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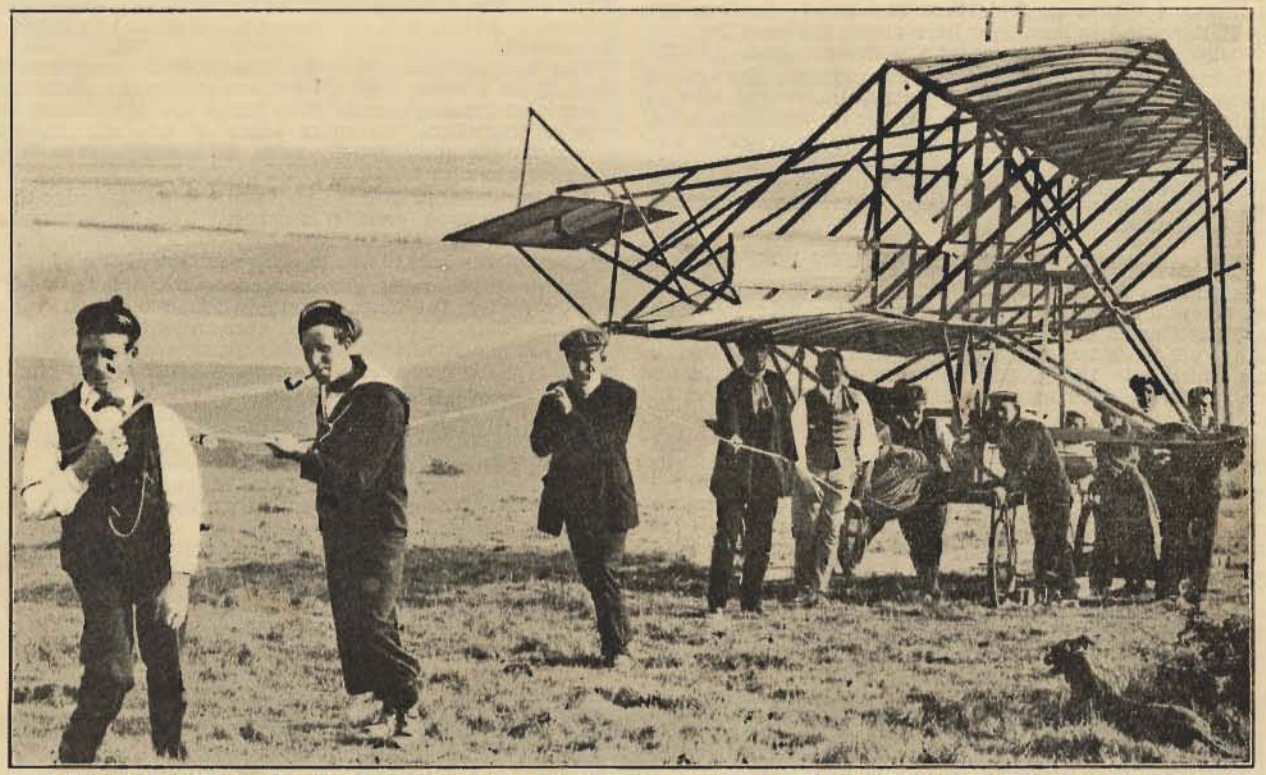
THE SAILPLANE AND GLIDER

Price 3d.

NOT SO VERY LONG AGO.



A REMINISCENCE of not so very long ago when Lieuts. Porte and Pirie, R.N., were gliding on the Downs behind Portsmouth.

GLIDER DESIGN.

So much interest is being taken by Clubs and individuals in the design and construction of gliders that we feel the article by Mr. Perfield, part of which we publish this week, will arouse considerable interest. Mr. Perfield is an American aeronautical engineer and speaks with authority. His paper, from which the article has been extracted, was read before The Society of Automotive Engineers at Detroit.

The article is quite general in its application and will, we think, help people to understand more clearly the means the designer has to adopt to overcome the problems with which he is faced.

The article is particularly interesting as in another part of THE SAILPLANE we publish a brief description of the primary training glider which the Imperial College Gliding Club has built. This has a triangulated fuselage which does away with the necessity for wire-bracing to the wings.

Another form of construction to which Mr. Perfield does not refer is the box-spar type adopted in the Cramcraft and in the B.A.C.II. We hear of another glider which is being built with a similar box-structure. It may be that this form of fuselage-construction will be one of the British contributions to the Science of Gliding.

AN IMPORTANT OCCASION.

An important lecture by Captain F. T. Hill, F.R.Ae.S., M.I.Ae.E., B.Sc., is being given on the evening of Wednesday, Nov. 19. This lecture, which is about "The Theory of Flight," is being given before the London Gliding Club in the Library of the Royal Aeronautical Society, 7, Albermarle Street, W.1. The nearest tube station is Dover Street on the Piccadilly.

As accommodation is limited by the size of the Library those who want seats should arrive early. When Herr Kronfeld give his memorable informal talk in the Library a large number of people had to stand throughout.

NEWS OF THE SCHLOSS MAINBERG.

In THE SAILPLANE for Oct. 24 was a list of the winners of the Soaring Contest which the National Glider Association of America had organised at Elmira, N.Y. The winner of the distance flight was Mr. A. C. Haller, who flew 21.1 miles. News now to hand confirms that this Mr. Haller was the Mr. Haller who has been over here during the past Summer and who got his "C" licence at the Wasserkuppe.

His many friends over here will congratulate him on his success in winning such an important event and also in beating the existing distance record for an American pilot. They will be also interested to hear that he sailed to victory in the famous German sailplane, the *Schloss Mainberg*. Apparently Mr. Haller landed in the Susquehanna River, but neither pilot or machine suffered more damage than a wetting.

WHO IS GOING TO WIN THAT TEN POUNDS?

Competition for the Dagnall Prize of Ten Pounds is getting fiercer and the Dorset Club have just collected enough "A" Certificates to give them quite a sporting chance of pulling off the prize which Mr. Dagnall is offering to the Club which gets the greatest number of "A" Certificates on a R.F.D. glider between the dates of Aug. 15 and Dec. 31, 1930.

We do not guarantee the following scores as everybody concerned seems backward in giving the desired information, but so far as THE SAILPLANE knows the score is now:—Portsmouth 9, Surrey 7, Dorset 6, Kent 4. We have no figures from the London Club, which presumably thinks it has as good a chance as any other Club. We hope that other Clubs will send along their figures.

A FRENCH HIGH DIVE.

The Gliding Movement in France seems to be going slowly ahead. Reports of its achievements have already appeared in THE SAILPLANE. There are a number of Clubs organised and operating successfully with French-built Zoglings.

A long flight was made near St. Jean-de-Luz the other day when a M. Ruamps took off a Zogling in a wind of 4 m. per second (about 9 m.p.h.) and flew for 28 min. As he took off from the top of a mountain 2,953 m. (9,687 ft.) high this feat is not quite so startling, although the flight itself was probably spectacular.

THE INCREDIBLE.

A picture of the glider built by the Imperial College Club has already appeared in THE SAILPLANE. We are now able to publish some more about *The Incredible*, as it is called.

One of the most apparent innovations in the I.C.1, as it is officially named, is the form of the fuselage structure. In the "Zögling" type machine the tail boom has very little sideways rigidity. It therefore has to be braced by wires from the wing-tips, which add to the work of rigging. In the I.C.1 the fuselage structure is of a triangular form, internally braced, and the conventional wires can therefore be omitted.

The wings, which are of uniform section throughout the span, have a thick high-lift section, giving the glider slow flying and landing speeds. The wings are of ordinary two-spar construction, the spars being of box section, with spruce flanges and three-ply webs. The same materials are used for the ribs, which are of I section.

The leading-edge is three-ply, and the trailing-edge dural tubing. The drag bracing is spruce. Torsion is taken by the usual flying and landing wires, the latter from a steel tubular cabane over the fixed centre-section of the wing.

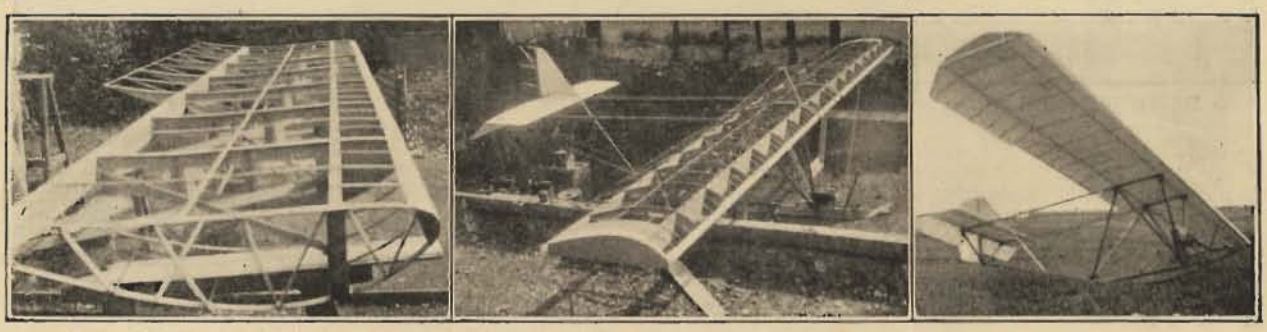
The elevators are heavily damped by a tailplane which is a good deal larger than is usually found on this type of aircraft. This is to give good fore-and-aft stability, and make the machine safe in fairly gusty weather. A correspondingly high degree of inherent stability against rolling has been aimed at by seating the pilot well below the wings, giving a sort of pendulum or parachute effect.

The light wing loading, together with the high-lift wing, gives slow forward and sinking speeds.

The result should be to combine a large degree of stability with a rather better performance than that of the ordinary "primary trainer."

The design satisfies the B.G.A. Airworthiness Requirements, and Air Ministry approved spruce has been used in the construction.

The main dimensions are:—Span 36 ft., chord 5 ft., height 7 ft. 6 ins., length 19 ft. 5 ins., wing area 179 sq. ft., weight (without pilot) 190 lbs.—J. H. P.



A BRITISH CONCEPTION.—The I.C.1 which was designed by Mr. J. H. Payne and built by Imperial College students. The lack of fore and aft fin area is very marked.

SOME GENERAL NOTES ON THE DESIGN OF PRIMARY GLIDERS.

BY WM. J. PERFIELD.

The main function of the primary training glider is to give safe, economical instruction in the rudiments of handling aircraft. To fulfil these requirements performance is of secondary consideration. Stability and strength in the air, ruggedness on the ground and facility of transportation, in the order named, precede aerodynamic refinement in importance in primary glider design. The importance of stability and ruggedness is apparent, but the stress on facility of transportation can only be appreciated after some experience. Contests, licence flights and exhibitions require surprisingly frequent removals. The task of knocking down, loading, unloading, setting up and rigging the average primary ship requires many man-hours of painstaking work which could be avoided by a little extra time spent on the drawing board and in the shop.

Weight is of little consequence in the primary glider except that excessive weight makes handling on the ground more laborious, especially when using shock cord. The average primary weighs between 175 and 200 pounds. More weight is unnecessary; less is unsafe unless unwarranted refinements in design and construction are resorted to.

Wing loading should be kept between 2 and 2.25 pounds per square foot considering a 170 pound pilot. This will make the area 160 to 175 square feet. Lighter loadings make a ship unsafe for the novice to handle, especially in gusts. Higher loadings, of course, increase the landing speed and gliding angle.

Since the gliding angle is the criterion of glider performance the L/D ratio will govern the selection of the aerofoil. A good glider section should have a maximum L/D of 18 or 20 and a maximum lift coefficient of not less than 1.2. Sections with sharp stalling points should, of course, be avoided. The U.S.A. 35 B, the Clark Y and several of the Gottingen sections have all been used with good results. The M-6 and M-12 apparently have good gliding characteristics, but we have no record of their use. Thick sections such as the Gottingen 387 are undesirable. Besides having high drag coefficients, their depth is too great for the size of spars required. A section with a maximum depth of about 12 per cent. of the chord is about right.

Good longitudinal stability will be obtained by placing the centre of gravity at the maximum forward position of the centre of pressure. Since there is no heavy motor on the nose the pilot must be placed well forward for balance. Usually his C.G. is almost directly under the leading edge of the wing.

With the pilots' C.G. so far ahead of the C.G. of the glider, variations in the weight of the pilot, which is almost half the gross weight, make accurate balance impossible unless an adjustable seat is provided. However, if care is taken to avoid excessive tail heaviness with light pilots this provision will not be necessary, although it would be desirable if some simple means of adjustment could be devised.

Special provision for lateral stability is not necessary. Dihedral is sometimes used, however, and the landing wire cabane is often made to serve as a skid fin.

THE TYPE OF GLIDER FOR TRAINING.

In the selection of a glider for primary training we have so far been guided by German experience. The type which they classify as the "Zoegling" has been generally adopted in America. It consists of an open lattice work fuselage, if it may be called such, usually of wood, a wood and fabric wing attached to the fuselage by wires, and a wooden skid for landing. It is controlled by the conventional stick and rudder bar.

The obvious feature of this type of machine is its simplicity of construction and ease of repair. It also has an advantage in that it places the pilot completely in the wind so that he may better judge his speed. Being fully exposed also requires the student to balance the glider entirely by feel and sound inasmuch as he has no reference point to keep on the horizon. Unobstructed ground vision facilitates landing and minimises the number of crashes from this source.

At present there is a movement in the United States to enclose the fuselage with a view of increasing safety and later adapting the fuselage to a secondary ship. From *Flugsport*, Dec. 11, 1929, we learn that the Breslau Glider Club now attaches to the Zoegling a cowling which encloses the pilot. This is used to accustom the students to cockpit flying in preparation for soaring and power flight. According to the report this cowling and other slight refinements decreased the gliding angle of the ship from 1 to 8 to about 1 to 12. They still give the first few hops in an open glider, however.

Whether or not this practice will be followed in America time will tell. Certainly the open glider recommends itself to primary training because of its fewer breakable parts. A cowling so designed as to be readily removable should be very effective for adapting one machine to both primary and advanced training.

SHOCK CORD OR AUTO-TOWING?

The design of the fuselage and landing gear depends to a great extent on the method of flying to be used. There is much discussion in this country as to the relative advantages of shock cord and auto-towing for flight training. The Germans use shock cord almost entirely.

Aside from the labour involved, shock cord flight has other disadvantages. A ground crew of at least six is required to launch a beginner by this method. More advanced pilots use as many as twenty in the ground crew. The acceleration received at the start is often bewildering to the student, who, upon finding himself so suddenly pitched into the air, confuses his instructions, gets into a stall and comes in for a hard landing.

Auto-towed flights can be conveniently managed by three people besides the pilot and may even be handled by two. With a little practice the glider can be flown back to the starting point, thus reducing the handling to a minimum.

The matter of safety is often brought up, it being argued that the altitudes attained by auto-towing are dangerous for students. Of course, if students were sent up two or three hundred feet for their first flight such fears would be well founded. The usual method of training, however, is to tow the student along the ground with just enough wind-speed to make the controls effective. The stick can either be held forward or the controls can be so rigged that the elevators cannot be raised. This gives ideal training in trimming the ship with the ailerons and rudder.

When the student has progressed to the satisfaction of the instructor he is permitted to make a few short hops. Standing on the running board of the towing car the instructor is able to limit the altitudes attained by having the driver slow down. As the length of the hops increases the student acquires confidence and is soon ready for banks and spot landings.

THE UNDERCARRIAGE.

A plain skid is the most practical undercarriage for shock cord work. It is by far the cheapest and simplest and because of the character of the ground usually found on gliding terrain is the most serviceable. The friction of the skid on the ground does not in any way hinder the take-off because the high acceleration puts the ship in the air after a very few feet of travel on the ground. The landing run is decreased by the friction of the skid which also prevents the ship from rolling backwards in the event that it is landed on a slope. When no trailer is provided, however, the glider must be carried back up the hill unless a horse is available.

Some sort of shock absorber is desirable though not essential in a primary glider. It is difficult to design one which will satisfactorily resist side loads. Springs, rubber blocks and air cushions have been used with fair success in some instances, but any such arrangements complicate repairs and for this reason are usually avoided.

For auto-towing a wheel gives the best results. Take-off by this method is not so rapid as by shock cord and the continual dragging around the field causes excessive wear on a skid.

Double skids and two-wheel undercarriages are seldom used. With the conventional single truss type of fuselage the increased structural weight necessary to get sufficient tread for stability on the ground is not warranted by the added convenience. The fact that the ship must rest on a wing-tip often worries the uninitiated. It is found, however, that after a level landing the wing-tip can be set down very gently. It could hardly be expected that a double undercarriage would offer much protection in a wing-tip landing. If it were designed for this condition each unit would have to be as strong and as heavy as the single unit.

DESIGNING THE SKID.

There is perhaps more to the design of a satisfactory skid than is at first apparent. The chief concern is provision for side-landings. The skid is not usually braced ahead of the front lift-wire or lift-strut fittings because of the inconvenience of any such bracing. The only solution then is to reinforce the forward portion of the skid. Sometimes this part is made detachable at the front lift wire fitting to make replacement easy.

The fact that the lift wires are usually attached to the skid eight to twelve inches up from the bottom, to prevent damage from stakes and other obstructions, adds to the seriousness of the side-landing loads. The Department of Commerce requires that glider undercarriages be investigated for the same landing conditions as the aeroplane using a minimum load factor of 5.

Hickory or ash is usually used for the runner, although either wood or steel, depending on the fuselage construction, may be used for the rest of the skid. The width of the runner should be 3 or 4 inches. It is steamed and bent to the required curvature before being attached to the skid.

The curvature of the runner determines to a great extent the take-off characteristics. Flat bottoms should be avoided. The curve should be such that the skid will act as a rocker during the take-off, thus permitting the angle of attack to be varied by the elevators. If this precaution is not observed it will be found very difficult to take-off a heavy pilot unless the wings are set at a considerable angle of incidence.

In order to reduce fuselage stresses the rear portion of the skid should be so shaped that there is little possibility of the tail post touching the ground. This will also protect the lower longeron and elevators from damage.

Wheel Undercarriages.

We, at the University of Detroit, have had very good success with a single 16 in. by 7 in. Airwheel mounted between the front lift struts. The Airwheel will probably stand more side-load than any of the rest of the structure and its shock-absorbing qualities greatly reduce the landing impact stresses. An air pressure of 3 pounds was first used but was found to be insufficient. The pressure will probably have to be increased to 5 pounds to protect the casing and tube from rim cuts.

The Airwheel installation is somewhat heavy and expensive. The present weight of slightly over 12 pounds can be reduced to about 5 pounds in a specially-built tire and hub. However, no immediate reduction in the price is predicted.

Two 12 in. by 3 in. tail wheels mounted on a short axle have been used to adapt a glider with a wooden skid for auto-towing. The axle projects through a vertical slot in the skid and is wrapped with shock cord to reduce the landing impact.

The ground angle should not approach the stalling angle as it does on aeroplanes. Because the wing is stalled the ailerons will not be effective at these high angles of incidence and lateral control, which is essential with a single wheel, cannot be maintained until the tail is raised. If the ground angle does not exceed twelve or thirteen degrees it will be unnecessary to raise the tail. This will permit mounting the wheel well forward to prevent nosing over. The low ground angle also assures ample flying speed at the take-off. Landing is best accomplished well above the stalling speed so a large ground angle is not at all necessary.

A large ground angle also makes a ship hard to handle on the ground on a windy day. If it is left unattended, as sometimes happens, a gust of wind is likely to pick it up and lay it over on its back. We have even had a ship picked up slightly with a light pilot in the seat.

A tail skid is, of course, necessary with a wheel. This should be kept forward to reduce fuselage stresses and should be well supported laterally.

(To be continued.)

GLIDING IN HUNGARY.

It is almost two years since gliding was started in Hungary. At that time two Hungarian power-pilots, Lt.-Col. Bernard and vitez Hefty, who took their "C" certificates in Germany started the Movement. Supported by the patriotic club Move, and by Col. Petroczy, who is the oldest Hungarian pilot, they started a gliding school, known as Movero, at Budaörs, a village only five miles from Budapest.

During my recent visit to this school I became convinced that it is one of the most difficult flying grounds in the world. The landing-grounds are certainly worse than those at the gliding schools in Germany, the main difficulties are provided by the stony surface and thousands of big stones.

In spite of these difficulties the ground is used very successfully for training, and although the maximum available height is only about 400 feet, some of the pilots have been successful in soaring. A privately-owned vineyard, which is situated right at the foot of the best slopes, is a particularly awkward obstacle.

The school had 14 pupils during its first year, and Gliding was done during the week-ends. Two Zöglings, one Prüfling and one Hols der Teufel were used for training; 224 flights were made during that year.

After the first successful season of the Movero school, the first provincial gliding school was opened about six months ago in Kaposvar. This school is called Sacero. During its first five months the Sacero had 26 pupils, who made a thousand flights with two Zöglings, and these machines were damaged on only seven occasions. This record will be envied by many schools and clubs. It must be noted, however, that the Sacero school had good landing grounds.

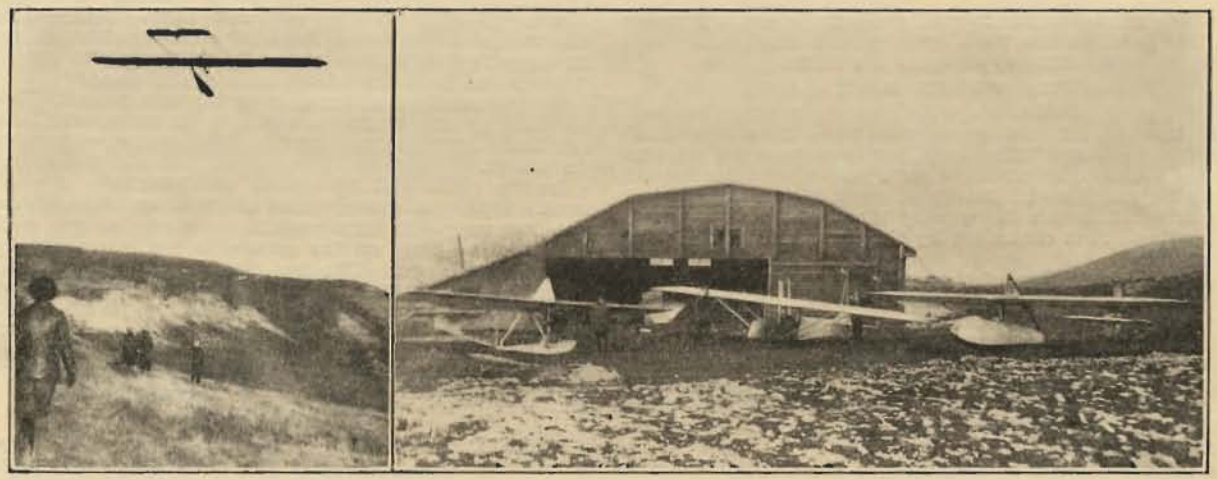
During the past year the Movero was further developed; new hangars and accommodation for students were built, and further machines, including a second soaring machine, were acquired.

The Gliding Club of the Hungarian State Railways built their own hangar beside the Movero school and started gliding with preliminary training machines built by members. During the second half of September a competition was arranged between the two schools at the Movero ground. It was won by Sacero with 11 points to 7.

At this meeting vitéz Hefty, leader of the Sacero team, established a Hungarian Duration Record by soaring for 1 hr. 21 min. in a Hangwind machine. Also, a Hungarian Altitude Record of 210 metres was established by Lt.-Col. Bernard who stayed in the air for 1 hr. 17 min. in a Hols der Teufel machine.

Up to the end of October the following licences were taken at the two schools: 22 "A," 12 "B," and 2 "C."

I understand that a suitable ground for soaring has now been found, and the present grounds will be used for training purposes only. I believe that the pilots trained on the present difficult grounds, if given a chance on a suitable soaring-ground, will be very successful, and I would not be surprised to hear in the near future of new Hungarian records.—P. A.



IN HUNGARY.—On the left a Hangwind over the difficult rocky soaring site of the Movero School. On the right, a Zogling, Prufling and a Hangwind in front of the hangar.

A NEW FEATURE.

This week we are starting a new feature in THE SAILPLANE by admitting a new class of advertisement, "SMALLS."

At the rate of one shilling a line an advertiser can say what he likes, short of libel; although he will not get the advantage of display advertising that he gets for the general rate, he will find it more convenient for advertising certain things.

We shall also be pleased to insert personal notices at a similar rate. We imagine that even in the Gliding Movement some people find time to get married, the other two principal catastrophes to which man is heir must befall all of us, and so we hope to make some regular revenue from notices of Births, Marriages, and Deaths.

QUANTITY of silver spruce for sale. Particulars and prices from W. Hopkins, 5, Jenner Street, Burmantofts, Leeds.

CORRESPONDENCE.

Air Currents and Other Matters.

Sir,—I would like to take this opportunity of thanking Herr Carli Magersuppe and KENTIGERN for their very useful information in reply to my inquiry regarding eddies, which you published in THE SAILPLANE on Oct. 31.

There is no doubt that every Club should fully explore the air currents on their Gliding ground. I read the article in your Nov. 7 issue on "Tracing the Air Currents at the Broadway Gliding Ground," by Mr. Horace C. Wright, with very great interest.

Unfortunately, every Club has not the benefit of such a capable and experienced instructor as Mr. Wright, and, although it is great fun for the novices to endeavour to explore the air currents on their Gliding ground, in many cases they will not have the experience, patience and necessary appliances, to do the job really thoroughly.

I would like to suggest to the B.G.A. that, as time goes on and they become stronger both financially and in organisation these explorations of air currents on proposed gliding and soaring sites should be undertaken when they are exploring sites on behalf of new Clubs. Better and safer progress will be made when Clubs are fully aware of the snags on their individual sites.

That the extra trouble involved would be beneficial, is more than amply proved by Mr. Wright's article.

If I might trespass a little further, I would like to add that I have been very surprised at the attitude taken up in your Editorial regarding the Ditchling Meeting.

Constructive criticism is always helpful and usually appreciated, but I do feel that the Editorial comments have been rather harsh.

The Nottingham Gliding Club were recently instrumental in organising a display in Derbyshire, and I can assure the Editor that to people who have not had previous experience in organising a meeting of this kind (it would be safe to say that the vast majority of the followers of the sport of Gliding in England have had no experience in this matter) it is extremely difficult to foresee every contingency.

For instance, at the Meeting mentioned above, a party of us spent a whole day in erecting rope barricades to keep out the public from the taking-off point. Owing to the fact that wind direction changed, this roping was only partially effective.

On the second day we again spent a considerable time in altering the roping arrangement. We found that, by midday, when the demonstration commenced, the wind had completely changed again, and the ropes were of no use whatsoever. In fact, practically every take-off was from a different point.

This was only one of many difficulties, and, judging from the correspondence there has been on the Ditchling Meeting, I think that your attitude should rather be that all concerned did the very best they could under the circumstances.

In my humble opinion, it will never be possible to organise a Gliding Meeting on such cut-and-dried lines as, for instance, Aeroplane Displays, as, owing to the vagaries of the wind, a Gliding Meeting is bound to be on free and easy lines.

At our demonstration we found that we were able to control the crowd very efficiently by having a length of rope between 100 yards and 150 yards long with eight or nine members along this rope at intervals. When it was necessary to clear a space the rope was merely pushed back, which kept the spectators confined to a definite area.

(Signed) W. S. BULLIVANT
(*Chairman, Nottingham Gliding Club*).

[We suggest that Mr. Bullivant should re-read our criticisms of Ditchling. He would then discover that the editorial criticism of the Meeting was published before the Meeting *took place*. The criticism was of strategy and not tactics. It was shown where and how the Meeting would fail because certain principles had not been grasped. We feel, however, that enough has been said about Ditchling and shall, therefore, close the correspondence on the subject.—ED.]

THE HOLS DER TEUFEL.

Visitors to the Wasserkuppe this summer came back so impressed with the Hols der Teufel type of sailplane that we feel a brief description of this machine will prove interesting.

The Hols der Teufel has been developed from the well-known *Djavlar Anamma*. It is a single-seat, high-performance soaring machine, designed at the Wasserkuppe and built by the firm Segelflugzeugbau Schleicher. Herr Schleicher, the principal of this firm, has held his "C" licence for several years and the design has therefore had the benefit of extensive aerodynamical knowledge coupled with the flying experience of a very sound sailplane pilot.

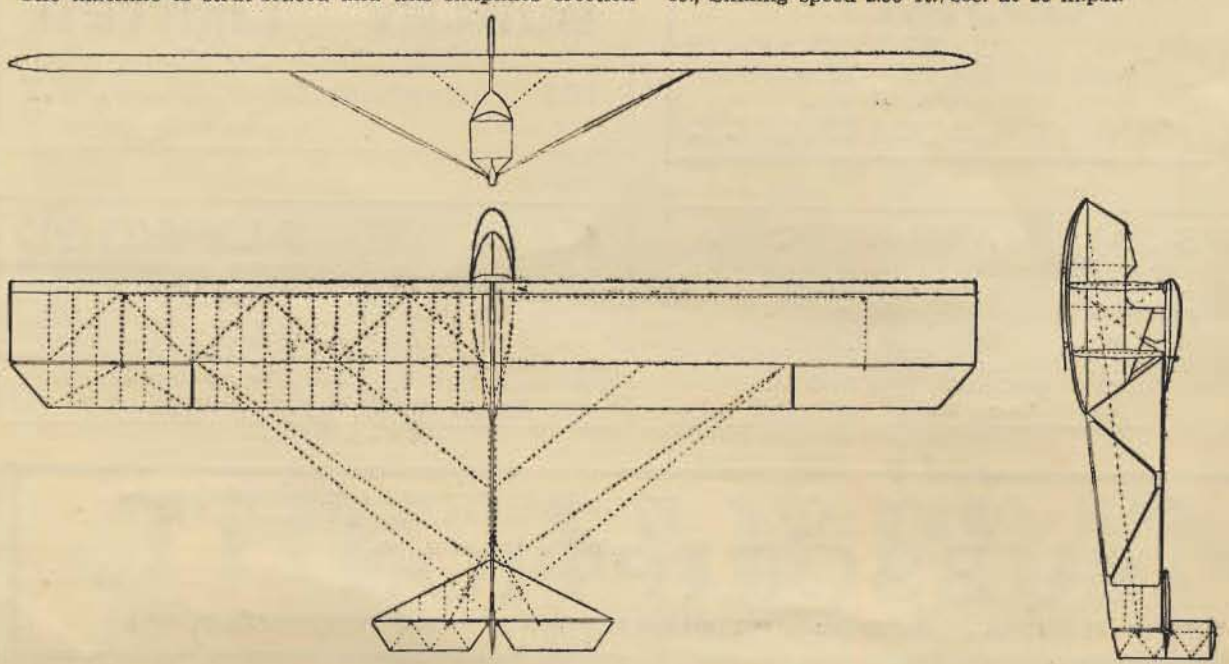
Apart from its primary use as a soaring machine it is intended for the taking of "B" and "C" licences; in its former capacity it is used throughout Germany, in particular the students of Göttingen University use this type of machine and they have performed very well in soaring competitions.

The machine is strut-braced and this simplifies erection and rigging; these struts are of a particularly elastic wood and thus the risk of their fracture is considerably reduced.

The general layout is seen in the accompanying sketches. The fuselage is built up in two portions. The fore portion carries a ply and fabric "nacelle" and is fitted with a spring-steel skid. The strut-bracing eliminates the necessity for landing wires and therefore for a cabane. The fact that it has a "grid" fuselage in no way detracts its performance as a soaring machine, but it would require an almost impossibly bad landing to break its "back." This form of construction has the further advantage that it is easily repaired.

The low sinking-speed brings it into the class of high-performance machines, and, although its performance is hardly that of, say, *The Wien*, it is a sound, robust soaring machine, particularly suitable for training and club use.

Span 41.8 ft., Chord 5.25 ft., Wing area 220 sq. ft., Weight empty 210 lbs., Flying speed 26 m.p.h., Gliding angle 1 in 15., Sinking speed 2.56 ft./sec. at 26 m.p.h.



NEWS FROM THE CLUBS.

WHERE GLIDING CAN BE SEEN.

Beds.—The Bedford Gliding and Flying Club. Week-ends at Wilstead Hill, 5 miles from Bedford on Bedford—Luton road.

Bucks.—The London Gliding Club Meeting place, the Inn, at Tottenhoe, on Sundays.

Dorset.—The Dorset Gliding Club, at Maiden Newton.

Glam.—Merthyr and District Gliding Club. Sundays, 10 a.m. to sunset. ¼-mile-left Dynevor Arms, Merthyr Tydfil—Swansea Road.

Herts.—Herts. and Essex Gliding Club. Sunday afternoons, Eastern Roadways Garage, one mile north of Stortford.

I.O.W.—The Isle of Wight Gliding Club, at Freshwater.

Kent.—Channel Gliding Club. Week-ends above Folkestone, close to Dover road, at the Valiant Sailor.

Kent.—Kent Gliding Club. Week-ends above Lenham, on the Maidstone—Ashford road.

Lancs.—The Furness Gliding Club, at Gleaston Park Farm, Gleaston, near Ulverston (midway between Gleaston and the Coast Road), every week-end.

Oxon.—Oxford and County Gliding Club. Week-ends at Ibstone, near Stokenchurch.

Staffs.—The North Staffs. Gliding Club. Week-ends at The Downs Banks, Barlaston Downs, near Stone, Staffs.

Surrey.—Surrey Gliding Club. Every Sunday, if weather permits, at Lockner Farm, Chilworth, near Guildford. 10 a.m. to sunset.

Sussex.—Sailplane Club of T.M.A.C. Horton Farm, Smalldole, near Steyning.

Sussex.—Southdown Skysailing Club at Ditchling Beacon. Sundays, 10.30 a.m. till dark.

Warwick.—Rugby District Gliding Club. Cote Hill Aerodrome, Husbands Bosworth, Rugby.

Wilts.—The Wiltshire Light Aeroplane and Glider Club at Easton Hill, Alton Priors Range, Bishops Cannings, near Devizes.

Worcs.—North Cotswold Gliding Club. Every Sunday at Fish Hill, above Broadway Village, from 10 a.m. to sunset.

Clubs are invited to send in full details as to where and when they can be seen at work. This feature should help Clubs considerably as readers who are not members can go to look at the nearest local clubs and see which they like best.

TO CLUB SECRETARIES.

The way in which the Secretaries of Clubs manage regularly to send along interesting reports is a constant source of pleasant surprise to THE SAILPLANE. There are two things we would like to bring to the notice of these industrious members of the Gliding Movement. The first is that typescript is so much easier and quicker to read than the most perfect long-hand.

Would all those who send along their Club Reports make a terrific effort to borrow a typewriter. The matter should be doubled-spaced. Attention to this request will save the Editor much trouble, and unnecessary wear and tear will be avoided.

The second point to remember is that news about gadgets and methods of instruction is much more interesting reading to other Club members than purely local news. We realise that Clubs want to use these reports for broadcasting their purely local news, but it would make the page of more general interest if some information of practical import were included. A number of Clubs already do this, we hope they will have many imitators.

We are always ready to publish pictures on this page, so send along any sharp and well-defined photographs of gliders or gliding that come your way.

THE BEDFORD GLIDING AND FLYING CLUB.

During the week-end it is pleasing to report that with favourable conditions further good work was done in the air.

On Saturday afternoon, in spite of the short space of time and light available, quite a number of members made successful glides from the East-end of the hill. Captain Marstrand gave a humorous display of chasing the rope party, much to his surprise and their dismay, but all ended safely.

On Sunday there was a good turn out of members and prospective members.

Unfortunately our "weighty" Secretary did not quite clear the edge of the hill in taking off, and bumped the machine, but luckily the damage was limited to a few turnbuckle eyebolts which were quickly replaced.

The slight delay made it impossible for all members to go up as the light soon failed, but this made it very clear that all members on Sunday should endeavour to arrive by 9.30 a.m., complete with lunch-basket, and thus enable an early start to be made. Many precious hours were lost on Sunday through lack of helpers.

Members will be glad to know that the Club Rooms in the town have now been definitely fixed up and will soon be available every evening.

THE BRADFORD GLIDING CLUB.

The Bradford Gliding Club held a meeting on Nov. 8, when a number of successful flights were made. Members had their first experience of flying in a rather strong wind and the way in which the machine was handled shows that the members have got a very good insight into the control of the machine. The glider was not taken out on Sunday owing to the strong, gusty wind.

On Nov. 15, the Club Chairman, Mr. N. H. Sharpe, is broadcasting a talking on Gliding from the Leeds studio of the B.B.C. at 7.0 p.m., which should prove of interest to Northern listeners.

The Club is holding a dance in the Queen's Hall, Bradford, on Dec. 4, which will be attended by the Lord Mayor of Bradford, Alderman Alfred Pickles, Esq., J.P., and members of all Clubs will be cordially welcomed.

Week-end meetings will be held at the Club ground at Apperley Bridge every week, weather permitting, and we shall be pleased to see anyone who cares to come along, as the gliding is quite interesting to spectators.

THE DRIFFIELD AND DISTRICT GLIDING CLUB.

The record of the Driffield and District Gliding Club up to date is rather too long to give in full. It was formed in consequence of an informal talk and lecture given at Driffield in April. By the middle of July an R.F.D. glider had been bought and tried out at Cottam!

Since then the membership has increased steadily until to-day there are 53 members, including vice-presidents and non-flying members.

The Club has had its full share of crashes, but in every case the machine has been in commission again by the following week-end. The value of the experience gained, expensive as it was in time and money, is shown by the fact that during five weeks' working not a spar was strained or a wire broken.

The Club has one "A" Certificate member and quite a number of members who are proficient enough to be sent off on a qualifying flight as soon as the Club trailer is sufficiently reliable to transport the glider to a suitable site.

On Nov. 7 the Club held its first Annual Ball in the Driffield Skating Rink and everyone voted it the best function of its kind held for some time. The R.F.D. glider, which has done such yeoman service, was hung from the roof and looked extremely decorative as it had been painted in blue and white stripes and shiny varnish. A number of balloons were hung around it and suggested the idea that some such device might be used as a shock-absorber when the glider was being used for other than ornamental purposes.

Herr Magersuppe was present and proved himself to be almost as wizard as a conjurer as he is at soaring. His now famous match trick is, however, more likely to endear him to followers of Guy Fawkes than to ladies who favour the anti-severe type of coiffure.

Mr. Norman Stather was Dance Secretary and Dr. E. H. Milner, the Chairman, took on the duties of M.C.—to their efforts was due the success of the evening.

Although the subscription is 30s. and the entrance fee 10s. 6d., members who join now and before the end of the current financial year, which ends with March, will pay a reduced subscription of 10s. with 10s. 6d. entrance fee. The Hon. Sec. is Mr. R. G. Spencer, The School House, Gembling, Driffield.

THE DORSET GLIDING CLUB.

During the past week-end six members of The Dorset Gliding Club qualified for "A" Certificates at Maiden Newton with flights varying from 34 to 40 seconds. Of these members, two were Club-trained *ab initios*, who have never piloted a power plane.

A remarkable flight was that of Mr. W. G. Gibson, who took off from an altitude of over 150 feet, disappearing from view five seconds later into a fog bank. A power pilot of experience, Mr. Gibson flew through the fog bank for 15-20 seconds and was eventually able to find his bearings by a dimly discernable landmark below. He landed cleanly at a pre-arranged spot. While his flight was invisible from the top of the hill the characteristic swish of the machine could be heard until he landed.

Several first flights were made in addition, members turning up from Weymouth, Dorchester, Yeovil and Honiton. Mr. J. Laver showed great presence of mind when he found himself drifting rapidly against a small hut. A bad collision seemed unavoidable, but he put the R.F.D. into a steep bank about 15 feet from the ground, landing safely just to one side of the building.

The Dorset Gliding Club have successfully tried out a new method of returning the glider to the top of steep hills, which dispenses with all the hard work attendant upon fairly long flights.

After the flight the machine is placed on a small rubber-tyred trolley, as is used by Herr Kronfeld. The trolley is attached to a rope some 250 feet in length, previously paid out from the top of the hill or starting point, where the rope passes through a small block and is tied to a motor-car. By running in any suitable direction the car will pull the glider up. It is found that the lightest cars can manage the load quite easily in bottom gear at lowest possible speed.

The system only requires enough members to lift the machine on to the trolley. Instead of afterwards having to heave at the glider, members are themselves helped up the slope by the rope. This method has enabled the Club, using a 45 degrees slope at an altitude of 150 feet, to carry out four 30-40 sec. glides per hour.

The rope should not have a breaking point of less than 950-1,000 lbs. That used by the Club was supplied at short notice and to special specification by Messrs. Marsh and Wright, of Weymouth. The rope only weighs two cwt. per mile.

THE ESSEX GLIDING CLUB.

This Club, which has been operating since early Summer, has now reached that stage where members begin to sigh for a 300-ft hill.

During the activities at Hog Hill and latterly at Havering-atte-Bower the Club has recorded some pretty good flights, several members making times which approached the "A" stage.

The Club's Ground Committee has been on the look-out for a better

site for some time and there is good reason to believe that the use of a much better hill will very soon be secured. As soon as this is an established fact particulars of locality and how to get there will be published.

The Essex Club members have recognised, from the start, that the team spirit is one of the first essentials in gliding and this has gone a long way towards helping the Club through its teething troubles.

A constructional programme has been laid down for the Winter evenings. The first part of the programme consists of rebuilding the No. 1 training machine. New "anti-damage" ideas are to be applied to the undercarriage on the principle that, in a bad landing, something must *give* and not crack up, as hitherto. When the new idea has been put to the test it may be worth passing on for the benefit of other sufferers.

The second item on the programme is the construction of an intermediate type glider.

Work will actually be started on Nov. 18 and all members will have an opportunity of lending a hand. As it is impossible to accommodate all members at the same time in the workshop a rota has been prepared which will be communicated to them weekly.

The workshop is situated at 47, Station Road, Chingford, and has been lent by Mr. J. Bass. The Club's thanks go out to him for his generous assistance.

All those interested may obtain particulars from the Hon. Sec., Mr. F. E. Darlow, 17, Randolph Road, Walthamstow, or the Hon. Asst. Sec., Mr. R. S. Collins, 13, Clarendon Road, Leytonstone, Essex.

The entrance fee and annual subscription still stand at 10s. 6d. and £1 1s., the latter being renewable each year from the date of joining.

THE FURNESS GLIDING CLUB.

The Furness Gliding Club is now getting down to the serious business of training on the site at Gleaston Park Farm.

Successful meetings were held on Nov. 1 and 2. Proceedings terminated on Nov. 1 with the first "crash," when a skid was damaged. This was repaired in time for instruction to continue by noon on the following day and numerous slides and hops were made.

Nov. 8 saw a resumption of operations, and a number of short hops were made. As before, a minor crash occurred, and although the damage was put right in time for instruction to continue on the Sunday, bad weather put an end to training for the day.

The Club will hold its first General Meeting on Saturday, Nov. 15, at the Imperial Hotel, Barrow-in-Furness. The General Meeting will be preceded by a Public Meeting, at which a lecture will be given.

Films showing Herr Magersuppe's flights in the Scarborough Club's two-seater sailplane at Kirkby in October should prove interesting; the Club will also have the pleasure of seeing a film of Mr. Lowe Wylde in the Club's own machine. The public will be given an opportunity of joining the Club, prior to the General Meeting.

Particulars may be obtained from the Sec., Mr. R. Cuthell, 31, Church Street, Barrow-in-Furness.

THE I. OF W. GLIDING CLUB.

On Saturday afternoon a number of members met at Somerton Aerodrome, Cowes, but very little practical work could be done owing to the still air. Members handled the glider, but there was no "lift" in the air. The Club's Captain made a test glide and afterwards for the benefit of the visitors another "take off" was made. Among those present were Mr. Guinness, Mr. John Lord, of Saunders-Roe Ltd., and Capt. Balfour, M.P. All were keenly interested,—the latter was invited to take a couple of glides, which he did.

On Sunday the gliding began at about 10.30. Mr. John Lord and others with their cars tried out launching by this means, but after a few tests it was decided to carry on with the usual man-power launching. It was found to be too dangerous, for in this case the cars were not pulling evenly.

The following members got in some useful work: Major Brannon, M.C., Messrs. Richards, Thompson, Gray, Hirst, Hackshaw, etc., etc. Then Mr. Allison, who is pilot for Mr. Guinness, was invited to a turn and made a good show, landing very smoothly. Mr. Guinness looked on and was very delighted. He afterwards sat in the glider, but at this stage he could not be persuaded to test his skill.

More enrolments were made, thus the Club is gradually expanding. The meeting was cut short a little earlier than we should have liked owing to Mr. Gray being caught with a gust and making a bad landing. However, members are putting in time during the week on repairs and it will be ready for next Sunday morning as usual.

It has been said that pilots have no patience for gliding, it being too tame, but when one can get the opportunity of getting a Pilot on the spot and can make him take a turn he realises that there is more skill than he hitherto thought and he becomes fascinated at once and wants to do more. The Club Captain would press our present Pilots to take up the sport as they can learn so much of feel and balance. There is scope for it, as all Pilots nowadays are taught too much about relying on instruments which sometimes let them down.

THE IMPERIAL COLLEGE GLIDING CLUB.

One of the first Clubs to be formed on the revival of gliding in England was the Imperial College Gliding Club. It was conceived by half a dozen students of the City and Guilds (Eng.) College, who attended that memorable lecture given by Dr. Georgii last February, not to mention the subsequent dinner! The Club was formed as a Founder Club of *The British Gliding Association*, and was affiliated to the Imperial College Union. Owing to a lack of funds it was decided to build our own training glider.

The machine was designed by Mr. J. H. Payne, who is Captain of the Club, the material for building was obtained, and construction began in the last week in June. With a machine of entirely new design progress is necessarily rather slow. Many of the members revealed quite remarkable skill at the work. This, with the experience we have gained, augurs well for the future.

In September the Club held a camp for three weeks at a farm in North Dorset. The farm lands, and others (belonging to an adjoining farm), of which we had the use, offer good gliding and soaring slopes facing the prevailing wind. The glider, being still unfinished, was towed to the farm, and construction continued amid ideal surroundings. It was three days before the end of camp before the *Incredible* was ready to fly. The fabric had not been doped, but as by this time funds were practically exhausted it was decided to make the trial flights without dope.

The machine was taken out in rather a high wind, and this, coupled with inexperience in ground-handling, resulted in an accident in which one wing was broken. Whilst not gravely damaged, the mishap was sufficient to put an end to all idea of flying before the end of the camp. The time at camp cannot by any means be said to have been wasted. Besides the experience gained in construction work, the lessons taught by the accident, will remain indelible in the memory of those who witnessed it!

Further, the camp was thoroughly enjoyed by everybody that attended it, despite the absence of flying. There can be nothing better than a holiday camp, well out in the country, for throwing members together, and encouraging that team spirit so desirable in a Club. Provided it is well organised, more progress can be made than with many months' "week-ending." This Summer camp we hope to make an annual event. We left the farm with the good wishes of the owner and warden, and a hearty invitation to come again.

It is a pleasure to be able to report that our early misfortune has caused no reduction of enthusiasm. On the contrary, during the last month our membership has been nearly doubled. We have also been placed in the fortunate position of being able to purchase another machine. This will be of the primary training type, so that we may get right ahead with the training whilst repairing the *Incredible*. We have arranged a series of informal lectures, discussions, and instruction classes during the next few weeks, so that members will be well prepared to take the air when the new machine arrives.

From the outset the idea of the Club has been to advance the science, as well as indulge in the sport, of gliding. The study of meteorology, and the design of instruments, will be an important part of our activities. There will also be a steady programme of construction work. Starting with the primary training glider we hope, by building a series of machines, each a little better than the last, to gain that first-hand experience of construction and operation which will enable us to produce and fly the "super-sailplane."

The Secretary is Mr. P. Adorjan, Imperial College Union, London S.W.7.

THE KENT GLIDING CLUB.

On Nov. 5 the Kent Gliding Club gave a demonstration of gliding at the R.A.F. Station at Eastchurch, by kind permission of the commanding officer, Wing Cdr. G. W. Murliss-Green, D.S.O., who has recently honoured the Club by becoming a Vice-President. The demonstration was given at the request of Flt. Lt. Crawford and Flt. Lt. Graham Nicholls with a view to arousing enthusiasm at Eastchurch and forming an Eastchurch branch of the Kent Gliding Club.

Meteorological conditions were not good for gliding and the wind direction did not permit taking off from any slope. Accordingly operations had to be carried out from almost level ground. Mr. Lowe Wylde kindly lent one of his B.A.C. Intermediate machines, and the Club took their original Zogling. Although soaring was impossible on level ground with the B.A.C.III it served to show to the uninitiated the difference between a Primary and a Secondary type of machine. Flt. Lt. Crawford at first briefly explained to the large gathering of enthusiasts the elements of gliding, and then gave several demonstrations on the two machines.

Later many of the onlookers were given the opportunity to make their first glide. So great was the enthusiasm aroused that there should be no difficulty in forming a strong branch of the Club, and with this view a meeting is being called at Eastchurch this week, when it is hoped that the branch will be inaugurated.

There will be primary training gliding at the Club's site at Lenham on Sunday next, Nov. 16, beginning at 11 a.m.

THE SOUTHDOWN SKYSAILING CLUB.

Following the recent B.G.A. Inter-Club Competitions held on our gliding ground at Ditchling Beacon, regular weekly practice meetings are now being held on Sundays, 10.30 a.m. till dark.

Last Sunday, Nov. 9, the Club held its third meeting and in spite of fog and drizzle some useful work was put in under the direction of the Club Captain, Mr. Leroy Brown.

The meeting opened with a test flight by our Captain on the Club R.F.D. machine—a good glide of 25 sec. being accomplished. Shorter glides were then made by Capt. Russell, Flt. Lt. Wood, Mrs. Brown and Messrs. S. Wood, E. K. Robins, J. H. Ely, D. Witheringhouse, P. H. Noble and C. King-Smith. Several other members made ground slides.

Mr. Robins made a particularly steady flight and Mrs. Brown, wife of the Club Captain, certainly made history by being our first lady member to take the air! We hope that her example and enthusiasm will inspire many more ladies to join our ranks as flying members.

Unfortunately, on the *thirteenth* flight, one member stalled, with the result that the machine had to go into the "shops" for repairs.

We are very fortunate in having a group of willing members who are working most evenings on the construction of a glider which we hope will prove very successful.

One member, Mr. S. Wood, has already built a machine and this will be tested when one or two minor alterations have been made.

Our membership list is nearly sixty. The annual subscription is two guineas for flying members, half-a-guinea for associate members, and half-a-guinea entrance fee.

All persons interested should communicate with the Hon. Sec., Mr. A. Yorke Bramble, New Yorke Hotel, Bedford Square, Brighton.

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