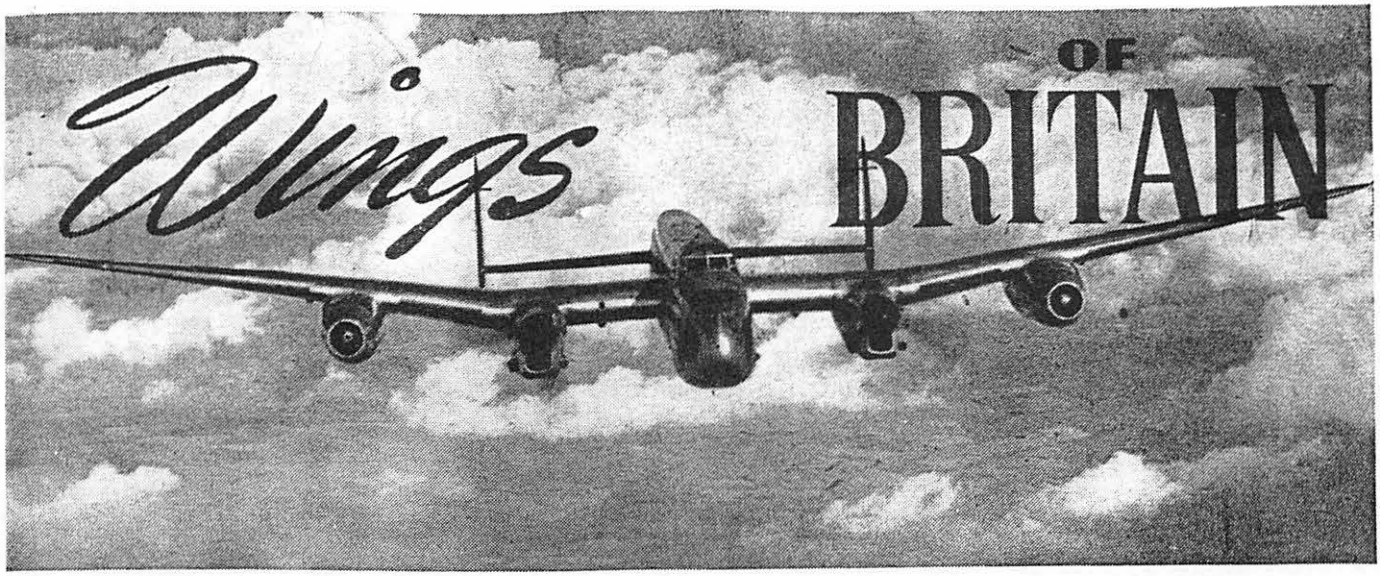

Turbine Era of "Flying Fifties" Target for British Aviation

ABOVE: Typical of the transitional features of the British aviation program since the war, this Lancastrian (civil Lancaster) is powered by RR Merlin piston engines inboard and Nene jets outboard.

A YEAR ago Canadian Aviation recorded, in a memorable special issue the 1947 status of aeronautical achievement in the United Kingdom and in Canada. Now, a year later, Canadian Aviation again serves the cause of aviation on both sides of the Atlantic, and particularly the cause of Commonwealth aviation, in presenting another review of progress.

In the foreword which I was privileged to contribute a year ago, I stated that British aviation was determined to show, in all its branches, that its records of service and quality in war will be continued and enhanced in peace. I added that, inevitably, the road ahead must be long and difficult before there can be realized the aims of a first-rate British airplane and a first-rate British air service for every major requirement.

Those observations can be reinforced today.

After a year which has rarely been rivaled, in time of peace, for difficulties and tribulations, we can look back on some solid progress, not with complacency but at least with satisfaction. Some worth-while things have been accomplished, though most of the results remain to be reaped in the days ahead. Much more remains to be done.

IN THE sphere of military aviation, one of the most significant marks of progress has been the steady re-equipment of British fighter squadrons with jet aircraft. The Royal Air Force in the United Kingdom now has the Gloster Meteor IV as its standard interceptor fighter. For low attack and close support it has the de Havilland Vampire III in squadron service. An indication of the versatility of this specialist close support type is that a modified Vampire with a DH Ghost jet engine, set up last March a new world's airplane height record of 59,492 feet—11 miles high.

Equally, the fact that Britain can produce not one but a number of jet-propelled single-seaters of the highest order is seen by the establishment of no less than four successive speed records round 100-kilometre closed-circuit courses. The speeds are worthy of note:—

August, 1947—
DH Vampire . . . . . 497 mph
February, 1948—
Gloster Meteor . . . . . 543 mph
February, 1948—
Vickers Attacker . . . . . 565 mph
April, 1948—
DH 108 . . . . . 605 mph

The job of flying a closed circuit of 62 miles low down at speeds of the order of 10 miles per minute calls for the highest qualities in machine and man; both in manoeuvrability at speed low down on the part of the machine and in endurance and precision of flying under "g" on the part of the man. In fact it is a real test of a fighter.

For that reason we can, I think, take particular satisfaction in the fact that four types of British single-seaters have gone faster "round the sticks" than any aircraft before them. That satisfaction will serve to spur us on to greater efforts during the 12 months ahead. Perhaps we in the United Kingdom may hope before long to be able to add, once again, the absolute speed record to the airplane height record recently established.

This evolution of the jet-driven

(Continued on page 56)

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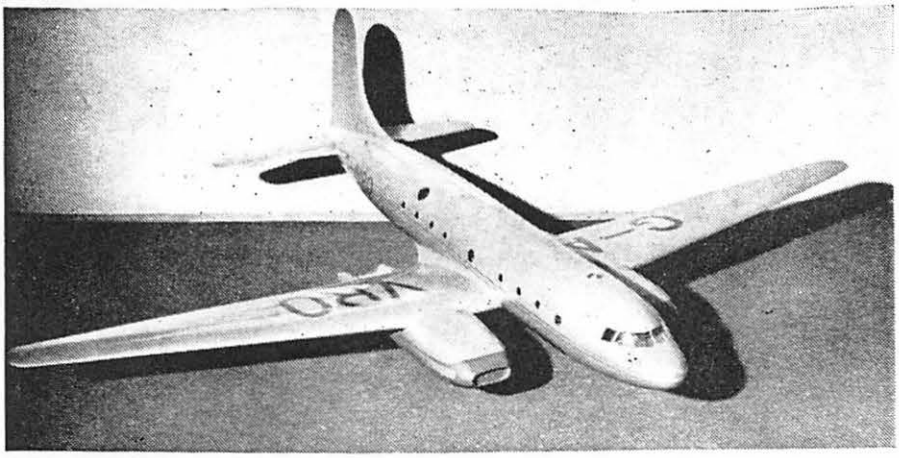

LEFT: Scale model of the Tudor VIII which will be fitted with four Nene jet engines in two Nacelles.

Turbine Era of "Flying Fifties" Target for British Aviation

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single-seater from an experimental toy to a practical combat aircraft is one of the milestones of achievement since the end of the war. Although a squadron of Gloster Meteors was in service before Germany surrendered, and scored a number of successes against the V-1 "flying bombs," the jet fighter was too late to play any significant part in the war.

Now, jet fighter squadrons form the first line of defense of the British Isles, and will soon entirely replace the propeller-driven fighters which have held sway since the days of Billy Bishop and the historic Sopwith Camels and SE 5's. And so this summer, for the first time, a squadron of RAF Vampires will fly across the Atlantic and will be showing their paces in many parts of Canada and the U. S. A.

In the bigger class of military aircraft, the jet bomber is still at an early stage. The first British all-jet bomber has yet to appear; although it will not be long delayed. The heavier class of jet-propelled aircraft raises many problems which remain to be solved, particularly that of achieving long range with turbine engines.

Thus, on both sides of the Atlantic some time must pass before the jet bomber wins the same place in its sphere as the jet fighters have done in theirs. In the meantime, the Avro Lincoln, successor to the Lancaster, will remain the standard medium-heavy bomber of the RAF.

But the real development of aviation lies, we may hope, in other fields —that of **commercial and personal flying.**. The past year has been a year of particular difficulties and troubles for British civil aviation—as it has been for civil aviation in so many parts of the world. Indeed, Trans-Canada Air Lines' profit on the North Atlantic, using DC-4M North Star aircraft with Rolls-Royce Merlin engines, is one of the few rays of sunshine in what has been, economically at least, a bleak and sombre year for commercial flying.

Nor can we expect a swift and joyous transformation of the situation. Air transport is, without doubt, fundamentally economic. Commercial aircraft **can** be made to support themselves financially, as well as aerodynamically, in the air. But we still have to clamber laboriously out of the troubles left by war. We may confidently expect that the years which will go down to history as the "Fighting Forties" will give place to happier years, which may well earn the title of the "Flying Fifties."

Meantime, we have learned that just as performance is the requirement of military aviation, so economy must be set as the first requirement of civil aviation. Economy is sometimes to be gained by performance—that is why we look to turbine transports for the future. But first of all we must found our fortunes on a revenue-earning potential which will exceed the operating costs. That means high payloads for the required ranges. It means also long life in service, it means low maintenance costs and reasonable fuel consumption. It means, above all, aircraft which will fit the routes and the traffic, and aircraft which can be depended on, year in year out, to achieve the three "R's" of air transport:—Reliablility, Regularity and Revenue. They must be safe, certain and competitive.

British civil aviation during the past year, equipped as it has had to be, with a series of stop-gap aircraft, has inevitably lost money. It is equally inevitable that so long as uneconomic aircraft are in service, money will continue to be lost. There can be no mystery about it, nor any magic answer.

Four quite distinct, although overlapping, phases of British civil aviation are beginning to be clear:—

Phase I—through which British aviation is still progressing, consists of civil operations with "stop-gap" converted war machines helped out by prewar types such as the DC-3. In this period the American DC-4 and Constellation stand out as two of the few genuine commercial types—and they both owe much to the war.

Phase II—now only beginning to emerge in Europe, is operation with "interim" types, first cousins, once removed, to the wartime aircraft.

Phase III—which is starting in North America but has not yet begun in Europe, is operation with the first true postwar commercial aircraft designed and brought into service since the war ended.

Phase IV—which still lies ahead, will be the turbine era of the "Flying Fifties."

Thus we are at present uneconomically hovering between Phases I and II. The Canadair Four in Canada and the Hermes IV in England both belong to the second Phase. They are, or should be, aircraft capable of holding their own economically. For Phase III we in Great Britain look to such aircraft as the Airspeed Ambassador and the Bristol 175 "Medium-Range Empire" type.

Phase IV has yet to be ushered in; with a prologue in Canada in the form of the Avro-Canada C.102, in England with such aircraft as the Vickers Viscount, the Armstrong-Whitworth Apollo and the research Nene-

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powered Viking. There will be still more exciting things to come.

But, one of the facts which has become quite apparent during the past year is that civil aircraft will not be in everyday passenger service for quite a few years to come, far longer than was forecast in the first flush of jet-mindedness at the end of the war.

Past experience enables us to guess how it will go. We had, first of all, that rush of optimism in which 500 mph jet transports appeared to be just around the corner. Now, before any have flown, we are in the throes of a reaction. We can see a few of the difficulties and problems still to be licked. Soon there will be some first flights. Again optimism will prevail and large headlines will doubtless again forecast the immediate triumph of the jet in civil aviation. That buildup will undoubtedly deflate as months go by and only difficulties emerge while the airplanes themselves are sometimes heard but rarely seen. The peaks of optimism and depths of pessimism will succeed each other until, some years from now, the first paying passengers may fly on a few good-weather services in jet aircraft.

Economy is Watchword

The jets are coming. But not today, nor yet tomorrow for scheduled passenger services. Economy is still the watchword, with competition as the most useful spur to prevent economy degenerating into stagnation.

That is, I think, a fair statement of how we stand. But, even though the struggle out of wartime upheavals is still putting a brake on the progress we had hoped to make, there is much in British aviation to give us confidence.

On the civil side, the **Avro Tudor** now gives promise of having outgrown its troubles and, as the Tudor IV is about to perform valuable service on the world's airways as a sound interim type.

The **Handley Page Hermes IV,** which is about to fly, possesses the "New Look" and, while free of the "built-in headwinds" which characterized its great predecessor the HP 42 of the early 1930's, has, we may hope, the same qualities of "built-in dividends." The Hermes IV is still an "interim" type. There are Hermes Vs, VIs and VIIs around the corner.

The **Airspeed Ambassador,** a real good-looker, will not be in service this year or next, being still at finishing school. British European Airways will be flying Ambassadors all through the "Flying Fifties."

As for the engines, the Rolls-Royce

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Merlin is now as well known—and, I fancy, as well liked—in Canada as in the U. K. Its turbine successors, the Rolls-Royce Dart and Armstrong-Siddeley Mamba have made their first flights and, during the next year, will begin to build up background; just as the bigger Bristol Theseus turbine is doing already, flying between England and Malta week in, week out, in the outboard nacelles of an Avro Lincoln of RAF Transport Command. Bigger and more powerful engines—Eagle, Centaurus, Proteus, Python, Avon, Ghost, are all making progress.

So, as we emerge from the war era of Phase I and enter Phase II of our postwar reconversion, the primary thought in our minds is the work still to be done. In the words of Disraeli "The present interests me more than the past, and the future more than the present."

Supersonic Fighters For British Arsenal

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tion — or of producing anything at all —may be nonexistent. So the type of mass-destruction weapon to be used, is something which must be regarded as an integral part of the heavy bomber design.

In the old days it was so easy—we had merely to produce a bomber with the greatest payload. If one bomber carried 10,000 lb. of bombs and another carried 11,000 lb., it was a simple matter to arrange for the latter to carry an extra 1,000-lb. blockbuster. Now the chemists and physicists must work out exactly what amount of bacteriological or radioactive material must be stowed to ensure the necessary human destruction.

The atomic weapon does not appear to suit British economy very well, because miles of concrete and thousands upon thousands of persons are needed to produce the necessary fissile material. A question was recently asked in the British Parliament about atomic weapons and apart from the statement that work is continuing, there is no clue as to how they will match up with the bomber requirements. It is merely hoped in British circles that the two industries, aviation and nuclear are working hand in hand.

The bacteriological bomb is ideally suited to the British effort, and in any case British laboratories have never relaxed their lead over the rest of the world in producing novel diseases which would spread quicker than any serum could be distributed.

Producing the viruses in the laboratory is one thing, but fitting them into a heavy bomber so that they can be sown effectively is, however, another. Many people think that bacteriological material would never fit into a bomb. This would not appear to bear examination, since using British bomb sights and radar no more effective than were employed in the last war, we could hit any water supply and reservoir entirely on instruments with the greatest ease (given the range).

The bacteriological bomb is such a fantastically powerful instrument of mass destruction that it seems almost a waste of effort to bother with nuclear weapons which are very messy since they knock down the buildings and can contaminate soil for generations. Also they are embarrassingly heavy in a jet bomber.

Turning to the fighter position, we appear to be safe from an attack so

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Testing an ejector seat at the Ministry of Supply's experimental station, "Horace," a 200-lb dummy, goes for a quick ride up the scale.