroplanes, Stockholm-New York should be flown in 22 hours. They will also endeavour to establish an air service between Sweden and Rio via Paris, Lisbon, Dakar and Natal, Brazil (approximately 7,500 miles), which, they say, should be flown in about 44 hours.

Before the War Sweden did not go in for extra-European air lines. In 1942 two Swedish Shipping Companies, Svenska Lloyd and Svenska America Linien, tried to form air line companies. This was discouraged by the Government, by A.B.A. and by Swedish commercial interests generally, who argued that there would be so much foreign competition anyway after the War in international air transport that Sweden's best course would be to combine all her efforts in one strong overseas air company.

Accordingly, on May 31, 1943, the founders' meeting of a new company, S.I.L.A., was held. Seventy-seven men representing industry, banking, shipping, the Swedish Government and the air line A.B.A. subscribed fully paid up capital of Kr. 12,000,000 (£712,166). The shipping companies have a minority representation, and A.B.A. are putting their technical and commercial air transport personnel at the disposal of the new company. Mr. Thorsten Hernod, Managing Director of Svenska Cellulosa, A.B., is Chairman of the Board, and Mr. Marcus Wallenberg, Jr., Managing Director of the Stockholm Enskilda Bank A.B., is Deputy Chairman. Mr. Per A. Norlin, Vice-president of A.B.A., is S.I.L.A.'s Managing Director. The other twelve members of the Board include Mr. Carl Florman, chief of A.B.A., and directors of shipping, banking, cement, electric, chemical and other industrial concerns, also a representative of the Swedish Ministry of Transport.

Earlier this year S.I.L.A. made it known that they were planning to operate their Stockholm-New York service unaided by the Swedish Government. They have calculated that each return flight will cost Kr. 85,000 (£5,045). Reckoning on a 75 per cent. load factor they estimate that the average revenue for each return flight would be Kr. 95,000 (£5,640). They are going to charge a single fare of Kr. 1,500 (£90), and expect to average 15 passengers per flight. Assuming that they would allow the usual 10 per cent. reduction for the

return fare, on these estimates they would obtain a total passenger revenue of £4,860 per round trip, leaving £780 to be gained from excess baggage, mail and freight revenue.

These figures, and in fact the whole scheme, seem to be very reasonable and serve to show up in their true perspective some of the fantastic ideas about post-War fares and costs that are being put forward in many quarters. The Swedish have again employed, in tackling this question, the realistic and efficient approach which has in the past built up for their country and its products a great reputation. It is very difficult to estimate future costs anything like accurately. No matter how much research is done and how many allowances are made, air transport cost estimates so very often come unstuck; there are still, at this comparatively early stage of its career, so many imponderables. A.B.A. so far only have experience of short-distance operation, therefore in their estimates for S.I.L.A. they are bound to have included a number of assumptions. Nevertheless they seem to have arrived at quite a conservative cost figure. It will be interesting to see in due course if they can in fact make this first long-distance service of theirs pay its way.

In Brief

The British Colour Council exhibition, which will deal with future interior decoration of air liners, opens at the Royal Academy on Jan. 15.

In Iceland two of the main new airfields, one of them at Reykjavik, the capital, cost the British Government £1,500,000.

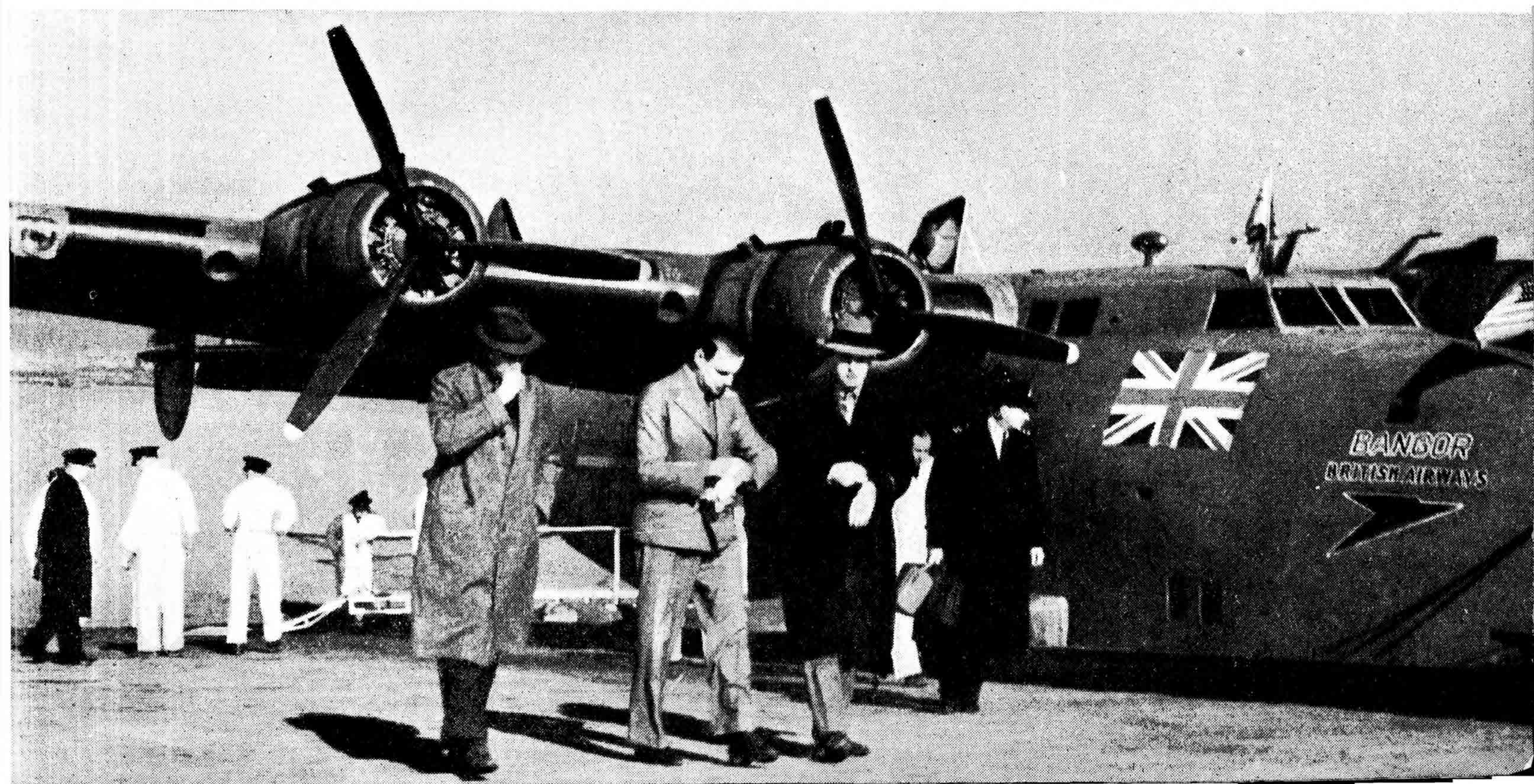
Another gigantic airport near New York may be built after the War. It will probably be on the New Jersey side and may be an enlarged and modernised version of Newark airport. This would give New York three large modern airports, including La Guardia and Idlewild.

The annual conference of British Overseas Airways Regional Directors was held recently in Cairo. Besides the Director-General, Brig.-General A. C. Critchley, and the Deputy Director-General, Major J. R. McCrindle, the following Regional Directors attended the conference:—Mr. J. W. S. Brancker, West Africa; Mr. B. C. H. Cross, Central Africa; Mr. G. N. Trace, South Africa; Mr. A. Lloyd Taylor, India; Mr. V. G. Crudge, West Atlantic; and Mr. R. Maxwell, Near East.

Sweden, it is reported, is negotiating with Germany for guarantees that its air service across the North Sea to Britain can continue without further interference. The service has been suspended since one of A.B.A.'s DC-3s was shot down by a German aeroplane last October. Thirteen were killed.

Basle is considering the construction of a new airport near Paradieshof. An area of 675 acres could be made available. Main runway would be 1,500 by 400 metres.

ON SCHEDULE.—"Bangor," the third of British Overseas Airways' Boeing 314 As, arrives at Baltimore. Checking the time in the centre is Mr. Erik Nelson, formerly Manager of B.O.A.C.'s base at Baltimore and now the Corporation's Manager at Montreal in charge of the North Atlantic Return Ferry Service.



THE STRATEGIC EYE—II

THE F.24 camera, designed specifically for military use by the Royal Aircraft Establishment, incorporates many of the basic features of the Eagle series described in the first section of this article. The main difference is the adoption of a focal plane shutter instead of the louvre-type fitted to the Eagle series. The camera takes 5 by 5 in. photographs and has capacity for 125 or 250 exposures.

The F.24, produced in 1929, has undergone minor improvements and is now widely used by the Royal Air Force and by the Allied Air Forces.

For vertical or oblique photographs the F.24 is fixed on a special mounting in the airframe. For use as a hand-held camera, the film winding and shutter setting are operated by the hand drive, which in the drawing may be seen projecting from the camera gearbox.

When automatic operation is required an electric motor is used. In this case exposure of the film is made by an electric control, which can be remotely located.

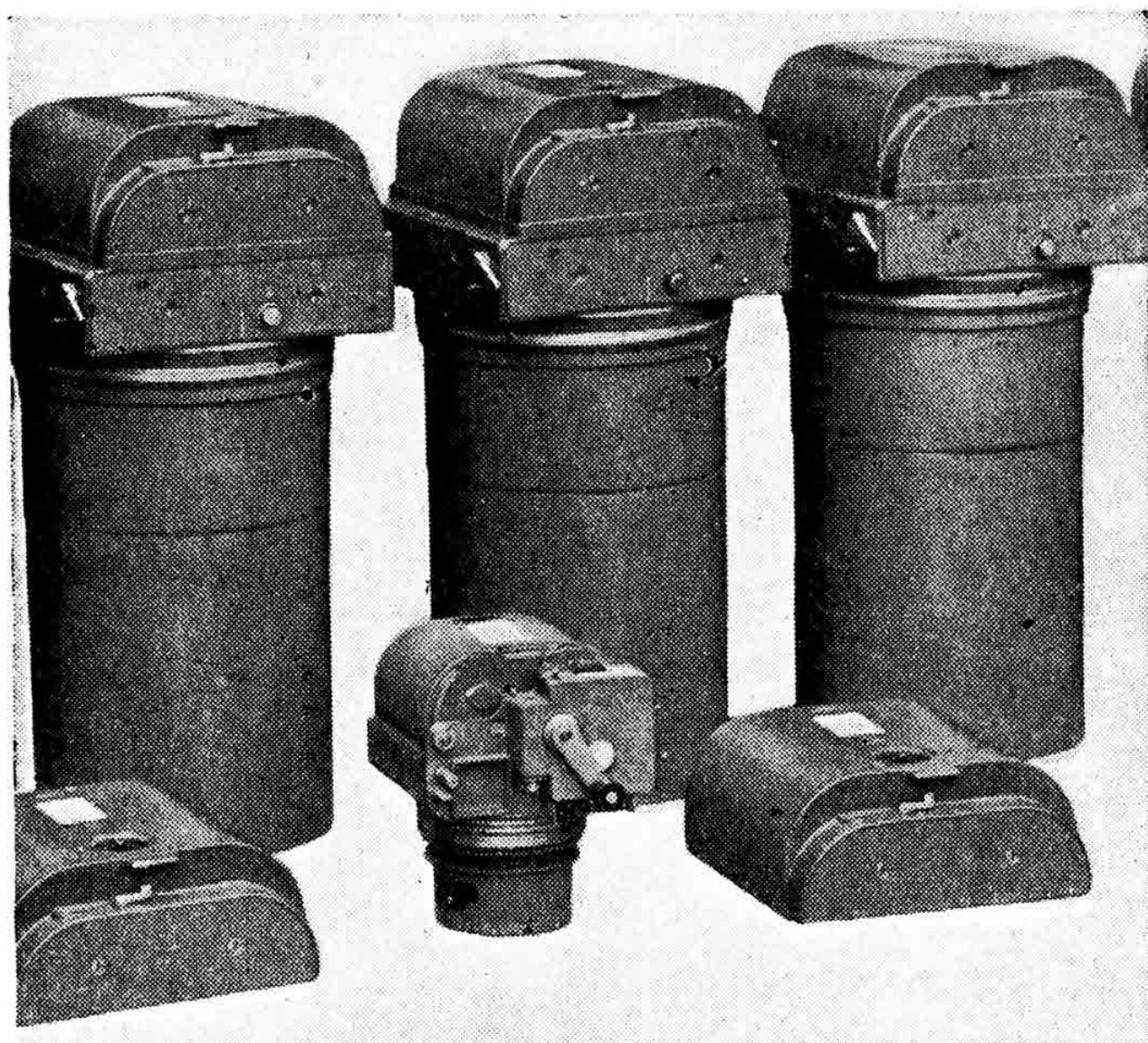
As in the Eagle cameras, the construction of the F.24 is arranged on the interchangeable unit system. The main units are the magazine, camera body, shutter gearbox and lens cone. Each is self-contained.

The magazine, in addition to housing the spools of film, contains the mechanism which flattens the film against the glass register plate during exposure. The same mechanism caters for winding lengths of film from the "unexposed" to the "exposed" spool and operates the exposure counter and the film wind indicator. A velvet-covered metal plate is mounted between the spool carrier, which flattens the film against the register plate. This pressure plate also "light-traps" the film when the magazine is taken off the camera.

The most important unit of the F.24 is the camera body, an aluminium casting machined on its contact faces, which houses the shutter, register glass and gearbox, holds the lens cone by three screws, and on its top faces mounts the magazine.

Two blinds mounted on spring tension rollers in a rectangular frame form the shutter, which is of the fixed slit focal-plane type. A clever device winds these blinds across the aperture as the exposure is made. The "capping" blind is completely wound off and the slit main blind is then drawn rapidly and evenly across the exposure aperture, exposing to light that part of the film sandwiched between the pressure and register plates. Exposure time is varied by altering the tension of the blind roller springs and by a braking device which is fitted to prevent acceleration of the main blind, thus ensuring that the slit travels across the exposure aperture at a constant speed.

All mechanical, electrical and optical devices are operated by the F.24 gearbox, which raises and lowers the film pressure plate, winds the film, works the exposure counter, and releases the shutter, and operates the electric motor switch, together with a remote motor signal and remote electrical exposure counter on the Type 35 control.



DAVID AND GOLIATH.—Three Williamson Eagle IX (F.49) cameras in company with an F.24 type. The former take a picture 9 in. square for air survey work.



WHAT THE AIR MARSHAL SAW.—Air photographs are of vital importance in the perfect direction of the Bomber Command's offensive.

Normally, the F.24 is issued with a range of lens cones from $3\frac{1}{4}$ to 20 in. focal length. Cones of different depths are necessary to hold the lenses rigid at the correct distance from the film to attain the desired focal length. The lens cone also ensures that the optical axis is at the right angles to the film as aligned on the register glass. Into the cone is screwed a cylindrical lens adapter locked to it by a set-screw. To set the "correct" stop, a small lever projects through the slot near the end of the cone which adjusts the iris diaphragm to the appropriate diameter. Internal baffles in the cone, which may be seen in the drawing of the F.52 in this issue, minimise internal reflections, which is an important feature nowadays when flash bombs are universally used for night photography.

The F.24 aerial camera referred to is the general-purpose type. Special duty versions have been evolved, such as the mark IA universal night camera, which is fitted to most bombers and automatically records the results of night bombing achieved by photo-electric cell control of the shutter, enabling the camera to take photographs by flash bomb illumination of the target area.

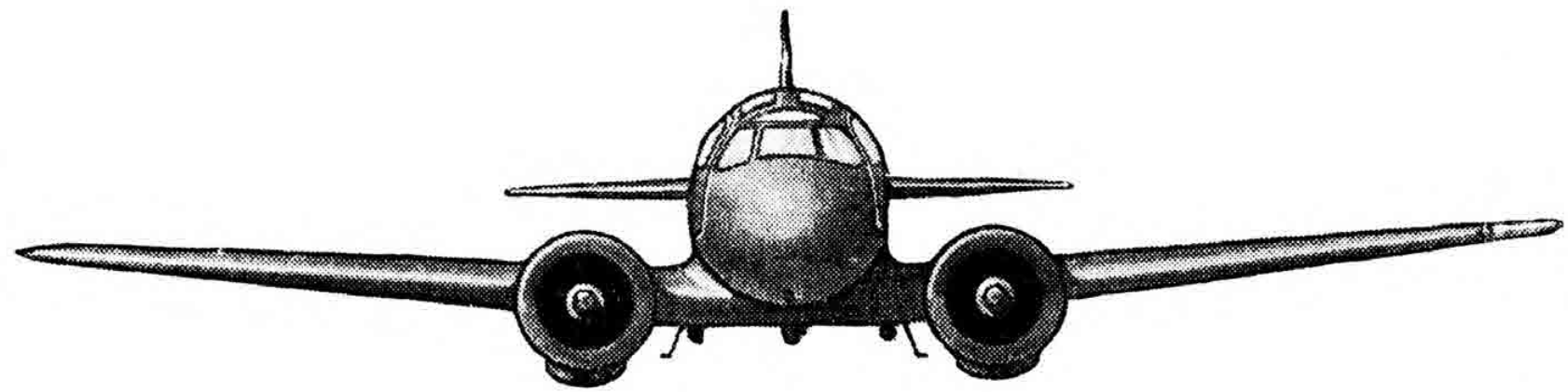
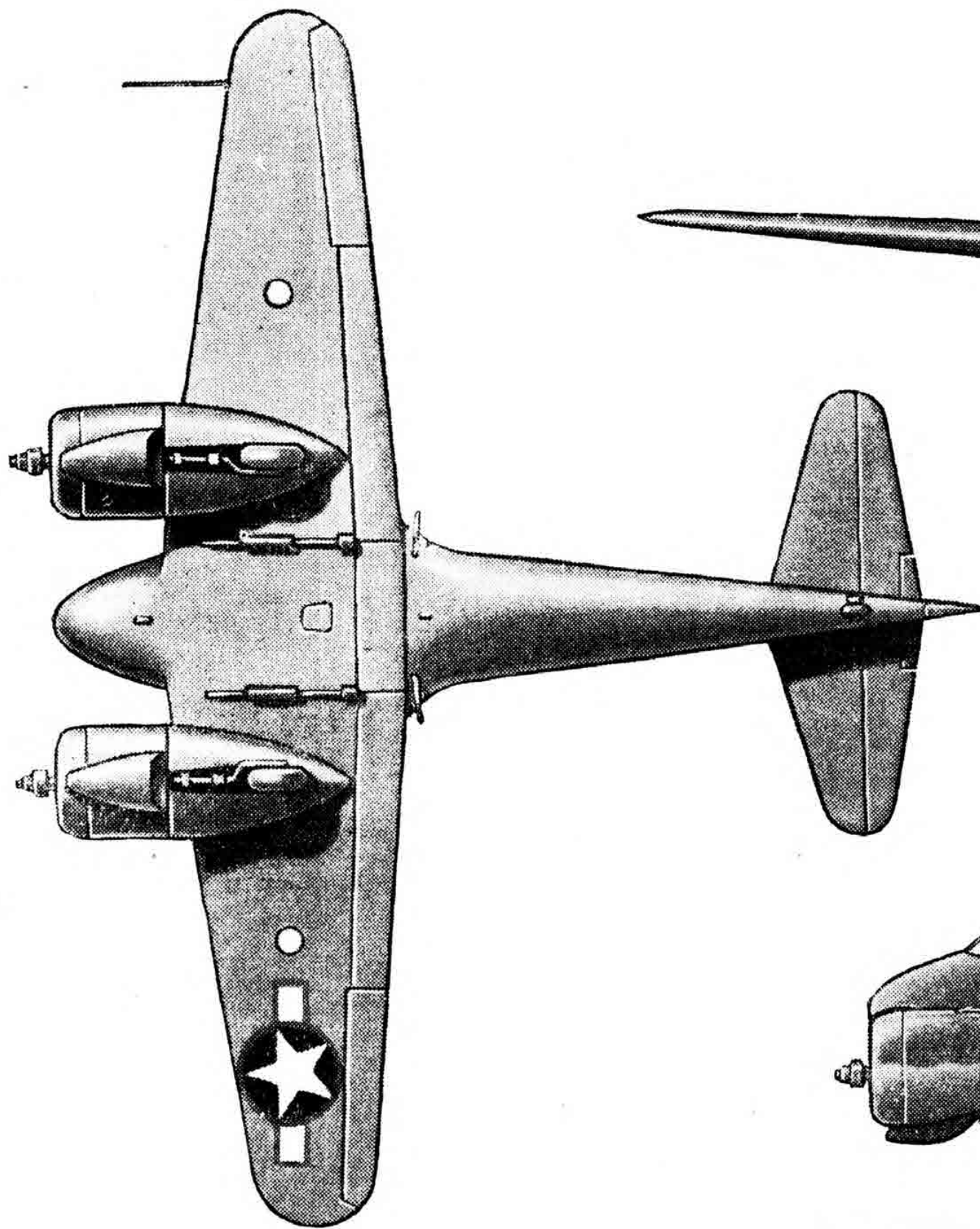
The F.52 (7 by $8\frac{1}{4}$ in.) shown in the drawing incorporates features from existing cameras and illustrates the return to a large picture size for Service use. Lens of up to 36-in. focal length can be employed, enabling large-scale photographs to be taken from great heights.

German aerial cameras are clumsy, compared with their British counterparts. The enemy appears to use an adapted air-survey type in the same way as we use the F.24. Their massive camera is about 160 lb. in weight; that is, four to five times greater than ours. One model takes 12 by 12-in. photographs, but its magazine can only hold a film of 100 exposures. Certain units of the German type are pneumatically operated, such as the location of the film on the register glass. A curious cuckoo-clock device stops light leakage during exposure, a complexity worthy of German design, and apparently rendered necessary by the use of an inefficient louvre shutter. Similarly, the German hand-held camera requires more hand manipulation than equivalent Allied designs.

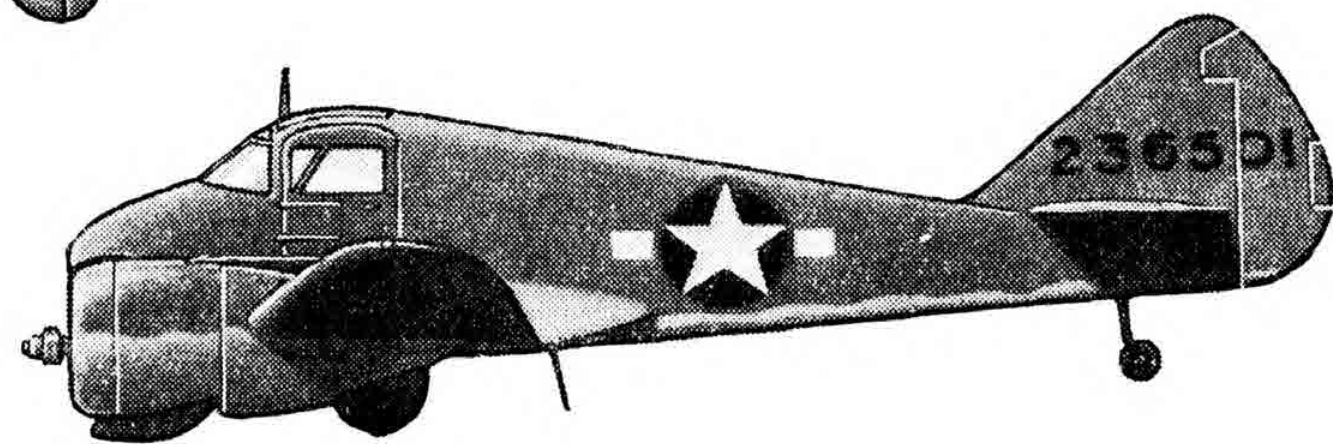
Air intelligence, especially for Bomber Command, is largely acquired from photographic information. As the specialised photographic reconnaissance units are minute organisations compared with other branches of the Royal Air Force, so the camera designing and manufacturing specialists comprise a very small body compared to the aircraft industry as a whole.

The importance of their work is none the less a vital factor in the waging of air warfare. The development of successful military air cameras from pre-War air survey types is a technical achievement of some magnitude. It is one of those factors which has always put the United Nations just a little ahead of the Germans in technique. A common fallacy is that German optical lenses are superior to ours. Practically all the lenses used in the cameras of the Royal Air Force and quite a number of those used by our Allies are of British manufacture, and some of the best optical glass in the World is now made in this country. In fact, the effort made by Britain towards the progress of air photography is a singular achievement.

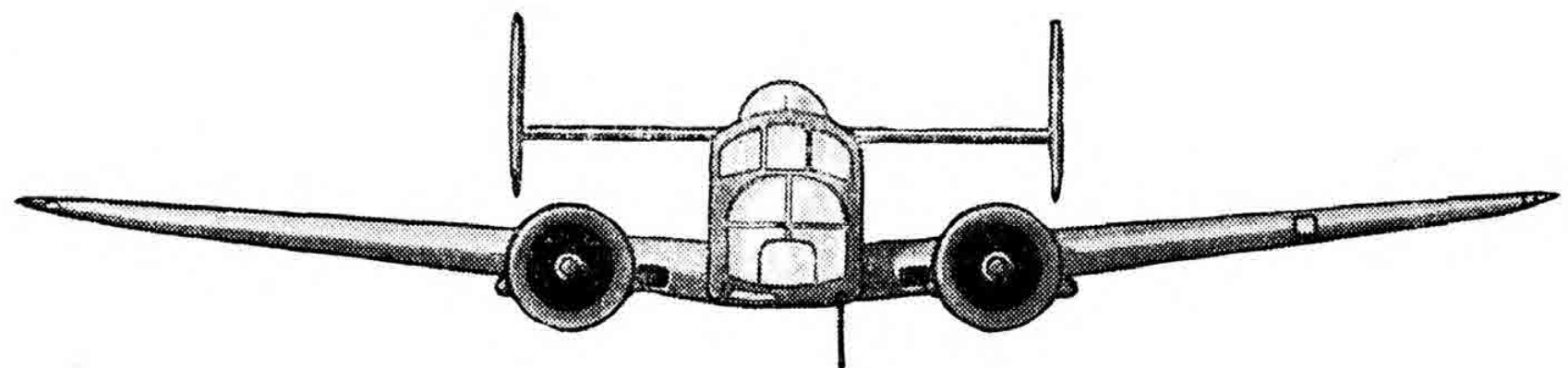
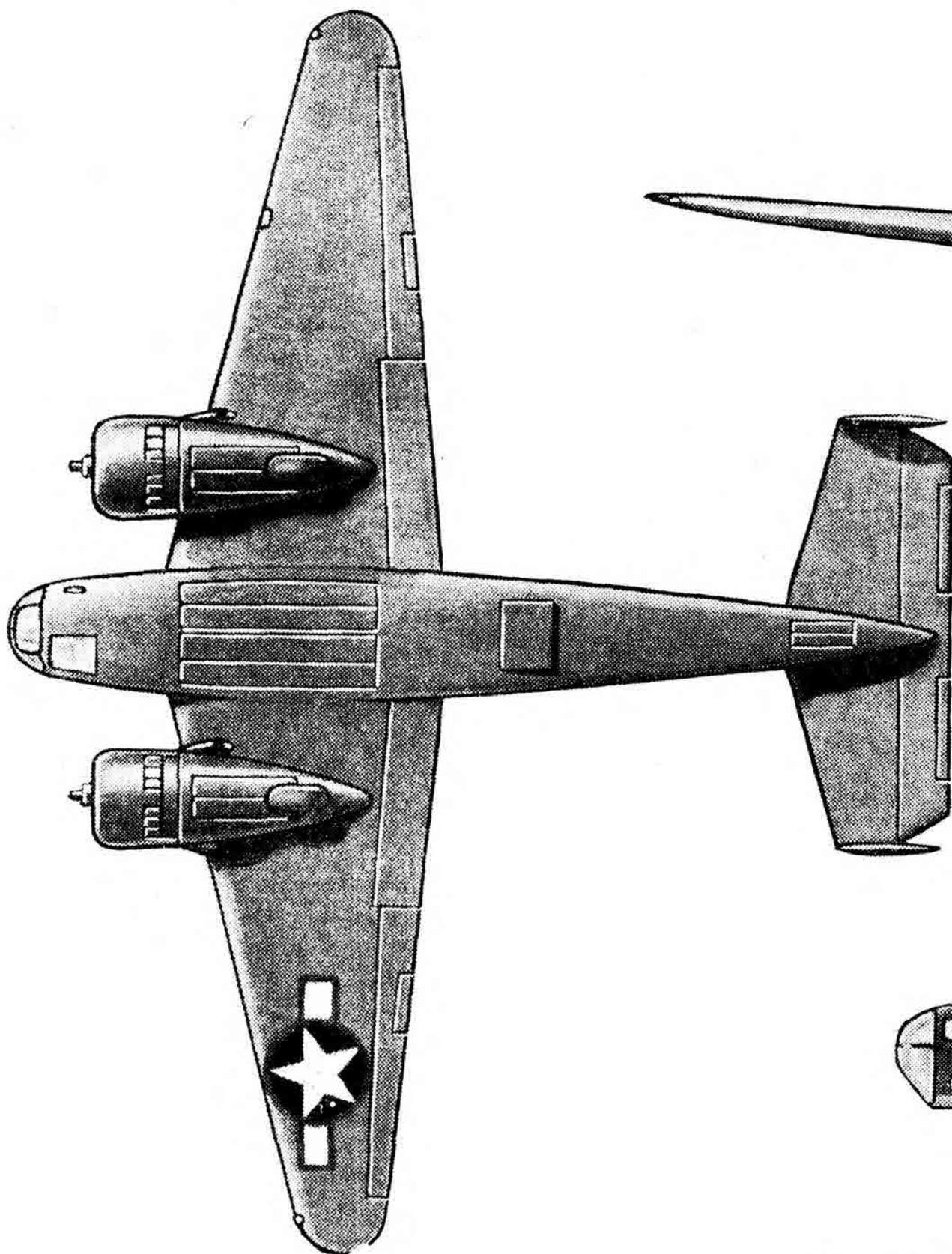
AIRCRAFT RECOGNITION



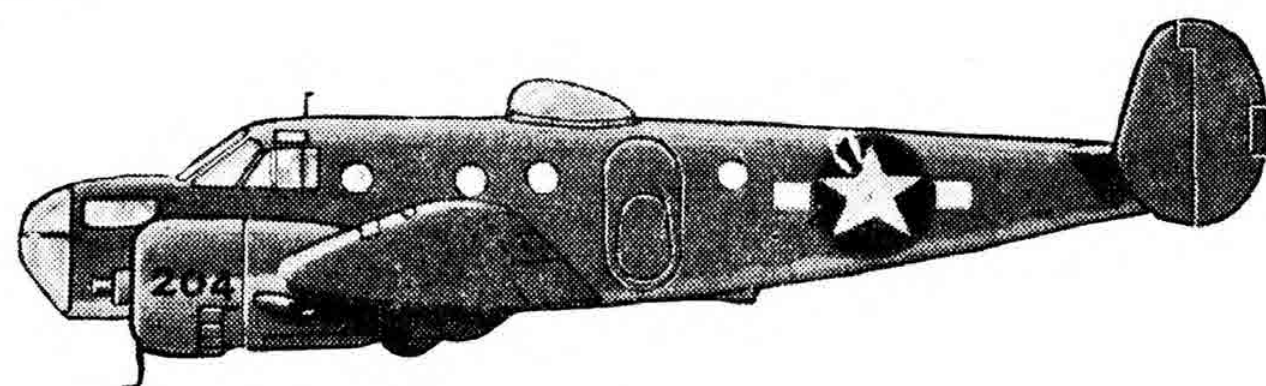
THE
CURTISS
JEEP



Span, 40 ft. 3 in.



THE
BEECH
KANSAS



Span, 47 ft. 0 in.

"The Aeroplane"
drawing.

CORRESPONDENCE

Details of Enemy Aircraft

MR. C. G. GREY'S letter in your issue dated Dec. 3 finds an echo in almost every corner of Britain's biggest Industry. After more than four years of warfare, the greater part of which—so far as this Island is concerned—has been in the air, the writer has been "privileged" to see a total of "two and half" German aircraft. Two of these were little more than autograph-encrusted shells. The half was a battered wing and fuselage keel. All were early "bags" and obviously had been dragged round the country to rouse the interest of the population in "Wings for Victory" week. That was quite laudable.

Has any Government Department yet organised an exhibition where the rank and file—the junior and senior draughtsmen, stressmen and factory workers in general—could go and spend a day examining not one but many foreign aircraft? It has organised parties of "I-am's" and "Me-too's" to visit various places where "exhibitions" have been staged, and their reports have been circulated within a limited field. The bureaucrats who endeavour to interpret otherwise sensible Government regulations are blind to the fact that thousands of young men and women are keenly interested in aircraft design and construction, for its own sake.

These enthusiasts have been embittered by the small-minded manner in which every sight and sound and piece of information has been withheld from them without adequate reason. The majority of people feel that any enemy aeroplane shot down in this country is, in a way, theirs. By taxation, National Savings Certificates, and a million other ways, they feel that they have paid for the A.A. shells or the night-fighters and ammunition, the searchlights and all the other paraphernalia bound up in bringing bombers down. And, furthermore, their sons, brothers, fathers, sisters, aunts, uncles and other cognate persons have assisted in the enemy's downfall. Therefore these people feel that they have no small right to see the fruits of their thrift, their blood and toil and tears and sweat.

Naturally enough, no one minds very much if the real scientific people remove the intricate ingenious mechanisms and radio equipment at the earliest date. But qualified engineers in the industry do object to having a battered relic which has been going the rounds for four years being held up to them for their examination.

There is another moan which we have. Is there any valid reason why we have to wait such lengthy periods for the publication of details of the enemy's aeroplanes? Possibly the King Rats of the industry are informed quite early of the features of new foreign contraptions. But we, the underlings, also want—and indeed need—to know about these things, and not second hand. In case the little Bureaucrats do not understand, we have to scheme out and design all the crafty structural and mechanical elements and we should know what the enemy is up to. But it is no good letting us see what he was doing in 1939.



We urgently need views of the enemy's weapons of aerial warfare in the flesh, at properly staged technical exhibitions—as in the last War. And we want published in the technical Press accurate descriptions, also as in the last War. Whenever the Government has called upon us for an extra effort, we've done our best. Let the Government kick its puppets into some form of action on our behalf, so that we may keep and increase our lead in technical excellence over the enemy.

"ERGAER."

[Mr. Sydney Camm, designer of the Hawker Hurricane and Typhoon, has testified to the personal value to him of the Enemy Aircraft Exhibition of 1918. There are many other eminent people in the Industry and Services who also derived benefit from that splendid show.—ED.]

Windermere Flying

YOUR "SIDELIGHT" on the Water-hen and Gnosspelius monoplane in the issue of Dec. 3 gives well-deserved credit to a little known group of British pioneers who persevered against great technical and political odds to prove the possibilities of inland waters as seaplane bases. As you state, Messrs. Wakefield, Gnosspelius and Rowland Ding developed several other types besides the above, in co-operation with Messrs. A. V. Roe and Co. and Messrs. Borwicks, first under the name of Labes Flying Co. and later as the Northern Aircraft Co.

The Water-hen itself was greatly improved by rebuilding and in its later years had a nacelle for pilot and two passengers. The ailerons at first were merely flaps hung from the trailing edge, but later were inset in the standard manner. The Admiralty were evidently impressed with the experiments, in spite of the opposition raised in Parliament by local members, for they had one of their 100 h.p. Anzani-motored Deperdussin monoplanes converted to take a wide Gnosspelius central float, with two wing-tip floats for stability.

At the same time Messrs. A. V. Roe received an order for a 100 h.p. Gnome biplane amphibian with a Gnosspelius central float and "disappearing wheels." Later a British-built Deperdussin, called the Seagull, was built and flown by the late J. C. Porte, though not at Windermere, which incorporated the lessons learned from the earlier conversion. Thus encouraged, the Lakes Flying Co. rebuilt and largely redesigned an Avro biplane originally supplied as a 35 h.p. ENV-motored single seater to the order of Mr. J. R. Duigan, the Australian pioneer. This was given wings of increased span and a 50 h.p. Gnome motor and proved very successful in 1913, being known as the Seabird.

Later, the Northern Aircraft Co., in addition to converting the Blackburn monoplane mentioned in your article, designed a somewhat curious pusher monoplane which made many training and passenger flights piloted by Rowland Ding. This machine had a nacelle shaped not unlike a punt which extended farther forward than the float, with the 50 h.p. Gnome motor behind the rear spar of the mainplanes which were wire braced. Experiments were also made with this machine, substituting a pair of long cylindrical Kapok-filled floats lashed to skids for the central float. Although the central float is not entirely the invention of these pioneers, having been advocated by Fabre and Bréguet earlier, they undoubtedly deserve to share in the success of the contemporary designs such as the Kingfisher and Seamew, which have shown themselves so handy for catapult launching from capital ships. C. H. BARNES.

Fortress Bombs

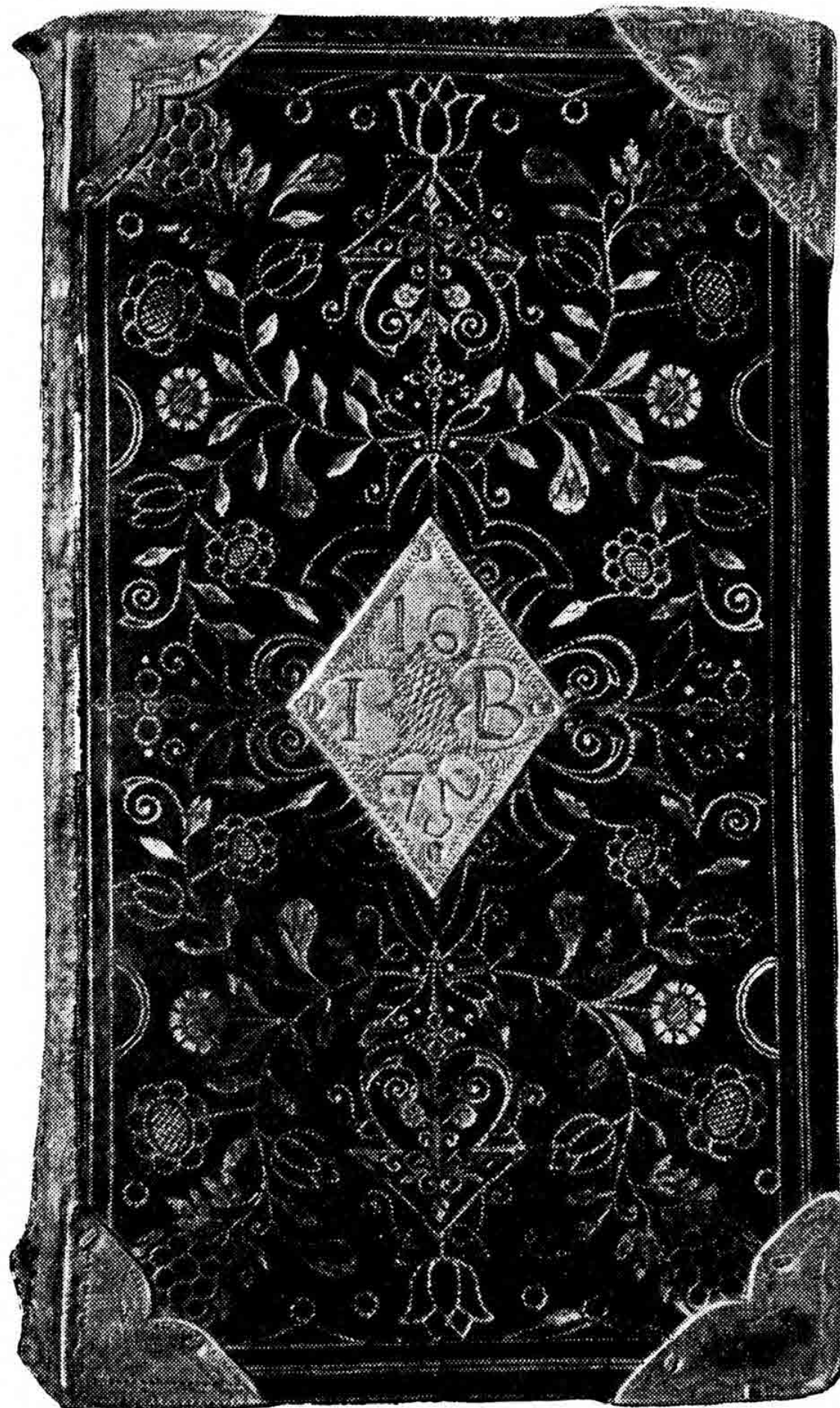
AS an ordinary member of the public who has been interested in spotting from a purely amateur angle, I, with many others, rely upon your excellent publication for information, but it would appear that many statements made cannot be reconciled, especially with regard to American machines.

If the Fortress can now carry nine tons of bombs, a number of which are to be slung under the wings, have the structure and power plants been modified? There appears no information on this point, but it becomes difficult to think of a Fortress bristling with guns and with bombs slung under the wings as having the same performance when carrying only two to three tons stowed internally.

There appears to be a lot of hot air on both sides of the Atlantic on aeronautical matters, but we look to your paper to keep us on the straight and narrow. F. SPEKE.

[This correspondent answers his own question. Any increase of load of any magnitude normally requires a strengthening of structure and, as a corollary, the weight of the airframe is increased. This in turn requires more power for a given performance. The problem is the old one of the vicious circle.—ED.]

ENGLISH WORKMANSHIP



Some time in 1675, a little team was making this tiny book, shown in its actual size.

Someone must have brought over the Morocco leather, another the silver and the gold, and using the simplest tools, some produced the silver sheet and engraved it, while others beat the gold into leaf, tanned and dyed the leather, and worked upon it this airy and delicate design.

How free and untrammelled they seem to have been, yet for all we know, their patron may have been changeable, requiring one thing to-day, an alteration to-morrow, and when all was done, the book may have lain unread.

For our own part, we in our work must answer to only one instruction: to make the best: when our work is done we know that what we have made will travel we know not where, carrying we know not what, for the common cause which—despite arguments as to its definition—is the same as that of the ball bearing: to carry the load and yet to be 'free.'

Fischer Bearings Co. Ltd., Wolverhampton. Associated with British Timken Ltd.

*Ball and roller bearings &
transmission equipment by* **Fischer**

KITTYHAWK

MOHAWK

TOMAHAWK

WARHAWK

Veterans of *Every* Battlesky

No other American-built fighters have fought so many battles, have downed so many enemy planes—over mountain, jungle, desert and sea—from the bleak Arctic to the blistering tropics—as have

the Curtiss pursuits, veterans of the battleskies of World War II.

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AIRPLANE DIVISION

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Member: Aircraft War Production Council, East Coast, Inc.



CURTISS WARHAWK

LATEST OF A LINE OF FIGHTING HAWKS

Bomber Loads

THE PUBLIC MISCONCEPTION that our Lancasters, Halifaxes and Stirlings are capable of carrying between them an average of seven tons of bombs to Germany was once and for all dispelled by Air Vice-Marshal Saundby in a recent speech, wherein he gave facts tantamount to saying that the average bomb load of our machines is three and one-third tons—or a round 7,500 lb. This answers the first point of Mr. Waller's letter in your issue of Dec. 3. His presumption that "on the Munich run, a Lancaster would not carry much more weight than a Heinkel working from a near base and using London as a target," is also refuted, since the Heinkel (working under ideal conditions) is incapable of carrying more than 4,500 lb. bombs.

H. A. C. SHAW.

The "Gigant"

ON page 636 of your Dec. 3 issue, the caption under the photograph of a six-motor German transport refers to it as "The huge Messerschmitt Me 323 six-motor transport aeroplane." The tattered remnants of similar aircraft that I saw on the Alouina airfield were described by official R.A.F. sources in North Africa as "Mersburg Me 323" transports. It was officially explained that "Me" stands for "Mersburg," not "Messerschmitt." What is the aeroplane's proper name?

JOHN MACVANE,

National Broadcasting Company, Inc.

[Mr. Macvane has apparently been misinformed. Since the Autumn of 1938, when the Bayerische Flugzeugwerke, Augsburg, were renamed the Messerschmitt Flugzeugwerke, the abbreviation "Me" for Messerschmitt has been in use for the type designations of Professor Willy Messerschmitt's designs. Hence the Me 108, the Me 109 and the Me 110, all of which were designed and built years before the Me 323 came out. Merseburg, not Mersburg as Mr. Macvane states, is a big Luftwaffe station less than 20 miles West of Leipzig. What Merseburg has to do with the Me 323, we do not know for certain. Perhaps there is a factory where these machines are built. Long before the official German type designation, Me 323 "Gigant," was made public, this largest freight carrier of the Luftwaffe was known as the "Merseburg Giant." Apparently a few outsize aircraft were observed by Royal Air Force reconnaissance crews on the Merseburg aerodrome. For want of the proper type designation, these aeroplanes were given the provisional designation "Merseburg Giant." Since the Germans themselves made its real designation known, there has been no reason to keep the provisional one. The proper name of this aeroplane is, therefore, the Messerschmitt Me 323 "Gigant."—ED.]

The A.T.C. of the Future

AN ARTICLE by Mr. C. G. Grey on the future prospects of the Air Training Corps appeared in your issue of Nov. 12 and held much interest for me. For some time I was a Civilian Instructor, and as a fairly big number of boys passed through my class I consider that I am able to speak with some knowledge of the internal conditions and working of the Corps.

The paragraph in that article headed "Combing the Commissioned Ranks" earned my strong approval and my full agreement. There should be a drastic "comb out" of officers in the interests of the Corps itself and that "comb out" should not be delayed.

The Air Ministry, in demanding a high standard of efficiency and general worth in A.T.C. Officers, should declare that an Officer serving with the Air Training Corps has precisely the same status as Officers serving in the Royal Air Force. The Air Ministry possibly believes that there is no recognised differentiation between the two bodies, but A.T.C. Officers, as wearers of the badge of their title, are conscious of humiliation exhibiting the distinguishing badge of inferiority on their cuff. A dignified badge worn on the lapel of the jacket would bring the Training Branch to that high line of public estimation with the Medical, Dental, Legal and Educational Branches.

Consider, too, the prohibition against the wearing by an A.T.C. Officer of a peaked cap. Many brilliant men are giving their services in the Scientific, Technical and Educational Training of the A.T.C. and even intellectual men are not always insusceptible to the impression created in the multitude by the sight of a noble head scantily protected by hair but surmounted by a cap which, in size, barely outruns his week's bacon ration. Many a good man has been deterred from joining the Air Training Corps through a fear of ridicule, and many more, having enrolled, entertain such fears through having seen the reaction of many of the public to their cuff badges and "little gor blime 'ats."

When the Air Ministry demonstrates, by attention to my little complaint, that it is in earnest in declaring that Officers attached to the A.T.C. have the same status as Officers in the Royal Air Force, it should also demonstrate that the high standard of the latter should be set for the observance of A.T.C. Officers, and a purge of the inefficient should be



begun. Many of them are old and have no knowledge of how to handle their Squadrons or Flights. The Air Ministry should do all it can to assist Commanding Officers to remove the demonstrably weak and inefficient. From instances brought to my notice I am in doubt as to whether some measure of inefficiency is not admired by the Air Ministry, so reluctant is it to disturb staffs when vigour, interest and ability have become attenuated.

W. BOXALL.

MR. GREY appears to have either wilfully misread my letter in your issue of Nov. 26 or to have become a master in the art of misconstruction. Or is this his way of rebuking those in the A.T.C. who accept youngsters under the official age? If so, then I thank him for putting into perfect language my exact thoughts upon a subject on which I feel very strongly.

Isn't the primary object of the A.T.C. to train young men for the R.A.F. and eliminate time otherwise spent in the I.T.W.? I have always thought so. That is why time and money are wasted on boys under age who, because they are too young, tire not of discipline but Morse and Maths., both of which are essential. But the blame shouldn't fall upon these "too youngs"; all harsh thoughts and phrases should be reserved for those who allowed them to join. The tragedy lies in the loss of good material.

I did not suggest lowering the age of entry to 14 and it is nonsense to say I regard A.T.C. cadets as liars and wasters. I have the greatest admiration and respect for the A.T.C. and many friends amongst its officers and cadets. I was only trying to seek one way of stimulating recruiting for the A.T.C. That's why I suggested fostering air-mindedness among younger boys by closer co-operation with the Air Scouts, in which the training is more suitable for boys up to 15. I know this is being done in some places, but it cannot be successful while this under-age ramp is allowed to continue. May I hope that Mr. Grey will agree with me on this?

ALEC L. WATSON.

An R.A.F.V.R. Club?

AS AN EX-SERGEANT-PILOT of the pre-War R.A.F.V.R., I would like to contact all other members, with a view to a "Meeting" at some future date.

I wonder whether it would be asking too much for you to print something to that effect in your journal and allow them to contact me through your office.

Incidentally, there are six ex-Sergeant Pilots of the old V.R. in this ship and we are most anxious to meet some of our old friends of the good old V.R. days.

HAROLD A. EFFE (Lt. (A) R.N.V.R.,
Late Sgt.-Pilot R.A.F.V.R.).

THE ROYAL AIR FORCE



THE RAINS CAME.—A Vickers Supermarine Spitfire, with pointed wing tips, on an advanced landing ground in Italy. Heavy rains hampered operations.

THE ROLL OF HONOUR

THE 324th Casualty List was published by the Air Ministry on Dec. 19. It contains the names of 303 officers and airmen, including those of 95 mentioned in previous lists as missing or missing believed killed and now presumed or reported killed, died of wounds or injuries received in action or on active service, or prisoner of War.

The list includes 72 killed in action or on active service, 16 died or died of wounds or injuries received in action or on active service, 15 wounded in action or on active service, and 105 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 64,030.

The 324th Casualty List is:—

ROYAL AIR FORCE

Killed in Action

1259642 F/Sgt. E. E. Chalk.
658569 Sgt. E. H. Fenning.
1377724 Sgt. E. S. Foskett.
1545876 Sgt. C. W. Holdsworth.
122557 F/O W. Kemp.
1583419 Sgt. E. G. Lane.
156417 P/O J. T. Rogerson.
1398053 Sgt. B. K. Short.
1313026 Sgt. W. C. Smith.
1411892 Sgt. F. O. Squibbs.
938779 Sgt. K. N. Taylor.
116203 Act. F/L L. E. Thompson.

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

1389244 Sgt. F. R. Burton.
1271406 Sgt. J. Harrison.
1269142 Sgt. S. B. Hawley.
1389462 Sgt. T. J. Lethe.
1004605 Sgt. A. Loudon.
126826 F/O P. S. McCaughey.
1316038 Sgt. E. J. Trezise.
1411732 Sgt. H. Wakefield.
1216336 Sgt. J. W. Young.

Previously Reported Missing, Now Presumed Killed in Action

1377348 Sgt. W. A. Barker.
80369 F/O N. Bird.
749425 F/Sgt. W. E. Boardman.
933423 F/Sgt. C. Bourne.
778810 Sgt. M. P. Brown.
1336567 Sgt. S. H. C. Brown.
50223 F/O V. G. Brown.
573198 Sgt. J. Bunce.
117445 F/O S. C. W. Carlson.
1384438 Sgt. B. J. Clinging.
1321550 Sgt. H. C. Cope.
648044 Sgt. G. S. Crossan.
637524 Sgt. B. H. Cruickshank.
136732 P/O G. Cruickshank.
1379731 Sgt. R. G. Edwards.
632330 Sgt. D. G. Fairlie.
1196513 Sgt. F. C. Fidgeon.
522417 Sgt. T. Gallagher.
80374 P/O G. J. Gibbings.
1030197 Sgt. J. Goddard.
1270428 Sgt. J. N. Gray.
130130 F/O A. J. Herriott, D.F.M.

1505123 Sgt. K. Hitchen.
49032 F/O C. G. Hitt.
1419577 Sgt. A. Howells.
1126718 Sgt. N. Hudspith.
617249 Sgt. J. Hunter.
1320164 Sgt. W. R. Jakeway.
656290 Sgt. W. R. Kinniburgh.
117353 F/O R. H. Larkins.
122558 P/O J. B. Lawrence.
1393387 Sgt. J. E. Lecomber.
776126 Sgt. E. G. Litchfield.
1290988 Sgt. G. S. Love.
144180 P/O R. A. Parkinson.
1335312 Sgt. E. H. C. Phillips.

1375981 F/Sgt. J. H. Prior.
1333360 Sgt. K. E. Rabbett.
535117 Sgt. A. S. Renshaw.
116210 F/O H. Robertson.
1293575 Sgt. G. C. D. Sayer.
1175875 Sgt. A. G. Shum.
1331504 Sgt. B. T. C. Smith.
126770 F/O D. A. Sparrow.
1333931 Sgt. J. R. Stone.
1013892 Sgt. J. Strachan.
1038224 Sgt. G. K. Thompson.
1266197 F/Sgt. R. G. Thorne.
1094818 Sgt. O. J. Trainor.
812184 Sgt. N. P. Tutt.
142864 P/O A. Urquhart.
1316950 Sgt. S. J. Vincent.
1180892 Sgt. G. T. Vincent.
1316193 Sgt. F. H. L. Vines.
952997 F/Sgt. R. Walton.
1335713 Sgt. B. W. E. Wedderburn.

136044 P/O G. G. Williams.
1237135 Sgt. H. E. Williams.
1365974 Sgt. H. R. Williamson.
1283893 Sgt. A. G. E. Wilson.
1330321 Sgt. J. B. Woods.
1083323 Sgt. F. A. Worsnop.

Wounded or Injured in Action

1621710 Sgt. J. W. Birchall.
1552244 Sgt. V. Garland.
547063 Sgt. K. V. Robinson.

Missing Believed Killed in Action

144329 P/O L. G. Heaney.
1318338 Sgt. R. T. Johnson.
1523625 Sgt. W. Quinn.
126629 F/O B. Soulsby.
43262 F/L R. F. Williams.

Missing

142349 F/O G. G. Banks.
1393862 Sgt. A. S. Bissett.
1339896 Sgt. P. Blanchard.
1332744 F/Sgt. E. G. Boucher.
130599 F/O J. A. Brett.
950835 F/Sgt. G. W. Bridgeway.
1804656 Sgt. E. R. Burbage.
125753 F/O P. A. Chappell.
1392932 Sgt. C. A. Clark.
1330063 F/Sgt. R. Cole.
1492748 Sgt. W. F. Cox.
75716 F/L C. A. F. Curwen.
1257520 F/Sgt. R. E. Doddington.
159033 P/O F. B. Edwards.
1262360 F/Sgt. R. L. Fennel.
1061575 F/Sgt. M. G. Fraser.
1562882 Sgt. J. A. Gouk.
1603188 Sgt. L. T. Graham.
1379996 F/Sgt. A. Griffin.
61951 F/L P. A. W. Gwynne.
1190798 F/Sgt. M. F. Hall.
1575982 Sgt. T. A. Hall.
655208 Sgt. J. Harkins.
746694 F/Sgt. A. Hayes.
1810331 Sgt. E. Hill.
1316915 Sgt. A. J. Hodgkins.
1581611 Sgt. E. F. Hudson.

1603664 Sgt. R. Kemp-Welch.
1590747 Sgt. T. Lackenby.
1218515 Sgt. G. F. Lawrence.
1238616 Sgt. N. Lee.
1213872 Sgt. R. Leybourne.
1590866 Sgt. R. McDonald.
1322523 Sgt. C. J. Massie.
1127575 Sgt. M. Mensforth.
1476465 Sgt. H. J. Middleton.
657704 Sgt. W. H. Milne.
108583 F/O T. Mitchell.
1029329 Sgt. H. Moorhouse.
1025192 Sgt. R. Musgrove.
1312779 Sgt. H. G. Paskins.
1024139 Sgt. L. Pow.
1117324 Sgt. W. B. Ralph.
905788 W.O. H. W. Robinson.
151328 F/O M. G. Sheerman.
40858 F/L I. B. Small.
1337465 Act. W.O. R. Stevens.
144087 F/O E. E. Tatt.
1081182 Sgt. J. C. Tetley.
1514349 Sgt. E. Thorpe.
1063624 Sgt. F. Tweedale.
1396600 Sgt. D. Wigglesworth.
147357 F/O C. J. M. Wilkie.
993249 Sgt. S. Wilkinson.

Killed on Active Service

107285 F/O O. Bechgaard.
1212556 Sgt. J. F. Bickley.
1653557 L.A.C. H. W. Booker.
1800466 A.C.2 R. D. Brown.
1400551 Sgt. D. Cawthorne.
1807761 Sgt. W. R. Coster.
144293 F/O J. Coughlan, D.F.M.
1346154 F/Sgt. W. A. Cruickshank.
125494 F/O C. S. Dallimore.
1544306 Sgt. L. L. F. De Vrye.
1399658 A.C.2 K. T. Ding.
150031 F/O J. H. Downs.
1456340 Sgt. J. E. M. Gess.
1622027 Sgt. J. O. Harvey.
156941 P/O F. O. Hawkes.
1874077 Sgt. C. J. Haycock.
1495776 Act. W.O. G. R. Hilton.
655502 F/Sgt. J. Holden.
1213183 L.A.C. J. L. Houghton.
1319717 Sgt. D. Hunt.
129733 F/O E. J. Jefferies.
1534905 Sgt. J. G. Kelly.
1332701 Sgt. M. C. Lang.
1122669 Sgt. L. Langley.
988641 Sgt. C. A. Lockett.
1365967 Sgt. M. D. Lumsden.
1553554 L.A.C. A. MacArthur.
1457139 Sgt. D. W. Meikle.
141562 P/O R. Morley.
1000267 W.O. T. B. Orford.
1500925 A.C.1 R. E. Penn.
1279173 A.C.1 H. R. Phillips.
926860 Sgt. W. J. Pollard.
1432802 Sgt. F. L. G. Price.
1551719 Sgt. D. T. Ritchie.
119168 F/O J. A. Robertson.
1459936 L.A.C. J. G. Rynn.
43142 F/L W. A. Shillitto, D.F.C.

1602873 L.A.C. R. G. G. Smith.
151652 P/O E. R. Stead.
574759 Sgt. F. A. Sterry.
1355333 A.C.2 D. A. Westcott.
1653049 Sgt. R. Whitford.
1331147 F/Sgt. D. I. Wildman.

Previously Reported Missing, Now Presumed Killed on Active Service

1387373 Sgt. A. W. Gardner.

Wounded or Injured on Active Service

133818 F/O B. Bridge.
1139516 Sgt. J. Moran.
1525011 F/Sgt. J. Turner.

Died of Wounds or Injuries Received on Active Service

1387348 F/Sgt. J. Shearer.

Died on Active Service

1183196 L.A.C. F. E. Anstey.
1816524 A.C.2 G. D. Barnes.
1209240 A.C.1 A. Buttery.
1521205 A.C.2 J. C. Cain.
1343057 A.C.1 W. H. Chambers.
982691 L.A.C. H. F. Draycott.
1109669 L.A.C. K. W. Griffin.
1377906 Sgt. W. G. Martin.
1652933 L.A.C. R. F. Patterson.
1025012 Cpl. H. Pountain.
1188749 L.A.C. P. W. Shepherd.
1154935 Cpl. L. J. D. Smith.
1625760 L.A.C. R. J. Turner.
44896 F/L W. L. Weager.
1873392 A.C.1 R. J. Wicks.

Previously Reported Missing, Now Reported Prisoner of War

134752 F/O E. K. Cam.
1320357 F/Sgt. D. E. Penn.

ROYAL AUSTRALIAN AIR FORCE

Previously Reported Missing, Now Presumed Killed in Action

Aus.404867 P/O A. H. S. Brown.
Aus.404014 Sgt. J. C. Daley.
Aus.412150 Sgt. H. V. Lamb.
Aus.401196 Act. F/L O. G. Rowcroft.
Aus.412730 F/O W. T. W. Smithson.
Aus.405189 W.O. M. P. Stewart.

Missing Believed Killed in Action

Aus.422033 F/Sgt. R. T. McCudden.
Aus.420270 F/Sgt. R. J. Rays.
Aus.405986 P/O R. J. F. Vivers.

Missing

Aus.426046 F/Sgt. T. P. Chadwick.
Aus.401104 P/O J. Cohen.
Aus.412405 F/Sgt. M. H. Crossing.
Aus.406591 F/Sgt. C. C. Dacey.
Aus.403915 W.O. W. J. Doude.
Aus.409686 F/Sgt. G. J. Gebbie.
Aus. 32782 F/Sgt. W. T. E. Highland.

Killed on Active Service

Aus.417448 F/Sgt. E. H. Berry.
Aus.412408 F/Sgt. H. E. Dennis.
Aus.425013 F/Sgt. P. D. Horrigan.
Aus.402744 F/O A. T. Leydin.

ROYAL CANADIAN AIR FORCE

Killed in Action

R. 69365 W.O. G. H. Cockburn.
R. 87337 F/Sgt. V. E. Cook.
J. 24182 P/O J. C. Findlay.
R. 117476 F/Sgt. J. G. F. Fortin.
J. 17912 P/O G. H. Hamilton.

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

J. 10119 F/O H. D. Beattie.
R. 115979 Sgt. C. L. Gerding.
R. 95244 Sgt. R. E. Hart.

Previously Reported Missing, Now Presumed Killed in Action

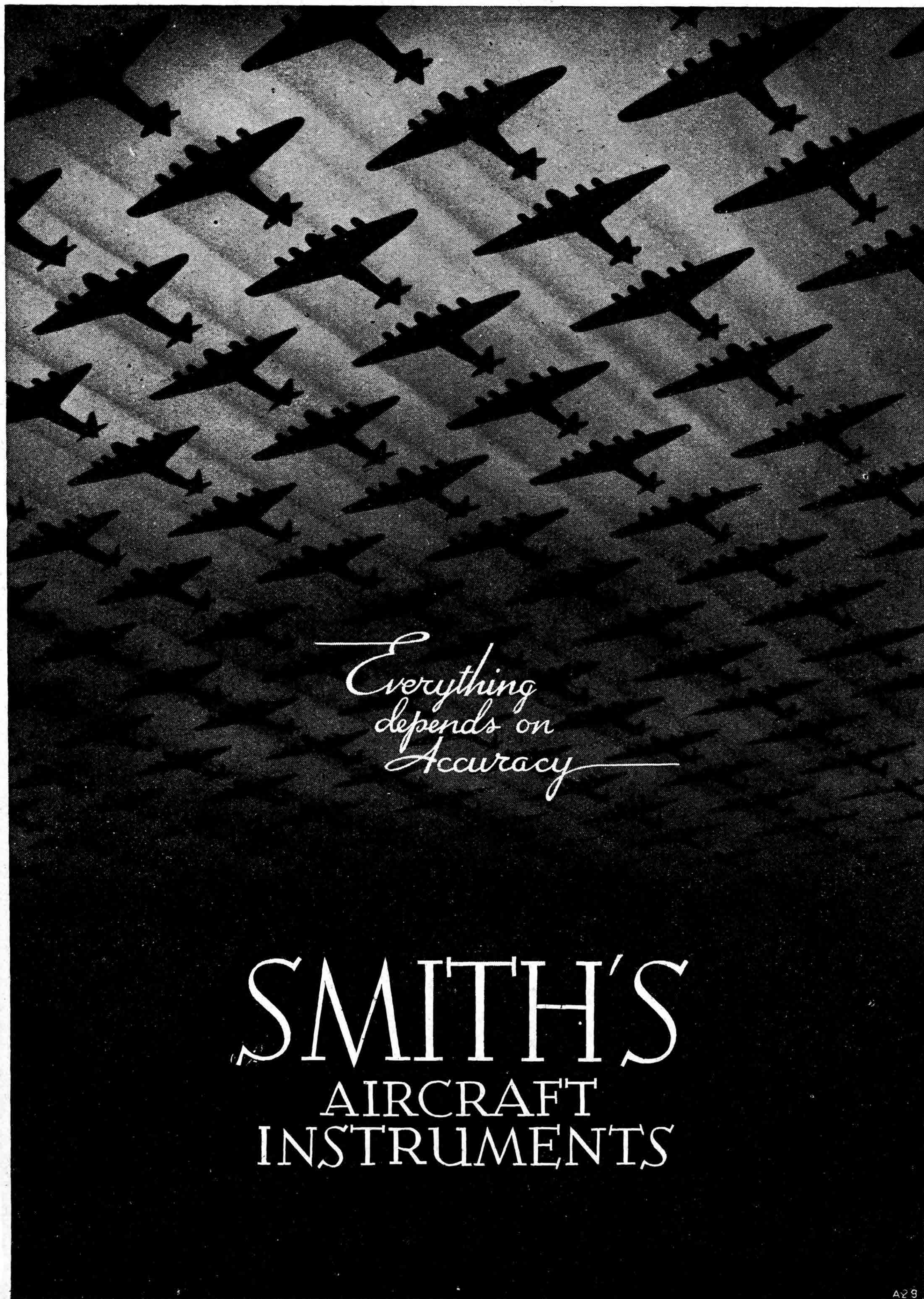
R. 134212 Sgt. F. T. Stanley.
14063A Sgt. G. Tyler.

Wounded or Injured in Action

R. 70142 Sgt. W. H. Cardy.
R. 161431 Sgt. S. J. Everitt.

Missing Believed Killed in Action

R. 172283 F/Sgt. A. Bortolussi.
J. 22865 P/O J. R. Dale.

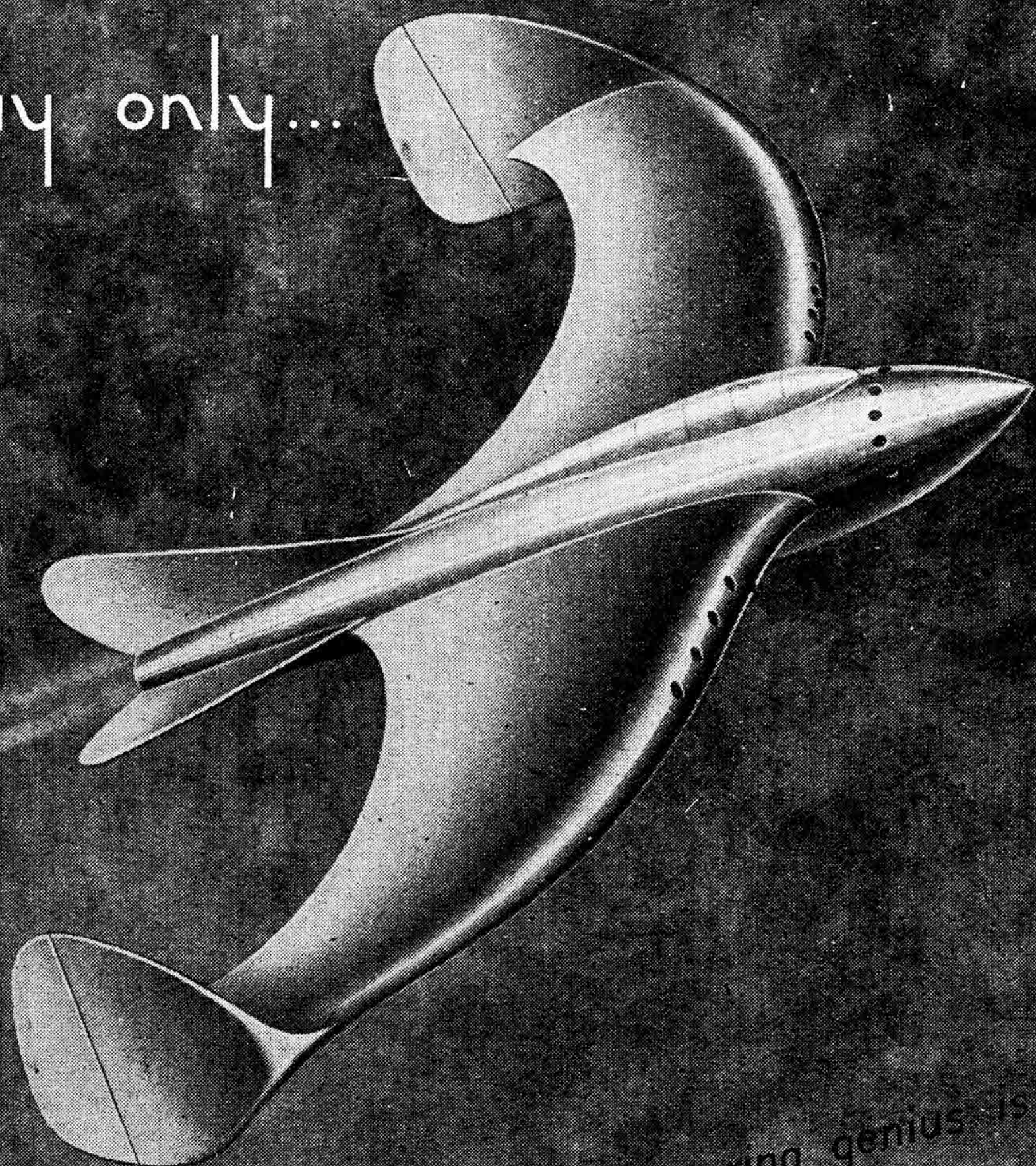


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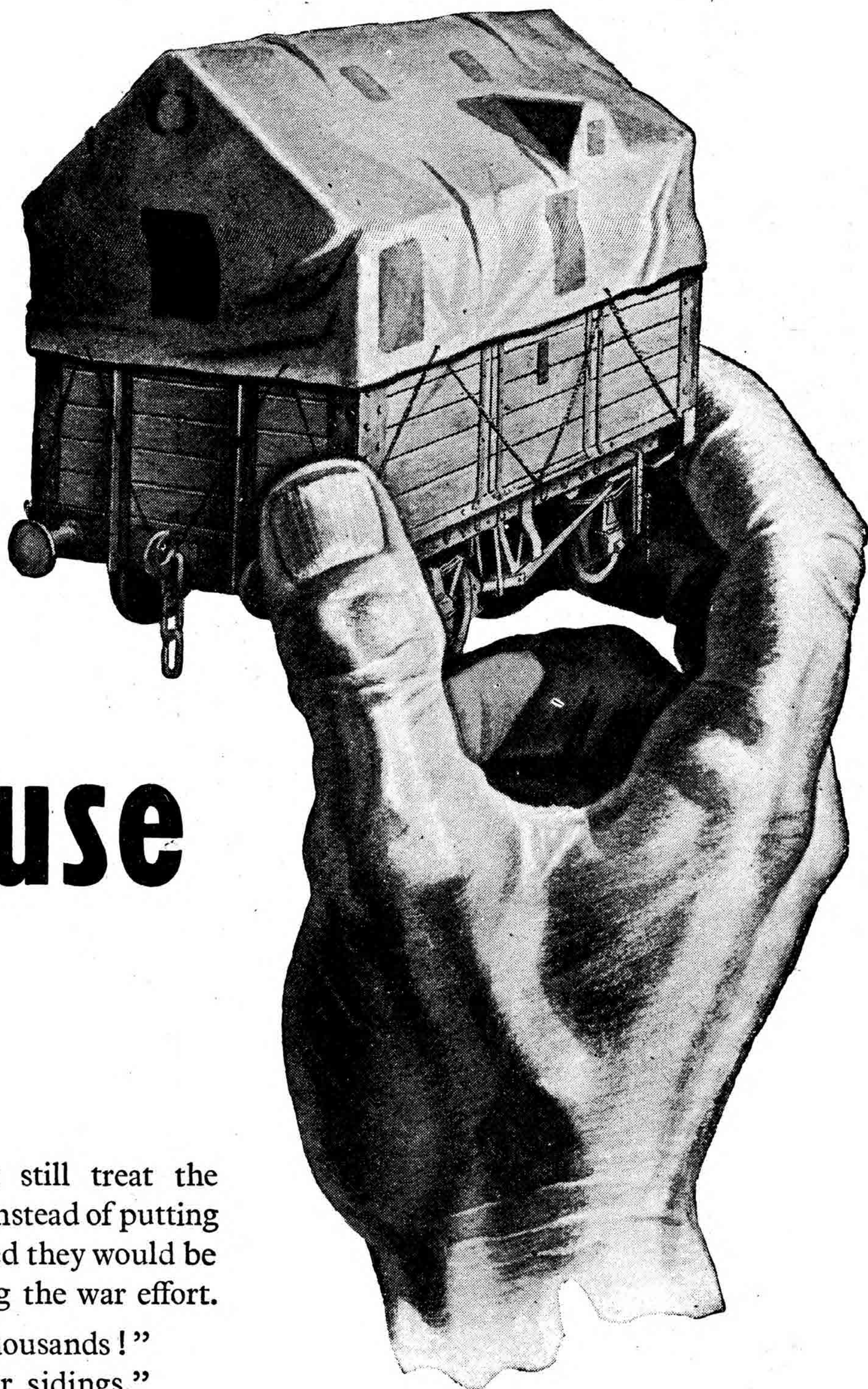
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But *in total*, hundreds of wagons stand idle for thousands of days—a huge loss to our vital transport system in its colossal war tasks. Will you take steps now to see if you are an unwitting "offender"?

QUICKER TURNROUND THAN EVER BEFORE

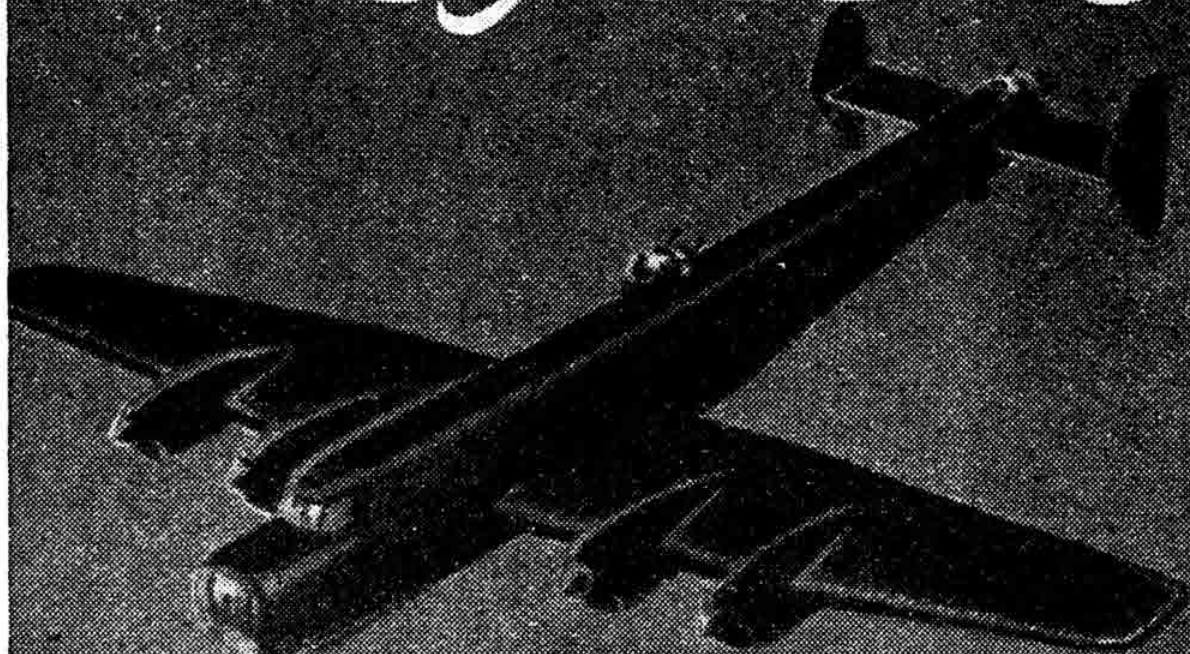
Issued by the Ministry of War Transport



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:

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3. WORK IN BLACK-OUT AND AT WEEK-ENDS.
4. OPINIONS OF "MEN WHO DO THE WORK".

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He — and his colleagues of the research and development laboratories — have made it possible to see deep into the heart of the metal of vital things like aero engines and gun barrels, to make sure that no hidden flaws exist; they have given to doctors and surgeons an ally of ever-increasing power and scope for diagnosis and cure; to them belongs much of the credit for the part which mass radiography will play in the final elimination of the scourge of tuberculosis.

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