"THE AEROPLANE," JUNE 12, 1942.

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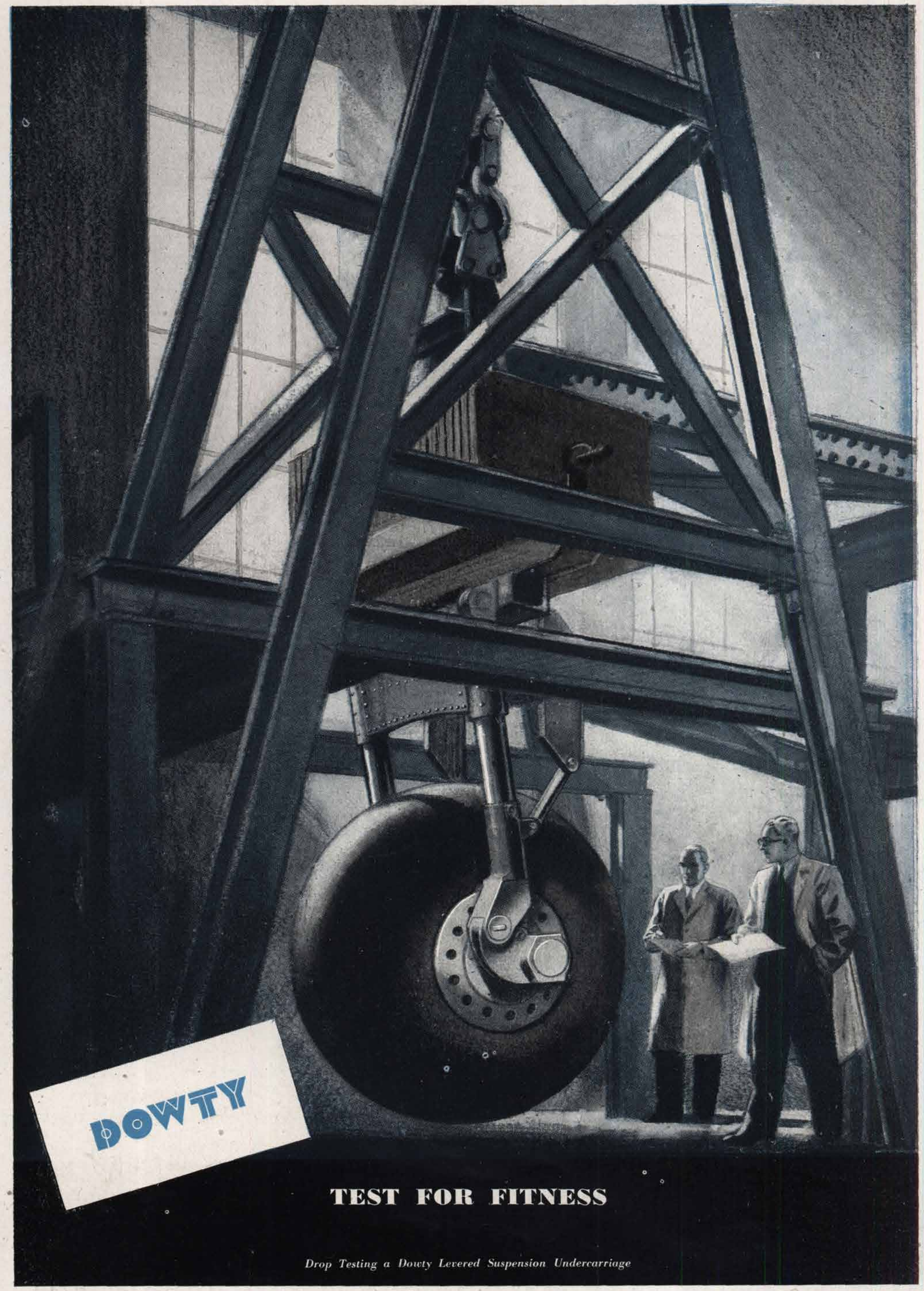
ONE SHILLING

# THE AEROPLANE

THE MOST INFLUENTIAL AVIATION JOURNAL IN THE WORLD






**TEST FOR FITNESS**

*Drop Testing a Dowty Levered Suspension Undercarriage*

VOL. LXII. No. 1620 JUNE 12, 1942

# THE AEROPLANE

Incorporating
**Aeronautical Engineering**

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Proprietors:
TEMPLE PRESS LIMITED

Managing Director:
ROLAND E. DANGERFIELD

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

# MATTERS OF MOMENT

## Towards a German Defensive

RUSSIAN SNOWS have melted. British bombs are presenting the Germans with a Summer dilemma of equal intensity. British plans, as inscrutable as oriental mysticism, cast a blight on all the enemy's aggressive hopes. Germany began the wider War, after the Polish campaign, hesitantly. Her course of easy conquest over, she hesitates again. This time her concern is not to organise the greatest possible striking force for a given task. It is to discover what Great Britain intends to do if her enemy should become locked in a profitless struggle in Russia.

The British waited for Germany to attack in Libya. That, as events have shown, was not to be explained by British weakness in Africa. Under pressure from Russia and the United States, the British have so far declined, nevertheless, to rush into an invasion of the Continent. That cannot be because she lacked the men or the arms; it cannot be because she is not impressed with the desirability of pushing the Germans out of Northern France. The British have not concentrated their bombing on a scheme to knock out the Luftwaffe, as the Germans sought to knock out the Royal Air Force when they opened their assault. That, too, cannot be because the means are lacking.

### Revival of the Defensive

Germany never truly despised the British. She misunderstood them and tried to deride them. Now she still finds them an enigma and, persuaded of their strength, she mistrusts her judgment and is influenced by fear. There are some who expect her to be stampeded by anxiety into a change of plan. They foretell a transition from offensive to defensive strategy in Russia and a transference of offensive strength to the West. They associate the new German pressure on Finland with this intention. They believe that defence is beginning to reassert itself and to recover its superiority over attack; and they suppose that Germany will have been the first to recognise the new phase and to prepare to turn it to account.

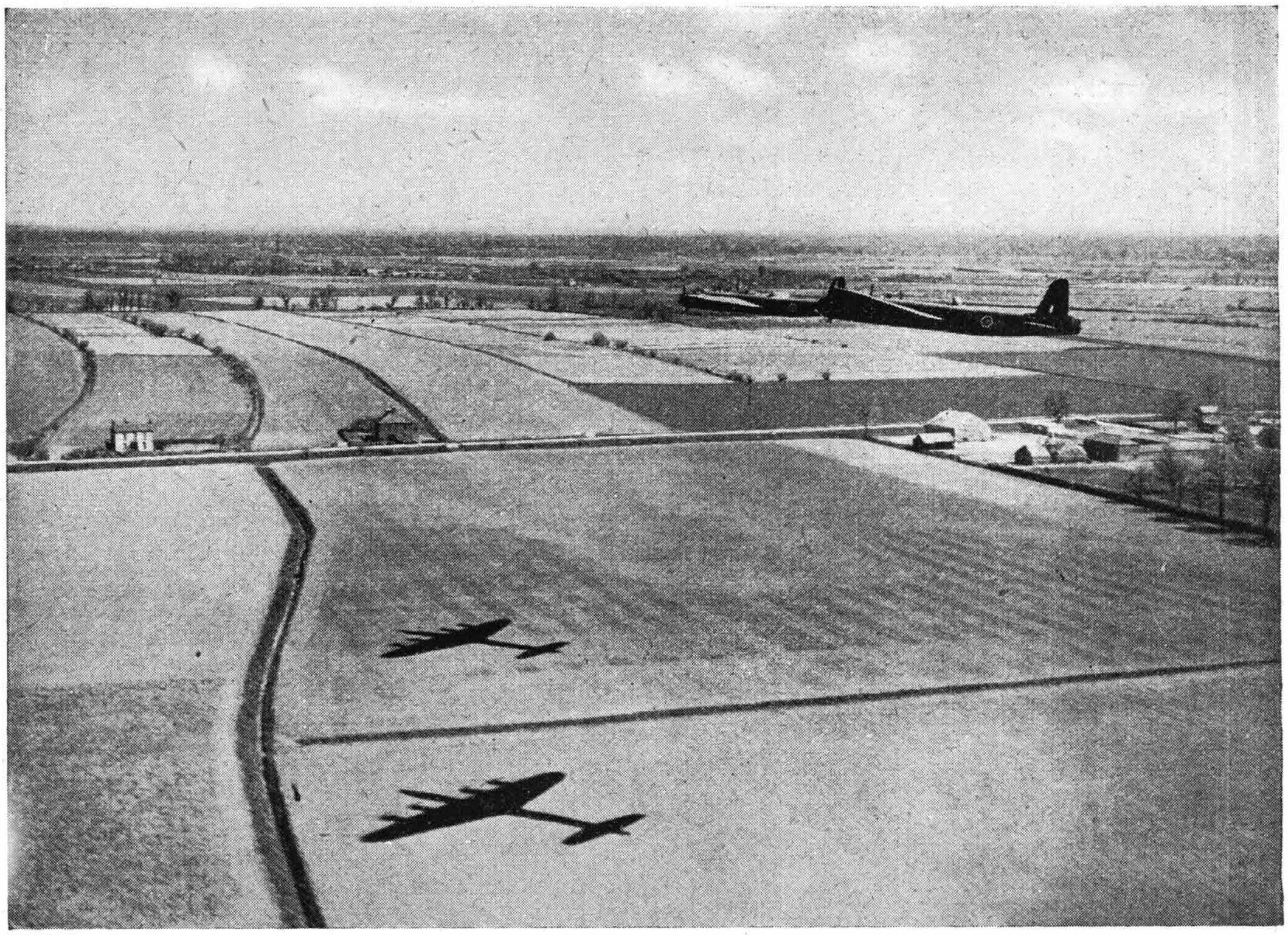
Observers who reach these conclusions may not be wholly wrong. Cut and thrust in Russia have not gained much for either side since the fighting became fully mobile again. Mechanised warfare in Libya has not yet yielded large territorial gains. A British assault on the French, Dutch or Norwegian coasts would evidently be more costly now than it would have been a year ago. And the British, as we expected, have waited for the time when the enemy should be fully committed to the biggest of his adventures before confronting him with their intervention elsewhere. What the prophets regard as a restoration of the defensive to its portentous pinnacle may prove eventually to have been nothing more than the product of conflict between forces of about equal strength. As one side builds up its power, the other may still find that defences cannot be set up quickly enough to make the offensive too costly to maintain.

Ultimate strength in relation to the adversary has now become Germany's real problem. Skill in military affairs will not avail if the generals are weaker in guns and tanks and aeroplanes than their opponents; for the guns can be moved up by their tractors to blast successive groups of "hedge-hogs"; and tanks can push forward so persistently that defences can never be deep enough to go on resisting them; and aeroplanes can paralyse everything on which a general must depend for sound defence. Even in this War the aeroplane has been under-estimated. We hope that the hunting meets of Air Marshal A. T. Harris will not cause it to be over-estimated. What those blows against Cologne and the Ruhr should teach is the ancient lesson against frittering away resources—the wisdom of striking in strength.

### Strength and Variety in Air Operations

When the Germans are outclassed on the ground they will likewise be outclassed in the air and German defences will suffer as Allied defences suffered when they were assailed by superior forces. Defences are sterile if they consist only of fortifications. The aeroplane can turn fortifications into useless islands around and beyond which the sea of war may sweep and surge. It can cut them off from supplies and reinforcements. It can destroy the munitions they need. It can smash the vehicles which should serve them. It can even prevent the arrival of succour by air. It can take the heart out of those who alone could afford them the means of resistance and endurance. It can stifle opposition at its source or crush it where it is manifested or make it blind and ineffective by depriving it of the help of its own aeroplanes. Everything depends on how and in what quantities the aeroplane is used.

Faith in bombing has been revived by two gigantic attacks. Those attacks were pure strategic bombing. They were not directed to the development of any particular military or naval operations. They were



SILHOUETTED BY THE SUN.—Short Stirling four-motor heavy bombers flying over the English countryside. Squadrons of Stirlings took part in the heavy raid on Essen on June 1, when, for the second time in history, a force of more than a thousand bombers were despatched from bases in the United Kingdom in a single night's operations. Other heavy raids during the week were made on Bremen and Emden.

planned with the object of making the prosecution of the War hard for Germany in the general sense. They might have been bigger or they might have been organised sooner or they might have been multiplied if so many other duties had not been found for bomber aircraft. They could perhaps not have been undertaken now if help had not been available from the Fighter and Army Co-operation Commands. Some day the work of those other Commands will be helped in the same way by the Bomber Command and the essential unity of all branches of Air Power should be established beyond doubt. Without unity in the full sense, every end which Air Power may achieve will be the more difficult to reach or will take longer in accomplishment.

### The Uses of Air Power

The use of the Air Arm for a given purpose is determined by the run of events. There was a time after the Dunkirk evacuation when every ounce of Air Power had to be devoted to defence. There was a period in 1941 when preference was given rightly to defence against night raiders and to operations against submarines. The time now has come to cut at the roots of industrial life in Germany and at the centres of maritime activity in the Mediterranean while a section of the British Air Arm preserves air supremacy over the Eighth Army in Libya. The Australians and the Americans are showing how Air Power may be concentrated on the naval operations of the enemy. When the time comes, everything the British possess will be devoted to covering, convoying and supporting an invasion; and it will be of no lesser value to the Navy and the Army because a month or two earlier it was all being applied to softening the opposition they would have to meet.

Air Marshal Harris is reported to have said that if he could send out 1,000 bombers against Germany on every night when the weather is suitable the War would be over in from four to six months. That can only mean that within four to six months the centres of production would have been put out of action and kept out of action, that transport would have been made impossible and that a highly developed community would have become so disorganised that it could no longer prosecute a war. We have no intention of disputing the Bomber Chief's dictum. We are equally sure that he will not have a chance to put it to the test.

Before this time comes he will be busy smashing defences for the Army while his Fighter colleague is giving cover to Navy, Army and bombers, and his opposite number in the Army Co-operation Command is bringing troops to the battlefield, supporting Army operations, driving off enemy aircraft and generally exercising control of the air wherever engagements develop. An air arm is intended to be flexible. Unless it is flexible and unless its flexibility is properly applied, the full weight of air support or of independent air action is not to be had in any field of activity.

Germany will certainly try to hit back. She may indeed have to change her plans in Russia to do so. That would be only an incidental boon to Russia. British Air Power is not merely relieving the pressure on Russia. It is building up a weapon which will enable Germany to be crushed, no matter how she may wriggle and face about. That weapon would be the sooner prepared if all four fighting Commands of the R.A.F. were equally available for the "combined operations."

# A "Bootless" Lesson

"NOTHING ABOVE 6,000 ft" seems to have been the order to all British pilots in the Libyan fighting until the attack by the enemy's ground forces had been turned. As crushing a condemnation of the German dive bombers as has ever appeared is contained in that order. The enemy had droves of them in North Africa and he had plenty of Me 109s to look after them. Air Vice-Marshal A. Coningham has said that on Martuba aerodrome alone on the night of June 4 the Albacores and Wellingtons dealt with an accumulation of 230 enemy machines. Yet the British chose the tank and the supply convoy as primary targets for fighters over the battle area until the troops had got the situation in hand.

The tanks were more dangerous than the Stukas and British fighters and fighter-bombers were more usefully employed in halting the tanks than in defending British tanks, supply columns and infantry from the dive bombers. Like the R.F.C. in the Great War, the R.A.F. came down into the smoke and dust of the battle and only went back to air warfare when the keener tension was relieved. That may mean that the Stuka has always been overrated, or that the troops have become used to dive bombing, or that improved anti-aircraft defences have taken the sting out of it. A little of each may have its share in making the dive bomber relatively unimportant.

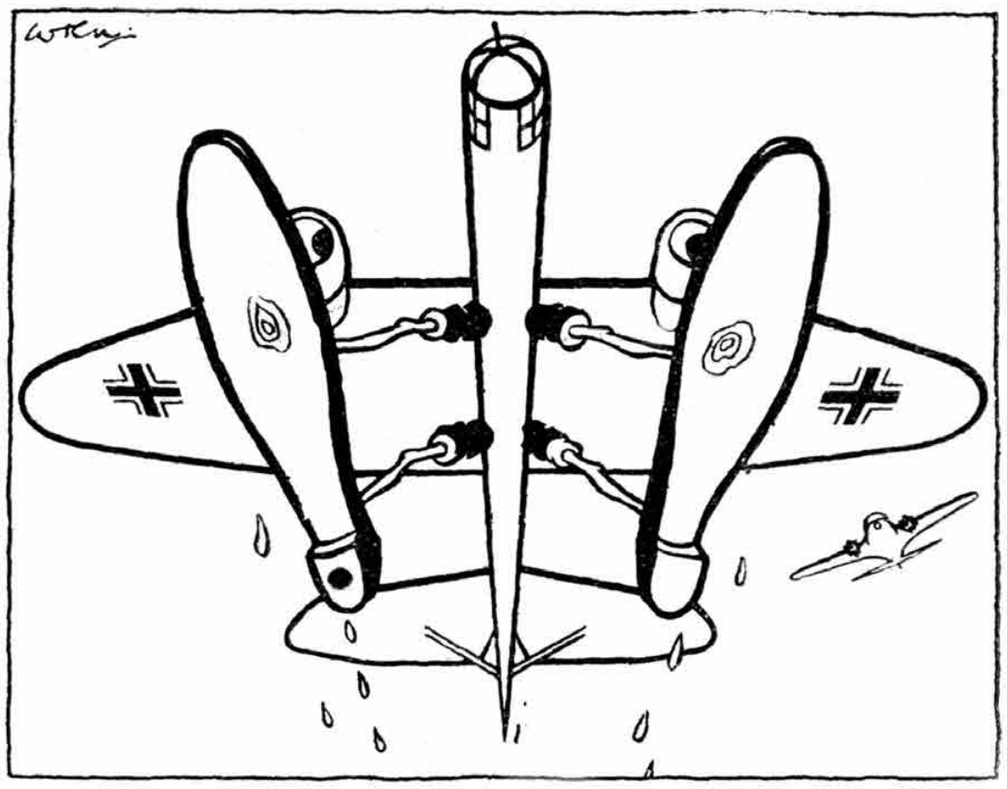
Strafing ground troops with bombs, cannon and machine-gun at low levels is also a dangerous business in these days. British pilots ran into intense fire in some places while they were spraying the desert troops. No doubt the Stukas too had a warm reception. Low attack work is bound to have become fairly hazardous, and both sides have to face that fact in deciding what use should be made of it, but on the evidence of the Libyan fighting there seems greater profit to be had from the varied type of ground strafing than from plain dive bombing no matter how solicitously the Stukas may be escorted.

A great many of the British pilots whose machines were brought down by A.A. fire afterwards trudged home. The armour seems to have been put in the right places and the Late Arrivals' Club must have a large membership by now—a membership marked, apparently, by sore feet at the time of initiation. That distinction is passing at last, for flying boots are no longer worn on this sort of desert operation. As Air Vice-Marshal Coningham has said, feet in flying boots are apt to get blistered "after the first 50 miles" of the walk home. Whether or not the pilots go flying ultimately in Army boots will naturally depend on how often the Army needs the services of the aeroplane at or near ground level and how skilled the pilots become in dodging the "flak."

One of the strangest things in a strange War is that R.A.F. pilots should have to give up their boots in showing the Stukas a "better way."

FLEET WATCHERS.—Fairey Albacores of the Fleet Air Arm flying in Libya, where co-operation between land and sea forces has been of the closest throughout the campaign.

# ODDENTIFICATION—LXIII



This booted villain, the One-One-Five,
Well-known among those men who strive
To keep our sea-lanes free from danger,
To you may be a total stranger—
If that is so, then do not fail
To note the wing-spread, mark the tail—
Remember, too, no "Gunter bite"
Will mark it in its ponderous flight.

# Japanese Type Names

MUCH CONFUSION has been caused by the Japanese habit of numbering their aeroplanes according to the year of their design. Hitherto this confusion has been worse confounded by the absence of authenticated type designations to give some distinction between different aeroplanes designed by the same firm in one year.

The following list has been confirmed as accurate and in use by the Japanese Air Forces. It goes a long way towards clearing confusion:—

| TYPE | JAPANESE NAME | JAPANESE SYMBOL |
|---|---|---|
| Ambulance | Byōinki | B |
| Army Co-operation | Rikugun Kyōryoku | RK |
| Dive-bomber | Kyūkōki | K |
| Fighter | Sentōki | S |
| Float Seaplane | Suijō Hikōki | SH |
| Flying-boat | Hikōsen | H |
| Heavy Bomber | Omoshi Bakudanki | OB |
| Light Bomber | Karui Bakudanki | KB |
| Reconnaissance | Teisatsuki | T |
| Reconnaissance Floatplane | Kaijō Teisatsuki | KT |
| Torpedo-bomber | Gyōraiki | G |
| Trainer | Kyōrenki | K |
| Transport | Yusōki | Y |

# The Air Training Agreement

A NEW AGREEMENT for the renewal and expansion of the British Commonwealth Air Training Plan—the official name for the Empire Air Training Scheme—was signed at Ottawa on June 5. It replaces the agreement which established the original Air Training Plan on Dec. 17, 1939, and which was to expire on Mar. 31, 1943. The new agreement is to operate from July 1, 1942, until Mar. 31, 1945, and provides for a single pool of trained personnel.

Training facilities in Canada are to be expanded and will continue to be used by Australia, New Zealand, Great Britain and Canada, though Canada will still supply a substantial proportion of the trainees. The total number of pupils sent under the United Kingdom quota will be greatly increased and will include men from various parts of the Empire and from the European members of the United Nations.

There will be complete co-ordination of air training in Canada, and in future operational training will be completed there so that air crews will be ready to join squadrons in action immediately they are sent overseas.

The estimated cost of training under the new agreement is about £330,000,000, of which Canada will pay 50 per cent. Australia and New Zealand will pay the cost of training their respective pupils, and the United Kingdom will bear the balance.

As far as is practicable, the United Kingdom's share will be contributions of certain aircraft, engines, spare parts, technical equipment, bombs, ammunition and other supplies as required. The liability for providing the equipment will rest with the United Kingdom, but Canada, as the administrator of the agreement, will determine the nature of the equipment and the quantity required.

Royal Air Force units in Canada will be administered by the R.C.A.F. in the same manner as units of the B.C.A.T.P. Units already established in Canada will retain their R.A.F. identity, but will be administered by the R.C.A.F., and any new units established at the request of the United Kingdom will come under the B.C.A.T.P. Elementary Flying Training Schools of the R.A.F. in Canada are to be placed on a civilian basis, similar to the Elementary Flying Schools operated for the B.C.A.T.P., except that Flying Instruction staff and certain specialised ground instruction posts will normally be filled by R.A.F. personnel.

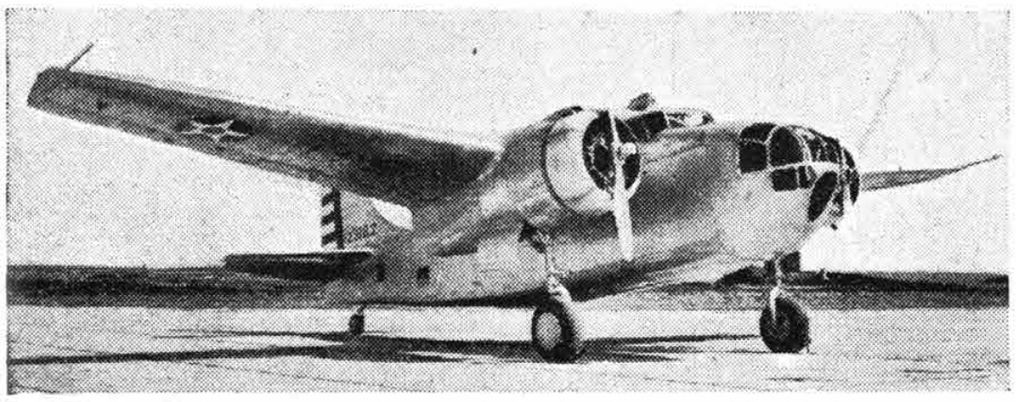
The new agreement provides for more R.C.A.F. units overseas and increased independence for those units. The R.C.A.F. Overseas Headquarters is to be given general supervision over all R.C.A.F. personnel attached to the R.A.F., and, subject to operational expediency, may recall such personnel to serve with the R.C.A.F. Also, the agreement of the R.C.A.F. Headquarters is to be obtained in the selection of Commanding Officers for R.C.A.F. squadrons and in the posting of R.C.A.F. officers of the rank of Wing Commander and above.

R.C.A.F. squadrons and higher formations are to be established overseas with all-Canadian personnel commanded by Canadian officers and Canadian personnel is to be posted to squadrons in which Canadians are already serving. At present Canadian personnel is scattered over 600 units.

A Canadian Bomber Group of R.C.A.F. bomber squadrons is to be formed under the command of R.C.A.F. officers and with Canadian ground crews. To gain experience of Group control, a number of R.C.A.F. officers are to be appointed to R.A.F. Group Headquarters, and a Canadian Bomber Group Progress Committee is to be set up by the Air Ministry.

Because of operational requirements, Fighter Squadrons must remain under the C.-in-C., Fighter Command, R.A.F., but so far as possible R.C.A.F. fighter squadrons are to operate from stations which will be made R.C.A.F. stations and manned by Canadian staffs.

Canadian Coastal Command Squadrons overseas will be manned, where possible, by Canadian personnel, and Army Co-operation squadrons allotted to Canadian Army formations will be Canadian Squadrons.



FOR ADVANCED TRAINING.—The Boeing AT-15 Advanced Crew Trainer (two Pratt and Whitney motors), which has been delivered to the Army Air Forces for test. It has Hamilton Standard constant speed airscrews, radio compass, automatic pilot, radio equipment, movable machine-guns, movable camera-gun, power turret and moderate capacity bomb bays. Its wing span is approximately 59 ft., length 42 ft., and its speed said to be more than 200 m.p.h.

# AIRDENTITIES—V


Air Marshal Sir Richard E. C. Peirse, K.C.B., D.S.O., D.F.C., A.F.C., i.d.c., p.s.a., Air Officer Commanding-in-Chief, Air Forces in India.

# New German Motor Cannon

ARGUS As 410 12-cylinder inverted Vee air-cooled motors are being adapted for the installation of cannon firing through the airscrew hub. Dr. Ing. Manfred Christian, Chief Designer of the Argus Motor Company, of Berlin-Reinekendorf, has completed the detail modifications necessary and, presumably, the motor-cannon will be used in such machines as the Fw 189 and Hs 129, both of which have Argus motors.

The Argus controllable-pitch airscrew operated by vanes on the spinner has a hollow shaft to take the barrel of the gun.

# Wooden Aeroplanes in Germany

THE GOTHA AIRCRAFT WORKS, already engaged in building Gotha 242 troop-carrying gliders and on sub-contracts for the Messerschmitt concern is also beginning the construction of wooden aeroplanes.

As yet, there is no indication of the type of machine which is being built in wood. Most probably it would be an advanced trainer of the Miles Master category, although there seems no reason why operational types should not also be built of wood.

# A German "Tank Buster"

NEW German aeroplanes are likely to include a "tank buster." Swedish journalists in Berlin were informed by a Government spokesman that information on new types ot aircraft used by the Luftwaffe may be expected soon. Among them is an armoured fighter which was described by the official as a "flying anti-tank gun," probably the Hs 129.

This new aeroplane is said to form a valuable addition to the flying equipment of such specialised Luftwaffe formations as the Richthofen Air Corps as it "combines the qualities of an air weapon with those of infantry and artillery, and has proved most effective because of its great mobility." According to the spokesmen of the German Government, the battle on the Kerch peninsula was conducted with surprisingly few ground troops as most of the work was done by the Stukas and these new "tank busters."

# Spitfires in the U.S.A.

THE Lisbon correspondents of several German newspapers report that Spitfires arrived in the United States to assist the American coastal patrols in their fight against the U boats, and that British light bombers were landed in Cuba to share with American bombers the guarding of the Caribbean Sea.

## A Gallant Rescue

FOR THREE DAYS the crew of a Halifax bomber drifted off the Dutch coast in their rubber dinghy. The Germans knew they were there, but let them drift in the hope that a British rescue attempt would provide them with some easy targets.

An Air-Sea Rescue Hudson of Coastal Command sighted the six men at noon on June 2 after they had been in the sea for about 12 hours. The Hudson was quickly set upon by Messerschmitts, but shot its way out and returned to base, badly riddled. The search was resumed, but not until the afternoon of June 4 was the dinghy again located—this time by a Beaufighter of Coastal Command.

That evening two high-speed rescue launches put to sea. Twenty miles from the Dutch coast a Ju 88 saw them but did not attack. Later, while the men were being transferred from the dinghy three Messerschmitts appeared but, like the Ju 88, did not attack. As the launches with the rescued men turned for England, five E boats barred their way. At 50 yards the enemy opened fire, but the rescue launches gave their motors full throttle, charged through the line of E boats and escaped unscathed.

## Comparative Results

SOME people seem to think that the losses in the R.A.F.'s big raids on Germany are out of proportion to the results achieved. And many people still doubt the ability of the R.A.F. to win the War.

Admitting that British Taxpayers (and Americans) who are paying for the War do not know just what these results have been, we may at any rate assume that they have been considerable—remembering that we had twice as many aircraft over Germany on each night as they ever had over here, and that our people carried four or five times the weight of bombs, and that they were dropped on an area much smaller than London.

Our losses were of the order of 300 to 350 men on each of the big nights. Of those we may hope that a fair percentage are alive, thanks to parachutes or skilful forced landings. Losses of material do not count in cash, for money has ceased to have any value. Losses in man-hours of work probably run into some few millions, which have gone for ever. But our future man-hours are unaffected.

In Germany the loss of life has obviously been far greater. It certainly runs into thousands. The losses in man-hours-cost of houses, plant, machinery and products must be enormous. And the loss of future man-hours, because of workers killed or injured, smashed dwellings and factories and machinery, and destruction of raw material—all of which will prevent future production—must be far greater.

Now consider what force of guns, tanks and men would have been needed to do the same damage by attack from the ground. Even if one assumes that we had been able to put an army into Germany without loss during transport by sea and air, and without opposition in landing, how many men would have been killed and wounded, and how much material would have been smashed in the attack? We should probably have lost more men in accidents, apart from enemy action, than the R.A.F. lost in the whole attack. That is the true measure of the value of air attack.

Another point. Whether one bombs factories so that the people cannot work or bombs the people so that the factories cannot work, the result is the same. The enemy does not get the needed munitions.

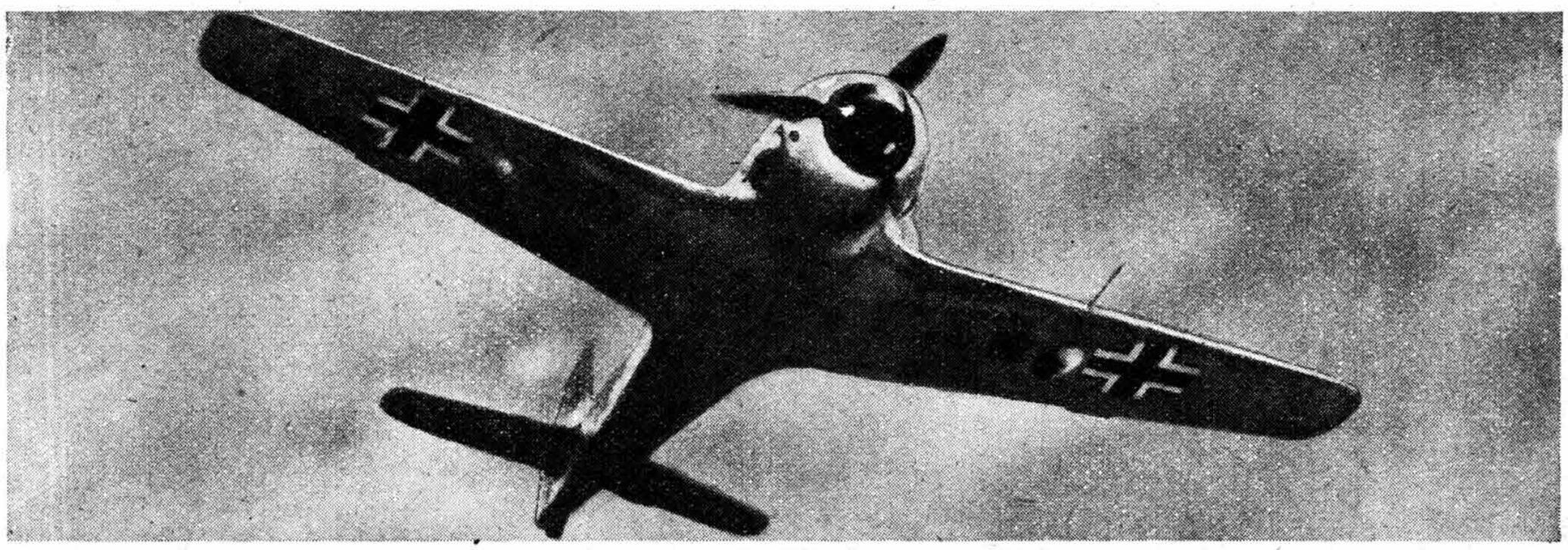
At last we seem to have rid ourselves of the cant and humbug of pretending to distinguish between the Service and Civil population. But, although air action may win the War, in that by cracking the enemy's will to fight it may get his psychological momentum moving towards peace, a war can only be kept won by a soldier on his flat feet with a gun in his hand on enemy soil—which was one of our mistakes in 1919. And soldiers can only get to Germany, or Japan, with the help of the Navy and the command of the sea. So the need for Britannia to rule the waves of the sea is as great as ever, even though we must also rule the waves of the air and of the æther.—C.G.G.

## Luftwaffe Night Fighters in Russia

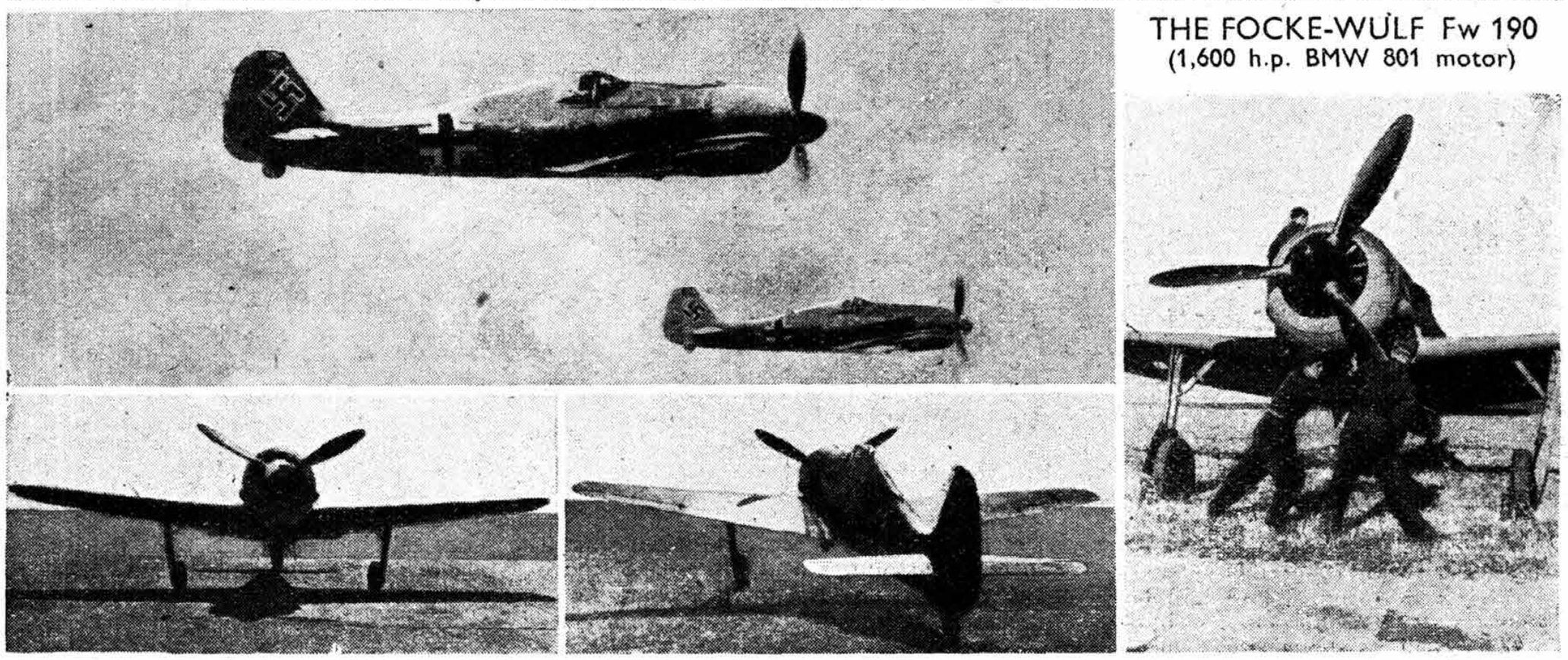
AT the end of May, the presence of Night Fighter formations operating on the Eastern front was mentioned in a German High Command communiqué for the first time.

## Danes to the Rescue

THE SHORTAGE of men on the Eastern front was so great in the beginning of May that the Danish Free Corps had to leave Denmark at short notice and was transported to the front in Junkers Ju 52/3mz.



THE FOCKE-WULF Fw 190
(1,600 h.p. BMW 801 motor)



*The 144th Week of*

# THE WAR IN THE AIR

CONCENTRATION of the maximum possible force at the decisive point is one of the fundamentals of strategy and one of the secrets of success in air attack.

This basic fact is especially true in bombing. As the scale of attack goes up so the nature of the results changes. It ceases to be only a nuisance and begins to become decisive action in the winning of the War. Thus the raids on Cologne and Essen last week by a force of 1,130 and 1,036 bombers respectively, supported by heavy attacks by Bomber Command on preceding and succeeding nights mark a new quality in strategic bombing. More concentration and greater forces will be employed as time goes on and our strength still further increases.

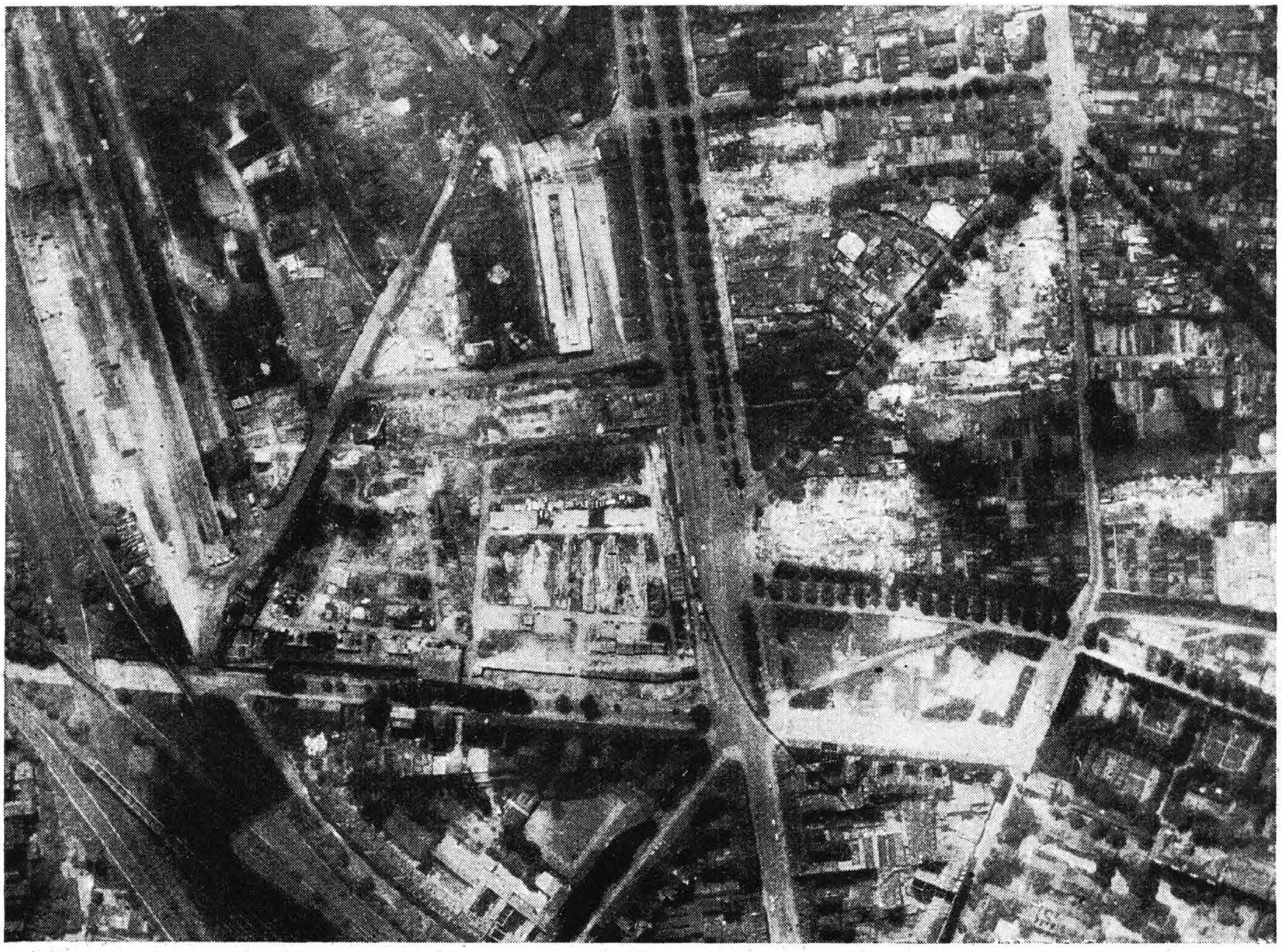
For this reason pleas for the dispersal of our air strength to all the thousand and one parts of the World where it would be useful are dangerous to our whole War effort. The Army and the Navy are both beginning to realise that Air Power is the decisive factor which dominates all warfare to-day. In consequence their advocates are asking for more and more diversion of our available strength.

Headlines in the Sunday papers well illustrate the dangerous pleas of those who lack understanding of the fundamental principles of War, each looking on the subject from his own narrow viewpoint.

"China's vital air needs," "Australia calls for 'planes," "The Army's needs," "Air Power for the Navy"—all testify to the new regard in which the potency of the air weapon is held. "The Observer" in particular—that great newspaper which has fallen from its former grace—published one article which can only do great harm by spreading its wrong-headed doctrines. This article under the heading "The Forum—Bombings and Sinkings" on June 7 made the following statements:

"The United Kingdom, the British Empire, the United Nations as a whole, depend for their prospect of victory, even of survival, on the maintenance of their sea communications. Sea power to-day is exercised not by ships alone, but also by air forces trained and practised for—and therefore efficient in—sea operations and the collaboration with ships-of-war. Here, then, should surely be one of the first calls on our available air resources, for if we fail at sea for lack of them no 1,000-plane raids on Ruhr or Rhineland will save us.

"There is, of course, no suggestion that such raids should not have been undertaken or should cease—the charge usually made by air enthusiasts against those who press for more air support for the Navy. They are a highly valuable factor in our War effort, and there could be no question of dispensing with them. But just as their magnitude must not be allowed to obscure realisation of dangers elsewhere, so it is important that the absolutely essential needs of other Services should not be starved in order to minister to that impressive magnitude. It would, for instance, be quite unjustifiable to devote all resources to one end in order to provide 1,000 aircraft rather than, say, 750, for a mass attack if that meant depriving our sea forces of the air contingent they



THE BRITISH OFFENSIVE.—Reconnaissance photographs of Cologne taken since the great raid by more than 1,000 British bombers on May 30 show that heavy damage was done over an area of more than 5,000 acres during the raid. The photograph shows the widespread devastation around the Luxemburger-strasse.

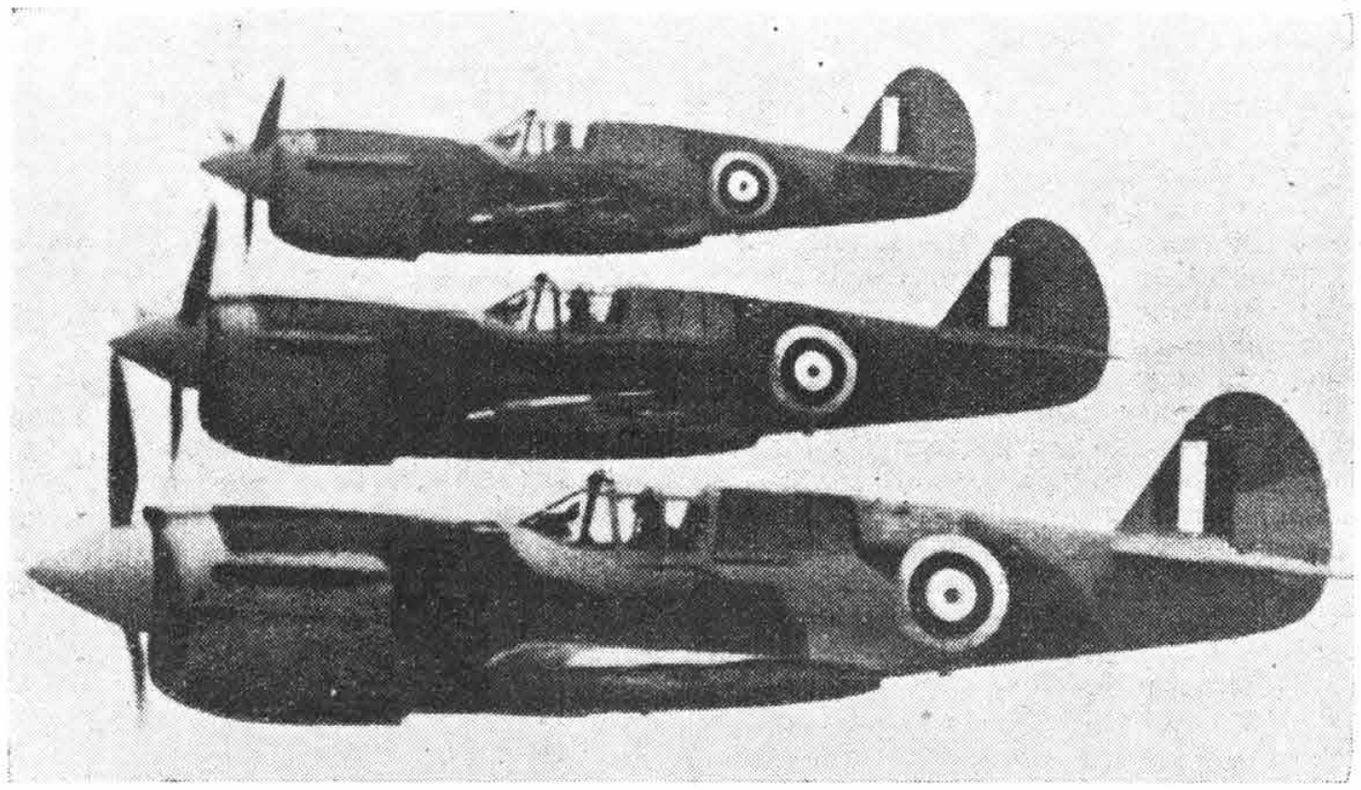
ought to have as a condition of fulfilling their functions or stinting the Libyan forces on whose efforts our whole Mediterranean position may well depend.

"The Ruhr and Rhineland raids will have their part in ultimate victory, if victory is not meanwhile jeopardised elsewhere by excessive deference to the counsels of those who see the War neither steadily nor whole. But the practical effect of the raids is to destroy the weapons and munitions that would be thrown into the battle two, six, twelve months hence. It is the weapons of which the enemy dispose now that must also be countered if defeat is not to be courted; and judging by the shipping losses —which are 'no secret' in New York—they are not being adequately countered now.

"How far that is due to lack of air support at sea is demonstrated to some extent by the adventures of an Arctic convoy on its way to Russia described some days ago. For five days on end it was the target of incessant enemy air attacks, against which it had no air support beyond what a few fighters carried in one or more of its ships could provide—each jettisoned after one flight, for though the pilot could be recovered, the aircraft could not.

"Early in May four British destroyers were engaged on an operation in the Eastern Mediterranean somewhere south of Crete. Three of the British destroyers were sunk by dive bombers in what was later described as 'one of the fiercest attacks yet seen in the Mediterranean.'

"This is not to suggest, of course, that actual forces can be switched in a moment from mass night raiding to work at sea; the material is not suitable nor the personnel competent. But it is to urge that the Navy's quota of air collaboration must be built up—in whatever form, Fleet Air Arm or Coastal Command, those responsible adjudge most suitable—even if it entails reducing the scale on which mass night raids on Germany can be made. It is vital for us to see to it that in pursuit of the future shadow we do not throw away the present reality. The shipping situation is grave, much graver than the average newspaper reader commonly realises, and cannot be neglected."



**BIRDS OF GOOD OMEN.—Curtiss Kittyhawk single-seat fighters in the air over Libya, where these new American aeroplanes have been doing excellent work during the campaign which opened on May 27. They are armed with Six 0.5 machine-guns in the leading edges of the wings.**

The plea is in fact—build aeroplanes to co-operate with the Navy instead of building long-range bombers. Undoubtedly the defence of our sea routes is vital, undoubtedly the sinkings are heavy and equally certainly the rate of construction by the end of the year will have outstripped the sinkings. But there is another point. By far the majority of the sinkings to-day are off the Atlantic coast of the United States. Losses in the Western Approaches to Great Britain are now comparatively slight—thanks to the magnificent work of Coastal Command in collaboration with the Navy. And in relation to that, we may remember that not one American aeroplane is on night operational service with Bomber Command.

No diversions of equipment from this country will make much difference to the rate of loss of our shipping in the Atlantic.

The Arctic route to Russia has different problems. Ships on that route sail too far from Allied bases for any help to be possible from Allied shore bases. The enemy can put short-range fighters on the scene and thus inevitably has air superiority over these areas. Presumably for this reason aircraft carriers have not accompanied the convoys —they are too vulnerable, too few and too valuable to risk.

These convoys must run the gauntlet and, until we have nearer bases they must depend for their defence on their A.A. fire and the catapulted fighters which can meet the enemy machines on equal terms. However great our Air Power this problem would remain.

Exactly the same applies to the Mediterranean. Lack of bases West of Tobruk prevents the exercise of our air power based in the short-range fighter. The Navy would do well not to venture out from under the umbrella of our fighter cover if it wants to avoid losses.

Long-range blows at the heart of the enemy's war effort is our best means of co-operation with the Army and the Navy. No diversions from this objective are justified in fact. How well the enemy recognises this is shown by his propaganda from the "New British Broadcasting Station" in Germany. It pleads for all our Air Power to be directed towards close support over the Army and Navy and not to be used to bomb Germany. It is the best advertisement bombing has had. The time for combined operations will come.

# From Defence to Offence

SUBSEQUENT EVENTS proved how right British headquarters in Cairo were when, reviewing the sixth Libyan campaign in the Western Desert after four days of fighting, its spokesman ventured the cautious opinion that Rommel's offensive was developing "not unfavourably" for the Eighth Army. Three days later, on June 3, the position seemed even more favourable, but a British victory was not a foregone conclusion. Both sides were still well-matched, and each was capable of delivering a knock-out blow should the other make a mistake.

Nevertheless, so well was the enemy held that on the 10th day General Ritchie, Commander of the Eighth Army, was able to assume the offensive, and within a few hours had secured his first objectives. His attack launched in good weather at a point known as the "Devil's Cauldron"—in front of the gap made in the British lines by the enemy—evoked a counter-attack from Rommel who, by drawing deeply upon his available reserves, was able to make yet another desperate bid to reach Tobruk, his original goal. Some of his armoured forces advanced 20 miles, but were halted and then driven back westwards. At the same time, British forces advanced to Harmat, six miles to the South-west of Knightsbridge, a position they still held at the week-end.

Earlier, on June 1, the British had captured Rotunda Segnali, 30 miles West of the main British positions and close to the enemy's supply lines, and, two days later, had turned the enemy out of Tamar, a strong point to the West of Knightsbridge.

Only at great cost had the enemy been able to widen the gap he made in the British minefield defences North of Bir Hakeim, and only by fortifying it with many guns was he able to pass traffic through to the main arena near Knightsbridge. His efforts to improve his position by the capture of Bir Hakeim itself, held by the Free French, failed. By his attempt to take it, the enemy may have hoped to draw strong British armoured forces from the main scene of the battle, but in place of heavy tanks and other armoured vehicles, the British sent the Royal Air Force to break the assault, and used comparatively light units for their land operations against the attackers.

The Royal Air Force had previously given proof of its prowess in wrecking enemy fighting and supply vehicles moving across the Desert, and the decision to allot the chief responsibility to the R.A.F. was no hazardous gamble. For days, Douglas Boston bombers and Hawker Hurricane and Curtiss Kittyhawk fighters carrying bombs had been taking heavy toll of the enemy's land forces. Tomahawk and Kittyhawk fighters, too, had sought ground targets in preference to air combats, and the havoc and loss imposed on the enemy by the combined attacks of bombers, fighter-bombers and

fighters played no small part in Rommel's failure to gain even one of his objectives.

Not until the enemy launched his offensive against Bir Hakheim did the fighters hunt the bombers. Then they sent Stuka after Stuka hurtling to the ground. In two engagements they shot down 13 Junkers Ju 87Bs, one squadron alone claiming seven in a single fight. Despite their pre-occupation with ground targets, the R.A.F. did not for a moment lose command of the air over the Western Desert. That remained firm in their keeping.

Supermarine Spitfire fighters, newly arrived in this theatre, were in action chiefly as top cover on bomber and fighter-bomber raids, and as interceptors over the main battle area. Their presence had a strong deterrent effect on enemy fighter pilots, few of whom seemed anxious to " mix it." Time after time, they made no effort to defend the bombers they were escorting, particularly when their charges were dive bombers.

Anti-aircraft gunfire probably accounted for the majority of the R.A.F.'s losses. The Germans always provide their columns with powerful defences against low-flying attack, and most of the fighters that failed to get back were doubtless forced down by light anti-aircraft gunfire. This assumption is borne out by the fact that many of the pilots made their way back within a few hours or days of being reported missing. Last week, official communiqués announced the return of no fewer than 23 pilots previously reported missing. Most had to walk many miles before being rescued and, as a precaution, all fighter pilots now include a rucksack with food and water in their operational equipment and wear boots more suited to desert hiking than their normal flying boots. Last week, two pilots forced down were picked up and brought back by air, one by a Hurricane, the other by a Tomahawk.

News of more Axis plans going awry was given in an announcement that artillery on shore and warships at sea had smashed an attempted landing on the coast near Gazala, behind the British lines, on the night of May 26-27. The invasion fleet of barges had been sighted during an R.A.F. reconnaissance and plans had been made to welcome it. The enemy tanks which reached and shelled the coastal road near Gazala may have been the enemy's reception committee, but they had a fruitless journey and were soon hustled back to Knightsbridge.

Throughout the week, Vickers-Armstrongs Wellingtons of the R.A.F. and Fairey Albacores of the Fleet Air Arm made night raids over a wide area. They constantly bombed the enemy's main aerodromes at Derna, Martuba and El Tmimi, and attacked the harbour of Benghazi, and targets at Syracuse and Catania, in Sicily, objectives at Pantellaria and Cagliari, in Sardinia, and at Naples, in Italy. In the Eastern Mediterranean, torpedo-bombers (presumably Bristol Beauforts) sank during a night attack a large, escorted enemy vessel, thought to be a fully laden troopship. Next morning, a hospital ship was on the scene picking up survivors.

Raids on Malta were continued on a reduced scale for the greater part of the week. In making them, the enemy lost five fighters and three bombers.

Broadcasts from Madagascar told of R.A.F. raids on aerodromes at Ivato, Devosto and Amborvie, and the bombing of Antananarivo, the capital of the island, and on Majunga, a town on the West Coast. Another report spoke of the British occupation of Ambiloube, and the approach of another British column towards Vohemar. There was no confirmation of these reports from British sources at the week-end.

### More Raids on Burma

The arrival of a large convoy carrying men and munitions to India gave the first hint of an impending offensive against the Japanese in Burma. Meanwhile, in the absence of land forces in the country, the Allies continued to build up a growing air offensive and the week brought encouraging news of daily raids on many objectives by the Royal Air Force and the United States Air Force in India.

As a result of the R.A.F.'s recent bombing of barges, steamers and other craft on the Chindwin river there was a pronounced decline in the movement of enemy troops along this important waterway. The raids were continued by Lockheed Hudsons and Bristol Blenheims. Blenheims also raided the aerodrome at Magwe. Other bombers made an attack on objectives at Oyster Island, off Akyab.

Bombers of the United States Air Force raided the docks at Rangoon and shipping in the harbour, shot down two of 12 intercepting fighters, and lost one bomber—the first casualty on active service it had suffered in that theatre.

Fierce fighting took place throughout the week in Chekiang Province where the Japanese made strenuous efforts to capture Chuhsien (Chuki), which has an air base from which Tokyo could be bombed. The Chinese inflicted heavy casualties on the attackers and succeeded in retaking a small village to the East of the town. Chinese mobile columns also harassed the enemy's long lines of communication in this sector. The Japanese claimed that another front had been opened in China when their troops marched into the Ordos Plain in Inner Mongolia during the week.

A dispatch from the American Volunteer Group of the Chinese Air Force described bombing raids by its pilots against Japanese troops on the Salween River and on the Burma Road. A.V.G. fighters also continued to drive off Japanese bombers which attempted to raid Kunming.

In the Australian zone, Allied bombers kept up their raids on Lae and Salamaua (New Guinea), on Rabaul (New Britain), Kupang (Dutch Timor), Dilli (Portuguese Timor) and Tulagi in the Solomons. They also raided Atamboea, on the coast of Timor, for the first time. Seven of 18 bombers and two of 12 escorting fighters were shot down by Allied fighters when the Japanese made another raid on Port Moresby on June 1. An enemy submarine was sunk by an Allied bomber, bringing the total number sunk by air attack in this zone to seven and probably eight.

An air attack lasting 15 minutes was made by the Japanese on Dutch Harbour, Alaska, early on June 3. Six hours later, enemy reconnaissance aeroplanes were over the Harbour but dropped no bombs. The raiders were believed to have been carrier-based On the following day, the Japanese made a bid to seize Midway Island, the U.S. Pacific base 1,653 miles to the West of Dutch Harbour. The attackers were repulsed and a big naval battle developed. First reports from Admiral Nimitz, commander of the U.S. Naval Force engaged, stated that the enemy's casualties were two and possibly three aircraft-carriers sunk and their complements of aeroplanes lost; three battleships damaged, six cruisers damaged (two of them badly) and three transports damaged. One U.S. aircraft-carrier was damaged and some aeroplanes lost, but casualties among personnel were light.

### A Week's Breather

Both the Russians and the Germans appeared to be exhausted by their blows and counter-blows at and below Kharkov, and for seven days a lull occurred along the entire front. The fighting which took place was of only local importance, but there were abundant signs that the interlude was merely temporary. Fine weather spread over half Russia and at the week-end the resumption of large-scale fighting seemed imminent.

Twenty-six enemy aeroplanes were reported to have been shot down during air raids on Sevastopol during a period of several days, and 11 others to have been burned out on their aerodromes following raids by units of the Russian Black Sea Fleet Air Arm. Altogether, the Germans lost 528 aeroplanes and the Russians 151 during the week.

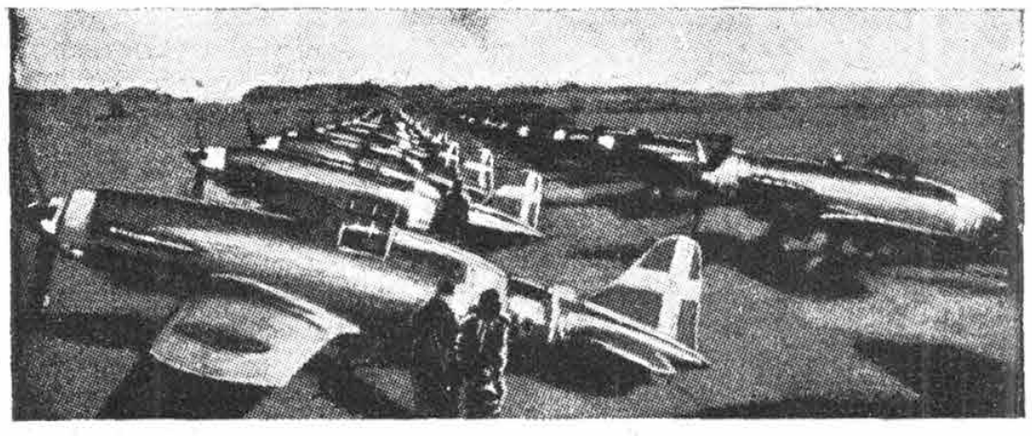
Flat-bottomed barges were reported to have been seen moving up the Baltic from the Kiel Canal in increasing numbers last week, suggesting that the Germans might be contemplating an invasion from the sea to supplement their land assaults on Leningrad.

### The Second One Thousand

For the second time in two days more than a thousand bombers from home bases raided Germany on June 1. The focal point of their attack was Essen, 35 miles North of Cologne, the target of the first raid. Obviously, bombing attacks of such magnitude cannot yet form a regular part of Bomber Command's work, and the operations were doubtless planned and carried through as much to test the feasibility of concentrating a large number of bombers at a single point during a comparatively short night, as to give the enemy a foretaste of what is to come.

Photographs secured with some difficulty left no doubt about the thoroughness of the attack on Cologne, and though no announcement had been made on the results of the raid on Essen, equal damage was almost certainly caused.

Heavy raids were also made during the week against war industries in the Ruhr, on Bremen and on Emden. Some idea of the scale of the attacks may be formed from the losses suffered. Altogether, including operations by Fighter, Bomber, Coastal and Army Co-operation Commands, the R.A.F. lost 78 bombers and 6 fighters in its night attacks over Germany and the occupied territories. The raiding bombers shot down a total of nine enemy night fighters, six in one night.



ITALY'S STANDARD FIGHTER.—The Macchi C.202 single-seat fighter; in service with the older type of German Mercedes-Benz DB-601 motor.

Daylight operations also reached a new high level in frequency and intensity, and every day Spitfires made sweeps and escorted Boston and Hurricane bombers to and from targets in the Low Countries and Northern France. In one operation Westland Whirlwinds were used. This fighter had not previously taken part in daylight sweeps.

Raids by the Luftwaffe on Great Britain were on a relatively small scale. Canterbury (Kent) had a "Baedeker" attack and there were other sharp raids elsewhere. Twenty of the raiders were destroyed, 11 over Great Britain and nine over their bases on the Continent.

A summary of the offensive operations of the Fighter, Coastal, Army Co-operation and Bomber Commands of the R.A.F. appears below.

# Diary of the Week

## Offensive Operations by the Fighter, Coastal, Army Co-operation and Bomber Commands of the R.A.F. From May 31 to June 6, 1942

### Sunday, May 31

DAY .. One armed trawler sunk off the Dutch Coast and two others driven ashore by fighters; railway targets and barges attacked in Belgium, and sweeps made over Northern France. Four enemy fighters destroyed. Eight R.A.F. fighters lost.

NIGHT .. One enemy raider destroyed off the English Coast, and two over their bases in occupied territory. R.A.F. fighters on night operations bombed runways and railways and attacked goods trains.

### Monday, June 1

DAY Fighter sweeps over Cherbourg Peninsula, the Calais-Boulogne and Dieppe-Abbeville areas. Hawker Hurricanes escorted by Supermarine Spitfires bombed docks at Bruges and a factory at Calais. Douglas Bostons escorted by Spitfires bombed docks at Flushing. Two enemy fighters destroyed during Bruges operations. Nine R.A.F. pilots lost from day's operations, but one pilot saved.

NIGHT .. Main target: War industries of the Ruhr, including Essen (by a force of more than a thousand bombers). Six enemy night fighters shot down by bombers. Aeroplanes of Bomber, Fighter, Coastal and Army Co-operation Commands attacked enemy aerodromes in Germany, France and the Low Countries. Thirty-five aeroplanes of all Commands lost. Crew of a Halifax rescued. One enemy bomber destroyed over its base in Holland.

### Tuesday, June 2

DAY .. Escorted Hurricanes bombed railway targets in Northern France and attacked two enemy minesweepers off Ushant. Bostons bombed the docks at Dieppe. Fighters made several sweeps during the day. Three enemy fighters destroyed. Nine R.A.F. fighters lost, but pilot of one saved.

NIGHT .. Main target: Essen and other objectives in the Ruhr. Docks at Dieppe also bombed and mines laid in enemy waters. Two enemy night fighters shot down by bombers. Aeroplanes of Fighter Command attacked aerodromes, railway and industrial targets in occupied territory. One enemy bomber shot down near its base in Holland. Five enemy raiders destroyed over Great Britain. Fourteen R.A.F. bombers lost.

### Wednesday, June 3

DAY .. Escorted Hurricanes bombed a railway at Le Tréport; escorted Bostons bombed docks at Cherbourg and Le Havre. Spitfires made several sweeps. Three enemy fighters destroyed. Four R.A.F. fighters lost.

NIGHT .. Main target: Bremen. One enemy night fighter shot down by a bomber. Docks at Dieppe also bombed and mines laid in enemy waters. Aeroplanes of Bomber and Fighter Commands raided enemy aerodromes in France and Low Countries. Ten bombers and two fighters lost. Aeroplanes of Fighter Command took part in a minor reconnaissance raid on the French coast between Boulogne and Le Touquet by combined forces. Four enemy bombers destroyed near their bases on the Continent; three destroyed over Great Britain.

### Thursday, June 4

DAY .. Escorted Hurricanes bombed the enemy aerodrome at Maupertus. Escorted Bostons bombed docks at Boulogne. Spitfires, in addition to escorting bombers, made sweeps over Northern France. One enemy fighter destroyed. Three R.A.F. fighters lost.

NIGHT .. Main target: Docks at Dieppe; enemy aerodromes in Holland attacked by aeroplanes of Bomber and Fighter Commands. One raider destroyed over Great Britain.

### Friday, June 5

DAY .. Escorted Bostons attacked targets at Ostend and Le Morlaix aerodrome. Spitfires and Westland Whirlwinds attacked Lannion aerodrome. Simultaneously, Spitfires made diversionary sweeps over Abbeville district. Six enemy fighters destroyed. Six R.A.F. fighters lost, but one pilot was saved.

NIGHT .. Main targets: Industrial objectives in the Ruhr. Thirteen R.A.F. bombers lost.

### Saturday, June 6.

DAY .. Escorted Hurricanes attacked German encampment in Normandy and bombed the aerodrome at Maupertus. Two fighters lost.

NIGHT .. Main target: Emden. Aeroplanes of Fighter and Bomber Commands attacked enemy aerodromes. Nine bombers and one fighter lost. One enemy raider destroyed off coast and another near its base in the Low Countries.

GERMAN, ITALIAN AND BRITISH LOSSES—MAY 31-JUNE 6, 1942.

| Date | Axis (N. Europe) | | Axis (Near East) | | R.A.F. (N. Europe) | | R.A.F. (Near East) | |
|---|---|---|---|---|---|---|---|---|
| | Machines | Personnel | Machines | Personnel | Machines | Personnel | Machines | Personnel |
| 31-5-42 | 7 | 19 | 6 | 14 | 8 | 8 | 19 | 16 |
| 1-6-42 | 9 | 13 | 3 | 3 | 44 | 218 | 4 | 2 |
| 2-6-42 | 11 | 38 | 1 | 1 | 23 | 99 | 2 | — |
| 3-6-42 | 11 | 40 | 7 | 14 | 16 | 73 | 8 | 12 |
| 4-6-42 | 2 | 6 | 9 | 15 | 3 | 3 | 6 | 1 |
| 5-6-42 | 6 | 6 | — | — | 19 | 91 | 1 | — |
| 6-6-42 | 2 | 9 | 7 | 13 | 12 | 63 | 3 | 10 |
| Totals | 48 | 131 | 33 | 60 | 125 | 555 | 43 | 41* |

*Excludes 29 fighter pilots and a bomber crew saved.

**TOTAL LOSSES IN THE AIR WAR* (To dawn, June 7).**

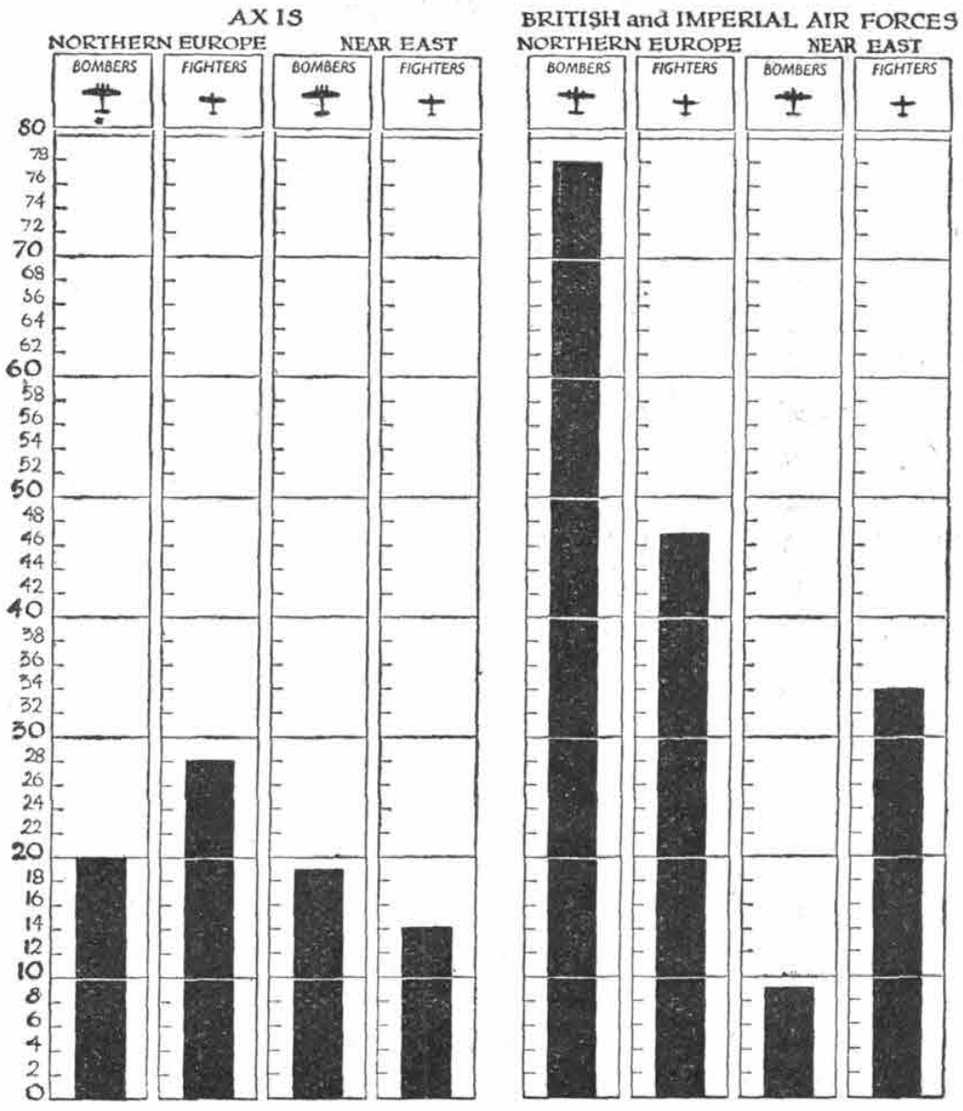
| | Axis Air Forces | Imperial Air Forces |
|---|---|---|
| Machines destroyed in combat or by A.A. gunfire .. .. | 8,733 | 5,111 |
| Personnel .. .. .. .. .. | 23,549 | 15,241 |

*** Excluding Russia and the Far East.**

**AN ADDITIONAL ENEMY LOSS**

An Admiralty communiqué issued on June 2 announced that H.M. Trawler Cayrian had destroyed an enemy aeroplane. No date was given, nor was the type identified in the communiqué, though its wreckage was recovered.

**THIS WEEK'S LOSSES—May 31 to June 6, 1942**




THE WEEK'S LOSSES AT A GLANCE.—Comparative losses in the Air War for the week May 31 to June 6, 1942, inclusive. The chart does not include aeroplanes destroyed in Russia and the Far East or those destroyed on the ground. The comparative losses are: Northern Europe: Axis (night offensive) 20 bombers; (defence by day) 19 fighters; (defence by night) 9 fighters; British (daylight offensive) 41 fighters; (night offensive) 78 bombers and 6 fighters. The losses in the Near East were: Axis, 19 bombers and 14 fighters; British, 9 bombers and 34 fighters. (The scale of values on the chart has been changed from that used in previous weeks.)

# NEWS OF THE WEEK

THE LARGEST military convoy that ever sailed from Great Britain was stated, on June 6, to have arrived in India. It included fully equipped squadrons of the R.A.F. and fighter and bomber pilots who have served in France, Libya, and Great Britain. The equipment included British and American aeroplanes.

**Midway Island** was attacked by Japanese aeroplanes on June 4, apparently as a preliminary to the invasion of the island by Japanese naval forces. The battle was still continuing on June 6, but the United States claimed to have sunk or damaged 12 Japanese warships, including two or three aircraft-carriers, and to have damaged three transport ships.

**Dutch Harbour,** Alaska, a U.S. naval base, was attacked on June 3 by four Japanese bombers and 15 fighters. Six hours later a second force of Japanese raiders came over, apparently on reconnaissance. They are believed to have been carrier-based. These were the first raids on the Aleutian Islands.

**A minor reconnaissance raid** was made by Commandos during the early hours of June 4 on the coast of France between Boulogne and Le Touquet. R.A.F. Fighter Command supported the land and naval forces during the operation and provided protection throughout their return. Hawker Hurricanes, Douglas Bostons and Havocs took part.

**Sir Charles Craven,** Controller-General at the Ministry of Aircraft Production, has resigned because of ill-health. He took up the appointment in June last at the request of the Prime Minister and the Minister of Aircraft Production. After a period of convalescence he will act on a part-time basis as Chief Industrial Adviser to the Ministry. This announcement was made on June 3.

**Essen** was the main target for 1,036 bombers of the R.A.F. on the night of June 1.

**Ceylon** was reported from Colombo on June 3 to have passed beyond the defensive stage and to have built up a substantial force of fighter aeroplanes. Until Japan entered the War Ceylon had been used largely as a base for Consolidated Catalinas engaged on patrol work and in transporting officers of high rank to the South-West Pacific zone. Since that time a number of new aerodromes and runways have been built and Ceylon is ready to play a leading part in a general air offensive in the Far East.

**Chuki aerodrome** in Chekiang province was occupied by the Japanese on June 6, according to a Japanese report.

**More than 100** aeroplanes were used on attacks against a large British convoy to Russia between May 25 and May 30. Details of the attack were given by the Admiralty on June 2. The first attack was made on the evening of May 25 by Heinkel torpedo-carrying aeroplanes and Junkers Ju 88 dive bombers. From then until May 30 heavy attacks were made by bombers, dive bombers and torpedo-carrying aeroplanes almost without interruption because of the almost continuous daylight in those arctic regions. One He 111 and two Ju 88s were destroyed, two more were probably destroyed and two others damaged. One of the He 111s was destroyed and another damaged by a Hurricane catapulted from one of the ships. The pilot, Flying Officer Alastair Hay, R.A.F., was wounded, but was picked up by one of the convoy escort ships. Only a few ships of the convoy were lost.

**A naval construction programme** for the U.S. Navy has been drafted and includes 500,000 tons of aircraft carriers, but no battleships, according to a report from New York on June 3.

**Hawker Hurricanes** and Curtiss Kittyhawks were stated on June 6 to be operating in the defence of India.

**From Mar. 24 to Apl. 12** a total of 1,869 tons of bombs were dropped on the Grand Harbour of Malta and 162 hours were spent under air-raid alerts. A total of 2,159 bombers raided the Island during this period.

**German A.R.P.** organisation has been taken over by Himmler, according to a report from Stockholm on June 2. It was formerly attached to the German Air Force.

**Mr. Oliver Lyttelton,** Minister of Production, has gone to the United States to discuss the co-ordination of war production in Great Britain and the United States.

**Lieut.-General H. H. Arnold,** Commanding General of the U.S. Army Air Forces, speaking on June 1 of his visit to this country, said it had hastened the day when the U.S. Air Forces would join in the air offensive against the enemy and that they had agreed that the best results would be achieved if American crews flew in American aeroplanes as American units, except when emergency conditions dictated another course. American units would work side-by-side with R.A.F. units but would have their own aerodromes, ground crews and communications. As soon as the American units arrived they would be prepared to operate in a very short time.

Lieut.-General Arnold also said that another point he had discussed here had been to ensure that the increasing demands of American units on U.S. aircraft production did not impair the British air offensive either now or in the future. He believed a mutually satisfactory balance had been struck. He also said that pilots were being trained at the rate of 24,000 a year in the United States and this number was being increased.

## Service

MESSAGES of congratulation on the Cologne raid on May 30 have been sent to Air Marshal A. T. Harris, C.-in-C., Bomber Command, from Sir Archibald Sinclair, Lieut.-General H. H. Arnold, Commanding General of the United States Army Air Force, and Lieut.-General A. Golavanov, Commander of the Long-Range Bomber Aviation of the Red Army. Air Marshal Harris replied to all the messages.

Air Marshal Sir Arthur Barratt, A.O.C.-in-C., Army Co-operation Command, also sent a message to all who had taken part in the Cologne raid, the first time on which aeroplanes of Army Co-operation Command had been mentioned as taking part in night operations with other commands of the R.A.F.

**A Catalina squadron** of the Royal Canadian Air Force, the first to serve in the Far East, was flown from Scotland to Ceylon over Gibraltar, Malta and Libya. This is believed to be the first time that a whole squadron has been flown to Ceylon.

**Group Capt. R. L. R. Atcherley** is in hospital recovering from wounds which he received during a recent fighter sweep. His aeroplane was shot down over the English Channel, he baled out and, after some hours in the water, was rescued by one of the rescue launches.

**The names** of the R.A.F. personnel who, with Naval and Commando, personnel, have arrived in the United States to take part in parades and to tour the U.S.A. were announced on June 8. They are:—Squadron Leader J. D. Nettleton, V.C., Sergeant D. N. Huntley, Wing Commander M. Loudon, D.F.C., Pilot Officer A. F. Taylor, D.F.C., Flight Sergeant M. A. D. Riddell, and Flight Lieut. C. W. McColpin. The party was flown to the U.S.A. by the Return Atlantic Ferry Service.

# WINGS ARE THE WHEELS OF TO-MORROW

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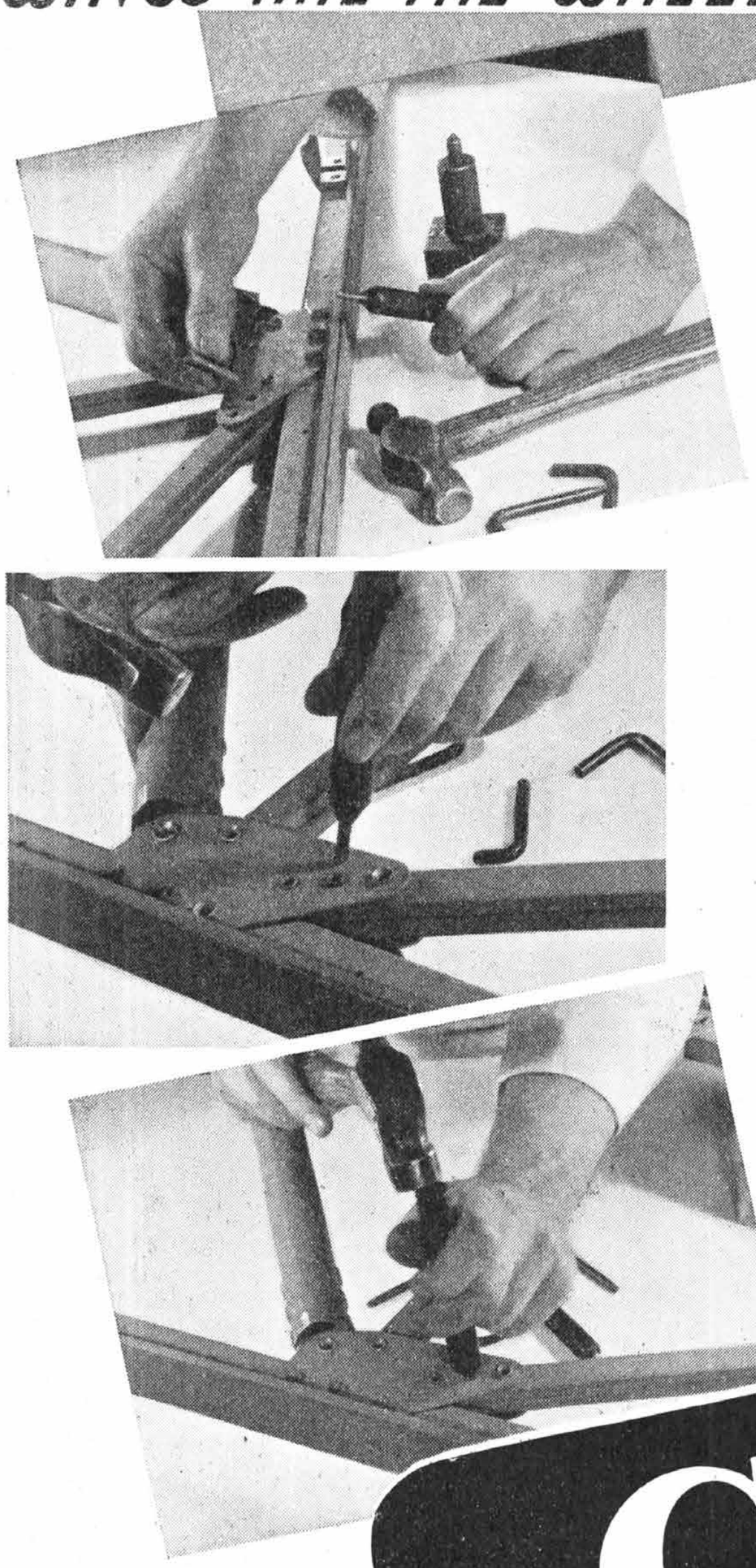

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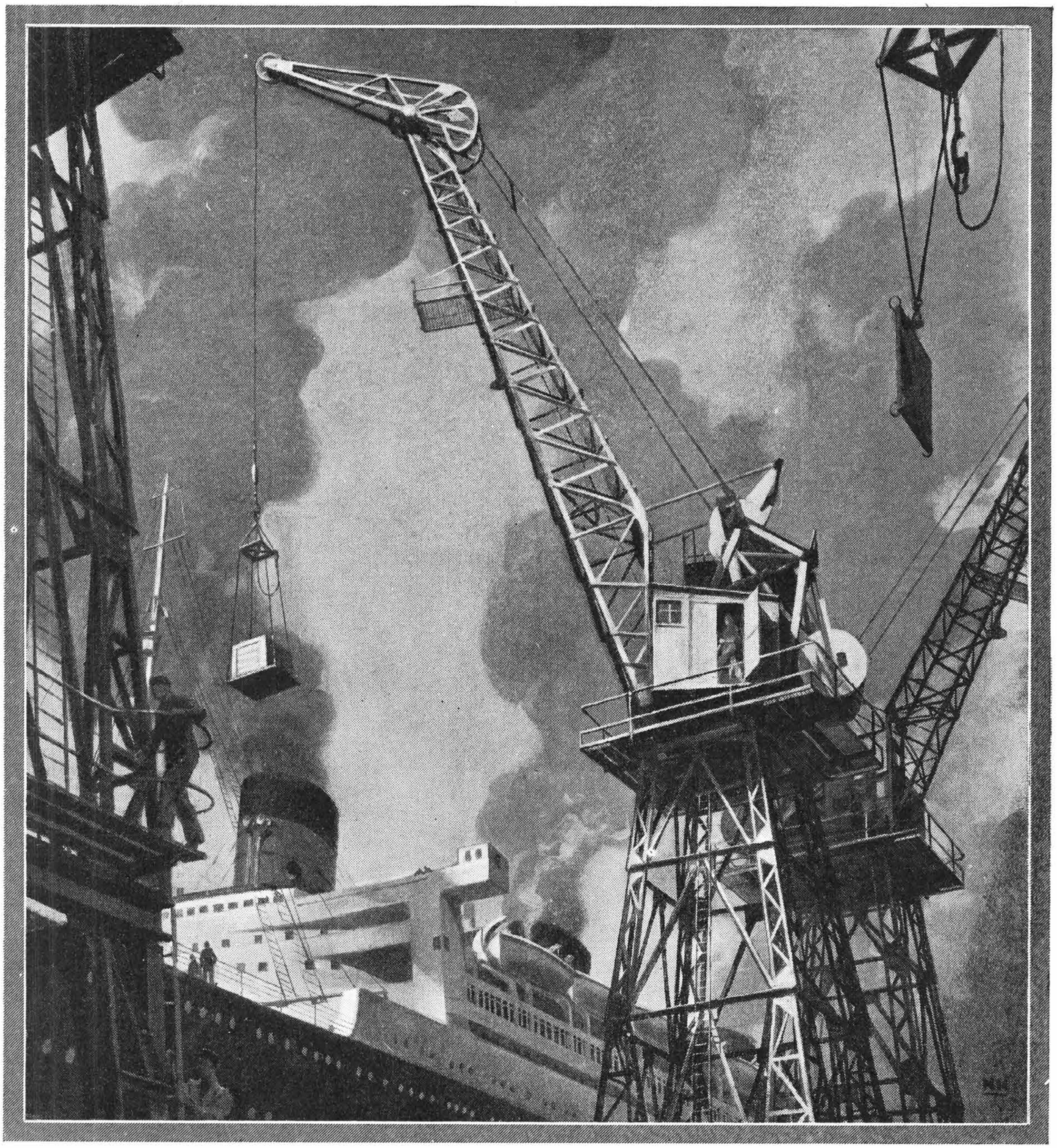

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**Previously Reported Missing Believed Killed on Active Service, Now Reported Killed on Active Service**

Aus.403005 P/O J. D. B. Rowlands.

**Previously Reported Missing, Now Reported Prisoner of War**

Aus.404392 Sgt. M. H. C. Berrie.

**ROYAL CANADIAN AIR FORCE**

**Killed in Action**

C.1616 F/O E. W. R. Fortt.
R.54174 F/Sgt. S. J. Kozlowski.

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

J.6156 P/O W. K. Colfe.
R.58300 Sgt. J. A. Jacques.
R.64431 Sgt. F. C. Stephenson.

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

J.4878 P/O J. G. Elliott.
R.61798 Sgt. T. C. Fitzgerald.
R.67682 Sgt. G. E. Findlay.
R.69575 Sgt. J. S. Lappin.
J.4764 P/O A. O. Learmonth.
R.62186 Sgt. W. R. Sutherland.
J.3254 P/O D. B. Van Buskirk.
R.62018 F/Sgt. C. A. Whidden.

**Missing Believed Killed in Action**

J.7030 P/O T. Best.
R.61792 F/Sgt. M. Duncan.
R.75715 Sgt. A. L. Flesch.
J.4903 P/O K. E. Hobson.
R.50712 F/Sgt. F. J. Lowe.
R.75147 Sgt. E. A. Mullis.
R.69723 F/Sgt. W. D. Page.

**Missing**

R.62688 F/Sgt. B. E. Doe.
R.89915 L.A.C. J. Molnar.
R.77507 Sgt. A. Lennox.
J.5687 P/O J. McL. Murdock.
J.15300 P/O W. F. Munn.
R.78467 Sgt. W. M. Pipher.
R.76063 Sgt. C. W. Starrett.

**Killed on Active Service**

R.67561 Sgt. N. G. W. Boyce.
R.98142 Sgt. L. N. Brown.
R.92079 Sgt .R. C. Dobie.
R.71707 F/Sgt. G. S. Gould.
R.67277 Sgt. H. J. Helbock.
R.86347 Sgt. B. Jeffery.
R.69761 Sgt. D. C. Lindsey.
R.54187 Sgt. R. J. O'Leary.

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

R.78172 Sgt. A. G. Batchen.
R.59262 F/Sgt. R. F. Stephens.
R.5509 F/Sgt. R. L. R. Younger.

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

R.78852 Sgt. J. R. Pierce.

**Wounded or Injured on Active Service**

R.87696 Sgt. J. W. Asselstine.
C.1711 Act. F/L W. F. Napier.
R.69258 Sgt. D. L. Rawson.

**Died of Wounds or Injuries Received on Active Service**

J.7065 P/O J. R. Moore.

**ROYAL NEW ZEALAND AIR FORCE**

**Killed in Action**

N.405324 Sgt. H. J. McNeill.

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

NZ.402241 P/O D. Brook.
P/O E. W. G. Churches.
NZ.40233 Sgt. G. G. Jillett.
NZ.391860 Sgt. E. R. Lucas.
NZ.40949 Sgt. A. W. Simpson.

**Wounded or Injured in Action**

NZ.404957 F/Sgt. J. M. Smith.

**Killed on Active Service**

NZ.403630 Sgt. A. W. Westgate.

**SOUTH AFRICAN AIR FORCE**

**Killed in Action**

47824 Lt. M. J. Bartels.

## Royal Air Force Awards

HIS MAJESTY THE KING has approved the following awards for gallantry and devotion to duty during air operations:—

**Bar to the Distinguished Service Order**

Act. Wing Commander P. C. Pickard, D.S.O., D.F.C.—No. 51 Squadron.

**Distinguished Service Order**

Wing Commander D. J. A. Roe, D.F.C., R.A.F.O.—No. 82 Squadron.
Act. Squadron Leader P. M. De Mestre, D.F.C.—No. 49 Squadron.

**Bar to the Distinguished Flying Cross**

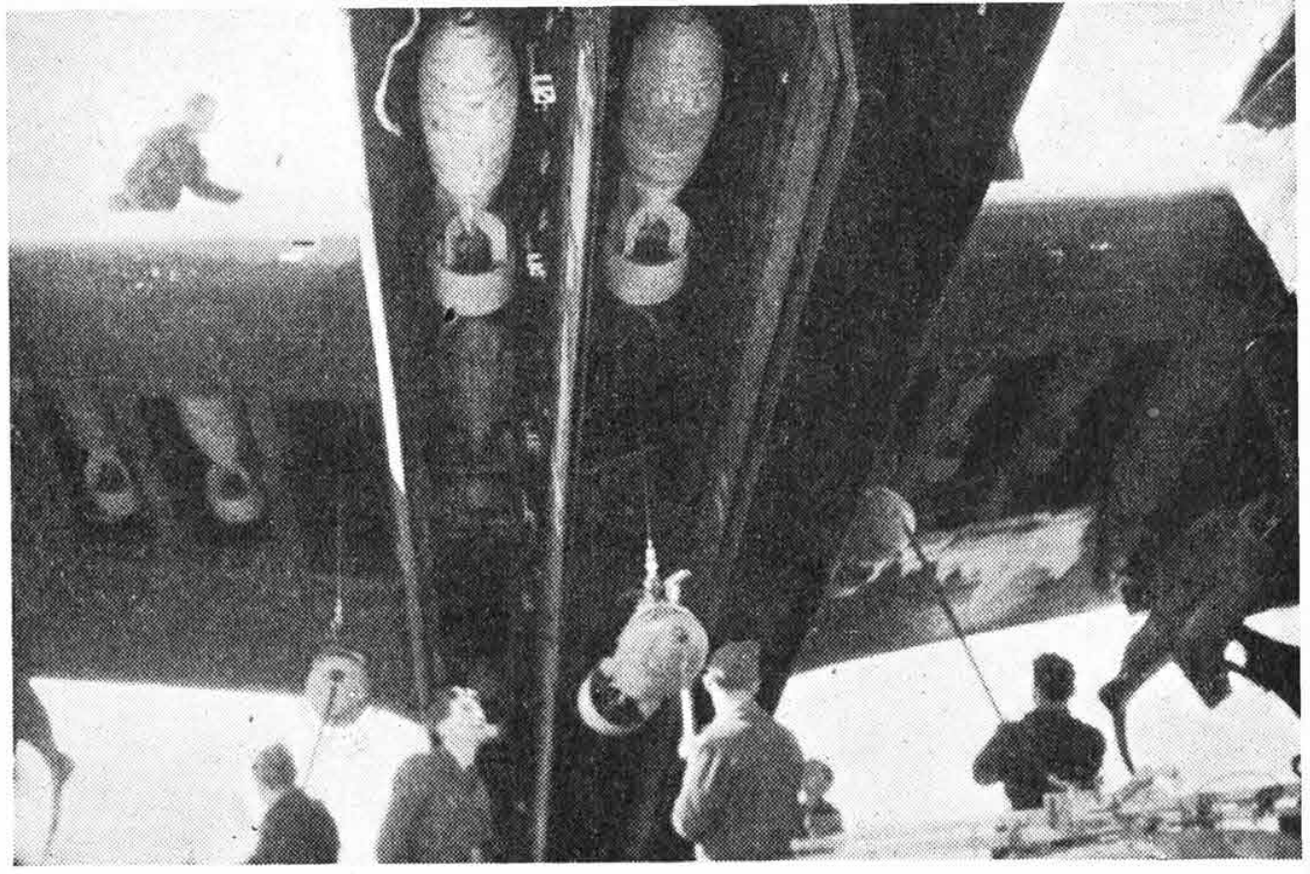
Wing Commander B. D. Sellick, D.F.C.—No. 15 Squadron.
Act. Squadron Leader P. D. S. Bennett, D.F.C.—No. 49 Squadron.
Act. Squadron Leader Donald Peveler, D.F.C.—No. 51 Squadron.
Act. Flight Lieut. L. P. Massey, D.F.C., R.A.F.V.R.—No. 49 Squadron.

**Distinguished Flying Cross**

Act. Wing Commander G. G. Stead—No. 204 Squadron.
Squadron Leader T. L. Bingham-Hall—No. 150 Squadron.
Squadron Leader J. A. Meade—No. 51 Squadron.
Squadron Leader E. A. Warfield, R.A.F.O.—No. 57 Squadron.
Act. Squadron Leader L. MacD. Hodges—No. 49 Squadron.
Flight Lieutenant R. A. V. Gascoyne-Cecil, R.A.F.V.R.—No. 61 Squadron.
Flight Lieutenant E. M. C. Guest—No. 200 Squadron.
Act. Flight Lieut. L. R. Barr—No. 15 Squadron.
Act. Flight Lieut. J. S. Belton, R.A.F.V.R.—No. 77 Squadron.
Act. Flight Lieut. W. P. Ferrie, R.A.F.V.R.—No. 50 Squadron.
Act. Flight Lieut. J. B. G. King, R.A.F.V.R.—No. 50 Squadron.
Act. Flight Lieut. N. A. J. Mackie, R.A.F.V.R.—No. 83 Squadron.
Act. Flight Lieut. R. S. Radley, R.A.F.V.R.—No 144 Squadron.
Act. Flight Lieut. A. W. Raw, R.A.F.V.R.—No. 144 Squadron.
Act. Flight Lieut. G. R. Watson, R.A.F.V.R.—No. 57 Squadron.
Flying Officer I. P. Bishop—No. 150 Squadron.
Flying Officer D. A. Green, R.A.F.V.R.—No. 207 Squadron.
Flying Officer C. A. Harris, R.A.F.V.R.—No. 58 Squadron.
Flying Officer D. W. Peck—No. 103 Squadron.
Act. Flying Officer G. F. Georgeson, R.A.F.V.R.—No. 12 Squadron.
Act. Flying Officer D. H. Swan, R.A.F.V.R.—No. 144 Squadron.
Pilot Officer Henry Cossar.
Pilot Officer L. J. Grandy, R.A.F.V.R.—No. 12 Squadron.
Pilot Officer P. A. Mackenzie, R.A.F.V.R.—No. 83 Squadron.
Pilot Officer V. V. Smith—No. 207 Squadron.
Warrant Officer W. J. Hemming—No. 61 Squadron.
Warrant Officer Ronald Lambert, D.F.M.—No. 15 Squadron.

**Distinguished Flying Medal**

Flight Sergeant J. C. Atkinson—No. 207 Squadron.
Flight Sergeant J. F. Barron, R.N.Z.A.F.—No. 15 Squadron.
Flight Sergeant J. C. Beck—No. 61 Squadron.
Flight Sergeant K. W. Bordycott, R.A.F.V.R.—No. 150 Squadron.
Flight Sergeant J. W. Gibson—No. 207 Squadron.
Flight Sergeant G. R. Herbert—No. 76 Squadron.
Flight Sergeant George Roberts—No. 200 Squadron.
Flight Sergeant D. W. Spiby—No. 115 Squadron.
Flight Sergeant Fred Taylor, R.A.F.V.R.—No. 58 Squadron.
Flight Sergeant R. E. Walker—No. 103 Squadron.



A CLUTCH OF EGGS FOR GERMANY.—Loading a Short Stirling bomber. This view shows the length of the internal bomb racks in the fuselage and some of the bomb racks in the wings. A Stirling can accommodate eight tons of bombs.

Sergeant Leslie Boot—No. 61 Squadron.
Sergeant Harry Cobb—No. 144 Squadron.
Sergeant G. H. Dow, R.N.Z.A.F.—No. 57 Squadron.
Sergeant J. M. Duncan, R.A.F.V.R.—No. 207 Squadron.
Sergeant D. W. Foster—No. 58 Squadron.
Sergeant C. F. Guest—No. 144 Squadron.
Sergeant P. M. P. Hall—No. 106 Squadron.
Sergeant H. G. Lines—No. 57 Squadron.
Sergeant Frederick McMullen—No. 51 Squadron.
Sergeant Albert Marvell—No. 103 Squadron.
Sergeant G. E. Mortimer—No. 10 Squadron.
Sergeant O. W. J. Pearce—No. 61 Squadron.
Sergeant N. C. Robertson—No. 50 Squadron.
Sergeant Ronald Vivian—No. 9 Squadron.
Sergeant John Wynn—No. 144 Squadron.
Sergeant A. D. L. Yarnell—No. 58 Squadron.

The following awards have been made for gallantry in flying operations against the enemy and gallantry and devotion to duty during air operations, including patrols over enemy territory, night fighter operations, fighter operations over the occupied countries, attacks against enemy shipping and submarines, photographic and reconnaissance flights, operations in Malta, Syria, Iraq and Libya, flying-boat operations, and for raids on Trondheim, Warnemünde and Stuttgart:—

**Distinguished Service Order**

Act. Wing Commander P. H. Hugo, D.F.C.—No. 41 Squadron.
Squadron Leader J. A. F. Maclachlan, D.F.C.—No. 1 Squadron.

**Bar to the Distinguished Flying Cross**

Squadron Leader R. M. B. Duke-Woolley, D.F.C.—No. 124 Squadron.

**Distinguished Flying Cross**

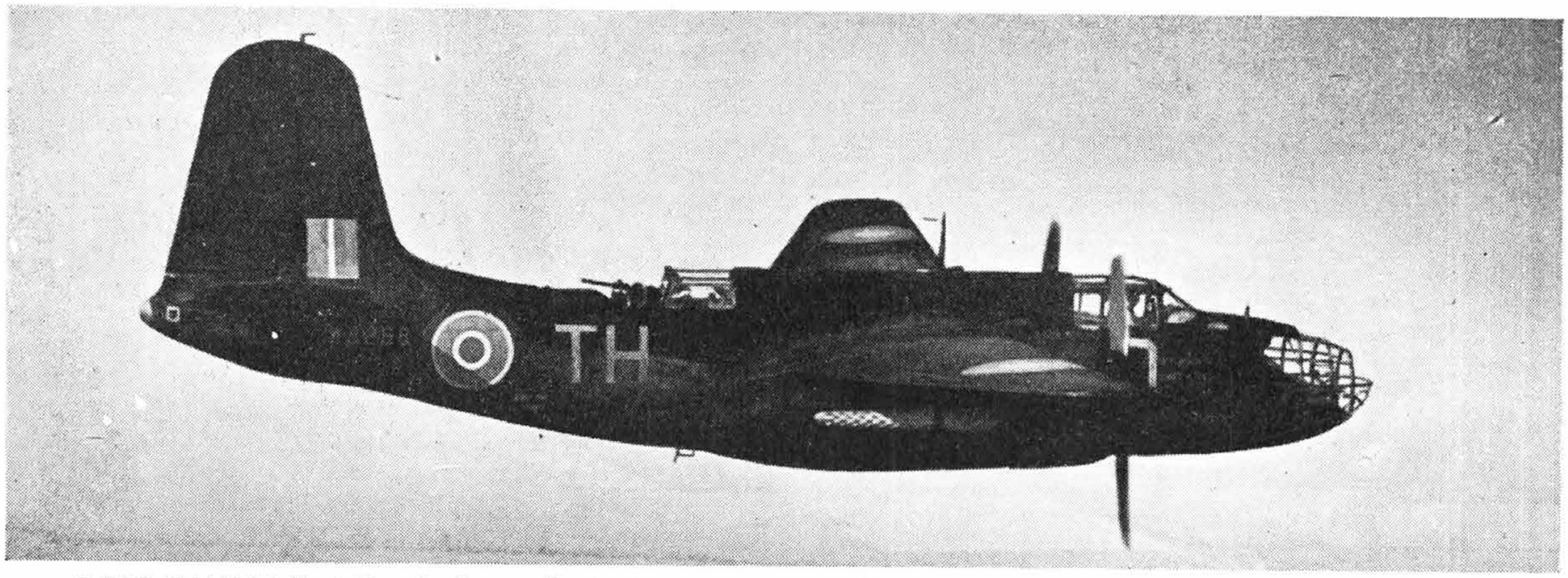
Wing Commander K. V. Garside—No. 230 Squadron.
Squadron Leader A. G. Douglas, R.A.F.V.R.—No. 401 (R.C.A.F.) Squadron.
Squadron Leader Joseph Dugdale, R.A.F.O.—No. 97 Squadron.
Act. Squadron Leader H. T. Gilbert—No. 65 Squadron (since died).
Act. Squadron Leader Douglas Iveson, R.A.F.V.R.—No. 76 Squadron.
Act. Squadron Leader P. E. Lewis—No. 407 (R.C.A.F.) Squadron.
Flight Lieutenant J. R. H. Merifield, R.A.F.V.R.
Flight Lieutenant D. N. Milligan—No. 230 Squadron.
Flight Lieutenant V. A. Ricketts, R.A.F.V.R.
Act. Flight Lieut. William Bradshaw—No. 240 Squadron.
Act. Flight Lieut. R. D. Church, R.C.A.F.—No. 148 Squadron.
Act. Flight Lieut. A. S. R. E. Ennis, R.A.F.V.R.—No 158 Squadron.
Flying Officer F. A. Arthur, R.A.A.F.—No. 70 Squadron.
Flying Officer J. R. Cockton—No. 11 Squadron.
Flying Officer E. G. Daniel, R.A.F.V.R.
Flying Officer H. H. K. Gunnis, R.A.F.V.R.—No. 252 Squadron.
Flying Officer J. B. Jewell, R.A.A.F.—No. 10 Squadron.
Flying Officer R. B. Milburn, R.A.F.V.R.—No. 148 Squadron.
Lieutenant P. V. Long-Innes, S.A.A.F.—No. 21 (S.A.A.F.) Squadron.
Act. Flying Officer Alfred Abels, R.A.F.V.R.—No. 35 Squadron.
Act. Flying Officer A. R. Tettenborn, R.A.F.V.R.—No. 9 Squadron.
Pilot Officer D. M. Crossley, R.A.F.V.R.—No. 148 Squadron.
Pilot Officer Glenn Gardiner, R.C.A.F.—No. 35 Squadron (since reported missing).
Pilot Officer A. H. Hanson—No. 158 Squadron.
Pilot Officer Gordon Sweeney, R.A.A.F.—No. 9 Squadron.
Warrant Officer H. V. Peterson, R.C.A.F.—No. 35 Squadron.
Warrant Officer E. C. Wavell.

**Bar to the Distinguished Flying Medal**

Flight Sergeant R. B. Hesselyn, D.F.M.—No. 249 Squadron.

**Distinguished Flying Medal**

Flight Sergeant K. A. Clack—No. 76 Squadron.
Flight Sergeant A. W. Cook, R.A.F.V.R.
Flight Sergeant H. T. Haggar—No. 201 Squadron.
Flight Sergeant S. W. Lee—No. 148 Squadron.
Flight Sergeant (now Pilot Officer) R. G. Mullen, R.C.A.F.—No. 407 (R.C.A.F.) Squadron.




"C FOR CANADA."—A Douglas Boston III of a Canadian squadron which is named "O for Ottawa." This R.C.A.F. squadron has discarded Christian names for identifying their aeroplanes, such as "C for Charlie," or the well-known "F for Freddie," and is naming them after Canadian cities.

Flight Sergeant W. J. Porritt, R.C.A.F.—No. 10 Squadron.
Flight Sergeant G. P. Rochford, R.A.F.V.R.—No. 10 Squadron.
Flight Sergeant D. R. Terrington, R.A.F.V.R.
Flight Sergeant (now Pilot Officer) E. A. Tett—No. 240 Squadron.
Sergeant A. D. Brisbane—No. 148 Squadron.
Sergeant H. A. Brown—No. 35 Squadron.
Sergeant M. D. Gribbin—No. 10 Squadron.
Sergeant F. S. Hiley, R.C.A.F.—No. 420 (R.C.A.F.) Squadron.
Sergeant E. L. Jones, R.A.A.F.
Sergeant G. B. Kukhmanoff.
Sergeant W. J. Maitland, R.C.A.F.—No. 420 (R.C.A.F.) Squadron.
Sergeant D. H. Phelan, S.A.A.F.—No. 21 (S.A.A.F.) Squadron.

### FOREIGN DECORATIONS

The King has granted unrestricted permission for the wearing of the following decorations which have been conferred on the officers indicated for valuable services in connection with the War:—

CONFERRED BY THE PRESIDENT OF THE POLISH REPUBLIC

**Polonia Restituta—Second Class**

Air Marshal Sir Sholto Douglas, K.C.B., M.C., D.F.C.
Air Marshal Sir Richard E. C. Peirse, K.C.B., D.S.O., A.F.C.
Air Vice-Marshal T. L. Leigh-Mallory, C.B., D.S.O.
Act. Air Vice-Marshal R. D. Oxland, O.B.E.

**Third Class**

Air Commodore H. K. Thorold, C.B.E., D.S.C., D.F.C., A.F.C.

**Fourth Class**

Act. Wing Commander H. C. Biles, R.A.F.V.R.
Act. Wing Commander W. B. Everton.



# Extracts from the London Gazette

*Air Ministry, May 26.*

### ROYAL AIR FORCE VOLUNTEER RESERVE

ADMINISTRATIVE AND SPECIAL DUTIES BRANCH.—Plt. Offs. (prob.) confmd. in appts. and to be Flg. Offs. (war subs.):—Jan.: L. R. Mullen. Feb.: G. de W. Young, E. F. Greenwood. Mar.: H. A. Eve, G. E. Goolden, S. H. O. Rich, W. C. Mackintosh, F. D. Andrews, R. A. Somervell, H. S. L. Payne, F. J. Wilcock, E. E. McCallion, A. Morgan. Apr.: H. E. Arnold, C. M. Danino, N. Harrow, F. B. Low, L. L. S. Rushworth, E. G. Thorpe, J. O. Davis, S. W. Fry, R. L. Howland, A. J. W. Manison, J. E. Parker, G. H. Rawlings, C. P. Robinson, R. F. Smith-Granger, S. M. Spence, R. J. Tannett, J. Taylor, C. J. White, N. Beanland J. L. Browne, F. Brown, D. I. Burns, L. O. Lawrence, W. H. Owen, E. A. Rodway, F. Walton, E. D. E. Barrett, M. Beevor, A. W. Boast, N. D. Garner, W. I. German, H. Ginn, L. C. F. Hicks, J. H. Lawson, J. G. Leach, R. G. Macleod, W. Pascall, H. F. Thomas, J. McL. Manson, T. N. P. G. Sandeman, W. Dunkels, J. C. Payne, E. G. Shedden, T. S. Brayshaw, H. C. C. Carver, J. Corbishley, P. Dermond, F. W. Francis, W. D. Gillies, H. A. Ham, B. de C. F. Holroyd, L. H. R. Manning, F. G. Mason, E. D. Moody, R. Moore, J. Stubbs, R. A. Symonds, W. B. Wyper, R. G. B. Chadd, C. J. Eprile. May: G. H. G. Watson, J. J Chapman, A. L. M. Anderson (Sen. Apr. 22), B. G. R. Moore (Sen. Apr. 18), R. J. Salsbury.

Plt. Off. (prob.) B. Y. Bartlett confmd. in appt. Jan., and to be Flg. Off. (war subs.) Feb. (Sen. Dec. 8.)

Plt. Offs. (prob.) confmd. in appts. Feb., and to be Flg. Offs. (war subs.):—Mar.: T. E. James (Sen. Jan. 24), A. Richardson (Sen. Feb. 18), J. D. Sessford (Sen. Mar. 3). Apr.: G. J. Parnell (Sen. Feb. 13).

Plt. Off. (prob.) J. A. Crawford confmd. in appt. Feb., and to be Flg. Off. (war subs.) Mar. (Sen. Mar. 3.)

Plt. Off. (prob.) W. A. Brown confmd. in appt. Mar, and to be Flg. Off. (war subs.) Apr. (Sen. Mar. 13).

Plt. Offs. (prob.) confmd. in appts. Mar., and to be Flg. Offs. (war subs.):—Apr.: E. V. Saffery (Sen. Feb. 21), I. Nicholls (Sen. Feb. 28), S. P. Beaumont, J. W. Bennett, P. G. Dwyer (Sen. Mar. 9), W. E. Lees (Sen. Mar. 10), G. B. G. Benson (Sen. Mar. 11), A. S. Wordsworth (Sen. Mar. 30), R. J. Unstead (Sen. Mar. 16).

Plt. Offs. (prob.) confmd. in appts. Mar., and to be Flg. Offs. (war subs.):—Apr. J. McCreesh (Sen. Mar. 1), L. R. Horrox (Sen. Mar. 2), W. J. Jarvis (Sen. Mar. 9), B. B. Joseph (Sen. Mar. 14), T. L. Dodd, F. H. Whitaker (Sen. Mar. 25). May: J. H. C. Ward (Sen. Mar. 31).

Plt. Off. (prob.) T. S. F. Flannery confmd. in appt. Mar., and to be Flg. Off. (war subs.) Apr. (Sen. Mar. 1).

Plt. Offs. (prob.) confmd. in appts. Mar., and to be Flg. Offs. (war subs.):—Apr.: J. E. S. Morley (Sen. Mar. 12), A. J. W. Harman (Sen. Mar. 7), D. Bird (Sen. Mar. 29). May.: G. K. Meakin (Sen. Apr. 4).

Plt. Offs. (prob.) confmd. in appts. Apr., and to be Flg. Offs. (war subs.):—Apr.: A. G. W. Loader (Sen. Mar. 25), T. F. Chew (Sen. Apr. 1), H. C. Burland (Sen. Apr. 2).

Flg. Off. P. L. Wheeley to be Flt. Lt. (temp.), Mar. 1.

Plt. Off. G. Carr granted the rank of Flg. Off. (war subs.), Mar 1.

Act. Plt. Offs. (prob.) to be Plt. Offs. (prob.):—Dec.: J. S. Middleton (Sen. Sept. 29), A. D. Lee (Sen. Oct. 19). Jan.: G. McCallum (Sen. Dec. 4), R. Baker (Sen. Dec. 14). Mar.: R. A. Alton Apr.: J. Watson (Sen. Dec. 22), W. A. Chandler (Sen. Jan. 26), D. Aarons (Sen. Feb. 2), J. G. Arrow (Sen. Feb. 9), J. F. Gilhespie, M. B. Price (Sen. Feb. 17), C. A. M. Peden (Sen. Feb. 8), T. F. A. Bach, W. G. Grant-Irwin, J. E. D. Greengrass, D. A. Jones, C. F. Kidd, A.F.M., J. T. Lawrence, E. B. Lenthall, F. R. W. Preston, R. C. Simmons, A. H. Simpson, F. Turner, E. R. H. Watson, J. M. Wilson, A. Peck (Sen. Nov 15), A. J. Neaves (Sen. Dec. 10), W. G. Naismith (Sen. Jan. 12), T. Atkinson, R. H. Miller (Sen. Jan. 19), S. O. Sennitt (Sen. Jan. 20), J. H. Dingwell (Sen. Feb. 2), N. A. Burton (Sen. Feb. 9), D. Callaghan (Sen. Feb. 28), W. Copley (Sen. Apr. 6), T. Hewitt (Sen. Apr. 16), R. K. Anderson, D. B. Taylor, J. W. Wilkinson (Sen. Apr. 25).

Act. Plt. Off. (prob.) R. O. Kendall to be Plt. Off. (prob.). May. (Subs. for notifn. of May 5.)

Plt. Off. (prob.) F. R. B. Smethurst is transf. to the Tech. Br. Feb. 28.

Wg. Cdr. C. J. R. Turner is transf. to the Balloon Br. May 12.

Flg. Off. P. J. Rossington relinquishes the rank of Flg. Off. at his own request and is transf. to the Gen. Duties Br. in the rank of Plt. Off. Apr. 14.

Flt. Lt. G. Frankau relinquishes his commn. on account of ill-health, Feb. 19, and retains the rank of Sqn. Ldr. (Subs. for notifn. of Feb. 28, 1941.)

Plt. Off. F. H. Tofts relinquishes his commn. on account of ill-health and retains his rank. May 19.

To relinquish their commns. on account of ill-health. May 14: Plt. Off. P. Pitt-Milward, Plt. Off. R. H. Hogg.

The commn. of Plt. Off. (prob.) A. R. Maclean is terminated. Nov. 1.

AMENDMENT.—In notifn. of Feb. 10, concern. The Master of Kinnaird for Act. Plt. Off. (prob.) *read* Plt. Off. (prob.).

In notifn. of Feb. 24, concern. H. Bert Hussey *for* Bert *read* Burt.

TRAINING BRANCH.—The persons whose names are marked "*") in the gradation list of this branch in the Air Force List for May, 1942, are granted emergency commns. in the ranks stated and with effect from the dates shown therein.

EQUIPMENT BRANCH.—William Beeton to be Act. Plt. Off. on prob. (emergency). Apr.

Flg. Off. (prob.) A. W. M. Stimson confmd. in appt. Nov.

Plt. Off. (prob.) W. G. C. Jacks confmd. in appt. and to be Flg. Off. (war subs.). May.

Plt. Off. (prob.) A. D. G. Denville confmd. in appt. Nov., and to be Flg. Off. (war subs.). Feb.

Plt. Off. (prob.) G. G. Hann, confmd. in appt. Dec., and to be Flg. Off. (war subs.). Mar.

Plt. Off. R. C. Pickup confmd. in appt. Jan., and to be Flg. Off. (war subs.). Apr.

Plt. Offs. (prob.) confmd. in appts. Jan., and to be Flg. Offs. (war subs.). Apr.: H. C. Hanrott, J. Hinchcliffe, S. O. Osborne, D. Milner.

Plt. Offs. (prob.) confmd. in appts. Feb., and to be Flg. Offs. (war subs.):—May: E. H. Harley, W. E. McWilliams, R. E. Perrott, E. D. Mitchell, E. A. Essex (Sen. Mar. 28).

Plt. Offs. (prob.) confmd. in appts. Feb., and to be Flg. Offs. (war subs.):—May: F. C. C. Godbeer, D. Grant.

ACCOUNTANT BRANCH.—Plt. Off. (prob.) H. H. Altman confmd. in appt. and to be Flg. Off. (war subs.). May. (Sen. Apr. 24.)

Plt. Off. (prob.) F. J. G. Thornton confmd. in appt. Dec., and to be Flg. Off. (war subs.). Feb.

Plt. Off. (prob.) B. M. Greer confmd. in appt. Jan., and to be Flg. Off. (war subs.). Mar.

Plt. Off. (prob.) B. W. Buswell confmd. in appt. Jan., and to be Flg. Off. (war subs.). Apr.

Plt. Offs. (prob.) confmd. in appts. Feb., and to be Flg. Offs. (war subs.). Apr.: L. S. Baker, W. H. Bell, T. Collins, L. H. Stewart.

Plt. Off. (prob.) P. H. C. Burgess confmd. in appt. Nov., and to be Flg. Off. (war subs.) Dec. 14. (Subs. for notifn of Mar. 24.)

Act. Plt. Off. (prob.) C. A. Woollett is transf. to the R.A.F. Regt. May 14.

MEDICAL BRANCH.—To be Flg. Offs. (emergency):—Apr.: B. M. Jensen, L.M.S.S.A.; David Agnew, M.B., Ch.B.; Gerald Caplan, M.B., Ch.B., D.P.M.; Sidney Childs, M.B., Ch.B., L.R.C.P. and S., L.R.F.P.S., D.P.M.; W. D. W. Dick, M.B., ChB.; R. G. Dickinson, M.R.C.S., L.R.C.P.; R. S. Flynn, M.B., Ch.B.; C. R. Griffin, M.B., B.Ch.; E. G. Hardy, M.B., Ch.B.; J. D M. Kieran, L.R.C.P. and S.; L. C. Lodge, M.R.C.S., L.R.C.P.; W. M. MacDermid, M.B., Ch.B.; Morrison McMurrich, M.B., Ch.B.; Lucien Read, M.B., B.Ch., M.R.C.S., L.R.C.P.; G. F. Stamp, M.B., Ch.B.; T. H. Steele-Perkins, M.R.C.S., L.R.C.P.; A. F. Upton, M.B., Ch.B.

Flg. Offs. to be Flt. Lts. (war subs.):—Nov.: D. M. R. Barry, M.B., B.Ch., L.M. Dec.: J. Fiddes, M.B., Ch.B., D.C.H. Jan.: J. Heginbotham, M.R.C.S., L.R.C.P. Feb.: M. Wynroe, M.B., Ch.B.; H. J. Richardson, L.R.C.P. and S., L.R.F.P.S. Mar.: J. S. H. Scott, M.R.C.S., L.R.C.P.; M. Crowley, M.B., B.Ch.; P. E. Perceval, M.R.C.S., L.R.C.P.; J. Guthrie, M.B., Ch.B.; C. W. Hall, M.R.C.S., L.R.C.P.; T. E. Griffiths, M.B., B.S., M.R.C.S., L.R.C.P.; R. J. L. Ferris, M.B., B.Ch. Apr.: E. W Jones, M.B., B.Ch.; A. A. Simpson, M.B., Ch.B.; W. Sinclair, M.B., B.Ch.; E. K. Jones, M.B., B.S., M.R.C.S.; L.R.C.P.; P. N. Stanbury, M.R.C.S., L.R.C.P.; E. S. Reed, L.M.S.S.A.

Flg. Off. N. S. Gurrie relinqu'shes his commn. on account of ill-health and retains h s rank May 14.

DENTAL BRANCH.—To be Flg. Offs. (emergency):—Apr.: K. A. Gordon-Ralph, L.D.S.; Benjamin Grant, L.D.S.; Francis Preston, L.D.S.; Harold Robinson, L.D.S.

Flg. Offs. to be Flt. Lts (war subs.):—Nov.. H. J Phillips, D.D.S., L.D.S. Feb.: A. W. Jackson, L.D.S. Mar.: K. Richards. L.D.S Apr.: W. Campbell, L.D.S.; G. W. Vincent. L.D.S.; W. G. C. Dimock, L.D.S.

CHAPLAINS BRANCH.—To be Chaplains (emergency) with the relative rank of Sqn. Ldr.:—Apr.: The Rev. M. C. Donald, The Rev. V. P. Howells, The Rev. C. P Sherwood, The Rev. L. A. Williams.

## AUXILIARY AIR FORCE

GENERAL DUTIES BRANCH.—Flg. Off. C. H. Macfie to be Flt. Lt. (war subs.). Sept.

BALLOON BRANCH.—Sqn. Ldr. J C. W. MacBryan is transf. to the Admin. and Spec. Duties Br. May 9.

## AUXILIARY AIR FORCE RESERVE OF OFFICERS

GENERAL DUTIES BRANCH.—Flt. Lt. A. P. Gray to be Sqn. Ldr. (temp). Mar.

## ROYAL AIR FORCE REGIMENT

ROYAL AIR FORCE VOLUNTEER RESERVE.—C. L. Bryant to be Sqn. Ldr. on prob. (emergency). Mar.

L. S. Munn to be Sqn. Ldr. on prob. (emergency). Jan. (Subs. for notifn. of Feb.)

J. R. Macfarlane to be Flt. Lt. on prob. (emergency). Feb.

## WOMEN'S AUXILIARY AIR FORCE

To be Asst. Sec. Offs. on prob. (emergency):—May: M. S. Alcock, V. I. Anderson, Stella Blaker, E. M. Boothroyd, D. A. Bouchier, J. M. Brandling, K. N. Bright, V. C. Brooks, D. A. Bull, Margery Bushell, S. K. Collingwood, D. B. Collins, E. M. Cook, I. M. Cooper, M. N. Coulson, J. M. Couzens, Stella Craine, Jean Croom-Johnson, Christine de Courcy Hamilton, E. Z. Dyson, S. E. Edwards, A. E. Elsmore, I. M. Foster, J. W. Fowkes, G. M. Fullbrook, M. K. Goff, M. B. Grazebrook, E. G. Greenwood, H. C. M. Gunston, A M. Hagon, M. B. Hanbury, D. S. Hobson, Gladys Holliday, I. R. Howell, H. F. M. Hungerford, J. M. Hutley, N. H. Jacob, D. F. L. Kellett, D. M. Lacey, E. M. Liddell, M. E. Mawrey, A. E. R. Milton, A. T. Moore, M. A. Munro, B. L. Norris, Marjorie Nye, E. J. Owen, Z. C. Owen, M. E. Parry, M. A. Pellow, A. Lea-Rawes, Evelyn Reay, E. F. M. Rutland, W. B. M. Saunt, U. M. Smith, A. A. L. Sprules, L. E. Stansfield, A. M. Stewart, Dawn Strettell, B. M. Turner, H. K. Twaites, G. M. Vaughan, K. J. Walton, D. E. Waters, O. H. Weinberger, M. A. E. Wetherall, E. A. Willis, E. F. Wimbush, O. E. Wybrants, Georgina Caudwell, S. E. S. Cockell, Betty Davidson, J. C. Emery, D. M. England, H. M. Ennis, H. R. Swinnerton, J. O. Wyndham.

Asst. Sec. Offs. (prob.) to resign their columns:—Apr. 13: B. J. S. Chalmers. Apr. 29: C. Robertson. May 5: A. Barlas.

Asst. Sec. Off. (prob.) R. Foulds resigns her commn. on account of ill-health. Apr. 24.

*Air Ministry, June 2.*

## ROYAL AIR FORCE

GENERAL DUTIES BRANCH.—To be Plt. Offs. on prob. (emergency):—Wt. Offs.: May: A. J. Lauder, J. N. P. Bell, N. S. Fear, B. P. Baker, D.F.M., C. W. Hammond, D.F.M., S. I. Hardcastle, P. E. Wilks. Temp. Wt. Offs.: Dec.: M. L. W. Britchford, E. P. Nolan, D.F.M. Apr.: L. J. Hilton, R. G. Ash. May: James Eardley, R. T. Holland, G. T. Williams, D.F.M., R. J. Ellis, D.F.M. Flt. Sgts.: Jan.: Stanley McAndrew. Mar.: K. E. Young. Apr.: Archibald Murray, D.F.M., Thomas Robertson, Walter Barford, Jeffrey King, Philip Kirk, D.F.M., L. H. Williams. May: S. R. Garrard, D.R.M., David Roberts, D.F.M., S. A. Warren, G. P. Watts, D.F.M., Harry Woolstencroft, D. H. H. Cleverley, D.F.M., Ronald Gibson, F. M. Henry, V. W. C. Taylor, E. R. W. Wood, D.F.M., Henry Ramsay. Temp. Flt. Sgt.: Apr.: A. G. Bake, D.F.M. Sgts.: Nov.: T. H. Bigmore. Jan.: J. R. Johnson. Feb.: T. V. Maunders. May: R. W. H. Pearson. Cpl.: Dec.: J. G. Finney. Ldg. Acm.: Mar.: P. H. Basson.

Flg. Off. (prob.) R. H. Francis, D.F.M., confmd. in appt. Jan. (Subs. for notifn. of May 12.)

Plt. Offs. (prob.) confmd. in appts. and to be Flg. Offs. on prob (war subs.):—Feb.: J. Gilbert (Sen. Jan. 22), M. H. S. Innes-Jones (Sen. Jan. 6). Apr.: B. J. Lovett, G. McPherson, A.F.M., D. H. A. Skillings. May: J. H. Moutray, D.F.M., C. C. Flynn, F. W. J. Kemp.

Flt. Lt. B. P. Young to be Sqn. Ldr. (temp.) Mar.

Flg. Offs. to be Flt. Lts. (war subs.):—Nov.: J. D. Ford. Feb.: I. H. Cosby, G. Parker, S. S. Duff, A. C. Hamman, D.F.C., A. J. J. Steel, L. L. Bartley, J. L. Groves, D.F.C., W. Baker, C. F. Ambrose, D.F.C. Mar.: G. C. R. Barker, M. J. Herrick, D.F.C., P. H. G. Mitchell, G. M. Goodman, B. V. Kerwin. Apr.: L. R. Barr, A. Blyth, E. Cotton, F. W. Dewell, C. Dunkerley, J. D. R. Forbes, G. F. Harcourt-Powell, A. James, W. A. L. Johnson, T. S. Kitching, W. C. Maher, A.F.M., J. Northrop, J. Shearsmith, A.F.M., A. W. Southall, H. W. Waylen, A.F.M., R. D. Westlake, F. W. Westley, W. D. Winward, J. R. Wood, N. Paterson, J. N. W. Kerr (Lt. R.T.R.), J. P. Lucas (2nd Lt. The Buffs), R. A. Miles (2nd Lt. Border R.), W. R. C. Sugden, R. I. Armstrong, W. C. Dallin, G. M. Howard-Jones, J. H. C. Lewis, S. W. Martin, R. M. Pugh, G. M. Rothwell, D.F.C., J. E. Turnbull, W. G. Bennetts (2nd Lt. R.A.T.A.). May: E. F. Publicover.

Plt. Offs. to be Flg. Offs. (war subs.):—Jan.: H. R. H. F. Irwin (Lt. 5th Maharatta L.I.I.A.). Mar.: R. V. Hudson (2nd Lt. R.A.).

Plt. Off. D. A. White to be Flg. Off. (war subs.). May.

Plt. Offs. (prob.) to be Flg. Offs. on prob. (war subs.):—Apr.: S. T. L. Baker, E. L. D. Bickenson, A. A. Emery, D.F.M., H. H. Lowe, D. H. A. Moore, D.F.M., J. C. K. Sutton, I. E. Verstage.

To be transf. to the Tech. Br., Apr. 24, 1940:—Gp. Capt. C. Crawford, Sqn. Ldr. (since promoted) H. L. Messiter, Wg. Cdr J. C. Bevan, Wg. Cdr. E. D. M. Hopkins.

The commn. of Plt. Off. (prob.) T. A. Matthews, D.F.M., is terminated. May 6, 1942.

Plt. Off. (prob.) B. G. Leigh is dismissed the Service by sentence of General Court-Martial. May 18.

TECHNICAL BRANCH.—To be Flg. Offs. on prob. (emergency):—Wt. Offs.: Aug.: Robert Allison (Sen. Apr. 28), R. D. Hill (Sen. June 1). Nov.: George Hunt (Sen. Sept. 19). Jan.: C. A. Fisher (Sen. Aug. 23). Feb.: R. C. Coslett (Sen. July 31), J. S. C. Gibbs (Sen. Aug. 5), G. A. Fricker (Sen. Sept. 9), C. E. Griffin (Sen. Oct. 16), F. S. Winfield (Sen. Nov. 1), W. F. Haines (Sen. July 1), A. E. Wolsoncroft (Sen. Dec. 18). Apr.: J. McG. Cattrell (Sen. Oct. 1), H. L. Brooke (Sen. Mar. 1).

To be Plt. Offs. on prob. (emergency):—Wt. Offs.: Jan.: W. G. Gates (Sen. Nov. 7). Feb.: L. C. Graves (Sen. Sept. 9), L. W. H. Jones (Sen. Sept. 30), B. L. Harris (Sen. Dec. 6). Mar.: E. C. Hayes (Sen. Dec. 3). Act. Wt. Offs.: Feb.: Alexander Pedley (Sen. Aug. 5), K. I. Thomas (Sen. Jan. 14). Flt. Sgts.: Dec.: J. M. Bowes (Sen. Oct. 7), Bert Mitchell (Sen. Nov. 7). Jan.: Terence McGreevy (Sen. Dec. 15). Feb.: A. A. Pedder (Sen. Aug. 12), J. S. Edwards (Sen. Dec. 3), Peter McEwan (Sen. Jan. 14). Sgt.: Dec.: L. E. Francis (Sen. Oct. 17).

To be Act. Plt. Offs. on prob. (emergency):—Wt. Offs.: Feb.: J. K. Pilcher Clayton (Sen. Sept. 23). Apr.: George Oversby (Sen. Nov. 6). Flt. Sgts.: Feb.: W. H. Newman (Sen. July 15), A. F. Page (Sen. Sept. 23). Apr.: F. J. Deacon (Sen. Oct. 23), J. S. Palmer, D. R. Levinson, M.B.E. (Sen. Oct. 23). May: W. J. Knowles (Sen. Oct. 30), B. M. H. Evans (Sen. Nov. 13). Sgts.: Apr.: J. A. Blythe (Sen. Oct. 23), C. F. Thomas. Apr. H. H. Wardell (Sen. Jan. 15).

To be confmd. in appts.:—Flg. Offs. (prob.):—Feb.: L. A. Andrews. June: C. Lobley. Plt. Off. (prob.):—Feb.: A. V. R. N. Chart.

Plt. Off. (prob.) P. W. Nunn confmd. in appt. and to be Flg. Off. (war subs.) Apr. (Sen. Nov. 26).

Plt. Off. (prob.) F. W. Morris confmd. in appt. Mar. and to be Flg. Off. (war subs.) May (Sen. Jan. 24).

Plt. Off. (prob.) L. C. Sykes confmd. in appt. Feb. and to be Flg. Off. (war subs.) May (Sen. Jan. 25).

Plt. Off. (prob.) G. J. Pearn confmd. in appt. Feb. and to be Flg. Off. (war subs.) May (Sen., Feb. 1).

Plt. Off. (prob.) H. E. A. Pratt to be Flg. Off. on prob. (war subs.) Apr. and confmd in appt. May.

Plt. Off. (prob.) G. T. Brown to be Flg. Off. on prob. (war subs.) Oct. and confmd. in appt. Nov. (Subs. for notifn of Dec. 23.)

Plt. Off. (prob.) F. Seeley to be Flg. Off. on prob. (war subs.) Oct. and confmd. in appt. Nov. (Subs. for notifn. of Dec. 30.)

Flg. Offs. granted the rank of Flt. Lt. (war subs.):—May: A. W. R. Peel, G. W Emery, O.B.E. Aug.: A. E. Blundell.

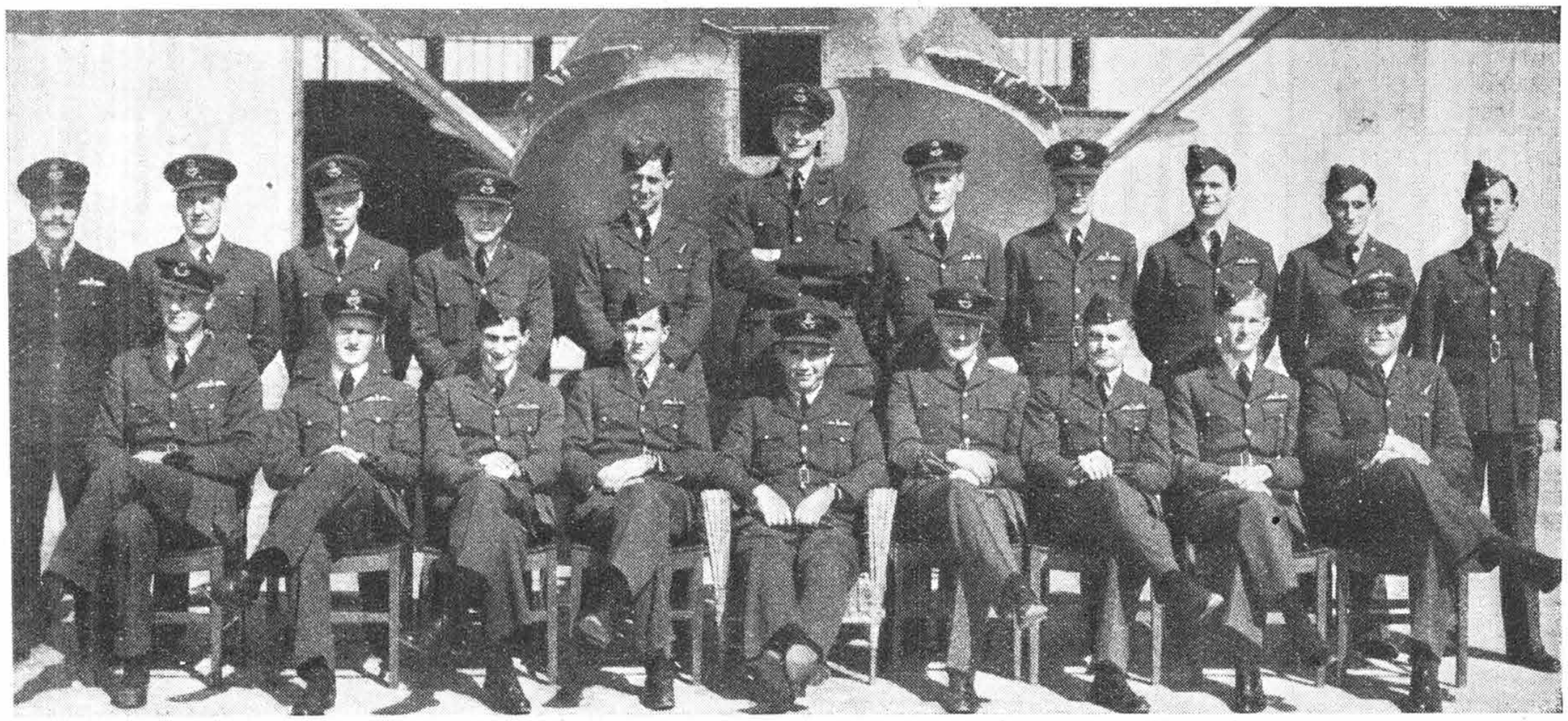
Plt. Offs. (prob.) to be Flg. Offs. on prob. (war subs.):—Oct.: H. Clark. Jan.: L. C. Norris. Mar.: G. Kirkby, C. H. J. Clampitt.

Act. Plt. Offs. (prob.) to be Plt. Offs. (prob.):—Nov.: G. Lennox (Sen. Apr. 15). Dec.: W. R. Watts (Sen. Sept. 21), K. C. Spurway (Sen. Oct. 22), J. Harris (Sen. Oct. 27). Jan.: N. J. Davey (Sen. Nov. 7), G. Wallis (Sen. Nov. 10), L. G. Westaway (Sen. Nov. 18). Feb.: W. G. Wootton, D. de M. Morgan-Bellinger (Sen. Nov. 10), H. Wyatt (Sen. Dec. 11), L. S. Edwards (Sen. Sept. 2), G. F. Stubbings (Sen. Dec. 10), W. G. F. Spackman (Sen. Jan. 9). Mar.: T. A. I. D. McArdle (Sen. Sept. 5), R. E. G. Piff (Sen. Oct. 9), C. G. H. Weale (Sen. Nov. 16), T. H. Compton (Sen. Dec. 17), J. R. Marchant (Sen. Dec. 19), R. Ogle, C. G. White, F. R. Paice (Sen. Dec. 20), W. Edwards (Sen. Dec. 22), A. Padden (Sen. Dec. 23), I. J. Richards (Sen. Dec. 24), C. L. Domoney (Sen. Feb. 3), G. L. Ogle (Sen. Nov. 30), E. J. Penton-Voak (Sen. Dec. 3), E. P. T. Milway, N. W. Verney (Sen. Dec. 25), H. L. Gregory (Sen. Jan. 2), H. L. Noel, J. R. M. Longstaff (Sen. Jan. 3), J. F. Viveash, R. G. Beaton (Sen. Jan. 8), F. Gibbs (Sen. Jan. 9), D. S. Marshall, F. A. Miller (Sen. Jan. 16), W. J. F. Fenton (Sen. Jan. 18), G. H. Cuckow (Sen. Sept. 12), D. D. Thompson (Sen. Oct. 9), E. Sealey (Sen. Dec. 18). Apr.: H. Hobson (Sen. Oct. 20), L. P. S. Boggust (Sen. Oct. 27), S. James (Sen. Jan. 18). May: D. T. Stanley, J. F. Dwelly, E. J. Spooner, G. F. Williams, K. Ainscough, W. E. Gamble (Sen. Feb. 3), L. G. Hayward (Sen. Feb. 6), F. H. O. M. Cameron (Sen. Feb. 21), J. C. Barker, H. W. Hunn, C. F. Povey, C. Anderson, F. J. Day (Sen. Mar. 3), J. G. Wright (Sen. Mar. 9), F. Matthews (Sen. Mar. 17).

Flt. Lt. C. A. Pope ceases to be seconded for Special Duty Apr.

ADMINISTRATIVE AND SPECIAL DUTIES BRANCH.—To be Flg. Offs. on prob. (emergency):—Wt. Offs.: Feb.: G. H. Cann (Sen. Jan. 16). Mar.: B. A. Chatfield (Sen. Jan. 6). Apr.: A. G. Barlow (Sen. Sept. 28).

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



AT GIBRALTAR.—Officers of one of the R.A.F. Squadrons serving at Gibraltar, photographed in front of a Consolidated Catalina flying-boat.

# AERONAUTICAL ENGINEERING

## Manchester Details

FURTHER DETAILS, now officially released, provide much interesting data of the Avro Manchester I, the only large two-motor bomber to go into service with the Stirling and Halifax four-motor class of heavy bombers.

The Manchester is powered with two Rolls-Royce Vultures. Bearing works number 679, it was designed to Air Ministry Specification P.13/36 of 1936. The Halifax was also designed to this specification, but was completed with four Merlins, as sufficient Vultures were not available at the time. Although the Manchester is no longer in production it is a very interesting machine as the largest two-motor bomber ever built and as the forerunner of the Avro Lancaster, which will play a decisive part in winning the War.

### The Motors

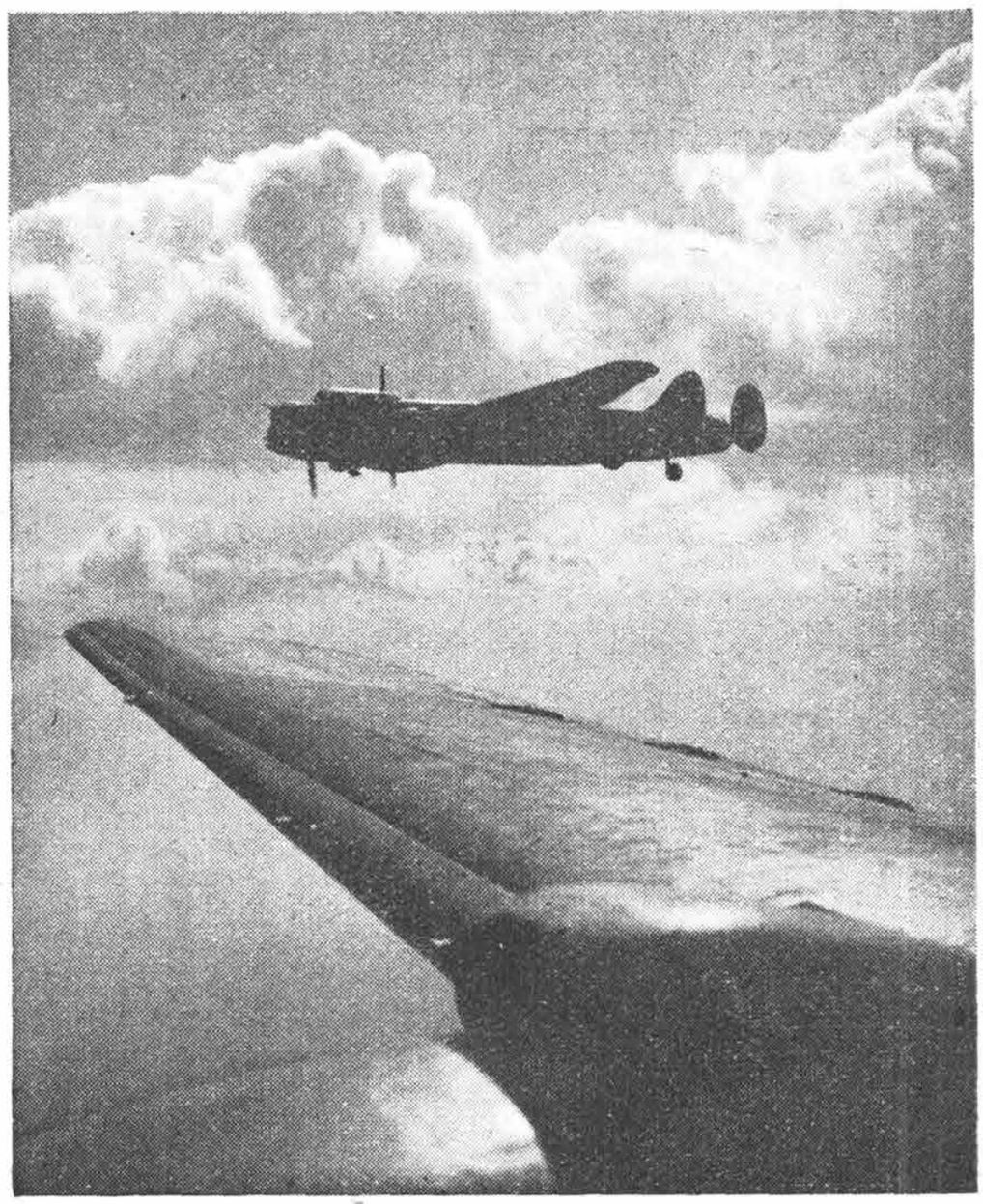
The Vulture is the largest motor yet produced by Rolls-Royce. It is a 24-cylinder 90-degree X-type of 42.5 litres capacity, which contrasts with the 27 litres of the Rolls-Royce Merlin. The Vulture is virtually a double Peregrine, cylinders, pistons, valve gear and other parts of that type being utilised on a common crankshaft and crankcase. The Peregrine is a 12-cylinder upright Vee type and represents the ultimate development of the older Kestrel, which had served the R.A.F. for many peaceful years.

Aero-motor design is more a matter of painstaking building-up on work already done than of sudden inspiration. Had sufficient time been available for thorough development of this new type of Rolls-Royce there is little doubt that Mr. Roy Chadwick, the Avro designer, would have had every reason for satisfaction in his choice of the Vulture to install in the Manchester.

Although the type is no longer in production, the details of this X-type motor as now revealed are well worth close examination. The gain of increased power from a larger number of smaller cylinders in a motor of the same capacity is offset by the added complications of the working mechanisms. There are also difficulties in crankcase design because of the extra stresses imposed by loading twice the power on a structure of the same overall dimensions as compared to the crankcase of a Vee motor.

An X-type was projected by aero engineers during the last War, and the Napier Cub was produced during the period between the Wars as a practical motor of that style, but the fact remains that a long period had elapsed before such a design went into service in numbers. This seems to point only to our tardiness in promoting British military aviation. Such a powerful motor as the Vulture would have been uneconomical in civil aviation as it was during the 1930s.

The Vulture gives 1,845 h.p. at 5,000 ft., and the Merlin X 1,130 h.p. at 5,200 ft., both in the low gear of the supercharger at 3,000 r.p.m. The high gear figures may be compared only approximately. The Vulture gives 1,710 h.p. at 15,000 ft., the Merlin XX 1,250 h.p. at 12,250 ft. These comparisons are helpful in at least one respect, for they give some slight idea of



THE MANCHESTER.—New particulars of the Avro Manchester (two 1,845 h.p. Rolls-Royce Vulture motors) two-motor bomber have been released recently. The maximum speed is given as approximately 300 m.p.h. which must apply to the machine flying light. The maximum range is quoted as approximately 2,000 miles and the bomb load as more than 5 tons. A full description is given in the article on this page.

the greater power of the Avro Lancaster, which may be described as a development of the Manchester. The Lancaster has four Merlin or four Hercules motors.

As already suggested, the trend is towards smaller cylinders of greater power. The Merlin has a bore of 5.4 ins., the Vulture 5 ins.; the Merlin a stroke of 6 ins., the Vulture 5.5 ins. Other obvious departures from the normal are the use of two main trunk induction pipes, necessitated by the double group of cylinder blocks and the arrangement of connecting-rod linkage, particulars of which are not yet released.

### The Airframe

Turning to the airframe which houses this powerful motive unit, the Manchester is a mid-wing all-metal cantilever monoplane.

The fuselage follows conventional lines of semi-monocoque construction of a flattened "O" section. Channel section formers are notched to carry continuous longitudinal stringers of angle section. Externally the lines of the Manchester fuselage are not so box-like as those of the Stirling or Whitley, and it is of medium length, contrasting with the short, stumpy Liberator and the extremely long Stirling.

The forward cabin is interesting, for the transparent canopy has a mixed metal and wood frame and contains bulletproof glass panels to give protection to the fire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SPECIALISTS IN MILITARY AIRCRAFT SINCE 1915

# "I AM AN AIRCRAFT DESIGNER"—V

## By L. G. Frise, B.Sc., F.R.Ae.S.

*A Talk given on the Forces Programme of the B.B.C. on Monday, May 25.*

Mr. L. G. Frise,
Chief Designer,
The Bristol Aeroplane Co.

I AM an aircraft designer who was born in Bristol and it was in this city in 1910 that one of the most important steps was taken towards laying the foundations of the British Aircraft Industry. This was by Sir George White, a famous Bristolian and transport pioneer, who, with typical foresight, established a factory on the outskirts of the city for the design and manufacture of aeroplanes.

As an inquisitive schoolboy I soon knew most of what was going on inside this factory, and sitting on the fence around the works' flying field, waiting patiently for a Box Kite to make a short flight, I little dreamt that one day, only a few feet from where I sat I should be testing some of my own ideas in a wind tunnel.

And whether or not I dreamt of one day being the Chief Designer in this great organisation, I certainly prepared for it by entering Bristol University determined to train as an aeronautical engineer.

Graduating half way through the last War and taking a commission in the Royal Naval Air Service, I was transferred back to Bristol to assist in the design of a fighter for the War. This was the beginning of my friendship with that fine pioneer designer, Captain Barnwell, and started me in at the birth of his famous creation, the Bristol Fighter of the first World War.

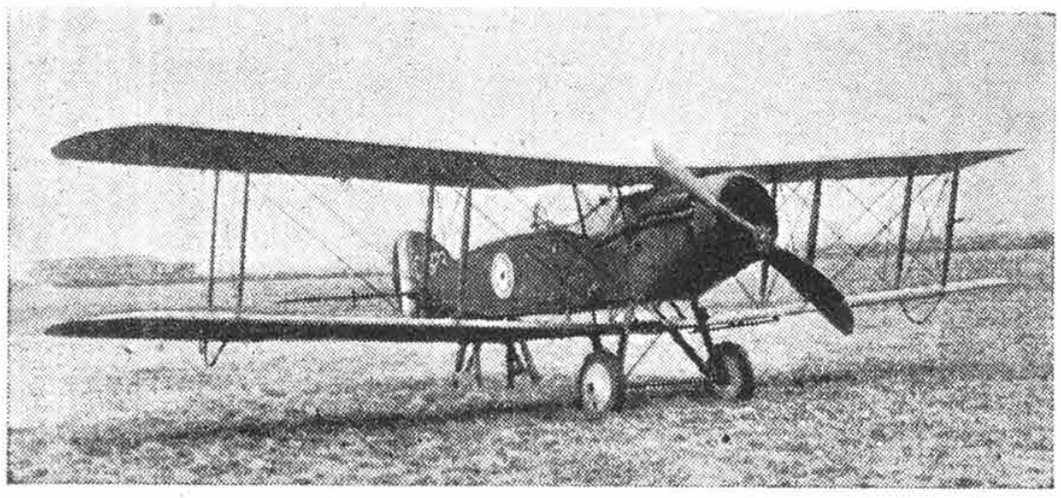
I remember that, as my share of the Bristol Fighter, I was able to complete the whole of the stress calculations, make drawings of a large proportion of the parts, design the airscrew and then go off to an Army School for a machine-gun course. Within a fortnight I was back with a gun and making the drawings necessary for its installation in the aeroplane. Going into the shops, I helped during the construction of the first batch of aircraft, and then, with Captain Barnwell as pilot, I went up as observer on many of the early test flights.

An all-metal version of this fighter was the first all-metal aeroplane to fly in England. Now the history of Bristol design is practically the history of the aeroplane, so I can touch on only a few types here, and I'll jump to 1923 when we staged a real peep into the future. We then produced a monoplane racer of monocoque construction, with cantilever wings, retractable undercarriage, and a Bristol radial engine completely enclosed. This was at least 10 years before the fashion became widespread.

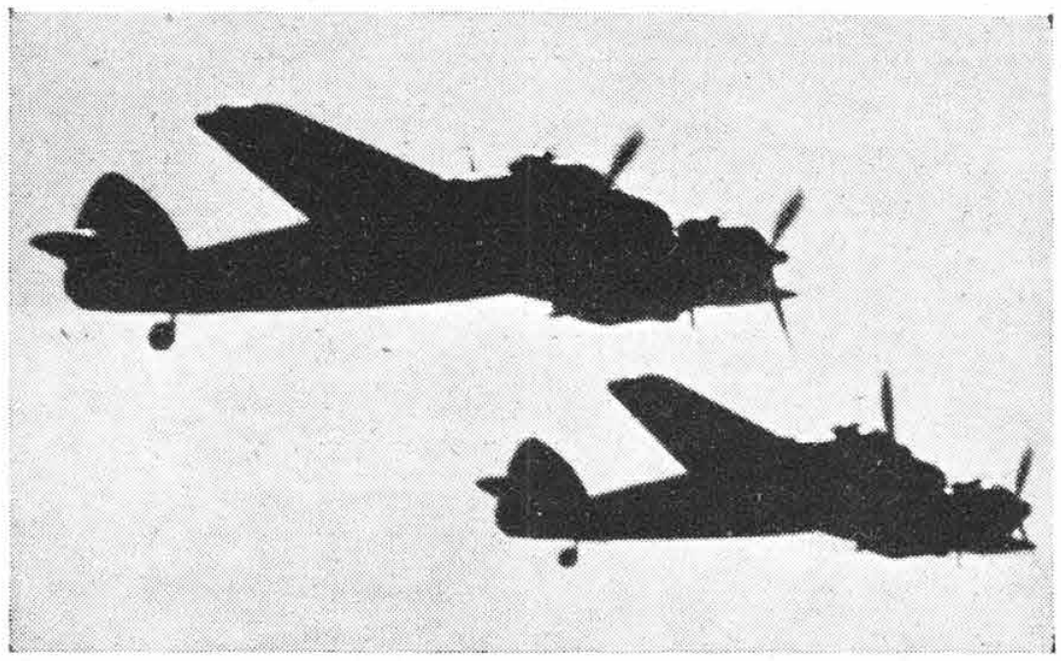
After years of research, we designed the most famous Bristol all-steel aeroplane in 1928. This was the Bulldog single-seater biplane fighter, with Bristol Jupiter engine, and it won the Air Ministry fighter competition.

In 1930 I designed the first Bristol gun turret, a very simple affair compared with our present models. More research produced the first metal-covered aircraft in 1933. This was a single-seater fighter with Bristol Mercury engine, and embodied all the now standard features of low wing, retracting undercarriage, flaps for slow landing, and enclosed cockpit.

In 1934 we designed the twin Mercury-engined, high-speed monoplane transport, called "Britain First." This machine was the fastest transport in the World, and set a new standard of light structure weight, which has only been surpassed by our own later designs. Its performance was so outstanding that Lord Rothermere, for whom it was built, presented it to the Air Ministry for further study. We converted it into a bomber, the now well-known Blenheim.



BRISTOL FASHION, 1917.—One of the outstanding aeroplanes of the Great War, 1914-18, was the Bristol Fighter, in the design of which Mr. L. G. Frise co-operated with the late Capt. Frank Barnwell, who was for very many years Chief Designer of the Bristol Aeroplane Co.



BRISTOL FASHION, 1942.—Bristol Beaufighters of the Coastal Command taking off on an offensive sweep. Mr. L. G. Frise was responsible for the design of this aeroplane which is doing such fine work.

Before I go on with the other Bristol types designed for war work, I should mention the special monoplane with Bristol engine which captured the World's height record in 1936 by reaching a height of nearly 50,000 ft. The following year this aeroplane raised the record to nearly 54,000 ft.

Now, before the War, a tragic accident, resulting in the death of Captain Barnwell, robbed me of a life-long friend, and left me to face the coming War, with a determination to maintain the traditions that he had established in the past. Soon I had four major types, operating in vast numbers, and flying for Fighter, Bomber and Coastal Commands.

The birth of the Beaufighter was unusual, and did not follow an Air Ministry specification, but came about in this way. Just before the War, we recognised the obvious and urgent need for a long-range fighter of decisive striking power. Now the design and construction of the prototype, testing, tooling and putting into production of a new aircraft, is a matter of a few years, however hard we try.

Looking round for a solution to this difficulty, I got the idea of using as many parts as possible of the Beaufort, and actually, by putting in the larger Hercules engines, and altering part of the body to take cannons and fighting equipment, was able to produce the required fighter in six months.

Soon the Beaufighter was taking toll of the night raiders and showing its versatility on many fronts, over the French ports, Norway and the Middle East. Its particular combination of speed, range, and hitting power has no equal in any of the Air Forces of the World. When the Beau-pilot presses his button the weight of lead that plasters the target is 75 times as great as that which came from the single gun I put in the old Bristol Fighter.

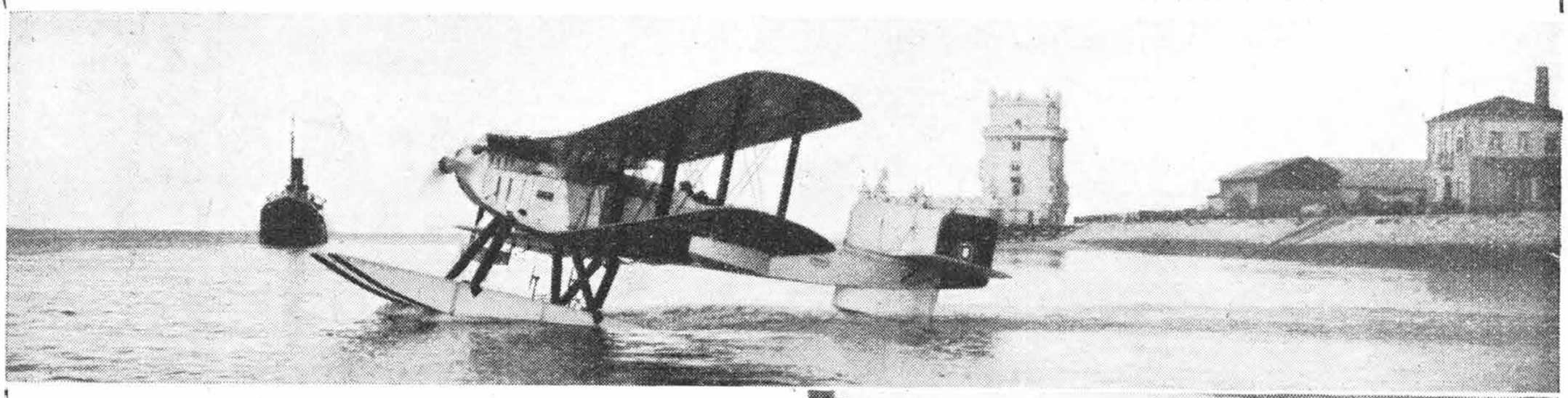
For years at Bristol, we have worked towards simplifying our construction and have achieved a structure weight lighter than any other.

I have been asked to mention the Frise aileron, which I patented as far back as 1921. The aileron, as you know, is the control on the wing tips used to carry out most of an aeroplane's manœuvres. This idea was born whilst I was working on means of improving the safety of flight, and it was awarded the Wakefield Gold Medal by the Royal Aeronautical Society.

This control became practically standard throughout the World, and soon its original purpose of improving safety was overshadowed by its ability to increase the fighting manœuvrability of aircraft in war. The only enemy aircraft not so fitted at the beginning of the War was the Messerschmitt 109, but this suffered so badly at the hands of the Spitfires and Hurricanes using the Frise aileron, that it is not surprising to find that the latest model Messerschmitt, the 109F, has returned to the fight wearing Frise ailerons.

Although we have seen so much of our work turned to the waging of war, we have in the aeroplane the strongest weapon also for peace, in that it can reduce the size of the World and make isolation and the flourishing of pernicious doctrines anywhere impossible. As Mr. Eden has recently said, "There will be but one village street from Edinburgh to Chungking." Now there is only one type of 'bus that can run a service down a street like that, and that is the aeroplane. And when the time arrives, I am sure that the British designers can be called upon to supply the bus.

# SIDELIGHTS FROM THE PAST—XXVIII.



THE FIRST SOUTH ATLANTIC FLIGHT.—March 30-June 17, 1922. The Fairey "Trans-Atlantic" Seaplane, the Lusitania, and Senors Sacadura Cabral and Gago Coutinho, at Lisbon, March 30.

TWENTY-TWO YEARS AGO the first crossing of the South Atlantic by air was completed by two Portuguese airmen, Lt.-Commander Artur de Sacadura Cabral and Captain Carlos Viegas Gago Coutinho. After careful preparations they left Lisbon on March 30, 1922, but they did not arrive at Rio de Janeiro till June 17. They had taken two and a half months and used three aeroplanes, and only by perseverance, courage and determination, the skilful piloting of Cabral and the brilliant navigation of Coutinho, the support and enthusiasm of the Portuguese Government and people, and the sturdiness of their machines, was the flight finally accomplished.

Cabral and Coutinho were no adventurous youths; one was 42 years of age, the other 53. They were given only about £5,000 for the flight. After months of careful study Cabral decided on a special version of the Fairey III-D (350 h.p. Rolls-Royce Eagle) seaplane, two of which had been ordered for the Portuguese Naval Air Service. He stipulated that his seaplane must have an empty weight of 4,000 lb. and that it must be able to take-off with an all-up weight of 7,000 lb. against a wind of not more than 13 knots, and must be ready by November, 1921.

Cabral came to England to practice flying Fairey III-Ds and though the Lusitania, as he named his special seaplane, was completed within four months it just failed on the take-off requirements and was 150 lb. heavier than the stipulated empty weight. Cabral decided to accept the risk and the Lusitania was shipped to Lisbon and assembled by the Portuguese Naval Air Service. After test flights the cruising speed for the flight was expected to be 70 knots (80 m.p.h.) with a fuel consumption of 18 gallons per hour. The flight, according to calculations, was expected to last 60 hours.

Three ships of the Portuguese Navy left Lisbon on March 25 with spares, petrol and oil and one was to be stationed off St. Pauls Rocks at the Equator, about 250 miles from Fernando Noronha, in case adverse winds prevented this stage being completed.

At 07.00 hrs. on March 30 the Lusitania took-off from Lisbon and flew the 710 miles to Las Palmas in 8 hrs., but when alighting there on a rough sea two of the float bracings broke. This delayed them, and then weather being bad at Las Palmas they flew to Gando Bay, 15 miles away and from there took off on April 4 for St. Vincent (Cape Verde Islands), covering the 850 miles in 10 hrs. 43 mins.

They were delayed again because of weather, but flew the short distance to St. Tiago, also in the Cape Verde Islands, and on April 18 took off, hoping to reach Fernando Noronha, an island about 200 miles off the Brazilian coast and 1,250 miles from St. Tiago. After two hours' flying both float tanks were empty and they had less than 10 hours' petrol left. They discussed the situation by passing notes between the cockpits and decided to go on, though the weather was deteriorating and they had a head wind. After 12 hours' flying they sighted the Rocks and the Portuguese cruiser waiting for them, but the heavy Atlantic swell made alighting difficult, and again they met with misfortune.

Cabral and Coutinho were rescued, but all efforts at saving the Lusitania were in vain. So ended the first stage.

The Portuguese Government sent one of the Fairey III-Ds of the Portuguese Naval Air Service to Fernando Noronha and on May 11 Cabral and Coutinho set off again. They were determined to fly across the whole of the South Atlantic so flew back to the Rocks, meaning to return to Fernando Noronha before continuing. Unfortunately, shortly after they had started back from the Rocks they were forced to alight because of engine trouble. Some hours later they managed to start the engine and taxied for an hour before it stopped again. The buffeting was beginning to tell on the machine, but shortly before midnight they were rescued, but only the motor of their seaplane could be saved.

Interest had been aroused in both Portugal and Brazil by their attempts to conquer the South Atlantic and public subscriptions were started. Then the Portuguese Government sent their second and last Fairey III-D.

On June 5 they set off again and this time were successful. They had earlier flown back to the Rocks and could go straight on. They arrived at Recife after covering the 300 miles in 4 hrs. 30 mins. at an average speed of 67 knots. After two days of celebrations they left for Bahia and were held up there by weather until June 13. Then taking off from there two float bracings were broken and they landed at Porto Segur for repairs. The final stages were Porto Seguro—Victoria and then Victoria—Rio de Janeiro, where they arrived on June 17, alighting at the Brazilian Naval Air Base of Ilha das Enxadas, where they ran up the Brazilian flag and fired a salute of 21 Very lights.

The total flying time from Lisbon to Rio was 60 hrs. 14 mins. for a total distance of 4,367 miles and an average speed of 72½ knots. During the 36 hrs. 44 mins. in which they were out of sight of land Coutinho took sights on the sun with his sextant 96 times.

The photographs show, above, the Special Fairey III-D, the Lusitania, at Lisbon before the start of the flight on Mar. 30, with the tower of Belem in the background (photograph by courtesy of "Garcez," Lisbon); and, on the right, Lt.-Commander Sacadura Cabral (front cockpit) and Capt. Gago Coutinho just before taking off from Lisbon (photograph by courtesy of "O Seculo," Lisbon). Details of the flight were sent to us by Mr. L. H. Howard, of Caramujo, Lisbon.

Gago Coutinho, whose accuracy in navigation could scarcely be improved on to-day, is now a Vice-Admiral (Retd.) but Cabral disappeared in November, 1924, while flying from Holland to Portugal. The weather was bad and he was presumed to have been lost at sea.

The Special Fairey III-D (350 h.p. Rolls-Royce Eagle) which was ordered for the flight was similar to the standard III-D, but was fitted with one extra bay of wing bracing. The particulars were:—Span, 62 ft.; length, 36 ft. 11 ins.; height, 13 ft. 1 in.; wing area, 700 sq. ft.; fuel capacity, 330 Imp. gals. Weight loaded, 7,250 lb., top speed 95 m.p.h.

# AIR TRANSPORT

## Vichy France to Jibouti

VICHY FRANCE is reported to be resuming the air mail service between Vichy France and Jibouti, French Somaliland.

Two large flying-boats are reported to be under construction at factories at Marignane, near Marseilles, and are said to be destined for service on Vichy civil air lines serving the French colonies. One of the flying-boats is probably the Potez 161.

## The First Five Hundred

ON FEB. 27 last, Pan-American Airways made the five hundredth crossing of the Atlantic since May, 1939. Since December 7, 1941, there have been 80 additional crossings to Africa and nearby points. Traffic statistics for the first 500 Atlantic crossings were:—passengers, 14,135; mail, 1,272,000 lb., and aeroplane-miles flown, 2,175,006.


AMERICA ON ACTIVE SERVICE.—Douglas DC-3s of Delta Air Lines being loaded with Army freight by U.S. Army personnel. The U.S. Army took over a number of aeroplanes from the American air lines at the beginning of the year and has now taken over the control of the air lines.

## The Death of a Pioneer

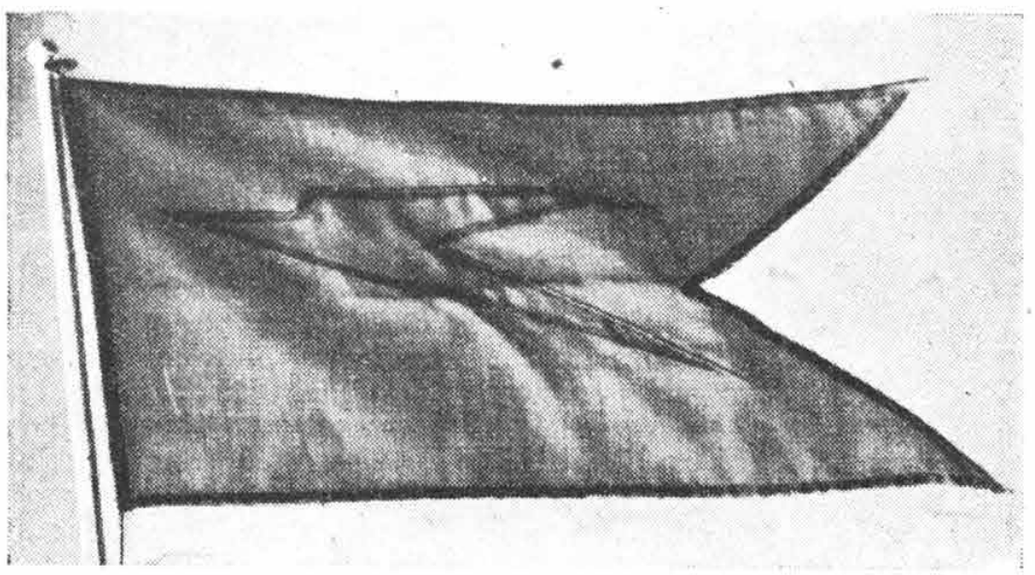
MR C. S. MEIKLEJOHN, who had 23 years' service with British air transport, died on May 2. He served with Instone Air Lines from the inception of the London to Paris service in 1919 until that Company was incorporated with Imperial Airways Ltd. in 1924. He represented Instone Air Lines at Brussels and continued as Imperial Airways' representative there throughout the whole of the existence of Imperial Airways.

When Belgium was invaded in 1940 Mr. Meiklejohn escaped to England and then went to the Belgian Congo to represent the British Overseas Airways Corporation. He returned to England a few months before his death and retired from the Corporation in December last.

## An Australian Crash

AN AEROPLANE of Australian National Airways flying between Tasmania and Melbourne crashed into the sea in the Bass Strait on May 29. The pilot and the three passengers were killed. Engine trouble is thought to have been the cause of the accident.

The pilot was Captain C. G. Weston and the passengers Mr. H. G. Selfe, an Amalgamated Wireless Official, an aircraftman of the R.A.A.F. and a private in the Army. There is no indication as to the type of aeroplane, but Australian National Airways operates DC-3s, DC-2s, D.H. 86s, Dragon Rapides, Monospars and a Short Scion.



HOUSE FLAG.—The House Flag of the British Overseas Airways Corporation. The "Speed Bird" insignia is worked in gold on a background of Imperial blue and the border round the burgee is gold. The House Flag will be flown over British Airways' offices and establishments in the U.S.A., across Africa from the Atlantic seaboard to the Sudan, from Durban up to Cairo, and in India, Iran, Iraq, Palestine, Arabia and other countries. Aircraft of the Corporation fly the Civil Air Ensign when landing and when passengers are embarked, while those carrying mail also fly the Royal Air Mail pennant.

## A Change of Name

CANADIAN COLONIAL AIRWAYS, INC., is changing its name to Colonial Airlines, Inc., because the present name is misleading and suggests that the corporation is Canadian, whereas it is registered in Delaware and 98 per cent. of the shareholders are American citizens. Canadian Colonial Airways operates services between New York, Albany, Burlington and Montreal.

## Services in Uruguay

INCREASED SUBSIDIES have been given by the Uruguayan Government to the National Air Line Company PLUNA (Primera Linea Uruguayana de Navegacion Aerea). PLUNA owns one D.H. 86B and two D.H. Dragonfly biplanes and recently acquired a two-motor Potez 62 monoplane from Air France in South America. The following services are operated: — Montevideo — Durazno — Tachuarembo — Salto —Artigas; Montevideo — Mercedes — Paysandu — Salto — Artigas, and Montevideo—Treinta y Tres—Rio Branco—Melo.

## Canadian Pacific Air Lines

THE TEN Canadian air line companies in which a controlling interest is held by the Canadian Pacific Railway are being reorganised into one co-ordinated system known as Canadian Pacific Air Lines Ltd.

Mr. L. B. Unwin is President of the Company and C. H. "Punch" Dickins, D.F.C., O.B.E., is Vice-President and General Manager in charge of all operations, with headquarters at Windsor Station, Montreal. G. W. G. McConachie, of Yukon Southern Transport, is General Manager, Western Lines, with headquarters at Winnipeg; C. R. Troup, of Dominion Skyways, was first appointed General Supervisor of the flying schools and aircraft repair schools operated for the Empire Air Training Scheme, but has now been made General Supervisor of Schools (flying training and observers); and T. W. Siers is General Supervisor of repair factories.

Mr. W. R. Patterson, Assistant Comptroller, C.P.R., has been appointed Comptroller of C.P.R. Air Lines Ltd., and Mr. T. H. Moffitt, Assistant Treasurer of the Railway Company, has been appointed Treasurer of the Air Lines. I. R. G Collins is the Secretary.

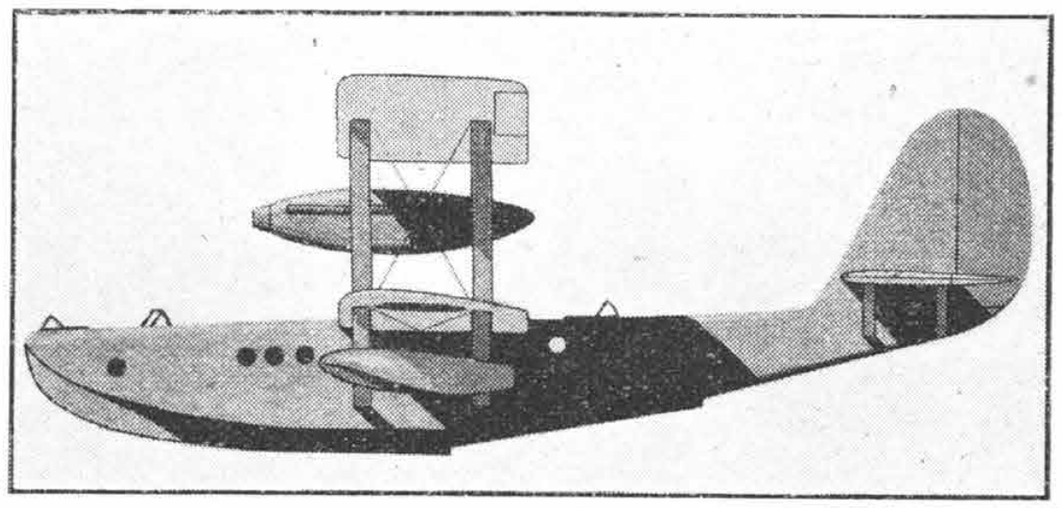
The companies controlled by the C.P.R. Air Lines Ltd. operate approximately 100 commercial aeroplanes and fly a total of 5,000,000 miles a year. Besides commercial services, the C.P.R. Air Lines carry military equipment and personnel under contract with the Government, do aerial mapping and other defence work, and operate one elementary flying training school, six observers' schools, and four overhaul and maintenance units for the Empire Air Training Scheme.

Particular importance is attached to the development of the Northern Canadian hinterland and especially the defence routes to Yukon and Alaska. Mr. McConachie, one of the pioneers of flying in the Yukon, has been interested for some time in a European route by way of Alaska and Russia. C.P.R. Air Lines Ltd. undoubtedly has many plans for the future.

# AEROPLANES OF THE JAPANESE ARMY AND NAVY AIR FORCES—V

### THE MITSUBISHI NAVY H-96
(Three 900 h.p. Mitsubishi motors)

TYPE.—Reconnaissance bomber flying-boat.
CREW.—Six.
ARMAMENT.—Believed to be one cannon and four machine-guns.
DIMENSIONS.—Span, 96 ft. 8 ins.; length, 70 ft. 0 in.; height, 26 ft. 3 ins.; wing area, 2,500 sq. ft.
WEIGHT.—Loaded, 38,750 lb.
PERFORMANCE.—Max. speed, 145 m.p.h. at 10,000 ft.; range, 1,400 miles at 125 m.p.h. with 2,000 lb. bombs; service ceiling, 13,000 ft. Made by Mitsubishi Jukogyo Kabushiki Kaisha (Mitsubishi Heavy Industries, Ltd.), Nagoya.



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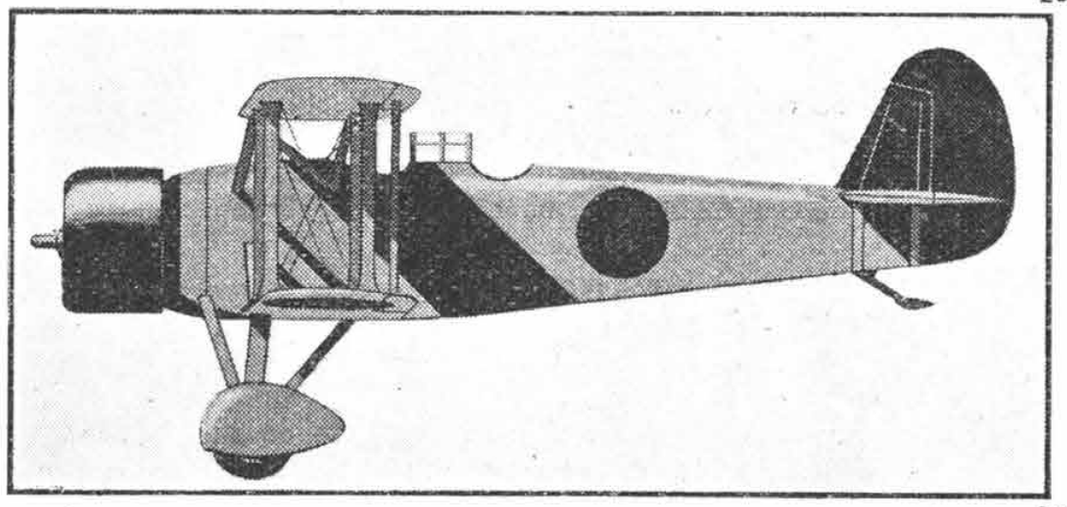
### THE MITSUBISHI NAVY K-96
(One 730 h.p. Mitsubishi Kinsei motor)

TYPE.—Dive bomber, carrier borne.
CREW.—Two.
ARMAMENT.—Two fixed forward fuselage machine-guns and one movable rear machine-gun.
DIMENSIONS.—Span, 37 ft. 6 ins.; length, 30 ft. 9 ins.; height, 12 ft. 10 ins.; wing area, 420 sq. ft.
WEIGHT.—Loaded, 5,200 lb.
PERFORMANCE.—Max. speed, 200 m.p.h. at 10,000 ft.; service ceiling, 23,000 ft. Made by Mitsubishi Jukogyo Kabushiki Kaisha (Mitsubishi Heavy Industries, Ltd.), Nagoya.



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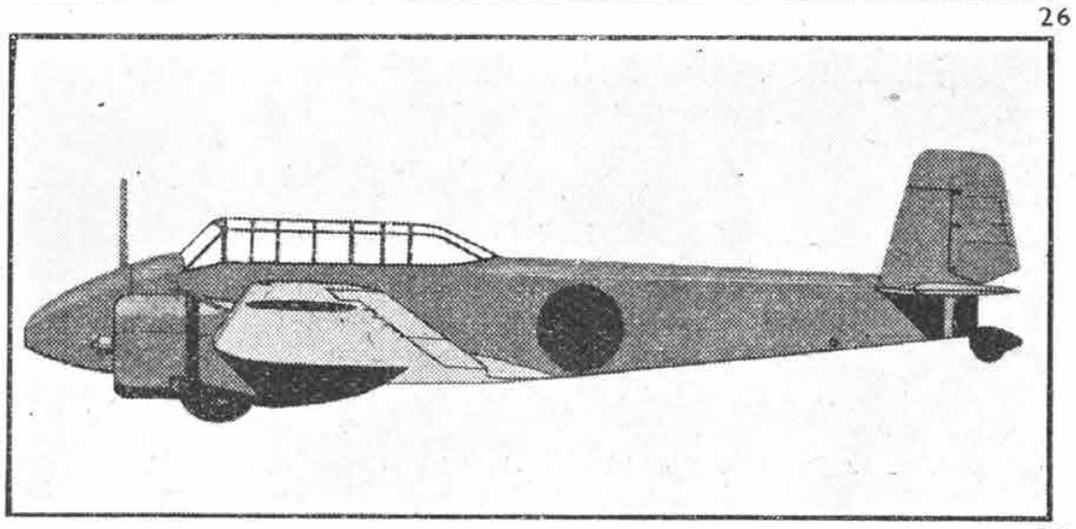
### THE MITSUBISHI NAVY B-96-1 OTORI (PHŒNIX)
(Two 550 h.p. Nakajima Kotobuki III motors)

TYPE.—Medium bomber.
CREW.—Three to four.
DIMENSIONS.—Span, 55 ft. approx.
PERFORMANCE.—Max speed, 240 m.p.h.; range, 1,800 miles. During 1936 one version of this machine flew non-stop from Tokyo to Bangkok, over 2,000 miles. Made by Mitsubishi Jukogyo Kabushiki Kaisha (Mitsubishi Heavy Industries, Ltd.), Nagoya, from Junkers designs.



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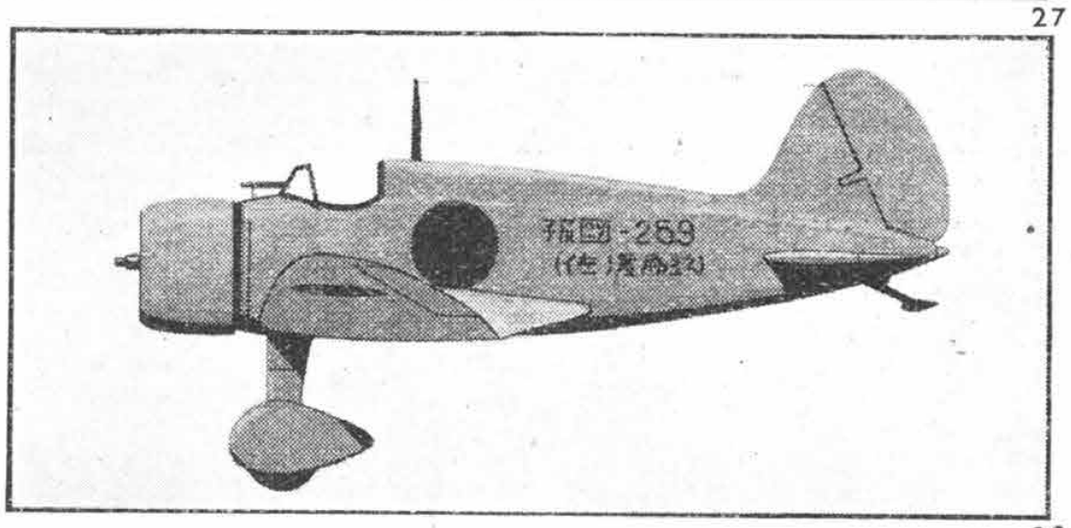
### THE MITSUBISHI NAVY S-96-2
(One 730 h.p. Mitsubishi Kinsei motor)

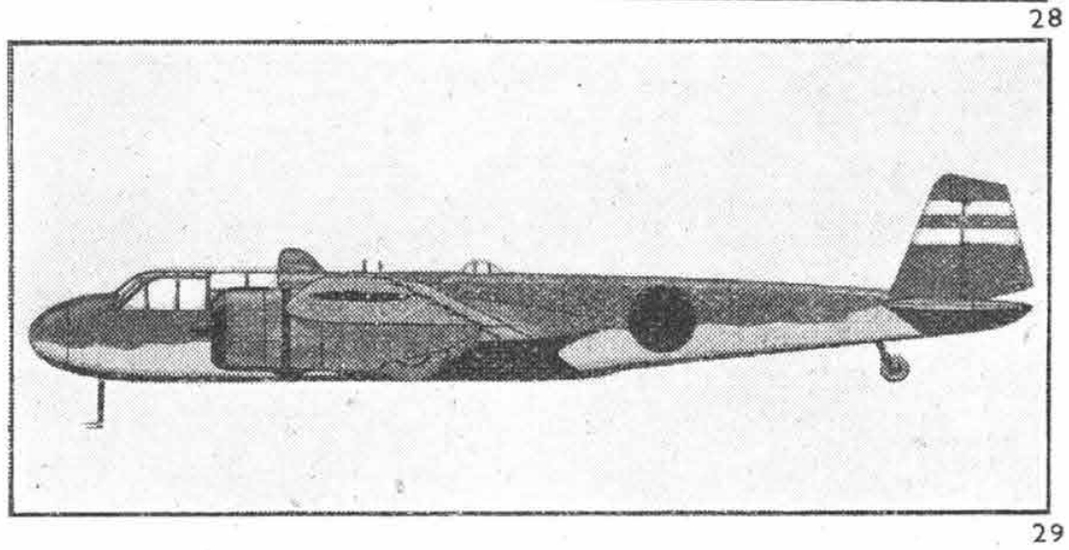
TYPE.—Single-seat fighter, carrier borne.
CREW.—One.
ARMAMENT.—Two 7.7 mm. fixed forward fuselage machine-guns, also believed to have two 7.7 mm. wing machine-guns.
DIMENSIONS.—Span, 36 ft. 0 in.; length, 24 ft. 6 ins.; height, 9 ft. 9 ins.; wing area, 170 sq. ft.
WEIGHT.—Loaded, 4,300 lb.
PERFORMANCE.—Max. speed, 250 m.p.h. at 9,000 ft.; range, 440 miles at 217 m.p.h.; service ceiling, 31,000 ft. Made by Mitsubishi Jukogyo Kabushiki Kaisha (Mitsubishi Heavy Industries, Ltd.), Nagoya.




28

### THE MITSUBISHI NAVY OB-96-4
(Two 1,000 h.p. Mitsubishi Kinsei motors)

TYPE.—Bomber.
CREW.—Four to seven.
ARMAMENT.—Probably six machine-guns.
DIMENSIONS.—Span, 82 ft. 0 in.; length, 52 ft. 6 ins.; height, 12 ft. 4 ins.; wing area, 800 sq. ft.
WEIGHT.—Loaded, 22,000 lb.
PERFORMANCE.—Max. speed, 230 m.p.h. at 10,000 ft.; range, 1,615 miles at 161 m.p.h.; service ceiling, 24,000 ft. Made by Mitsubishi Jukogyo Kabushiki Kaisha (Mitsubishi Heavy Industries, Ltd.), Nagoya, from Junkers designs.
There are also freight and passenger versions of this aeroplane without armament and modified aerial arrangements.



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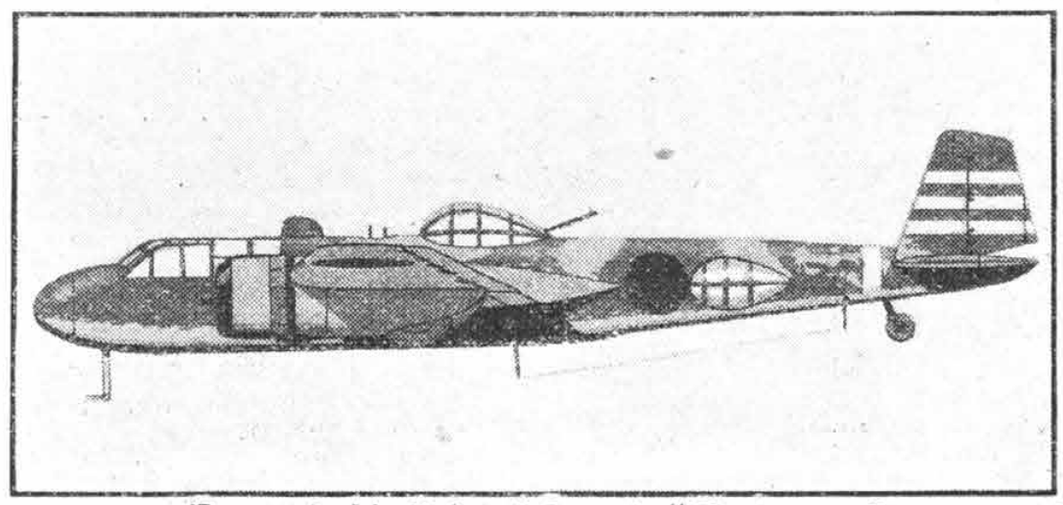
### THE MITSUBISHI NAVY OB-96-4A
(Two 1,000 h.p. Mitsubishi Kinsei motors)

TYPE.—Bomber.
CREW.—Four to seven.
ARMAMENT.—Two 7.7 mm. wing machine-guns, one 7.7 mm. machine-gun and/or one 20 mm. cannon in dorsal turret, two 7.7 mm. free lateral machine-guns, one 7.7 mm. free ventral machine-gun, and one 7.7 mm. fixed tail machine-gun.
DIMENSIONS.—Span, 82 ft. 0 in.; length, 52 ft. 6 ins.; height, 12 ft. 4 ins.; wing area, 800 sq. ft.
WEIGHT.—Loaded, 22,000 lb.
PERFORMANCE.—Max. speed, 230 m.p.h. at 10,000 ft.; range, 1,615 miles at 161 m.p.h.; service ceiling, 24,000 ft. Made by Mitsubishi Jukogyo Kabushiki Kaisha (Mitsubishi Heavy Industries, Ltd.), Nagoya, from Junkers designs.
Differs from OB-96-4 above only in armament and addition of blister gun turrets.



*(Drawings by John H. Stroud, Copyright, "The Aeroplane.")*

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## FORTHCOMING EVENTS

June 12.—**Preston.**—S.C. No. 249 (Preston and District).—Third Class Test.—At Central Police Station.—19.30 hrs.
June 12.—**Richmond.**—S.C. No. 184 (Richmond).—Meeting in Darrel Rd. School, Darrel Rd.—19.30 hrs.
June 13.—**Durham City.**—R.O.C.C. Northern Area Council. Executive Committee Meeting.—At Three Tuns Hotel.—11.00 hrs.
June 13.—**Bedford.**—**Eastern Regional Council.**—Annual General Meeting.—At the Igranic Electric Co., Elstow Road.—11.00 hrs.
June 14.—**Bishop's Stortford.**—R.O.C.C. Branch 21 (Bishop's Stortford).—Third Class Test.—Lecture on Recognition.—At the Hockerill Training College.—14.45 hrs.
June 14.—**Boroughbridge.**—R.O.C.C. Branch 25 (Boroughbridge).—Talk by C. F. Andrews, Librarian of the Club, on "Aeroplane Signatures."—At Boroughbridge.—10.30 hrs.
June 14.—**Colchester.**—R.O.C.C. Branch 64 (Colchester).—Meeting at East Ward School, Greenstead Road.—10.15 hrs.
June 14.—**Flookburgh.**—R.O.C.C. Branch 83 (Furness).—Talk by T. Benson on New Types in Second and First Class Tests.—Branch Trophy Competition.—At Village Hall.—14.30 hrs.
June 14.—**Leven.**—R.O.C.C. Branch 140 (Leven).—Lecture by H.O.—Third Class Test.—At Leven.—17.45 hrs.
June 14.—**Shirley.**—R.O.C.C. Branch 2 (Shirley).—Second Class Test.—At Shirley.—10.00 hrs.
June 14.—**Hatfield.**—S.C. No. 4 (Hatfield).—Club Championship and Open Competition.—Open to all members of N.A.S.C., A.T.C., H.G. and H.M. Forces.—Details from E. H. Morris, 15, The Parade, St. Albans Road, Hatfield.
June 14.—**Watford.**—S.C. No. 118 (Watford).—Competition Day.—Second and Third Class Tests.—Novelty Competition.—At Watford Public Library.—10.30 hrs.
June 14.—**London.**—Institute of Estimators Planning and Time Study Eng.—Paper on "Establishment of Basic Rates," by J. G. Harding.—At the Waldorf Hotel.—14.30 hrs.—Visitors welcome.
June 15.—**Birmingham.**—S.C. No. 15 (Birmingham).—Annual General Meeting.—Third Class Tests.—Lecture by Mr. Hastilow.—Certs. now due for endorsement.—At Sir Josiah Mason's Orphanage, Orphanage Road.—19.30 hrs.
June 15.—**London.**—**London Regional Council.**—Development Meeting.—Three talks on various aspects of raid spotting.—Questions and General Discussion.—At the Geological Museum, South Kensington, S.W.7.—19.00 hrs.
June 15.—**Hanwell.**—S.C. No. 111 (Ealing).—Meeting at Drayton Schools, Drayton Bridge Road.—20.15 hrs.
June 17.—**Blackpool.**—S.C. No. 2 (Blackpool).—Meeting at Talbot Road Police Station.—19.15 hrs.
June 18.—**London.**—S.C. No. 142 (City of Westminster).—Study of Revised Third Class Tests.—Puzzle Corner.—At Thornycroft House, Smith Square, S.W.1.—18.00 hrs.

## The M'Kellar Squadron

THE 67th City of Glasgow Squadron of the Air Training Corps is to be known as the M'Kellar Squadron in memory of Squadron Leader Archie M'Kellar, of the City of Glasgow Fighter Squadron, who was killed in action some time ago. His decorations (D.S.O. and D.F.C. and Bar) are kept in the main hall of the Squadron's new headquarters.

AIR TRAINING CONFERENCE.—Representatives of 15 of the United Nations met at the Conference on Air Training at Ottawa beginning on May 18. Above are seen representatives of the ABCD powers (left to right) Major-Gen. Barton K. Young, U.S., Commanding General of the Flying Training Schools; Capt. Harold H. Balfour, M.P., British Parliamentary Under-Secretary of State for Air; Major-Gen. T. H. Shen, Commander of the Chinese Air Forces in the United States, and Major-Gen. L. H. van Oyon, of the Royal Netherlands Indian Army.

## Company Notices

### NEW COMPANIES

**Clifton Aircraft Ltd.**—Private co. Reg. May 28. Cap. £10,000 in 10,000 shares of £1. To carry on the business of aeronautical, motor and electrical engineers, etc. Subscribers (each with one share): Rothwell Bamber, 12, Park Street, Lytham, and Wilfred Sacre.

**Hercules Aircraft Construction Company Ltd.**—Private co. Reg. May 21. Cap. £500 in 500 shares of £1. To acquire that part of the business of the Hercules Engineering Co. which consists of the manufacture of aeroplanes or any part thereof. Subscribers (each with one share): W. Manning, and L. V. Laming. Directors: Philip H. Cook, Francis V. Cook, Bernard A. Cook and Kathleen M. Cook.

### INCREASES OF CAPITAL

**Mansell and Adams Ltd.**—Nom. cap. increased by the addition of £10,000 in £1 ordinary shares beyond the reg. cap. of £5,000.

# PERSONAL NOTICES

### BIRTHS

**Barrett.**—On June 1, at Driffield, Yorks, to Ruth, wife of Sqdn. Ldr. J. H. Barrett—a son.

**Crawford Rolt.**—On May 25, to Pauline, wife of Sqdn. Ldr. J. P. Crawford Rolt, R.A.F.—a son.

**Crompton.**—On May 29, at Harrow, to Cecily (*née* Orton), wife of Sqdn. Ldr. P. R. Crompton, D.F.C., R.A.F.V.R.—a daughter.

**Dwyer.**—On May 24, at Stroud, to Barbara (*née* Freeman), wife of Wng. Cmdr. M. H. Dwyer, R.A.F.—a daughter.

**Earl.**—On May 30, at Windsor, to Freda Mary, wife of Plt. Off. G. J. Earl, R.A.F.V.R.—a son.

**Ellis.**—On June 1, to Margaret (*née* Robinson), wife of Plt. Off. Gabriel Ellis, R.A.F.V.R.—a son.

**Flannery.**—On June 2, at Torquay, to Kathleen (*née* Day), wife of H. V. Flannery, R.A.F.V.R.—a son.

**Flinders.**—On May 30, in London, to Isobel May, wife of Flt. Lt. J. Layton Flinders, R.A.F.—a son.

**Goggin.**—On May 26, at Brighton, to Eileen (*née* Baker), wife of J. A. Goggin, R.A.F.—a son.

**Irving Bell.**—On May 26, at Crawley, to Adria (*née* Charnock Smith), wife of Sqdn. Ldr. J. R. Irving Bell, R.A.F.—a son.

**Kyle.**—On May 24, to Sheila, wife of Flt. Lt. Edward Kyle, R.A.F.V.R.—a son.

**Layton.**—On May 27, at Llandudno, to Beryl (*née* Drew), wife of Flg. Off. Martin Layton—a daughter.

**Lillywhite.**—On May 28, at Blackpool, to Edythe Margaret (*née* Thomas), wife of Flt. Lt. G. E. Lillywhite, A.F.C., A.F.M., R.A.F.—a son.

**MacLean.**—On May 29, at Easter Laggan, Dulnain Bridge, to Marcia, wife of Sqdn. Ldr. C. H. MacLean, A.A.F.—a son.

**McLaughlin.**—On May 28, at Tunbridge Wells, to Rosemary, wife of Sqdn. Ldr. C. R. McLaughlin, R.A.F.V.R.—a son.

**Moira.**—On May 29, at Bangor, to Ely (*née* Jones), wife of Flg. Off. J. V. Moira—a daughter.

**Noble.**—On May 27, at Fulmer, to Yvonne (*née* Hogan), wife of Flt. Lt. J. R. Noble, R.A.F. (killed on operations Dec., 1941)—a son.

**Pearson.**—On May 25, at Oxford, to Kathleen (*née* Farrand), wife of the Rev. R. T. G. Pearson, R.A.F.V.R.—a son.

**Perman.**—On June 2, at Wembley, to Jean (*née* Brake), wife of Lawrence Perman, R.A.F.—a son.

**Sawyer.**—On June 2, at Lyndhurst, to Mary (*née* Sinclair), wife of Wng. Cmdr. A. V. Sawyer, D.F.C., R.A.F.—a son.

**Seale.**—On May 18, to Diane, wife of Flg. Off. George Seale, R.A.F.V.R. (killed on active service in Apr., 1942)—a son.

**Stidolph.**—On May 27, at Bowdon, to Elizabeth (*née* Rhodes), wife of Sqdn. Ldr. N. E. Stidolph, R.A.F.V.R.—a son.

**Van den Bergh.**—On May 28, in London, to Avril (*née* Murray), wife of Flg. Off. C. J. Van den Bergh, R.A.F.V.R.—a daughter.

**Wagner.**—On May 28, at Cambridge, to Dorothy (*née* Marshall), wife of Flt. Lt. R. F. Wagner, R.A.F.V.R.—a daughter.

**Widdows.**—On May 27, at Cowley, Uxbridge, to Nickie (*née* Rawlings), wife of Grp. Capt. S. C. Widdows, D.F.C., R.A.F.—a son.

### FORTHCOMING MARRIAGES

**Bell—Prendeville.**—The engagement is announced between Sgt. G. C. Bell, R.A.F.V.R., only son of Mr. and Mrs. H. S. Bell, of Colwyn Bay, and Rita Mary Prendeville, L.G.S.M. (Eloc.), elder daughter of Mr. and Mrs. J. J. Prendeville, of Colwyn Bay.

**Booker—Bradford.**—The engagement is announced between Flg. Off. B. S. Booker (now prisoner of war in Germany), elder son of Mr. and Mrs. C. S. Booker, of Transkei, South Africa, and Margaret Enid Bradford, younger daughter of Mr. and Mrs. A. D. Bradford, of Great Missenden, Bucks.

**Challenor—Beal.**—The engagement is announced between Plt. Off. C. Handley Challenor, only son of the Rev. and Mrs. Frederick Challenor, of Blackheath and Ross-on-Wye, and Olga Valerie, second daughter of Mr. and Mrs. F. H. Beal, of Purley, Surrey.

**Cooper—Finch.**—The engagement is announced between Lt. W. F. Cooper, R.E., youngest son of Capt. and Mrs. Allan Cooper, of Horley, and Elisabeth M. Finch, W.A.A.F., daughter of the late Capt. George Finch, R.A.M.C., and Mrs. Finch, of Guildford.

**Hewan—Bartholomew.**—The engagement is announced between Flt. Lt. T. A. D. Hewan, R.A.F.V.R., elder son of Mr. and Mrs. E. D. Hewan, of Walton-on-the-Hill, and Ellen, elder daughter of Sir Clarence and Lady Bartholomew, of Margery Wood, Lower Kingswood, Surrey.

**Jackson—Gwinnett-Sharp.**—The engagement is announced between Sqdn. Ldr. L. A. Jackson, R.A.F.V.R., of Old Warden, Beds, and A/S/O Noreen Gwinnett-Sharp, W.A.A.F., only daughter of Loftus Gwinnett-Sharp, of Rugby.

**Lamb—Thompson.**—The engagement is announced between Lt. (A) T. W. Lamb, R.N., eldest son of Mr. and Mrs. T. Lamb, of Forest Hall, Northumberland, and Joice Thompson, W.R.N.S., only daughter of Capt. and Mrs. F. G. Thompson, of Newcastle.

**McCabe—Steel.**—A marriage has been arranged, and will take place shortly in Canada, between Sqdn. Ldr. W. McCabe, R.C.A.F., and Mrs. Elizabeth Daphne Steel, daughter of the late Mr. F. S. P. Swann, C.I.E., I.C.S., and Mrs. Swann, of Par, Cornwall.

**Nettleton—Havelock.**—The engagement is announced between A/Sqdn. Ldr. J. D. Nettleton, V.C., R.A.F., son of Mr. and Mrs. J. H. Nettleton, of Cape Town, and A/S/O Betty Havelock, W.A.A.F., daughter of Capt. and Mrs. Havelock, of Paignton.

**Reid—David.**—The engagement is announced between Flt. Lt. J. G. Reid, elder son of Mr. and Mrs. J. J. Reid, of Northwood, and A/S/O Anne David, W.A.A.F., twin daughter of Col. and Mrs. C. H. David, of Llandaff.

**Sims—Fendick.**—The engagement is announced between 2nd Lt. T. H. Sims, United States Army, only son of Mr. and Mrs. T. H. Sims, of San Angelo, Texas, and A/S/O Joy Fendick, W.A.A.F., eldest daughter of Eng. Capt. W. R. Fendick, R.N. (ret.), of Danbury, Essex, and of the late Mrs. Fendick.

**Stokes—Pilditch.**—The wedding of Plt. Off. John Stokes, R.A.F.V.R., son of Mr. and Mrs. Stokes, of Sheen, to Julie, daughter of Mr. and Mrs. Pilditch, of Iver, Bucks, will take place at 1 p.m. on June 13, at St. Edward's Church, Windsor.

**Towill—Godman.**—The engagement is announced between Major F. H. Towill, The Border Regt., eldest son of Mr. and Mrs. M. H. Towill, of Carlisle, and Mary Godman, W.A.A.F., daughter of Air Commodore A. L. Godman, C.M.G., D.S.O., and Mrs. Godman, of Northallerton.

**Walton—Pym.**—A marriage has been arranged, and will shortly take place, between A. C. W. Walton, R.A.F., younger son of the late Brig.-Gen. W. C. Walton, C.B., C.M.G., and Mrs. Walton, of Callander, Perthshire, and Hilary, younger daughter of Mr. and Mrs. F. C. Pym, of Oswestry, Shropshire.

### MARRIAGES

**Berggren—Kilner.**—On May 30, in London, Flt. Lt. J. V. Berggren, to Miss Vera Kilner.

**Colenbrander—Bone.**—On May 23, at Horsham, Flt. Lt. J. C. Colenbrander, M.B., B.S., R.A.F.V.R., only son of the late Col. J. W. Colenbrander, C.B., and Mrs. Colenbrander, of London, to Enid, daughter of the late Capt. J. H. Bone, 7th Hussars, and Mrs. Bone, of Horsham.

**Maltby—Goodson.**—On May 30, at Wickhambreaux, Flg. Off. D. J. H. Maltby, R.A.F.V.R., of Beaworthy, Devon, to Georgina Goodson, of Wickhambreaux, Kent.

**Miller—Gaspey.**—On May 27, at Illogan Church, near Camborne, Flg. Off. R. W. Miller, R.A.F.V.R., son of Mr. and Mrs. Miller, of Blackheath, to Marie Therése Gaspey, younger daughter of Dr. and Mrs. E. T. Gaspey, of Camborne.

**Mudd—Cross.**—On May 23, in Johannesburg, R. A. Mudd, S.A.A.F., son of Mrs. Mudd, and the late Dr. Mudd, of Johannesburg, to Joan Ruth Cross, younger daughter of the late T. W. Cross and the late Mrs. E. H. Farrer, of Kimberley, S.A.

**Nind—Lamon.**—On Mar. 11, at Perth, Australia, John Nind, R.A.A.F., only son of Mr. Nind and the late Mrs. Nind, of Ealing, to Lotus, daughter of Mr. and Mrs. Lamon, of Perth, Australia.

**Tabor—Lewis.**—On June 1, at Downham, Aircraftman R. C. Tabor, R.A.F.V.R., younger son of the late Mr. and Mrs. James Tabor, of Rochford, to Beryl Norah, daughter of the late Dr. A. C. Lewis, and Mrs. Lewis, of Wickford, Essex.

**Williams—Davies.**—On May 30, at Ruthin, Plt. Off. R. J. Williams, to Eileen C. Davies.

**Wilson—Bainbridge.**—On May 30, at Goring, Flg. Off. Christopher Wilson, R.A.F.V.R., son of Mr. and Mrs. Ellwood Wilson, of Knowlton, Quebec, to Norma, daughter of the late Col. Norman Bainbridge, C.B., C.M.G., D.S.O., and Mrs. Norman Bainbridge, of Streatley.

# CORRESPONDENCE

## The Old Designer and Recoil Shocks

A PARAGRAPH in Mr. Peter Brooks's most interesting article, "The Weapons of Air Warfare," tempts me to overcome my habitual inertia and, without heat—since the day is warm—to submit a mild correction.

Your contributor states, in reference to the then Lieut. Clark-Hall's experiments with a gun-carrying seaplane in late 1913: "A Short pusher floatplane was used for this purpose and the gun (a semi-automatic 1½-pounder made by Vickers) was mounted on the front of the nacelle."

The impression is conveyed that a "stock" machine was used. As a fact, the seaplane (numbered, if memory serves, O/1378) was specially built for the job. I had the privilege of designing it, to the instructions of the late Mr. Horace Short, and so can speak with certitude. I well remember the quite new problems involved in stressing for a half-ton gun-recoil in several directions. Those were the pre-cosh-bosh days, of course; the days when an ordinary (or P/A + M/Z) stressman could always count upon obtaining a fresh job by stating, in his letter of application, "I am familiar with the Theorem of Three Moments." ("Good man," would mutter the prospective employer. "Bit of a highbrow mathematician! We'd better *get* him!") Happy days!

The firing trials were long delayed and before they came off I had left the firm. There was a yarn, I remember, to the effect that when the gun was fired forward the machine stopped dead in the air and then dropped 500 ft.! Perhaps Mr. A. E. Bibby (who is one of my few Eastchurch colleagues still with Short's) can give more definite information on this point.

A. CAMDEN PRATT.

[We hope that, as succeeding instalments of "The Weapons of Air Warfare" appear, others of our readers who have personal knowledge of the experiments described will correct or supplement such statements as may need amendment or amplification. The author has painstakingly compiled his facts over a period of many years and has drawn them from countless sources. To the best of our knowledge, no one has previously dealt with the subject so fully and so accurately, but there are many still living who, like Mr. Camden Pratt, can supply the intimate details which are denied to all but those directly concerned with them. Most of the experiments were, of course, conducted in conditions of great secrecy.—ED.]

## Flight Without Wings

I HAVE JUST READ the most interesting account in THE AEROPLANE of May 29 of the reconstruction of the Morane-Saulnier MS.138-E2 by two R.A.F. Officers in France in the early part of the War.

One of the most striking incidents is surely the flight of the fuselage "sans" wings, and it would be very interesting to have your readers' opinions as to how this came about. First the "wing" loading during the flight must have been terrific, and yet, presumably, the ground speed was not more than 60 or so. Sixty yards is too far for it to have been a jump caused by a lump in the ground. Of course the tail could get substantial lift from tailplane and elevators. It would appear that the pronounced curvature of the engine cowling must have been, by chance, an extraordinarily efficient wing section. Incidentally, if the fuselage flew without any wings, the aircraft must have had a delightfully slow landing speed with wings.

One other outstanding point; personally, I just missed the era of the rotary engine, but I always understood that aircraft so fitted needed a special technique in landing because of the gyroscopic effect. I think, therefore, that Wing Commander Hugo and Flying Officer Fowler showed much skill in going straight off Gladiators on to this rotary relic and flying it successfully.

J. S. POLE,
The Sperry Gyroscope Company, Ltd.

[The "flight" of the wingless MS.138-E2 was probably more of a powered jump in which the machine bounced off the ground and prolonged its bounce for sixty yards by means of the elevators and airscrew. The fuselage would be very light minus struts and with little fuel. The gyroscopic effect of the rotary must have been formidable, but no roll is related in the 60-yard flight.—ED.]

## The Case Against the Dive Bomber

THE AEROPLANE in its issue dated Apr. 24 makes a rather extraordinary and far from plausible comment in dealing with an article by "Scrutator" which contained reference to the dive bomber.

Having reiterated a statement made by the Air Minister that the R.A.F. was at last to have dive bombers from America, it goes on to say that the Brewster Bermuda and Vultee Vengeance, both "technically" dive bombers, will not in all probability be used as such.

Surely this gives one the impression that THE AEROPLANE considers that Sir Archibald Sinclair's remark concerning the dive bomber was made purely to mislead, because the aeroplanes of which he spoke were not in fact to be used as dive bombers.

In addition I should be interested to learn details, more particularly as to type, of the "far better aeroplanes than the dive bomber to sink enemy ships and demoralise and destroy the enemy's forces" which THE AEROPLANE forecasts we shall have when we obtain "absolute air superiority."

D. ALLEN.

[Sir Archibald Sinclair was certainly not attempting to mislead the public nor did our comment suggest it. Our criticism of dive bombers has rested chiefly on the conviction that they are a wasteful type, too highly specialised and too vulnerable to give value for money in the face of strong air defence. We believe that others are coming to our view. Dive bombers will probably be used on occasions as dive bombers, but they are not likely in future campaigns to have the vogue which they have had in some of the German walk-over victories. In due course, Mr. Allen will learn details of the more effective types to which we referred—but not until the enemy has felt the full weight of them.—ED.]

## Ground Threads

I WOULD be much obliged if you could give me some information regarding Ground Threads on aircraft engine studs as mentioned in several recent articles in THE AEROPLANE.

One article in particular appeared in your issue dated Nov. 28, 1941, on the Bristol Hercules engine.

We have had so many arguments in suggesting various reasons for this procedure. Is it done so that the studs fit perfectly into the tapped holes in the crankcase, or is it done to reduce the chances of undue stresses being set up in the material during the machining?

The latter reason seems to me to be the most logical, but I would be pleased to have your opinion on the subject.

W. JAMES.

[The holding-down studs of aero-motor cylinders are subjected to extremes of alternating stresses. The maximum tension is imposed on them during the power stroke.

The minimum cross-sectional area of a stud is at the base of the thread, and experience has shown that fatigue in the material takes place at that point, should any blemish in the thread have been caused by ordinary methods of machining. Even a slight scratch or tear starts fatigue.

Several means have been adopted by motor makers to overcome this engineering problem. Grinding the threads of the studs is one of them, and this is particularly favoured by the Bristol Company.—ED.]

## Self-sealing Tanks

I WAS interested to read in your account of the Stirling, on page 239 of THE AEROPLANE of Feb. 27, in connection with the use of leak-proof tanks in that machine, that this was "one of the few developments in which the Germans set us an example."

Surely since leak-proof tanks were used by us towards the end of the last War, we may claim the initiative in this direction also. I would quote General Seely, in the House of Commons, on July 17, 1919:—"From the preliminary reports received by the Air Ministry, it would appear that the aeroplane in question caught fire after crashing. The provision of 'self-sealing' petrol tanks is a great safeguard against fire in accidents of this kind, but the progress with this type of tank has been so recent that it has only been possible to fit them in the very latest design of aeroplane. All future designs will provide for self-sealing petrol tanks."

I understand that the tank in question was of British design and that the Germans had at that time no such safeguard.

N. DE COUTOULY.

[This tank was represented as crash-proof and never pretended to be bullet-proof. Far from sealing itself, it relied on external pressure to help in sealing it after a crash. The example which Germany set Great Britain was in developing and applying the idea. Development work was undertaken in Great Britain between the two wars, but the proof that Germany was using self-sealing tanks in her aeroplanes led the R.A.F. to prescribe them for its aeroplanes.—ED.]

# BRITAIN'S POWER IN THE SKIES.


Powered by "Bristol" Taurus engines, the "Bristol" Beaufort has scored many successes as a bomber, mine-layer, torpedo-carrier and on reconnaissance.