AIRCRAFT

News

DECEMBER · 1950

THE HYDRA-STATIC TWO LEADING SHOE AIRCRAFT BRAKE

THIS brake consists of two self-aligning shoes operated by two wheel cylinders spaced diametrically opposite.

Each wheel cylinder has two pistons of a different form : one having a slot at right angles to the axis of the bore, which operates the shoe when the brake is used in forward rotation, and the other with the slot inclined at an angle to the bore which forms the abutment for the other shoe in similar condition.

This inclined slot has a predetermined angle which allows the shoe to accurately align itself to the drum as well as forming the abutment. The total shoe reaction is transmitted via a shoulder on the piston to the cylinder body.

By this arrangement, two-leading shoe operation is obtained in either direction, and greater power for a given input and greater stability is obtained.

TYPICAL FIGURES

$5\frac{7}{8}'' \times 1\frac{1}{2}''$ Approximate maximum dynamic torque 2,950 lbs. inches, at 60 lbs. per sq. inch lining drag. Two $\frac{5}{8}$ ins. diameter cylinders.

$7'' \times 1\frac{1}{2}''$ Approximate maximum dynamic torque 4,200 lbs. inches, at 60 lbs. per sq. inch lining drag. Two $\frac{3}{4}$ ins. diameter cylinders.

Master cylinder for use with the above brakes is a 15/32 ins. diameter $\times$ $1\frac{1}{2}$ ins. stroke design.

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AIRCRAFT NEWS

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DECEMBER, 1950

Editorial

ONCE AGAIN it is with pleasure that we take this opportunity of wishing all readers a Happy Christmas and a Prosperous New Year.

With these greetings, too, goes the hope that your interest in the field of light aircraft has been maintained during the past year, through the medium of this magazine, and that you will continue to read its contents with increased interest during the ensuing year.

To those whose contributions, however small, have enabled us to present information which would not otherwise have been possible, we extend our sincere thanks.

Austers in Antarctica, 1949-50

By SQUADRON-LEADER G. B. WALFORD, R.A.F.

Sqdn.-Ldr. G. B. Walford, on the extreme left, with his team, Sgt. P. D. Weston, B.E.M., Flt.-Lieut. H. M. H. Tudor, D.F.C., Cpl. L. A. Quar and Cpl. W. D. Gilbey on his right. Just behind, the R.A.F. flag flies in Antarctica for the first time.

FOREWORD

One year ago a scientific expedition, sponsored by the Norwegian, British and Swedish Governments and supported by the British Royal Geographical Society, The Scott Polar Research Institute, The Norwegian Polar Institute, and the Swedish Geographical Society, left Europe for a two-years-and-a-half stay in Queen Maud Land, an unexplored tract of the Antarctic, lying between latitudes 20 deg. west and 45 deg. east.

Part of the British contribution to the expedition was the provision of a detachment of the R.A.F., comprising two officers, three non-commissioned officers, and two Auster 6 aircraft. Their function was to provide aerial reconnaissance in the search for a passage through the pack-ice, for a landing place on the Antarctic ice-shelf, and for advance bases on the mainland.

The R.A.F. Antarctic Flight, having satisfactorily completed its work, has now returned to the United Kingdom, with the

exception of Cpl. Quar, who remained to act as radio operator for the expedition. The following article by the Commanding Officer of the R.A.F. unit describes conditions, and difficulties encountered between the period of departure from London and their eventual departure from Antarctica. It is being presented in two parts, the final part of which will appear in next month's "News."

"THE BEST EQUIPMENT is only just good enough for Antarctic exploration." So wrote Captain Scott early in this century. It was with this in mind that we equipped ourselves for our voyage to the far south.

Readers may be familiar with the story of the voyage to establish the Norwegian-British-Swedish Expedition in Queen Maud Land, but it may be as well to trace an outline of some of the reasons and events which led to it.

The continent of Antarctica is almost the same size as the United States and Europe put together, and only a very small portion of its six million square miles has ever been surveyed. The history of its early exploration by Scott, Shackleton, Amundsen and others is now well known : but these early heroic enterprises were concerned mainly with the conquest of the Pole, thus it was perhaps inevitable that the areas which provided the most convenient approach to the Pole should be the first to be explored, and about which most is known to-day. This applies to the Ross Sea sector. On the other side of the continent the peninsular of Graham Land juts out beyond the Antarctic circle towards Cape Horn, and has now been extensively surveyed largely by the Falkland Islands Dependencies Survey, who have employed Auster aircraft for several years. The only other information about what lies inland in the continent is based on the information brought back by a very limited number of aircraft flights, but the entire coast-line has now been roughly charted. Even to-day, therefore, Antarctica remains the greatest piece of geographical exploration yet to be undertaken.

This, the highest, the coldest and most remote land in the world, is known to contain the answers to many questions of geographical and scientific concern. For example, observations over the last hundred years of the Arctic regions have shown that conditions there are getting warmer. The pack-ice is receding, and vegetation is

growing farther and farther North. Opinion is that an increase in solar activity is responsible for this change. But what interests the glaciologist is whether this warming-up process covers the whole world, and the logical place to pursue the investigations is in the Antarctic. This is the theme which inspired the planning of this Expedition. The glaciology, the study of the movement and behaviour of ice, leads therefore the scientific programme of work which includes geology, survey, physics and meteorology.

The plan was that a party of some fifteen scientists, drawn in equal numbers from the three participating countries, should be deposited in Queen Maud Land, the Norwegian sector of the Antarctic, where they would remain for two-and-a-half years. The vessel which would carry them

The "Norsel" surrounded by nature's barrier to the Antarctic.

there would, however, return to Europe at the end of the first season, and sail south again the following year. But no landing had ever been made in this rather inaccessible sector of the Antarctic. The Germans had, however, with flying-boats, obtained in 1939 a large number of photographs of the central portion, revealing interesting and extensive mountain peaks about a hundred miles inland.

Nature, however, does much to deter the visitor to the Antarctic, surrounding it with great natural obstacles. First the world's most tempestuous ocean must be crossed, next there stretches the unpredictable barrier of pack-ice, and then there remains the insecurity of the continental ice and sudden and violent gales. The bad weather in the

southern ocean, the "roaring forties" and "furious fifties" is due largely to the rapid circulation of a series of depressions around the continent, with no land mass to slow them down or interrupt them. Pack-ice surrounds the shores of the Antarctic even in the short summer season of December to March and its behaviour is so erratic and knowledge of it is so incomplete that it is impossible to forecast when or where penetration may best be attempted. Passage through it can only be made by vessels built for the purpose, and in some areas, notably the Weddel Sea, which adjoins Queen Maud Land, it can be dangerous in that ships beset in the pack can be crushed and destroyed by the pressure, as was the fate of Shackleton's ship *Endurance*, and other boats. The continent is covered with a layer of ice of very great thickness; this layer spreads out and over the land beneath it to form a floating apron on the sea called the shelf-ice, which is characteristic of Queen Maud Land. Its insecurity lies in the fact that portions of it are liable to break off and form icebergs which may be as much as a hundred square miles in area.

It was appreciated in the planning stages that aircraft would be invaluable if not essential, to the search for a suitable landing-place. The Expedition received offers from many different quarters for this purpose, but Royal Air Force participation was secured as a result of the great interest of the Chief of the Air Staff, who is a member of the council of the Royal Geographical Society, in this project. Thus an opportunity was found not only to assist an international scientific project in the far south, but for the Service to add to its knowledge of work in polar conditions and to visit the Antarctic for the first time.

The R.A.F. Antarctic Flight was formed in the spring of 1949, and we set about the first stage of our adventures —the planning.

Originally it had been desired to carry a helicopter for this reconnaissance work, but on closer examination it had to be rejected on the grounds of impractibility. Casting about for a suitable alternative, the Auster appeared to satisfy all the requirements, and the expedition committee agreed with our recommendations for their use.

The problem at this stage resolved itself into the following :—

1. How to get two aircraft, a spare one being essential, on to the deck of a small 600-ton sealing vessel already loaded to the brim with expedition material.

2. How to protect these aircraft from the effects of 8,000 miles of varying weather, and yet be able to operate them from the ship at short notice down south when required, either as ski-planes or float-planes.

3. How to ensure that they would work reliably in low temperatures, and

4. How to avoid getting lost when flying over the featureless pack and shelf-ice.

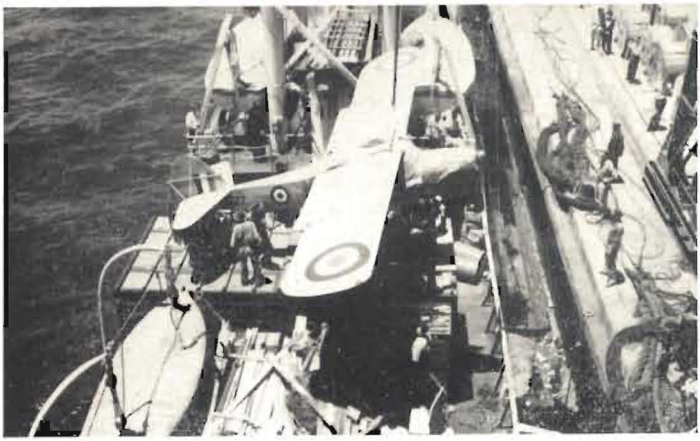
There had been many excursions to the Antarctic employing aircraft before, but they were normally of two classes. Firstly, those that were concerned with a reconnaissance of the coast, using sea-planes from convenient vessels, and secondly those expeditions which carried their crated aircraft through to their destination on the continent, there to be erected and flown. The fundamental difficulties with us were therefore the factor that the small ship was carrying everything needed by fifteen scientists for two-and-a-half years, and could therefore devote little space and facilities for aircraft, and that air reconnaissance would be expected from us at any time after the first pack was encountered, and to be maintained throughout the search for and establishment of, the base on the continent itself.

The solution to these problems of stowage and handling was due in large measure to the ingenuity and persistence of the staff of Auster Aircraft Ltd. There is no space to catalogue the detailed list of requirements or the measures and modifications adopted to meet them : a general description has, however, been given in previous issues of this *News*. Mention however must be made of the admirable crate designed and produced by the firm which housed one aircraft in a partially assembled state, together with all the spares and accessories in specially-constructed cupboards. This box acted as a flight office, hangar and workshop at the expedition base. We had obtained ski equipment from Northwest Industries in Canada, and from Austers, and at the last moment a float assembly was designed and constructed by that firm in time to reach us before departure. Flight-Lieutenant Tudor and myself had not had opportunity to acquaint ourselves with the technique of ski-planing or

float-planing, and looked forward to the experience with moderate confidence.

To quote Captain Scott again, "The worst part of an expedition is over when the ship sails," and I think that was true in our case. Without wishing to minimise all the industry and energy which went into the preparation and assembly of our equipment I must pass on to the story of how it all behaved.

The Expedition ship *Norsel* arrived in London in the middle of November last year, and seemed to have no space whatever left to take on board the two huge crates which lurked like two prefabs on the quayside nearby. But somehow things were sorted out, and we found that the



One aircraft was lashed to the top of the large crate at Cape Town.

large crate stowed athwartships on the afterdeck fitted with inches to spare into the space assigned to it ; the smaller crate was fitted in nearby.

I felt rather like the traveller who has at last had the satisfaction of seeing all his luggage aboard. The twenty-eight days' passage to Cape Town passed uneventfully, but the sea-water was finding its way into the small crate and doing a certain amount of damage to the aircraft parts which were secured to the floor.

In Cape Town we realised that we would have to reduce

the space we occupied on board, and also have to arrange one aircraft in a manner which would enable it to be flown either from the water or the ice at short notice. This meant having to build one up and expose it to some of the worst weather in the world. We worked hard on the quayside in Cape Town erecting the aircraft from the small crate and hoisting it on board to rest on top of the large crate containing the partially assembled aircraft. With its undercarriage removed it was screwed down and lashed athwartships, protected somewhat by the boat-deck and, in spite of the rather pessimistic opinions of the Royal Navy in Cape Town, we reckoned we had a reasonable chance of getting it through safely.

Two days after leaving Cape Town the "roaring forties" greeted us with gales and heavy seas. The after-deck which carried the aircraft crate was permanently awash in swirling water which rushed across this deck as the ship rolled. Its exit through the scuppers was obstructed by a number of oil barrels, with the result that compression was set up and the floor of the crate began to give way to this surging tide. Our first battle had begun.

(To be continued.)

Miscellaneous Jottings

MR. C. H. PERREM

FOLLOWING THE ANNOUNCEMENT last month of the safe return of Mr. and Mrs. G. H. Perrem to Umtali, Southern Rhodesia, a letter has now been received from Mr. Perrem, part of which reads as follows :

"VP-YGR performed very satisfactorily indeed over the whole route, and required no service, in spite of long hours daily, except at Malakal, where our take-off was delayed a few minutes owing to the carburettor float-valve screwing itself out of its seat.

"We averaged between seven and eight hundred miles per day, with the longest day completing 1,000 air miles.

"Please give our regards to the staff and thanks for a good job of work."

HE FLEW BY NIGHT

THE THEFT OF MR. E. E. KIMBELL'S AUTOCRAT, G-AHHP from Sywell Aerodrome, Northampton, by the "flying Borstal boy," was prominently featured by the English press last month. The boy, who has had but one flying lesson, made a daring take-off between midnight and 3 a.m. from the unlit airfield, and finally landed in a field at Peronville, forty miles from Paris.

The fact that this was not the first occasion on which an Auster has been stolen prompted the following comment from test-pilot Leslie Leetham :

"It would now seem necessary to change our claim of 'The all steel Austers' to that of 'They all steal Austers.' "

HORMONE SPRAYING IN APPLE ORCHARDS

THE APPLICATION OF HORMONES by aerial spraying has recently been tried as an experiment on a farm in Fitchburg, Massachusetts. Hormones are apparently the latest medium for controlling the pre-harvest dropping in apple orchards.

According to the farm-owner the spray application was five gallons to an acre, and the spray remains effective for ten days, after which it must be renewed. Although it is claimed that the use of hormones is valuable in controlling droppage due to strong winds, the spraying was originally intended as a protection against losing the last part of the crop when it matured too fast to harvest.

THREE CAME BACK

WE DO NOT NORMALLY give publicity to air accidents in this magazine.....after all, it is the *cause* of an accident which is of value to pilots, and the cause is not usually announced. In the case of the following mishap, however, we feel that the facts may well prove of general interest.

About the middle of November an Auster, being flown in heavy wind conditions across South Island, New Zealand, hit the top of the 7,332 feet Faerie Queen Mountain in the Spenser Mountains, near Hanmer. The three occupants, Messrs. P. B. Legge (pilot), W. Tatham and P. T. McDavitt, not only escaped without injury of any form, but also succeeded in climbing down what is a rarely-climbed peak, to report.

Our correspondent states that New Zealanders are adamant on the fact that if the aircraft has not been an

Auster the occupants would most certainly have been killed, and even so it is amazing that they escaped unhurt.

In a graphic account of the mishap, Mr. Legge states that a few minutes before the collision he was flying along at about 5,000 feet, possibly some 900 feet under the cloud ceiling. Suddenly the aircraft was whisked up in a violent air current to 7,500 feet, so that he was flying blind through a thick layer of cloud. Then, just as suddenly, a violent down-current took the aircraft back to 6,000 feet in a few seconds.

As Mr. Legge was climbing at full throttle through cloud which at times hid the wing tips a slight gap revealed that the machine was about thirty feet away from the mountain face, and heading straight for it. Mr. Legge thought that the summit could not be far away, and he hoped that with luck he might be able to clear it or, at the worst to pancake on to the abrupt slope. The pancake landing was, however, inevitable, and the aircraft finished up in a patch of snow about two feet deep ; fortunately no further movement occurred once the ground contact was made.

There was a rock under one wing which the aircraft missed, otherwise the machine may have bounced away and would probably have tumbled backwards over a 2,000 feet precipice.

Apart from a damaged tail-wheel and a cracked propeller, no other damage resulted to the Auster. According to those who know the country, however, it is thought most unlikely that the aircraft will be salvaged, as some very strong winds blow in the apparently exposed position where the aircraft is resting. The probable result is that it will be blown away in one of the next strong winds, which seems a great pity, since the damage is so negligible.

The Press is most welcome to utilise subject matter from the *Aircraft News* in whatever manner it may desire with or without acknowledgement. The Editor will also be pleased to be advised of any items suitable for inclusion in a future issue, and to receive photographs of Austers and those who fly in them.

Auster Personalities

No. 8. MR. A. MacKENZIE-LOW

MR. MACKENZIE-LOW is an Auster owner who started flying in August, 1948, at the Hastings Airfield in a club AUTOCRAT. The following year, in July, he bought his first aircraft, an Auster Model D 2-seater, christened "Bluebird." This aircraft gave him much pleasure, and on one occasion a forced landing in a stubbled field on account of low clouds and an empty petrol tank. The aircraft had an exceptionally good climb, however, which was very useful for getting out of this and other small fields.

The Auster "Model D" photographed after its forced landing.

In October, 1949, Mr. MacKenzie-Low took delivery of an ARROW, which he christened "Firefly." This was fitted with a Goodyear crosswind undercarriage, cabin heating, steerable tailwheel, starter, generator, and navigation lights. In order to test the possibilities of the aircraft with crosswind undercarriage, Mr. McKenzie-Low, once he was familiar with the castering wheels, decided to make a crosswind landing alongside the furrows of a ploughed field. All went well, but when reaching the end of the run he found that the aircraft could not be turned

round in order to taxi back, so without any help he had to drag the aircraft backwards over two hundred yards, lifting the tail. Such experiments were never repeated !

Having become accustomed to the crosswind undercarriage, any aircraft without this form of landing gear now has no appeal to Mr. MacKenzie-Low.

A somewhat amusing experience occurred once when he flew out over the sea in the ARROW, and apparently disappeared from a coast-guard's view. On his return to the airfield at Hastings a policeman was enquiring after the "lost" aircraft, and asked for a search. Says Mr. MacKenzie-Low : "My chief gave me a wink, and said, 'Go and have a look'." So he went out to look for himself !

In October, 1950, the ARROW was replaced by an AUTOCAR, also fitted with self-aligning landing wheels, and equipped with starter, generator, artificial horizon, direction indicator, sun-blinds and floor carpets. This was christened "Blue Sky," rather optimistically for England. The first few days with the AUTOCAR were spent trying different loads, getting the feel of the aircraft and establishing its performance. "The AUTOCAR is," says Mrs. MacKenzie-Low, "even better than I imagined it would be."

On a flight to Le Touquet the "wobble-wheels" were put into very good use landing crosswind on the runway. As always, "Blue Sky" seemed to sit down without any "feeling." Subsequently, continuing to Toussus le Noble, "Blue Sky" was parked with one wheel turned out at an angle, which always give the impression of a bent axle. Mr. MacKenzie-Low had gone over to the control tower to report, and when he returned to his aircraft, found a mechanic with tool-case bending over the offending wheel, chatting away fifty words to the minute in French. "I thought he wanted to dismantle the wheel. I tried to make him understand that it was quite alright.....but without luck. So, running as fast as I could to the control-tower, I

Mr. MacKenzie-Low with the Autocar "Bluesky."

rushed someone over to the aircraft who could speak English. This person confirmed my suspicion that the mechanic fully intended correcting a bent wheel-axle."

Finally, Mr. MacKenzie-Low offers quite unsolicited praise for the AUTOCAR, saying that at all the aerodromes where he has been, everyone was amazed at the aircraft, and remarked what a beautiful, sturdy looking plane it is. "Furthermore, people often say: 'What is all this fuss about Austers,' and I say to them, 'If you haven't flown an AUSTER you haven't flown an *aircraft*'."

Tabloid Wit

ALL TOLD

Mr. Happy took his family to see "Ali Baba and the Forty Thieves," at the local theatre.

After paying what he thought was an exorbitant price for admission, he gave the man in the box-office an angry look and muttered :

"Now we'll go in and see the other thirty-nine !"

° ° °

HIGH TALE

Two skunks got married. They are now looking forward to a little stinker in the Spring.

CLASSIFIED ADVERTISEMENTS

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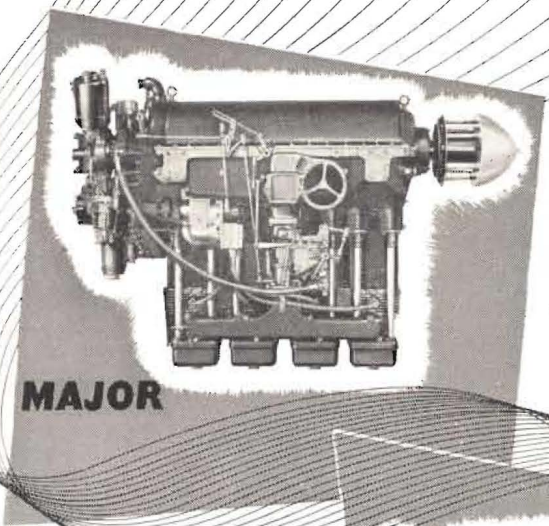

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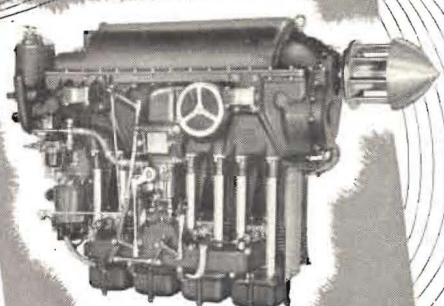

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