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The First Journal devoted to Soaring and Gliding



JANUARY 1949

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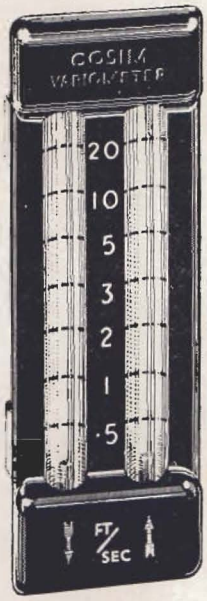
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THE FIRST JOURNAL DEVOTED TO SOARING AND GLIDING

JANUARY 1949 ★ Vol XVII No 1

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COVER PICTURE:
Oerlinghausen. "The Expert's hand Aerobatics," taken by D. L. Barker, 1/100, F16, super XX, 2X Yellow Filter.

EDITORIAL

THE London Gliding Clubhouse was re-opened to the public on January 1st, 1949, three years to the day that gliding began again after the end of hostilities. On that cold January day when Lawrence Wright sang down to those below from a height of 50 feet as he turned along the ridge "How am I doing?" after years of no gliding at all, no one believed that it would be three years before the P.O.W. cage below on the landing field would be removed, or the untidy camouflage, huts and other impedimenta vanish from the scene they were spoiling.

During all that time the members have looked forward with anticipation to the time when Kit Nicholson's architectural achievement would become once more a part of their daily lives and much of the toilsome and frustrating inconvenience of using a makeshift clubhouse some way from the site, be removed. In the past few months, under the leadership of Lawrence Wright the Clubhouse has regained almost all of its pristine freshness, its white walls glisten in the sun, new paint abounds, new rubber flooring softens the tread of flying boots. The hangar underneath and alongside the restaurant is full of aircraft and the club once more in its stride.

It was unfortunate that the howling gale made flying impossible for all but Marmol in his "Krajanek" (It seemed that the keel would be pulled out of his machine in the almost vertical belly launch in which he achieved 2,500 feet in the gathering dusk) even though it brought Keith Turner and two others in an "Auster" from Bristol in under forty minutes. But over 200 people turned up to tea in two sessions, and to hear Dudley Hiscox, Chairman of the London Club and of the B.G.A. Council, introduce Mr. Whitney Straight, C.B.E., M.C., D.F.C., Chairman of B.O.A.C. and of the Royal Aero Club, and Col. Preston, Secretary-General of the Royal Aero Club. His brief remarks referred to the diffidence he felt, as one who knew more of the more vulgar form of flying which used engines, in venturing among the purists, but he paid tribute to the part that Gliding had played in Meteorology, in aircraft design and in the development of Airborne Forces. Just as the Sea had been the source of our great influence in history, now the Air is our heritage, and the place we must occupy must be second to none.

(For the benefit of our foreign readers, who may not know, your Editor would like to recall an occasion in November 1940 when on a visit to Northolt Airfield, then an R.A.F. Fighter Station. He was talking to the C.O., and a gallant member of the famous 303 Polish Fighter Squadron, when two Spitfires landed. A few minutes later two pilots came into the Mess. One was Whitney Straight, an unadorned Flight Lieutenant. They had been on a two machine sortie over France, which had been uneventful. Shyly, Whitney Straight was heard to ask his comrade if he had fired his guns. "No" was the reply. "I am so glad" said W.S., I was afraid you would and I wouldn't have." Whitney Straight afterwards forced landed in France but made an extraordinary escape from the Germans and returned to London. Here he was promoted Air Commodore and put in charge of the Air Transport for the North Africa landings and then on. He is not yet forty.)

After tea, there was a Film Show by Lawrence Wright of various films made by various people, but the masterpiece was a cartoon gliding film made by Lawrence Wright, which was instructive and amusing, with a brilliant classical musical accompaniment by Doc Slater. The V.M.F.G. might like to hear that their film of their Camp in 1931 was shown, including the one of the Sailplane which was launched from a hill so high that you got your Five Hours on the way down, if you followed the road.

The Party and Dance which followed went on until the small hours. The wind abated and the morning saw renewed flying activity. It was a gay occasion, but there were the faces of those one missed . . . always in the back of the mind.

One hopes the powers that be will take some interest in the U.L.A.A. paper in this months issue on the cost of taking a power "A" by the Ab Initio solo method, which it is suggested could cut down the cost to less than £30. This is the answer to the M.C.A's. costly new Regulations. It is a practical scheme, founded on experience and one that should turn out far better pilots than anything which proceeds on a basis of 40 hours minimum dual.

An example of what can be done if we are left to ourselves without Government interference is the scheme by which C's. of A. can be done on site by the Clubs themselves at but a fraction of what it would cost (and did) when the scheme was run by the Government. In this at least the M.C.A. have realised that the Clubs knew what they were talking about and have acted accordingly.

SOARING IN FRANCE

The "Caudron C.810" Sailplane

by GUY BORGÉ

BY 1941, Mr. Raymond Jarlaud, then the chief designer at the sailplanes office of the Caudron Works, had studied 3 different sorts of machines, each one for a determined job :

" Caudron C.800," two-seater for school.

" Caudron C.810," one-seater for training.

" Caudron C.820," high-performance one-seater.

The " C.820 " was never built. On the drawing board, it consisted of a nice mid gull-wing machine, of which the characteristics were : wing span, 58 feet.—Area, 183 square feet.—Aspect Ratio, 18.—Full weight, 610 lb.—Wing loading, 3.3. For climbs inside clouds its safety factor was 12.

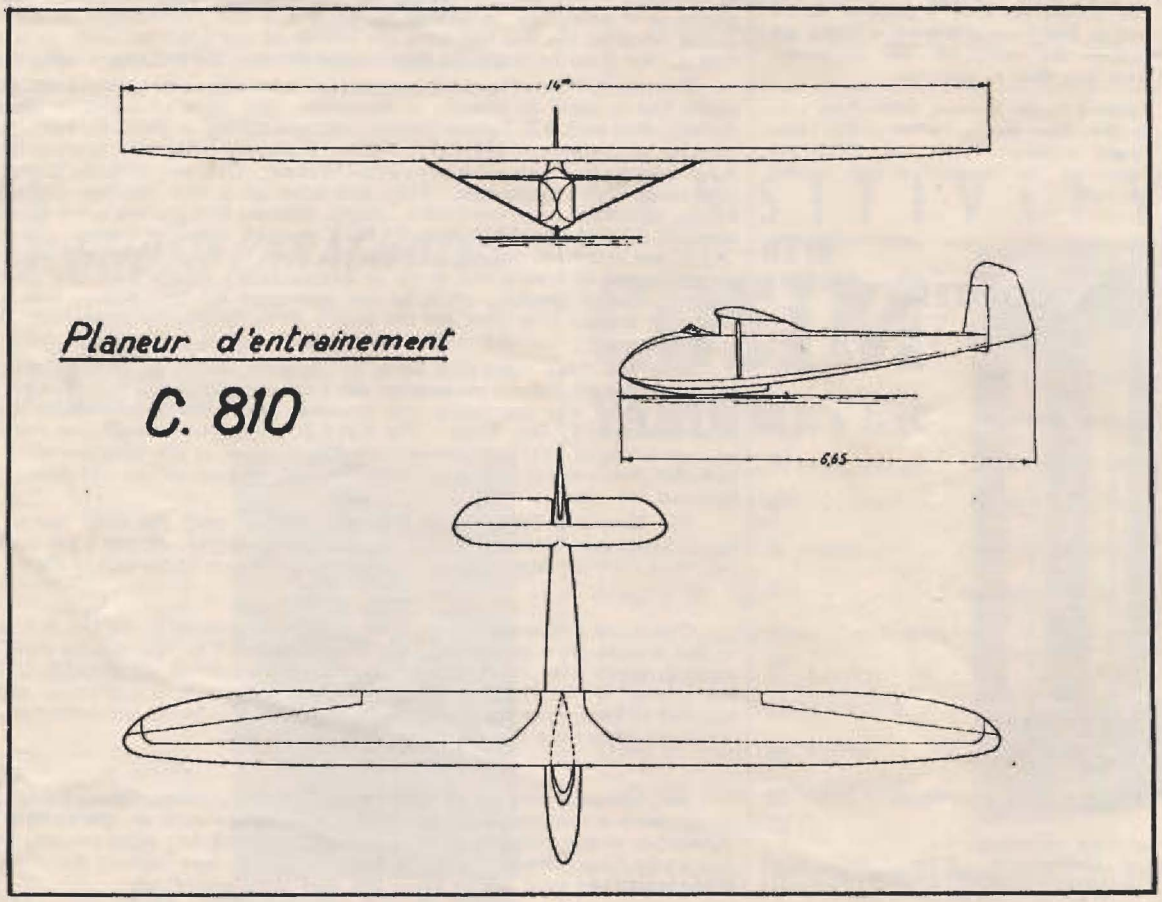
The " C.800 " two-seater on the other hand flies everywhere in France. It has been found that its actual performance is better than the calculated one, mentioned in the *Sailplane*, November issue, 1947 ; its minimum sink is well under the 3 feet/second mark.

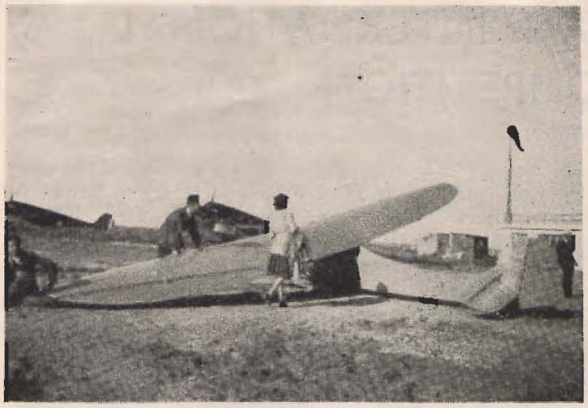
Together with its remarkable soaring qualities, the " C.800 " offers many other attractions : its gentle stall around 25 m.p.h., absolutely viceless ; its easy transport on to the tarmac by 3 men (a difference from the " Kranich " !) ; its quick rigging and de-rigging ; the comfort of its side-by-side seats.

It seemed natural that Mr. Jarlaud thought of giving similar characteristics to a training one-seater, so that the pupils instructed in the two-seater might fly a very similar machine during their first soaring solo tests.

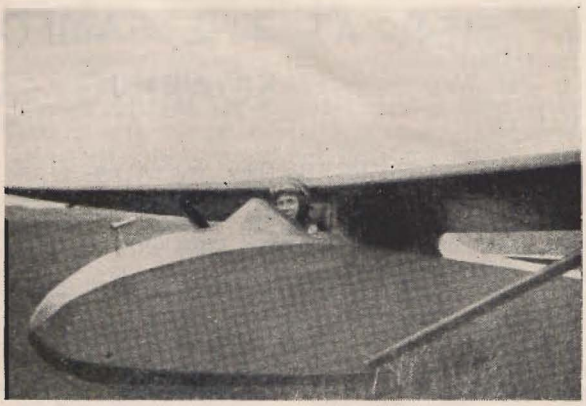
This machine is the " Caudron C.810," which has many features in common with the " C.800 ". Apart from its dimensions, the wing is essentially the same. For the " 800 " and " 810 " wings, Mr. Jarlaud wanted to obtain at the incidence of the maximum gliding ratio, a strictly elliptical curve of the lift along the span, in order to attain the minimum induced drag at this incidence. Such an elliptical curve was not obtained by an elliptical wing plan shape, very expensive to realise, but given by a careful study, in a wind-tunnel, of the best combination between a simple plan shape and an aerodynamical wash-out.

Therefore, the greatest part of the " C.800 " and " C.810 " wings has a rectangular plan-shape with





" Caudron C.811 " at Chavenay.



" Caudron C.811 ".

a constant Gottingen 654 section (of relative thickness ratio : 14.5 per cent). The tips, washed out, have a parabolic shape with an evolutive section of which the extreme consists in a Gottingen 676 (of relative thickness ratio : 11.9 per cent).

Like those of the " C.800," the " C.810 " ailerons have a differential action : a rise of 25 degrees corresponds to a lowering of 12 degrees. The metal spoilers, on the upper surface of the wing only, are also the same.

The fuselage alone offers a different appearance : the " C.810 " bulkheads are hexagonal, and drawn so that the angles of their sides remain constant for ease of construction.

Two " C.810 " prototypes were built during German Occupation. They were destroyed, without having been tested, by the Allied Bombardments on the Renault Plants.

When Freedom came, the Air Sports Service, anxious to avoid delays, ordered batches of known sailplanes, like the " Grunau," the " Castel 310," and the " Emouchet " for training purposes ; it dropped the " Caudron 810."

But the Gaston Caudron Aero-Club, the successor of the old C.O.B. (Club Olympique de Billancourt) decided to build again this machine which bore its name. So many members worked at it in the late Caudron plants, that they became part of the SNCAN (Société Nationale de Constructions Aéronautiques du Nord).

They carried a few modifications on the relation of the spoilers and the horizontal stabilizer which was lifted to avoid their disturbance. They also added an elevator trimmer, controlled by a button fixed on the stick tip, and a seat trimming in height and length for adding comfort.

The machine, under the name of " Caudron C.811," was constructed in 13 months, and began to fly on the 8th June, 1946. As an actual performance sailplane, she appeared to be very superior to the " Grunau " in soaring qualities, the lightness of her controls, her solidarity, and her low minimum speed : 23 m.p.h.

It is regretted that the " G.B. " has replaced this outstanding realization. The following data show the different characteristics of both machines :

	" Caudron C.811."	" Grunau-Baby II "
Wing span ..	46 ft.	44.3 ft.
Aspect Ratio	12.7	12.8
Wing area	166 sq. ft.	153 sq. ft.
Length	20.6 ft.	19.8 ft.
Empty Weight ..	330 lb.	300 lb.
Full Weight	528 lb.	500 lb.
Wing-Loading ..	3.2 lb.	3.2 lb.
Minimum vertical speed	2.4 ft./sec. at 32.5 m.p.h.	2.8
Maximum gliding ratio	21 at 39 m.p.h.	18

The " Caudron C.811 " numbers several hundreds of hours to-date. Several pilots, confident in her strength, tried in her all the aerobatics, or climbs inside clouds. For instance, Mr. Lambert, the Gaston Caudron Vice-President and a met-man, succeeded in a 2,400 ft. gain in a big cumulus cloud.

Another example proves her solidity : the " C.811 " was exhibited at the Paris Aero-Show, hung from the Grand Palais ceiling. At the end of the Show, the Gaston Caudron members came to take out their lovely machine. But by an accident during the descent, she crashed from 25 ft. on a link-trainer just under her. The unhappy link was properly written off but the sailplane suffered only minor damage !

I heard that Mr. Melleton, the soaring instructor at the Gaston Caudron, had once attempted a trip in the " C.811 " from her Chavenay airfield to England, without success owing to the weather conditions.

Will the " Caudron 811 " be the first French sailplane soaring towards Britain and " rendant la politesse " to Mr. G. H. Stephenson ? But I know that numerous French pilots have the same goal.

Because of these happy results, the Gaston Caudron members have just undertaken the construction of another machine derived from the " C.811 " : the " Caudron C.812." It will keep the same successful wing, but fuselage will have an oval section, as in the " C.800 " two-seater, and an enclosed cockpit.

They hope to get airborne a sailplane offering the same performances and strength as the " Olympia."

GUY BORGÉ.

MET. AT THE SAMEDAN INTERNATIONAL SOARING COMPETITION

(continued).

DR. EICHENBERGER then passes on to a general description of the synoptic situation during the competitions. The weather, which had been bad until then, improved especially for their start, as it were.

" A belt of high pressure has formed, which links the Azores anticyclone with our area. North west of the British Isles a deep Atlantic depression is moving slowly north east, reaching Scandinavia on the 23rd of July. Meanwhile pressure remains high over our area although it is periodically affected by fronts which, associated with the Atlantic depression, are rotating around its south like the spokes of a wheel and brushing us on their way to the north east, thus giving us variable weather . . .

" The 24th an anticyclone formed over central Europe, giving us easterly winds which lasted until the end of the competitions."

Rather than go through the unfolding of the weather day after day, the Doctor prefers to describe some of its most interesting features : up to the 22nd there was sunny weather and deep unstable air, with a condensation and a freezing level both around 4,000 metres. This sounds as if a little room was allowed in which to sort things out below.

The 23rd appears to have been a tricky day. Morning fog was preventing the meteorologists from getting their three dimensional gen. When that little trouble was over and, as a result of their having gone in for a day of thermal convection, it was decided to hold a height test, a cold occlusion, unheralded and of local manufacture, puts a wet blanket of medium cloud over the land during the early afternoon, and wrecks the show.

Next, the period of goal flights, ending with the 28th, is discussed.

" The 25th, the weather which had gone wrong during the evening of the 24th, was bad. On Monday the 26th, first day of the period in question, it does itself up, but it does us in !

" The freezing level lingers at about 3,400 metres, and an inversion limits cumulus development to about 4,000 metres. The condensation level is 2,800 metres to begin with. However it is expected to rise during the day. But according to the Payerne sounding, it is lower still over the Swiss Plateau. Thermals can only be expected to arise from ground situated above 1,700 metres. Thus hollows must be avoided. The crossing of passes is made difficult by the low cloud base. A south easterly drift suggests flights towards the west. The whole day is afflicted with a (Rückseitenbewölkung), (a sky with a frontal hangover), that is to say, cumulus associated with thin medium multi-layer cloud.

" In spite of these accumulated, difficulties, several pilots crossed the Gothard to land in the Rhone Valley . . . whilst others go north and north east."

The 27th appears to have been marred by a thickening veil of cirro stratus which curbed the convection. Only one pilot managed to leave Samedan for a short flight. The Doctor attributes the unwelcome cirrus to the formation of an upper warm front. The meteorologists were much exercised when it came to decide whether that spoilsport weather feature would still be there to ruin the next day.

With this note of uncertainty the curtain rises for the next day. A day of records, and sorrow.

" To begin with the teleprinter is unserviceable. Impossible to draw a chart. We get some information by telephone ; our first need is the soundings for Lyons, Strasbourg, and Payerne. These soundings show general wet instability, increasing westwards."

According to the local ascent convection clouds will be able to push through two inversions (this was admirably demonstrated later by the presence of alto cumulus layers which marked the inversions). The air is stable up to 3,000 metres and will only be climbed with the help of dynamic flow (Maloja wind). Above, thermals will be found, arising from the peaks. The condensation level is at about 3,800 metres, the freezing level at 4,600 metres.

There is a tendency for thunderstorm formation, especially over the western Alps. Over the plains cloud base will vary between 1,500 and 2,000 metres. Westwards, the freezing level will come down to 3,800 metres. The upper wind is still easterly, but in the lower layers there will be local winds.

From Italy we only have very little information. Between 5 and 6, during his sounding, the pilot has observed over there a great number of towering clouds, signs of great instability. It is thundery towards Genoa. It is raining in Turin.

We advise pilots to start early. The " Départ " is accelerated. With the exception of four sailplanes, which for a long time hover above the Muottas, at the critical altitude of 3,000 metres, everybody disappears rapidly enough from the Samedan sky.

At night the news came to us of the wonderful exploits performed during that day. Each flight has gone on from cumulus to cumulus, then from cunim to cunim, in spite of the peaks treacherously hidden within the clouds. Thus Persson . . . .

Unfortunately the day has been darkened by the accidents during which Nicholson and Greig met with their deaths. As we have already said there was already a lot of cloud during the early morning in Italy. As a result of the atmospheric instability thunderstorms soon occurred there. The condensation level over the valleys is low. The summits are in cloud. Blind flying, Nicholson hits the side of Monte Berlinghera, whereas Greig's accident is not caused by meteorological factors, as we first thought.

All the British pilots have gone in the direction of Italy and had to land in the neighbourhood of Lakes Maggiore and Como. It may be that they

might have chosen another direction, if we had been able to provide them with the information which the teleprinter would have given, if it had been functioning normally.

As we know that in other directions from Samedan there were more mountains with their heads in cloud, and cables along their flanks, there is really no need to express such regrets.

Under the sub-title of " Mot de la fin," Dr. Eichenberger ends his interesting article with these words :

" If the soaring which took place at Samedan were to be classified it would be necessary to say before all else : ' flying in cumulus.' This meant blind flying of a kind which was almost always dangerous because the condensation level was too low relative to the summits, and because icing layers were frequently entered by the pilots. Below the clouds thermal and slope soaring took place. There was no wave soaring.

" This was no restful job for our improvised meteorological outfit. However, apart from the few surprises which we have detailed, everything went ' according to plan.' "

There is no doubt that at the present stage in the development of soaring technique, and with the present training methods and available equipment, the ability to fly in large convection clouds forms a stringent " efficiency bar " in soaring achievement. It would be futile to deny that a certain amount of danger is associated with this type of blind flying ; but it is a danger which it is easy to exaggerate. However, the presence of high mountains might be sufficient to render the risk less than fair when the pilots are driven by the incentive of competition. Unless I mistook his words, this view was substantially expressed by our Senior Pilot, when he gave at Londonderry House a brief account of the flying conditions during the meeting.

About the slope and thermal soaring at Samedan, I should have liked to hear a little more from the mouth of a meteorologist. Some of their aspects must be as different from the straight forward kind, as the Derby and Lancs. ' Evening Thermal ' appears to be from a common or garden standing wave.

I think that one ought to be grateful to Dr. Eichenberger for having followed up his thankless task at Samedan with the writing of such a valuable account.

JACQUES COCHEMÉ.

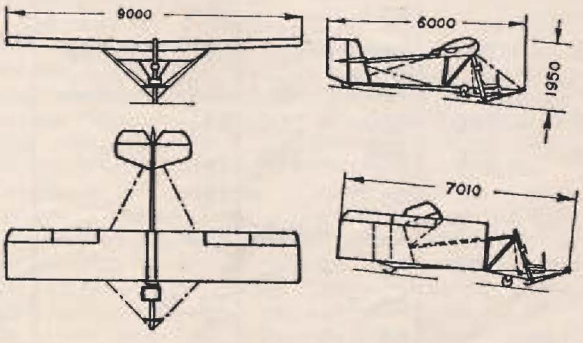
GLIDING IN POLAND

NEW POLISH DESIGNS

By WITOLD CHARLES STARZEWSKI

THERE is only one glider-factory at present in Poland. It is the I.S. (Soaring Institute) at Bielsko in the south of the country. It has the difficult task of supplying all the necessary designs for our gliding sport. Although it co-operates with some of our best designers known from pre-war times, such as Kotowski, Matz and Nowakowski, its work was and still is hampered by the lack of technical and scientific equipment.

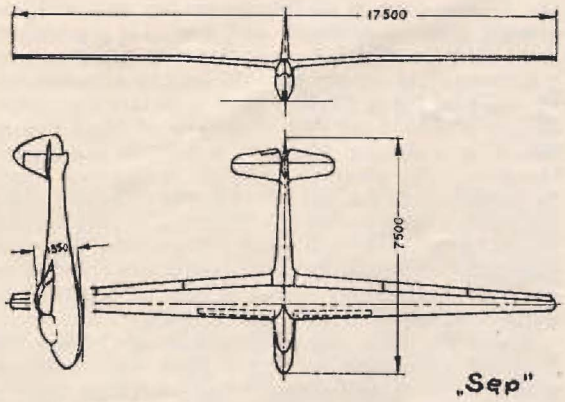
The first design produced was " IS-1—Sep " (Vulture), a high performance plane of a great span and aspect-ratio, with curved wing. Five gliders of this type already produced followed with some changes (not for the best) the prototype. Dive brakes after the design of the Aerodynamical Institute in Warsaw from 1939 have been applied to it ; they considerably limit the speed with a comparatively small increase sink, so that the pilot can circle in a cloud without taking the risk of passing the critical speed. The brakes consist of two long plates of about 7 inches wide, taking 32 per cent of the span, and placed on both sides of the cockpit on the wing-undersurface near the leading-edge. When not used they are hidden in the contour, and when stretched out, they are lowered at the angle of 60 degrees. To make short landings easy by increasing the sink one must apply brakes. Simple trailing-edge-flaps moved down with the ailerons, applied to the " Sep " did not give the expected improvement of sink ; but they considerably diminished the rather great circling radius by rendering the stability greater and the minimum speed smaller. The merits of " Sep " are speed and a strong construction ; its drawbacks, unanimously stressed by all the pilots, are difficult piloting while circling and a not very luckily designed set of levers to handle the flaps, brakes, interceptors, tab, jettisonable undercarriage, the nose and side releases. A large cockpit secures the pilot's comfort, but forms an unnecessary parasite drag which makes the gliding angle and the sinking ratio worse than could be expected from the span and aspect ratio.

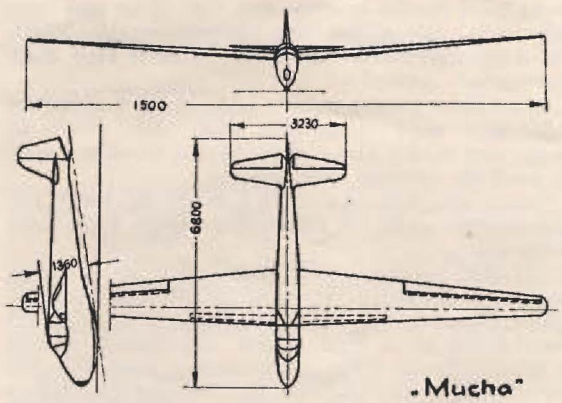


„ABC"

Another type is " IS-2—Mucha " (the Fly), an advanced trainer, finished a few weeks ago.

THE SAILPLANE





The designers are Ing. Kotowski and Ing. Kaniewska. It is a cantilever midwing with the span, aspect-ratio and wing-loading like those chosen by Jacobs for " Olympia." " Mucha " has, however, an entirely different structure, a shorter tail, highly differential ailerons (unusually great ratio 1 : 6), and dive brakes as mentioned above which limit the speed to 92 miles/hour.

The construction is very strong, economical in avoiding any unnecessary surplus of material, light, inexpensive and smart. Its gliding angle and sinking speed being a little better than those of the " Olympia," it is much more manoeuvrable and easier in piloting and circling. It seems to be the best in its class of the aspect ratio 15 and has a fine prospect of an international career.

" IS-3—ABC " is, as the name itself indicates, a primary glider. It was designed by Ing. R. Matz and R. Zatwarnicki. It is the result of long study of different types of primary gliders. It is a wooden, strutted construction ; its airfoil has a stationary centre of pressure. The wings have 5 degrees lateral dihedral angle. " ABC " is cheap and is fitted out with two improvements long wished for by schools and beginners. They are : a pliable transport-wheel and easy folding wings and tail for storing. Special attention was given to secure the same proportion of the movements of the stick and the plane in all the directions. Its achievements qualify it both for training by winch or by slope soaring. The construction has been checked also with regard to the stress for towing and aerobatics, so that complete test-flights could be made. " ABC " proved to be a very good training-plane, offering perfect security against spin. All these qualities ought to make " ABC " an object of interest for the training centres of the world.

Cracow, June 22nd, 1948.

Technical Data

Data	Dimension	IS-1 "Sep"	IS-2 "Mucha"	IS-3 "ABC"
Span	ft or m	57,4 ft - 17,5	49,3 - 15,0	29,6 - 9,0
Length	ft or m	24,6 - 7,5	22,4 - 7,0	20,5 - 6,0
Height	ft or m	4,7 - 1,43	4,5 - 1,36	4,6 - 1,4
Aspect ratio	-	18	15	6
Gross wing area	sq.ft or m^2	183 - 17	162 - 15	145 - 13,5
Wing loading	lb/sq.ft or kg/m^2	4,9 - 24	3,28 - 16	2,28 - 11,1
Weight empty	lb or kg	730 - 330	350 - 160	154 - 70
Weight loaded	lb or kg	900 - 410	530 - 240	320 - 150
Best gl. angle	-	27,5	25	11
Min.sinking sp.	ft/sec or m/sek	2,3 - 0,7	2,2 - 0,66	4,3 - 1,3
Diving speed	m.p.h.or km/h	155 - 250	93 - 150	- -
Load factor	-	11	10,2	12,25
Section at the root		G8 549	G8 549	
Section at the tip		M 11	M 12	

GLIDING IN GERMANY

A.T.C. GLIDING—Course No. 13 from 9th-24th October, 1948.

By S/Ldr. A. R. DRIESSEN, D.I.O., Area No. 2, and of No. 104 Gliding School, Martlesham Heath.

ROYAL Air Force Reserve Command organized altogether thirteen gliding courses in Germany during 1948 for personnel of the various A.T.C. Gliding Schools in this country. All of them took place at Oerlinghausen, and all of them can be said to have been more than successful. The standard of flying at B.A.F.O. Gliding Schools is high, and the assessment which was issued in respect of every member who attended a course will, in consequence, be a valuable record to Reserve Command of the flying and instructing ability of its Gliding School personnel.

No. 13 Course was the last course of the year, and consisted of F/Lt. Davies, Command Gliding Officer in charge. F/Lt. Head, Cambridge; F/Lt. Southern, Doncaster; F/O. Young and F/O. Struth, Scotland; Mr. Bridges of Southend; and myself from Ipswich. Having foregathered at R.A.F. station White Waltham the trip to Oerlinghausen was made by a Command Anson to Buckeburg, and from there by road to the actual gliding site at Oerlinghausen, one of the former German gliding schools.

Oerlinghausen and the surrounding country is pretty, and although the ridge is not large, and some distance from the landing ground, excellent soaring can be had and, providing one follows instructions and prepares to leave the ridge when height has been lost to two hundred metres, the completely wooded areas back to the landing ground offer no terrors.

The Oerlinghausen Club House under the direction of the Malcolm Club is well run, food is good and plentiful and the accommodation leaves little to be desired. The only improvement I would suggest is a new hot water system. Hot baths were a luxury and severely on the ration.

We received a warm welcome on arrival. F/O. McCallum the C/O. and C.F.I. of the Gliding Club and Miss Diana Hervey the manageress of the Malcolm Club did everything to make us feel at home in a few moments. After a wash and some food we gladly joined in what was the celebration of a hard and successful day's flying.

The next day, a Monday, a rest day for the staff, F/O. McCallum, our C.F.I., got down to brass tacks. We had a lecture on flying routine, thermal, soaring, ridge soaring with particular reference to the Oerlinghausen ridge, and finally on what was expected of each course member. The drill was roughly this. Everyone would be given a circuit in the " Kranich " two-seater as passenger in order that he might become accustomed to the site from the air and the best way to approach the landing site, which is well surrounded by woods. Before being allowed to fly any other glider, every member to do one complete circuit in the open primary, the German " S.G. 38," and spot land. This to be a competition. I do not mind saying here that the prospect of doing a circuit at about one thousand feet on one of these ancient contraptions filled most of us with more than misgivings, particularly as most of us had never been in one of those string bags before.

However, Tuesday dawned and we not only acquitted ourselves honourably of the ordeal, but really enjoyed the new sensation. F/Lt. Davies won the competition and collected the " Kitty " but was no doubt heavily out of pocket in the evening.

We were next allowed to fly the " Grunau." One nose launch, then conversion to C. of G. launch during which we had to stall the machine, spin it, fly hands and feet off and spot land. All this, being watched like a lynx through Artillery spotting glasses from the ground. Herr Rolf Reese, the German chief instructor, a Sailplane Pilot with about two thousand hours' experience, and first assistant to F/O. McCallum, was a just but relentless critic. Perfection was the ideal and nothing else would do. In the days that followed, warm and sunny, with never a breath of a nice strong Westward on the ridge, we were taught and practised accurate turning, circling in thermals, accurate approaches and spot landings on the only available, and not very large, grass plot in what otherwise could be a small edition of the Sahara Desert. Sand, sand everywhere ! No, the Aerodrome is certainly not much to look at, and in rain, and we certainly got some of that in our second week, it really becomes quicksand in places.

We were certainly made to work. F/Lt. Davies returning to England on the 11th appointed me Course Commander, and it then became my job to allocate the many duties that a well run Gliding School demands. However, praise to all of them, everyone worked with a will, even when most of the gliders had to be carried from landing to launching site because the available M.T. was alas, no better than that available to Gliding Schools in this country. With all this we still did eighty to ninety launches a day.

On the Thursday F/Lt. Head, Bill Bridges and myself were converted to the " Meise Olympia." A great day. This particular " Meise " is a beautiful machine and handled like a dream.

Friday brought some ridge soaring, and we all became conversant with some of the peculiarities of this not too easy site. F/O. Young, the only one among us without his " C " made it easily with twenty minutes and followed up with a further thirty minutes later in the day.

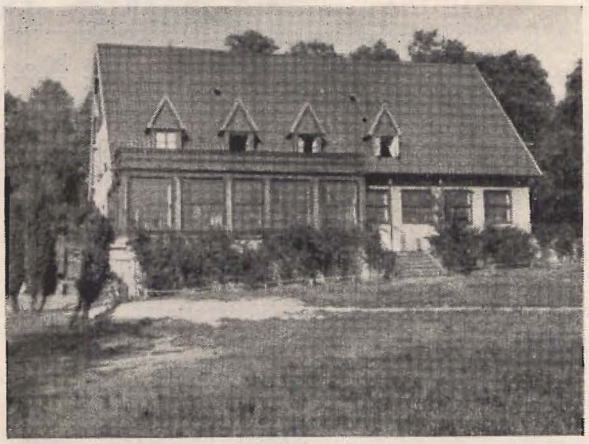
Saturday and Sunday were Club days, and the A.T.C. rested and became acquainted with the pleasant surroundings of Oerlinghausen and made excursions to some of the magnificient Officers' Clubs in Rielefeld, Herford, Guetersloh, etc. However, the second Monday of our course soon dawned, and with it came a really mounting Westwind. Young, Bridges, and myself decided to have a try at our five hour duration, and finally set off. Young and Bridges in " Grunaus " and myself in the " Meise." Reese briefed us. It would rain on and off, cloud

would be low at times, but as long as we kept out of cloud and remembered to turn home when we had lost height to two hundred metres, we just could not go wrong. Well, we did go wrong; but certainly not in a way that any of us anticipated. A cold front, of which incidently none of us had any experience, changed its course and decided to pass over the ridge. Bridges, furthest west on the ridge, the first to spot the altering conditions, attempted to turn back with spoilers out to keep him out of cloud, but was too late. When he found himself forced over the ridge and realising he could not get back, decided to run in front of the cold front rather than get into cloud without proper instruments. He succeeded in completing a cross country of one hundred and fifty kilometres, a record for the Oerlinghausen Club during this year. He landed at Wesendorf ten kilometres outside the Russian Zone. No need to say this was celebrated, it certainly was !

Young was caught in cloud whizzed up to one thousand metres and straight down again on the other side of the ridge. He crash landed in a little clearing among trees, but was luckily unhurt.

Myself, furthest east on the ridge, was caught unawares and went up into cloud with the variometer off the clock. Spoilers and diving appeared to make no difference to my upwind movement, and when in almost inky blackness hail began to pound my ship, I remembered every story I had ever read of Sailplanes breaking up in cloud. However, after a struggle I managed to regain daylight having come out through the side of the cloud presumably, and finally landed at Heidenoldendorf 30 m. away. How I afterwards wished I had hung on a little longer. But then, I must admit that my courage at that precise moment was not of the best order. I shall know a little better next time.

The weather for the rest of the week was not too good. Strong winds and rain most of the time; but we still managed to do a few circuits, or snatch an odd half hour on the ridge, until Friday when another good ridge wind held promises. Bridges in the "Weihe" and myself in the "Meise" decided to have another try at the five hour duration. Alas, it clamped completely and we had to give up after three hours of incredibly strenuous flying in rough weather.



Club House, Oerlinghausen.

I think I can say that both F/O. McCallum and Herr Rolf Reese were pleased with No. 13 course. Praise was received where it was due and criticism was always just. I cannot end without paying tribute to F/O. McCallum's German staff. Whether in the shops, the office, on the winches or retrieving, they did what they could for us with a smile and it is worth while noting that many of them are holders of Silver "C" gained before the war.

The Malcolm Club gave us a grand farewell dinner on the Saturday and we left, reluctantly, on the Sunday morning, again by road and air, hoping that we shall be fortunate enough to go again next year.

"THE OBVERSE SIDE"

"WAS I REALLY SO DUMB?" Some afterthoughts by a beginner

By Autolycus.

AS an Army Officer serving in the B.A.O.R. I took the golden opportunity of trying my hand out at gliding at one of the Service clubs out there. It was all a dismal failure and I have since often asked myself why this should have been. I think I have an average amount of intelligence, I do quite a bit of sailing which is, after all, akin to gliding, and I have done a small amount of power flying.

The searching question I have asked myself so many times is "Did the fact that my efforts were such a failure arise from lack of proper instruction or was I really so obtuse about the whole business." Without throwing bouquets at myself I have come to the conclusion that, although there were undoubtedly faults on my side, the instruction left a lot to be desired.

Now that I am back in England and circumstances prevent me carrying on with a sport I learned to love in spite of my failure to master it, I can look back objectively on my efforts and perhaps my experiences might help both pupils and instructors to avoid the troubles which hindered my progress.

My gliding career commenced on a cold March afternoon in 1947 when, after work had finished on the Saturday, I journeyed down to a service club which possessed a first class flying field and a wonderful fleet of primary and advanced machines. On that afternoon I completed two ground slides on an "S.G. 38" and coped fairly well. The first taste was good and I hungered for more.

Next day the weather prevented primary flying in the morning but I had the opportunity of seeing what was in front of me if I persevered when I

was given a hill soaring trip in a " Kranich " by one of the club's experts. This trip thrilled me and I just could not wait to get through the irksome training stage before getting my hands on something that would soar. Alas, I was to be disillusioned.

The wind dropped that afternoon and I got in one more ground slide which went off so successfully that I was informed that next trip I should be allowed to do a low hop. An hour later, full of confidence, I embarked on my first solo airborne trip. And here the trouble started. It was an appalling performance and none of the liberal consoling poured on me by the old hands shut my eyes to the fact that I had started off badly.

But why ? what had gone wrong ? who was to blame ? The following had gone wrong ; I had hung on to the winch too long, gone too high, released in a stalled attitude and never recovered. My eventual arrival on the ground was something to be seen to be believed and would have broken anything less sturdy than the " S.G. 38." At the time I cursed myself for my failure but looking back now I realise that the briefing I received was anything but sufficient. My instructors were all power pilots of considerable experience of powered aircraft and sailplanes and I consider they failed to appreciate the problems of the comparative tyro at the art of flying.

My own power flying at the time had been confined to taking over high powered machines when they were airborne and I fondly imagined that the " S.G. 38 " would behave in a similar manner. It did not, of course, and the instructions to " just level out and land the thing straight ahead " were not much use to me when I found myself sitting on the " broomstick " about 25 feet in the air.

That disastrous low hop concluded my first week-end at the club and I spent the whole of the next week telling myself that I should do better next time. I must have done because after three more low hops the following Saturday I was told I might try a high hop, going up to something in the region of 100 feet. In retrospect this strikes me as sheer madness. On none of my low hops had I really grasped what it was all about and not one of my landings could possibly have been described as good.

So, the first serious accusation I level at my instructors is that they allowed me to run before I could walk. And what is more they allowed me to run before they had really done very much to help me to learn to walk. It is my firm opinion now that I should have been kept at the low hop stage until I was able to land the machine properly every time, and not have been allowed to progress a stage further just because one of my arrivals on the ground had not been quite so appalling as the others. Naturally I was all for jumping straight to the high hop stage as it brought me nearer to the time when I should be flying a sailplane. At least I thought then that it would. I realise now that that particular jump probably retarded my progress more than anything else.

Strangely enough my first high hop was reasonably successful and I arrived back on Mother Earth feeling very pleased with myself. My self-congratulation was short-lived however, and each subsequent straight high hop seemed to become worse than the last. I was conscious myself of the fact that I was making little or no progress, but in spite of this my instructors adopted a complacent attitude and instead of calling me on one side and telling me quite plainly where I was going wrong they merely comforted me by saying that it was simply a question of practice. On many occasions after a trip I dashed over to the group of " Experts " who always clustered around the man with the authorisation book and asked them what I had done wrong, but in most instances none of them had noticed my short trip ; they had all been too busy watching old " George " doing some very clever antics over the field in an advanced sailplane.

So, my next accusation against my instructors is that they did not detail a man who knew what he was talking about to watch the tyros and tell them where they were failing. This accusation may seem a bit hard but it is true. I know it is true because on subsequent occasions I have had beginners come up to me and ask me, of all people, where they had gone wrong.

A glance at my log book will soon show anyone how slow was my subsequent progress. After the low hops I find eleven straight high hops before I was allowed to even try a gentle turn off the straight path to the other end of the field, or the plough beyond. After this we find a series of ten high hops with turns before the circuit stage is reached. And some of these high hops with turns were " dicey " in the extreme. I was given little or no instruction on how to turn ; " If you want to turn to the right, put on right bank and rudder, and if you want to go to the left do the reverse." This was followed by instructions to do " a forty-five degree turn to the right, then a forty-five degree turn to the left and land straight ahead." I usually found that, by the time I had managed to get the dear old primary round forty-five degrees one way or the other, it was more than time for me to think about regaining Mother Earth before I ran out of field or air.

So my next accusation against my instructors is that they failed to realise how much turning instruction is needed by the novice before he can execute turns in a reasonably competent manner.

My first circuit was something to be seen to be believed. I got a good launch and cast off at about 800 feet almost over the winch. I had been told to keep a good speed up and there followed a very good imitation of a Spitfire doing a screaming, turning, dive bombing run. It must have been something like this because half way down the down-wind leg I found myself much lower than was comfortable and had to do a smart turn on to the centre of the field to get back at all. The less said about the landing the better. I stalled at about twenty feet and hit the ground harder than I had done before, or have done since, thank heaven.

This really shook me, my confidence had gone, I was thoroughly disgusted with myself and arrived back at the launching point a thoroughly miserable person. I realised at once that if I was to continue gliding there was only one thing for me to do and that was to climb straight back on to the wretched machine and have another crack at it. This suggestion was met with all sorts of discouragements ;

" But, old boy, there are seven people ahead of you on the Primary list and you'll have to wait your turn."

I persisted, and ten minutes later embarked on my second circuit. This was much more successful and after a reasonable circuit I got back on to the field with a tolerably good landing. Next point for instructors, give pupils another chance immediately after a failure which may have affected their nerve.

After five more circuits on the open primary, by which time I had qualified for my " B " certificate I graduated to the nacelled " S.G. 38." By this time my confidence had returned and I got on quite well in the " Boat " as the nacelled " S.G. 38 " is affectionately termed. But all the time I missed any constructive criticism and I found myself having to soldier on on my own.

We were now at the end of June, and on the 28th of that month I had my most successful day. I completed eight circuits in the boat, each more successful than the last, and I began to think I was getting somewhere. Late that evening I was pushed into a " Grunau " and without further ado launched on a low hop. There is little more to tell. After three low hops in the " Grunau " I did a total of 23 circuits in the same machine. My longest trip was 2½ minutes and I never even had the vaguest idea what to do when I hit lift of any sort. And no one ever told me in detail what I should do.

There is one further chapter in the sad tale. When I had completed about 15 circuits in the " Grunau " my work took me to the Oerlinghausen area one Wednesday, and on my way home I looked in at the club there and was offered a trip in a " Grunau." I intended to do a straight circuit there but immediately after release I hit lift. I started to circle madly and, of course lost the lift. I now found myself in unfamiliar surrounds, over a wood, with not the vaguest hope of getting back to the field. I landed, downwind, in a clearing in the wood, fortunately without damage to the " Grunau," but the machine had to be dismantled before it could be got back to the field. Thus an hour's flying was lost on that machine and I was unpopular to put it mildly. I know I was in the wrong, but then, I had never been given any instruction on airmanship.

To sum up, it took me 29 launches to get to the circuit stage and after a further 49 launches I was still only doing straight circuits. 78 launches and my best solo effort 2½ minutes. Hardly a creditable performance you will agree. At this stage I went back to sailing.

I had lots of fun at gliding and the many instructors I encountered were all grand fellows. They were more than willing to help one, but I do not think they knew quite the right way to go about it. They never really seemed to appreciate quite how elementary the instruction must be for the beginner who has not the advantage of several hundred hours of power flying behind him. I think also that in their understandable endeavours to see one get on quickly they overlooked the fact that there is no point in going on to lesson 2 when the pupil has not thoroughly digested lesson 1.

In spite of all the above, however, I would give a whole lot to see my name in the list of " Silver C's," or even " C's."

SUTTON BANK.
SUNDAY, 29.8.48.

Matt Lamb in the " Blue Kite "

WE, Andie and I, took the " Kite " out of its trailer and erected it. The turn and bank had failed to function when last flown, so I examined it and found the rubber tubing disconnected. I replaced the tubing and fixed it with a twist of wire at both ends and decided to leave it and test the instrument, which was a recent acquisition. As Bill Sharp was just preparing to go off in Slingsby's new " T20 " 2-seater, I went over and asked him to sign my sealed barograph. He did so, remarking positively that I could expect nothing to-day as conditions were too poor. I politely agreed and said I could but try. Evans, who had just landed in the " Grunau," said there was nice lift all over, that his maximum was 6-700 feet but that I might do better in the " Kite." Conditions seem to worsen and the sky become thicker with dead looking clouds.

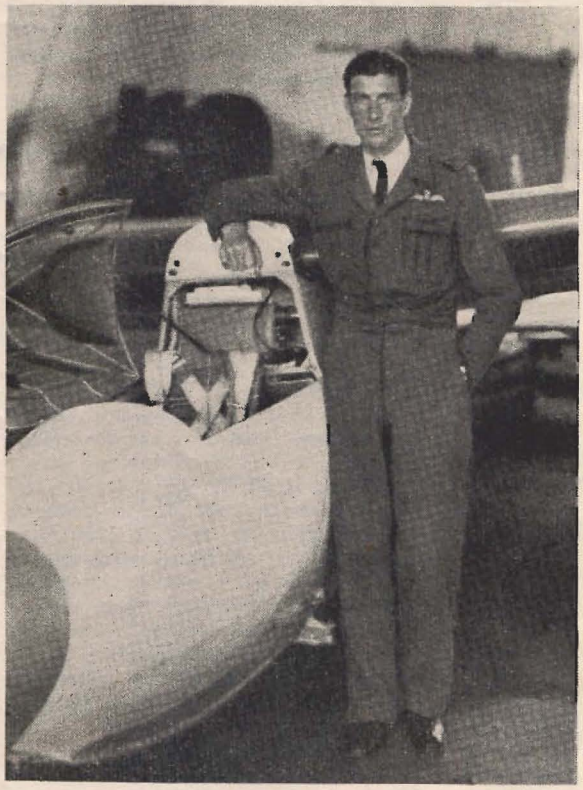
The wind was SSW and about 18 m.p.h. when I cast off at 600 feet and beat off to the south facing slope, noting, as I did so, that my ASI was not registering half my correct speed, and realising, regretfully, that I had not replaced the plug in the static half of the Pitot tube. I dropped to 500 feet on the way over, then steadily rose in the smoothest of lift where ever I went. All over the slopes and out in the valley was gentle lift. The wind did not seem any greater in speed as I climbed, because I could make headway against it in any direction. I had plenty of ground speed, in whichever direction I flew.

All my flying has been in hill lift, where one is constantly being pushed back over the hill, and where there is just a narrow belt of lift in front and above on the wind-ward side. There are vast differences in ground speed into and down wind in hill lift. To-day was unique in my experience of Sutton. I could circle and circle without being shoved back to, and behind, the Bank. I was in thermal lift. My ground speed did not vary much whichever way my nose pointed. I suppose this is the way to differentiate between thermal and hill-lift. After three-quarters of an hour, I was at 1,000 feet and reached cloud base about this height. Large masses of cloud were coming up the valley and I made into the edges and found lift in them and behind them, so I circled and slope-soared them until I'd worked my way to 4,000 feet in clear air and above all the clouds visible in the sky. " Now," I said to myself,

" is the time to go across country." So I turned east and followed this cloud which had so gently taken me up to silver " C " height. I had been up 1¼ hours. Not having made a cross country flight before, I had some doubts about my ability to make one. My intention, therefore, was to hang on to my cloud as far as I possibly could, so as to conserve height, to keep to its windward side, to keep in as much lift as possible and to keep near a hole in the clouds so that I could watch the country and keep direction. The clouds were thickening. There were clouds all round me, N, S, E, and W, and I was above their tops. There was but one gap I could see—on my port quarter. I saw a long narrow ravine of trees, which I identified as going down to Rievaulx Abbey. Cloud covered the earth directly below me but I reckoned I was about ten miles on my way, though blown off course by the S in the wind. The Turn and Bank was not indicating. (I found on landing that the rubber tube had cracked under my wiring.) I circled to fill up with as much height as possible and decided to set a course S of E and go straight. I did this. I set my course at 120 and flew straight at the cloud ahead, the top of which was just about my own level. Though my blind flying instruments were U/S, I was getting a little impatient of hanging about outside my fostering cloud and wished to get on in front of it. Besides, I was going too far north with it—and there was no way round it. If I kept in a straight glide, I thought I could not go wrong: and I had a parachute. I plunged into the milk and flew smoothly blind straight on. I was rewarded by coming out of the cloud's farther side a few minutes later still on an even keel, and right side up. The clouds were gently shelving down about 2,000 feet or so to a gap in them 2 or 3 miles ahead. I flew to it and made out Kirbymoorside on my port side. I was dead on course. The clouds, however, seemed to be coming up from my starboard quarter to close the gap. I was half-way and still had nearly 3,000 feet. There appeared to be no lift about as I circled, so I had to go down through the gap or straight on through the clouds. I chose what I thought to be the shortest route to my destination, the straight glide through the cloud to the coast. It had worked before. So I followed the same technique as before and in I went. Within a minute I was looking for a way out.

The compass seemed an impossible instrument to keep steady. It showed me travelling N then W then S then E, and kept on turning, with and without my help. The wind outside seemed to be rushing past me with a force gradually increasing to gale strength. All instruments, except the compass, had a dead look about them. I put on rudder with no permanent effect on direction as shown by the compass. The wind howled past me at a speed such as I'd knocked up when looping the " Kite." I eased the stick here and there. I saw the Sun, shining dimly through the cloud, pass from under my port wing to overhead out of sight. I wondered who had upset the Universe so quickly and in the short space of time I had been in cloud. I blamed the Russians and the Government. I concluded I wasn't flying the " Kite " at all. It had taken the bit and run off. Well, let her. I could think of nothing to regain control. I listened for signs of stress, wondering if I'd have to abandon ship. There were none: no creak, no crack, not a shiver or a judder. She was strong and capable. She could take it and so could I. She appeared to be enjoying herself. On we swooped. I wished I could see this aerobatic display. I might be able to repeat it at some air show. But no one saw it, and I hardly felt it. I was on my seat all the time. At last I caught a glimpse of earth far below and immediately lost it as I hurtled back into cloud. But I was comforted by the knowledge that the cloud was far above the ground. A minute or so later I came out of cloud and saw the earth a long way below me. The " Kite " tried to lift back into cloud but I levelled off and nosed her down as I looked around for land-marks. About two miles away I recognised Wombledon aerodrome. I flew towards it. I felt no lift. The sky seemed dead. I decided to land. I circled the aerodrome looking for Slingsby's hangar and, at last, made it out and landed alongside. It was half-an-hour after leaving the Bank. There was hardly any wind. My barograph could be heard ticking steadily.

MATT LAMB.



OUR NEW "GOLD 'C'"
F/Lt. R. C. Forbes
(see R.Ae. Club Certificates).

THE BRITISH GLIDING ASSOCIATION

Londonderry House,
19, Park Lane,
London, W.1.

Editor "Sailplane" 11th December, 1948.

Dear Sir,

KEMSLEY FLYING TRUST PRIZE COMPETITION RULES

It has been pointed out that paragraph 5, in our circular letter of 2nd December, which deals with the method of measuring the distance of any qualifying flight, is neither comprehensive nor sufficiently explanatory, and I am therefore to inform you that the following paragraphs have been substituted :—

"In the case of aero-towed launches the point of release must be behind a line drawn through the starting site, at right angles to the line joining the starting site to the landing point, the exact point of release to be certified on the certificate required by paragraph 8 (2). Distances will be computed from the starting site, not the point of release.

"When winch or bungy methods are used for launching, distances will be measured in a straight line from the point of take-off.

"The minimum qualifying distance in either case is 15 miles."

Additionally, I am to inform you that in the event of two or more qualifying flights, covering exactly the same distances, in either one of the two classes of launch, the winner will be judged from his narrative of the flight.

Yours faithfully,

Secretary.

AWARDS OF NATIONAL GLIDING COMPETITIONS 1948

Cup	*Winner*	*Marks*
Londonderry Cup	J. W. S. Pringle	326
L. du Garde Peach Trophy	Cambridge University Gliding Club Pringle .. 326 Granth .. 171 Dick .. 138	635
Firth Vickers Trophy	A. D. Smith	331
EON Cup	C. J. Wingfield	658

FINAL MARKINGS OF THE NATIONAL GLIDING COMPETITIONS 1948

Name	*Club*	*Entry*	*Date*	*Machine*	*Dist. (Miles)*	*Goal, Return or Distance*	*Marks*	*Height (feet)*	*Marks*	*Total Marks*	*Remarks*	*Final Placing*
Wingfield, C.	Midland	Individ.	6.5.48	"Olympia"	114	O.R.	384	5100	52			
,,	,,	,,	17.6.48	,,	110	D.	100	5700	64			
,,	,,	,,	15.9.48	,,	—	—	—	5400	58	658		1
Smith, D. A.	London	,,	27.6.48	"Gull I"	38	D.	38	4390	43			
,,	,,	,,	22.7.48	,,	100	G.	150	—	—			
,,	,,	,,	25.7.48	,,	67	G.	100	—	—	331		2
Pringle, J. W. S.	Cambridge	Club	30.3.48	"Olympia"	108	G.	174	4650	46			
,,	,,	,,	17.6.48	,,	64	D.	64	4200	42	326		3
Garnett, R.	Surrey	Individ.	22.7.48	,,	71	G.	106	5900	68			
,,	,,	,,	22.8.48	,,	42	G.	63	—	—			
,,	,,	,,	17.9.48	,,	—	—	—	6255	74	311		4
Ince, D. H. G.	Midland	,,	3.9.48	,,	48	D.	48	10150	151			
,,	,,	,,	17.9.48	"Petrel"	—	—	—	5800	66			
,,	,,	,,	29.9.48	"Olympia"	—	—	—	3700	37	302		5
Grantham, J.	Cambridge	Club	19.4.48	,,	—	—	—	5200	52			
,,	,,	,,	22.7.48	,,	—	—	—	3500	35			
,,	,,	,,	21.9.48	,,	49	D.	49	3500	35	171		
Dick, A. D.	,,	,,	21.6.48	,,	46	D.	46	7100	92	138		
Dean-Drummond, A. J.	Surrey	,,	11.4.48	"Weihe"	77	D.	77	—	—			
,,	,,	,,	1.8.48	,,	32	G.	48	—	—	125		
Brown, D.	,,	,,	16.8.48	"Olympia"	74	D.	74	3970	39	113		
Welch, L.	,,	,,	3.6.48	,,	52	D.	52	4960	49	101	Not a Club machine	
,,	,,	Individ.	16.6.48	,,	65	D.	65	—	—	65		
Murden, P.	,,	Club	8.7.48	,,	40	D.	40	3910	39	79		
Merritt, R. P.	,,	,,	14.4.48	,,	44	D.	44	3380	33	77		
Poland, R. D.	,,	,,	26.8.48	,,	65	D.	65	—	—	65		
Bisgood, P.	,,	,,	27.8.48	,,	53	D.	53	—	—	53		
Laurie, M. V.	,,	,,	24.4.48	,,	—	—	—	4000	40	40		

ULTRA LIGHT AIRCRAFT ASSOCIATION

VICE PRESIDENTS

It is with great pleasure that we welcome four new Vice Presidents to our Association. All are famous names in the aviation world, and, as with Sir Alan Cobham, need no introduction from us.

Our very cordial welcome to The Rt. Hon. Lord Balfour of Inchrye, P.C., M.C., Sir Geoffrey de Havilland, C.B.E., F.R.Ae.S., P. W. S. Bulman, C.B.E., M.C., A.F.C., A.F.R.Ae.S., and F. G. Miles.

We hope to announce the acceptance of the sixth and last Vice President in our next issue.

ON SOLO TUITION FOR ULTRA LIGHT AIRCRAFT PILOTS

THE theory of "Solo Training" on powered aircraft has been a topic for discussion and debate since the formation of the Association. As part of our policy to explore every method of making flying, and especially flying training, cheaper, and therefore, bring it within reach of many more potential flyers, the Association feels that solo training schemes merit a very thorough investigation.

Whilst bearing an open mind on the practicability of solo training, and believing that all the theory in the world is useless unless backed by real experience, the Association proposes to translate the solo training theory into practice upon machines designed especially for the purpose, and thus prove once and for all the practicability, or otherwise of this method of training.

A lot of loose talk has been heard on the subject of solo training on powered aircraft and we consider that in the interests of all our members, a thorough exposition of its theory and principles should be placed before them.

So, bearing in mind that solo training may be part of the solution to the problem of how to get the greatest number into the air cheaply and safely, we make no apologies for devoting this complete number of the *Bulletin* to the subject.

Mr. A. R. Weyl, A.F.R.Ae.S., as Chairman of our Research Sub-Committee, has produced a very comprehensive paper on solo training based on his own experience as an ultra light aircraft designer. Unfortunately space forbids publication of the complete paper, and therefore, F/O. Imray, Chairman of our Operations Sub-Committee, has drawn up a "precis" of the original paper in collaboration with Mr. Weyl. How thoroughly they have covered the subject we will leave to our members to decide after reading it.

Let us hasten to add that the scheme and methods outlined below are open to modification, or possibly even more drastic alterations—and without doubt to criticism. The Association will, therefore, welcome all comment and criticism, favourable or otherwise, as we believe, unlike many others, that open discussion and informed criticism will produce a solo training scheme that will have the greatest chance of being put, successfully to the test.

Good pilots possess three qualities—Skill, judgment and self-confidence. Skill and judgment are the results of experience guided by advice and example, whilst self-confidence is inspired. The correct degree of self-confidence should be the happy mean between fear (the instinct of self-preservation), and recklessness. The main task of a Flying Instructor is to instil self-confidence in his pupil. In a pupil self-confidence can easily be destroyed; a temporary lapse in self-confidence in any pilot is dangerous. While skill and judgment can always be restored, loss of self-confidence cannot always be remedied.

To make a pupil teach himself with an Instructor to guide, advise, criticise and encourage, develops the right brand of self-confidence. The great advantage of solo training is that the pupil is made to find out things for himself by practical experience under conditions of reality when he can make all the mistakes possible without danger to himself. Pilots trained thus are bound to become reliable.

First Solo

The First Solo is the biggest test for a novice. The best instructional methods are those which make the step to first solo nearly unnoticeable. With the pupil's first solo comes the realisation that he now has to rely solely upon his own skill and judgment. It is here that the self-confidence which has been inspired during the preceding instruction, is most severely tested. The strain is eased when the pupil has already been accustomed to situations which he will meet on his first solo flight. Obviously then solo training is far superior to dual training.

However, this superiority applies only when :—

(*a*) The pupil does his first solo flight in the very machine in which he has carried out his previous training.

(*b*) The first solo is undertaken in the same surroundings where he has carried out his previous training.

(*c*) The pupil is so prepared ("conditioned") for his first solo circuit that no new sensations have to be met.

The basic rule of any solo training must, therefore, be that the pupil acquires his pre-flying experience on the very same aeroplane in which he is to make his first real flight. Pupil and aeroplane should grow together to the stage of instinctive flying—they should become an inseparable unity. As this means economy of equipment it is a perfect solution. The functions of flying an aeroplane are rooted in the subconscious and are hence not a matter of simple training (like Maths or welding) and are difficult to analyse.

Penquins

Since 1908 ground trainers in the form of immature aeroplanes have been repeatedly suggested and introduced. These are considered useless because they give the novice the impression that the "real thing" is too difficult to handle directly. It is

a fallacy to assume that " Penquins " are economical. An ultra light solo training " aeroplane " can easily be fitted with temporary devices to protect the airscrew and wing tips from damage during the early stages.

A simplified Link type stationary training device is a different proposition. It can be used in any weather (" indoor flying exercises ") and the novice will not be disappointed as he knows that professional pilots also use it. The Instructor too can ascertain the pupil's progress and correct bad habits.

Experiments made by commencing flying instruction with gliders and motor gliders have given disappointing results. The glider lacks the characteristic element of the aeroplane. The throttle is a basic element of aeroplane control. To glide an aeroplane is of minor importance and easily learned. Motor gliders for beginners' instruction are undesirable. Their climb is poor, they are sensitive to gusts and their low landing speeds restrict the type of weather in which they can be used.

The Ideal Solo Training Aeroplane

The general purpose aeroplane as exemplified by the Dart " Kitten," Piper " Cub," or Fairey " Junior " is ill suited for ab initio self-tuition because these aircraft represent a train of thought which bases design on efficiency ; they are aerodynamically too good for ab initio training. All the advantages of our trend towards efficient design—low drag, substantial speed range, flat glide, etc, render these aircraft unsuitable for solo-training purposes. Low drag at small incidences may contribute to the cause of serious accidents. A flat glide requires more judgment during approach. When the glide is steepened the speed increases, the aircraft flies too fast and the landing becomes difficult (high control sensitivity).

From this it follows that a special solo-training ultra light aeroplane is required. This machine would have two parents who have proved themselves suitable for efficient ab initio solo-training : the antique Farman " wire-cage " biplane, and the Dagling elementary glider trainer.

What conditions should this training plane satisfy ?

The *ideal* aeroplane of this sort should fly at one speed only. It should take off, climb, fly level, glide and land at one and the same speed. Even in a dive it should not gather speed. An approach to this ideal was the old Farman biplane which proved so suitable for self-tuition. The enormous parasite drag made it easy to fly and relatively harmless in spite of its tail-heaviness, pusher arrangement and fragility. Solo-training to-day requires something of this kind—an aerodynamically *inefficient* aeroplane—if it is to be economical and free from serious accidents.

What would such a trainer be like ?

It should, by present-day standards, be pretty inefficient aerodynamically, but perfect in handling qualities. Controls should be harmonised, adequate and moderately sensitive. Stability about all three axes should be present, and moments of inertia, especially in pitch, should be small. The aeroplane should have plenty of parasite drag, say, by way of a wire braced wing of poor aspect ratio. The machine should be light, wing loading about 5 lbs./sq. ft., and ample engine power to give quick take off and steep climb. The wing section should give plenty of profile drag at small incidences and, if possible, enormous profile drag in a dive. When approaching high incidences, the lift/drag ratio should deteriorate and buffeting should occur to convey to the pupil an unmistakable warning of the approaching stall.

The Pilot's seat should be well protected. He should be surrounded by vital members and sit within a cage of solid structure, pylons and bracing cables. These members would take the impact in a crash and protect him. Piano and stream-line section wires should be avoided. The airframe would be simple, cheap, robust, easy to repair, and rugged enough to withstand clumsy handling without producing structural failure in vital members. In spite of the protected seat, the pilot should have a good field of vision. The cockpit should resemble that of a normal ultra light aeroplane. The wheels should have a large diameter so that unevenness in " natural " fields can be overcome. The undercart should, however, collapse should the aircraft run into serious difficulty, without any structural members entering the cockpit.

The maximum speed would be low for the engine power, say 60 m.p.h., the speed range small, and the landing speed not much less than 35 m.p.h. Too low a landing speed renders the aircraft susceptible to gusts.

The solo-trainer would have two adjustments for different stages of training, both adjustable on the ground by the instructor and safe against being tampered with by the pupil or a third person. One is a throttle adjustment limiting the travel of the throttle lever (gating). The other is some form of effective lift-spoiler, capable of partial removal, giving results ranging from total inability to take off at such poor lift that sustained flight is impossible. The ailerons, however, should retain their effectiveness. Further safety precautions would be the provision of an engine self-starter, the installation of some simple fire extinguishing device which acts in a crash, stiffening of the cockpit structure, and the provision of ample crash padding. The airscrew would be cheap and of wood.

Fixed slats might be added to delay stalling but they might accustom pupils to perform in abnormal attitudes. Funds available for training will determine the introduction of this and other additional features.

Solo-training will be at its best when it makes the pupil conscious, in the very early stages, that good flying, good judgment and persistent reliability are necessary for survival. This should be brought home early in the most innocuous manner by personal experience on the flying ground.

The " pusher " design is not favoured. It is best to train pupils on something as near to the conventional as possible. Solo-training in enclosed cabins is unpractical. The pupil gets a false sense of security and less " airsense."

The tractor aeroplane may be exposed to airscrew damage during the early stages, but airscrews are comparatively cheap. The training aeroplane, moreover, could easily be fitted with an airscrew-protecting device during the early stages. Unless the engine is of the hanging cylinder or radial type, it will rarely sustain damage during the taxying and hopping stages.

The monoplane is judged to be superior to the biplane. It is simple—its large span is conducive to good flying qualities in a solo-trainer—its structure and rigging are easily checked—dismantling repair and re-erection are simple. Access to and egress from the cockpit can be made easy with the low or mid-wing arrangement, and the field of vision does not present difficulties.

Our solo-trainer then would be a simple robust aircraft mainly of wood for ease of repair and capable of home construction by amateurs. More, its design could be so simple and its construction so amenable to amateur construction that it would be the aircraft with which home construction would begin. It would thus fill a dual role—*training construction groups in building, and providing flying training in the cheapest and safest way.* It could become the basis from which a popular flying movement could arise.

A Scheme for Solo-Training

There is little doubt that the responsibility of the Instructor is heavier in solo-training than in dual-training. He may have to observe several pupils at the same time (on a large ground), and it is difficult to form an opinion of their progress from seeing them perform hops and taxying at a safe distance. Added to this is the difficulty in assessing when the pupil is experienced enough to be sent on his first circuit. To delay this fateful moment means to kill the pupil's interest and harm his self-confidence. To send a pupil up before he is ready is asking for trouble. Therefore, the Instructor should have the opportunity to check his pupil's progress in a manner which leaves no doubt as to the latter's ability. The scheme proposed here allows for checks at several stages during the training. For such check tests, the simplified Link Trainer, in conjunction with a few dual-control flights on any elementary two-seater trainer is suggested. *These tests should not serve directly as "instruction,"* but they will not be wasted as they will accustom the novice to real flying as a pilot, and at the same time permit the Instructor to correct bad habits by advice. As the check tests are short, the advice will adhere to the pupil's memory.

Another major point to be considered is the flying ground on which the solo-training is carried out.

Aerodromes and airports should *not* be used. These establishments serve civil and/or military flying on (mostly) high performance types, and dual-training. They should not be cluttered up with taxying and hopping novices who are concentrating on their own progress. Such novices cannot be expected to conform with signals from the control tower and to watch for other aircraft to whom a right of way should be given.

Modern aerodromes are now characterised by large buildings and factories and are surrounded by built-up areas. To operate from such places not only confuses the beginner but is a potential danger to third parties. Such aerodromes are usually populated with aircraft. Solo-training will flourish only when the novice can have the whole field to himself. It is suggested, therefore, that solo-training should be conducted on suitably large fields or meadows which have no specific aeronautical character. Often fields are surrounded by hedges which prove excellent brakes for eager beginners displaying poor judgment.

Solo-Training Syllabus

The solo-training to fly should begin and end in the cockpit described above. All preliminary lessons on the action of an aeroplane's controls, the theory of flight, or preparation on a synthetic trainer are useless and even harmful. The novice is likely to become confused and to feel a sense of danger which is not there. He is apt to be afraid before making a real beginning. The reasons for this statement are that, by using such synthetic measures and initiations the pupil forms the following impressions :—

(*a*) That learning to fly is frightfully difficult.
(*b*) That the " real thing " is so different from the initiating appliance.
(*c*) That the training aeroplane must be so fragile or so dangerous that it cannot be approached directly.
(*d*) That flying is terribly complicated and something which only supermen can grasp.
(*e*) That he will never be able to learn.

There is only one way in which to begin solo-training :—give two or three minutes clear advice as to how to handle the engine and what to do, and then seat the novice in his aeroplane to find out things for himself.

The aeroplane is rendered incapable of flight, the throttle is well gated and full lift-spoilers are fitted. The engine is started when the novice is well out in the field, and he is instructed to taxy in a specified direction towards a target ground marker, to navigate round it, and to return to another target by describing a figure of eight and so on. To facilitate rudder control during tail down taxying exercises, a larger and heavier rudder may be fitted.

When the novice has mastered slow taxying with occasional mild bursts of power to assist manoeuvring, he will be permitted to attempt faster taxying. The co-ordination of throttle and rudder is now developed.

The next stage is taxying with manipulation of the stick so that the tail is raised during parts of the straight runs. This accustoms the novice to the co-ordination of rudder, throttle and elevator. During this stage the normal rudder should be used the throttle should be less gated, but full lift spoilers should still be fitted.

As soon as the novice is proficient at such ground manoeuvres the Link Trainer will give a good check test for the Instructor, and help to convey to the pupil the proper co-ordination of the three flying controls. The pupil is taught that in flight, controls

should never be crossed. The Instructor is able to correct bad habits.

The pupil then returns to his aeroplane which has had its lift-spoilers partially removed, while the throttle is gated to say 80 per cent. power The pupil proceeds to the stage of straight hops.

Two targets are laid out. Taxying at sufficient speed with the tail up towards the first target, the pupil will attempt a hop, but he must be on the ground again before the second target is reached. The distance between the two targets is gradually increased from, say, 20 to 100 yards. At the same time the wing span portion affected by the lift-spoilers is gradually decreased.

An automatic cut-out device for the engine may be applied at this stage, but should be discarded as early as possible as it is apt to accustom the pupil to rely upon such a device rather than develop his own judgment.

The altitude reached in these hops should not exceed 5-10 feet. The pupil should not be deemed proficient to progress to the next stage until he is able to make straight hops keeping a fairly even altitude and the wings parallel to the ground. This stage will prove his ability to co-ordinate at least two flying controls and to handle them smoothly.

At the end of this stage, another dual check is advisable. This might consist of one 15 minute flight followed by one or two circuits during which the Instructor leaves the controls to the pupil as far as possible giving only the most urgent instructions. Observing the ability of the pupil to taxy, take off and handle the machine in the air and on the approach, will enable the Instructor to judge with certainty the pupil's fitness to proceed to the next stage.

The next stage consists of hops, reaching say 300 yards in length. Only one target is employed towards which the pupil has to fly, learning to come to a standstill before reaching it and thus accustom himself to judging landing distances.

Some advanced Link Trainer instruction might be useful at the end of this stage.

The pupil now progresses to the execution of long hops with slight S-turns near the ground. These hops should be about 300 yards long and at an altitude of up to about 30 feet in conditions of practically no wind. The pupil is instructed to taxy towards target No. 1, to take off when this is reached, and fly towards target No. 4, the most distant, but in doing so turning first right then left so as to leave targets Nos. 2 and 3 to port and starboard respectively, all four targets being in one straight line. The lift-spoilers are completely removed, and the throttle is less and less restricted until the pupil carries out this exercise with the machine capable of sustained flight.

Another dual check may be desired here in which the controls should be given to the pupil, who should be permitted to attempt a landing, and should demonstrate a circuit of the same type as that he will perform on his first solo flight.

Safely past this check, the pupil continues hopping with gentle turns, the hops being as long as the ground permits, and no targets being used.

When the Instructor feels that it is time for the pupil to do his first solo circuit, he should give the pupil no warning as to his intentions—the pupil's trust in his own abilities is still tender.

The weather for the first solo should be calm, visibility perfect, and the flying ground free from other aircraft. Targets may be laid out to mark a convenient landing place and to mark the field boundaries.

Pupils on first solos are apt to become flustered by trivial things. They may suddenly lose their sense of direction and may become terribly worried by other aircraft. Gusty conditions can also be very upsetting at this stage. Even very slight damage sustained on the occasion of a first solo circuit can do immense harm to the pupil's self confidence.

After the first successful solo circuits, the training does not differ fundamentally from dual training. At least six hours flying should be completed on the solo-trainer, before the pupil proceeds to instruction on the General Purpose type.

Intercommunication

One device which would greatly facilitate solo-training is the " walkie-talkie " type of radio telephony. The Instructor would be in a position to correct the pupil, to tender advice and give immediate instructions. Two-way transmission is unnecessary as its operation may confuse the pupil, and his ability to ask questions and seek solutions to his problems, may make him too dependent on the Instructor.

Instrumentation

It is far safer to train pilots to keep a good look out and fly instinctively rather than fly correct turns by reference to instruments. The pupil who flies bad turns with his eyes outside the cockpit stands a better chance of survival than one who turns perfectly with his eyes " in the office." It is, therefore, essential to train the pupil *from the beginning* to look around as much as possible. Targets on the ground will contribute towards this in the early stages, and an appropriate even if old fashioned arrangement of instruments outside the cockpit will also assist. Instruments are apt to worry the beginner, and the fewer there are in a solo-trainer the better. However, a fuel gauge, oil thermometer and oil pressure gauge should be provided in the cockpit. Benefit can also be derived from the installation of a simple spirit level to help the pupil to develop the feel for flying correctly banked turns.

The Solo-Trainer

The manufacture of solo-trainers would scarcely be a profitable undertaking for larger industrial concerns. There would be little sense in making the design subject to competition. The development of such a training aeroplane needs experience and experimentation, but does not require a great deal of money, nor does it present any particular difficulties. Once the design is consolidated, its suitability as a medium for constructional training should

be given serious consideration. Certain components may be preferable when made of metal, and such components may be better supplied ready made up in kit form. Wooden construction is preferred, and there should be no great difference between the ability and equipment needed for the solo-training aeroplane and the original Dagling training glider.

Estimated Costs of Solo-Training

The solo-training aeroplane described might cost initially £400, and a total life of 2,000 training hours is assumed. A further sum of £400 is allowed to cover overhauls, spare parts and repairs. This gives a cost of 8s. 0d. per training hour, to which should be added 4s. 2d. as cost of fuel (2½ gallons/hour) and oil (5d. per hour). Insurance, expenses, Instructor's fees (if applicable), hangarage and ground rent will be small on the basis of a non-profit making Group, but may vary considerably according to local conditions. However, it should be possible to arrive at a cost in the region of 15s. 0d. per training hour. In total, between 20 and 30 hours training will be required, which will include the conversion to the general purpose type, and thus a pupil could be trained for the expenditure of approximately £22. 10s. 0d. Where the aircraft is built and maintained by a Group and the expense account kept low, the cost of an hour's training may be reduced by as much as 50 per cent.

SUGGESTED SOLO TRAINING SYLLABUS

Based on 30 hours ab initio tuition

Stage	*Exercise*	*Training Device*	*Time Spent.*
1	Taxying (general ground handling) tail up taxying	ULA Training Single seater; gated throttle full lift-spoiler (airscrew and wing protection)	2 hours
Check Test	Control co-ordination	Link Trainer (open vision)	1 hour
2	Straight hops	ULA Training Single seater; less gated throttle; lift-spoilers gradually removed (automatic ignition cut-out)	2 hours
Dual Check I	Control co-ordination and air sense	Any light aeroplane with dual control	30 minutes
3	Long straight hops	ULA Training single seater; partial lift-spoilers (automatic ignition cut-out)	1 hour
Check Test	Control co-ordination and turning flight	Link Trainer (open vision)	1 hour
4	Slight S turns during long hops	ULA Training single seater as fit for sustained flight	1½ hours
Dual Check II	Circuits and glide approach	Any light aeroplane with dual control	30 minutes
5	S turns during long hops with up to 45 degrees change in direction	ULA Training single seater, as fit for sustained flight	1½ hours
6	First circuits	Ditto	30 minutes
7	Practice in sustained flight (up to 500 feet; gentle turns, approach glides; plenty of take offs and landings	Ditto	2 hours
Dual Check III	Turning flight. Effect of over controlling	Any light aeroplane with dual control	30 minutes
8	Flying practice (up to 2,000 feet altitude or more; steeper turns spiral glides, sideslips, fish tailing, orientation flights)	ULA Training Single seater	6 hours
9	Conversion exercises (competency tests for U.L.A.A. Pilots Badge and Civil Licence)	ULA General Purpose Single seater	10 hours

NOTICE

Owing to pressure of space the conclusion of the article on "Problems of the Ultra Light Aeroplane" by A. R. Weyl is held over until next month.

NEWS FROM THE CLUBS

SHOREDITCH TRAINING COLLEGE GLIDING CLUB

The month of November produced a realisation of ideals which, a year ago seemed almost beyond imagination for Sunday the 14th saw our completed " S.G.38 " being towed out for our testing.

Readers who have themselves worked for weeks upon a machine which represents the future success of a budding club can imagine the mixed feelings prevailing as the cable arrived.

The test pilot of " Brabazon 1 " will feel no less respectful to his obligations and responsibilities than I felt whilst the cable was snapped in position, checked for release and snapped home again.

" One flag " and then the silky rustle of tautening wire ; a fixed grin to belie the presence of butterflies ; " two flags," another nerve wracking pause then we swept forward and I relaxed to enjoy the sense of elation which filled me as our " broomstick " took the air.

A low hop was the original intention but she flew so beautifully that I climbed to 300 feet in order to check lateral control whilst still on the cable.

Gliding in to land I set her down on our home made skid as gently as a mother would her new born babe, because I had orders to start running if I broke anything, even if it included both legs.

Next followed a test circuit up to 1,000 feet during which the machine displayed no unusual characteristics and in my biased opinion, flew better than any other " S.G.," " Grunau," " Kranich," or " Gull." The recipe for a heart warming flight of one minute in November would appear to be : purchase a few pence worth of firewood, glue it together with blood, sweat, and tears, take a year to overcome your obstacles, then fly it.

Training began immediately and within an hour Roy Yates had the honour of becoming our first " A " pilot ; Ernie Clarke and Dave followed his example with Clarke reaching " B " stage late in the afternoon. All flying was of an excellent standard and the ground handling of the aircraft amply repaid the lectures held at college last winter.

Wed., 17th Nov. With typical audacity Shoreditch had invited Mr. Philip Wills to give the entire college a talk on the whys and wherefores of gliding and with typical generosity Mr. Wills rolled up on the dot of nine thirty to face 360 curious and cynical students.

His talk was based on a number of gliding pictures to be projected through our epidiascope which at the last moment proved ineffective owing to inadequate blacking out. Undismayed, Mr. Wills pressed on and soon had the college roaring with laughter at his unkind but apt reference to " Primaries " looking like a five barred gate with wings on, and flying like one.

Our assembly hall has never rocked to such laughter and applause, yet, whilst we daren't ask what he must have thought of us, we would like to credit Britain's gliding ace with being the most successful lecturer, heard at the college in years ! Our warmest thanks Mr. Wills.

Sat., 20th Nov. Flying commenced at 2.30 p.m. and Roy Yates flew a comfortable " B." Dave followed suit and the remainder of the afternoon was devoted to Terry Dawson who is a qualified " B " licence powered instructor. He flew the " S.G." as if he had been born in it and reached his " B " licence (gliders this time) in record time, his landings were those which one reads about but seldom see.

Total flying for Nov. produced four " A's " and four " B's " plus a wealth of encouragement to the others who follow in future courses which will be arranged after Xmas vacation.

In the meantime our four " B " pilots are brushing up their hill soaring lectures preparatory to visiting Dunstable in Feb. next year where we hope they will reach " C " stage and also the apex of all our plans and hopes. They're all yours, Dunstable—Good Luck !

ARMY FLYING CLUB

The Army Flying Club has been instituted to provide facilities for gliding and soaring and later for ultra light power flying and aircraft construction. Membership is open to all Officers and Other Ranks in the British Army.

The Army Flying Club came into being on the 7th November, 1948, but it is by no means a new and untried venture. This Club has been operating on a small scale since January, 1948 under the name of the RMAS Flying Club financed by the Royal Military Academy Sandhurst and working in conjunction, up to May, 1948 with the RA Aero Club (Camberley Branch).

From the beginning of the year until 7th November, 1948 the RMAS Flying Club has done 1,428 launches and has gained 27 " A " Certificates, 23 " B " Certificates, and 3 " C " Certificates. These figures exclude those of the RA Aero Club (Camberley Branch).

Now that membership of the Club has been extended to the entire British Army, the Army Sport Control Board have begun to finance the venture, and there is no reason why this Club should not develop into a large healthy organisation, in which all ranks can fly and glide comparatively inexpensively.

I hope, too, that in due course branches of the Club will be opened in other parts of the country, or even overseas, wherever there is sufficient demand for flying or gliding facilities. However, before we start other branches we want to create a main centre somewhere in this area, where accommodation and catering facilities can be organised and a permanent staff provided so that members will be able to spend any length of time they desire in flying or gliding to a high standard.

At present, gliding facilities are available at Odiham, Hants, on Saturday afternoons and all day Sundays, although at this time of the year the short day makes Saturday afternoons rather worthless. Later as the evenings grow longer Wednesday afternoons will be included as well. We now have

two winches and hope to get a third winch shortly. With four lines (one winch has a double drum) and seven gliders, we should be able to provide gliding for quite a large number at a time. The Club fleet consists of one "Dagling," two Primary "Eons," one "Tutor," and one "Olympia," and we have just taken delivery of a "Grunau II b."

For those who reach the required standard, the "Olympia" will be kept at Thruxton, near Andover, and with an aerotow from there, cross country flights should become a regular feature. The "Olympia," "Grunau," and "Tutor" can also be chartered for use at other sites such as Dunstable and the Long Mynd and the Club possesses a bungy for those who like to go exploring various slopes in the neighbourhood.

Weather has been poor this month and only 107 launches and three gliding certificates have been obtained. Congratulations to Officer Cadet J. J. S. Wilson (RMAS) on obtaining his "A" Certificate (27th Nov., 1948) and Officer Cadets M. Accad (RMAS) and G. F. N. Charrington (RMAS) on obtaining their "B" Certificates (21st Nov., 1948).

As well as being affiliated to the British Gliding Association the Club is also affiliated to the Ultra Light Aircraft Association (We are Group No. 9) and by next Spring we hope to acquire our first ultra light aircraft, a "Motor Tutor." Members should be able to fly this aircraft at about £1 an hour and they will be able to convert to the "Motor Tutor" after reaching the required standard of gliding on the "Tutor" Glider the Club possesses. Later, I hope we shall be able to afford a two-seater "Tipsy Junior," so that after sufficient hours in the "Motor Tutor" pilots will be able to fly the "Tipsy" and carry a passenger.

In order to get more money and increase our facilities we must have more and more members. I have some large posters available and plenty of information sheets and application forms so if any officers and other ranks in the Army are interested in joining please drop a line to:—

Squadron Leader D. J. Roe,
D.S.O., D.F.C.,
RMA Sandhurst,
Camberley, Surrey.

MIDLAND GLIDING CLUB

Activities during September, October, November, 1948.

During the past three months there have been periods of activity as intense as the Mynd has ever known. These have been interspersed with longer periods when the weather has been most uncooperative, and sometimes completely clampers on the hill top for days on end. In spite of this a total flying time of over 500 hours was put in during the three months. The last two A.T.C. instructors' camps and the last Club camp of the season were held in September.

Very quick and complete changes of weather were a remarkable factor—some excellent flying days being brought to a premature conclusion by approaching fronts, and other apparently hopeless days developing excellent conditions in a matter of minutes. There have been periods, particularly during the September camps, when low stratus hung for days at a few hundred feet above the hill top, with wave lift running through and above this stratus to a height of several thousand feet. Various people achieved considerable heights in these conditions, and many others put in practice at the various stages of instrument flying. The stratus layer could be reached with ease in hill lift, and several members were thus able to venture into cloud for the first time. On occasion the cloud base became so congested with aircraft that the Duty Instructor was compelled to forbid cloud flying in the interests of safety. In general our hopes, our achievements, and the weather alternated between the depths of depression and the highest elation. The following are brief notes of the more interesting performances:

September

On Wednesday, 1st, the A.T.C. secured six "Cs." On Friday 3rd, Ince flew to Elmdon (Birmingham) in the Club "Olympia," reaching Golden "C" height on the way in cu-nimb. On Monday, 6th, Nadin flew to Elmdon in Primrose's "Olympia," reaching 6,000 feet on the way, and Bowdler took his "C." Wednesday, 15th Sept., Wingfield in his "Olympia" and Garnett in Surrey Club "Olympia" climbed through overcast in a wave and reached 6,500 feet and 6,000 feet respectively. On Thursday 15th, Wingfield flying the "T21" climbed to 3,100 feet passing above the lower layer of cloud. On the same day Devitt did 5 hours in a private "Olympia" and Aked 5 hours in a Club "Kite." On Friday 16th, a standing wave was in action most of the day. Hamilton and Holder both did 5 hours in a Club "Kite" reaching Silver "C" height at the same time with 3,300 feet and 3,800 feet respectively. On the same day Garnett reached 6,300 feet in an "Olympia," Ince 5,800 feet in a "Petrel," Maufe 4,400 feet in a "Olympia," and Thwaite 4,800 feet in the "T21"—altogether a most excellent day. On Sunday 19th Sept., the wave was still in evidence, though it was only contacted successfully by Yates who reached 5,800 feet in privately owned "Olympia," and by Ince who reached 2,500 feet in the "T21" late in the evening. Two A.T.C. instructors (names not available) did 5 hour flights on Thursday 23rd Sept. in "Grunaus." On Wednesday 29th, a wave was once again found, and Ince reached 3,800 feet while H. Primrose completed 5 hours in the family "Olympia."

October

On Saturday 2nd, lift was very erratic but extended well out into the valley in front of the normal hill lift zone—at one stage Wingfield in his own "Olympia" and "T21" were both some 200 feet below the launching point but both were able to climb again to the launching point, Wingfield first going to 3,200 feet. On Saturday 23rd wind was westerly and many high lenticulars were sighted—Wingfield in the "T21" and Baker in the Club "Olympia" both reached 3,100 feet above hill top in a mild wave. The Bristol Club "Olympia" arrived by aero tow, and soared the same wave for a short time before landing. On 31st, Grindall and James, who have been trained ab initio by the 2-seater method, did satisfactory straight hop solos in the "Tutor."

November

Conditions had now become typical of autumn in this part of the world and there is little to record. On 20th there was con-

siderable activity, with three "Olympias" and the "T21" putting up 11 hours flying between them, in a hill soaring wind of 15 to 25 m.p.h. The best height of the day was, 1,800 feet put up by Neill and O. Wingfield (just returned from America) in the "T21." On 21st, there was again a hill wind, and the days flying time totalled 3 hours 15 minutes.

We have now become more familiar with the conditions under which our standing wave appears. In the past the winter programme has been virtually confined to hill soaring. The wave requires stable air and usually a moderate wind anywhere in the south westerly sector. It has been encountered in a north westerly, but this must have been a wave from a different source. An actual inversion seems to be helpful but not essential. A high percentage humidity also seems to be helpful, for wave activity has often been accompanied by 10/10 stratus at a few hundred feet above the hill top. On climbing through this stratus layer, which can be over a thousand feet thick, pilots have found clearly defined stationary roll clouds along which they could perform soaring beats in the hill soaring manner. These stationary clouds have greatly assisted pilots in maintaining station above the Mynd which was hidden by the stratus layer. The only real danger in performing long flights under these conditions seems to lie in the possible lowering of the stratus base on to the hill top during the flight. The answer to this seems to be the use of signal rockets, fired through the cloud from the landing area when conditions are seen to be deteriorating though these would admittedly constitute something of a hazard in themselves Since stable air conditions are quite often met in winter without necessarily producing all pervading fogs it seems that wave flying might considerably extend the winter programme in future.

VICTORIAN MOTORLESS FLIGHT GROUP

Newsletter No. 10—November, 1948

Well, here it is just one year since the first of these newsletters was thrust before you. At that time, things were black; we had lost our flying ground and there seemed little prospect of finding another and getting permission to use it in time for the Christmas camp. Club history, now, is that determined effort by the Victorian Soaring Association to locate a flying ground. (One recalls ploughing over rough stony paddocks in the most unlikely localities, trying to persuade ourselves that it would be quite a simple matter to clear away those boulders, put in a few gates . . . IF they'll let us). An effort that resulted in permission for member clubs of the V.S.A. to use Berwick Aerodrome; statistical history, too, that, in less than five months, this Group and the Beaufort Gliding Club made such use of the permission that over 1,000 launches were carried out. I don't think any of us will ever forget those first months at Berwick and the delightful novelty of seeing the smooth mown strips below us as we circled in the bounteous Berwick thermals. Then in August, we began to build the hangar and now here we are ready for another Christmas camp, with the strips rolled and mown again and the hangar almost completed.

As for how the camp will go this year, that's a little in doubt at the moment. It was inevitable and unavoidable that the bulk of the year's work and worry would fall on the club's senior members, and, without dramatising the situation at all, it's a fact that these people are pretty well worn into the ground, so the amount of flying we do will depend upon whether the "Rhon" repairs are finished in time (the "Coogee," of course, and the "Heron," are ready for action) and upon the instructors available. I have no doubt that all of us are agreed that, even if we don't get much flying this Christmas, it doesn't really matter for at last we have a hangar and a home. We've reached the top of the hill and the prospect before us is fair indeed.

Since flying stopped to make way for hangar-building, about the last week in the month your correspondent dons a hunted look and begins to hope that people will fall off girders or something, anything, just so's the newsletter can be filled up without too much padding. But last month we had GLIDING! The Berwick Agricultural Society, whose showgrounds adjoin the field, held their hundredth annual show on Saturday 20th November and we agreed to put on a display for them. Needless to say, we didn't confine flying to a paltry hour or so but were on the spot bright and early with "Kestrel" and "Coogee" all prettied up ready for Christmas. The winches were brought out from under their tarp, and started up like little gents. Meanwhile, we gazed quite disbelievingly at the sky, which had puffed itself up with 5/10th cu.

Ron Roberts was away first in "Coogee," released at 800 feet and began to circle above the show arena. Bill Iggulden joined him in a couple of minutes in the "Kestrel" and away he went, too. The boys proceeded to put on a delightful text-book display of the art of soaring flight. With only a very light breeze blowing, they were able to gain their altitude almost above the showground. Bill went to 3,300 feet for 1 hour 1 minute, Ron to 2,300 feet for 56 minutes, both finishing off with very nice loops and stalls. The man on the public address system gave a surprisingly knowledgeable commentary and caused a little hilarity among the gliding fraternity by breaking short to announce that a lady had lost her umbrella. We, of course, knew that it was undoubtedly circling coyly up to cloudbase with Ron and Bill.

On the next two flights, Jack Iggulden in the "Kestrel" soared lazily around for 46 minutes while your correspondent, in "Coogee," managed without any trouble at all to get up and down again in the space of 4 minutes. It was hardly necessary for that puzzled spectator to ask, "Eh, why don't you stop up like them, girlie?" or for the other one to add insult to injury by his "I say, there's no skill in flying these things, is there? You just get blown around by the wind, don't you?" Then, of course, there was the little boy who thought we made thermals with the Lucas signalling lamp. Viv Drough stooged around in "Coogee" for 11 minutes and by that time conditions had petered out a little.

Arthur Hardinge, of "Olympia" building fame, spent the day with us and although he managed to preserve a moderately sphinx-like

expression there was a Look in his eye as he watched the machines soaring happily about. One almost expected to see him trot hurriedly away to return hours later staggering across the paddocks with arms full of " Olympia."

Another member of the Gliding Club of Victoria, Jack Edmonds, paid us his second visit of late; at least, we think it was Jack behind those glasses. We were glad to hear that the G.C.V. is heading for Benalla again this Christmas and look forward to hearing of some good flying from that direction.

Of course, it wouldn't be Christmas without someone having to do a rush job on something so Bill Iggulden, thinking perhaps that he and Jack would find looking after the " Rhon " repairs too dull a job, bickered with a fence and, for the very first time in seventeen years of gliding, managed to damage a machine. I think it was Iggie Senior who expressed the view that it was about time that fences were put underground. To have finally gone and done it should be rather a load off Bill's mind.

On Sunday we were back on the job, sailplanes stacked back in trailers, hammers and saws hard at work. Nance Iggulden brought her dog, Riffie, to begin breaking him in so that by the time Christmas comes around he may have learnt that, despite the fact that he is a large fierce dog, it doesn't necessarily follow that he must terrorise everyone. Riffie had a wonderful time swimming in the dam and shaking himself on people. When that palled, he invented a game called Pulling People Down from Hangar Rafters. Anyone unwary enough to dangle legs as he worked was able to join in the game. As Riffie is a tall dog and a lot of our people have yards of leg, the game worked out quite well.

Just Ribbing: Bon Vicary and Jack Scully made the job of the " Rhon " repairers lighter by producing lashings of nose and full ribs, which they have been making at home during the last few months. Nice work indeed, Bon and Jack. And, speaking of enthusiasts, take the case of Gordon Macdonald who joined our Group about the time we started hangar building. Gordon has been working with great vigour and good humour each Sunday; visiting the home of the Robert's one evening he discovered the " Coogee." " Ah," he cried excitedly, " at last, a GLIDER ! " Seems that Gordon had just taken our word for it that we actually possessed a few kites, tucked away here and there. Seems, too, that the Scots are na sa canny as they used to be, otherwise the Macdonald would have insisted on inspecting our fleet (?) before building a hangar.

Visitors: On Sunday, 7th Nov., we were delighted to welcome Dr. Hall of Toowoomba and Fred Hoinville of Sydney, who had afternoon tea with us at Berwick. On Tuesday, 9th Nov., Harold Bremerman and his wife, of Brisbane, spent an evening with some of us at the home of the Senior Igguldens.

Then there's the new addition to the younger generation, Peta, daughter of Peg and Hugh Fry, born on Cup Day. Congratulations, Peg and Hugh.

" *Rhon* " *Repairs* are being carried out at 1, Gillard Street, East Brighton. Contact Viv Drough, Central 1925 or XM1294, for details.

Flight Tickets: You know the rule about flight tickets being produced BEFORE you fly—not that we think you're up to any hanky-panky but to make things easier for your over-worked instructors and treasurer. Buy your tickets NOW. The rule is going to be strictly enforced—yes, we've said that before but this is dinkum. It's really all the fault of those people who kept walking in front of the headlights, by whose lights the Hon. Treas. and Hon. Sec. were always trying to balance their books at the end of the day.

And to all our friends in Australia and overseas, we wish a Happy New Year, from us all, with the green ball busting right out of the top of the tube.

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DERBYSHIRE AND LANCASHIRE GLIDING CLUB

Club Notes for November 1948.

Sunday, 14th—Wind W.S.W. 15 m.p.h.

Early in the morning, the cloud was nine-tenths at 300 feet. The first tentative circuit in the "Cadet" was successful only in so far as the machine arrived safely on the ground again. Undaunted by the previous exhibition, Gerry Smith took off in the "Olympia" and flew up and down the Edge for half an hour at high speed, practising vertical turns, one wing tip below the Edge, the other hidden in cloud. During a beat to Rebellion Knoll, he finally lost contact and was not seen again for nearly an hour. The Edge being left free of the ubiquitous Smith one or two more "Olympias" and the "Viking" were launched. Although cloud base lifted, it was not a pleasant day for soaring.

Gerry arrived back after an hour, having contacted the edge of a wave just north of Rebellion Knoll and, flying down Hope Valley in steady lift, reached a height of 3,400 feet over Hathersage. Wave conditions have persisted now for months and the fact that someone has managed to reach a respectable height on a warm wet windy day when any sensible pilot puts his feet on the stove and starts talking about the Disley days, is going to give winter soaring a substantial fillip.

Totals 14 launches, 5 hours 51 minutes.

Saturday 20th—Wind W.S.W. 20 m.p.h.

Although rather rough, conditions to-day were not without interest. Curly Bulling in the "G.B." and one or two "Olympias" beat up and down the Edge in good lift although there was no sign of a standing wave or an evening thermal. Older pilots quickly identified the conditions as hill-lift and explained to the younger members that at one time this type of soaring was quite common.

Totals 9 launches, 10 hours, 53 minutes.

Sunday 28th—Wind West 2 m.p.h.

Conditions were suitable for making up some arrears of training. Brown, Hollingsworth, Kelly, and Godber made some progress on the primary and a few pilots had circuits or high hops in the "Cadet." Harry Cook made his first three circuits in a row to obtain a good steady "B."

Totals 35 launches, 1 "B" Certificate.

Club Notes for December 1948.

Saturday 4th—Wind N.W. 15.

A cold clear day and a good north west wind. Harry Cook carried out two circuits in the "Cadet" by way of limbering up and then took his "C" Certificate with a flight of 6 minutes. The "Viking" and the "T.21" were the only other machines out.

The reason for the apparent lack of interest of a good soaring day was, of course, the Annual Dance which was held the same evening at the Devonshire Arms, Baslow. One hundred members and guests turned up and everyone enjoyed what must have been the most successful dance we have had for a long time. During the course of the evening there was a rumour that in North Wales, Bill Crease had reached 13,000 feet in a wave, probably a bit of back-wash from a Camphill wave.

Totals 7 launches, 2 hours 21 minutes.

Sunday 5th—Wind South 40 m.p.h.

The party finished about 4.30 a.m. and those who stayed up latest rose earliest for one reason or another so that a handful of haggard not-so-merrymakers screwed themselves up to have a flight, probably under the impression that a nice rough flight on the south slope might do them good. Thats what they got and perhaps it did.

Cloud was about seven-tenths mainly down to about 500 feet with occasional clearances. Charles Faulkner drifted backwards off the Edge, climbing steadily and smoothly until he reached 1,900 feet, apart from this it was neither smooth nor altogether pleasant.

Totals 8 launches, 6 hours 19 minutes.

LONDON GLIDING CLUB

November Notes

From the flying point of view, this was one of the poorest months we have had, and only 66 hours 21 minutes were recorded from 184 launches. No certificates were gained and an extensive piece of crashery occurred to the "Kadet." This was when Newley took a poor launch in the machine, crossed the power lines, turned to recross them, changed his mind, and dived into the ground with the "Kadet" finishing up on its back. Judging from the wreckage we expected a completely remoulded Newley, and were pleasantly surprised to learn that he got away with a damaged rib, some cuts and a shaking. Which all goes to show that, right from the start, we must have a plan for every possible emergency firmly fixed in our minds BEFORE taking-off; there is no time to think one out when we meet it face-to-face. And a poor launch is one of the more frequent emergencies.

Apart from several days of adverse winds there were also many days of calm, and no less than nine continuous days of fog. Never-the-less, it was during this month that we passed the 2,000 hours mark, and by Nov. 30th, our total flying time for the year stood at 20.15 hours 42 minutes. Launches over the same period amounted to 6,622, and 1,057 miles of cross-country flying had been accomplished from 36 departures. These figures do not include flights made by L.G.C. members at Cranfield or any other club's site.

"A," "B," and "C" Certificates gained over the same period were recorded in last month's notes; we now find that 17 duration, 10 height and 9 distance "legs" were flown for Silver "C," and that 11 members were awarded Silver "C" badges during the course of the year. They were: Cochemé, Foster, Hanks, Arnold, Lee, Latto, Reilly, Cadman, Anson, Smith and Ellis. Of these, Hank's flight will be remembered as the first Silver "C" to be earned in a "Tutor."

A fittingly simple, yet moving ceremony was held at Dunstable on Sunday, Nov. 14th, when the ashes of Donald Greig were scattered on the Downs. The service was held on the brow of the hill from which many hundreds of soaring flights were commenced in the past, and a site well known to innumerable gliding enthusiasts in many parts of the World. Here, we paid our last, silent, tribute.

November also marked our return to the main club building, beautifully renovated under the critical supervision of Lawrence Wright, who, as chairman of the House Committee is responsible, together with Alex Ivanoff and Mary Greaves, for the arrangements for our Grand Opening and House Warming Party, on New Year's Day, from the effects of which we hope to have recovered by the time these notes appear in print.

Summary of flying for the month—Number of launches, 184. Hours flown, 66. Certificates taken, Nil.

SCOTTISH GLIDING UNION

On December 5th, Mr. Rust piloted the syndicate-owned "Olympia" which is staying with us just now, and soared for fifteen minutes off a 900 feet launch at Balado. On Bishop Hill, we collected 50 minutes' flying time from three trips, during which Allan Moncur explored the South slope in a gusty 30 m.p.h. south-west wind. On the 12th, Bill Lawson treked up and down the Hill with three others, bringing the "Tutor" down in instalments, while many new members turned up at Balado to dice on the "S.G. 38." Among them Dr. Campbell and his fiancée showed good promise.

Alex Fyfe converted to the "Cadet" on the 19th, when "Cadet" circuits were the order of the day.

Sandy Cook has joined the S.G.U. and gives us some interesting details of the Bristol Club methods on their "A" Camp, to compare with ours.

Early in the month, Ron Flockhart took his "A" Power Licence, and the 19th December at Balado was enlivened by the joyous presence of George Whyte and David Hendry, both of whom had their first power solos the day before—David after a total of three hours' dual instruction. Our number of power-flying members is markedly on the increase.

KRONFELD MEMORIAL FUND

The following is a list of subscriptions received to the above Fund to date.

	£	s.	d.
General Aircraft Ltd. ..	105	0	0
Guild of Air Pilots ..	5	5	0
Oxford Gliding Club ..	5	5	0
Philip A. Wills	5	5	0
J. Laurence Pritchard	2	2	0
L. A. Wingfield ..	10	10	0
Anonymous		7	6
S. Scott Hall	5	5	0
Slingsby Sailplanes Ltd.	5	5	0
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Leo Walter		10	0
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GLIDING CERTIFICATES: "A" .. 184 (Nos. 9173—9356 incl.).
"B" .. 43
"C" .. 22

SILVER "C" .. .. 2 (Nos. 181 and 182).
GOLD "C" 1

"B" CERTIFICATES

No.	*Name*	*A.T.C. School or Gliding Club*	*Date Taken*
1227	Michael Robert Alston	C.U. G.C.	27. 5.39
5554	Arthur Stanley Roder	Luneburg G.C.	18. 8.48
5988	Sidney Humphreys	126 G.S.	31.10.48
7124	Eric Miller-Crook	182 G.S.	14.11.48
7804	R. L. Dimock	Gosport	17. 5.48
7879	Russell Nell	31 G.S.	17.10.48
8627	Thomas Frederick Noel Tuersley	192 G.S.	31.10.48
8762	Michael Leonard Beach	Surrey G.S.	30.10.48
8828	David Brown	H. Page G. C.	14.10.48
8831	Robert Stanley Millar Brown	Scottish G.U.	31.10.48
8912	Philip Ramsden	C. of Aero	14.11.48
9006	Norman Ian Sproul	Scottish G.U.	7.11.48
9173	Dennis Alfred Wigg	Fulmar G.C.	23.10.48
9179	Gavin Antony James Goodhart	Surrey G.C.	5.11.48
9181	Eric Frank Herbert	Oerlinghausen	23. 5.48
9187	George McPherson	130 R.A.F.	10. 4.48
9188	Brian Sparks	London G.C.	20. 8.48
9200	Maurice Ernest Morey	84 G.S.	21. 7.48
9201	Michael Henry Benyon	Oerlinghausen	15. 8.48
9202	Sidney Gordon Waite	R.M.A.S. F.C.	16. 6.48
9217	John Gunn	Gannet and Ulster G.C.	3.10.48
9218	Graham Edgar Miller	Bristol G.C.	31.10.48
9227	Sydney James Baker	London G.C.	16. 9.48
9231	Frank William John Kemp	Halton A.	19.10.48
9252	Humphrey Dennis Bettens	62 Group	7. 4.47
9253	Henry John Cundall	123 G.S.	3. 06.48
9281	Ilkkq Erik James Bowles	Fulmar G.C.	7.11.48
9282	John Douglas Goble	Gannet G.C.	19. 9.48
9283	Ian Aidan Poyntz-Gaynor Leigh	Oerlinghausen	5. 9.48
9284	Anthony George Creasey	61 Group	22. 9.48
9288	Ernest Walter Clarke	Shoreditch	14.11.48
9282	Kenneth Joseph Charles Rogers	Bristol G.C.	30. 7.48
9293	Walter Charles Davey	Shoreditch	20.11.48
9296	Geoffrey Royston	Gloucester	7.11.48
9317	Peter James Felix	162 G.S.	17.10.48
9325	Robert John Bazley Jackson	12 (F) Group	31.10.48
9326	Walter Harry Mallender	Newcastle G.C.	7.11.48
9338	Stanley Cale	83 G.S.	5. 9.48
9339	Frank George Moore	Surrey G.C.	3.10.48
9341	Thomas Francis Taylor	A.H.Q. G.C.	12. 9.48
9343	Charles Stewart	Gutersloh	12. 6.48
9344	Alan Victor Garrett	Bristol G.C.	16.10.48
9349	Reginald George Sfakianos	A.H.Q. G.C.	11.11.48

"C" CERTIFICATES

1227	Michael Robert Alston	Empire Test Pilot's School	18. 8.48
1940	James Morrow	26 G.S.	17.10.48
3763	George Frederick Young	Oerlinghausen G.C.	16.10.48
5396	George Bolton	Scottish G.U.	11. 7.48
5554	Arthur Stanley Roder	Luneburg G.U.	17.10.48
6508	Peter John Pearce	Scottish G.U.	17.10.48
7246	Denis Winfield Cooper	Newcastle G.C.	23.10.48
7409	John Fox	Oerlinghausen G.C.	24. 6.48
7599	Norman Edwards	Scottish G.U.	3.10.48
7682	David William Morgan	Empire T.P.S.	21. 5.48
7715	Ronald Alastair Bute MacFie	Imperial College	6.11.48
7742	John Frederick Squirrell	104 G.S.	24.10.48
8296	Donald Francis Miller	Scottish G.U.	17.10.48
9181	Eric Frank Herbert	Oerlinghausen G.C.	15. 9.48
9187	George McPherson	130 R.A.F.	17. 4.48
9200	Maurice Ernest Morey	84 G.S.	19. 9.48
9217	John Gunn	Gannet G.C. & Ulster G.C.	3.10.48
9227	Sydney James Baker	London G.C.	17. 9.48
9252	Humphrey Dennis Bettens	62 Group Soaring	31. 8.48
9282	John Douglas Goble	Gannet G.C.	19. 9.48
9283	Ian Aidan Poyntz-Gaynor Leigh	Oerlinghausen G.C.	4.11.48
9343	Charles Stewart	Gutersloh G.C.	14.11.48

SILVER "C" CERTIFICATES

No.	*Name*	*Certificate No.*	*Date Gained*
181	R. T. Cole	883	12. 7.48
182	R. M. Smart	660	16. 9.48

GOLD "C" CERTIFICATES

3	R. C. Forbes	5269	20. 5.48

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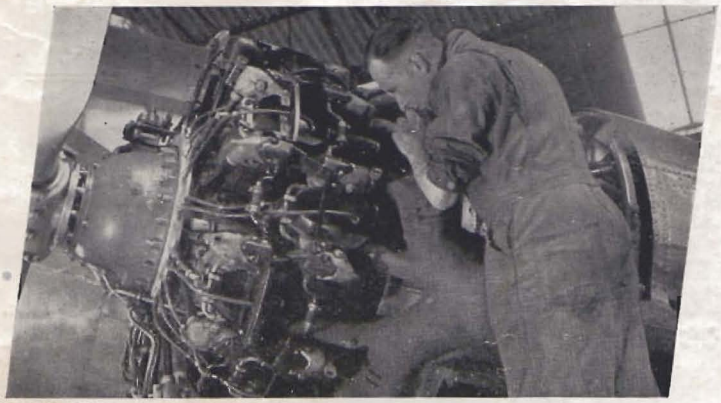
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