AUSTER NEWS

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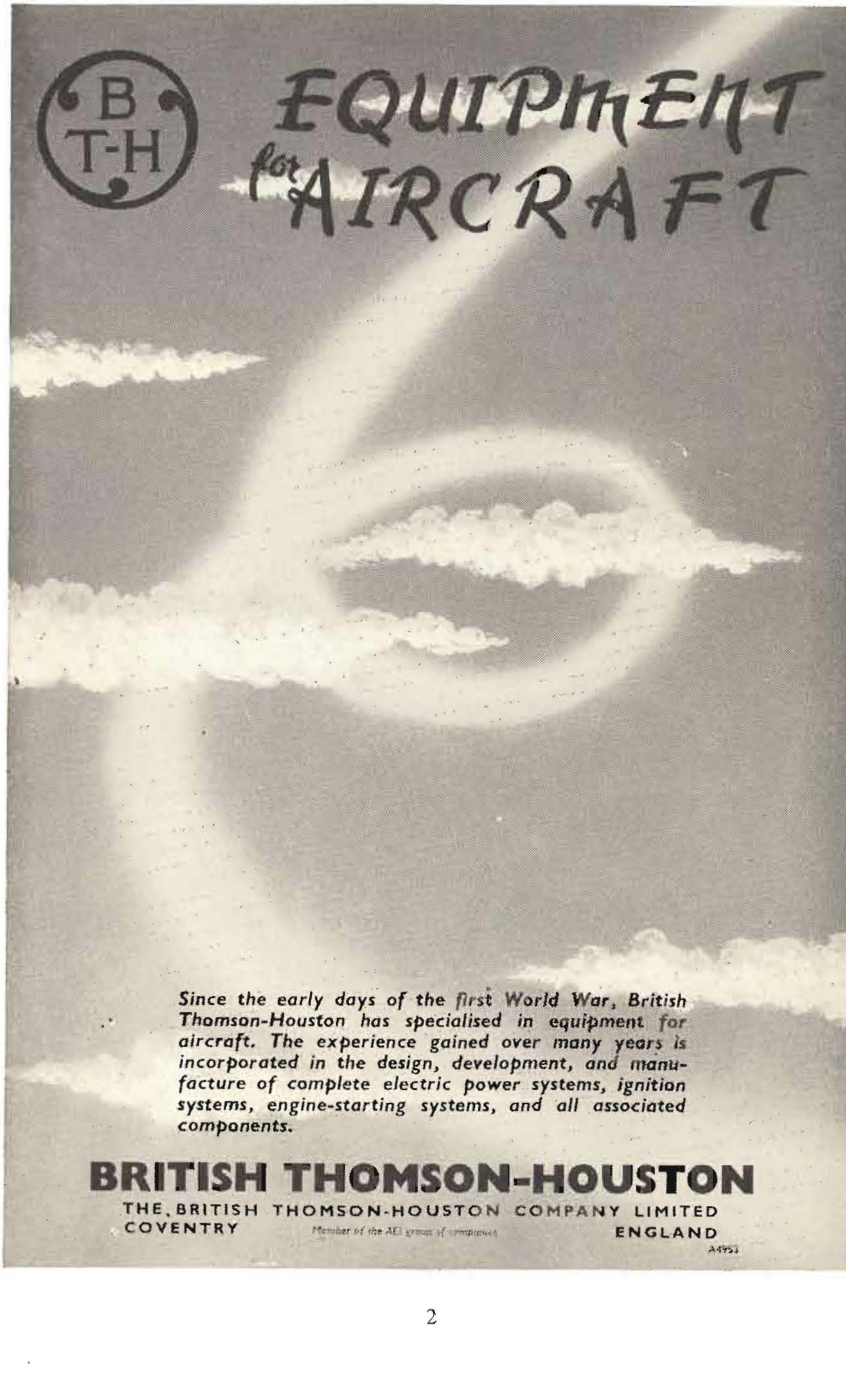
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AUSTER NEWS

Vol. 6 : No. 6 July/August 1957

Something New at Farnborough

THE AIR DISPLAY AND EXHIBITION held annually by the S.B.A.C. at Farnborough aerodrome will herald, this coming September, the announcement of an entirely new aircraft built by this company.

It is the Atlantic. A nose-wheel undercarriage, 205 h.p. available for take-off, ultra wide doors (nearly four feet across) and a spacious air-conditioned cabin are only a few of its features. New standards of styling, comfort, and flying ease, have been set by the Atlantic. We haven't the space to describe it here, but we shall be delighted to see you at Farnborough and show you the Atlantic—on Stand H.

Cover Photo

THE STURDY AUSTER MK. 9 — work horse of the British Army—is shown equipped with message/mail pick-up gear. A combined hook and weight is towed by the aircraft and engages in a line positioned between two posts some ten feet above the ground. A message bag is attached to the line and is snatched by the low-flying aircraft.

The AGRICOLA goes to work in NEW ZEALAND

Now that Agricolas have been in service for some time, reports are becoming available which give some indication of the success the aircraft is enjoying.

Tom Ewart, the New Zealand correspondent for 'Aircraft', Australia's foremost aviation magazine, accompanied an Agricola to a topdressing strip. Some of his observations, containing both praise and criticism, are reprinted below.

FIRST OF ALL it can safely be said that the Auster Agricola has not had to live down claims made by its makers and agents. After a close examination of the aircraft's performance in the field on actual topdressing, the publicity claims made for the aircraft can be assessed as fair and reasonable. Already the aerial topdressing industry in New Zealand has had its share of extravagant propaganda about aircraft and in making an assessment of the Auster it was something of a relief to find early in the piece that it would be entirely unnecessary to discount everything that had been written and spoken about it.

The evaluation started at some ungodly hour in the morning from some rolling downs behind the home of Claude Stephenson, the manager of Airlift (NZ) Ltd. Stephenson's wide topdressing experience embraces practically every type of aircraft engaged in the New Zealand industry. The aircraft was the first Agricola imported into the country and it rolled off the downs almost too easily to be true.

The starting point was between two Wairarapa towns, Featherston and Martinborough, in a large district well known for its turbulence. First stop was at another town in the area, Carterton, where the loader drive had to be uplifted. Here the landing characteristic of the Agricola became apparent. It made a very steep approach and rolled to taxying speed in a surprisingly short distance.

Over the Riumtaka range to the scene of topdressing near the capital city of Wellington there was a fair amount of turbulence, a condition usually to be expected in westerly conditions. It was noted that there was absolutely no need to struggle with the Auster. Admittedly it was occasionally buffeted around but it was thoroughly determined to maintain straight and level flight without any special efforts on the part of its pilot. That inbuilt ability is important when an aircraft is to be used on aerial topdressing in New Zealand. Any time it is tiresome for a pilot to be the go-between when aircraft and turbulence are fighting, but it is worse when the aircraft is a little one and the venue is framed by hills.

The loader driver was dropped on one mountainous strip to shift a loading tractor from A to B. With the westerly blowing a fairly constant 15 knots and gusting to 20 on the tops a call was made to another strip on a ridge, roughly into wind, to inspect a fuel dump. Sheep had to be beaten off—no doubt enjoying new grass on the strip. From there, a call had to be made to Rongotai where, in spite of the continued expenditure of millions, bulldozers will never shift turbulence or the surrounding obstructive hills. In fact, experience already gained with the Agricola raised the thought that it could use this fickle airfield more confidently than passenger-carrying airliners would in the future.

The scene of topdressing operations was the Pauatahanui airstrip north of Wellington which, interesting enough, was one of the few airstrips which had a formal opening ceremony. That was performed by then Director of Civil Aviation E. A. Gibson on 30th September, 1955. It was not exactly a good choice for an official ceremony because it runs across the prevailing wind.

The Agricola is seen here operating over typical New Zealand hill land. Turbulent conditions call for excellent response from the aircraft's controls.

In spite of a wind which maintained a fairly constant 10 knots across the strip and gusted up to 15 on the landing end because of a valley, the Agricola started to sow basic slag. That material provides an acid test for any topdressing aircraft. It is very fine and dusty, even when oil treated. It does not flow evenly and generally topdressing pilots prefer to avoid it because hoppers cannot cope. A lot is said for the design of the Agricola hopper, therefore, when it can be stated that slag was sown without difficulty. The binding nature of the material was demonstrated by the loader which had trouble transferring the load to the aircraft. There is no doubt at all that many loaders still in operation are unsatisfactory, in many respects, particularly with regard to stability, ease of steering and handling and load transfer.

The Auster Agricola carried 15½ cwt. of slag, its agricultural overload payload. It took off downhill and cross wind. It showed no tendency to swing and a noteworthy point was that it climbed steeply and briskly from the moment it became unstuck. There was absolutely no tendency to wallow or struggle for altitude, even with 15½ cwt. aboard. There, again, it demonstrated another characteristic which should be possessed by topdressing aircraft—the ability to get away from the ground and trouble, quickly.

During the sowing run the slag left the hopper with a flow that was remarkably even. There was a noticeable drift of dust, but the farmer was satisfied that the major portion of the material was landing where it was required. As an instance of the results from aerial topdressing, that same farmer, Mr. W. K. Bradey, of Puketea, said his wool production had almost doubled over a period of six years. He also demonstrated a sidelight to the industry universally appreciated by topdressers—the hospitality of farmers. Morning tea was provided in the field and he supplied transport to his home where Mrs. Bradey laid on an excellent lunch.

But, to return to the performance of the Agricola. It landed with a 15-knot gusting wind at the bottom of the Pauatahanui strip without any difficulty. Claude Stephenson emphatically stated that it was the best ground handling topdresser he had ever flown. And with the exception of the Edgar Percival EP.9 he has flown the lot. Rudder controlled the cross-wind component and the wide track undercarriage gave stability on the ground.

The first Auster had completed about 150 hours when it operated at Pauatahanui. Only two bugs had been encountered in that period. One had been fractured exhaust stubs, a problem which looked like being cured with welded strengtheners. The second had been fractures in the large oil cooler, an accessory which had proved its worth. This difficulty had been overcome by extra bracing. Another point which at first glance might seem unimportant concerns the colour scheme adopted for the aircraft, a blending of greyish blue and green. It should be noted by those who might be experts in future wars that these are most effective camouflage colours. A pilot in another aircraft was unable to see the Auster on the topdressing circuit. This was dangerous and if an aircraft were ever forced down in some of New Zealand's lonely mountains it would never be found.*

The cabin of the aircraft is noisy but the problem could largely be overcome by wearing a crash helmet. Such a recommendation has been made by C.A.A. for all topdressing aircraft operating in New Zealand. But, as is well known, crash helmets are about as popular for headgear as belltoppers. It looks, however, that they will become mandatory. They have already saved lives.*

The manufacturers of the Agricola have taken special pains to lessen pilot fatigue by introducing hydraulic controls on the flaps and hopper doors. This innovation is most successful and for its introduction they showed an excellent appreciation of the job the aircraft was to do. They have also introduced a triplex windscreen in place of the usual perspex which quickly becomes scratched and dirty with phosphate.

In all fairness, however, it must be pointed out that the Agricola's noise seems to come from the induced cooling system rather than the engine or propeller. In plain language, the exhausts blow through the air ducts and cooling air is available, therefore, according to the power demand. The system is the same as that used on old goldmining sluicing claims to 'suck' away surplus water. A sluicing nozzle was shot up a large pipe which began in the unwanted water and ended over a bank. The displaced air took the water with it. In the case of the Agricola the displaced air brings in a strong cool draught of more air. The Agricola, as a result, seems to be entirely free from the temperature problems which have arisen with other topdressers using Continentals in New Zealand. In fact, it was noted with no little amazement that the instrument panel did not contain a cylinder head temperature gauge. There is only an oil temperature gauge which hit 80°C. and stopped there. And talking of gauges, it might also be added that the pilot has to slip off a shoulder strap to see the fuel gauge.*

Improved Revenue Earner

Even though 150 hours are nothing in the life of an aircraft—especially when it comes to costing—they do give an idea of direct operating costs and, more accurately, revenue. On the revenue side it looks as if the Auster has a 15 per cent advantage over topdressers in the same class. The Auster, however, does lose a bit on its competitors because of its higher capital cost—£NZ9,280. The 15 per cent advantage in earning power, however, would more than balance the higher figures that would naturally be listed under fixed costs, such as insurance and depreciation.

The lack of afterthoughts in the design of the Agricola applies to the 'clean' hopper outlet and also to the spraying installation in the wings. The aircraft I inspected had no spraying installation—in fact aerial spraying is only starting to develop in New Zealand. But the idea of housing not only the tanks but also the booms in the wings certainly obviates drag. Only the spray nozzles protrude below the surface and to compensate for any slight drag that might be caused by them, the hopper doors can be removed. The hopper and spray tanks are, of course, separate installations and this obviously facilitates change-over from one operation to the other, a feature that would have an even greater appeal in Australia than New Zealand. Large inspection panels in the wings afford access to the spray tanks. Capacity is 144 imp. gallons.*

The thought given to maintenance deserves mention. Even its unattractive canopy can be excused on the ground of maintenance simplicity. There is no costly curved perspex, and replacements, even of the triplex windscreen, could be cut from standard sheets. Legs, wheels and elevators are all interchangeable. That is not unique as the Fletcher also incorporates interchangeability. But it is important when an operator has to consider capital tied up in spares. If, for example, he holds a spare oleo, he has no need to worry whether it is right or left. Inspection panels and cowls can all be removed quickly, revealing the easy accessibility of all items which are most likely to require servicing.

There has long been considerable argument as to whether a top-dressing aircraft should be fabric or metal covered. Austers have stuck to fabric and they have introduced an innovation by using breathers to allow for temperature and altitude changes. Phosphate corrosion is not such a bogy as it was once thought to be, but the exponents of fabric aircraft can rightly claim that it can be more readily rebuilt than metal counterparts. The rejuvenation of dilapidated Tiger Moths has proved that point.

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*[EDITOR'S NOTES.—*Aircraft colours:* A special butyrate finish has been produced for use on the Agricola to withstand the corrosive effect of the agricultural chemicals dispersed by the aircraft. Initially only two colours were available—those mentioned in the article—but now a wide range of colours is available to individual requirements. This will alleviate the problem of location should the aircraft put down in emergency. *Fuel gauge:* A transparent panel is now being built into the cabin sides of Agricolas. This allows pilots to read the wing-mounted fuel gauge without the necessity of slipping off the shoulder harness. *Noise:* In the light of experience, modifications have already been made to the Agricola's 'jet cooling' system. These have effectively lowered the noise level both inside and outside the cabin. *Spraying equipment:* Since this article appeared an internally-mounted spray gear has been fitted and successfully tested. This equipment is capable of high density spraying, such as gorse spraying in New Zealand where up to 40 gallons per acre is required. Further information on the spray version of the Agricola will be given in a future issue of the *Auster News*.]

The WEATHER FORECAST

by Philip F. McAllen

Meteorological Office, Air Ministry

FROM THE REMOTEST PERIODS, man has practised the art of weather forecasting. Before the advent of modern scientific aids, predictions were confined mainly to changes in local weather conditions based on observation of wind and sky, but in its more sublime form the art has been treated in the writings of more than one eminent philosopher. In recent years, the growing need of mariners and aviators to have precise information of weather conditions likely to be encountered on their intended routes has been largely responsible for bringing about the development of weather forecasting from a naïve art to a scientific study. Thus, apart from its many other functions, the weather forecasting service has come to comprise an essential part of the complex system of modern transportation.

Reliable and frequent weather observations by thousands of skilled observers on land, sea and in the air form the foundation upon which all forecasts are made. The observations are plotted symbolically on an outline map at regular intervals throughout the day and night. The maps give the forecaster a synopsis of the current weather situation and, for this reason, they are called 'synoptic charts'.

No country could forecast weather effectively without the co-operation of its neighbours. For example, when a forecast is made for 24 hours ahead for the British Isles, the forecaster needs to study synoptic charts over an area which covers the whole of Europe and the North Atlantic, bounded by Greenland in the north, and the Mediterranean in the south. If then he wished to give an outlook for a further 24 hours this area might have to be extended westward to include North America and, eastward, well into Asia.

To make this possible there exists the World Meteorological Organisation, with its headquarters in Geneva, one of the many functions of which is to co-ordinate the arrangements for exchanging information. Weather observations from the majority of countries are interchanged and an internationally agreed code is used for transmitting them. The international weather code not only enables reports to be passed by land-line or radio in a compact form, but also makes it possible for the reports to be understood by meteorologists of all nations irrespective of language. For the meteorologist, the political divisions of the world are virtually non-existent and he has a share in what must be one of the best examples of international co-operation in being.

Observing weather is, in itself, a specialised branch of the weather service and surface observations are prepared in a standard form to include the following information:

Barometric pressure and barometric changes.
Temperature and humidity of the air.
Direction and speed of the wind.
Type, height and amount of cloud.
Visibility.
Details of past and present weather.

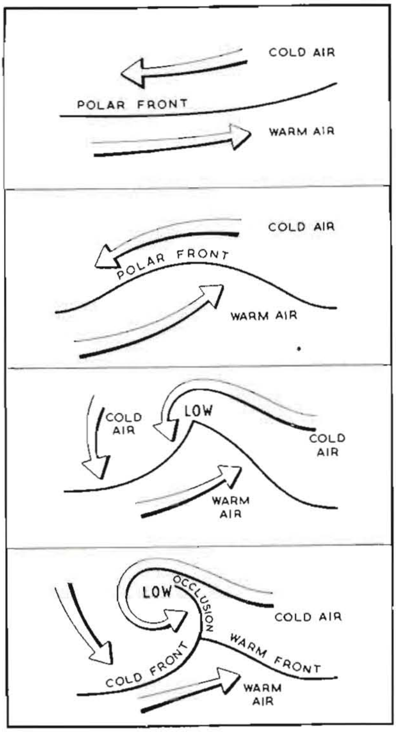
Apart from the standard instruments such as barometers, wet and dry bulb thermometers and other equipment that the meteorologist has at his disposal for recording details of surface weather conditions, a number of observing stations have special facilities to enable upper air observations to be made.

At sea, information is supplied by ships which take part in a voluntary reporting scheme. About 500 British cargo and passenger vessels take part and their reports are extremely valuable. Often, when important weather development is taking place at sea away from the main shipping lanes, the forecaster would give much to have many more ships' reports on his chart. Additional and important knowledge has been gained in recent years about the weather by the establishment of 'Ocean Weather Ships' at strategic stations to maintain a constant watch on the weather.

To supplement this information in the vicinity of Great Britain, weather reconnaissance flights are made by aircraft of the Royal Air Force operating from R.A.F. Station, Aldergrove. These aircraft fly on a triangular track in order to explore a wide area over the Atlantic Ocean. At the end of the first leg, which is normally about 700 miles in length, an ascent is made to approximately 18,000 feet. The second leg is flown at this high level while the return leg is made at low level again. Complete weather observations are transmitted to base every 50 miles. In addition, many R.A.F. and civil aircraft supply weather information whilst making long flights in the normal course of their duties or passenger schedules, and a special flight, operating from Worcester, makes regular high altitude ascents for the purpose of obtaining meteorological data.

With the large number of observing stations and also the many separate forecasting stations in each country, the work of individual stations must be co-ordinated from national Central Forecasting Offices. These national centres maintain constant communication with each other in the reciprocal transmission of all coded observer reports and the organisation depends upon a highly efficient system of communications. Although radio is used as a means of communication with some overseas stations and with ships, the main system in the British Isles and in Europe is by the Meteorological Teleprinter System.

Information about conditions in the upper atmosphere is as important to the forecaster as the surface observations and, in addition to the use of high flying aircraft, an instrument known as the 'radio-sonde' is employed to obtain this information. The radio-sonde was first

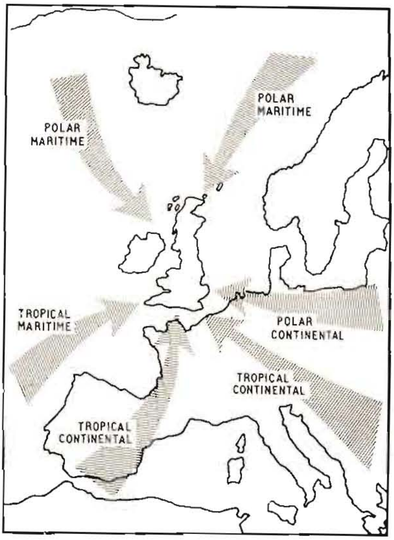


Diagrammatic sketch showing the progressive stages of development of a typical low pressure system. One of the factors responsible for the circular motion of the air is the rotation of the earth itself.

developed shortly before the last war and is a device incorporating a lightweight radio transmitter and three meteorological instruments to measure air pressure, temperature and humidity. It is lifted by a free balloon and, as it rises, the flow of air causes the three cups on the 'windmill' to rotate after the fashion of an anemometer. Attached to the rotating spindle is a three-way switch which connects the radio transmitter to each of the three measuring instruments in turn during rotation. As each instrument is 'switched in' it transmits a note, varying in pitch according to the values registered by the instrument. The radio-sonde is carefully calibrated with ground equipment so that the pitch of the note transmitted corresponds with known values of pressure, temperature and humidity. The balloon also carries a reflector of metallised nylon mesh to enable its passage to be followed by radar. In this way, the speed and direction of the wind can be determined as it ascends. One advantage of the radio-sonde is that it can ascend to a greater height than the aircraft but, in fact, both methods have their own applications and both are used regularly today.

With this information, which is normally obtained at 12-hourly intervals, the forecaster is able to draw upper-air charts showing the changing conditions at various levels high above the surface which he studies in conjunction with the synoptic charts when preparing a forecast. Another aid which is prepared from information obtained by upper air soundings is a special type of graph known in the British Meteorological Office as a Tephigram. The tephigram is drawn up by relating the temperature and dew point curves from a radio-sonde ascent and yields essential information regarding the stability of an air mass and, so, the likelihood of convection cloud formation and precipitation. The dew point—being the temperature to which air must be cooled to become saturated—is often a critical factor to be considered by the forecaster. By studying a representative upper air ascent on a tephigram, it is possible to determine, not only whether showers are probable, but also what will be the height of the cloud base and tops, and the heights at which an aviator would expect to experience icing conditions in the cloud.

Yet another aid prepared by the forecaster is that known as the Prebaratic Chart. It is modern practice in the British Meteorological Office to construct such a chart and its purpose is to show how the various pressure systems and fronts are expected to develop and where they will be positioned in the ensuing 18 hours. The charts are prepared in the forecast room at the Central Forecast Office and are based on calculations and deductions made from surface and upper air observations over a large area of the northern hemisphere. All forecasting stations receive C.F.O. prebaratic charts four times a day, and they help to maintain a basic uniformity in the forecasts issued by individual stations. An accurately constructed prebaratic chart is, however, only a stage in the preparation of a forecast, as there is still the task, and often the more difficult one, of interpreting the weather likely to be associated with it. It is by the forecaster's description of the weather expected that his work is judged. He would get little credit for forecasting accurately the arrival of a front if the weather he had associated with it in his forecast had changed appreciably *en route*.



This sketch shows the classification by type of the main air masses affecting Europe and the British Isles.

Among the most important features of the weather in temperate latitudes are fronts. These are lines drawn along the boundaries between masses of air having different physical characteristics and, in particular, differences in temperature. Since the two main air masses that affect the temperature latitudes can be said to be largely of 'Tropical' or 'Polar' origin, by far the most important front is the one that divides them. This is called the Polar Front, and although it often becomes a complex feature on the chart, and at times rather indistinct, it can usually be traced around the globe in both the northern and southern hemispheres. Its precise position is constantly changing but, as a general rule, it encircles the globe in the region of the 60-degree latitude line. The position of this front can be a critical factor for the forecaster as nearly all the deep and intense depressions experienced in temperate latitudes are formed at points along this line and a knowledge of its exact location is of considerable value in the determination of future trends.

A forecaster's task is to deduce, by scientific estimation, and experience, the most likely sequence the weather will follow in the future. His assessment must be made from a careful study of all available information of the existing weather conditions over a wide area. When isobars form a conventional pattern on the synoptic chart, such as in a well-defined depression or anticyclone, certain orthodox weather conditions normally prevail, according to the time of year, and forecasting the future trend can be relatively straightforward. Wind speed and direction can be determined from a study of the isobars; the closer the isobars, the greater is the 'pressure gradient' and the stronger is the wind. Future changes in wind speed and direction are apparent from tracing the movement of the pressure system as a whole, while individual variations in barometric pressure provide an indication as to the tendency; that is to say whether, for example, a depression may be intensifying or an anticyclone weakening.

However, the problems are not always straightforward and many other factors have to be taken into consideration. A knowledge of the source of an air mass affecting any particular region is essential to accurate forecasting. A mass of air that has remained, say for a week or so, in the circulation of an anticyclone in the Azores region will gradually become warm and humid and have quite different characteristics from air that has spent some time in Polar regions.

Apart from the general description of 'Tropical' and 'Polar' air masses, other important distinctions must be made because once these air masses leave their source regions, their passage over land or sea into higher or lower latitudes can change their temperature and humidity considerably. For this reason, sub-classifications of 'Continental' or 'Maritime' are also made.

There are marked differences in air masses of the same type, and a forecaster knowing the origin of an air mass and, therefore, broadly the type of weather to be expected, would still have to make a careful study of his upper air ascents and surface observations before he could assess the more exacting details of the weather as is required in a forecast. For example, polar maritime air over the British Isles is usually associated with bright spells and, on many occasions, showers. However, before the forecaster is in a position to say whether or not showers are probable, and if so, how frequently they are likely to occur, he must be able to determine the stability of the air mass with which he is dealing. As polar air moves over a warmer land or sea, convection clouds develop when currents of air warmed at the surface rise vertically and, in rising, are cooled adiabatically (or through expansion). Once the air is cooled to its dew point, continued rising leads to condensation in the form of the familiar cumulus clouds which may or may not produce precipitation.

The more readily these convection currents develop, the more unstable the air is said to be and the greater is the likelihood of precipitation. On many occasions the surface sea temperature is not high enough to set the vertical air currents in motion, but the land usually does become heated by the sun sufficiently to do so. A well-known example of this is provided by the cloud covering which often forms above an island during the hours of daylight and which is visible on the horizon long before the land itself comes into view. By considering the air temperature and dew point information provided on the tephigram in conjunction with the wind speed and surface temperatures, the forecaster can usually arrive at the degree of instability to be expected.

However, the unexpected development of a trough of low pressure, which can form readily in unstable air and which is frequently difficult to detect on the chart, could quite easily result in completely overcast conditions with almost continuous rain when brighter weather had been forecast. The least of the forecaster's worries on a day when the air is unstable is visibility, because the impurities in the air are quickly dispersed by the rising air currents and, except in the heavier showers, visibility is usually good.

Many examples could be given of occasions when the forecaster works to extremely fine limits. The timing of the arrival of a rain belt, or perhaps the formation and development of a depression, often allows him only a very small margin of error in his calculations. Some of his most difficult problems perhaps are those encountered when conditions appear to be favourable for the formation of fog and, in particular, radiation fog. On a clear and cloudless night the ground cools rapidly due to radiation. If the air is very still and the temperature of the ground falls below the dew point of the air in contact with it, the result is usually a deposit of dew. On the other hand, if there is slight motion in the air in the same circumstances, fog will form. This is because still air is a bad conductor of heat or cold but a slight wind will usually give sufficient turbulence to spread the cooling at the surface upward to a height of a few hundred feet. The density of the fog that forms will depend largely upon the humidity of the surface layer of air. To complicate matters still more, the effect of a further freshening of the wind under these conditions may result in the formation of low cloud instead of fog.

Although on some occasions a forecaster can feel quite confident about the formation of fog, on others when he forecasts fog he is well aware that a slight error in his estimation of the wind velocity could result in the fog turning out to be little more than dew or, perhaps, low clouds or even nothing at all. An error of one or two degrees in his estimation of the night minimum temperature, or the temperature at which he expects fog to form, can have a disastrous effect on his forecasts. It is almost inevitable that a weather forecast will have an element of uncertainty but, fortunately, with the advance of scientific knowledge and the increasingly comprehensive network of observing stations to provide meteorological data, serious errors are becoming less frequent.

There are, in the science of meteorology, a multitude of special conditions with which the forecaster must be familiar, according to the region in which he is located. Phenomena such as the Föhn wind of

(Air Ministry Photo : Crown Copyright)

A 'Met Hastings' of No. 202 Squadron, Royal Air Force, about to take off from Aldergrove on its long flight out over the Atlantic.

the Alps and the Mistral in the Rhône Valley are caused by effect of the local topography which must be studied by a forecaster in the area. Hurricanes, typhoons and cyclones are all intensified variations of the circular low pressure systems that are known so well in these latitudes as depressions. They are known by their individual names according to the part of the world in which they occur. Miniaturised, but sometimes no less dangerous versions of the circular storm are exemplified in whirlwinds, dust devils and, at sea, waterspouts.

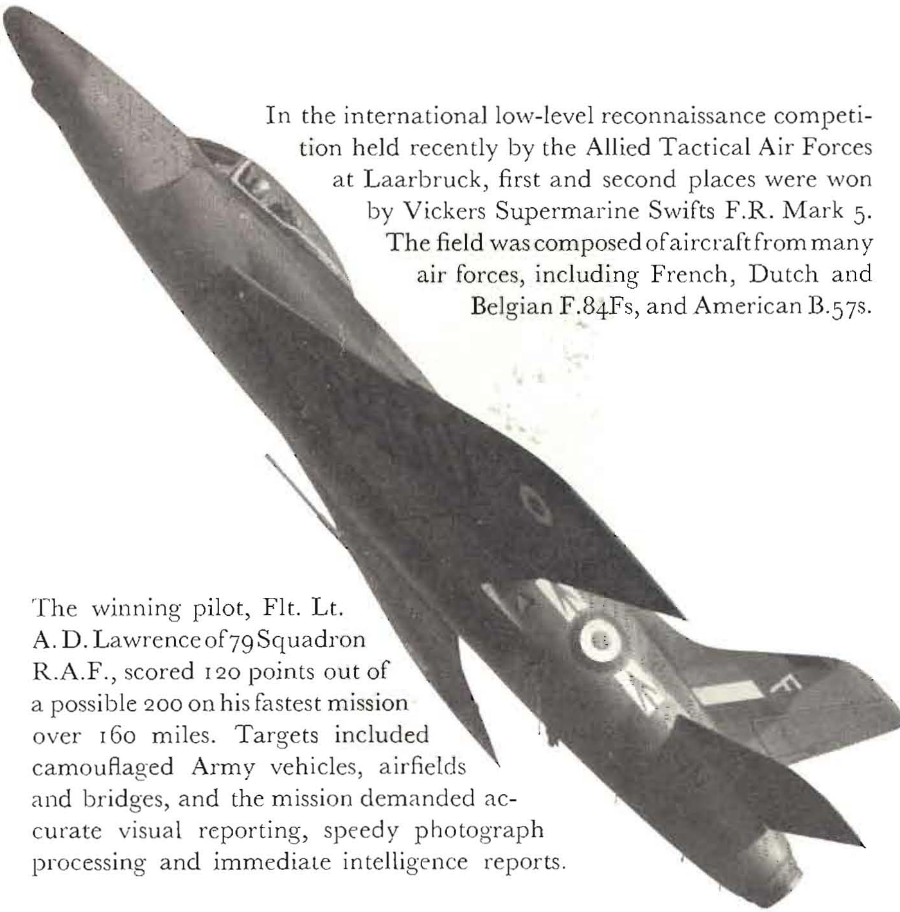
In many parts of the world, such as in the monsoon regions or the areas of the trade winds, the forecaster's task is greatly simplified by the general stability of weather conditions. It is in the temperate latitudes where changeable conditions prevail that the meteorologist's skill is taxed to the greatest extent.

The accuracy of weather forecasting has improved considerably during the last two decades and there is little doubt that further improvements may be expected in coming years. New instruments and new techniques are continuously being developed and introduced into general use. In particular, those investigations which are concerned with gaining a greater knowledge of conditions in the upper atmosphere are likely to have an important influence on the advancement of the science. Such investigations have resulted in an increase in the accuracy of forecasting the strong winds in the upper atmosphere

Preparing a meteorological balloon for ascent in the after hangar on Weather Explorer. *The radiosonde itself is attached below the kite-like radar reflecting screen.*

which can be of great value to a long-distance airline operator. Furthermore, the relationship between the changing pattern of upper air conditions and weather experienced at the surface is already becoming clearer and it is confidently expected that further research along these lines will enable the meteorologist to keep pace with the ever-increasing demands made upon him not only by the aviation, marine, and other transportation organisations but also by a wide variety of general industries whose activities are dependent upon the weather.

The *Swift* beats an international field in Low-level Reconnaissance Contest



In the international low-level reconnaissance competition held recently by the Allied Tactical Air Forces at Laarbruck, first and second places were won by Vickers Supermarine Swifts F.R. Mark 5. The field was composed of aircraft from many air forces, including French, Dutch and Belgian F.84Fs, and American B.57s.

The winning pilot, Flt. Lt. A. D. Lawrence of 79 Squadron R.A.F., scored 120 points out of a possible 200 on his fastest mission over 160 miles. Targets included camouflaged Army vehicles, airfields and bridges, and the mission demanded accurate visual reporting, speedy photograph processing and immediate intelligence reports.

VICKERS-ARMSTRONGS (AIRCRAFT) LIMITED SUPERMARINE WORKS SOUTH MARSTON

TGA AT547

FARMING and FLYING can go together

A 'home grown' hangar built from straw bales and timber cut from his farm is a feature of the airfield owned by Mr. Hubert Knight, a farmer who finds private flying both pleasurable and light on the pocket.

IN SOME WAYS the farmer may be better placed than many to operate his own aircraft. Provided his farm is reasonably flat, any field of thirty acres—less if it is rectangular with a long diagonal—is a potential aerodrome. All that is required is a hangar built on the farm which, apart from the saving of hangarage fees, means the aircraft is ready and conveniently at hand for business or pleasure. Private flying is not a rich man's hobby. It can in fact cost less than many forms of motoring, and if he is air-minded any farmer can become an aircraft owner.

Mr. Hubert Knight, who has a 350-acre farm in the Forest of Dean, is typical of the flying farmers of Britain. Owner of an Auster Autocrat, Mr. Knight learned to fly powered aircraft through an interest he had in gliding. Initially his aircraft was hangared at a flying club some 15 miles from his farm, but a land improvement scheme provided the opportunity of laying out a 30-acre field well suited for use as an airstrip. The aircraft even proved useful during the land improvement scheme, for Mr. Knight used it to provide aerial photographs to the Ministry of Agriculture for a grant-aided scheme which turned a number of small fields into the large one.

Perhaps the most interesting part of Mr. Knight's farm airfield is his truly rural hangar. It was built entirely by the farm staff and has walls of straw bales contained by strong wire netting and timber cut on the farm. The roof is of galvanised corrugated iron and roll-up tarpaulins provide frontal protection against the weather. The whole unit, which measures 75 feet by 24 feet, was built for an all-in cost of just under £100, including labour. It houses — in addition to the aircraft — a combine harvester, a straw baler, and other small farm implements. His airfield proved particularly useful last winter when a disabled naval aircraft saw the wind sock and made a successful forced landing.

Mr. Knight takes full advantage of the mobility provided by his aircraft and visits most of the big air rallies and races held in Britain and France. Apart from such pleasure trips he co-operates with a friend, Donovan C. Wilson, who is making a name for himself as a specialist in aerial photography. A result of this close co-operation is that Mr. Wilson has recently been awarded the Associateship of the Institute of British Photographers for his work in this specialised sphere.

When work on the farm is not too pressing Mr. Knight often takes two friends on a week-end trip to Paris. The economics are extremely favourable for the journey—which takes less than four hours from Mr. Knight's farm—costs them less than £3 each, return!

No hobby, with the exception of perhaps sailing, can give that satisfying feeling of being 'away from it all' in the way that flying can. Farmers in particular seem to derive extra pleasure from flying. Quite a number are known to complete their journeys at a safe minimum height which provides them with an uninterrupted view of other people's crops and farm layouts. For Mr. Knight the landscape has a genuine interest. He admits, "I often come down low to see what my neighbours are up to."

THIS . . .

The scooter fits neatly into most car boots.

Only three minutes is required to assemble this little scooter. Powered by a 50 c.c. motor it is ideal for private aircraft owners as it can be carried quite easily in the back of any three- or four-seat Auster.

TO THIS . . .

Assembly takes only three minutes.

IT'S THE AIRSCOOTER

As many private flyers will know, there are certain times when some method of road transportation is required at the end of a journey by air. Numerous airfields are not well served either by public transport or taxis, but the answer to this problem has now been found: it is the Airscooter.

The most favourable features of this mechanical midget are its light weight and the ease with which it can be dismantled and stowed in the back of a light aircraft or the boot of a car. The Airscooter is made up of four detachable parts which can be dismantled in about

TO THIS! *(in under 5 minutes)*

The assembled scooter weighs 65 lb. and does 180 miles per gallon.

65 seconds by means of three wing-nuts. When assembled it can carry two people and has the phenomenally low petrol consumption of 180 miles to the gallon. A smooth ride is assured through the employment of front and rear springing and a three-position foot rest gives further comfort by catering for various leg lengths.

One of the directors of the company marketing the Airscooter is Mr. F. G. Willinger, a keen private pilot and owner of an Auster J.4. Mr. Willinger objected to 'buying' a French taxi every time he crossed the Channel to one of those out-of-town airfields. The result was that work was started on the design of the Airscooter which took two years to bring to the prototype stage. It is now in production and costs £85 (plus £20 5s. purchase tax to U.K. residents).

AUSTER SERVICE BULLETIN

Issue No. 43 July/August 1957

ASSEMBLY OF AILERON LINK CABLE TO CONTROL COLUMN

Applicable to Mk.5, Mk. 5D, J1, J1B and J1N Aircraft

It has recently been observed that as a result of the change-over from the AGS160 series of washers to the SP13 series which supersedes the former, a case exists in the above assembly where the cable is not fully retained in position at the quadrant due to the SP13C washer being only of the same diameter as the cable roller.

The installation is perfectly safe when the controls are connected and in tension, but it is possible in certain instances when the controls are broken down to pull the cable out and over the roller about which it pivots.

To eliminate this possibility a washer, Part No. E2025, is now being fitted in place of the existing SP13C washer, this new washer being of a larger outside diameter, fully retains the cable in position in all conditions. This special washer, Part No. E2025, can be supplied from stock upon application to the Service Department.

AUSTER MOD. 2782

Applicable to J1N Aircraft

It has been noticed that some Auster Alpha (J1N) aircraft which have been modified by other firms are not complying with the undercarriage modification No. 1828. This modification calls for the top portion of the undercarriage legs to be strengthened by welding straps around the tubing at the top of the leg.

This requirement is referred to on Drawing No. EJ121 which is supplied by this Company with every modification kit. Any operator who requires the necessary Modification Kit No. 1828 should order same through the Auster Service Department. All undercarriage legs supplied by us during the past six years have had modification 1828 embodied.

Auster Service Bulletin (cont.)

THE STEERABLE FULLY CASTORING TAILWHEEL

Reference was made in the last issue of the *Auster News* to the necessity of facilities being available for drilling the bottom leaf spring when the new steerable, castoring tailwheel is fitted.

It is now *not* necessary for owners to be able to drill the bottom leaf spring, as a $\frac{3}{8}$ in. diameter bolt is to be supplied with the modification kit ; this bolt is the same diameter as the standard attachment bolt.

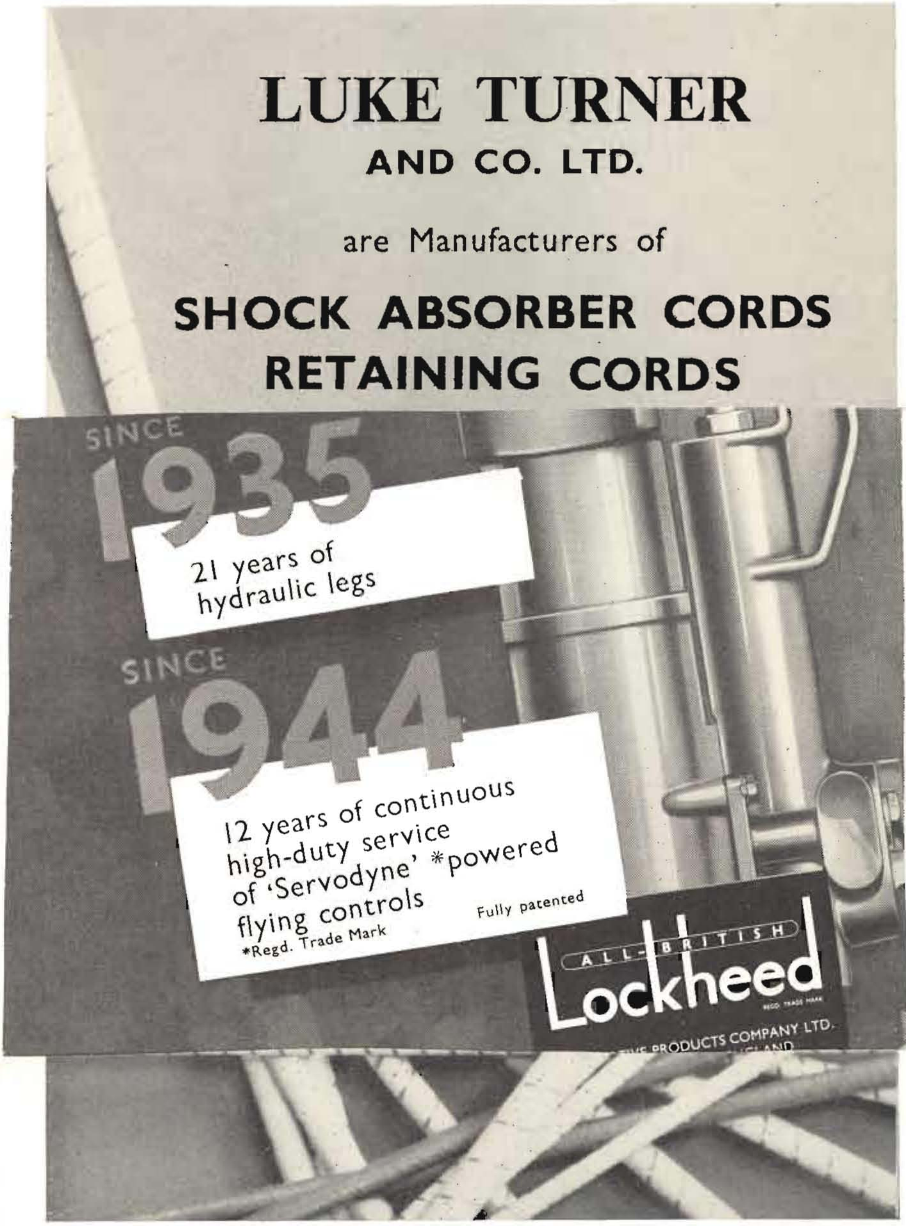
THROTTLE CONTROL

In our Service Bulletin, Issue Number 37, we drew owners and operators' attention to a new type throttle control available for the following aircraft : J1, J1B, J2, J4, J5 and Mk. 5D.

Many owners and operators ordered the modification but recently cases have come to our notice where the controls have been supplied with the two Allen screws, which secure the inner member through the removable end fitting, unlocked. Inspection should be made at the earliest opportunity or not later than the next check, and if necessary the screws to be punch locked. On controls with the flexible type outer conduit the two Allen screws in question will be found readily visible at the engine end of the control. With controls having the rigid type outer conduit it will be necessary to remove the control from the aircraft as the Allen screws on these controls are at the throttle box end of the control and the end fitting into which they are assembled is screened by the outer sleeve connecting the control to the throttle box.

Issued by the Service Department, Auster Aircraft Ltd., Rearsby, Leicester, Eng.

Telephone: Rearsby 321, Ext. 6 *Telegrams: Auster Leicester*


LUKE TURNER
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are Manufacturers of
SHOCK ABSORBER CORDS
RETAINING CORDS
SINCE
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21 years of
hydraulic legs
SINCE
1944
12 years of continuous
high-duty service
of 'Servodyne' *powered
flying controls
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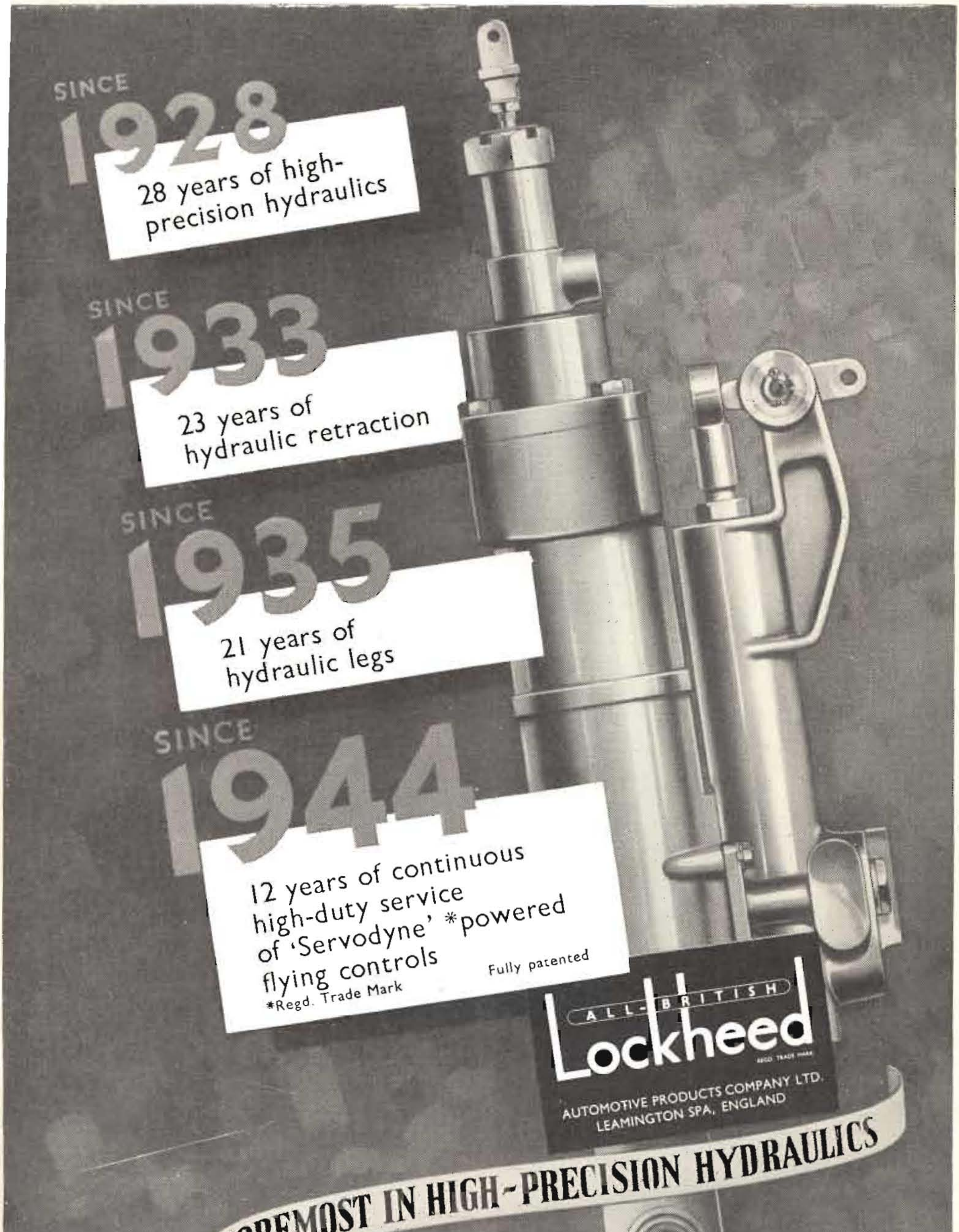
Fully patented
ALL-BRITISH
Lockheed


SINCE 1928
28 years of high-precision hydraulics
SINCE 1933
23 years of hydraulic retraction
SINCE 1935
21 years of hydraulic legs
SINCE 1944
12 years of continuous high-duty service of 'Servodyne' *powered flying controls
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