SAILPLANE AND GLIDER

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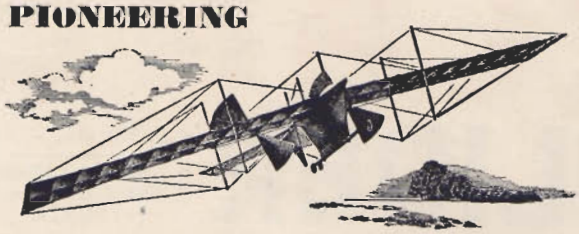
The First Journal devoted to Soaring and Gliding

PIONEERING



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THE FIRST JOURNAL DEVOTED TO SOARING AND GLIDING

JUNE 1945 ★ Vol XIII No 5

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WHAT NOW?

PERMISSION to participate in every pre-war sport is now free to anyone in Great Britain, except the sport of "Private Flying."

The Air Ministry Announcement stated that Private Flying is still forbidden for "reasons of military security, and other reasons," and although Gliding and Soaring were not specifically mentioned it must be assumed that they are included.

Up to the time of going to press, no statement has been made by the B.G.A., although it is difficult to see how the B.G.A. can do very much until the Government has outlined a general policy.

Meanwhile, all over the country old Clubs are making plans for their re-opening, and new ones are writing to *Sailplane* to ask advice about how to begin. (Hence the new series of articles by the secretary of a well-known club, on the pitfalls of beginning a club.)

It is difficult to imagine what reasons of Military Security exist to prevent Private Flying: but the other reasons may well repay speculation. There is hardly a sailplane in the country (except for A.T.C. machines) which has been flown for five years, so it may be with a view to re-examining the regulations governing Certificates of Airworthiness before allowing these aircraft to fly again: it may be thought necessary to submit every machine to official inspection before permission is given. This would entail a great deal of work, and an adequate staff, and the A.I.D. Inspectors experienced in sailplane construction are still dispersed in important jobs throughout the aircraft industry on military work. It is as well to remember that insurance requirements will also have to be met.

Then there is the question of certification of instructors. Before the war, when numbers were not large, Chief Instructors were approved by the B.G.A. on personal knowledge and experience, and assistant instructors were responsible to the C.I. There were no tests or examinations, but these were not then necessary, as, with many new and untried people taking up gliding, they now will be. With the possibility of dual instruction becoming more widely used, the necessary qualifications for two-seater instructors will have to be considered.

The release of petrol, essential materials of aircraft quality, and a certain amount of labour will also be necessary before very much can be done.

One can, however, only hope that extreme views will not prevail.

The B.G.A. has wide experience of civil gliding, what it entails, and what is necessary for its economic and safe operation both as regards club members, and the public. It can be relied on to use its good sense, as it is representative of those people who have the interests of this branch of Private Flying at heart. But, as stated previously, nothing much can really be done until the Government has outlined a general policy which will not strangle Post-war Private Flying, and the trade it produces, at birth.

Nevertheless, there are clubs in this country who feel convinced that if the restrictions were lifted, they could begin again immediately, and with due regard to safety of operation. The clubs are careful of their reputation for good service, and efficiency, and they have plenty of enthusiasm, and enthusiasm is a valuable commodity after 5½ long years of war.

Photo: K. Thalhammer.
Dr. Slater taking off from Gaisburg mountain at Salzburg.

(*No.* 13)

PIONEERS OF BRITISH GLIDING

Dr. A. E. SLATER

AN English dictionary defines a "King-pin" as a piece of metal which holds together a structure made up of many component parts. No man in the British gliding movement is more entitled to this description than Dr. Slater, or as he is affectionately known to his innumerable gliding friends, "Doc."

EDITOR "SAILPLANE"

Never since the inception of gliding in this country 15 or 20 years ago has any important event or gathering taken place for the advancement of soaring flight, without Dr. Slater being in attendance, complete with his little camera, notebook, and oftimes his ivory whistle too, but more of that anon; there can be no doubt that his articles and photographs and his general early management of THE SAILPLANE, of which he became Editor in January 1933, have done more to bind together and inform the whole British gliding fraternity than any other single agency; from his articles and notes gliding people throughout the country have learnt of each other's doings and achievements, to say nothing of theories, controvercies, etc. etc., as well as benefiting by the pointing finger of the purist, always ready to pounce on the "little engine" merchant, and to make short work of red herrings drawn across the steep and difficult path of soaring flight.

FIRST BRITISH "A"

Unless you knew better, you might assume from these remarks that Dr. Slater was a bookish man whose interest was academic rather than active, but there you would be wrong. It is strange that in a movement like the British gliding movement, where practically everyone knows everyone else, very few people realise who was the first British *ab initio* to accomplish an "A" flight, and it is my happy lot to put on record that this flight took place at Rossitten, Germany, in May, 1930, on a "Zögling" machine. The British pioneer to make this flight was Dr. Alan Slater. It therefore follows that he should have been No. 1 in the series "British Gliding Pioneers," which he undoubtedly would have been but for the fact that he is now the Associate Editor who writes these notes, and his unassuming modesty would have excluded him altogether; but truth will out, and this is the rest of the story.

After the "A" flight in Germany, he returned to England and was associated with the beginnings of the London Gliding Club; he took his British "A" on the South Downs with the Surrey Club in December 1930, but owing to many difficulties and for personal reasons it was not until 1932 that he gained his "C" certificate at Dunstable on the old "Kassel 20," of which he was part owner. This was the same machine on which the late Eric Collins did the bulk of his early soaring and acquired that technique which put him at the head of British pioneers of thermal flying. In due course, wear and tear (mostly tear) made the old "Kassel 20" unserviceable, and in May 1934, Dr. Slater became the sole owner of the "Blue Wren." This was a beautiful machine but unlucky, and he never flew it very much. It was broken several times by other people, but I do not think that "Doc" ever damaged it himself.

THE IVORY WHISTLE

British and international contests were faithfully and fully reported by Dr. Slater and many private gliding expeditions were attended by him; one in particular, which Eric Collins, Fred Slingsby Jack Dewsbery and the writer arranged on the Clwyddian range above Prestatyn, was an example of his many-sided activities and interests. On the Whit-Sunday, 1934, it blew a howling gale, and there on the mountain top in a small caravan the party was confined for the day; this was the occasion when the light operas and other popular tunes were produced on his inimitable ivory whistle, which raised the

(*Continued on page* 15)

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FORMING A GLIDING CLUB

THIS article has been written by request—almost under pressure—and I wish to make it known that I do not claim to be a special authority on the subject, or art, of forming gliding clubs. The following notes comprise my experiences and observations relating to activities as the secretary of a gliding club for more than 15 years, and as such can be accepted for what they are worth.

There are many people in this Movement who are more qualified to deal with the separate subjects included in these notes, and their constructive criticism would be an appreciable help to the writer, and the many existing and prospective gliding club organisers.

It would appear that there are persons seeking information on how to form a gliding club, and the first thought that comes to the mind of one who has seen some of the hazards of this task, is to wonder why, and to offer a few words of warning.

GLIDING IS NOT CHEAP

First of these warnings is that of the popular fallacy of cheapness. It is wrong to compare a self-supporting gliding club with the gliding activities of the A.T.C. In this Government sponsored movement machines and equipment may fall like manna from the skies, and to the uninitiated it would appear that there is nothing in this gliding business. The private gliding club on the other hand, has to find members who will not only pay for equipment, but will also pay the rent of the site, the cost of providing hangarage and accommodation, rates, taxes and maintenance. All of the 101 items which go together to make a gliding club. In addition to this each member has his own individual expenses, which vary with the stage of his training. It is one of the most difficult duties of club officials to operate a club within the means of the man in the street.

This fallacy of cheapness was rampant in 1930, when over 96 gliding clubs were formed in this country. Few of these clubs existed—or operated—after 1934, and at the outbreak of war in 1939 there were less than 20 successful clubs in the country.

The mushroom growth of clubs is not good, as every club which is formed and then dies through lack of nourishment, injures the remaining clubs by loss of faith in the gliding movement. To avoid the recurrence of this mushroom growth new clubs immediately after the war should be formed only on a regional basis, planned in accordance with the distribution of population. There can be nothing more lamentable than two clubs vieing with each other to exist and grow almost in the same district.

Fig. 1. *An inexpensive hangar under contruction.*

PUBLIC APPEAL

Gliding for pleasure requires a temperament which is not very common, and soaring will always be the preserve of a few real enthusiasts, directly comparable with yachting. Air-mindedness has been created as a result of this war, but the appeal of gliding to the masses of the population will show only a temporary post-war boom, which should be borne in mind by all club organisers.

Prospective promoters of gliding clubs must also realise that only advanced sailflying is spectacular, and a long rough road must be travelled before a new club of beginners can reach this stage.

CRASHERY

A more pessimistic thought is that unless fully experienced and qualified personnel is available, there might be a spurt of serious accidents—presumably by ex-power pilots who have been accustomed to Spitfires, etc.—which would injure the movement in general, and may even extend to the imposition of restrictions, and official interference, which would hamper experienced clubs and slow up the progress of gliding generally.

These references have been included in the hope that they will have the effect of deterring any enthusiast who is not doubly sure that his efforts to form a club would help to promote the goodwill, and contribute growth and expansion of the gliding fraternity. There must be no half measures.

An unsuccessful club is a liability to the Gliding Movement, and there was some excuse for that in the early 1930's when it was a case, more or less, of the blind leading the blind. That is not so to-day. There are hundreds of people with from 10 to 15 years' active experience, in all phases of club management and organisation. These people now know that a gliding club must be organised as a profit-making business — and started business end first.

While the sport and art of gliding is the main object of all clubs, that object cannot be obtained without capital, and a plan to ensure sufficient regular income to provide a " Gliding Service " in a manner desired by the members.

A gliding club can attract people who are interested in both the sporting and the constructional aspects, and it will be necessary to assess the relative proportions of these interests in the prospective members. It may be found

advisable to concentrate only on the sporting side at first, because most members will want to get into the air as quickly as possible.

The success of a club is the result of teamwork and whole-hearted unselfish co-operation of the members. This teamwork which we now know so well from the Battle of Britain, and the co-operation of bomber crews, is one of the attributes for which the gliding movement has always been known.

It has been proved that under proper supervision, gliding is the safest and most thorough way of learning to fly, so providing you can refrain from looking through rose-coloured glasses at the arduous work entailed in forming a gliding club—let us become launched.

PROVISIONAL COMMITTEE

Founder Members. Clubs are usually started by a small group of genuinely keen enthusiasts, who will all devote their spare time to the formation of the Club.

This group of enthusiasts should add to their number until they include :—

(1) An experienced glider pilot, or person with as good a knowledge as possible of practical gliding.

(2) An accountant or person with similar qualifications.

(3) A successful business man with good local contacts.

(4) An estate agent, or person with knowledge and experience of land and property negotiations.

(5) A press representative or publicity man.

This combination of men will possess sufficient rudimentary knowledge of legal matters to prevent mistakes against the law.

It can be said that such a group consists of four types of interest—Business ; Sporting ; Academic ; and Political. The personnel of these four interests must be able to form a partnership like blood brothers.

Men with these qualifications are essential to the club, and attempts may as well be made to obtain their support during the initial investigation period, rather than after the inagural meeting.

If an experienced glider pilot is not available in the district, it would be advisable to get in touch with the nearest established club, and ask them to send an instructor in an advisory capacity.

At the first meeting of this nucleus, appoint a Chairman ; Secretary and a Treasurer, *pro tem.*

Then decide upon a registration, or guarantee fee of about 5/-, which could be regarded as an advance payment towards the first year's subscription. This registration fee is necessary to ensure that the supporters you enrol are genuine, and to pay the preliminary expenses.

This provisional committee should hold several meetings to investigate, and later to report their decisions to a general " organising " meeting of the prospective or founder members, who have paid registration fees.

PLAN NOW

The preliminary work should be divided amongst the committee members with the qualifications for proper investigation. Although it is not practical to start the club during the war, all the planning

and much of the ground work can be done at once by this committee. They must decide upon the type of club which they consider possible in their area. A special section has been reserved for this and will appear in a later article.

SITE

Having decided upon the type of club the next most important question which confronts the organisers is the choice of a suitable site from which to commence operations. Upon this choice depends to a great extent the choice of equipment.

BEWARE OF THE FARMER

It is during, or after, the site negotiations that the committee will come up against their first real difficulties. They will find that landowners are somewhat adverse to allowing gliding on their land. If by chance a reasonable landowner is encountered, there will crop up a shooting tenant, or there will be stunt holders. The farmer as a rule is not obstructive, but he is usually out for his own interests. Gliding does not affect grazing, and it is essential to have the land grazed to keep it in agricultural condition, and to endeavour to keep the grass short. Cattle on the site does, however, involve a liability to the club, because the farmer can claim for damage in various ways. This could be by injury due to machines colliding with cattle. The cattle being caught in the winch cable; straying on the highway or elsewhere through gates being left open, or faulty fences. In fact it is difficult to define all possible claims. In the early 1930's a farmer claimed against a club in this country because one of his cows died, and he attributed its death to the swallowing of a turnbuckle from a glider. Clubs can insure against this damage, but they should study the attitude of the farmer first, and also endeavour to include the grazing in their lease of the land, so that they can let the grazing on their own terms.

CONTROLLING GRASS.

It will be found that the cattle cannot keep the grass as short as you require it, and provision should be made with the farmer for cutting hay. He may not like this, but it is essential to provide for at least tracks to be cut for launching areas, and this should be a condition of the letting.

If the shooting tenant is awkward you may find that the cost of this item is small and, with good diplomacy you could get the shooting and game rights included in your lease, and again let these out on your own terms.

DETERIORATION OF LAND

Land in the vicinity of collieries may bring you up against the sinking of land compensation. Several months after completing the negotiations for a site near a colliery, the farmer informed my club that he received over £30 per annum compensation for land sinkage, and that he would lose that compensation due to our tenancy—so the £30 was added to our rent. Enquiries were made at the local Farmers' Club and it was learned that the farmer was receiving the compensation from the colliery through the Farmers' Club. Gliding, therefore, does not affect the payment of this compensation.

One of the difficulties in Scotland is that objection is taken to gliding on Sundays.

OUTSIDE TOWN BEST

It may be very convenient to have a site close to a town, but upon enquiry you will find that few miles outside the boundaries of the town the cost of land is very much less expensive. Grazing land in the vicinity of a town is known as accommodation land, and can be let at a high figure to farmers and cattle dealers, for the purpose of accommodating cattle prior to sale in the cattle market.

If you are unable to obtain a lease on the land you require it may be possible to obtain a "Licence to Glide" from the landowner, which would give you security of tenure. This will cost about £5. A lease will cost over £15.

TESTING SITES

Before committing yourselves to a particular site, it is advisable to have alternative sites tested. It may not be possible to use a glider for these tests during the war, but preliminary testing can be done by the committee under the guidance of the pilot member. Wind direction readings could be taken over a fairly long period. Eddie currents amd thermals on or near the site can be located by the employment of smoke screens, balloons, kite flying, and observation of cloud formations. Give consideration to the distance of the site from the coast. Such work during the preliminary formation days may avoid the selection of an unsuitable site. It may prevent some crashery and enable the hangar to be correctly sited.

Fig. 2. Building Completed.

SUITABLE SURROUNDINGS

Consider the relation of the site to roads, transport facilities, and fresh water supply. Learn your liability for fences—do not assume that the fences all belong to adjoining farmers. Learn all you can about rates.

Make provision in the club rules so that your objects cover all of the transactions you will be required to make in regard to land.

All the essentials of a good site do not come within the scope of this

article, and the experienced glider pilot will know the requirements for the type of club you have decided to form.

HANGAR

Consideration should next be given to the type and consideration of the hangar, if there is no suitable building on the site. Experience has proved that a sound building is very necessary for the storage of gliders, and it is not economical to use any old barn or outbuilding. There should be many W.D. surplus buildings of the Uni-sec type available after the war.

Figures 1 and 2 show a very economical method of erecting club buildings. This arrangement consists of two standard buildings, which may be ex-government, erected a given distance apart. The space between the buildings can be roofed in ; closed at one end (with windows), and provided with loose shutters at the other end to form a door. The roof trusses must of course be very rigidly constructed and supported on uprights independant of the side buildings.

AIRCRAFT ACCOMMODATION

In the building shown an annexe was built on the closed end of the hangar portion, to form a small workshop. The side buildings were used as clubroom and bunkhouse. The hangar could accommodate three primary gliders with only the main planes removed, and stored in wing racks. The hangar dimensions were 16 ft. by 24 ft. by 8 ft. high.

It is a risky and tiresome procedure having to rig and de-rig machines each flying day, but a new club is unlikely to be in a position to erect a hangar large enough to avoid this, unless they obtain a financial loan. This is not the correct way to start. Only when the club has been proved a success may the committee consider floating a loan.

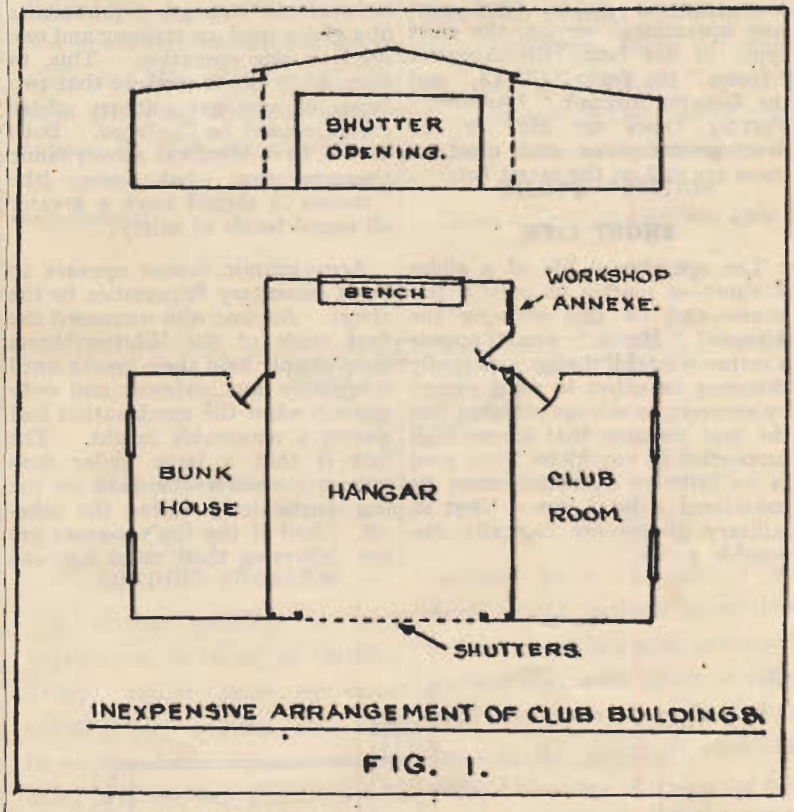
STATE OF HANGAR

Very careful thought will be required to decide the position in which to erect the hangar on the site. Many mistakes have been made in this selection by existing clubs, and much depends upon the type of club. If the site is suitable for soaring it is a temptation to erect the hangar near the launching area, which is seldom sheltered from gales, and is unlikely to be near to a road.

It will be found that safety from weather vagaries, and the amenities of civilisation are not near the launching area on such a site, and where these amenities exist so should the hangar. Transport trolleys can be provided for getting machines to the top of the hill, when the club is on its feet.

GROUND EQUIPMENT

Preliminary enquiries can be made by the provisional committee to locate second-hand equipment. A winch is essential and Barrage Balloon Winches have been converted and used with success at A.T.C. Elementary Gliding Training Schools. Enquiries at this source should provide the committee with useful information in regard to winching and retrieving equipment.



INEXPENSIVE ARRANGEMENT OF CLUB BUILDINGS.

FIG. 1.

RULES

During these investigations the secretary should be busy drafting rules. The compiling of the rules should be done with due consideration to the future expansion of the club. They should be as flexible as possible. It is advisable for the committee to assume that they will become registered under the Industrial and Provident Societies Act, and application should be made to the Registrar-General for a specimen copy of their rules. It may now be possible to obtain a copy covering the requirements of Gliding Clubs. Even though the club does not become registered at once they should work to these specimen rules as near as possible, including licensing rules, registered office, public auditors, etc.

PUBLICITY

The publicity member should also be busy during this preliminary period, by continually probing the press, and keeping the SAILPLANE informed.

In this direction it is hoped that after the war, when there is likely to be a spate of applications to join gliding clubs, some far-seeing person, or group of persons, will produce a booklet on the lines of "The Silent Wing" which was produced for the club movement by Mr. C. Espin Hardwick. This booklet could be made available to clubs, who could have their local matter printed on reserved pages.

(*Continued on Page* 15)

SOME COMMENTS ON MILITARY GLIDERS

By R. H. WARRING.

THE text of this article was prepared in late 1943 when, to the writer at least, " Hamilcar " was merely a name for a new military glider. The " Hamilcar " does in fact typify many of the desirable features suggested in this article.

Many thousands of troop- and cargo-carrying gliders have now seen operational service, the chief types in use being the Airspeed " Horsa," the Waco " CG-4A," and the General Aircraft " Hamilcar." Further types are still in the development stage and most of these are still on the secret list.

SHORT LIFE

The operational life of a glider is short—a matter of only a few hours—and on this showing the Airspeed " Horsa " would appear a rather wasteful design. Actually this may be offset to some extent by recovery or salvage schemes, but the fact remains that a very high proportion of any glider force used in an airborne operation must be considered a total loss. That is, military gliders are basically disposable goods.

SAFER TRAINERS

It would appear, therefore, that this fact must greatly influence the design desiderata, with a further allowance for training time. Whatever type is used its crew must be familiar with its behaviour before attempting operational duty, but there is a considerable difference between the strength requirements of a glider used for training and one used on one operation. This, in turn, leads one to venture that two types of any one military glider design should be produced. Both should have identical aerodynamic characteristics, but one (the " trainer ") should have a greater all-round factor of safety.

Aerodynamic design appears to be of secondary importance to the above. Anyone who witnessed the first trials of the Whitley/Horsa team simply held their breath until everybody was airborne and only relaxed when the combination had gained a reasonable height. The fact is that a large glider does impose a considerable load on the tug, particularly during the take-off. And if the tug's motors are not delivering their rated h.p.—as often happens even with the best of attention—the whole thing becomes just one step nearer the dramatic.

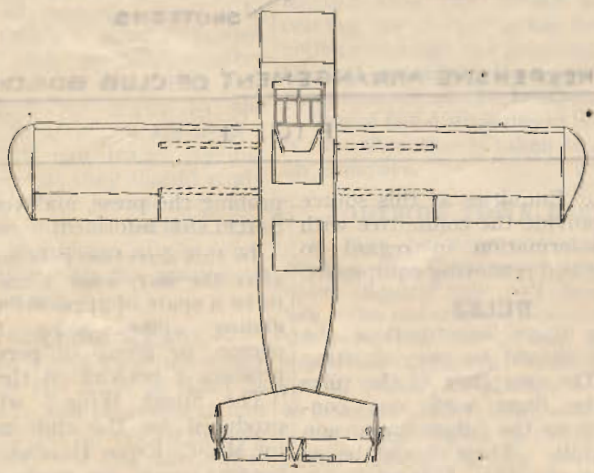
Obviously the cleaner the glider the greater the margin of safety, for the same tug, but the difference between a lift/drag ratio of, say, twelve to one and ten to one, does not appear sufficient to warrant streamlined monocoque construction and fully cantilever aerofoils.

SIMPLICITY IN DESIGN

Put in another way such glider specifications seem to call for a flying box-car capable of carrying a specific load. All constructional features would then be simplified to a degree, so cutting material lists and production time to a minimum. The aerodynamic design should be based on this, stringing together the simple basic components to give a reasonably efficient flying machine with good stability. Whatever prejudices this may arouse it should be most difficult for the good designer to reduce the efficiency below the minimum required.

SELF-ASSISTED FLIGHT

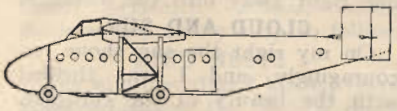
Coupled with this all large gliders would greatly benefit by the fitting of some form of self-assisted take-off—even if this is only a batch of simple rocket units. The ideal would appear to be the powered glider fitted with normal aero-motors, the power of which is only sufficient to maintain level flight. Hence the tug is still needed for the take-off, but can then cast off and come back for more rather than have to go the whole way and back again. This, of course, means the loss of several motors with the glider, which is rather against the writer's first statements, but rough calculations on the economics of this scheme appear to indicate that the difference in cost is far less than first thoughts would indicate.



Experiments with models show that endplate fins tend to increase stability.

LARGE GLIDERS

Willy Messerschmitt was not so far wrong with his " horrible " Me 323—the chief mistake being that the Germans have never had

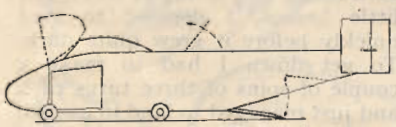


General layout. Showing box shape and good pilot vision.

the opportunity to use them to full advantage, whereas we have—if we had had them ! To be successful with the powered glider of this type the designer must aim high and produce a really big machine. The Russians, for example, have gone up to a span of some 250 feet, capable of carrying, according to some reports, even the heaviest of heavy tanks. How they get this off the ground without some form of assisted take-off is not apparent —so presumably the glider *is* " partially self-contained."

PILOT FATIGUE

Reverting to aerodynamic design. Stability is important—particularly stability on the tow line. The longer the towing time the greater the strain imposed on the pilot(s)—(another argument in favour of the self-contained unit). Most towed gliders have the unfortumate charac-

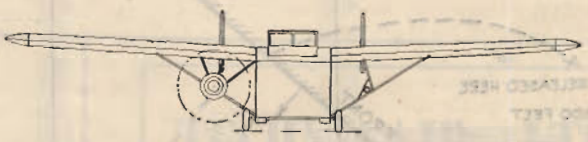


Showing different entrants possible to enable ease of loading and unloading.

teristic of requiring to be flown every second of the time, giving the pilot no rest. And if the job is not directionally and spirally stable this unfortunate fellow will be forced to give up long before they have reached their destination.

ENDPLATE FINS

As yet, apparently, no great attention has been given to end-plate fins which do have a peculiarly stabilising effect on *models* in gliding flight. Should this characteristic be maintained on full scale designs the slight extra complication would certainly appear worthwhile, but this is about the only point where aerodynamic features appear to take precedence over purely structural and production requirements.



Suggested positions of auxiliary power units, left ; internal combustion engine, right ; rocket.

LOADING PROBLEM

A further question of great importance is that of loading. Troops and/or their equivalent military load, vehicles, etc., must be emplaned and deplaned without delay and emplaning must not be jeopardised by the fact that a rough landing may jam doors, etc., unless a quick alternative method of exit is available. The original " Horsa " design was particularly bad in this respect and getting a sizeable vehicle through the front ramp often demanded the patience of Job and the skill of Houdini. In later models where the whole front hinges to one side this obvious difficulty is avoided—*i.e.* the " load " now enters along a straight line and does not have to be coaxed through a right angle within the confines of the fuselage—but introduces the necessity of breaking-down the whole of the control system link up whenever the nose is to be opened.

The scheme whereby this is done is most ingenious, but how much better if the necessity for this could have been avoided. Similarly on the " Hadrian," where the whole of the nose hinges upwards. Arrangement of the control leads became someone's problem child.

PILOTS POSITION

Then again, although the view is excellent when the pilot(s) are stuck in the extreme nose these individuals are in a most unenviable position should the glider be called upon to make a rough landing. Even to the extent of sacrificing some of his range of vision the best position for the pilot(s) appears to be on top of the fuselage just in front of the wings in a raised enclosure, as on the " Hamilcar." Side-by-side seating with dual controls should be provided. Then you can hinge the nose how you like without interfering with the controls and run it against a brick wall without necessarily killing the aircrew.

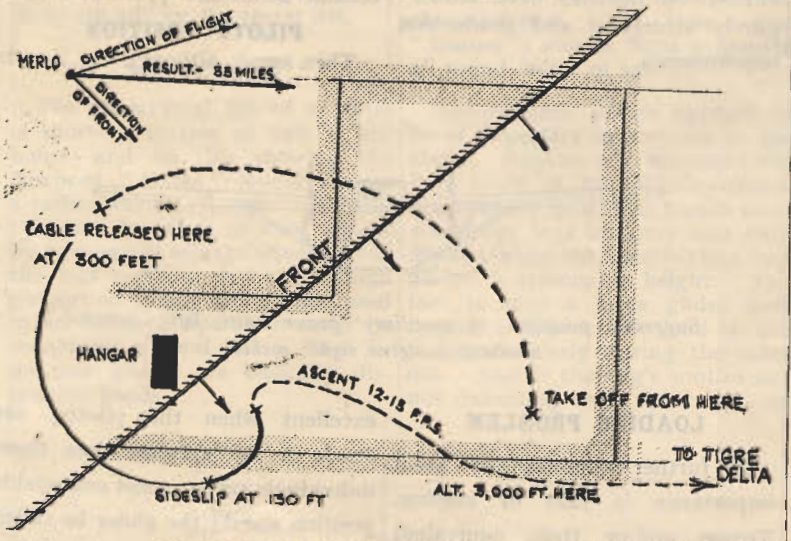
(*To be continued.*)

Another Argentine Storm Front Flight

By ULI GALLUSSER (Swiss)

ON the 7th October, 1944, I had the luck to make a storm-front flight which differed considerably from the classic descriptions of previous flights in the form of figure of eights along the edge of the front. The Argentine, a country generous even in the size of the storms that form there (extending to a thousand kilometres in width), gave me the opportunity to make the flight which I would like to relate to you.

The day was one of those first warm days of Spring, and after we had been able to make the first soaring flights of the season over our base at Merlo a cold front suddenly appeared towards the South. Judging by the blackness of the clouds and by the speed with which it approached it was going to be quite a storm, so we made all haste to get the machines safely into the hangar before it broke. (Possibly next time we shall go out and look for the storm instead of sheltering from it !)



12 FEET PER SECOND

I took off and left the launch at a height of three hundred feet, with the intention of flying the " Grunau Baby " direct to the little field in front of the hangar. Slipping in from a height of about a hundred and thirty feet the " Baby " suddenly began to rise, steadily and rapidly. I made a 180° turn to face the field again, and in so doing saw that at the other end of the aerodrome, about a kilometre away, the dust was rising into the air to a great height. I felt very cold and looked at my instruments — the variometer marked twelve feet a second rise and by the time I got over my original point of departure I was at 3,500 feet ! !

VERY COLD

I at once decided to make use of the front for a distance flight, after the most agreeable sensation of having gained more than three thousand feet in a few minutes without having made a single turn or felt the slightest turbulence. As it says in the books, the atmosphere in front of such a storm ascends with incredible rapidity, but so uniformly that it appears like a calm sea. Yet the extraordinary size of the front let me fly along parallel with it without ever having to make any figure of eight turns, for even after I had been flying nearly an hour at full speed I had only covered an insignificant portion of it. After the first ten minutes at more than three thousand feet I was shivering with cold, for I had set off in shorts and shirt intending only to fly the machine to the hangar. So I flew a little away from the actual front, always dead straight, always at full speed with the variometer marking zero, keeping at a height of about 1,200 feet by simply getting closer or farther away. On my left there was an amazing wall of heavy black cloud, and below and a little behind me the wall of dust lifted by the front made a straight line right away into the distance.

CLOUD AND SUN

On my right the sun shone encouragingly, and I was thrilled with the beauty of the contrast. Suddenly a frightened pigeon appeared from within the clouds, also doing an unexpected storm front distance flight like myself. I saluted it as it went past in the direction of better weather. Later two hawks accompanied me, but when they finally abandoned me I felt very alone. Far away I could see a wide river, which I took for the Parana. Fine, I thought—I must be nearing Entre Rios (the neighbouring Province). I went a little nearer the front to gain speed without losing height and crossed the river most elegantly. Fifteen minutes later it struck me as strange that there were no signs of life in the countryside below, although there were miles and miles of roads. I went on flying, enchanted with the wide avenues, curving streets and little lanes—until it dawned on me that they were streams, canals, and marshes in which nothing could live. I was flying over the dreaded Delta !

THE LANDING

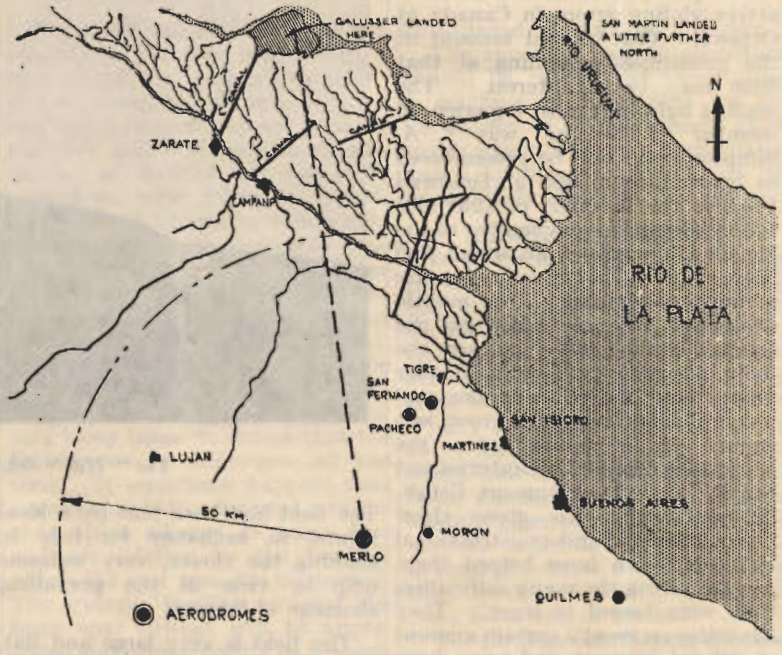
Horrified, I hurried back to my front, confident in its powers, and was wafted again to three thousand feet. I was intensely cold and the sun was nearly setting. High time to look for a landing place. I crossed several more canals and little rivers and saw in the distance another, much larger, which I took for the River Guazu, being lamentably ignorant of the geography. So, still thinking I was already in Entre Rios and seeing at last a few little houses, I decided to land quickly before it grew quite dark. To get down I had to make a couple of spins of three turns each and just managed to land in a small field between bushes—and found myself on a bed of rushes which fortunately proved to be dry. At this moment the storm caught up with me and I had to hang on to the glider with all my force. I had covered fifty-two miles in fifty minutes without having made a

single turn, and having gained more than three thousand feet in height. Had it been earlier in the day I could have gone very much further, for I discovered later that the same front had extended as far as Posada, more than a thousand kilometres from Merlo. It was a most classic front, perfectly defined, which made it supremely easy to follow.

KIND HOSTS

Ten minutes after I landed there appeared among the reeds a fierce face with a pair of enormous moustaches and long hair flowing in the wind, which scared me because behind him there was another man with a knife even bigger than the moustaches. Heavens, I thought, he looks hungry ! ! But it was alright and there immediately appeared a score of other islanders who helped me carry the " Baby " to safety, because in a few hours my field would be flooded again. The owner of the island was most kind ; he gave me supper and a bed, lent me some money, arranged for a launch to ferry me (and later the sailplane) back to civilisation, and was generally helpful in every way.

My conclusion is that storm-front flights are the simplest method of covering great distances. There is no need at all to enter the clouds, because parallel to the front there is a wall of constantly rising air. When the front is well defined all one needs to do is put the nose down and beat it along the edge in a straight line !

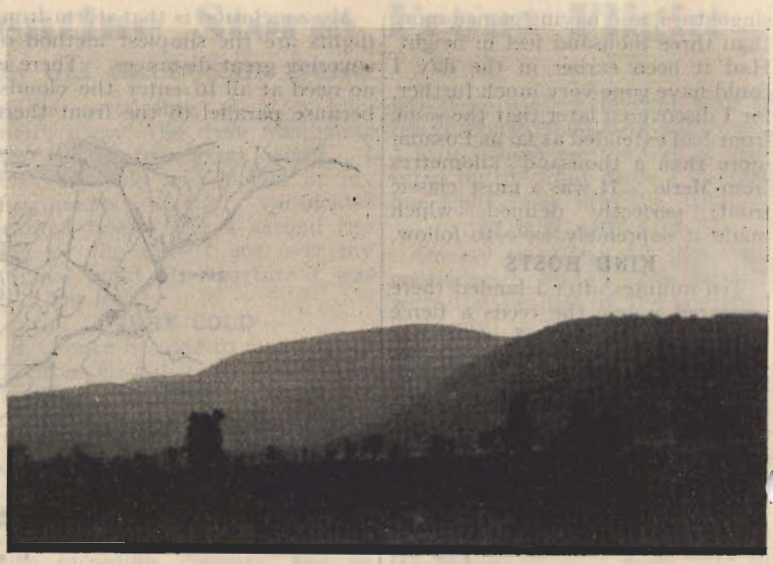


Canadian Visit

IN the summer of 1943 I was able to pay two visits to the most active gliding group in Canada at Ottawa. This belated account of the conditions prevailing at that time may be of interest. The leading light and most experienced member of the club was J. A. Simpson, who will be remembered as instructor-manager at Bradwell Edge in the summers of 1938 and 1939. He was an ex-member of the McGill University Club which had broken up in 1941 due to pressure of military training. The mantle of McGill has now fallen on the Ottawa group and they are the main advisers to various smaller groups and independent constructors. The nucleus of the group was formed by members from the National Research Laboratories and the R.C.A.F. Development Establishment; this has given them useful technical and constructional facilities which have helped them in overcoming the many difficulties they were bound to meet. They have also received a certain amount of official support and have been fortunate in inheriting a powerful winch using manila rope and other equipment from the McGill Club. A Dagling " gate " and tail unit still bearing the proud crest of McGill has been furnished with a new pair of wings constructed by the members. These wings show promise for future constructional activities, for they were built with great care and the difficult job of laying on a diagonally grained plywood leading edge was successfully undertaken.

The club was moving to a new site when I first visited it in July, so that I saw no flying but considerable activity in other directions.

Going through aileron drill in front of the hangar.



The " Hill " Ottawa Gliding Club.

The field had been lent by a local farmer in exchange for help in mowing the clover, very welcome help in view of the prevailing shortage of labour.

The field is very large and flat, situated about 20 miles North-west of Ottawa at the base of a 500-foot ridge, 35 miles long facing into the prevailing wind. I arrived to find the clover about half cleared and lent a hand shifting the components of the prefabricated (?) hangar on the farm cart to a sheltered corner of the field.

The site had all the hallmarks of a first-class training and soaring ground, the ridge was similar to the Surrey Clubs Colley Hill. Walking the length of the field in the summer heat I soon developed a really wicked thirst; unfortunately such was the beer shortage that a " No Stag " rule was in force in all the local hostelries (meaning they would not serve unaccompanied males), one of the best arrangements I've yet heard for recruiting the refining influence to the Gliding Movement.

Concurrently with my visit to the club I had lunch and an engrossing talk with Jim Simpson. As usual the talk covered the whole field of gliding activity; reminiscences were interjected with hopes for the future. He was very enthusiastic about the great possibilities that exist in Canada, but stressed the need for practical experience in developing the widely scattered centres of interest. As exemplified by his recent articles, he is a keen meteorologist and showed me some good sterescopic cloud photographs, as well as some attractive colour films of the McGill club's " Kite " at the 1941 Elmira Competitions. Small wonder that I had to run to catch the last bus back to my hostel in Ottawa.

SECOND VISIT

My second visit was in September and was marred by bad weather. I found the clover cleared, the hangar up and ground slides in progress. The training system was similar to that evolved in England, the rope appeared to give a smooth tow with little surge and to stand up to the wear and tear very well. The winch was very heavy and not surprisingly it got bogged once or twice in the wet ground. Eventually it came on to rain hard and operations were washed out.

Wartime shortages of " Gas," tyres and material have proved as restrictive in Canada as over here. But there are radically new designs on the drawing boards, a core of interest and experience is being kept alive at Ottawa, and I am sure that all the obstacles ahead will be overcome by the determination and keenness that were so evident during my short but extremely enjoyable visits.

The Practical Side of Airworthiness
(Part II)

By IKARUS

PART I of this series covered the airworthiness requirements fundamentally affecting gliders and sailplanes, *i.e.* official stipulations and current procedure; this article deals with the actual aircraft with particular reference to rigging, adjusting of controls, etc.

Rigging (either as an art or an exact science) is a trade rapidly disappearing. The advent of the cantilever monoplane, modern production methods ensuring interchangeability, and the increasing robustness of modern machines, while not eliminating the rigger altogether has curtailed his activities in this particular field. There can be few people, however, who have not seen a primary dropped so heavily that its wings adopt a slight anhedral angle, and so long as the primary and braced secondary survive, rigging will be a part of the engineer's duties.

It is assumed that readers will be familiar with the terms commonly used in connection with gliders and sailplanes. If the expressions "dihedral," "incidence," "washout," etc., are not clearly understood reference should be made to one of the standard text-books for a clear definition.

ASSEMBLY

At some risk of boring the experts and inviting the contempt of those whose engineering experience has been gained outside the aircraft industry, a fundamental truth will be stated for the Nth time:—"Do not handle, grip, lift, push or pull on components which are designed purely for other functions." Presumably the influx to the soaring movement of people who have been acquainted with Service aircraft makes the warning as necessary as ever; so long as trailing edges are pushed in, pitôt heads pulled off and fabric rent, so many valuable hours of soaring will be sacrificed while repairs are carried out.

CARE

A little extra caution when assembling a machine tends to prevent the last minute snag which sends everyone scurrying around for tools while the wind drops or the front passes miles down wind.

Pins, root end bolts and the like should be put into place with a hide, lead or copper hammer; prolonged smiting of bolts with an ordinary hammer does not improve the bolt and can lead to fatigue failure of fittings if repeatedly carried out over a lengthy period. A thin coat of grease (preferably graphited) on all removable pins greatly eases the job. In cases where the particular part is not directly accessible a drift made of brass or light alloy should be used.

Wings and fuselages should be adequately supported when assembling or dismantling, exceptional care being taken to ensure that the fittings are in alignment all the time. It sometimes happens that a front spar bolt is inserted and the wing-tip is allowed to move fore and aft relative to the fuselage before the rear spar pin is inserted. The leverage tending to twist the front spar fittings will be appreciated and cannot lightly be ignored. This sort of thing is apt to happen when working short-handed.

WIND DANGERS

It is well to bear in mind that a glider with one wing assembled is a fairly inanimate object, but when complete with the other wing, can become airborne in a trice; moral —assemble machines across wind when working out of doors and utilise enough assistants to hold the machine down if need be.

Nuts, or bolts which screw into fixed threaded parts, should be tightened with discretion. Although there is a certain satisfaction in tightening a nut until one can hang on the spanner, it almost invariably gives rise to high stresses in the bolt. Due to the composite construction of sailplanes almost every joint consists of metal bolts passing through timber; over-tensioning causes crushing and deterioration of the timber.

RIGGING

The old order of rigging "Dihedral, Incidence, Stagger" can be modified for sailplanes by omitting the last item, which applies only to biplanes. Certain machines designed some years ago incorporate "sweepback," and this can be substituted in place of "stagger."

The appended rigging procedure should be carried out every time a machine is overhauled for its Certificate of Airworthiness after major repairs or after a particularly heavy landing unaccompanied by immediately apparent damage.

RIGGING PROCEDURE

To commence rigging, the fuselage should be supported in rigging position; all machines have (or should have) definite datum blocks, one pair being used for fore and aft level and the other pair for cross level. The use of the word "pairs" is perhaps misleading, as three datum blocks are usually fitted, one block being common to both checks. With a *parallel* straight edge and a spirit level, the machine is trestled up so that it is in rigging position fore and aft and then levelled laterally, using the cross level datum blocks.

The fuselage can then be checked for twist by laying the straight edge and spirit level across the top longerons where the tailplane attaches; alternatively, a plumb-bob can be suspended through the hinges on the fin to indicate if the rear fin spar is out of vertical.

CHECKING ALIGNMENT

Warping of the fuselage in the vertical plane may sometimes occur in machines that have been incorrectly supported in storage. This can be checked as follows:—suspend plumb-bobs from the nose and stern-post and stretch a thread from nose to tail immediately under the plumb-bobs. From the centre line of the fuselage bottom at a point approximately half-way between the nose and tail suspend another plumb-bob. If this latter plumb-bob is not within one-tenth of an inch either side of the stretched thread some further investigation should be made.

Skids and tailskids should be checked for alignment by the same method and wheels should be most carefully inspected to see that they are not tending to roll the machine slightly "crabwise."

WINGS AND TAILPLANE

The mainplanes and tailplane can now be assembled on the fuselage

complete with struts in the case of braced components. The tailplane should be checked for lateral level before the struts (if any) are connected; should the tailplane be level and the strut holes not align with the relevant fittings, the fittings should be inspected, as they may have been forced from their original position.

Struts should be checked for bowing, the maximum permissible bow generally being one in six hundred, although certain less stringent figures may be quoted in specific cases; if any doubt exists the manufacturer will usually give technical advice. Bowing can be easily detected by holding a mirror at one end of the strut so that the whole strut length appears as a reflection about one inch in apparent length.

DIHEDRAL AND ANHEDRAL

The wings, having been assembled to the fuselage, can then be checked for dihedral. This is just as essential for cantilever machines as for strut-braced machines; distortion or movement of the root fittings may not be detected by mere visual examination, but a dihedral check is apt to show any divergence from the manufacturer's original angle.

Due to sagging of wings under their own weight dihedral should be checked inboard of the aileron and, in the event of gull wings or a machine like the "Olympia" (which has a definite dihedral angle) an inclinometer should be used on the straight edge instead of a spirit level.

Adjustable struts are rare on gliders or sailplanes, but where these are used the dihedral can be set accurately; with two-strutted wings or wire-braced machines the front spar only should be checked for dihedral.

INCIDENCE

For the checking of incidence the correct type of incidence board should be used, although sections with a concave underside, such as the much used "Gottengen 535" lend themselves to the use of an ordinary straight edge. When pressing a straight edge against the trailing edge care must be exercised to avoid upward deflection, as inclinometer readings under such conditions are likely to be inaccurate. Where sections modify to bi-convex towards the tip or washout (*i.e.* decrease of incidence at the tip) is present, special incidence boards should be used.

Strut or cable-braced machines should be checked for incidence just outboard of the wing strut attachment, and the incidence adjusted by raising or lowering the rear spar by the means provided (if any). A further check about three feet inboard from the tip is recommended and is essential on wings with washout.

FINAL CHECK

As a final check on rigging diagonal measurements should be taken on each side of the machine between the following points, and any difference exceeding plus or minus one quarter of an inch should be investigated:—

Nose to front strut at wing attachment.

Nose to tip of aileron spar.

Sternpost to tip of aileron spar.

Tailplane rear spar to tip of aileron spar.

These diagonal measurements also check sweepback if used on the machine.

TESTING C.G.

Where machines are being rigged after major repair it is recommended that a check be made on the centre of gravity position with a pilot in the cockpit; the pilot should weigh 187 lb. (the standard weight used in C.G. calculations) or be suitably laden with parachute, etc., to give the required weight. It is agreed that a check of C.G. position is valueless unless a position has been indicated previously and certain limits fixed, but machines tend to get tail-heavy after one or two major repairs and stability may be affected if the C.G. gets too far aft.

CONTROLS

The machine having been assembled and rigged the control system and control surfaces should be installed and/or adjusted.

The majority of gliders and sailplanes use cable control runs; systems using push rods and idler cranks are rare, although many machines use push-rods between the control torque tube and the aileron cranks at the wing roots.

CABLE

The cable used for control is an extra flexible type with seven strands of nineteen wire each (except 10 cwt. and 5 cwt. cables, which are 7 x 14 and 7 x 7 respectively). Only aircraft cable to B.S.S. specification W.2 should be used, as commercial cables are less flexible and will fray due to fatigue failure when taken round pulleys of relatively small diameter. All splices should be of four and a-half tucks in length and of the approved type shown in A.P. 1208, Volume 11.

SPLICES AND TURNBUCKLE

The old type of splice round a brass thimble, although still permissible, has been superseded by the splice around a roller; these rollers form component parts of the modern tension rod type turnbuckle (AGS 702). Old type turnbuckle with brass barrels (AGS 490 to 508) are still in common use, and the following points should be borne in mind:—These turnbuckles are in safety only when the brass barrel conceals the left and right-hand threads of the eyes and forks; if any portion of the threads lies outside the barrel the turnbuckle may fail under load. The turnbuckle should be locked with soft iron locking wire threaded through the hole in the barrel, wound round the eyes and forks in such a manner that they are prevented from unscrewing, passed through the end holes and given at least four complete turns round the shank.

The AGS 702 tension rod type uses left and right-hand fork ends similar to those used on swaged rods and streamline wires. These fork ends are provided with a safety hole near the threaded end, into which a pin can be inserted; if the barrel has not been screwed sufficiently far into the fork end the pin will pass right through the fork end and the turnbuckle is not in safety. These turnbuckles are locked by means of the brass locknuts.

Occasionally cables are duplicated and have turnbuckles on each cable adjacent to one another. Where these turnbuckles are of the old type they must be locked individually and not to one another. Locking wire, as is the case with splitpins, should be used only once.

PULLEYS

All pulleys should be examined for freedom of rotation and orientation (in the case of pulleys

(*Continued on page* 16)

FORMING A GLIDING CLUB. (*Continued from page* 7)

Such a booklet would be a boon to club secretaries and organisers when activities are commenced and enquiries start pouring in.

The inaugural meeting should be well advertised and a slide on a local News Theatre would be good publicity.

INAUGURAL MEETING

When the provisional committee consider they have collected all of the information necessary for the formation of the club, they should arrange an " Organisation " meeting, to which all of the persons who have registered for membership should be invited. At this meeting the committee will acquaint their supporters of the preliminary work they have done. Obtain their approval and arrange a date and place for the inaugural meeting. They can also obtain confirmation at this " Organisation " meeting that the provisional committee be appointed to act for a certain period after the inaugural meeting, and they will arrange for this to be proposed and seconded immediately after the inauguration.

PROPOSE TO FORM CLUB

The inaugural meeting will be a public meeting, over which some prominent local citizen should preside. The Chairman will outline the scheme of organisation which the Founder Members have approved at the " Organisation " meeting. A proposal that the club be duly formed should be proposed and seconded and agreement reached by show of hands.

It is a good idea to have a few Founder Members in different parts of the meeting room, so that they can circulate small cards and obtain the name and address of each person present. These addresses will be useful after the club is formed, because you know that each person present has an interest in your club. If they do not enrol at the inaugural meeting you know that they are on the " doorstep " and can be approached with confidence when the club is started.

ENTERTAINMENT

An inaugural meeting can be as dry as dust to the new comers, and it will be advisable to arrange for a short lantern lecture, or a film show. Lantern slides and films are available in the movement. The Ministry of Information will give the film show. The meeting may even be held in a local cinema. There are certain laws appertaining to film shows, but if it is held in a cinema, or in conjunction with the Ministry of Information, you will steer clear of any pitfalls.

DRAFT RULES

Having agreed to form the club, those persons present who are not likely to enrol could leave, and the meeting would then proceed to approve the draft rules. They would confirm the appointment of the committee, and increase this if necessary according to the rules.

The business would end by advising the members of the next meeting, or informing them of the means to be employed to advise them.

The Press, of course, would be invited to the meeting, and a prepared draft of the scheme of the club should be handed to the reporters present, to ensure a good and correct write-up.

(*To be continued.*)

Club Buildings (Finished).

PIONEERS OF BRITISH GLIDING

(*Continued from page* 2)

spirits of the party to such a height that next day when the wind moderated and shifted and the rain ceased, more than ten hours flying was put in over strange, uncharted country, flights of up to 2½ hours' duration and to heights of 3,000 feet from the start being made by almost novices.

TIMES CORRESPONDENT

In June 1938 the " Doc " took a course at Salzburg and flew over the town. In 1937 he attended the International Competitions at the Wasserkuppe as Special Correspondent of *The Times*. In 1938 he had his first aero-tow with the Cambridge Club, following a visit to the Mynd, in which he put in three or four hours in the air.

CLOUD PHOTOGRAPHER

But perhaps one of the most important contributions the Doctor has made to British soaring in his technique of cloud photography, perfected between the years 1932 and 1939. It was his idea to take several photographs of one cloud and piece them together to make a whole and then in a short time to take a further series showing its development, to be treated in the same way. This has now been followed by several other " cloud and airflow-minded " pioneers, who are developing it on lines which should yield valuable instructional results for both power and soaring pilots. This year he was elected to the Council of the Royal Meteorological Society.

WRITER OF PIONEERS

Since the war and the recommencement of THE SAILPLANE, it is from Dr. Slater's pen that the good old reminiscences have flowed to buoy us up in our enforced grounding, and we are all accordingly looking to those happy days when once again the shining wing, the rolling cloud, and the gentle hum of air passing by, plus Doctor Slater with his camera and little notebook, and his new machine, are with us once again.

C. E. H.

Letters to the Editor

DEAR SIR,

Would you kindly invite your readers to express their opinions about the following proposal. For the benefit of all concerned an exchange of visits between clubs is obviously desirable. Taking our particular case here in Leicester, we are roughly equidistant from Dunstable, The Mynd, and Camphill. We would like to visit those sites. The clubs at The Mynd, and Camphill will want to visit each other and also to come to Leicester to enjoy something which they have not got at home—aero-towing and flying with the wind in any direction. So I have been asking members of the various clubs mentioned how we can get together to exchange memberships. The following ideas have arisen and need consideration by the Committees in due course :—

(1) A central body, say the B.G.A. or an Association of Gliding Clubs, would form a pool. A member of any associated club on payment of a fee (say 3 gns. or so) would be granted country membership in ALL the other associated clubs. It might appear that some clubs would lose certain country members now paying their fees direct, but I feel that the scheme would be such a great boon as to encourage far more people to interest themselves in duplicate membership.

(2) In the absence of any central scheme the clubs might generally favour a more direct exchange of membership. For instance, the Leicester club could pay 3, 4, or 6 country membership fees at one or more of the other clubs and be permitted to send up to 3, 4, or 6 member (but not more) on any one day. These members could carry a card of introduction giving their gliding experience for the guidance of the flying instructor.

(3) In a case where two clubs wanted to visit each other no fees need pass, but an agreement reached to exchange up to say, 3, 4, or 6 members on any one day.

The first scheme (proposed by Mr. Bernard Thomas, of Derbyshire and Lancs. G.C.) would be very convenient if we can get all parties roped in. I hope your readers will discuss this matter and let me have all their fruity ideas so that I can put them before the Clubs concerned.

Yours faithfully,

J. CECIL RICE,
Chairman Leicestershire Gliding Club, Blaby, Leicester.

20th April, 1945.

DEAR SIR,

Apparently the nom-de-plume of Icarus has numerous claimants, most of whom are anxious to dissociate (or associate ?) themselves from recent articles in the SAILPLANE AND GLIDER appearing under this name.

Apart from the lack of copyright in pen-names one would have thought that such a sardonic choice would be avoided by writers dealing purely with motorless flight.

To avoid future confusion it is suggested that future contributions from this pen will be made by Ikarus. The substitution of a Greek " kappa " for the Roman " C," while technically more accurate, will no doubt be open to an obvious allusion, but after all is in keeping with the rash spirit of my illustrious fore-flyer.

Yours faithfully,

IKARUS.

AIRWORTHINESS (*Continued from Page* 14)

mounted in swivelling brackets) ; guards should be carefully examined to ensure that they do not chafe the cable, although there must not be so much clearance that the cable can slip over the edge of the pulley.

Under no circumstances should grease be applied to fibre fairleads ; grease mixes with grit to form a superior grade of grinding paste with more detriment to the cable than the fairlead.

The hinges of control surfaces, if of the fork and eyebolt type, should be locked by a screw or metal guard to prevent the bolts turning. Cases have occurred in the past when controls have jammed due to a hinge turning through ninety degrees.

All control surfaces should be checked for full angular movement, particular attention being paid to the various forms of aileron differential mechanism. Dive-brakes, if fitted, should be adjusted so that the pawl or dead-centre device precludes any chance of suction lifting them open in flight.

The control system should be inspected to ensure that each surface is correctly connected and is not reversed ; crossing of controls can be eliminated wherever there are two adjacent turnbuckles as follows :—Instance an aileron control with two turnbuckles attached to the bell crank at the wing root. Fit the left-hand thread to the upper arm and the right-hand thread to the lower arm. If, at any time, the turnbuckle barrels are removed it will be impossible to cross the controls when reassembling, although the possibility of twisting the two cables round one another should not be overlooked.

It cannot be too strongly emphasised that any adjustment to flying controls, no matter how slight, should be dual checked by another person. Lack of attention to this matter has caused serious accidents in the past and may cause equally serious accidents in the future.

Sailplanes, unlike power aircraft, do not appear to be temperamental about trim ; this is largely due to their low centre of gravity, lack of airscrew torque and the incorporation of much inherent stability.

Cable-operated ailerons should be drooped up to a maximum of three-eighths of an inch so that the stretch on the operating cable in flight positions the aileron in the neutral position. Too much droop on ailerons which are of relatively wide chord at the tip may precipitate tip stalling, as the washout decided upon by the designer has been altered. Certain machines may actually fly better with slight negative " droop " and the "Wolf " sailplane was rigged in this manner.

LONGITUDINAL TRIM

Nose or tail heaviness is so much a function of pilot's weight and C.G. position that the engineer is somewhat at a loss when specific symptoms are described. The tailplane should always be checked to ensure that it is correctly assembled on the fuselage and that its incidence has not been altered due to loose packing or the like.

Fixed trimmer tabs should be moved in very small increments of about one-sixteenth of an inch and the machine test flown after each adjustment. Note that trimmer tabs which have little effect at low speeds are remarkably powerful when the machine is doing high speed cruising at speeds over 60 m.p.h. indicated.

Machines fitted with dive-brakes and spoilers may experience slight yawing or buffetting due to the controls not being flush with the wing in flight, either due to the suction on top of the wing, as previously mentioned, or due to inertia jolting them up and down as the machine passes through gusts.

(*To be continued.*)

Australian Gliding Association

VICTORIA

THE GLIDING CLUB OF VICTORIA

Training activities are being carried on at Mordialloc approximately every second week-end with "Merlin," "Utility" and "Eagle" primary. Good progress is being made. Work is progressing on modification of No. 1 Winch.

N. Hyde (Recorder of Flights) has furnished the following details of flying from 1/1/45 to 3/3/45. Flying was carried out on nine days and totals for each machine are as follows :—

Utility of the Victoria Gliding Club.

"Grunau Baby II"	1 hr.	11¼ mins. for	11 flights	flown on 1 day
"Utility Trainer No. 1" ..	1 ,,	48¼ ,, ,,	51 ,, ,, ,,	6 days
"Merlin" two-seater	3 ,,	12½ ,, ,,	72 ,, ,, ,, ,,	,,
"Eagle" Primary		19¾ ,, ,,	43 straights,, ,,	7 ,,
			79 skids & hops, not timed	
Total	6 hrs.	31¾ minutes.	256 Launchings.	

A total of 2 hours 9 minutes dual instruction was given to trainees and 24 passenger flights were made. Launchings were 2 by car tow, 122 by Winch No. 2, 132 by Winch No. 3. On Sunday, 11/2/45, the highest day's total of launchings on record were made, there being 60 winch tows for the day at Mordialloc. The previous best for winch was 36 at Mordialloc and for car tow 54 at Geelong on 6/10/40. "*Grunau*" *damaged.* On 3/3/45, the "Dodge" towing car was accidentally backed into the rear of the "Grunau" by a trainee (K. Chamberlin). The rudder was crushed and the sternpost and rear end of the fuselage damaged. Repairs are in progress at Dowlings' workshop at Fawkner. *Winch No. 1a.* Construction is being carried out at workshop at 28, Princess Street, Footscrsy.

Annual Report and Balance Sheet. Copies are now available.

NEW SOUTH WALES

SYDNEY SOARING CLUB

Gliding Meeting at Box Hill. Harry Ryan, in a letter dated 9/2/45, advises—"We had a two-day camp at Box Hill on anniversary week-end, 28th/29th January, 1945, with the "Gull." The Metropolitan Gliding Club's "Falcon" two-seater was there and Beaufort (Chullora) Gliding Club's "Dagling" primary arrived late on the Monday (29th). There were some short periods of good conditions especially on Monday, but we were unlucky most times in not being able to get off the ground quickly enough. A changing wind also caused considerable delay, necessitating frequent shifting of the winch.

On Doc. Heydon's last flight on Sunday the cable caught on a fence post (not in our customary launch-

(*continued overleaf*)

Winch of Victoria Gliding Club.

ARGENTINE NOTES

MRS. PLATT writes :—"I am not a Silver "C" yet, although I had hoped to pull it off this summer. I just move humbly among them and learn where I can. I was shocked by Mr. Hicks' letter about aerobatics not being necessary to a soaring pilot. Loops ? Possibly not, but a lot of fun to do and much easier than a 360 degree turn. But stalls are imperative on any normal day of strong thermals. At times a stall turn is the only way to avoid collision (in the course of the Cordoba concourse we had once eleven machines circling together in one narrow thermal), and a spin is the only really effective way to get out of a cloud quickly. A sideslip even with flaps hard on may still leave you rising at the rate of 6 feet a second, and we unluckily have neither instruments nor blind flying training. Often in a cloud conditions are so turbulent that the machine finds itself upside down and almost inside out, and with the speed ever increasing. If a pilot is accustomed to strange angles this will not bother him, but it is a little disconcerting if he does not know how to right himself. As B2009 indicates, confidence in oneself and one's machine is the most necessary part of a soaring pilot's training. And a thorough grounding in aerobatics gives just that confidence—at least it did to me.

Early pilots were against aerobatics because the machines were unsuited, and it was only when the 'Grunau Baby' appeared that pilots realised that a sailplane need not necessarily break up in the air. The complex lasted though, and even here in the Argentine there are a few old-fashioned pilots who argue that aerobatics are not necessary. But the rest of us—all of us—do them and like them, partly for the incredible increase in confidence and partly for their real value in awkward situations. I was mistaken in saying they are a part of Patente Necurial. They are voluntary. But we all look forward anxiously to the joyous day of our first loop, and then do our best to reach the standard necessary for display and competition work. We practice all winter long and so are well in training by the time summer thermal flying begins."

CORRECTION.

In last month's article on Fulmar Petrels the caption below the second photograph—"parachute soaring"—belonged to a photograph which was NOT printed. The photograph printed shows the Fulmar in normal soaring flight at cruising speed.

WANTED, new or secondhand, copy of "SAILPLANES" by Latimer Needham.—Ball, 53, Arbor Road, Croft, Leicester.

We regret to announce that owing to an accident to the Editor whilst gliding there has been a delay in the reply to correspondents.

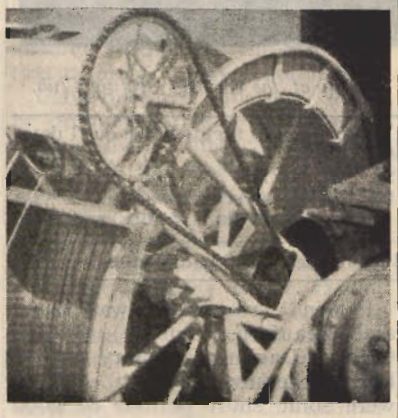
As he is now recovering quickly they will receive replies in the immediate future.

CHANGE OF ADDRESS

Please will all readers note that in future all correspondence be sent to :—58, Fleet Street, London, E.C.4. 'Phone Cen. 2708.

(*Continued from page* 17)

ing track) and from the appearance of the cable the winch-driver (myself) thought that the cable had broken and so continued to wind it slowly in. However, the cable suddenly freed itself, with the result that the "Gull" (which had started a turn to the left) suddenly received a pull on the nose, which turned it almost at right angles to its course. It looked somewhat hair-raising from the ground, but the Doc. said things were not quite so bad. After the first flight on Monday we unaccountably lost the



Closeup of Winch.

special link for the "Gull's" release and our three spares had accidentally been left behind—the result, much more loss of time until a temporary link was made, but after one more flight the wind reversed completely and we packed up to go home.

"The Gull" was flown by S. Newbigin, L. Schultz, H. Ryan, M. Waghorn and Doc. Heydon. Total—11 flights for 1 hour 36½ mins. On Sunday, 28/1/45, H. Ryan reached 2,500 feet and was in the air for 43 minutes.

A.W.A. GLIDING CLUB

Mr. Gil. Miles, in a letter dated 13/2/45, advises that the Club's primary is rapidly nearing completion. He has purchased a "Prufling" glider built by McFarlane some years ago, and work is to be done on reconditioning of this machine as soon as the primary is finished.

CANBERRA GLIDING CLUB

Mr. V. H. Southwell has advised that he has been appointed Secretary of a new Club known as the Canberra Gliding and Soaring Club. His address is Block 13, Fyshwick, Canberra, A.C.T.

PHOENIX GLIDING CLUB

Mr. John Edwards, Hon. Secretary, in a letter received 6/3/45, states—"The Club took delivery of the 'Utility' which it is purchasing from Vic Dawson. He is re-designing it for us. The result should be an improvement in the performance of the finished machine. We plan to convert it from a parasol, wire-braced monoplane with single wheel undercarriage to a fully-enclosed high-wing cabin monoplane with wings strut-braced and converting it from wheel to skid landing gear. The Club House is situated at 23, Coles Street, Concord—an unusually large single car garage."

SOUTH AUSTRALIA

WAIKERIE GLIDING CLUB

Hon. Secretary, Jack Moody, in a letter dated 6/2/45, states—"Up to date we have had very little to report in regard to our flying activities, as this is a busy season for most of our members who are, as you know, in the fruit business. We have had the two-seater out on several occasions with moderate flights and were going fairly well with the primary until Miss N. Swann made a stall landing and broke a casting on the aileron control, the machine thus being laid up for a couple of weeks. During the last week-end Mr. C. M. Moir and his wife (of the Gliding and Soaring Club of S.A.) visited our club. The two-seater and primary were flown. We started off to give him a demonstration of winch training with the primary on the Sunday—it was hot and one of those days when the breeze comes from all over the place. Bob Rowe set out to do a 200-300 feet high straight flight, but he had hardly got off the ground when the wind chopped around and he came down very heavily and broke the landing wires. However, very little damage was done, not even a broken rib, and Bob was not hurt. With a few hours' work the machine should be ready to fly again.

BEAUFORT GLIDING CLUB (MELBOURNE)

Progress is being made on two-

(*Continued on page* 20)

SOARING

Your Emblem

Have you earned a gliding or soaring certificate? Then you have something which very few people in the country, and even in the world, possess.

The A GLIDING BADGE

The B GLIDING BADGE

The C SOARING BADGE

Silver C and Golden C

SOARING BADGES

The A, B, C, Silver C and Golden C badge you received is different from the usual emblem you see people wearing. In most cases the buttons in people's lapels signify that their subscriptions are paid up. In your case it means more than payment of dues. It means you've done something. It means that, without a motor, you are striving to outdo the flight of birds. Wear your badge—and wear it proudly!

ROYAL AERO CLUB
GLIDING CERTIFICATES

		Gliding School	Date taken
	"A" Certificates (85)		
2426	Edward David Taylor	N.W. 184 E.G.S., Woodford	18. 3.45
2427	Reginald Gordon John Wilson	C.123 E.G.S., Bray	10. 3.45
2428	Alastair William Erskine Muir	Ditto	10. 3.45
2429	Albert Thomas Dowie	Ditto	10. 3.45
2430	Peter Frederick Cawthorn	L.146 E.G.S., Fairlop	10. 3.45
2431	Herbert Sydney Stidolph	L.142 E.G.S., Stapleford Tawney	24. 2.45
2432	Robert John McAllister	201 E.G.S., Lisburn	11. 3.45
2433	Kenneth James Brett	L.141 E.G.S., Kidbrooke	11. 3.45
2434	Donald Henry Howle	L.146, E.G.S., Fairlop	11. 3.45
2435	Edward Arthur Owens	N.W.186, E.G.S., Speke	11. 3.45
2436	Peter Anthony Skinner	S.E.166, E.G.S., Ashford	4. 3.45
2437	Eric Caton	N.E.26, E.G.S., Greatham	11. 3.45
2438	Peter Leonard Watts	Ditto	4. 3.45
2439	Cyril Frederic Pickard	N.E.30, E.G.S., Sherburn-in-Elmet	25. 3.45
2440	Roger Anfray Mann	Ditto	25. 3.45
2441	Donald Craven	Ditto	25. 3.45
2442	Terence Philip Hubbard	Ditto	25. 3.45
2443	Neil Edney Pettigrew	Ditto	25. 3.45
2444	Michael Alan Boyce	Ditto	25. 3.45
2445	Eric Rupert Chalk	L.146, E.G.S., Fairlop	24. 3.45
2446	Ernest James Hall	Ditto	10. 3.45
2447	Geoffrey Alfred Stark	L.145, E.G.S., Colchester	25. 3.45
2448	Alan Stanbrook	C.123, E.G.S., Bray	10. 3.45
2449	Frank Edward Winter	S.E.161, E.G.S., Brighton	7. 4.44
2450	Albert Gordon	N.W.186, E.G.S., Speke	11. 3.45
2451	Leslie Ronald Gerald Swain	S.E.166, E.G.S., Ashford	11. 3.45
2452	Bryan Henry Trunkfield	N.W.186, E.G.S., Speke	10. 3.45
2453	Victor Albert Sterry	S.W.83, E.G.S., Moreton Valence	11. 3.45
2454	Frederick Thomas Houchin	N.E.31, E.G.S., Usworth	17. 3.45
2455	Frederick Douglas Millican	Ditto	17. 3.45
2456	Charles Douglas Renner	Ditto	17. 3.45
2457	Ronald Phillips	Ditto	17. 3.45
2458	Maurice Gordon Armstrong	Ditto	17. 3.45
2459	Ernest Bulmer	Ditto	17. 3.45
2460	John Scott	Ditto	17. 3.45
2461	Frederick Henry Rowe	Ditto	17. 3.45
2462	Cyril Charles Knox	N.W.183, E.G.S., Woodford	17. 3.45
2463	Oliver Owen	C.124, E.G.S., Aldenham	30. 3.45
2464	Gordon Frederick Parry	L.146, E.G.S., Fairlop	10. 3.45
2465	John Leonard Spruce	E.102 ,E.G.S., Norwich	30. 3.45
2466	Trevor John Hammond	M.41, E.G.S., Knowle	25. 3.45
2467	Stanley Maurice Cooper	Ditto	25. 3.45
2468	John Herbert	N.W.184, E.G.S., Woodford	18. 3.45
2469	Arthur Herbert Carter	M.46, E.G.S., Derbyshire & Lancs.	8. 4.45
2470	Arthur Roy Thompson	N.W.186, E.G.S., Speke	11. 3.45
2471	Reginald James Harris	S.W.89, E.G.S., Christchurch	4. 3.45
2472	George Richardson Stokoe	N.E.31, E.G.S., Usworth	17. 3.45
2473	Peter Craven	Ditto	17. 3.45
2474	William Norman Harrison	M.47, E.G.S., Derby & Lancs.	8. 4.45
2475	Boardman C. Reed	C.126, E.G.S., Booker	8. 4.45
2476	Michael Joseph Conry	S.E.161, E.G.S., Brighton	7. 4.45
2477	George Perry Lambourne	S.E.161, E.G.S., Brighton	6. 4.45
2478	William Brian Beck	E.104, E.G.S., Ipswich	25. 3.45
2479	John Charles Mason Mogg	N.W.183, E.G.S., Woodford	17. 3.45
2480	Ronald William Warren	Ditto	11. 3.45
2481	Ronald Frederick Jones	W.65, E.G.S., Cardiff	8. 4.45
2482	Cecil Hazelhurst Mann	N.W.184, E.G.S., Woodford	18. 3.45
2483	William Hendon	C.123, E.G.S., Bray	2. 4.45
2484	Edward Gordon French	N.E.31, E.G.S., Usworth	17. 3.45
2485	Thomas Henry Michael Stafford	M.44, E.G.S., Bretford	18. 8.44
2486	Jack Waddington	N.E.30, Sherburn-in-Elmet	8. 4.45
2487	Frederick Raynes	Ditto	8. 4.45
2488	Jack Womersley Headley	Ditto	8. 4.45
2489	Richard Henry Wright	Ditto	8. 4.45
2490	Albert Henry Lawrence	L.142, E.G.S., Stapleford	24. 2.45
2491	John Marcus Ludlow	S.E.166, E.G.S., Ashford	11. 3.45
2492	Kenneth Albert William Giles	167, E.G.S., Fairoaks	18.11.44
2493	James Wilson	203, E.G.S., Newtownards	8. 4.45
2494	Maitland Harry Botten	S.E.161, E.G.S., Brighton	7. 4.45
2495	John Herbert Granville White	C.121, E.G.S., Halton	2. 4.45
2496	Douglas Bland	L.146, E.G.S., Fairlop	10. 3.45
2497	Edgar Cyril Robinson	N.E.26, E.G.S., Greatham	25. 3.45
2498	William Arthur Henry Banks	E.103, E.G.S., Bury St. Edmunds	10.12.44
2499	John Edward Sewell	E.104, E.G.S., Ipswich	25. 3.45
2500	Brian George Adshead	N.W.183, E.G.S., Woodford	17. 3.45
2501	Bertram Sydney Adams	L.147, E.G.S., Bulphan	10. 3.45
2502	Louis Reginald Clark	S.W.83, E.G.S., Moreton Valence	11. 345.
2503	Horace George Davy	L.146, E.G.S., Fairlop	15. 4.45
2504	John Porteous Russell Galbraith	N.W.189, E.G.S., Carlisle	17. 3.45
2505	William Speirs	Ditto	17. 3.45
2506	Cecil Herbert William Harrison	Ditto	25. 3.45
2507	Alfred Blackwell	N.W.184, E.G.S., Woodford	25. 3.45
2508	Arthur Henry Taylor	L.141, E.G.S., Kidbrooke	28. 3.45
2509	John Wallis Eade	L.146, E.G.S., Fairlop	14. 4.45
2510	Raymond Carter	E.103, E.G.S., Bury St. Edmunds	8. 4.45
	"B" Certificates (19)		
2144	Alfred Eric Campbell	N.W.185, E.G.S., Barton	18. 3.45
2258	Rees, Harold Hopkins	M.50, E.G.S., Hereford	25. 3.45
2431	Hergert Sydney Stidolph	L.142, E.G.S., Stapleford Tawney	25. 2.45
2449	Frank Edward Winter	S.E.161, E.G.S., Brighton	7. 4.44
2181	Denis William Heightman	L.145, E.G.S., Colchester	8. 4.45
2476	Michael Joseph Conry	S.E.161, E.G.S., Brighton	8. 4.45
1707	Raymond Alfred John Alder	C.123, E.G.S., Bray	8. 4.45

(Continued Overleaf)

CLUB ANNOUNCEMENTS

LEICESTER GLIDING CLUB

May 11th. Talk by Sir Frederick Handley Page, College of Art, at 7 p.m. An aerodynamic course with wind-stream models is being instituted, also a construction group. Those interested should get details from the Secretary, who will also supply details of the visits, etc., arranged for the summer, Leicester Gliding Club, Park Road. Blaby, Leicester.

THE MIDLAND GLIDING CLUB LIMITED

The Secretary invites enquiries *re* post-war programme at Long Mynd. Subscription rates, etc., forwarded to those interested on application to :— F. G. Batty, F.C.A., 2, Lombard Street West, West Bromwich, Staffs.

DERBYSHIRE & LANCASHIRE GLIDING CLUB, GREAT HUCKLOW, TIDESWELL, DERBYSHIRE

Still on the active list. Club activities will commence as soon as civil flying is permitted. Full particulars, booklets, etc., from Secretary, 87, Fargate, Sheffield, 1.

NEWCASTLE GLIDING CLUB, Ltd.

(founded Feb. 1930)

Applications for Membership now invited in Reorganised Post War Club.

Special Registration Fee 6/-

Ensures Membership when activities restart.

Further Particulars apply

HON. SEC., 25, HOLME AVENUE. NEWCASTLE 6

The Yorkshire Gliding Club, Sutton Bank, Yorkshire.

The Club will offer full flying facilities as soon as Gliding activities are permitted. Complete programme of Training from abinitio to advanced soaring stage—including unexcelled Club Flying —will be published later.

LIVERPOOL AND DISTRICT

Owing to the changeover of premises the address of the members interested in forming a gliding club in the above district has been mislaid.

Will these members please contact the SAILPLANE as information has now been received.

Royal Aero Club Gliding Certificates—(*Cont.*)

"B"	*Certificates*	*Gliding School*	*Date taken*
1931	John Michael Bloodworth	167, E.G.S., Fairoaks	7. 4.45
1955	Cyril James	Ditto	8. 4.45
2490	Albert Henry Lawrence	L.142, E.G.S., Stapleford	25. 2.45
1352	William Henry Murray	N.W.183, E.G.S., Woodford	8. 4.45
1990	Sidney Mark Tidy	S.E.161, E.G.S., Brighton	15. 4.45
2206	Frank Ogden	S.E.161, E.G.S., Brighton	11. 4.45
2494	Maitland Harry Botten	Ditto	8. 4.45
2504	John Porteous Russell Galbraith	N.W.189, E.G.S., Carlisle	25. 3.45
2505	William Speirs	Ditto	25. 3.45
2506	Cecil Herbert William Harrison	Ditto	8. 4.45
2507	Alfred Blackwell	N.W.184, E.G.S., Woodford	7. 4.45
2508	Arthur Henry Taylor	L.141, E.G.S., Kidbrooke	28. 3.45

Australian Gliding Association

(*Continued from page* 18)

seater machine, one wing being nearly ready for covering and the other assembled, but trailing edge and wing tips to be fitted. Mr. John Wallis, Chairman of the Club, has furnished the following figures for this machine :—Wing Span : 56 feet ; Chord, 5 feet 6 inches (2 spar), parallel wing (306 square feet). Strut braced : Length 26 feet, height 6 feet ; weight empty, estimated 640 lbs. The design is by Doug. Henderson,

Details of Winch.

previously of the Brisbane Gliding Club. The Club has forwarded a donation of £1 1s. to the A.G.A.

WESTERN AUSTRALIA

Letter dated 17/1/45 has been received from Neville J. Wynne, Honorary Secretary of Perth Gliding Club. The Club is comprised of members of the former " Pinjar Soaring Club." Unfortunately their flying ground at Lake Pinjar has had about 200 miles of furrows run through it as an anti-invasion measure. The " Kestrel " sailplane and Rhon Ranger "primary" are in flying condition and work is being done on a 40-foot span, strut braced secondary, with a nascelle, side by side seating dual control, with a landing wheel. The address of this Club is c/o 112, Loftus Street, Leederville, W.A.

NEW SOUTH WALES

C. A. Richards, Honorary Secretary of Mascot Beau Glider Club, in letter dated 22/1/45, states :— " I wish to acknowledge with appreciation circulars and gliding information which have been forwarded by you from time to time to our Club. We find the contents most interesting, particularly as it is concerned with gliding in all States, thus giving an excellent idea of what is really going on. Our Club has had many difficulties to overcome, especially as regards to workshop space, which is very limited. The Club's primary glider is, however, now only awaiting final assembly and covering, and we hope to commence this work as soon as sufficient space can be obtained."

Leo E. C. Dickman, Honorary Secretary of Cumberland Gliding and Soaring Club, in a letter dated 5/2/45, states :—" Our primary glider (the " Griffon ") was completed about a month ago, but we have been held up owing to no success in application for fuel licence for our activities. We hope to fly by the end of this month before our good instructor, Norm. Kershaw, leaves for England. Norm. was originally a member of the Derbyshire and Lancashire Gliding Club in England before he came to Australia."

Where should the sun be when you snap?

Try snapping with the sun at your side, as in the diagram, instead of directly behind you. Side lighting gives more natural shadow effects and avoids a flat appearance. Be careful though not to let the sun shine into the lens.

• **By the way,** avoid loading your camera in bright sunlight. Good film is very sensitive —careless loading can easily spoil the spool.

'Kodak' Film is scarce because of war needs, so

MAKE THE MOST OF YOUR **KODAK** FILM

P 29v

Steeling a march! Trust Gillette's fine-tempered edge to get through where the going's toughest. On the Elbe or on the chin, Gillette in battledress smooths the way — to that *victory smile!* Gillette in battledress, maybe but Gillette true to form!

Gillette in battledress

"Standard" Gillette Blades (plain steel) 2d each, including Purchase Tax. Fit all Gillette razors, old or new.

If you can't always get them, remember they're worth trying for! Production still restricted.

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