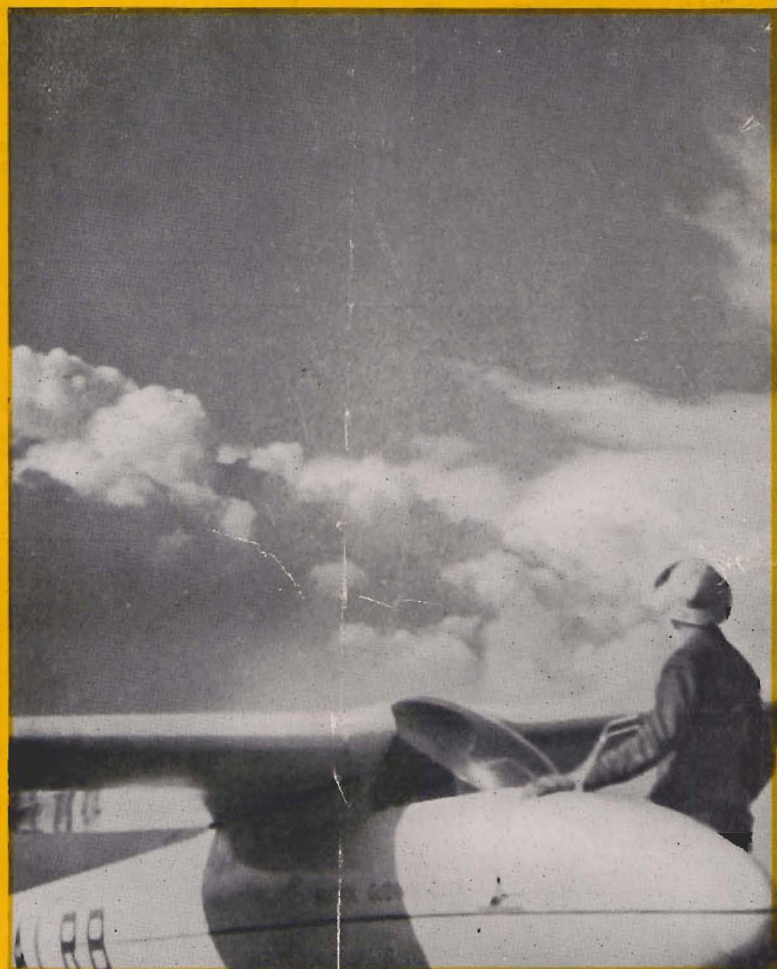


# *Sailplane and Glider*

*The First Journal devoted to Soaring and Gliding*



**JANUARY 1950**

**1/6d**



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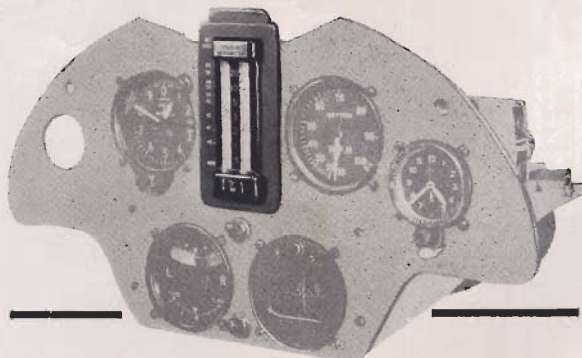
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# Sailplane and Glider

## Sailflying Sailflyer

and ULTRA LIGHT AIRCRAFT

THE FIRST JOURNAL DEVOTED  
TO SOARING AND GLIDING

JANUARY 1950 ★ Vol XVIII No 1

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### COVER PHOTO:

Speed and Spun at the Bristol Gliding Club.  
Photo: R. J. Hinton.

## FROM THE AIR REGISTRATION BOARD

Brettenham House,  
Strand, London, W.C.2.  
22nd December, 1949

The Editor,  
*Sailplane and Glider*,  
139 Strand, London, W.C.2.

Dear Sir,

May I beg space in your Journal to explain the Board's attitude to ultra-light aircraft. There have been several references in recent issues to this matter and these references are oddly contradictory.

In November 1949, Mr. Dorman referred to "the obstacles of the Air Registration Board . . .". In December 1949, Group Captain Mole used the phrase "whereas we (thanks to C. of A. regulations) cannot get off the ground." In the same issue Mr. MacKay, in reference to Paulham and Graham-White, said "they had no A.R.B. to hold them back and their progress was not hampered by masses of regulations and red tape." These comments represent one view.

On the other hand, Mr. Weyl of the Ultra Light Aircraft Association writing in November 1949 said "Incidentally, in all our dealings with the Air Registration Board, in particular the Air Registration Board Inspectors, our Groups and Members will do well to bear in mind that they are well-disposed towards our movement. . . . As yet, we have not a single instance to record in which the Air Registration Board has not been most helpful to our amateur constructors . . .". This is the other view.

As an interested party, I will not attempt to debate which view is the more accurate. I should, however, like to give two facts.

- (a) Recognising that current airworthiness requirements for aeroplanes were unsuited to the needs of the ultra-light aircraft, the Board prepared in March 1948 a simplified set of airworthiness requirements for application to ultra-light aircraft.
- (b) The Board has approved the Ultra Light Aircraft Association Design and Inspection organisations, in order to permit major portions of investigation of design and inspection of construction to be done by the Ultra Light Aircraft Association itself, with a minimum of supervision by the Board.

Both these steps were taken in the belief that given suitable design conditions and given the freedom of operation accorded to an aeroplane constructor, there could be no unsurmountable difficulty in designing and building aircraft for which a certificate of airworthiness could be issued.

What then is the real nature of the difficulty? The law requires all aeroplanes to hold a Certificate of Airworthiness (although the Ministry of Civil Aviation has granted some dispensations). If the Certificate is to have any value, it is clear that the airworthiness must be investigated, but the investigation required by the Board is by no means excessive. I think it would be true to say that if any less investigation were made, the subsequent safety of the aircraft would depend more on hope than knowledge.

My personal impression is that if once the ultra-light aircraft enthusiasts could submit a prototype, if desired through the Ultra Light Aircraft design organisation, and show that it complied with the simplified requirements, the future would be clear. The existence of the Ultra Light Aircraft Association organisation would then permit construction of the approved type by individual persons or groups. Approached in this way the difficulties would disappear, and I can assure the movement that there will be no strangulation by red tape.

The Board prides itself on its independence and autonomy and makes every endeavour to avoid any form of restrictive or obstructive practice.

Yours faithfully,

R. E. HARDINGHAM,  
Secretary and Chief Executive,  
Air Registration Board.

### EDITOR'S COMMENT

We think this letter of sufficient importance to be given prime publicity. For the interest of those who do not know, the A.R.B. Council consists of, Take Note, Australia, S.A., N.Z., representatives of constructors, insurers, operators and independent people (such as Lord Brabazon) who have an interest in Aviation. Finance is provided by statutory fees, contributions from the industry and a grant from the Treasury. There is no room for axe-grinders in this set up.



# THE SAIL PLANE

## SOARING IN FRANCE

### THE PONT SAINT VINCENT NATIONAL CENTRE

By GUY BORGÉ

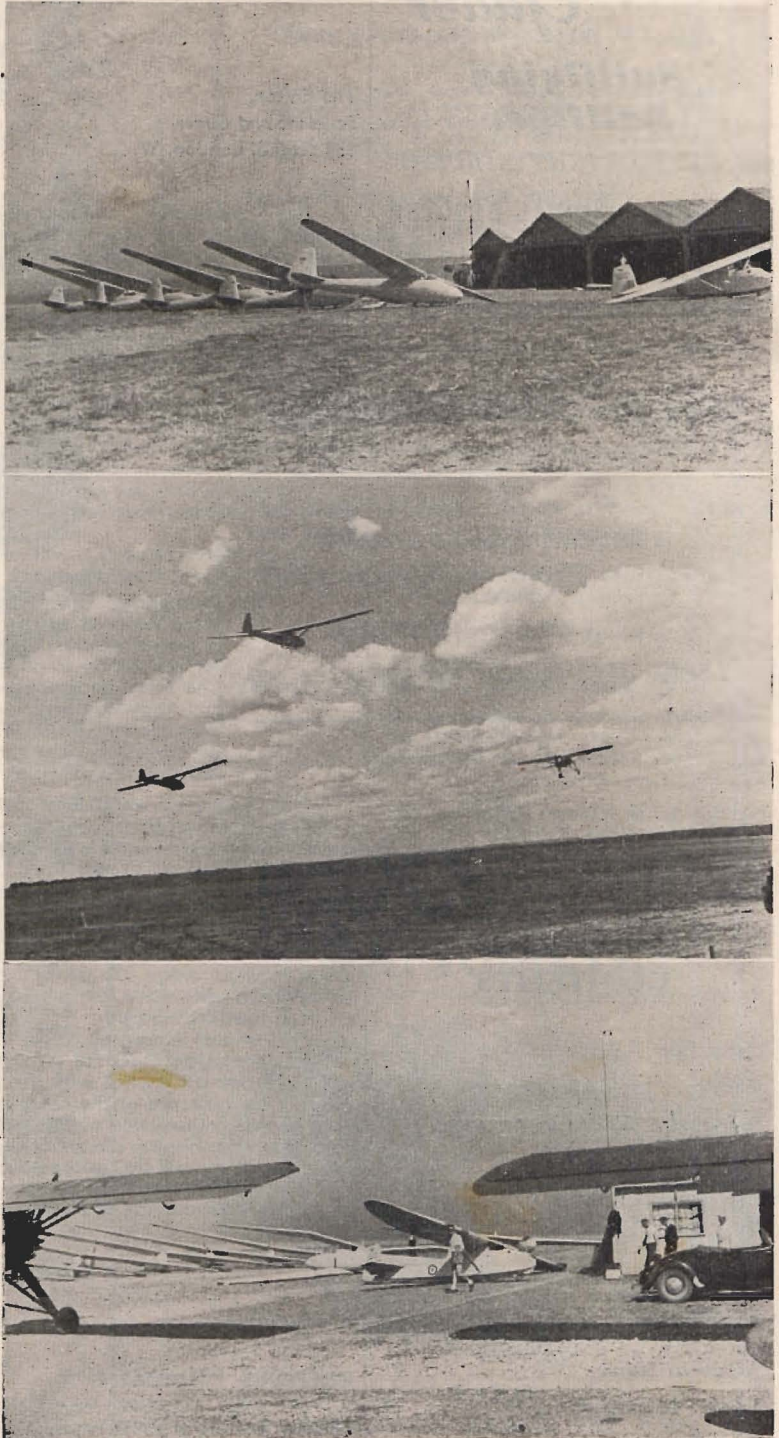
**I**N 1949 I took my August holidays at the Pont Saint Vincent National Centre, near Nancy. I chose it because I had decided several years ago to try all the French soaring sites, and I did not know Pont, in Lorraine.

The Centre is very old and its history interesting. In 1930, M. Mangeot, a joiner, and Dr. Trampol decided to found the Haute Moselle Aéro-Club. They began to fly gliders (some "Avia 11 A" primaries), built at the Mangeot's joinery, on the plateau overhanging the Pont Saint Vincent town. After a difficult teething period, the new Club revealed its vitality; little by little it emerged from obscurity. Messrs. Didion, the Lamort brothers (4 brothers, all sailplane pilots), Martin, Picoré, and others learned to be very good pilots and to register noticeable performances in the strong plateau lift.

A regional Centre was founded in 1937, and at the outbreak of war it possessed numerous machines: a "Minimoa" "Goevier" and "Avia 20" two-seaters, several "Avia 40's" and "Avia 15's." M. Mangeot, not a pilot but fond of soaring, studied a new training sailplane derived from the Polish "Salamandra," the "Emouchet," which flies in every part of France to-day.

After the Liberation, the new Air Sports Service started in 1945 a National Centre at Pont, where progress was extremely rapid. I give below a unique table, which required a good deal of research in the Centre's records: the activity of the site from 1932, although incomplete for the first years.

The year 1949 saw an amazing increase in activity: during July alone at Pont, there were 1,068 hours of soaring, 2,268 launches, 12 altitude legs, 9 durations, 3 distance legs of Silver "C"—and 1 altitude leg and 2 distance legs of the Gold "C." Best day was 25th July, 1949, with 83 hours 33 minutes. But the smallness of the



PONT ST. VINCENT.

(1) Hangar of the small field and a pride of "Olympias". (2) Double tow under a seductive sky. (3) A covey of sailplanes waiting for thermals.



# THE SAIL PLANE

Year	Hours	Launches	B	C	Silver C legs	Golden C legs
1932	?	250			.	
1933	?	700	6			
1934	16	1,300	4	4		
1935	100	2,500	17	13	1	
1936	100	3,000	24	20	3	
1937	300	5,000	40	32	9	
1938	623	10,681	86	41	19	
1939	773	13,344	77	44	38	
1945	496	3,968	27	16	6	1
1946	1,696	18,641	195	70	22	1
1947	1,571	15,725	113	52	26	
1948	2,935	21,818	118	43	35	2
Total of badges :			707	335	159	4

hangars limits the number of airborne machines. The "Weihs" were rigged each morning and de-rigged at night. Sometimes the chief instructor ordered the machines in store to be brought out and rigged on the airfield, when all rigged machines were out of their hangars.

The Pont Saint Vincent Centre has two very contradictory specialities : tuition for "B" and "C" badges high performance flights. For attaining a good output in both these opposing activities, there are two different airfields on the plateau, each one being specialized for one activity. The great airfield is reserved to beginners, with a hangar containing "C.800" two-seaters, "S.G. 38's," "Avia 151's," "Castel 301's," "Emouchets," "Grünaus," in their respective order of use. Here beginners glide, under the direction of Messrs. Tricot and Servais, the instructors, and get their "B" and "C" badges.

The second airfield, called "the small field," is composed of several narrow runways, where various types of sailplanes are used : "Grünaus," "Castel 310," "Rhönbussard," "Meise," "Nord 2000 Olympia," "Mü 13," "Weihe," "Minimoo," "Air 100," "Kranich," "Goevier," flown by the training and performance pilots.

On the first day of my arrival at Pont, on the small airfield, M. Maxime Lamort, the Chief Instructor came to me and said : "Take the 'Nord 2000' ; you must try your 300 km. leg to-day." I was very surprised, because I had never flown at Pont, and here I was going off straight away. But I did not succeed in doing 300 km. on that day.

When the weather is favourable, six pilots in "Olympias," "Weihs," or the "Mü 13," can

attempt the 300 km. flight. Best winds for this purpose blow from north-east, mainly in Spring. Jean-Pierre Weiss, 18 years old, accomplished the best distance from Pont : 304 miles in a "Nord 2000." In south-west or west winds, pilots fly towards Germany, and their retrieving presents many difficulties ; it also needs several days, owing to the difficulty of crossing frontiers (luckily not in a sailplane !). Certain Customs officers are furious to see unknown sailplanes returning when they did not notice them on their original crossing. This year, young Bonnet in a "Weihe" flew 208 miles landing at Fulda, close to the famous Rhön Soaring Centre. He learnt from inhabitants that only 10 miles separated him from the Iron Curtain !

During my course at the Pont Centre, I flew 5 types of sailplanes : "Nord 2000 Olympia," "Weihe," "Mü 13," "Minimoo" and "Air 100," but without a test in a two-seater like in the other Centres. I met only thermal currents arising from the plateau slopes. These thermals are very good, and flights lasting 8 or 9 hours are frequent during July and August.

When a strong wind blows from north-east, east, south, or south-west, the shape of the plateau offers several interesting and serviceable slopes. In 1936, Mrs. Edmée Jarlaud broke the women's duration record with 7 hours 5 minutes. In 1947 M. Kaplan broke the Lorraine record by 11 hours in a "Mü 13" on the north-east slope.

Nearly all the launches on the small airfield are accomplished by double aero-tows behind a "Fieseler



Guy Borgé in "Minimoo", also waiting.



Storch." Dual control sailplanes, such as the "Kranich" or the "Goevier," have a radio set for keeping in touch with the tow-plane or the ground teams.

For altitude training, the Centre uses a link-trainer specially designed for meeting the sailplane conditions in the clouds. From 1946, several pilots, such as Messrs. Maurice Lamort (instructor), Ringle (instructor), Weiss, Besnier, succeeded in making 3,000 metres gain inside big cumulus. Here Eric Nessler broke in 1938 the French altitude record by a 12,000 ft. gain in a "Minimoa." The Pont instructors like their pupils to achieve all their Golden "C" badges at Pont Saint Vincent, without (for instance) going to Saint Auban for the altitude leg in waves.

The Centre owns a complete fleet of sailplanes, fulfilling any need:

*Primary: 4 gliders—*

2 "SG 38" and 2 "Avia 151."

*Training: 14 sailplanes—*

3 "Castel 301," 5 "Grünau 2 b," 1 "Grünau 2 a," 1 "Nord 1300 Baby," 4 "Emouchets."

*Performance: 10 sailplanes—*

2 "Rhönbussards," 2 "Castel 310," 2 "Meises," 4 "Nord 2000 Olympia."

*High Performance: 8 sailplanes—*

3 "Weihs," 2 "Mü 13 d," 1 "Minimoa," 2 "Air 100."

*Two-seaters: 8 sailplanes—*

3 "Caudron C.800," 3 "Kranichs," 1 "Castel 25," 1 "Goevier."

These machines show impressive flying figures in their log books; here are the records of some of them:—

Machine	Number of launches	Flying hours
"Avia 151" No. 502..	6,000	242
"C.800" No. 116 ..	8,822	555
"Goevier" .. ..	3,936	440
"C.800" No. 346 ..	7,087	360
"Emouchet" No. 12	4,400	440
"Mü 13 d" No. 1 ..	502	620

The "Avia 151" No. 502, built in France before the war, was found in Germany, and one does not know the number of its launches in Germany.

This work—mainly heavy landings from beginners—wears the gliders very much. But happily for the Centre, its joiners very quickly repair light breakages. After big crashes, sailplanes are taken to the Mangeot's joinery in Pont Saint Vincent where they are reconstituted with skill and care.

On Sundays, M. Mangeot directs training at the great airfield. He is not a pilot, but his son Henri, who works as a design engineer at the Arsenal (he studied the "Air 100" and the "S.A. 140" under

Jarlaud) got his Silver "C" badge at Pont several years ago.

Next year, M. Mangeot will have reached his 20th year on the soaring field. We wish the creator of the Pont Saint Vincent Centre and the creator of the "Emouchet" many more soaring years, as happy as the ones before. When French soaring shows such good results, it is men such as M. Mangeot who are responsible.

## THE MISTRAL

St. Auban French National Gliding Centre

**L**AWS of duration of the mistral remain completely unknown. Popular opinion believes that the number of mistral days is a multiple of 3: 3, 6, 9, 12 and so on. But this rule is inaccurate; for several days (sometimes one complete month) the mistral seems to disappear, and this causes depression among pilots. But changes in the meteorological situation occur very quickly. Some pilots, already on their train home, and seeing the wind rising, have returned to the airfield, and succeeded in making unexpected good climbs.

In spite of the popular rule of 3, 6, 9, 12, the start, duration and end of the mistral depends only on a general meteorological situation in which a Low Pressure Centre (moved by a lower pressure centre in the Rhône valley) is formed in the Gulf of Genoa, through an Atlantic anticyclone. French meteorologists, who are very interested in soaring, can announce several days in advance the coming of the mistral. At each 9.30 a.m. broadcast Met. bulletin (French Radio, National Programme, after the news) they give a few special soaring notices: for instance, possibility of wave flights in Alps by mistral, or of 300 km. flights.

Therefore, just as Miss Boselli knew in Paris three days before when she could break the altitude record, so a candidate for the Golden "C" altitude should take advice from Met. men before going to Saint Auban and fixing the day of his course. I think that the best conditions exist during Spring: if there is no mistral, one can at least enjoy thermal flights, while without mistral the Winter months remain tedious.

## LINK TRAINER FOR BIRMINGHAM WOMEN'S JUNIOR AIR CORPS

**T**HE Women's Junior Air Corps is an enthusiastic and enterprising organization which aims not only to make Britain's young women air-minded but also to teach as many of them as possible to fly. The W.J.A.C. claims to be the only youth movement in the world to possess its own aeroplane—a four-seater "Fairchild."

Shell-Mex and B.P. Ltd. have now presented the W.J.A.C. with a Link Trainer and this will greatly assist the training scheme.

At a ceremony at the regional headquarters on Saturday, 3rd December, Mr. C. R. Field, General Sales Manager of Shell-Mex and B.P. Ltd., presented the Trainer to Mrs. Rene Spink, Director of the W.J.A.C.



# TOUR OF NEW ZEALAND with the "YELLOW WITCH"

By ARTHUR D. HARDINGE. "OLYMPIA" SAILPLANE.

(Copyright reserved)

(Concluded)

TAIERI eventually came in sight and quick work made of the landing, and an examination of the "Tiger Moth" fuel tank showed only enough for 10 more miles. A de-thawing process of pilots was a welcome conclusion to a hazardous flight, Ron Bush's main comment—"Now I know how a dog must feel with a tin-can tied to his tail!"

An agreement with the Otago Aero Club necessitated a demonstration tow over Dunedin on Friday, 13th May, to attract the public for the Sunday show. The flight in yesterday, had been broadcast, but many had missed the arrival owing to the pouring rain and near dark conditions, once more we were air-borne although I wasn't happy about flying on Friday the 13th and out of the Taieri Valley to the city on the other side of the mountains, and extreme scarcity of landing areas in the city proper.

Ron Bush must have believed he was a merry-go-round, he cruised for several circuits over Dunedin with a North Westerly wind producing turbulence, rather uncomfortable for the sailplane pilot.

Arriving back at Taieri, gave the aerodrome staff some aerobatics, then stowed the "Witch" into the hangar in readiness for the Sunday show.

In the wake of the bad weather, a remarkable anti-cyclonic condition prevailed which lasted 8 days, a very rare occurrence for this region of New Zealand, and of extreme value from my viewpoint.

I wanted to fly further south to Invercargill after the Dunedin show, but another air show by the "Flying Kiwis" made the trip impractical, so I decided to fly to Timaru after the Taieri commitment.

Gave three more flights at Taieri on Sunday, 15th May, and another explanatory speech to the Dunedin residents after these flights.

Accommodation being difficult in Dunedin, I rang through for a "Tiger" from Timaru, the canopy "Moth" arrived with Len Mitchell aboard. The "Witch" was ready for the tow, but with a large diameter airscrew the "Moth" could not shift the "Olympia" so a "pull" start was given and we cleared the end fence with a small margin in hand.

Kit was due to leave shortly afterwards by bus, and arranged to meet her later in the evening in Timaru.

Instead of flying down the Otago Harbour as on the flight to Dunedin, Len climbed up over the Silver Peaks, 2,500 ft., and a region heavily clustered with sharply defined peaks. Here the upper wind was quite strong and slow progress for 24 miles till past Karitara, the height required for safety was 3,000 ft.

Len was in a hurry to make Timaru, the air speed quite fast.

Once over Karitara we descended to 1,000 ft. making better ground average speed, once more over the Canterbury Plains we heaved a sigh of relief to be free of the mountains.

A two hour tow of 108 miles, the longest tow during the tour, Timaru came once again under the keel

of the "Witch," and using the remainder of my height, cruised for some time over the city.

Kit felt relieved to know the "Witch" arrived safely.

A friend, Tony Dannis, club member of South Canterbury Aero Club, surprised us by mentioning that Philip Wills' cousin, Matthew, was living near Timaru, 7 miles from Albury and just over 40 miles drive. As he intended adjusting some business in the locality, invited us to visit Matthew and his wife.

Kit and myself spent an enjoyable day with the Wills', a very charming couple, a very lovely home, and so keen on the gliding.

I wanted to fly to Harewood drome, Christchurch, whilst the weather held, so Matthew decided to drive to Timaru in the super-charged Mercedes-Benz and acquire some aerial shots of the "Olympia" from the canopy "Tiger." As the "Wills" hadn't seen an "Olympia" in flight, it was an experience for them, strange to say, a letter received from my mother and opened just after the flight, contained a cutting announcing Philip's cross-country record flight of 230 miles.

Shortly after lunch Johnny Neave flew in from Harewood to carry the "Witch" to Christchurch; the weather was perfect with a following wind giving a smooth flight and the 90 miles aero-tow in 1 hour 10 minutes.

On Sunday, Kit wanted to fly in the towing "Tiger Moth" and after the release, Cliff Fantham circled in fairly close to the "Witch" giving Kit a much better perspective of the machine in flight.

After a few minutes the "Tiger" pilot gave Kit a trip over the Cashmere Hills on the Banks Peninsula and Christchurch, returning shortly after the "Olympia" landed.

We wanted to return to Auckland, a call to Air Dept. R.N.Z.A.F. resulted in a "Dakota" being made available within 4 days, so the "Witch" was flown over to Wigram, then de-rigged for loading.

Wednesday, 25th May, Kit and myself bade farewell to the South Island, both of us comfortably installed in the crew's quarters in the "Dakota." Kit was rather thrilled with the view from the cabin of the aircraft, voted this flight the best ever experienced on the tour.

A first-rate view of the rugged South Island and the Kaikouras, the rugged region of Wellington and the highly respected area around Mt. Ruapehu. Turbulence had broken up into little pieces, one of Ohakea's air speed "Oxford" aircraft, only a few weeks previously giving some indication of the savage nature of the air currents in this locality. The machine disintegrated before it hit the ground.

A night landing at Whenuapai ended our transport with the R.N.Z.A.F., a magnificent effort on their part and those responsible for the allocation of the aircraft, our heartiest thanks to these Officers.

We unloaded the "Witch" next morning but weather prevented a tow to Mangere, so Kit and



myself departed for Hamilton for a few days' rest. I made arrangements for another pageant with the Waikato Aero Club at Rukuhia, we returned from Hamilton to collect the "Witch," but before the Air Force permitted me to leave Whenuapai, they required one aerobatic flight.

Jack Marsh flew over from Mangere for the return tow, giving an exhibition of soaring under some light cumulus, then the aerobatic routine from 2,000 ft. for the officers of 41 Squadron.

Their only laments, they didn't have any sailplanes and they couldn't aerobatic their "Dakotas" in the same manner as the "Olympia."

The "Witch" was picketed for the night at Mangere, Dave Bisley from Waikato Aero Club obliged with the tow of 68 miles to Rukuhia, but forgot the maximum permissible towing speed and performed three circuits over the Waikato Winter Show at 400 ft. and near the 90 m.p.h. mark, the air around the "Olympia" turned a bright blue, without intercommunication my efforts were futile, just had to sit in behind and make the best of the high speed tow.

I do not reprimand any tow pilot for a fast tow, they have to adjust themselves to a different attitude in flight and with an element of apprehension, and therefore are taking risks on their first launch.

The New Zealand boys performed a magnificent task during the tour, with a total of 72 aero-tows and 17 pilots, with flying hours ranging from 6,000 hours to 100 hours. Mostly instructors undertook the responsibility, but at times, only pilots with small number of hours were available, however, I was only too pleased of the co-operation to complete the itinerary, a grand piece of work to aero-tow with only a short talk on the technique.

The weather proved adverse for the pageant at Rukuhia, rain falling and becoming heavier, however, the Show went on, everybody becoming very wet, but the Waikato Club never let the public down.

"Olympia" went to 1,800 ft. into cloud base for an aerobatic flight, her second to 1,400 ft. with cloud dropping rapidly, and rain pelting down.

We were very glad to finish the programme and seek the warmth of the Club House. The Waikato boys gave their luck token, the "Pig's Ear" on condition I paint a replica of the "Yellow Witch" as a return gesture. A fine group of pilots both male and female; there are a large number of women pilots in New Zealand.

With my final demonstration at Waharoa in a week's time, 12th June, I returned to Auckland, Kit was leaving for Australia on the 8th June by Flying Boat, I was rather sorry to bid farewell to her, for the success of the tour I give all the credit to her, not only from the finance view-point but her courage to visualise the ultimate success of the venture, and to alleviate the numerous set-backs encountered from time to time. A grand little girl in every way!!

Sunday the 12th June showed little promise, rain bearing cloud over Rukuhia gave a grim picture, but Flying Control reported this was only a local condition and passing over, much to our relief.

Dave Bisley was instructed to tow over the towns on the way to attract patrons for the Air Show,

Morrinsville the first, then Waharoa, climbed to 4,000 ft. at Matamata, heading back to the airfield at Waharoa.

Pulled the release at 4,300 ft. in cloud base one mile from the drome, and due to the upper wind, lost 2,000 ft. in covering that single mile.

The weather report was far from promising, rain was on the way and cloud base dropping rapidly, but the pageant proceeded, my first tow I reached 2,800 ft. and the second only 1,400 ft., and the order came through that all Rukuhia aircraft must leave by 4 p.m.

"Olympia" was last out, towed by Charlie Barraclough, his wife in the front seat of the "Tiger" and his first attempt at an aero-tow. Cloud base dropped to 500 ft. and wind had picked up to 35 m.p.h. A range of hills obscured by cloud necessitated a deviation to Morrinsville, a hard plug upwind in gusty conditions and heavy rain did not make matters easy for Charlie, but once over Morrinsville we swung into the downwind leg of the flight with cloud base much higher at Rukuhia, arriving with 1,200 ft.

Little time was lost in landing the "Witch," with Dave Bisley and Wally Christopherson we dismantled her and tucked her into the hangar.

Reg Fraser-Jones arrived on Tuesday, 14th June, for the final flight of the tour, a beautiful day but deteriorating.

When Reg arrived at 3 p.m. a cold "front" appeared, of large proportions, haste was made to take-off for Mangere.

The two aircraft were airborne at 3.35 p.m. with the "front" ever so much closer, the sky becoming covered with rain bearing cloud across our course, several deviations were made to skirt around these clouds, as well as keeping a wary eye on the cloud showing five anvils of large dimensions.

We just managed to reach Mangere before the front passed through, both aircraft were subjected to a buffeting in the air, and after landing, the 68 miles' flight occupied 1 hour 25 minutes.

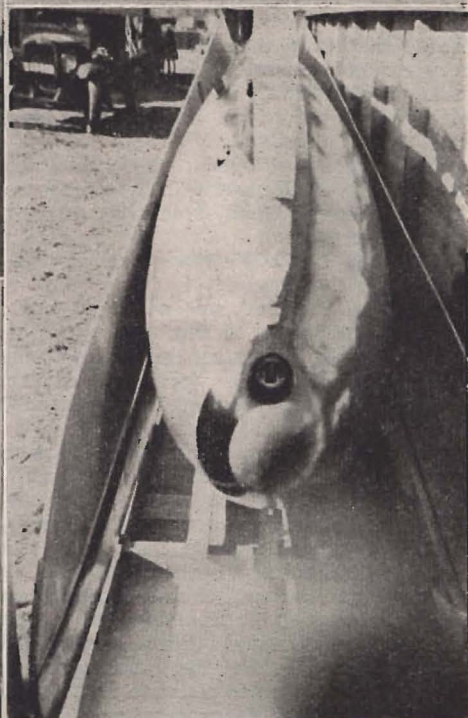
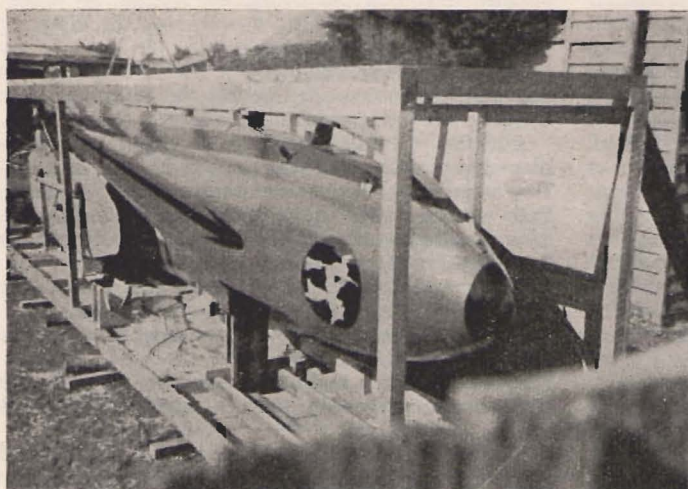
The tour had ended with the "Yellow Witch" completely intact, no damage occurred during the flying programme, 2,050 aero-towing miles, 72 aero-tow flights, 2 auto-tows, greatest duration 3 hours 38 minutes, altitude 4,550 ft., ten successive loops at Palmerston Nth., longest aero-tow 108 miles and 54 hours' flying in New Zealand. Cool conditions prevented cross-country flights, and lack of trailer a deterrent, plus lack of large fields to aero-tow from.

Opportunities for cross-country flying are many, but depends entirely upon the facilities available and the resources of the individual or group operating the sailplane.

My readers will be asking where the most suitable regions are for Soaring, in New Zealand, I will comment only on areas over the extent of the tour, many cities and towns could not be included in the itinerary owing to mountain ranges and turbulence being the barriers, when one flies in rough conditions they are really very rough, making the towing-plane resent the added drag of a sailplane, plus the inability of the aircraft to gain sufficient height to cross the mountains.



# THE SAIL PLANE



1. "Yellow Witch" being crated for N.Z. tour.
2. Morning of Mangere Air Pageant.
3. Standing wave of large dimensions at Wellington.
4. Arthur Hardinge and his cousin Mrs. Kit Batten, Sydney-Auckland bound.
5. Note excellent finish of this home-built "Olympia."



Auckland proved itself by permitting a 3 hour 38 minute flight, which could easily be improved upon, distance flights are rather uncertain owing to lack of terrain to fly over except to the South-East and North-West. It must be remembered that cloud base average of the North Island is 3,000 ft., and the terrain is liberally covered with high mountains, averaging 5,000 to 9,000 ft., high upper winds are a menace, and turbulence is quite common.

Cloud flying pilots are in for a rude awakening if they indulge in prolonged sessions in cloud, it's remarkable how a sailplane drifts towards a large mass of mountain. I had an experience at Ardmore, dabbling in cloud base, then popping out of the cloud to be in close proximity to the range of mountains too close to be considered healthy, my retreat was a hasty one.

I found the Waikato district rather suitable for thermal activity and good prospects for flights up to 50 miles and perhaps 100 miles in a certain direction. A good slope exists near Hamilton facing the prevailing wind, "Tiger Moths" can soar above this slope, but once again we find quite a number of miles to reach the mountain, plus the query if suitable fields are available near the base to operate from.

Throughout the tour I noted that any suitable hill soaring ridge, was quite some distance from the populated areas.

I cannot visualise any gliding at Wellington, the terrain and turbulence are of such shocking characteristics to make flying very hazardous and very expensive, aero club aircraft find it hard to make any headway in the high and gusty winds with the thrust of an airscrew and engine, what hope the sailplane!!

The ridge, Mt. Victoria, was quoted as a possible soaring site at Rongotai, but somehow or other the wind rarely blows from that quarter to make the ridge useable.

With the North-West wind, a glorious standing wave is fairly frequent, but any pilot is welcome to it, if he can find somewhere to land after his flight, the prospects of aero-towing out of Rongotai are slim, if the enthusiast doesn't mind breaking his sailplane, it might be worth the experiment, but sailplanes are too precious for expensive investigations of this nature.

I found Wanganui, Ohakea, and Palmerston Nth. very suitable for cross-country work, with a limited scope on distance, the country beyond the flat region is commonly known as "Tiger" country, and has few landing fields, mixture of escarpments, lava flow and thickly timbered slopes.

Fine cumulus and cumulo-nimbus, and occasionally a water-spout rips through, I photographed one such phenomenon during my stay with the Air Force at Ohakea, the same region where the "Oxford" was torn to pieces in mid-air; once again the emphasis lies in the whereabouts of your machine after you have reached maximum height in a towering cumulus.

The New Zealand pilots know their country and cloud, they prefer to keep out of them wherever possible.

Slope soaring in the Masterton region is quite

possible also thermal flying, once again the scope is limited by terrain, a flight down or up the Wairarapa Valley could be attempted.

The Canterbury Plains in the South Island provide the answer to the dream of the sailplane pilot. Unfortunately I arrived in April.

Autumn in this Hemisphere, and you just cannot soar any sailplane if convection is not available. Two months previous, temperatures of 95 degrees Fah. were recorded, quite ideal, but I was not there to use these conditions. Snow was already cloaking the Southern Alps, the day after I arrived the Alps were covered almost to the level of the Plains, and a chilly wind eliminating upward air currents, and I didn't have the cash for an aero-tow to the windward side of the Alps.

A cross-country flight from a point 20 miles north of Christchurch could yield a flight of 150 miles ending at Oamaru.

The Canterbury Plains extend for this distance and virtually a billiard table, not a mountain to block the path of the sailplane, navigation is easy, the Southern Alps running parallel to the West Coast, the sea on the East.

The sailplane, flying in the strong north-westerly wind which produces the convection on the plains, really needs to be of the high penetration category, the Island is only 70 miles wide, 20 miles taken by the Southern Alps, therefore the drift from the upper winds can easily drive the machine out to sea.

I would have desired staying longer to investigate the Southern Alps, but with money very limited, I had to keep going on the "barnstorming" to meet expenses, and nobody was interested in giving any money to help us out, Kit's cash had to be paid back, so I kept to a schedule of austerity.

To anticipate Government aid in New Zealand for promotion of aviation is a forlorn hope, they just won't pay out a penny, but I do note, this is only *my impression*, and it seems very evident, if an airman brings a machine to New Zealand to demonstrate and be educational for the public, he can do it at his own expense if he is silly enough to do it, the country would naturally benefit by having an unusual machine shown to them, providing it doesn't cost the Government anything in hard cash, and if the fellow can't pay his way, it's just too bad for the enthusiast.

Civil Aviation, Wellington, put up every possible barrier to prevent the "Yellow Witch" from flying, no credit is due to them in any way for the successful conclusion of the tour. Gliding enthusiasts in New Zealand have been continually blocked and frustrated because not one person in Civil Aviation is prepared to accept any responsibility for any decision relating to gliding, therefore gliding in New Zealand is an unsound proposition.

I would like to see gliding progress in our sister Dominion, but enthusiasts are not going to build their own aircraft to approved plans, type record or C. of A. and when finished the machine might or might not be accepted by the District Surveyor, nor are they going to flourish if all their machines are to be subject to an annual C. of A. overhaul regardless of whether the machines have flown or have not flown.



There is no future for the amateur builder or club which attempts to build its own machine, the only acceptable machines according to C.A.B., Wellington, are factory built aircraft, an interesting point, an amateur builder is not allowed to build a main spar, must be built by approved aircraft engineers and tradesmen in an approved workshop.

Without any attempt to be egotistical, I would state that the "Yellow Witch" is one of the best "Olympias" ever built, and other people have said the same, but it just didn't mean a thing with C.A.B., Wellington. It was a "backyard machine" and they just don't like them.

I enquired of the possibilities of staying in New Zealand with my "Olympia," I was informed it was a "backyard machine" and my drawings would have to be submitted for a C. of A. check by three aeronautical engineers, and my machine stripped for inspection, and for the labour involved would cost me £250 Sterling. To pay for the labour involved, and such an astronomical figure, caused me to change my mind about staying in New Zealand.

The flying people in the Dominion are fine types and helped me considerably with the tour, but their Dept. of Civil Aviation can not be regarded as co-operative, strangely, they will block you in every conceivable manner, which is hardly considered progressive.

If gliding progresses in New Zealand it will not be through their assistance. The Director of Civil Aviation was alleged to make a statement he wanted gliding to be a national sport in the Dominion, but after the discourtesy shown by him when I arrived on a gentleman's agreement to demonstrate gliding if he would organise some co-operation, it was a bitter experience to find he would not allow the "Witch" to fly until the history of my machine had been cleared and Australia to accept full responsibility for its activities, I do not believe gliding will ever become a national sport in N.Z., after my experience and the discourtesy displayed by the authorities, it is very remote.

At one time in proceedings it was suggested that I be limited to a three-mile radius and no aerotowing between cities, so I told them I would take the machine back to Australia and tell the world the story, fortunately they changed their minds.

The success of the tour revolved on some remarkable incidents, Mrs. R. G. Casey wrote to her friends, Sir Bernard and Lady Freyberg and Kit and myself were invited for luncheon at Government House, Wellington, their interest was a mighty factor, an introduction by the Secretary of the Wellington Aero Club, Mr. E. Annand, to the Deputy Chief of Air Staff, Group Capt. Sheen, clinched the deal for transport with the "Dakota," provided I demonstrated for the Air Force.

Aero Clubs assisted, and were most enthusiastic, they wanted to see me recoup the expenses so they organised Air Displays to merge with the movements of the "Olympia" as well as being a draw attraction and money spinner for them.

The weather invariably remained suitable for the weekend demonstrations except on one or two occasions, was exceptionally lucky in this respect.

Hangarage was always available unless on fields where no hangars had been erected, but in preference to their own aircraft, the "Olympia" would always be placed inside.

The interest shown by the R.N.Z.A.F. was most heartening, particularly from high ranking officials, Chief of Air Staff, Air Vice Marshal A. de T. Nevill expressed very favourable views on gliding. I met Sir Robert Clarke-Hall at Wigram, a very brilliant man in aviation.

The crews of the aircraft and personnel of the Air Force stations proved to be a fine crowd and helped at every opportunity. Flight Lieutenant Fitzgerald at Ohakea regarded the "Witch" in high esteem, and as much care and attention as a baby.

Parachute packing was attended to by the R.N.Z.A.F.

I have no regrets for the New Zealand tour, it was a most interesting experience and seeing New Zealand in an entirely novel manner, I hope others have gained knowledge, there are 17 aero-towing pilots available now and many people have been converted to think along sailplane lines, but whilst ever Air Dept., C.A.B., place barriers to hinder private flying instead of fostering the interest, I am afraid New Zealand will be very backward in this sphere of aviation. There doesn't appear to be any logical explanation as to why their regulations are so strict. There are so many restrictions to private flying that the average person would not be bothered with an aircraft or a club and would prefer to take up sailing in a yacht; you don't have to take out a Certificate of Airworthiness on a yacht which is one consolation.

The fact that two Christchurch lads who have talked gliding for years, gave up their jobs and came to Melbourne to experience the real thing, surely this gives an indication of the prospects of gliding in New Zealand, it represents the truth, and effectiveness of an over regulated Air Department.

A.D.H.

## An Evening Thermal Theory

AT Sutton Bank on the afternoon of Saturday, the 10th September, 1949, there was a very weak west wind blowing on the hill. With A. DE REDDER as pilot the Slingsby "Petrel" was winched to only 400 ft. This height was maintained for an hour along the edge with only about 20 ft. differences of altitude loss or gain. The maximum observed rise on the variometer during this period was but half-ft. per second and could not be held more than a quarter of a circuit at any time. Many sorties were made away from the hill into the valley with no loss of height, one even as far as Sutton Village 2 miles away. Then, just in front of the hill stronger lift was encountered and 650 ft. was reached and maintained for a quarter of an hour. In this period another journey to Sutton Village and back was made and, again, there was negative sink. Ground observation showing a cleared landing field with machines and winch put away, it was regretfully decided to land before all helpers disappeared. A

(Concluded on page 12)



## "GLIDING CAN ONLY BE MAINTAINED BY THE MAINTENANCE OF THE GLIDERS"

Next time you seat yourself in a club machine and strap yourself in, in preparation for a flight, ask yourself a question or two.

"Do I do my share of maintenance on this machine?"

"Do I stay away from maintenance days because I can't or won't find time to be present?"

A lot of members can truthfully say that they do their share of work, but there is also many who can not.

Properly maintained equipment is necessary for trouble-free Gliding as you will probably agree.

The tow-car, tow-lines, trailer and more so, the gliders themselves all have to be correctly maintained or should be.

But how can this be done properly when the bulk of the work is left to a few enthusiastic members.

Most members will turn up on a scheduled flying day "eager as beavers" to fly. Yet where are those eager members at maintenance days?

No! they don't turn up, but the same few always do and amongst these few are members who are building their own machines and can ill-afford the time to work on the Club equipment.

A lot of types state that they don't attend, because they can't do the work, don't know how to go about it; and they never will, unless they be present on maintenance days and watch and assist those members who do know.

So what about it, members? Let's see more of you attend maintenance days and so help relieve the strain from those few who give so readily of their time and labour to keep club equipment in good condition for your use.

## TECHNICAL TOPICS FOR BEGINNERS

By "G.W.C."

### "The Daily Inspection of an Aircraft before Flight."

The safety of the pilot depends upon the efficiency of the inspection of the aircraft. All parts and components are thoroughly inspected during manufacture and assembly for faulty material or workmanship and during the machine's flying life, careful periodic inspection is made of all moving and highly stressed parts for wear, damage and ability to stand up to the stresses imposed.

It is advisable, however, for the pilot to be thoroughly conversant with his machine and before flying it to satisfy himself that it is in an airworthy condition.

To be positive that no part is overlooked it is essential to adopt some form of routine. For ease of inspection the aircraft should be on level ground and on an even keel.

Commence with the Starboard Wing.

#### Fabric

A general examination of the fabric covering for slackness, rucking or deterioration is made. Should the fabric be torn, it must be repaired before the aircraft is flown as the air in passing over the torn surface during flight will strip the fabric from the component, especially if any excessive speed is built up, such as in a dive, etc.

Rucking of the fabric is indicative of some structural failure in the wing and fabric should be opened up to find the cause.

The aileron control surfaces are similarly inspected and the aileron hinges should not be unduly worn.

#### Aileron Controls

The aileron control rods, levers, cables and pulleys are examined for freedom of movement, locking of bolts, clevis pins, turnbuckles—where the turnbuckles are locked with soft copper locking wire, the figure of eight method is preferable to the older and more confusing method of winding the wire around the barrel against the direction of its unscrewing—and general lubrication.

Grit in moving parts not only creates excessive wear but can definitely cause close fitting parts to jam.

When the trailing edges of both ailerons are in alignment with the mainplane trailing edges it is preferable to have the ailerons "drooping" slightly—not more than  $\frac{1}{4}$ -in. on each aileron. This will take up in flight and will give quicker response of movement of the aileron surfaces to movement of the control column.

#### Landing and Flying Wires

These should be tested next for correct tension. Make sure that each wire has a similar tension—that one is not tighter than the other—and if streamlined wires are fitted, they are in line with the airflow—nothing will create greater drag than streamlined wires out of truth. When flying, these wires will vibrate and create a burring sound if not truly lined up.

Inspect the attachment of the wires to the mainplanes, keel and cabane for locking, etc. A pin hole  $\frac{1}{4}$ -in. from each end of the turnbuckle barrels



when probed with a pin or fine piece of locking wire will give an indication whether the wires are in safety or not.

It will after be found, during hot weather, that although the bracing wires were quite tight when the machine was rigged first thing in the morning, as the day progresses and becomes hotter the wires will become appreciably slacker. Should the wires be so loose that definite movement can take place in the mainplanes, one or two turns of the turn-buckles only should be made during re-adjustment. Care must be taken to see that the mainplanes are still in alignment and no wash-in or wash-out of incidence have been given to them.

If conditions are such that heights in excess of 2,000 ft. are likely to be attained, the wires must not be tightened as they will contract the higher the machine flies. Also as the day cools towards evening, care should be taken to see that the wires are loosened again by the amount previously taken up.

Where struts are fitted this disadvantage is obviated and only the attachment fittings need be inspected for wear and locking.

The wing root attachment fittings should receive special surveillance particularly for wear, strain and locking.

## Tailplane Group

From the starboard mainplane the next group in order of sequence is the tail unit or more technically, the empennage. The fabric surfaces are inspected in the same manner as the mainplane. Check for attachment to the fuselage or boom, making sure that no movement takes place. See that all attachment fittings to either struts or wires are locked and that there is sufficient tension in the wires without bowing the tailplane spars or fin sternpost. Make certain that the elevators are in alignment one with the other, the elevator and rudder hinge pins are not excessively worn, have sufficient lubrication and are securely locked. Inspect the elevator and rudder control horns making sure there is no sign of them bending or pulling away from their respective control surfaces. See that all control cables are securely attached and locked to the control horns and that the control surfaces have full freedom of movement.

Having completed the inspection of the tail unit, the port mainplane now comes under consideration, giving it the same careful inspection as for the starboard mainplane.

In the case of a primary type glider, the tail boom bracing wires from the mainplanes can be checked for tension and locking also the rudder and elevator control cables leading to the cockpit as the pilot is moving around the machine during the course of his inspection.

## Skid

The sprung skid attachment and shock rubbers should be watched for wear and damage, particularly the metal strip on the under side of the skid. This should be renewed before allowing it to wear too thin with the attendant risk of breaking and peeling back.

## Cockpit

The controls of all gliders and sailplanes are basically the same, so there should be no confusion when different types of machines are checked over by the one person.

As there is more chance of dirt and grit fouling the moving parts in the cockpit of a Primary Glider, more care should be taken over the inspection for wear in that type. Make certain by watching the movement of the control surfaces that they move freely and in the correct direction relative to the movement of the controls in the cockpit—e.g. control column to the right, starboard aileron moving up, port aileron down; control column forward—elevator down; right rudder forward—rudder moves to the right. Opposite movement of the control column in each case will of course have the opposite effect on the movement of the control surfaces.

## The Quick Release

The quick release mechanism should have particular care taken during the check. The best method being to test the operation of the release by attaching the towline and releasing whilst a member of the ground crew is pulling on the cable.

The safety harness should not be neglected, particularly at the point of attachment to the machine.

## Instruments

Where Instruments are fitted to the machine, these would probably be as follows:—Air Speed Indicator (A.S.I.), Sensitive Altimeter, Variometer, Ball Bank Indicator, etc., and probably a Compass. Some machines, the more advanced types, have a blind flying Sperry panel, consisting of an artificial horizon, turn and bank indicator and directional Giro. These instruments are operated by suction created by a venturi mounted outside the cockpit in the airflow; but as the machines under consideration in this article are not fitted with these instruments, we will not discuss them at present.

Tests for the previously mentioned instruments during the pilot's pre-flight inspection are few and simple.

Although it is not good practice to blow down the pitot tube just to see the pointer go round the clock, a light puff with the mouth about six inches from the pitot tube given by a member of the ground crew whilst the pilot is watching the instrument is all that is required to make sure it is functioning. Be certain the pointer returns to zero.

As the altimeter is affected by variations in weather conditions, it must always be checked for setting and if necessary reset to zero before every flight.

In the case of the variometer no test can be given excepting to make sure that both the red and green balls are at the bottom of the tubes in the instrument. A check during take-off will give an indication whether the instrument is functioning correctly or not. The ball bank being purely a mechanical device can be tested by tilting the machine whilst on the ground, when the ball will move towards the wing that is down.

Having completed your Pre-flight Inspection you may now prepare to take-off.

(From "Glidabout" Gliding Club of W.A. News.)



## SOARING IN PRIMARIES

I AM not aware whether it is an unusual thing to thermal soar unacelled "Primaries," but if it is I would like to place on record the following data. The "Fulmar" Gliding and Soaring Club at R.N.A.S., Lossiemouth, had never been able to qualify the "Soaring" title until Sunday, 5th September, 1949. The club has been in existence for over two years although little flying was done in the first year. The second year produced about 1,500 launches with a Primary. Numerous A. and B. licences were gained but that is as far as it went. No sailplanes of any description being within our reach we had resigned ourselves to the point of view that we would get no further and that the "C" licence would be denied us.

I was winched in the "Primary," fitted with an altimeter in the ballast stowage to 1,100 feet on Sunday, 5th September, 1949, and turned down wind for the inevitable circuit. I had lost 100 feet when I felt a slight upward waft and turned slowly and shallowly to starboard. I gained 50 feet in the first turn and carried on turning until I reached 1,700 feet, and by this time was over the coast line. At this stage lift disappeared so I flew up wind to the spot where I had first hit the lift, and sure enough I found it again and this time made 1,600 feet. A third attempt took me to 1,500 feet. There was no more lift and I returned to base with 14 minutes 20 seconds to my credit, and a "C" licence which I had been so sure would be denied me. Although this constitutes a new local record for time it is not a height record as I was winched to 1,750 feet last year. Upon landing the other members wished to try and did so without success but the zeal and interest in getting airborne in the "Primary" is back once again.

We are now busily engaged in constructing a "Nacelle."

LIEUTENANT (E) D. A. WIGG, R.N.

## 1,000 FT. TO 3,200 FT.

## IN A NACELLED PRIMARY

## The Gliding Club of Western Australia (Inc.)

THE day was hot—the sky was cloudless with a slight wind blowing from the east, when, one Sunday at approximately 12 o'clock, I was auto-towed from Caversham Airstrip in the Club's nacelled primary "Jenny Wren."

Climbing to a height of 1,000 ft. I released and had started a mild left turn when I felt the "Wren" surge and heard a higher pitch whistling in the wires. Continuing the turn I watch the green ball shoot up the tube and on completing 360 degrees it was constant at 15 ft. sec. I was watching the "vario" closely as the "Wren" climbed but the green ball never wavered.

The lift was very smooth and I started thinking in terms of thousands of feet when, at an altitude of 1,800 ft. the green ball flopped to zero and up went the red, 3 then 5 ft. per sec. Either the lift just petered out or I had lost it due to faulty circling; probably the latter.

By this time I was about a  $\frac{1}{4}$  mile or so from the strip so I turned upwind. Noticing a large dried-up swamp area on my right and remembering others having soared above this spot, I decided to investigate. Sure enough, right on the edge of the area I felt the "Wren" lift and heard the shrill whistle once more.

I had barely completed 180 degrees of a circle when I noticed the green ball had shot up to 20 ft. sec. and although I tapped the "vario" several times it remained there.

Paying more attention to my circling I found that I could drop the airspeed back to about 23 m.p.h. and still maintain good control while the "Wren" seemed to lift more rapidly.

As the "Wren" climbed higher and the strip got further away I began to wonder whether or not I could get back and being over pretty rugged bush I decided not to risk getting caught out.

So, at 3,200 ft. I turned away from the lift and immediately encountered 10 ft. sec. down. For quite a while the "vario" showed this reading and I was losing height fast without seeming to get any nearer the strip. This patch did not last too long however and the "vario" dropped back to 5 then to 3 ft. sec. down and I eventually reached the strip with 1,600 ft. on hand.

Circling around the approach looking for lift I found nothing and was forced to land after a flight of approximately 25 minutes and having reached 2,200 ft. above point of release.

I guess I was a bit excited—this was my first thermal flight—'cos I muffed my Landing and just dropped in the last couple of feet, but did not do any damage other than jarring my "seat" a bit.

R. BAIRD.

## AN EVENING THERMAL THEORY—Continued from p. 9

wide circuit of about 3 to 4 miles was therefore made away from the hill then south of the White Horse cliff to Kilburn Village and finishing up well east of the field still with 200 ft. in hand. The "Petrel" was in the air from 17.15 hours to 18.30 according to the log book.

Conclusions: The whole flight was as smooth as could be and suggested an evening thermal condition. The pilot, however, looks upon it as mostly hill lift and exactly the same as lift in strong wind on a hill but a different degree. He says that as in strong winds the lift goes up higher and the higher it goes the further out from the hill the lift also advances, so the same thing happens in this weak lift. He suggests that some of these so called evening thermals may be wind movement steady but weak against a hill, too weak to noticeably climb over a hill but sufficient to push up the air in front of, and sometimes well in front of, the hill. The valley of Sutton is not so surrounded by hills, and the hills are not so high that enough cooling is likely that cold air will descend in quantities enough to lift the valley air by displacement.

A. DE REDDER. 11.11.49.



# ULTRA LIGHT AIRCRAFT ASSOCIATION

## BULLETIN. VOL. 3. No 7.

### DESIGN SUPPLEMENT

Contributed by Group Captain E. L. Mole, Chairman, Design Sub-Committee.

#### Proposed Two-Seater Trainer—Specification Suggestions

WITH the *Bulletin* of last March, we issued a questionnaire to get members' opinions on the specification requirements for our proposed two-seater trainer. In this questionnaire we drew attention to the maximum limitations acceptable to the A.R.B. for the ultra light category C. of A., which are: engine power 75 b.h.p., all-up weight 1,200 lb., stalling speed (flaps down) 40 m.p.h.

We also suggested comparison with existing two-seaters: the "Topsy" (62 b.h.p.) and the "Piper Cub" (65 b.h.p.) both have excellent performance, though the latter is slightly over the weight limitation; the "Aeronca" (36 b.h.p.) has an all-up weight of only 1,000 lb. and flies well, except that its take-off run when fully loaded is rather long and its climb sluggish. We pointed out that increase of power gives better take-off and climb performance, with consequent increase of safety. It involves, however, a heavier engine and airframe structure and increased fuel consumption, with consequent increase in manufacturing and operating costs.

We have now received 36 replies to our questionnaire representing the opinions of approximately 90 individual and group members. These have been carefully analysed and the following summary has been prepared to show the trend of thought on the subject.

#### Design Characteristics

In our questionnaire we suggested various design characteristics and asked members to mark them in order of priority. By totalling the marks allotted to each characteristic, the following order of priority has been obtained:—

- (1) Safety.
- (2) Cheapness of first cost and operation.
- (3) Simplicity of construction and ease of maintenance.
- (4) Ease of flying and suitability for training. Robustness and long life.
- (5) Take-off and climb performance.
- (6) Ease of housing, ground handling and transportation.
- (7) Comfort.
- (8) Range and speed performance.

#### Summary of Specification Opinions

The following is a summary of members' replies to our questionnaire. The figures quoted in brackets are the numbers of opinions received in each case.

##### Wing Details

Layout: high wing, strutted (16); low wing, cantilever (16); mid-wing, cantilever (3); high wing, cantilever (1); high wing, wire braced (1).

Shape: "square" wing (26), tapered (9), elliptical (0).

Flaps: split flaps (9), plain flaps (8), spoilers (3), no flaps (14).

Span (ft.): 20-24 (3), 25-29 (5), 30-35 (16), 36-40 (5).

Area (sq. ft.): 70-75 (2), 110-130 (7), 135-150 (11), 160-175 (6), 200 (2).

##### Accommodation

Cockpit: open (22) including 9 with removable or sliding hoods; closed (14).

Seating: side-by-side (22), tandem (14).

Controls: with side-by-side seating, twin control columns (14), single column centrally placed (7).

"Stick" control column (30), spectacle type (5) including one protruding from dash.

Rudder pedals (21), rudder bar (13).

##### Undercarriage

All replies favoured non-retracting undercarriages, 4 suggesting spring leaf as "Cessna."

Conventional type (21), including 16 with tail wheels and 2 with skids.

Tricycle type (14).

Brakes (30) including 16 mechanical operation, 2 hydraulic; 8 hand operated (including 6 "as Fairey Junior"), 6 foot operated.

No brakes (5).

##### Construction

Structure: wood (18); composite (11) mostly welded steel tube and wood; light alloy (3); steel tube (2).

Covering: ply and fabric (23); light alloy and fabric (6); fabric (2); ply and light alloy (1); light alloy (1).

##### Aerobatics

Fully stressed (18).

Limited aerobatics (13).

No aerobatics (5).

##### Power Plant

Tractor (29). Pusher (7).

Horse Power: 37-40 (3), 45-50 (10), 51-60 (11), 61-70 (9), 71-75 (2).

Four cylinders (30). Two cylinders (6).

Horizontally opposed (20). Inverted in-line (14).

Upright in-line (1). Vee (1). Radial (1).

Starting: Prop. swinging (24), handle (9), electric (3).

##### Instruments and Accessories

Minimum instruments for visual flying by day (17).

As above, plus variometer (6).

As above, plus turn and bank indicator (7).

As above, plus full I/F panel (10).

As above, plus night flying requirements (4).

As above, plus I/F or night flying to special order (4).

Accessories: fire extinguisher (22); radio (6) including 5 "optional"; generator (2); long range tank (1).

##### Weights and loadings

Tare weight (lb.): below 500 (1), 500-590 (10), 600-690 (10), 700-780 (7).



# T H E   S A I L   P L A N E

Crew : all adopted the usual allowance of 170 lb. each.

Fuel (gals.) : 3-5 (4), 6-8 (4), 9-11 (7), 12-14 (7), 15-17 (3), 20 (2).

Oil (gals.) : 1 (13), 1½-2 (12), 3-4 (2).

Luggage (lb.) : none (5), 10-25 (7), 25-48 (7), 50-80 (7), 100-150 (3).

All-up weight (lb.) : below 1,000 (3), 1,000 (6), 1,050-1,150 (7), 1,160-1,200 (14).

Wing loading (lb./sq. ft.) : 5-5½ (2), 6-7 (6), 7½-8½ (13), 9-10 (5), 12-14 (2).

Power Loading (lb./b.h.p.) : 14 (1), 15½-17½ (5), 18-20 (14), 21-23 (7), 23½-25 (3), 28 (1).

## Performance Desired

Stalling speed, flaps down (m.p.h.) : 28-32 (5), 33-36 (12), 37-40 (16), 41-50 (2).

Cruising speed (m.p.h.) : below 70 (3), 70-75 (4), 75-80 (8), 85-90 (13), 95-100 (9).

Maximum speed (m.p.h.) : below 85 (2), 85-95 (8), 100 (11), 110-115 (7), 120 (4).

Take-off run, still air (yards) : below 100 (6), 100-150 (14), 200-250 (7), 300-400 (2).

Initial rate of climb (ft./min.) : 300 (1), 400-450 (3), 500 (14), 600 (11), 700-750 (2).

Cruising range, still air (miles) : below 200 (3), 200-240 (5), 250 (9), 300 (10), 325-400 (6), 450 (1).

Endurance (hours) : 1½ (1), 2-2½ (3), 3 (11), 3½ (9), 4 (6), 4½-5 (4).

## Price and Supply Conditions

Maximum retail price : below £300 (2), £300-£350 (4), £400-£450 (8), £500-£550 (8), £600-£800 (3).

Supply conditions : kits of parts for home construction (18); hire purchase arrangement (17), including 2 "pay-as-you-fly."

## Resulting Two-Seater Trainer Specification

The following specification is based on an analysis of the majority opinions in the foregoing summary, but although the Design Sub-Committee is in general agreement, we must emphasise that this specification does not necessarily represent our final views.

The first requirement for our proposed two-seater trainer is essentially safety. Secondly comes cheapness of first cost and operation and, thirdly, simplicity of construction and ease of maintenance. Characteristics of next importance are ease of flying and suitability for training, together with robustness and long life. Good take-off and climb performance is necessary as it has a bearing on safety, especially when operating from fields. Ease of housing, ground handling and transportation must be studied. Comfort, range and speed performance are the least important considerations.

The aircraft desired is a tractor monoplane with "square" wings probably with split or plain flaps. Opinion is equally divided between a strut-braced high wing and a cantilever low-wing, but here the Design Sub-Committee gives a casting vote for the low wing on the score of its better view inside a turn, which is essential for safety when a trainer is carrying out "circuits and bumps." The span will be 30-35 ft. with a wing area of 135-150 sq. ft. Side-by-side seating will be used in an open cockpit (possibly fitted with a removable or sliding hood), and dual control will be provided by means of twin control sticks and rudder pedals. A non-retracting, con-

ventional undercarriage with a tail wheel will be fitted, and provided with a simple hand-operated mechanical brake (the Fairey "Junior" design is favoured). The airframe structure will be stressed for full aerobatics, and will be of simple wooden construction with ply and fabric covering. A flat-four cylinder engine of 50-60 b.h.p. is desired, to be started simply by propeller swinging. Only the minimum instruments for visual flying by day are necessary, though provision for a turn and bank indicator and a variometer should be borne in mind. A fire extinguisher is required. The retail price should not exceed £550, and a hire purchase scheme is desirable. Arrangements should also be made for the aircraft to be supplied in kit of parts form for home construction.

Weight and performance data will be as follows :—

Tare weight .. .. .	550-700 lb.
Crew (two) .. .. .	340 "
Petrol (12 gals.) .. .. .	86 "
Oil (1½ gals.) .. .. .	16 "
Luggage, etc. .. .. .	up to 50 "

All-up weight .. .. . 1150-1200 lb.

Wing loading about .. .. . 7½-8½ lb./sq. ft.  
Power loading about .. .. . 18-20 lb./b.h.p.

Stalling speed, flaps down .. .. .	37-40 m.p.h.
Cruising speed .. .. .	85-90 "
Maximum speed .. .. .	100 "
Take-off run (still air) .. .. .	100-150 yds.
Initial rate of climb .. .. .	500-600 ft./min.
Range (still air) .. .. .	250-300 miles
Endurance .. .. .	3-3½ hours

## Some Individual Design Suggestions

A number of members submitted design suggestions with their completed questionnaires for the two-seater trainer. Many of these showed considerable thought and ingenuity, and the Design Sub-Committee is grateful for their efforts. The following ideas received are of special interest.

Group Captain Christopher Paul, D.F.C., besides being an experienced sailplane pilot is also an ultra-light enthusiast. He writes to say that the two-seater idea intrigues him immensely. He has a firmly rooted belief that safety of operation is closely connected with pilot's view, and that pilot's view is unexcelled in a pusher. From his experience of pushers (such as the "Vampire") he is convinced that the only place for the pilot is in front of the wing : he suggests that high wing arrangements, with the pilot sitting under a lid that conceals everything that matters during a turn, ought to be banned by law ! He considers that the advantages of the pusher in the freedom from cockpit draft, and the relegation of the noise and smell to the rear, are no small points in a "popular" aircraft. Group Captain Paul favours an open cockpit which, in an adequately windscreened pusher, he claims can be draft free and will give a sense of freedom and excellent visibility. He enclosed a drawing showing a simple side-by-side seating nacelle with a tricycle undercarriage, the tail unit being carried on a boom. A pusher engine is mounted on a parasol wing which



is situated behind the cockpit at sufficient height for the propeller to clear the tail boom.

Mr. J. A. Allan is also an advocate of the pusher type. He submitted a drawing showing a high aspect ratio, cantilever wing, thickening at its centre section to accommodate the pilot and passenger seated side-by-side. His aim with this arrangement was to reduce parasite drag. The tail unit was carried on a simple, square section boom behind the wing, and the pusher engine was mounted on a neck above the wing high enough to obtain propeller clearance.

Mr. P. Simpson submitted details of a design he is working upon, which he calls the "March Hare." This is really a cleaned up "Aeronca" layout, with a cantilever high wing fitted with split flaps. A tricycle undercarriage is used with brakes on the main wheels. The construction is to be of wood with ply and fabric covering. The engine is to be a 36 h.p. "Aeronca" J.A.P., but he would prefer a 50 h.p. engine when available. The normal all-up weight of 864 lb. includes a useful load (crew plus fuel and oil) of 427 lb., and with the 36 h.p. engine he estimates the cruising speed will be as high as 88 m.p.h.

Mr. E. O. Tips pointed out that the post-war version of his well known "Topsy B" design—the "Belfair"—is an ultra light, being only 500 kilograms (1,100 lb.) all-up weight). It is, moreover, aerobatic. We gave a description of this excellent design in the September *Bulletin*. Mr. Tips considers it would be extremely difficult to design a cheap two-seater with a motor as large as 75 h.p. within our weight limitation of 1,200 lb.

Mr. G. A. Henwood writes to say that though he has a penchant for the "Topsy," which he considers to be a beautiful little aircraft, he doubts if it would be suitable for the rigours of training. He considers that a trainer must be essentially robust, simple of construction and without frills. He suggests the development of a two-seater motorised version "Dagling" or "S.G.38" primary gliders, the simple airframes of which are extremely economical in material and labour. The machine would not be pretty; but he feels that for our purpose elegance should be sacrificed to utility; the "built in" drag, he suggests, would be an advantage in making landing approaches more easy.

Capt. C. H. Latimer-Needham, well known to us as the designer of the successful pre-war Luton "Minor" and "Major" ultra-lights, considered that if we required to operate from small fields, a low stalling speed was essential and high speed must be sacrificed. If, however, it is assumed (as in America) that normal aerodromes will be available, a stalling speed of 50 m.p.h. is quite low. By bringing up the stalling speed, the wing loading is increased and the whole machine becomes smaller, and a good all-round performance is obtained enabling one to get from A to B in a reasonably short time. Furthermore, he added, the small size of the aircraft allows the wing and fuselage surfaces to be covered with light alloy sheet, thus producing a machine which is not only robust, but very smart in appearance, and one that can be left out in the open so that hangar accommodation is no longer important. Now, whilst we fully agree with Capt. Latimer-Needham's

proposal when applied to our high performance class of aircraft for experienced pilots, we feel that such high-wing loadings would be unacceptable for our concept of a basic trainer, for which suitability for field operation is important and speed is not a primary consideration.

Mr. W. J. Watkins considers that the provision of an ultra-light two-seater trainer suitable for group construction is an immediate necessity, and he favours our recent suggestion that the major components for such an aircraft should, so far as possible, be interchangeable for both single and two-seater versions. He submitted a drawing of a neat 50-60 h.p., high wing, side-by-side cabin two-seater on conventional lines, with the following provisions to make it as simple and versatile as possible:

- (a) A glider tow hook can be fitted.
- (b) The simple "square" wing is designed so that flaps can be added later, if needed.
- (c) The undercarriage legs are made from steel strip (as with the American "Cessna" and R.H. and L.H. legs are interchangeable).
- (d) Ailerons are interchangeable, and also flaps.

Finally, Mr. Watkins stresses that appearance must be neat and modern; he does not favour "unrefinement" as a means of gaining cheapness.

## The "Colearner" Flight Trainer

We have received from Mr. Anthony Cole, well known for his racing successes in his Comper "Swift," the drawings and a description of an ingenious device intended to solve the question of teaching people to fly easily, quickly and cheaply. This, he calls the "Colearner" Flight Trainer. It consists basically of a small, all metal low wing U.L.A. of 16 ft. span with a high lift wing section and a stalling speed of about 25 m.p.h. It has no engine, but is towed by a car by means of a rigid link which can swivel in a vertical plane. The aircraft is connected to the link by a universal joint fitted with limiting stops. An instructor sits at the rear of the car, facing aft, and is provided with dual controls, the cables for which pass through the link to the aircraft. The pupil sits in the aircraft and has a throttle connected to the car engine (which can presumably be overridden by the car driver). Communication between instructor and pupil is by normal speech.

Mr. Cole's remarks concerning his Flight Trainer are as follows:—

"There can be no danger attached to the machine, as the Instructor can have complete charge, but from the very start, the pupil will feel he is the master, as he alone is airborne, and this will give him considerable confidence. There is complete control in both lateral and longitudinal planes, and although the pupil cannot turn the device as a whole, he will have to use the rudder to prevent the machine from yawing, and will thus quickly learn to co-ordinate rudder and ailerons; and, a further item, it will be appreciated that with no engine, the instructor on the ground, and low speeds, the construction of the aircraft may be simple and light, thus the stalling speed of the high lift section used will be very low. To make the operation of the machine almost indistinguishable from free flying



the A.S.I. will be scaled so that at take-off it will read, say 40; and at about 40 m.p.h., a desirable maximum, it would read in the region of 90.

"To perform a 'flight' in the machine the pupil, instructor, and driver, will take up their respective positions, and the driver will accelerate to about 15 to 18 m.p.h. and change into 3rd gear. The pupil will then take over control of the throttle lever, and proceed in the normal way to take off. Once airborne he can do everything necessary to take him up to 1st Solo stage. It will most probably be desirable for him to undergo a short course on a ground trainer, in order to familiarise himself with a completely free movement, but this could be done, as he would now be relatively experienced, on the actual aircraft in which he will make his first flight.

"It is not easy, at this early stage, to foresee all the possibilities of the 'Flight Trainer' but, as one suggestion, the machine could be used with a hood to provide a complete Blind Flying course!

"The great advantages in using such a machine are that there is no necessity for a Certificate of Airworthiness, or other undesirable permit, there is no expensive maintenance of a delicate engine, and the initial expense is lower than that of a free flight aircraft (the car can be detached quickly and used in the normal manner!).

"Further, it is not necessary to have an Aerodrome at one's disposal, any quiet stretch of road can be used, as the span, due to the light weight and high lift section, is quite small. Thus it is possible to take the elementary flying to the pupil!

"Incidentally, it should be remembered that flying time, in hours, in the Flight Trainer, cannot be directly compared with hours put in in a free flight machine. A pupil will learn far more rapidly in a series of short flights, followed by ground instruction, than in a long flight. And of course, quite a proportion of free flight training is spent in judging heights and distances when approaching to land. This naturally cannot be taught with the Flight Trainer.

"But the greatest advantage of all, is that this machine does provide a solution to the present stalemate situation, of how to teach people to fly in the face of ever rising costs, and increasing Government opposition."

We submitted the whole scheme to Mr. A. R. Weyl, head of our Design Team, for comments. Mr. Weyl is, of course, a well known advocate for the solo-trainer aircraft as the best means of providing cheap flying instruction. His remarks are as follows:—

"If my recollection is right this device is substantially the same as the glider training device of Mr. L. C. Ottley. Years ago, Ottley told me that he and his son had tested this device with a rigid tow-bar (just as Cole's) and found it practical and safe; it was, however, never accepted by any club or training organisation, and I think that he has given it up entirely. The provision of dual control is, of course, new (though I tend to pity the poor instructor!). Without cross-wind, the device would work, but it requires an aerodrome runway of substantial length in order to be useful. The rigid tow-bar will, of course, transmit all accelerations and shocks of the car to the aircraft. I doubt if it will be completely safe with a raw beginner, as,

if one wing dips into the ground, the contraption will be smashed more severely than if it were in free flight. The speed of the tow-car which is required, depends upon the wing loading. (16 ft. span is, of course, a bit too low and will scarcely give 25 m.p.h. gliding speed, vide "Dagling" performance). The wing loading should not be too low as otherwise the slightest gust would bear effect upon the device. Also the towed contraption cannot be built flimsily (as with a genuine ground-trainer), because it is actually flying and failures of the structure would produce injuries.

"I have two basic objections to such training devices:—

- (a) They are all at least as expensive and cumbersome as a cheap primary aeroplane.
- (b) They impress any novice with the feel that flying is very difficult and dangerous to learn. One does not learn to drive a car or to sail a yacht in contraptions but by actually doing so in the real thing under advice and supervision from an instructor. With flying, there is not the slightest reason to do otherwise!

"The only ground trainer which seems to have reason for adoption, is the Link Trainer, and for such a device the main advantage in u.l. aviation is that it allows a certain amount of cheap and useful exercise at times when flying is not possible or practical. But the real flying aeroplane will always be superior to all attempts of inventing synthetic flying contraptions for training purposes. We ultra-light people (and the glider people) are the last who can get away from this basic truth."

Our main criticisms of the "Colearner" as a flight trainer are:—

- (a) The rudder can only be used to prevent yawing, and the pupil will be unable to get the feel of a correctly banked turn.
- (b) The machine would be likely to be unmanageable in a cross-wind.
- (c) The cost of construction (including car modification) would probably be too heavy to give the scheme any advantage over normal dual instruction.

Despite these criticisms, we feel that the scheme has points of considerable interest to the U.L.A. movement and we would welcome opinions from members on the subject. We would very much like to see an experimental version built and tried out, and would be glad to hear from any member or group who would be prepared to co-operate with Mr. Cole on the subject.

## The Right Spirit

We are glad to publish an article by a new member, Flight-Lieut. G. Banner, D.F.C., the first part of which appears below. This article gives a stimulating description of his early efforts to get into the air, and it illustrates the type of group spirit we are trying to foster. We greatly admire the undaunted enthusiasm and determination which successfully overcame the many obstacles encountered (both financial and otherwise), and enabled the group of young men to achieve their ambition of building and flying their own aircraft.



Whilst, for reasons given in the *Bulletin* last June, we are not prepared at present to sponsor the building of "Flying Fleas" in this country, we have been doing our utmost to make drawings of approved U.L.A. designs available to our members for home construction. Already the Slingsby "Motor-Tutor" has been offered for sale in kits of parts form, and other suitable designs are expected to be available in due course. We have a stock of unused 36 h.p. "Aeronca" J.A.P. engines, which can be obtained by members at moderate charges, and we would be glad to assist them with problems of materials and construction. Moreover, our Inspection Organisation is available to guide and supervise amateur construction to ensure that the completed aircraft will be eligible for the issue of Certificates of Airworthiness.

Despite difficulties due to the lack of a suitable post-war design, a number of our individual members and groups have had the initiative to re-construct pre-war aircraft and to build from pre-war designs. Several examples have already been completed and flown successfully, and are in operation. This is the right spirit! Let us hope with the advent of the "Motor-Tutor," and of other designs which are coming along, that we shall see many more groups emulating their drive and determination to get airborne!

## THE RECOLLECTIONS OF A "FLYING FLEA" ENTHUSIAST

Contributed by Flight-Lieut. G. Banner, D.F.C.  
Part I—The Construction

Whilst discussing Mignet's "Flying Flea" with a member of the U.L.A.A. he made the observation that in his opinion the advent of the "Flying Flea" had ruined the pre-war Ultra Light Aircraft movement. This was a point of view with which I heartily disagreed. I have read the remarks in the June and July *Bulletins* and the aerodynamic notes on the subject by Mr. Weyl, which seem to have dealt fully with the matter, and technically, the summing up in favour of the conventional aircraft is sound, but there is one important aspect which I feel has been overlooked. Creation of light aircraft clubs with what has been termed "Club Spirit," sufficiently strong and lasting to get through three stages of completion, formation, building and flying, has always proved extremely difficult.

The two deadly enemies of such clubs are cost and frustration. The "Flying Flea" was without doubt the only aircraft which was designed primarily to overcome these two bogies. Only a technical fault, fully explained by Mr. Weyl, prevented it from being a great success. I hope my story will illustrate this.

Let us go back to the year 1937 and view the Aviation World through the eyes of a young man aged about 19, a young man who had that irresistible urge to fly but without the necessary sterling balance to satisfy his needs—a state of affairs as common to-day as it was then.

I was an apprentice draughtsman at the time and worked at a local ship builders and engineers. I lived on the edge of an industrial town but was within reach of the open country by walking or cycling, a fact which later proved useful. The

local aerodrome was well within my radius of action and it was here that I became immersed in that atmosphere of engines, castor oil, dope and fresh air. The fascinating mixture guaranteed to stir the blood of any would-be aviator. King's Cup air races and travelling Air Circuses visiting this aerodrome served me with an opportunity to scrounge flights as a passenger. By selling tickets for trips round the airfield at 5/- a time I was rewarded at the end of the day by a flight which might include a loop or a roll, all very exciting but not as satisfying as flying oneself.

Mignet then published his book which received considerable publicity. I read it carefully and then heard of a number of fellow enthusiasts who were forming a club to build one of these machines. I joined this club and paid 6d. a week which I thought was a reasonable fee. The members of this club were local people of all ages. The older ones had joined not so much to fly but just for something to do and they were left with the management and finances. There were the usual girls who lent colour to the place and helped with dances, tea, etc. In all there were about 50 members. We acquired one single room beneath a garage at a modest rent of 10/- per week. It was just large enough to accommodate a "Flying Flea." Electricity was laid on, a bench was installed and various members contributed tools and we were all set to commence work.

There were about six of us who actually did the building, the other members helping occasionally. We had one member who was an expert on timber, so we left the ordering of materials to him. I made a number of detailed drawings and converted the metric measurements to the better understood feet and inches. I know of a certain editor in aviation circles who would not have liked this. However, some of the measurements given in the first edition of the book did not agree with some of the detailed measurements. It was a simple matter to draw the details to scale as roughly illustrated in the book and take the measurements direct from the drawings. Many vital dimensions were omitted from the book so my drawings had to be relied upon. It is worth repeating here that the construction really was so simple that anyone who had a grasp of simple engineering drawing and could use tools with modest skill could build this machine.

The six building members as I shall call them all came under the above category, and the work went ahead. Various glues were experimented with until we found a cold water type that set stronger than the wood itself. There were many arguments as to the best method of doing various jobs. We were held up through running out of cash to purchase materials. There were the usual club personalities who could not stand each other. Resignations with much show of dignity were common, but the building members seemed to have a common bond of enthusiasm which held through these various troubles. We were guided by a very able amateur carpenter and we were very proud of our work which was done with perhaps exaggerated care and attention, but we intended to have a sound job with nothing skimpy. With this in mind I constructed some of



the small amount of the metal work in this machine, and introduced a personal element of design which might be of interest. When viewing dismantled light aircraft I had always been struck by the apparently weak bolts and flimsy metal plates that formed the main engine bearers. Even to-day I shudder to see those few thin looking bolts that secure the main plane to the fuselage. I am aware that a simple calculation shows that they are not only strong enough but there is an ample safety margin. The "Flea's" wing was secured to the fuselage by a single bolt in the centre and two flying wires to the mid-wing. This centre bolt was not only taking the load but was also a hinge for the main plane which was of a variable incidence design. The bolt and its attachment was in full view of the spectator in the completed machine, and not decently buried out of sight as in the construction of more conventional aircraft. I therefore decided to make it not only strong but to look strong at the expense of a little weight. I was told that the finished article bore the stamp of a battleship builder. Its main features were heavily welded steel plates with a substantial phosphor-bronze bush for the hinge, and a relatively enormous bolt of high grade steel to take all the strains plus about 10g.

The wing construction again could not have been more simple but the book gave no details of the dihedral apart from the amount at the tips. The illustrations showed the main spar to be curved continuously up from the centre to the tips. There is a formula which ship builders use for obtaining that smooth even camber seen on ship's decks. I applied this in reverse to the main spar and it certainly made a sweet curve.

As the work progressed it was inspected and finally registered with the proud letters G-AEIZ on the side. The engine, a Scott twin inverted two stroke with a reduction gear, was fitted and gave no trouble. This engine cost £65, the money being raised by Club functions such as dances, etc. It developed 30 horse power and drove a wooden airscrew which we bought at a cost of £6. We obtained enormous pleasure by opening all the windows and

running the engine at full blast. Sitting in the cockpit under these conditions was to us a real thrill. The wood-littered floor became green fields and the dull grey ceiling became bright blue sky, and of course the billowing swirling smoke of the exhaust made excellent strato cumulus or cumulus nimbus according to taste.

No one was more pleased than the local residents to see us move off to the next phase of our activities. We were about to fly!

Because we had not yet obtained a Permit to Fly we were not exactly encouraged to fly from the local aerodrome. I remember formidable things like hangar fees, landing fees and insurance being discussed at great length by the committee. I gathered that leaping into the air was not to be done with the careless abandon of the Wright brothers or a Bleriot.

However, by circulating the local farmers we found one good chap who let us have the use of a very large field at no charge whatsoever. We made him an honorary member immediately. We also raised fifty pounds to buy a very small canvas hangar which would just hold our machine and a few items of gear. A commercial firm made us a present of a wind sock which was hoisted with due ceremony. We stood back and proudly admired our aerodrome. We had a visit from the local county council who were alarmed by having a full blown aerodrome in the middle of their territory. We were the subject of petitions by the residents and minutes by the councillors. The local surveyor was appalled by our hangar for it complied with no known building regulations and we had not even filled in the first form, in fact the whole thing was so unprecedented that no one knew what to do.

While these worthy gentlemen were working on this problem we started our first and what was to prove our only form of flying. We were waiting for a qualified pilot to air test this machine before getting our Permit. Until this was done the insurance company would not cover us for flying outside our field. Looking back this was extremely wise of them as future events were to show.

*(To be continued)*

## THE LONG FLIGHT

By Terence Horsley

*Country Life, 18s.*

**H**ERE is a collection of short stories by one who was both a gliding enthusiast and a craftsman with words. These stories have, as their common theme, the struggle of individuals against the forces of Nature. In "The Record," Horsley takes us up with a sailplane pilot on a stormy 21,000 ft. gain. In others, we fly with wildfowl on their long migrations, stalk wary stag in the Highlands, share the salmon's instinctive journeyings along the river. And in "Home Coming" we pass tense moments with the crew of a great air-liner.

There is science as well as personal experience in these tales. Recently both "Times" and B.B.C. told us that wildfowl travel at night chiefly to avoid the "snare of the fowler." Here we learn of the much older wisdom which bids these birds fly at

night to make use of the thermals rising from the warm sea. Much exact observation is woven into this book: but, prophetically, there is a note of tragedy too. This the author seems to have found inseparable from the action of those great natural forces which for him made life an adventure. Of his heroes and heroines—bird, beast, crofter, fish, airman—he says:—

"They possess the qualities of which the creatures of our planet cannot have too much—courage, tenacity, and knowledge of the fickle Goddess whom we know as Nature."

A grand book for those who like to view their sport in a large setting. The illustrations—woodcuts by C. F. Tunnicliffe, A.R.A.—are excellent. A.R.



## NEWS FROM THE CLUBS

### SHOREDITCH TRAINING COLLEGE GLIDING CLUB

#### Club Report

After a long silence from Shore-ditch, during which many a gliding enthusiast must have shaken his or her head and, in sorrow, said "I knew it," it is our privilege to lift the iron curtain which seemed to have fallen on our activities.

We would like to apologise to the editor and the readers of *Sailplane and Glider* for our lack of courtesy in not keeping the gliding world informed of our doings. It is due to our ignoring the wise proverb of Oscar Wilde that "Procrastination is the thief of time."

We have plenty of news but will abbreviate this report for the editors' and readers' sake. Since our last bulletin in March the following successes and failures have occurred.

A winch, a beaverette and a "Cadet" aircraft were purchased from the Royal Artillery Gliding Club, Middle Wallop, with the assistance of the Kemsley Flying Trust, and negotiations with the London County Council produced the transport which completed the deal. Training began at once with our "S.G.38," and on non-flying days a "Dagling" aircraft was rebuilt (please note). The repairs to the hangar and the building of the club hut were completed under the able direction of Dave who appears to be able to do anything from laying a runway to dismantling a hangar. The "Cadet" was test flown and gained two "B" certificates under the pilotage of Jim Pearce and Peter Alcock before being put on ice pending insurance negotiations. George Ford, pioneer of the "£5 wreck days," qualified for his "A" certificate in September on our old faithful "S.G.38." Ab initios including several ladies have been sliding and hopping desperately to beat the weather which renders our field almost unusable from November to the early spring. During one of these busy days the

"S.G." oleo leg failed to retract in a heavy landing and caused structural damage to the port wing. The old girl departed to hospital and has received an overdue major inspection. Praise must go, for a large amount of this work to the College of Aero and Auto at Redhill and also to Ken Priestly whose metallurgical skill has produced an amazing new development in landing skids which we hope to make public at a later date.

The London County Council have very generously paid off our debt in respect of a winch and beaverette and are contributing to the future development of the club. A lease-lend agreement is being effected between the Shore-ditch Club and the promising and budding Cheshire Gliding Club which is under the very able direction of Mark Twomey and Glyn Thomas.

Reverting to our "S.G.'s" successor the "Dagling Primary," this aircraft has carried a very heavy load on ground slides and air-slides and is now under full overhaul and inspection before being promoted to high hops. An Ab initio called it affectionately "Ernie's Horror-Box" and the name has stuck.

The future holds promise of another "Dagling" and another "Cadet." Now we retire to our workshops to carry on building with a promise to keep the gliding world better informed of our activities in the future. We take this opportunity to wish the rest of the gliding world a very Happy New Year.

### THE NEWCASTLE GLIDING CLUB, LTD.

#### Club Notes. Aug. to Nov., 1949.

The Club has been honoured by the acceptance of a Vice-Presidency, by the Hon. Denis G. Berry, son of Viscount Kemsley.

Andy Coulson has been appointed Chief Flying Instructor since Arthur Burningham has resigned this post due to pressure of business. Sid Smith (D.F.C.) has been appointed House Committee Secretary and Mr. W. Laidler has taken over the

duties of Bar Manager. Miss Jane Hicks has accepted the office of Magazine Secretary—and would like to have more orders to handle.

As already reported in the Yorkshire Club news, on August 13th, Dr. de Redder flew 28 miles from Sutton Bank to Sherburn, in the "Petrel," and on the 14th, K. Lion put in his 5 hours' duration flight at Sutton Bank in the Newcastle "Tutor."

During September, October and November, training and passenger flights were continued at Morpeth Aerodrome. On September 4th, some weak thermal lift was sought out and the best flight was 10 minutes in the "T.21B," by the C.F.I. with Bill Stephenson.

On the 10th and 11th of September, aided by a moderate breeze blowing along the main runway and a new cable, auto-towed launches of over 1,000 ft. were obtained. Some rather weak lift gave opportunities for thermal chasing. The "Hols," now fitted with A.S.I. and altimeter, was circuted by L. Dent, D. Cooper, Bill and Ken Thompson.

In October, the "Tutor" was brought from Sutton Bank by Robbie, because it serves a much larger number of members at Morpeth Aerodrome, although the transfer is unfortunate for the few members who were able to travel to Sutton Bank.

The "Tutor" seems ideal for solo practice by pupils trained in the "T.21B," and they regard it as having the same good handling qualities as the two-seater, with the advantage of being smaller, quicker on the controls and having a better field of view.

"B" certificate pilots who have recently graduated to the "Tutor" are L. Dent, P. Wallace, K. Thompson, J. Anderson, J. Mills and D. Collinson.

Incidentally Pros Wallace, who joined us only in June (after seeing our gliding demonstration at the Newcastle Air Display) is one of our most useful and versatile members. He has done a good deal of launching, both by car and winch, and is a capable member of the Ground Staff, yet somehow he



has found time to collect "A" and "B" certificates from scratch, and by October was flying excellent circuits in the "Tutor."

Another recent member is Keith Millican, who flies over from Wool-sington in his "Topsy" for a few motorless circuits in the "Two-seater."

A prize draw took place in the city headquarters on November 25th—the twentieth anniversary of our Inaugural Meeting. Over £100 was cleared on this event, and the Club is exceedingly grateful to Robbie and his friends outside the Club, Mr. Laidler, Mrs. Craig and Len Hartley for their generous donation of prizes. We also thank Mrs. Miller for so ably conducting and controlling the despatch and receipt of tickets and money.

The Annual Tramp Party took place on Saturday, November 26th, and the make-up of the revellers was even funnier than previous years. Harry Goodfellow entertained and over 50 tramps and trampesses were present.

The Christmas Party will take place on Christmas Eve, and we expect this to be as successful as last year's event.

D.C.

# DERBYSHIRE AND LANCASHIRE CLUB NOTES

*Saturday, Nov. 5.* Wind W. 20 m.p.h. "Eon Baby," "Tutor," and a couple of private owners did 2 hours between them in the late afternoon, after rain had cleared.

*Sunday, Nov. 6.* Wind WSW. 15 m.p.h. "T.31," "Cadet," "Tutor," "Eon Baby," and private owners totalled 14 hours. There were actual thermals for about an hour, and Charles Faulkner got to 3,000 ft., the last 1,000 ft. in cloud. Threlfall got his "C" in the "Cadet," but I wish he would learn that this machine behaves much more nicely at 35 than at 28 m.p.h.

*Saturday, Nov. 12.* Wind W. 40 m.p.h., increasing. Two "Olympias" were out in the morning and did the first bungee launches since before the Competitions in August, but by 1 p.m. the wind at 1,000 ft. was 55 m.p.h., so lunch seemed indicated. A full gale blew up in the afternoon and put a stop to any further ideas of flying.

*Sunday, Nov. 13.* Wind NW. 15 to 20 m.p.h. Bungee launches for "Gull," "Eon Baby" and private owners, and winch launches

for "T.31," "Cadet" and "Tutor." 25 hours' total, including two "C" flights, by Clare and Tallent.

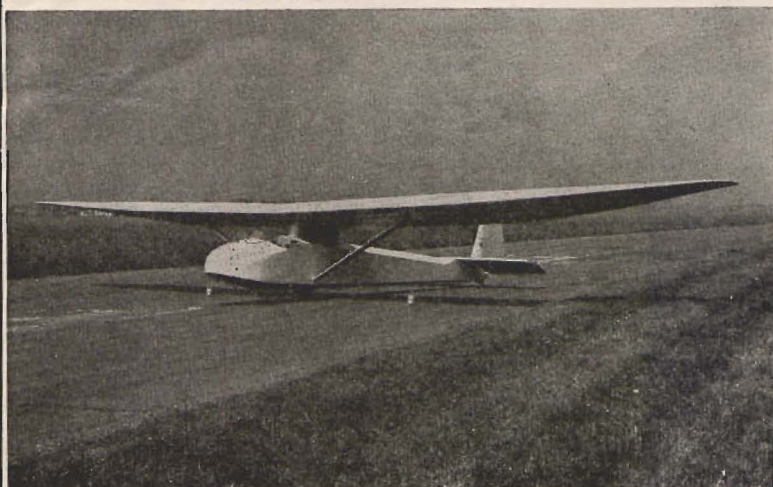
*Saturday and Sunday, Nov. 19 and 20.* Wind nil, increasing to 4 m.p.h., S. Most of the country was under thick fog, but Camphill remained above it in brilliant sunshine for the whole week-end. Training with "T.31" and "Cadet," both days.

*Sunday, Nov. 27.* Wind NE. 10 m.p.h. Intermittent low cloud and intermittent launching of "T.31" and "Cadet." Following our usual practice at about this time of year, we de-rigged all machines with trailers and put the trailers inside the hangar.

*Sunday, Dec. 4.* Wind WNW. 40 m.p.h. Two "Olympias" were bungee launched and had mild fun up to about 1,500 ft., but it was too rough for anything less than an "Olympia." Over the week-end we welcomed Chief Instructors from various other clubs, who had foregathered at Camphill for a B.G.A. Instructors' Panel meeting.

*Sunday, Dec. 11.* Wind N. 10 m.p.h. 2-in. of snow on the ground, but a nice sunny morning. The "T.31" was doing its stuff

## On Service—for The Service



The T21B, 2 seater is now in quantity production for the Reserve Command Royal Air Force as well as for export to foreign governments.

Slingsby Sailplanes Ltd., Kirbymoorside, Yorks.



as usual, and we also rigged and tested the "T.21" which had been away for re-covering and C. of A. It is now finished in silver and blue, and opinions vary as to its beauty; but it flies as well as ever, which is the point.

## SCOTTISH GLIDING UNION

Mike Smedley, dual member of the S.G.U. and Surrey Gliding clubs was apparently in a slight dilemma, for with 150 feet of height in hand, he was already over his landing position. Mike's answer was to do a couple of lazy steep turns, break down wind away from the airfield, until he was in a favourable position to turn in, approach, and land. To make, that is a "spot" landing, for although Balado has a large airfield there is always a certain amount of misbegotten prestige attached to landing at the instructor's elbow. With a height margin of some 90 ft. he made his final turn, but, like his previous turns, it was too slow and too steep; from a steep turn to a partial stall turn and into a spin was a smooth, deadly sequence. The glider hit the ground and crumpled into a matchwood that only the tail and one aileron escaped. Mike himself, was carried off to hospital, where he is still making a reasonable recovery from a heavy concussion and suspected fractures of the skull and jaw.

But with the "Eon Baby," the aircraft in use, went two dreams. The first was mentioned last month, whereby the idea was mooted of forming a syndicate of twelve club members who would guarantee to cover the costs of the "Baby" by having an average of half a dozen launches each every

month. By some grim irony this scheme was approved by the Directors just before the accident occurred on the last weekend of November. The second dream was that of an accident-free year, the first in the post-war history of the club. Andrew Thorburn, our architect in chief, has with the utmost patience built up a safe flying policy, which despite the large number of trainees and beginners, had after three years begun to bear visible fruits. But the crash danger is always bound to be present; to quote a recent remark of American air ace Eddie Rickenbacker, "Crashes are the price you pay for motion . . ."

The accident served to fan most uncomfortably, the dying embers of an eventful year. With the shorter days and with the bitter weather that sometimes sweeps in from the east, physical activity decreases whilst ambitious planning becomes the keynote, and the blue prints for the next year are produced. And blue print No. 1, which will take effect from Feb. 1st, produced with solid Scottish optimism, is to engage a permanent, full time, maintenance engineer who as well as covering the obvious maintenance work, will ensure gliding at any time of day or week granted a minimum of two people turning up together. Any visitors from the South can consequently be assured of some gliding if they care to visit the club on any of their future Scottish holidays.

Having agreed to employ a maintenance engineer, we were then sorely tempted by the offer from Macdonald Aircraft to sell us the "Tiger" we use for aerotowing, for £200. This amount could probably have been quickly

regained if something like the usual rates of £3 an hour had been charged for solo flying and other trips. But since there was an element of financial risk, and since we had not got the ready money, the offer had to be sadly refused. But the fact should be duly noted that ever since the club moved into Balado, an airfield run by Macdonald Aircraft, the company have been very decent to us. There is no particular financial reason why they should foster our interests to the extent they have, but they have, and we are duly grateful.

Usually at this time of the year, it is permissible to speculate on who has been the Man of the Year. Without much doubt, the S.G.U.'s "Man" has been Alex Fyffe who, at a mellow age, recently took up gliding and within the year has steadily taken his first three certificates. To these, a couple of months ago, he completed his height and endurance legs of his Silver "C" in spectacular fashion flying a mere "Cadet." As an additional qualification, his odd jobbing round the club has been invaluable, but just in case he felt the title was in doubt, he clinched the issue by providing our one and only marriage, duly performed in the last month of the year. If justice were done, this column should feature the Men of The Year, who as the same old team of half a dozen, labour year after year in the dull routine jobs. Appreciation for them runs deep, but faced with the difficult task of guiding, persuading or just bullying our individualistic members along paths chosen by the majority, their ways are not easily pursued. They have our often harsh criticism, sympathy and genuine gratitude.

## Letters to the Editor

30th November, 1949.

SIR,

With reference to the article headed "A Warning" published in the November issue of the *Sailplane*, as one of the members of "the group from another club with the 'Pétrel' who wished to fly" I wish to make the following comments.

On that occasion, and on every other occasion when outsiders visit

this site, flying is laid on on request, swiftly, efficiently and with the minimum of fuss and officialdom.

By their conservative policy during the uncertain years since the War the Club operating this site have maintained the site, hangarage, their own aircraft and equipment at a maximum of efficiency, and thereby have benefited other visiting clubs as well

as the one of which I am a member.

They are fully aware of the need for ab initio training, and have already made all necessary arrangements for putting it into effect.

I should like to add, as far as my limited experience goes, that they are the only club I know of that combines the true atmosphere of complete lack of regimentation and officialdom with a very high standard of efficiency.



To forestall the gibe that they maintain their own aircraft at a maximum of efficiency by not flying them, I would state that they are always right as to when flying is possible at their site and then their aircraft are flying continuously.

Yours faithfully,  
S. C. O'GRADY.

17, Hollymead Drive,  
Guisborough, Yorks.

DEAR SIR,

Hot air is almost essential to the art of gliding, and the contributor of your article "A Warning" in the November issue has rid himself of a thermal which must have worried him. May I, as Chief Instructor to the Yorkshire Club, to which your contributor refers, endeavour to prick the bubble?

Firstly, the suggestion that Y.G.C. is too fond of the bar is uninformed, if not unkind and libellous, bunkum. Few major clubs there can be which have operated since the war until the summer of this year without any bar at all, as the Y.G.C. has.

Secondly, the suggestion that the Y.G.C., having not yet resumed ab initio training, does not recognise its vital importance is uninformed nonsense. We have hitherto reluctantly pursued a cautious policy on purely financial grounds, otherwise we should have gone broke, or been obliged to mortgage our property. As a result we are still solvent and have, I believe, the most favourable insurance rates of any Club.

Thirdly, it can hardly be true that Wills wins our competitions because he gets his "Weihe" out of the trailer regardless. He wins because he has hands and brains, nearly a quarter of a century's experience at the business, a first class fetching and carrying organisation—headed still, I hope, by the admirable Kitty—and because he invariably flies the finest type of machine available.

Fourthly, it does seem a pity that our Club no longer has your contributor as a member, for we are to start ab initio training in the new year, and he could surely cut prangery to a "manageable minimum," or could he? We should like to know the club at which he instructs in order to check his credentials.

Finally, I should like to exhort my fellow Club members not to turn up late in unfavourable weather and risk keeping waiting any visitors who *might* turn up to fly a borrowed machine. You may live 50 miles from the site, you may be short of petrol, time, or cash, but rally round chaps; V.I.P.s, real or imaginary, don't like being kept waiting. You have been warned!

Yours faithfully,  
L. H. BARKER.

DEAR SIR,

My hearty congratulations to you for publishing and to the unknown author for writing "A Warning" in the current issue.

After the moaning and groaning one hears about the difficulties of getting airborne it was like the breath of a soaring wind to be reminded of those vigorous, determined days before 1939 and the activities which once surrounded that delightful clubhouse whose brick fireplace alone remains as evidence of what was done by enthusiasm and will.

I was never more than a day-member of that un-named Club but yet I have the happiest memories of a warm welcome to the stranger, of the old "Hols der Teufel" being bungled for the benefit of interested spectators, of a "Dorsling" breaking the British Duration record, and of Philip Wills and a diminutive "Scud II" being trundled slowly into the air, by a distant but leisured winch, at a time when such an operation was an adventure in itself—I can still hear him say as the "Scud" lurched drunkenly to a standstill, "There goes the famous weak link!"

Those were satisfying days—when the spirit seemed to be "It doesn't matter who flies so long as someone flies"—and if your unknown writer has recalled but an echo of that essential "enthousiasme" he has done aviation a service.

How truly he says "It's up to you" and how truly he might also have said "In Club life you will find it." As A. P. Herbert wrote not long ago:—

"Return, sweet Chaos: come the  
Bad Old Days  
Before the Wise Men watched  
about our ways,

When Ministers had not annoyed  
the Sun,  
Not much was Planned but many  
things were Done."

Yours very truly,  
C. A. KAYE.  
(*Derby and Lancs.*).

DEAR SIR,

I must apologise to your readers for an apparent lack of lucidity in my article "A Warning" (*Sailplane*, Nov., 1949), for Mr. W. C. Sharpe, and there may be others, seems to have interpreted it as the personal grouse of a visitor disgruntled at being unable to fly.

In fact I was not the least bit disgruntled—I was accorded that hospitality and welcome for which the Yorkshire Gliding Club has always been renowned—the purpose of the article was to emphasise, as it seemed to require emphasis, the views I had already expressed to him in person at the time, namely that a club which refuses to accept ab-initios, however good the reason for such refusal may seem to be, and financial reasons always do seem to be pretty compelling, such a club is in effect cutting its own throat. I could enlarge on that theme at length, but knowing the editorial desire for brevity I will simply say that to an onlooker with nostalgic memories, the air of defeatism shown by the arguments put forward by my old friends came as a shock to me, especially in comparison with the air of optimism and enthusiasm encountered at other clubs, where, for instance, the total lack of a trailer would not long be tolerated, and enthusiasm for gliding would ensure that at least some of the members got down to sorting about for materials and making themselves a trailer on non-flying days.

Your correspondent's last sentence implies the complete misunderstanding of my purpose in writing the warning, and compels me to refute any desire on my part to "use the Club aircraft on a short-term membership at less than cost." My grateful acceptance of the loan of a "Kite II" involved the club in no loss, in fact I made a contribution to club funds over and above the launching fees. The same machine was, I understand, on loan to the club when



not required by its owner, which looks as though the owner was in effect subsidising the club any way.

Whether or not the expression of my opinions may have affected the club's decision to re-introduce ab-initio training, I regard this decision as an answer to at least part of my prayer, and I hope the club will take full advantage of the chance to increase membership (rather than limit flying) as the best way of ensuring its financial stability. The Yorkshire Gliding Club has a proud record of effort and achievement behind it; may it now look forward to greater achievements, but it will involve greater efforts.

Yours faithfully,

J. C. NEILAN.

Dear Sir,

The news announced officially that soaring is now permitted in the A.T.C. is very welcome.

An order has been given for two-seater advanced trainers (Slingsby "T21") which will allow cadets to receive instruction in Soaring. Several schools have for some time been allowing cadets to perform circuits and obtain their "B" Certificates now it is to be encouraged and "C's" will be the usual end of a Cadet's tuition at the State's expense.

There is some virtue in this we agree, but, without wishing to denigrate the work of the A.T.C. Gliding schools, we do feel that the same money spent in a subsidy to existing clubs would yield greater results. Just imagine the overhead costs of A.T.C. Gliding—officers, uniforms, hangars, new machines and compare them with the capital assets of any club and see how far the clubs have made their very little go. The London Gliding Club Gazette mentions that the crash ratio at their Club is one to every 237 launches. It would be interesting to know what the A.T.C. similar average is, but experience suggests that it is much higher than that. If so the running cost of A.T.C. Gliding must be comparatively higher. There is food for Treasury thought there. We know it already.

Ex A.T.C. INSTRUCTOR.

The following is an extract from a letter received from Mr. A. C. T. Isaac in the Transvaal and refers to an article by Mr. A. R. Weyl on ultra light aircraft

which appeared in a recent issue of the *Sailplane and Glider*.

"I have personally built four aircraft along the lines of your article, the last being very near to your specification. I do not agree, however, to your stalling speed of 40 m.p.h. I agree that this may be safer than 35 m.p.h., but only when a good aerodrome is used. The original 'Cirrus Moth' was supposed to stall at 40 m.p.h., and was a definite liability on the average English field. I found that with a low wing monoplane 35 m.p.h. was not too slow. I got blown over once after landing, but the weather was definitely not 'ultra light.'

"I agree very heartily with your statement that the conventional low-wing tractor engine machine is the best lay-out. From 1920 to 1930 this was thrashed out very thoroughly in America and from the cost and safety point of view there is no doubt that this is right. One can certainly save in the number and weight of structural members.

"The machine which I personally evolved in 1928 had a Chevrolet car engine and a wide fuselage with room for an occasional second seat beside the pilot. The fuselage was made of folded Duralumin angle  $\frac{3}{4}$  by  $\frac{3}{4}$ . This was safer than wood, and not more difficult to build. All joints were secured with  $\frac{1}{4}$ -inch bolts. A rough wooden jig located the four longerons and then each joint in turn was clamped in a drilling jig which located the holes. One simply put the struts in position, clamped on the jig and drilled the holes with an electric drill. I built the fuselage, aft of the engine bearers, in one afternoon.

"The wings were 28 feet span, 4 feet chord, all ribs being the same. The leading edge was a piece of Dural sheet folded round the front spar. The wings were pin jointed to the lower longerons and wire braced. The top wires ran continuously across the top of the fuselage and the bottom ones to a cabane behind the wheels.

"The wheels were mounted on oleo legs secured to the fuselage. This gave a reasonable track because the cockpit was three feet wide.

"An Avro-type nose-skid was fitted. This permitted the wheels to be set well back and made taxiing

a lot easier. To start up, one tipped the machine forward on to the skid and the engine could then be left idling without the use of chocks.

"The tailplane was on the bottom side of the fuselage. This permitted the use of a one-piece elevator and a simple pull and push rod to the stick. It also resulted in the complete failure of the aircraft.

"In those days we knew little about the breaking away of the slipstream round the tail; it was only after three major crashes on landing that I began to realise that my piloting might not be at fault.

"The engine was a 1924 vintage Chevrolet with fly-wheel, etc., removed, and aluminium pistons fitted. It gave no trouble at all. The airscrew was mounted directly on the flywheel flange and the speed-diameter ration was such that it was made of spruce. This probably cuts the work down on making an airscrew by 50%. The whole aircraft was built as a spare-time job in four months.

"I think you will see that this machine was very much along the lines you have recommended. If I were to build another, the only changes I should make would be to put the tailplane on top of the fuselage and to substitute struts for the bracing wires. It is probably an unrecognised fact that one can make four struts quicker than eight bracing wires.

"I had expected to build a machine on these lines over here but unfortunately civil aviation regulations are even more impossible than they are in England, and the complete absence of good spruce does not help."

We summarise below Mr. Weyl's reply.

"Owing to the normal gustiness of the English climate, the higher (40 m.p.h.) landing speed is preferred. The original "Klemm" had far too slow a landing speed to be practical over here. Mr. Weyl goes on to describe his proposed "Ulap" primary trainer, and the "Dart Kitten" general purpose type, both of which will fly on the J.A.P. 37 h.p. Aeronca engines available from the Association. Both are suitable for home construction, but before this can be arranged prototypes will have to be constructed, as indicated in Mr. Weyl's letter quoted in the Design Supplement."



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Subscription, 6 gns.; Entrance fee, 2 gns.; Non-flying members, 1 gn. If you are interested please write to the Hon. Secretary, 87, Fargate, Sheffield 1, for further details.

## Royal Aero Club Gliding Certificates

(Issued under delegation, by the B.G.A.).

NOVEMBER, 1949.

GLIDING CERTIFICATES: "A" .. 167 (10988-11154 inc.)

"B" .. 45

"C" .. 22

Silver "C" 1

Gold "C"

### "B" CERTIFICATES

No.	Name.	A.T.C. School or Gliding Club	Date taken.
5907	Derek Roy Owen	Bristol G.C.	23.10.49
6052	Frank William Keith Charles	Portsmouth G.C.	9.10.49
6876	Peter Richard Fritz	London G.C.	1.10.49
7692	Brian Eric Honey	Luneburg G.C.	26. 9.48
7884	John Richard Stride	87 G.S.	21. 8.49
7885	Ralph Partick Stride	87 G.S.	21. 8.49
7990	Brian Wilfred Marshall	84 G.S.	16.10.49
9710	Raymond William Terry	186 G.S.	18. 9.49
10121	Harry Grant Boyne	Halton Apprentices	9. 7.49
10657	Thomas Arnold Fuller	Halton Apprentices	1.10.49
10993	Arthur William Doughty	London G.C.	1.10.49
10994	William Frederick Bradley	Uetersen G.C.	23. 7.49
10995	Gordon Henry Sydney Richards	Luneburg G.C.	6. 6.49
10996	James Arthur Iain Reid	Coll. of Aeronautics	13. 2.49
10997	Henry Brian Iles	London G.C.	13. 2.49
11007	Anthony Alfred Pearce	R.A.F. Coll. Cranwell	13. 7.49
11029	Arthur Joseph Record	Yorkshire G.C.	31. 7.49
11030	Leonard George Seynour	Luneburg G.C.	7. 8.49
11036	William Robert Eric Harrison	Southdown G.C.	11. 9.49
11042	Leslie Stanley Whittingham-Jones	Lutbeck G.C.	28. 3.48
11043	Geoffrey Richard Thirk	London G.C.	26. 7.49
11052	Prosper George Matthew Wallace	Newcastle G.C.	18. 9.49
11053	Donald Aitchison Cree	130 G.C.	31. 7.48
11054	Anthony Walter Petrie	R.E. (Hemel) G.C.	30.10.49
11063	Michael Finn	Oerlinghausen G.C.	29. 9.49
11064	John Amos Buckle, Jr.	London G.C.	13. 7.49
11067	Michael Joseph Burgess	Wahn G.C.	31. 1.48
11068	Edward Inkerman Jordan Bell	Army F.C.	30. 7.49
11103	Arthur Martin Clare	Derby & Lincs. G.C.	30.10.49
11124	Douglas Avison Collis	Army F.C.	27. 3.49
11125	John Edward Anderson	Newcastle G.C.	7.11.48
11126	Joseph Henry Love	Fulmar G.C.	8.10.49
11127	Michael Jenkins	Halton Apprentices	30.10.49
11128	Arthur Wallace Goodall	Fulmar G.C.	10. 9.49
11129	Alec Davidson	Luneburg G.C.	7. 8.49
11130	Victor Felix G. Bonnaud	London G.C.	2.10.49
11131	Robert Paul Vivian Woodward	Luneburg G.C.	18.12.48
11132	Frank Stokes	Luneburg G.C.	15. 9.48
11133	Sydney Herbert Verder Harris	Oerlinghausen G.C.	5. 3.49
11135	Geoffrey Leonard Howitt	Air Registration Bd.	10.11.49
11141	Adrian Vincent Wilson	Luneburg G.C.	15. 4.49
11149	Michael Herbert May	Gutersloh G.C.	13. 8.49
11150	John Struth	Oerlinghausen G.C.	17. 6.47
11151	Angus Harris	Scottish G.U.	17. 4.49
11152	Neil Chester William Moss	Gannet G.C.	13.11.49

### "C" CERTIFICATES

7692	Brian Eric Honey	Luneburg G.C.	1. 5.49
9639	Richard Julian Threlfall	Derby & Lincs. G.C.	6.11.49
10085	Robert Michael Barwell	R.E. (Hemel) G.C.	22.10.49
10145	James Thomas McGregor Holmes	203 G.S.	22.10.49
10326	Gordon George Ralph Miller	Portsmouth Naval G.C.	6. 8.49
10837	John Thorner Talant	Derby & Lincs. G.C.	13.11.49
10995	Gordon Henry Sydney Richards	Luneburg G.C.	24. 7.49
10996	James Arthur Iain Reid	Coll. of Aeronautics	28. 5.49
10997	Henry Brian Iles	London G.C.	6. 5.49
11007	Anthony Alfred Pearce	R.A.F. Cranwell	29. 7.49
11029	Arthur Joseph Record	Yorkshire G.C.	31. 7.49
11042	Leslie Stanley Whittingham-Jones	Lutbeck G.C.	13. 6.48
11064	John Amos Buckle, Jr.	London G.C.	19. 7.49
11067	Michael Joseph Burgess	Wahn G.C.	20. 9.49
11068	Edward Inkerman Jordan Bell	Army G.C.	14. 8.49
11103	Arthur Martin Clare	Derby & Lincs. G.C.	13.11.49
11131	Robert Paul Vivian Woodward	Luneburg G.C.	3. 7.49
11132	Frank Stokes	Luneburg G.C.	24. 4.49
11133	Sydney Herbert Verder Harris	Oerlinghausen G.C.	3. 4.49
11141	Adrian Vincent Wilson	Luneburg G.C.	17. 7.49
11149	Michael Herbert May	Gutersloh G.C.	12.10.49
11150	John Struth	Oerlinghausen G.C.	24. 6.47

### SILVER "C" CERTIFICATES

No.	Name.	Certificate No.	Date Gained.
247	J. S. Williamson	9919	22.10.49



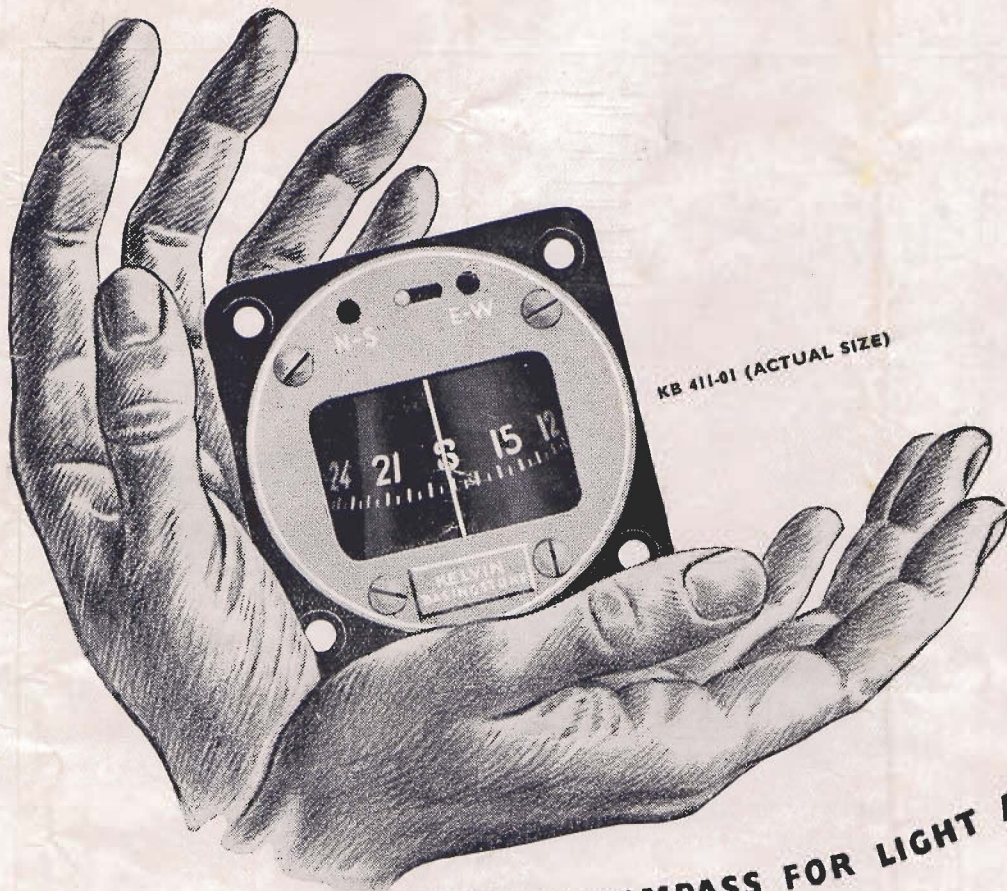


Platelayers' dreams  
run parallel  
But the motorist  
only dreams of

—and when the days of “Pool petrol  
only” are over, you will find once  
more that—you can be sure of Shell.







KB 411-01 (ACTUAL SIZE)

## A SMALL DASHBOARD COMPASS FOR LIGHT AIRCRAFT

The Kelvin-Kollsman Dashboard Compass has been designed for use on sailplanes, gliders, helicopters and light aircraft. It can also function as a standby for remote indicating compass systems.

The instrument indicates the course of the aircraft with respect to magnetic North by means of a floating graduated card read against a fixed lubber line. It operates efficiently up to  $18^\circ$  displacement from its normal axis, and is accurate within two degrees at all points on the card.

The card is attached to a magnet system of high magnetic moment which ensures quick settling after turns. The bowl is completely filled with special compass fluid and has an expansion chamber at the rear for temperature compensation from  $-40^\circ$  to  $+70^\circ$  C. A built-in corrector allows neutralisation of any local magnetic fields.

DATA; Type; KB 411-01. Case;  $2\frac{1}{4}"$  S.B.A.C. (overall length  $2\frac{3}{8}"$ ). Weight 8 oz.

# KELVIN AIRCRAFT INSTRUMENTS

proven in reliability - ahead in design



KELVIN BOTTOMLEY AND BAIRD LIMITED BASINGSTOKE