The First Freedom ?

Preparing for Post-war Gliding : Two New Sailplanes Described

THERE appears to be a reasonable chance that, in the not too distant future, the barr on gliding by private individuals will be lifted. Certainly, "gliding freedom" is, in present circumstances, likely to be the first to be obtained by the amateur, who may have to wait for quite a while before he is permitted to go his own way in power-driven aircraft. Furthermore, it is even possible that the ex-Service or ex-A.T.A. pilot may, apart from the question of finance, actually prefer to take up a "new" sport rather than to return, so to speak, to his E.F.T.S. days with any types of light aircraft which may be available.

At least for the first year or two it is probable that the great majority of gliding club members will be those who already have adequate flying experience, and it would seem that the immediate need will be for dual and solo high-efficiency gliders rather than for primary gliders. The few of the latter that are available should be adequate for the training of the inexperienced. No medium or high-performance types have been built in this country for the last six years, and very few were built even before the war. So there should be quite a useful market both here and abroad for sailplanes.

Pre-war light aircraft pilots will no doubt remember the little single-seater built by Chilton Aircraft, of Hungerford. After a "war" of sub-contracting, this firm is now going ahead with the construction of a sailplane, since only in gliding can an immediate market be seen for any aircraft. The firm has chosen the Olympia as a type worth development.

THE CHILTON OLYMPIA	
DIMENSIONS AND WEIGHTS	
Span	49.3ft.
Length	22ft.
Wing area	161 sq. ft.
Wing loading	3.48 lb./sq. ft.
Aspect Ratio	15
Weight empty	353 lb.
Load	209 lb.
Structure weight/all-up weight ...	0.625
Structure-weight/wing area ...	2.19 lb./sq. ft.
PERFORMANCE	
Best gliding angle (L/D)	25 : 1 at 45 m.p.h.
Minimum sinking speed	2.2ft. per sec. at 39 m.p.h.
Stalling speed	31 m.p.h.
LOAD FACTORS	
C.P. forward	10
Diving	2
Pull-out	10
Inverted flight	5.5
In gusts of 33ft. per sec.	2

Olympic Specification

It may be remembered that when the 1940 Olympic Games were planned, soaring was included amongst the competitive sports, and it was decided that all should fly an identical aircraft. A committee was formed to lay down the basic requirements of this aircraft. Interestingly enough, this committee limited the wing-span in order to obtain an easily handled machine, and stipulated a minimum weight in order to discourage cheese-paring. An amply wide cockpit, dive-brakes limiting the terminal velocity to 124 m.p.h., and a severe set of strength requirements were also included in the specification. In all, this specification demanded a robust and sensible machine. There were eight entries from various countries and the Olympia sailplane was the winner of this competition.

Generally conventional in layout, the Olympia has a number of interesting features which make for ease of assembly and maintenance, and it is fully aerobatic. Research suggests that the gull-wing is not necessarily as efficient as had previously been supposed, and the wing-shape of the Olympia is of normal design, with a taper ratio of 2.6 to 1 and a dihedral angle of 2.5 deg. The section at the root is Gottingen 549, thickened to 16 per cent. of the chord to allow the use of a deep spar, with a tip section of Gottingen 676 to give better stalling characteristics. To obtain good fore and aft control and stability the tail surfaces are larger and further from the wing than has been previously usual. Small but important points, such as rudder-pedal adjustability and a manually operated tab trimmer, have been included, and the instrument panel, including, in the standard aircraft, an A.S.I., a variometer, a turn and bank indicator, an altimeter and a compass, can be quickly removed if the machine must be left unattended after a cross-country. There is a compartment behind the pilot for the mounting of a barograph.

The Olympia is small and the design subscribes to the modern theory which is aimed primarily at obtaining a good L/D ratio at higher speeds in the interests of "penetration." In earlier designs efforts were made to obtain the lowest possible sinking speeds near the stall, with the result that efficiency went to pieces at high cruising speeds.

Quite a large number of Olympias—believed to be about 1,000 were built in Germany—for *Luftwaffe* training, but, not unnaturally, Chilton Aircraft have had to put in a lot of hard work in "Anglicisation" and in making the various fittings more suitable for production. Service pilots who have flown German-built Olympias have been enthusiastic about their performance and stability.

Six of the first machines off the production "line" are, incidentally, to be supplied to the Derbyshire and Lancashire Flying Club.

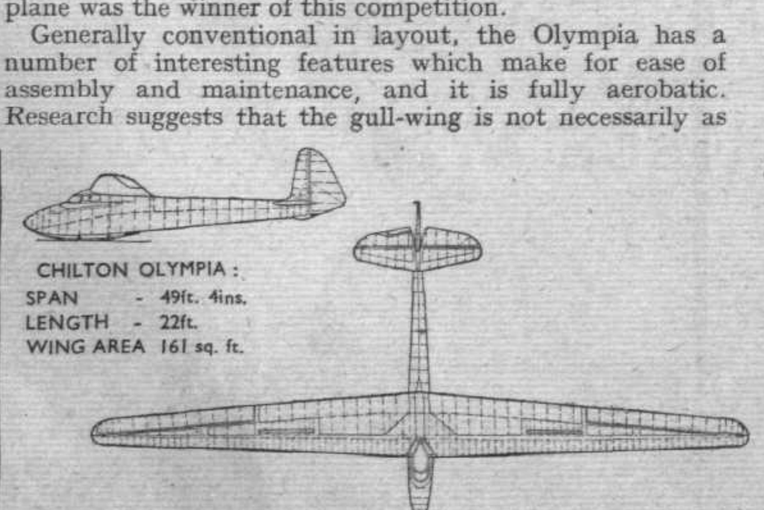
Private Venture

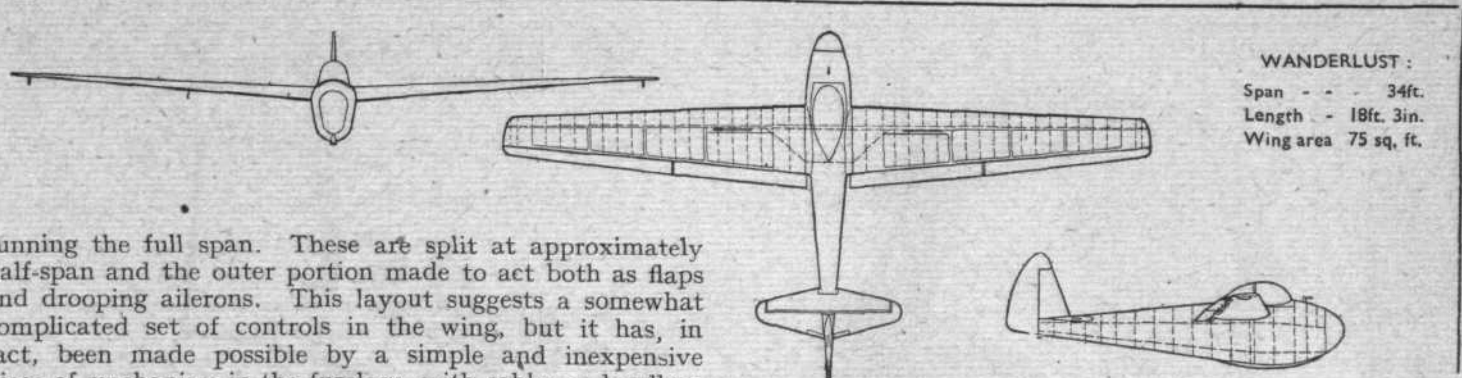
Another interesting sailplane, named the Wanderlust, of new design, is being built in their own time by two draughtsmen, T. E. Brown and K. W. Radbarn, employed by Miles Aircraft. This aircraft, incidentally, is being built without machine tools.

The most noticeable feature of the Wanderlust is its small size. The question of size has been discussed at great length in the past, and the makers consider that the smallest machine possible, with medium all-round performance and good cross-country performance, is required for reasons of handling ease.

Since the Wanderlust has been primarily designed for cross-country work, the maximum mileage per hour with the lowest sinking speed was aimed at, and the machine had to be manœuvrable at 36 m.p.h. and efficient at 90 m.p.h. It had also to be able to land in the smallest possible space. Cloud flying is inevitable, with the risk of building up excessive speed, so means had to be found of limiting this. The wing loading had to be kept high in order to obtain a good cruising speed, together with penetration in a high wind. It was on this foundation that the Wanderlust was designed.

The wing is fitted with extended aerofoil section flaps





running the full span. These are split at approximately half-span and the outer portion made to act both as flaps and drooping ailerons. This layout suggests a somewhat complicated set of controls in the wing, but it has, in fact, been made possible by a simple and inexpensive piece of mechanism in the fuselage, with cables and pulleys as the only controls in the wing. The flaps are actuated by a handwheel in the cockpit. This also droops the ailerons, which have been designed with an extreme differential movement to overcome adverse yawing movements.

In order to improve the cruising characteristics and to take the aerotowing stresses, the wing sections vary somewhat from those of past practice. N.A.C.A. sections have been used. The root section is 23021 and the tip section 4315, with 2 deg. washout to improve stalling characteristics. These sections have a very small c.p. travel, which is more essential since the flaps, when lowered, cause a fairly large pitching moment.

The wing itself is of normal type, with a single box spar and ply-skinned nose to give torsional stiffness. Aft of the spar the wing is fabric covered—the only fabric on the machine. Torsional and drag loads of the wing are carried back to the fuselage by the use of a drag strut through the wing. Assembly of wing to fuselage is through five bolts only, the controls being automatically linked up by the mating of the wing to the fuselage side.

WANDERLUST SAILPLANE

DIMENSIONS, WEIGHTS AND DATA

Span	34ft.
Overall length	18ft. 3in.
Height (tail down)	4ft.
Wing area	75 sq. ft.
Flap area (total)	13.65 sq. ft.
Aileron area (total)	13 sq. ft.
Tailplane and elevator area	12 sq. ft.
Fin and Rudder area	7¾ sq. ft.
Root chord	40in.
Tip chord	18in.
Aspect ratio	15.4
Root section	N.A.C.A. 23021
Tip section	N.A.C.A. 4312
Dihedral	4°
Weight (empty)	190 lb.
Weight (all-up)	375 lb.
Wing loading	5 lb./sq. ft.
PERFORMANCE (ESTIMATED)	
Stalling speed	32.4 m.p.h.
Best gliding angle	1 in 25
Best gliding speed	35-37 m.p.h.
Speed range	35-95 m.p.h.
Rate of sink at 95 m.p.h.	6.5ft. per sec.

Wing spoilers are used to shorten the hold-off and to check dangerous speeds. These are of simple design, the mechanism consisting solely of parallel links. It may be remembered that, just before the war, it became compulsory in Germany to fit spoilers to all sailplanes.

The cockpit is larger than was previously usual; the aircraft may be flown either with open or closed cockpit. The rudder pedals are adjustable.

Between the skids and fuselage bottom, a pneumatic form of shock absorption is used, consisting of a sealed-off motor cycle tube which is held between the skid and fuselage by a canvas covering.

A very simple form of fuselage structure is used, dispensing with laminations and jig assembly. Only two laminations have been used on the entire fuselage.

The tailplane is of normal construction, and is completely faired into the fuselage. The elevator has two cockpit-controlled trimmer tabs.

It is hoped that the Wanderlust will also be available in kit form. The selling price of the finished machine should be less than £250.

"FORTS" WORTH MILLIONS LEFT TO WASTE

FLYING FORTRESSES worth £37,000,000 stand staked in a field 25 miles south of Munich and will probably never fly again, writes Marshall Yarrow, *Reuter's* Special Correspondent.

Wing tip to wing tip and tail to tail, 450 of these warcraft lie in silvery lines on a lush Bavarian field, their mission accomplished.

They were used by the 8th U.S. A.A.F. to help hammer Germany into final submission. They remind one sharply of huge, shining eagles roosting triumphantly on the body of their prey. The long ranks of Fortresses are called by the G.I.'s around here "the Occupation Air Force." Theoretically, perhaps, that's what they are. But those in charge of it seem to have few qualms about the future.

They are guarded by only a few bored-looking soldiers, and it is doubtful if there are enough air crew within 200 miles to get them into the air. Already the first flurries of snow are dusting the countryside with whiteness. Six months out in the open will probably do to this army of Fortresses what the *Luftwaffe* could not do—ground them for ever.

I asked an American officer was there no remedy for this staggering waste.

"What can you do?" he countered. "They cannot be converted to transport or passenger planes. They are too expensive to operate. They have not the cubic capacity for cargo planes and, anyhow, their weight would militate against that. They were built for just one job—to carry a load of bombs. They did their job well—you just ask the Germans!"

Even the engines, apparently, are not worth salvaging. No peacetime air transport line wants to start out in business with second-hand engines, no matter how good they once were.

And so a king's ransom in unneeded aircraft stands parked on a southern German field—not even an airdrome—as a shining monument to the overpowering air superiority achieved by the Allies and a disturbing reminder of the industrial waste of war.

But an officer put me right on this. "Hell!" he objected. "They ain't wasted. Just take a look at all these soldiers living around here in peace and comfort. If we hadn't had all these ships we should still be fighting and a lot of these boys would be dead."

I had to agree that the £37,000,000 expenditure was not wasted in a humanitarian sense, but those acres of sparkling aluminium still looked like a lot of cooking utensils, vacuum cleaners, civilian automobiles, refrigerators and coffee pots to me.

However, I was assured that there is such a potential supply of new aluminium in the world that it would not be profitable to dismantle these retired aerial warriors for the amount of metal they would yield.

It did, however, pay to put them together—one more instance where the battle was the pay-off.

R.A.F. TO FLY MORE A.T.C.

MORE flights in R.A.F. aircraft for A.T.C. cadets will now be possible, under new instructions which the Air Council have just issued to the Commanders-in-Chief of all R.A.F. Commands at home. A new concession authorises R.A.F. station commanders to employ aircraft for the purpose of giving passenger flights to A.T.C. cadets whenever the aircraft and crews can be spared without interference with the ordinary work on the station.

Previously, cadets could only be taken as passengers by R.A.F. squadrons when space was available in aircraft engaged in ordinary duty flights. As flights will continue to be given to cadets on such routine duty flights as circumstances permit, the new concession means that passenger flying for the A.T.C. will be substantially increased. This increase in flying facilities is part of the new peacetime programme for the Corps, and it has been introduced because the Air Council find that "well conducted passenger flights can be of the greatest value to the efficiency and enthusiasm of the A.T.C."

Each of the 95,000 A.T.C. cadets has a personal flying and gliding log in which all his airborne training is recorded.