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Editorial

PERHAPS A SUITABLE WAY to introduce this issue is by drawing attention to the information which appears on subsequent pages concerning the latest floatplane type to be produced in the United Kingdom.

The primary points concerning the appearance of the new floatplane are that it was converted from a landplane by means of a specially designed modification kit, and that it has afforded an opportunity for various pilots to fly a light floatplane for the first time. These pilots are individually full of praise for the plane, and the ease with which it can be handled on and off the water. Handling simplicity and safety are so pronounced that there is virtually little that can be written on the subject, even though there is naturally a certain amount of doubtful anticipation *before* the plane is handled for the first time.

What a pity it is that these islands are void of light floatplanes, while some other countries are able, mainly because of their suitable topography, to take full advantage of this pleasant form of flying. There can be no doubt that light floatplanes would be most popular here among pilots and passengers alike if opportunities for their flying could be made available.

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.

Making and Flying Floatplanes

REGULAR READERS OF THIS MAGAZINE will be well aware that in the past floats have been fitted to various Austers, the most notable of these being the Mk. 5 in the Falkland Islands and the Mk. 6 in the Queen Maud Land ventures last year. During the last month another floatplane has successfully passed its flying trials at Beaumaris, Anglesey ; this time it is the Auster J.5. There is, however, one difference between this and the previous floatplanes..... a greater number of impartial pilots have been privileged to fly the J.5. Included among these were some who had never previously flown a floatplane, and it is significant

that every one agreed that the floatplane was as easy (if not easier) to handle as an Auster landplane, and that after the initial feeling of doubtful anticipation was replaced by confidence, it even appeared safer.

The purpose of the trials was to test a float modification kit, two of which have been ordered by the New Zealand Government for fitment to J.5. aircraft operating in New Zealand and the Fiji Islands. The kit comprises everything necessary to effect the changeover from the landplane, and this is a straightforward job needing no welding or special equipment. It can be similarly fitted to the AUTOCAR or AIGLET, though on the latter aircraft the absence of an engine starter would necessitate a starting technique similar to that evolved for the Auster Mk. 5.

Those readers with a memory for registration letters will recollect that floatplane G-AJYL was equipped as a landplane crop-dusting aircraft for some months ; it was in fact at the S.B.A.C. show at Farnborough last year in that role, and may even be seen again as such after the floats have been removed for dispatch to New Zealand.

Perhaps one of the best ways to quote impartial opinion of the floatplane is to repeat the words which have appeared in *The Aeroplane* and *Flight*, and these are reproduced herewith, with full and due acknowledgement to the two journals concerned.

Flying the Auster Floatplane

By Derek D. Dempster

(Reproduced by courtesy of "The Aeroplane")

On the North American continent and especially in Canada, where innumerable lakes make ideal alighting strips, the floatplane came into its own many years ago in the hands of the bush pilot who is still, and perhaps will always be, the mainstay of communications in the backwoods. Most high-wing aircraft there have, at one time or another, been adapted for float work.

In this country, however, the floatplane, as opposed to the larger flying-boat and the amphibian, has been virtually extinct since before the War. But in the past two years Austers have had the opportunity of restoring it to life.

This was mainly due to the need for an Auster floatplane for the Falkland Islands Dependencies rescue of marooned scientists on Stonington Island in 1949, and the decision of the R.A.F. Antarctic Flight, under the command of Sqdn. Ldr. G. B. Walford, to use the Auster on the Anglo-Scandinavian expedition to Queen Maude Land on the 600-ton sealer *Norsel*, as it appeared to satisfy all necessary requirements. (Some details of the Antarctic Flight were given in *The Aeroplane* for December 1, 1950).

Up to that time Austers had had little or no experience of building floats and they set about designing and building them from scratch. Despite their lack of experience in this specialised field the results were most successful. The aircraft used by the Falkland Islands Dependencies was fitted with Edo floats.

Since then the New Zealand Government has ordered two sets of Auster-designed floats, for two of the six Series J.5 Austers now operating on forestry patrols, fire spotting and various other general duties in New Zealand. One of the sets of floats was fitted to the Auster that I flew at Beaumaris, Anglesey, last week, where the aircraft is undergoing manufacturer's and A.R.B. trials.

From a personal point of view, the opportunity of flying a floatplane could not be missed. Never having flown an aircraft off the water, the flight promised to be loaded with new experiences and new handling techniques, but in point

The floatplane being taken down the slipway on its beaching trolleys

of fact the anticipation was unfounded, for it seemed to be just as easy to fly off the water as it is off *terra firma*. The only real difference encountered was in handling the aircraft on the water itself, but after a few minutes' practice, even this turned out to be quite easy.

With the exception of one or two minor structural changes necessary to strengthen the existing fuselage, the incorporation of a larger fin and rudder (AIGLET and AUTOCAR type) and the introduction of new fittings, such as a stabiliser fin and water rudder controls, the aircraft for the float trials is a standard Series J.5 Auster powered by a 130

b.h.p. Gipsy Major I engine. The larger fin and rudder is already fitted to the AIGLET and the AUTOCAR as standard equipment, which, if it is so desired, makes the adaptation of these two types of aircraft as floatplanes a comparatively simple operation, as practically all the fittings are bolted on to existing parts.

Once a certain amount of local strengthening has been done, an Auster can be changed from landplane to floatplane and back again, depending on the demands of the occasion, with considerable facility. The floats themselves are built of aluminium alloy and are 17-ft. 4-ins. in length without the rudders, which are 12-ins. long. They have seven screw-down inspection hatches, fitted with sorbo-rubber water-tight washers, for the seven compartments that go to make up the float. Mushroom-head riveting is used throughout ; this must set up a considerable amount of water drag, which could well be dispensed with.

Total weight of the two floats and their accessories, complete with struts, is 360 lb. Thus, as the normal Auster undercarriage weighs 70 lb., there is an increase in alighting gear weight of 290 lb.

Water rudders, spring mounted to lower automatically when the cockpit control is released, are actuated by cables running from the air rudder. In this circuit are springs which allow coarse use of the air rudder should this be necessary in fairly strong winds.

What handling would be like under these conditions is difficult to say as there was only a light breeze blowing when I flew the aircraft, but I should imagine it would not be very easy as there is nothing like a brake to check weather-cocking, although the water rudders are very effective. Visibility is similar to that from the landplane version, except when at a standstill, when the lowered nose gives car-like vision forwards.

At low r.p.m. in reasonably calm water the aircraft can be made to turn on an imaginary axis running through the wing tip. At higher r.p.m.—1,400—the radius of turn increases to about 25 to 30 ft.

Drill before take-off is the same as for the normal Auster, but the water rudders must be retracted. The retraction control is so remarkably simple that nothing can go wrong with it and is designed for cheapness and quick installation. As soon as the throttle is opened fully for take-off, the

rudder becomes effective. Acceleration, especially through choppy water, is slow, but following a lapse of between 35 and 40 seconds and a run of approximately 450 yards during which the aircraft, the floats and the occupants are subjected to some fairly hard buffeting, the aircraft becomes airborne. The calmer the sea or lake, the shorter the take-off run, as any waves or swell, however small, will help to slow down the seaplane.

Best take-off time made so far during the trials has been 27 seconds. The longest run has taken 55 seconds.

One of the most fascinating things to watch on a water take-off is the ever-increasing bow wave of whatever float you happen to be watching and the wake and spray thrown up as speed is gathered. The spray just clears the tail-plane of the Auster by a few inches.

Once the aircraft is in the air the impression is gained that the climb is laboured in the extreme and that little progress is being made at all. But this is only an impression gathered in the first moments of flight, and can be refuted by the fact that the aircraft has a rate of climb of about 400 ft. per minute at 60 m.p.h.

A more powerful engine would make all the difference to the performance giving a better rate of climb and a shorter take-off run. A more powerful Gipsy, the 155 b.h.p. Cirrus Major, or, better still, the 185 b.h.p. Cirrus Bombadier, would seem to be very suitable in this direction.

Handling in the air differs not at all from the handling of the landplane version, and the flying characteristics in general are identical. Directional stability, however, is greater than on the AUTOCRAT and comparable with that of the AIGLET. This is accounted for by the larger fin and rudder and the additional stabiliser fin which has been mounted beneath the fuselage.

Stalling presents no difficulty at all even though there are two relatively massive floats hanging beneath the aircraft. With the flaps retracted the stall occurs at 40 m.p.h., and with the flaps fully lowered, at 32 m.p.h.

Performance is slightly reduced and at 2,200 lb.—the weight at which I was flying—the cruising speed, with an r.p.m., setting of 2,050, was 95 m.p.h., or about 10 m.p.h. slower than the land version. A noticeable point in level flight was that the nose had to be held slightly higher than on the landplane, otherwise the aircraft lost height.

The approach to land—or to be more strictly correct, to alight—is made at 55 m.p.h. with the flaps in the landing position and the throttle set to give 1,200 r.p.m. The glide is normal, and the subsequent flare-out for touch-down quite conventional. Instead, however, of drawing the stick right back as if for a three-point landing, it is positioned to give the attitude of a tail-down "wheeler."

Speed lost, the aircraft drops into the water with a fairly loud smack and slight jolt, pulling up in a matter of 100 to 150 yards. The pull-up is perhaps the most impressive part of the alighting as it seems to be done without effort and without that awful sensation of straining at the leash. Despite the hard buffeting, it is gentle.

When flying a floatplane, or any other aircraft that uses water as a medium for launching itself into the air and getting back to ground level, there are, of course, other alighting techniques to be learnt. For example, there are days of flat calm when it is impossible to tell where the water level is, and it is necessary to make "mirage" landings.

For these, in the Auster floatplane, the approach is made at 45 m.p.h. with a throttle setting to give between 1,400 and 1,500 r.p.m., or a higher r.p.m. if necessary, depending on the rate of descent required. The result is that the aircraft hits the water fairly gently despite the difficulty encountered by the pilot in judging his height beforehand.

If the approach for a "mirage" landing is made at 50 m.p.h. in the Auster, it is more than likely that the nose will be too low, and the excess speed will tend to make it bounce off.

In conclusion, the flying characteristics of the Auster floatplane are such that anyone familiar with any of the land plane variants can, without any instruction, except in the specialised art of "watermanship," handle it with ease. Individuals who have never before flown a floatplane, including myself, have been impressed by the similarity in handling that exists between it and the landplane, and among the notable pilots who flew without previous instruction were Sqdn. Ldr. Walford and Flt. Lt. Tudor, who sailed with the Anglo-Scandinavian Expedition to the Antarctic last year.

Unfortunately, we have few lakes and suitable spots in which to use the floatplane in this country, otherwise it would be ideal for the angler, anxious to seclude himself in the centre of some vast lake.

Aquatic Auster

(*Extracts with acknowledgement to "Flight"*)

.....As can be seen from the accompanying photographs, the floats are large and sturdy ; they are also of high hydrodynamic efficiency. Two mooring cleats are fitted on the forward ends. The only change in the cockpit consists of a pull-up cable, fitted below the throttle quadrant, for lowering the water-rudders. These are, of course, retracted for take-off and landing and, to avoid damage, before the floatplane is hauled on to the slipway. Once the initial strengthening details have been completed, the Auster is quickly convertible from floatplane to landplane or *vice-versa*.

Its flying characteristics are especially viceless. Though, of course, it would be folly to attempt to operate such a

light craft in really rough water, the Auster floatplane can take a surprising amount of punishment. On opening the throttle the machine can almost immediately be eased on to the step. Once off the water the aircraft handles with ease and lightness characteristic of all other members of the Auster family. The only noticeable difference is that the rate of climb and maximum cruising speed (90 m.p.h.) are a little slower than that in the landplane versions. Stalls, whether with power on or off, are all quite straightforward and free from any tendency to be followed by a spin.

With water-rudders lowered taxying is simple, and the aircraft responds to a touch of throttle. Rudder also is sensitive, and manœuvring close in-shore is quite safe.

A long-range tank which can be fitted to the underside of the fuselage is not subject to the water-buffeting, as the float bow-waves move back quickly and in any case tend to be fairly flat.

BRIEF PERFORMANCE

At a weight of 2300 *lbs. (equivalent to carrying three people)*

	10 *m.p.h. wind conditions*
Take-off time	48 seconds
Take-off distance	490 yards.
Landing run	150 yards
	Still air conditions
Initial rate of climbing	375 ft. p.m.
Service ceiling	7,500 ft.
Cruising speed (2050 r.p.m.)	91 m.p.h. (true air speed
Maximum speed	102 m.p.h. (true air speed)
Stalling speed (flaps down)	32 m.p.h. I.A.S.
Range	260 miles

AFTERTHOUGHT

One pilot, after flying the floatplane, said, "Don't bother to tell people the best way to 'ditch' an Auster. Just tell them to fit floats." This refers, of course, to last month's Editorial.

Service Bulletins

THERE ARE NO AUSTER DEVELOPMENTS to announce since the issue of Bulletin No. 18 in last month's *Aircraft News*, but the following amendment relates to Bulletin No. 18 :—

In the Remarks against Mod. No. 144, under *Essential Modifications*, include 5 in the Auster Marks to which the Mod. applies and amend reference to Mod. 195 to read Mod. 159.

Spraying from Fixed-Wing Aircraft is Effective

FOR THOSE PEOPLE interested in crop spraying there are three choices regarding the method of application. Of these the pros and cons of spraying by ground equipment are already well known, and aerial spraying by helicopter is becoming equally well known, if only because of the expense involved. The third form of application, from the air by fixed-wing aircraft, has until now involved considerations in costs and effectiveness which have led to controversy in its comparison with the other two methods.

It is now possible to state that so far as spraying from Auster fixed-wing light aircraft is concerned an extensive period of tests, experimentation and actual operational work has recently been concluded, with the results having proved that this aircraft and the unique spraying equipment with which they are fitted are completely successful for spraying. The costs are far below those of the helicopter, and for all but the very small individual acreages they are even lower than those for ground machinery.

It can also be claimed without dispute that so far as can be determined, the Auster with this spraying equipment is superior to all other equipment available to-day, even in America, where crop spraying is very extensively used.

The most important part of the actual operational work was effected in the Sudan through October and November of last year, when three Auster AIGLET spraying aircraft owned by Messrs. Aerial Spraying Contractors Ltd. of Boston, Lincolnshire, were flown out to Khartoum. Conditions in the Sudan are very trying for aerial spraying ; the climate is thoroughly testing for continuous operation of aircraft and personnel alike, and the natural hazards are numerous and difficult. As a point of interest this 3,200 mile journey was completed without mishap in 34 flying hours spread over 10 days.

The purpose of this flight was to undertake the spraying of 17,000 acres of cotton against cotton jassid, a pest which is difficult to control, since the effective spraying period is short and the insect lives and feeds entirely on the underside of the leaves. It is significant to mention this last point, since in the past doubt has been expressed

One of the Aiglets *arriving at Khartoum Airport on the outward journey.*

in some quarters as to the ability of the spray from fixed-wing aircraft to reach the underside of the foliage. This so-called fallacy can now be ruled out since evidence of the effectiveness of the spraying has been proved beyond doubt to the entomologists who were detailed to examine and report on the results obtained.

The 17,000 acres were widely spread along both sides of the White Nile, about 100 miles south of Khartoum, over a district of 120 miles, in plots varying from 30 acres to 3,000 acres. These areas in turn consisted of fields varying in size from five acres to 200 acres, the average being 75 acres. The average area covered during each spraying hour was about 70 acres, the deposit varying between two to four gallons of liquid, which was applied from a height varying between six and fifteen feet, depending on climatic factors.

The operational pattern was arranged on an orthodox style, and a central air strip was used throughout as a base for the aircraft. There the aircraft were hangared each night and accommodation and maintenance facilities were centralised. The aircraft flew out each morning to an improvised landing strip as close to the area to be sprayed as possible, which varied from a few hundred yards to eight miles ; an average being two miles.

The landing strips were not limited in size, but the surfaces varied from very smooth to very rough, as the

strips were quite unprepared ; even so, about 1,500 take-offs and landings were made without mishap.

A good indication of the speed with which spraying from Austers can be effected was established when 280 acres were sprayed in 50 minutes, operating from a landing strip adjacent to the field. The ground organisation and equipment was so efficient that the turn-round from "wheels on" to "wheels off" averaged only one minute thirty seconds.

In an operation of this extent it is natural that there were numerous hazards to be encountered. Trees, telephone wires and birds were the main obstructions, but these difficulties were overcome without affecting the general efficiency of the operation. The most serious hazard proved to be the birds, and these consisted of flocks of birds ranging

One of the Aiglets *on a spraying flight over cotton plants about* 10 *inches high.*

in weight from two ounces to fourteen ounces, and single birds up to 10 pounds, and possibly larger. A striking example of the ability of the Auster to withstand impacts from flying birds was occasioned when a large bird struck the windscreen in front of the pilot, possibly after being cut up by the propeller ; this caused no damage whatever. All servicing of aircraft and equipment was carried out on the spot, and it was not found necessary to utilise any of the comprehensive stock of spares that was carried, either for the aircraft or for the equipment.

This whole spraying operation has since been proved by entomologists to have been a complete success, giving

a percentage kill much greater than obtained elsewhere, and as such it has conclusively sealed an exhaustive series of proving tests commenced in the United Kingdom and Holland, by Messrs. Aerial Spraying Contractors Ltd., and Austers about two years ago.

The special spraying equipment to give the larger range of output required was designed by Mr. P. C. Andrews, a Director of Messrs. Aerial Spraying Contractors Ltd., and consists of a retractable windmill-driven pump inside the aircraft, which is connected to a 48-gallon spray tank, and a double spray-bar beneath the aircraft wings. It incorporates one or two unique features not previously employed in the field of aircraft spraying, and these have fully proved their worth in practice. The equipment was fitted and approval obtained by Auster Aircraft Limited. The ground filling unit was specially designed to pre-mix the insecticides and the spray system within the aircraft provided for circulation thereafter. The main feature of the ground filling unit was the Lee-Howe easy-prime pump with which it was possible to fill the aircraft spray tank in about 25 seconds.

Aircraft Radio Installations

PART III. NOISE SUPPRESSION

WITH THE GROWING USE of V.H.F. radio communications in light and medium aircraft and its extensive use by charter companies, and also in view of tightening of the regulations concerning radio to be carried in aircraft, the effect of ignition noise on its proper functioning has become increasingly important.

Some investigations made during the last nine months indicate that insufficient attention has been paid to this problem in the past. Although numerous engines have had suppression devices fitted, they have been in some cases only applicable to M.F. and H.F. installations, or, alternatively, to large multi-engined aircraft, where the installation and modification costs have been of secondary importance. To the private owner and small charter operator using probably single- or twin-engined aircraft, the cost and work involved becomes a serious problem.

Therefore, it would appear that more attention during the design and prototype stage would be beneficial, and, in fact, will be necessary as the use of V.H.F. communication channels becomes more vital.

There are several kinds of noises which have their effect on reception of radio signals in aircraft, the most obvious one, of course, being the effect of the cabin noise level on one's aural faculties. Again, the small aircraft suffers in this respect, as it is normally noisier than a large aircraft. The only noise which is permissible in a receiver is known as "set noise" and should take the form of a hissing or scratching noise in the headphones. In practically any receiver this is of minute proportions and serves as an indication that the set is on and functioning correctly. Any other noise, such as large clicks, tearing noises and whistles, etc., can certainly be said to be undesirable, and in all cases can be removed. The engine-driven generator gives rise to a considerable amount of noise, but is reasonably simple to suppress. The most serious form of noise emanates from the aircraft ignition system, which is a rhythmic series of clicks or bangs which vary in speed with the engine speed.

With a completely unscreened installation this noise can sometimes be equal to the loudest signals received from a nearby ground station, and therefore will serve to blot out the station signals. There are a good many engines in aircraft which have partial suppression, but complete suppression is extremely necessary to give satisfactory long-range working up to, say, sixty to eighty miles.

It is not only necessary to ensure good bonding and screening of all electrical circuits, but one has to be certain that the magneto housing itself is not radiating noise from the system.

In some magnetos, the magnet is not earthed, thus causing a noise potential to be set up on the case, which is in turn picked up by the aircraft receiver. This could be rectified by fitting an internally-modified and fully screened magneto.

Again, the noise may be radiated by any part of the electrical system such as the wiring to the navigation lights, especially if these are unscreened.

One way in which the radio equipment designer can help is by providing a noise suppressor circuit in the receiver, and in fact, most do ; but this device is only partially successful, as it tends to limit the receiver sensitivity, and can never be as good as suppression at the source.

The degree of suppression of noise in the aircraft is a direct measure of the range which is likely to be obtained, and to obtain the optimum range it is necessary to fit a screened ignition harness (if not already fitted), check the magneto housings for radiation, and possibly fit a suppressed type of plug such as the Lodge type RS9/IR (if approved for the particular engine).

It is possible, even with a receiver without a noise limiter, to get the level of noise down so that it is hardly audible, although nearly every aircraft presents a different problem which, to overcome, may involve considerable time and expense.

The Leaning Tower

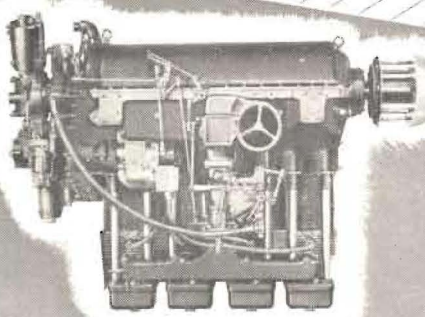
RANALD PORTEOUS, during a flight by Auster to Malta recently, took a photograph of the Tower at Pisa from the air and this is reproduced below. The magnificent buildings adjacent to the Leaning Tower are shown quite clearly in this view.

Corporal L. A. Quar

IT WAS WITH GREAT REGRET that we learned of the untimely death of Corporal L. A. Quar recently in an unfortunate incident in the Antarctic. Corporal Quar was the radio operator of the R.A.F. Antarctic Flight which did such grand work in guiding the British-Scandinavian Expedition ship to a suitable landing point in Queen Maud Land last year. Corporal Quar remained behind to continue his duties as radio operator for the Expedition after the R.A.F. Flight returned to England. His death occurred when a Weasel, in which he and three others were travelling, ran into the sea during bad visibility. There was only one survivor.

SEEN IN THE FACTORY

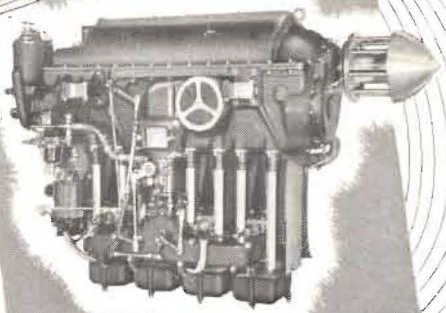
"GOD HELPS HIM who helps himself, But God help him who helps himself to this toolbox."



MAJOR

CIRRUS engines have a long record of success in many countries and in a great variety of light aircraft, and are now showing their worth in the new light civil planes being built by many leading manufacturers.

You will want absolute reliability coupled with the utmost economy. You will expect the engine to give you real service with the minimum of upkeep and maintenance such an engine is the sturdy war-tested CIRRUS.



MINOR

Cirrus REGD. TRADE MARK

REGISTERED CIRRUS TRADE MARK

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BBE/6