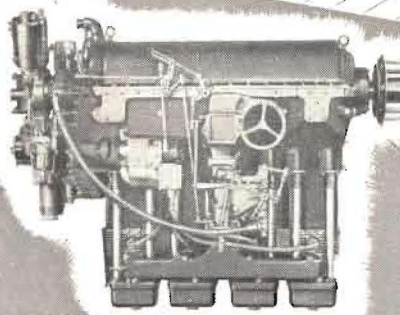
AIRCRAFT *News*

JUNE 1950

THE STEEL AUSTER AIRCRAFT AEROPLANE



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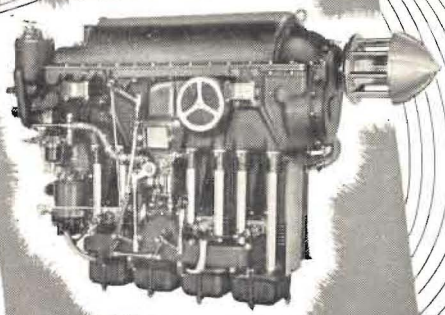

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AIRCRAFT NEWS

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JUNE, 1950

Editorial

THE *Aircraft News* is normally devoted to the developments and activities of Auster aircraft ; it also includes other topics and articles which are anticipated as being of general interest to readers. In this issue we are including an article on Aerial Pest Control, which, although it makes but passing mention of aircraft, we think will nevertheless prove of considerable interest and enable most readers to obtain a somewhat clearer picture of the insect world and the power it holds in relation to our own lives.

Control of insect life from the air has many applications. Effective control naturally depends to a great extent on the development of efficient insecticides, but the equipment to distribute the insecticides will also be continually improved. Continued research with a view to increased economy for the operator, is the policy of Auster Aircraft Ltd., in their own equipments for pest control.

Miscellaneous Jottings

FROM NEW ZEALAND

AN AUSTER WAS RECENTLY IMPORTED by the Otago Aero Club. That, in itself, is nothing extraordinary, but the aircraft concerned was G-AJAF and its registration letters will now be ZK-AUF. There is a strange gap in the journey log of aircraft G-AJAF. It covers a period of nearly four months from the first week in June, 1947. The log shows that at that time the plane was operating in Palestine and gives the owner as one Bernard Edward Fergusson.

This B. E. Fergusson is better known as a wartime leader of one of Wingate's Chindit columns in Burma. He was later friend and commanding officer of the famous commando officer Captain Roy Farran in Palestine.

It was Colonel Fergusson who went to Syria after Farran when he had escaped from custody in Palestine after being accused of the murder of an Israeli youth. He persuaded Farran to return to face his trial.

The gap in the log covers the time of Farran's escape, his return, and trial. Yet, strangely enough, the blank page is covered with Syrian Customs stamps—although no flights are recorded.

The aircraft is now being assembled at Rongotai for the Otago Aero Club. With the aircraft was a letter saying that this was the plane used in Farran's escape from the Israeli forces, who had put a price on his head. This seems to be borne out by the gap in the log.

The letter says that Colonel Fergusson, now a Black Watch Regiment commander in the West Berlin garrison, "was, and is extremely fond of the plane." He has asked that a test report be sent to him after the plane has been assembled.

FROM THE U.S.A.

IT IS STATED that the business use of private aircraft has climbed four-fold in the last three years, with some 32,000 craft being used. Last year they flew a half-million more hours than all commercial planes. About 8,000 are being used by corporations, and about 4,900 are owned by farmers for dusting, spraying, fertilising, and seeding.

Pilot Victor Spencer is here shown swinging the propeller. The passenger is already in the cabin with R/T headphones on. This photograph was taken at North Arm farm in March.

FROM THE FALKLAND ISLANDS

IN A PREVIOUS ISSUE of the *News* we gave a few details of the excellent service Austers have given to the population of the Falkland Islands. In terrain where travel is almost restricted to walking or horse-riding, and where a ship may take months to navigate a comparatively short coast-line, air travel has proved a great asset. The available landing strips are inadequate for most types of aircraft.

The Auster of the Falkland Islands Government Air Service is here seen on take-off at North Arm.

FROM ENGLAND

EVERYONE HAS HEARD OF FLYING FISH, but Monmouth is now proud to boast of its flying fisherman. The enterprising gentleman concerned is actually a Leicestershire businessman, Mr. R. B. Weston-Webb, who often goes to Monmouth for an afternoon's salmon fishing on the Wye. Many people have seen his Auster AUTOCRAT G-AHHM swoop in to land near the Redbrook road. They have seen fishermen arrive in buses, cars, on bicycles and on foot, but Mr. Weston-Webb is the first who has literally "hopped over" for a spot of fishing.

Mr. Weston-Webb finds other uses for G-AHHM. This photograph shows him collecting day-old chicks from a poultry farm near Deddington, from whom he had ordered 500 newly hatched chicks. Day-old chicks are susceptible to tedious travelling, and are apt to catch cold, especially when the cardboard boxes in which they travel are left standing on draughty station platforms. If they do catch a chill it takes them weeks or even months to recover from the effects.

Most farmers rely on the co-operation of railway guards and porters to see that the chicks reach their destination

without delay, but Mr. Weston-Webb took no chances—he collected his consignment personally by Auster.

Mr. F. E. Sowerby of Bullington, near Market Reason, is another Auster owner who has employed the same method of chick collection. He flew 100 miles to collect 27 boxes containing a total of 675 chicks.

Mr. Denis Wright, the well-known Bridlington garage proprietor, is shown below with his *Auster* AUTOCRAT at Bridlington (Speeton) Aerodrome, Headquarters of the East Riding Flying Club. His wife and her friend are alongside in a Bond Minicar, the lightest of all lightweights of the road.

Ragosine–Auster Homing Trophy

THE ANNUAL COMPETITION for this trophy was held at Rearsby on the 4th June. This is a solo navigational test calling for careful and intelligent flying.

There were fifteen starters. Twelve went round the course more or less on schedule, three returned without completing the circuit, one of them after landing at an aerodrome to ask where he was.

Several competitors arrived over the turning-point area but could not find the exact spot, and were reported by our observers as "unidentified owing to distance."

The "forced landing" test at the end of the course was

exceptionally good, three pilots making a three-pointer exactly on the small landing square.

The final results showed the leaders to be :—

Mr. D. R. Woolley, Brough	...	12 points lost
Mr. T. B. Meek, Cossington	...	12 points lost
Mr. C. Gregory, Sleaford	...	12 points lost
Mr. P. R. Jefferies, Cheadle Hulme		12½ points lost

This triple tie for first place was settled according to the rules by awarding the Trophy to Mr. Woolley, as the pilot with the smallest number of flying hours, but we congratulate all three equally.

Since this is the third consecutive year that Brough has supplied the winner, it seems that pilots from other districts, Rearsby included, will have to make a concerted effort next year to prevent the trophy becoming known as the *Brough Home Trophy*.

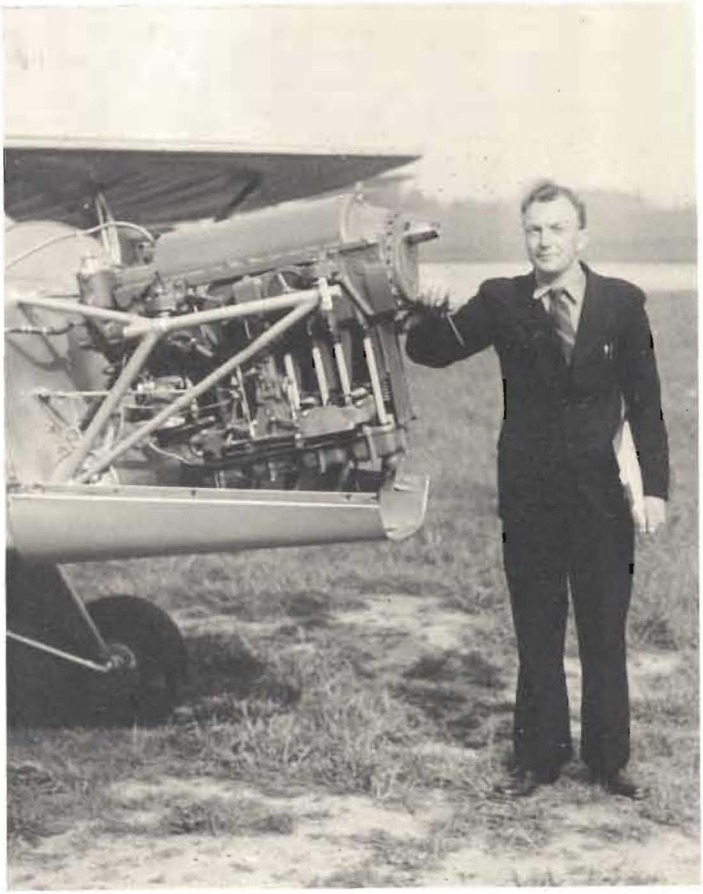
Auster Personalities

No. 5. MR. ARTHUR PICKETT

ARTHUR PICKETT IS MANAGER of our Repair and Servicing Department. As such, he is well known to many British aircraft owners and operators as a very sound engineer who has an intimate knowledge of aircraft and engines. His opinion is one which can always be regarded as honest and to the point. There are naturally periodical "headaches" which come his way, but the method by which these are tackled show Arthur to be a man of unperturbable nature who is always most considerate and helpful.

Arthur served his apprenticeship in a Southampton shipyard, but apparently considered shipyard work was going to be too heavy and moved into the motor industry. In the early 1930's he transferred to the De Havilland experimental machine shop, and aircraft have claimed him ever since. Perhaps this is not quite a true statement, for Arthur's immediate associates know only too well that his main hobby is building motor bicycles—and looking after his very excellent motor-car of early vintage.

It may not be generally known, but Arthur will always be pleased to see Auster owners, operators and pilots at Rearsby at any time, and give them advice in connection



with their aircraft if desired, and anyone who cares to take advantage of this offer will be assured of good service.

Arthur is generally well occupied on work for renewing the C. of A. for aircraft, which is another service many owners may not appreciate as being available at Rearsby. Being a person who is not afraid of work, however, Arthur will always welcome further enquiries in this connection, and looks forward to the day when he will have met every Auster owner in the British Isles.

Aerial Pest Control

(With acknowledgments to "Shell Aviation News")

THERE ARE TWO HUNDRED AND FIFTY MILLION more people in the world to-day than ten years ago. Ten years hence this increase will be more than doubled, but food production, which is at present below the level necessary to provide an adequate diet for everyone, is not being stepped up by an amount commensurate with the needs of this growing population.

The more intensively land is farmed, and the more new areas which formerly supported only wild vegetation and animals are cultivated and stocked, the more severe will become the struggle with that remarkable class of creatures, the insects. Although they rank very low in the accepted order of life on earth, they wield a power which necessitates man carrying on a continual war against them for his food, and by using aircraft to apply the new and potent synthetic insecticides which have been discovered in recent years he has gained great strategic advantage over his insect enemies.

In the years since the late war the use of aircraft for spraying and dusting against insects has developed enormously, particularly in the United States. Just how highly this method of applying insecticides is valued in that country may be judged from the fact that between 8,000 and 10,000 aircraft are employed each season for pest control. Aircraft, of course, have also been employed for spraying and dusting in other parts of the world and there is a growing realisation that scope exists in many areas for exploiting the advantages of this method of application.

Aerial spraying can be carried out to the greatest advantage when extensive areas under the same crop are to be treated, but it is also of value even for comparatively small acreages, when applied to crops which cannot be treated without damage by ground equipment, either because of the mode of growth of the crop, or because it must be sprayed at an advanced stage or for both these reasons.

Peas, for example, have a straggling growth habit, and to control effectively one of their principal pests, the maggot of the pea moth, spraying must be carried out after the

pods have formed, at which time normal ground equipment would cause damage. Spraying from the air is also of value when wet condition of the ground makes the use of ground machinery undesirable or even impossible. For many irrigated areas, too, aircraft provide the answer to the problem of applying insecticides.

No one knows how much damage and destruction insects cause. Estimates—or "guesstimates" as they have been called—are available, however, and even if these are fairly wide of the truth they do indicate beyond any doubt the magnitude of insect ravages.

It is reckoned that in the United States the food losses due to insect attacks on animals, stored grain and growing crops amount to over £170 million each year. The loss due to the European corn borer alone in 1946 was estimated at £16 million, and the annual toll of the grasshopper is around £9 million.

Losses caused by the wheat-stem saw-fly in the prairie provinces of Canada have amounted to as much as 50 million bushels in one year.

Italy loses over one-third of its olive crop in certain provinces, owing to the activities of the olive fly, and it is claimed that in some areas over 80 per cent. of the plum crop is destroyed by sawflies.

Spain loses about 200,000 tons of wheat and a similar quantity of potatoes annually through insect pests.

Australia lost up to 20,000 tons of potatoes in a single state in one season because of the potato moth.

These figures do not indicate the plight of the indivicual farmers concerned, who may lose the whole of their crop in a bad outbreak.

It is not only food crops which suffer ; cotton, for example, is attacked by a number of damaging pests, and one of these alone, the boll weevil, costs the United States over £107 million each year. More than 120,000 acres of cotton in the Sudan are attacked annually by the cotton jassid. The crop would suffer untold damage unless this pest were kept in check, and a very considerable amount of money has to be expended each year on its control. Aircraft have proved a most useful means of applying insecticide : the enormous acreage and the fact that the crop is irrigated are two factors which clearly point to the

aerial method of application. There are many insect pests of forest trees, and a single outbreak of the Sitka spruce beetle caused a loss of over 34 million board-feet of high quality spruce in Alaska.

The species of insects which are harmful to man and the things he values are only a comparative few out of the multitude which exist on the earth, but owing to the remarkable power of adaptability of the insect class new pests are forever likely to arise.

The Colorado beetle will serve to illustrate how a once harmless insect may become a major pest. When the Colorado beetle was first discovered in the early years of the last century it lived on a weed on the eastern slopes of the Rocky Mountains extending from Canada to Texas, and was of no importance to man. But when the early settlers pushing westwards across the continent planted potatoes, the beetles largely deserted the weed for the potato plants which, grown in patches, were so much more readily accessible to them. The beetle spread rapidly eastwards from potato patch to potato patch and in 1874 reached the Atlantic coast, whence it was carried by ship to Europe.

Little regard was paid to it, with the result that during the last twenty-five years it has become a most serious menace to potato crops throughout western and parts of eastern Europe. It is only since the inception of the international scheme for Colorado beetle control in 1947 that the spread has been arrested and a noticeable reduction inflicted in its numbers. Aircraft have played a most important part in the control of this pest. Last year 8,000 acres in the Caen area of France were sprayed and dusted with D.D.T. by helicopter and fixed wing aircraft.

Similar pest problems are always likely to arise when crops are introduced into areas not previously cultivated, as they will be in the effort to grow more food. It is vital to check such pests at the outset, and aircraft are of great value for this purpose, especially if large areas are involved.

Insects outnumber by far all other terrestrial animals. More than three-quarters-of-a-million different species have been discovered and given names ; thousands more are discovered each year, and it has been suggested than ten million different species live on the earth. As for the total

pods have formed, at which time normal ground equipment would cause damage. Spraying from the air is also of value when wet condition of the ground makes the use of ground machinery undesirable or even impossible. For many irrigated areas, too, aircraft provide the answer to the problem of applying insecticides.

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number of individual insects, the following figures will form a starting point for the imagination. Ten million insects per acre are commonly present in the soil, and as many as 65 million have been found in forest soils. The number of insects flying over each acre of surface has been calculated from a series of trapping experiments to be about 3,000 in the morning and 11,000 in the evening.

A major reason for the profusion of insects is their amazing reproductive capacity, which can be attributed to the large number of eggs or young produced in each generation in some cases, in others to the short life cycle and the rapidity with which the generations succeed each other, or to a combination of both these factors, as in the case of the common house-fly, which has a quite remarkable rate of reproduction.

It has been estimated that if a pair of flies start operations in April, they could be the progenitors, if all were to live, of 191,010,000,000,000,000,000 flies by August, and that if one-eighth cubic inch were allowed per fly this number would cover the earth to a depth of 47 feet. Of course, such an increase never occurs, owing to factors of natural control, but the statement does serve to show why flies appear in such vast numbers when summer comes.

The house-fly must be considered as one of the most dangerous animals in the world. This is not because of any direct damage it causes ; it cannot bite or sting, nor does it, of itself, cause any disease. It can, however, and frequently does act as a carrier for millions of bacteria and protozoa which cause diseases of man and animals, including typhoid, cholera, dysentery and anthrax. The hairy body of the house fly makes it an admirable carrier for bacteria, up to 6,600,000 having been found on a single fly.

The residual toxicity of D.D.T. and certain of the other new insecticides has simplified the control of the house-fly and this applies particularly to large-scale control schemes. Aircraft have been found of the utmost value for large-scale spraying. About three years ago in Egypt during the cholera epidemic aircraft sprayed D.D.T. in oil over thousands of acres of town and countryside and so checked the breeding of the disease-carrying flies. Aircraft were particularly suited to this work ; they were able to put

down a fog of toxicant (the D.D.T. in oil solution being injected into the exhaust manifolds) which filled the flying insects and left a residual deposit on the ground, so that flies settling also were killed. Most important, it was possible to spray with great speed, and speed is clearly essential when dealing with insects which breed so rapidly. Delay, even of a few hours, means millions more flies to spread the disease.

Another scourge of mankind is the malaria-carrying mosquito, and it is against this particular insect menace that some of the most spectacular successes have been achieved in aerial spraying in recent years. Aircraft have been employed both for spreading larvicides to kill the larvæ in the water where they breed, and for spraying to kill the adult mosquito.

The use of aircraft for this purpose was intensified and developed during the war. In many areas in the far east malaria was causing more casualties than enemy action until the spraying of vast areas with D.D.T. held the disease in check by destroying the insect responsible for its spread. No other means could have been employed satisfactorily with sufficient speed through jungle territory.

The use of aircraft for this purpose has continued since the war, and in the United States during 1947, for example, about 1,000,000 acres were sprayed. Successful anti-malarial campaigns have also been carried out in Sardinia and many other countries.

Insects show tremendous diversity, and it is difficult to generalise about them. Whilst it may be said with truth that the majority of insects are prolific there is one insect—the tsetse fly—whose rate of breeding is extraordinarily low by insect standards. In spite of this apparent handicap, the importance of the tsetse fly as a pest can hardly be exaggerated. Speaking in the House of Commons in June, 1948, the Under-Secretary of State for the Colonies said these very striking words in referring to development in East Africa :

"The area of this vast region, greater than Western Europe, is occupied by only 15 million people. It might be asked : why is that ? The reason is that three-quarters of this vast area is run, organised and ruled—if such terms can be applied to an insect—by the tsetse fly. In fact, the

humans and animals—savage as well as tame animals—are crowded into one-quarter of the territory and that is the quarter in which there is the lowest rainfall. The broad belt of high rainfall comes up from Northern Rhodesia, through Tanganyika and Uganda, and it is in that potentially fertile area that the tsetse fly holds sway."

This is East Africa alone ; including territories in West Africa, the total area under tsetse fly is $4\frac{1}{2}$ million square miles, which is 75 times the area of England and Wales.

The tsetse fly is responsible for the transmission of minute organisms called trypanosomes, which cause sleeping sickness in man and a disease known as nagana in cattle. Thanks to medical science man can be protected against sleeping sickness, and the death rate from this malady need now be no higher than from any other cause. It is for its part in spreading the nagana disease of cattle that the tsetse fly must be considered such a grave menace. Many hundreds of square miles of valuable grazing land are unstocked solely on account of the tsetse fly. Owing to the great extent of these areas and to the presence of wild animals it is both difficult and dangerous for man to carry out spraying on foot, and aircraft may well prove the best means of attack. Experimental work with aircraft is in progress in East Africa, and in Zululand the tsetse fly has been practically eliminated from one area as a result of aerial applications of D.D.T.

The power of flight which is possessed by many species of insects is another feature which helps to make those which are pests so difficult to control. Because of their flying ability they are able to forage far and wide for their food, escape from danger, and lay their eggs over a considerable area. The highest speed of insect flight that has been carefully measured is 35 m.p.h. for certain hawk moths and horse-flies, although it has been claimed that some dragon-flies may reach 60 m.p.h. Flying insects are of great interest from the aerodynamic point of view. The tsetse fly can have a blood meal more than three times its own weight and take-off and fly with apparent ease.

Probably the most spectacular as well as the most devastating flying insects are the migratory locusts. They have been known to man since the earliest of times, and have probably caused more direct damage to crops than

any other insect species, and in so doing have been responsible for millions of deaths. Locust swarms may fly hundreds of miles, and when they alight completely denude all vegetation. A count of a roosting swarm of red locusts in Tanganyika recently gave 300,000 locusts, or one ton to the acre.

The numbers which locusts can achieve are almost beyond belief. In 1889 one swarm which passed over the Red Sea was estimated to be 2,000 square miles in extent. According to official reports, during an infestation in Cyprus in 1881, 1,300 tons of locust eggs were collected and destroyed. Such large outbreaks have not occurred in recent years, but unless these insects are kept severely in check the possibility must always exist.

As with tsetse flies, locust control is no simple matter, and costs many millions of pounds each year. Modern synthetic insecticides are now established as the best materials for locust control and, correctly applied, as little as 1 oz. of many poisons will kill one ton of locusts. The difficulty is applying the insecticide rapidly and effectively. Aircraft have proved of enormous value for spraying against locusts, and in Tanganyika, where a great deal of work has been carried out, several hundred gallons of insecticide have been employed to spray roosting swarms.

Another reason why insects are so prolific and difficult to control is that their small size enables them to tuck themselves away in tiny cracks and crevices in the soil and vegetation so that they are out of sight and reach of their enemies. Their ability in this respect often makes their control very difficult, because they may be out of reach of the insecticide. In the life cycle of many insect pests there is often only one period when they are vulnerable to control by insecticide. It is, of course, of vital importance to know when this period occurs, and in any pest control organisation, whether for ground or aerial spraying, it is essential to have available on the spot, staff with a sufficient knowledge of entomology to decide the right moment to apply the insecticide.

It is because insects are vulnerable for such a short period that aerial spraying and dusting is so valuable for their control. Indeed, where large acreages of crops are

involved aircraft are frequently the only possible means of applying the insecticide in the time available.

The discovery of the present range of synthetic insecticides and the development of efficient and rapid means of applying them has put man in a better position than ever before for dealing with the insect menace. Even so, the position is by no means secure and it is essential to continue the search for new and better means of control.

BRITAIN'S WAR MINISTER, Mr. Strachey, and the Colonial Secretary, Mr. Griffiths have both recently been to Malaya to investigate the conditions there. During their visit, Austers were used to fly Mr. Strachey to Bentong from Kuala Lumpur and Mr. Griffiths to Mentakab in Pahang.

* * *

AUSTERS WERE USED to keep watch from the skies over the vast crowds which gathered in Berlin for the Whitsun Youth Rally.

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 cy inder for use with the above brakes is a 15/32 ins. diameter x $1\frac{1}{2}$ ins. stroke design.

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