

THE SAILPLANE

& GLIDER

JANUARY
1935

Vol. 6 No. 1

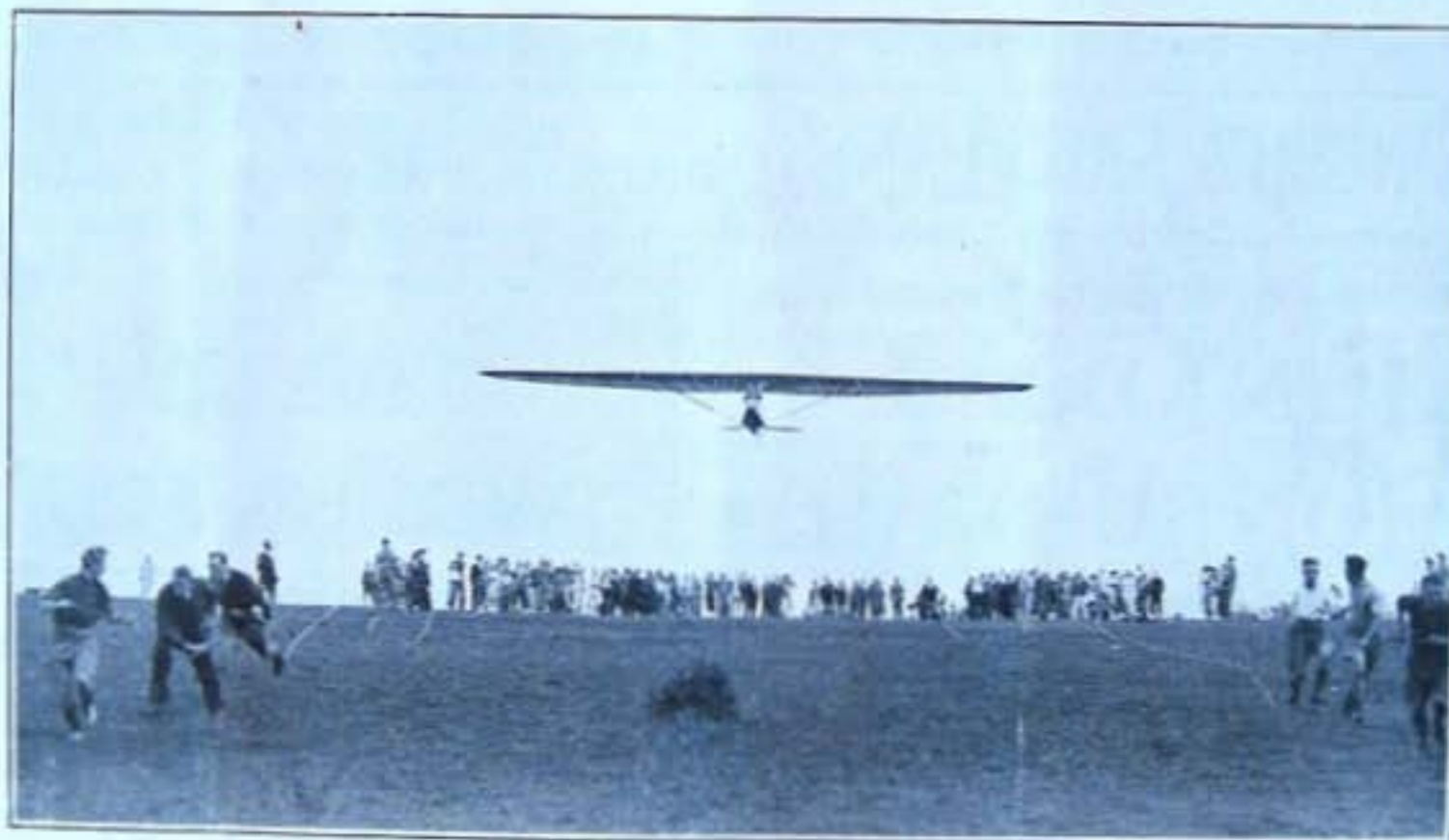
PUBLISHED
MONTHLY

Editorial Offices:
13, VICTORIA STREET, S.W.1



OFFICIAL ORGAN *of* THE BRITISH GLIDING ASSOCIATION

Editor: ALAN E. SLATER



The Launch of a "Wren"

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Official Organ of The British Gliding Association

Editorial Offices: 13, VICTORIA STREET, LONDON, S.W.1 Telephone: Victoria 9153-4

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Published Monthly

No Time To Be Lost

THERE is no close season for soaring flight. The only form of motorless flying that can be said to have a "season" is thermal soaring. But before the thermal season is upon us there is much to be done. It is true that queer patches of lift are to be met with even in the winter: twice last month we have seen gulls going up in circles under an overcast sky; and were not the first three cross-country flights of last year done on a day in the middle of March? Such phenomena may perhaps be attributed to a "cellular" distribution of vertical currents which the meteorologists have studied so much but can tell us so little about; it is for our expert pilots to help them to secure the data they need.

But for the rest there is no need to be idle. It has been emphasised over and over again by leading exponents of soaring flight that, before a pilot can hope to get up to cloud level and go wandering across country, he must first have that self-confidence and familiarity with his machine which can only be got by *flying time*, hours and hours of it. The winter is the time to put in those hours and hours, for there is usually no lack of wind to enable slope-soaring along the hills to be carried on somewhere or other as long as daylight lasts.

We are fortunate in being able to start this month a series of articles on pilotage, which we hope will encourage pilots to try out in practice the advice there given. Next month, if all goes well, there will begin in addition another series on the technique of advanced soaring, leading up to the art and science of thermal flying, which subject should appropriately be reached by about the time thermals are beginning to form. For those in the more elementary stages of learning to fly, we published a series of articles in 1933, but there is nothing to prevent those seeking further information from fellow-gliders from using our Correspondence columns for the purpose.

The B.G.A. and the Subsidy

SINCE our last issue the penultimate steps have been completed in the solution of the B.G.A. controversy. We published in the December issue the fact that the Air Ministry had communicated their requirements to the British Gliding Association.

What had happened was that the disputants had each put their case before the Air Ministry for their arbitra-

tion, and had agreed to abide by their decisions. When these decisions were communicated, they were translated into a new set of draft rules, and the Ministry were again interviewed to clear up the few points outstanding. The Rules Committee then produced a corrected version, and this was put before a Council Meeting on December 21st, ratified by them, and recommended for acceptance to a General Meeting of the Association which will be called about February 1st.

The Ministry have indicated that immediately the B.G.A. has been reconstituted in accordance with the wishes the new Council has to draft a scheme for the distribution of the subsidy, and there seems every reason to expect that when this scheme has been drafted and approved it will be put into operation without delay.

Both parties are pledged to the new Constitution and it carries in addition the recommendation of the Council, so that there seems little doubt that the General Meeting will ratify it. February 1st, therefore, should prove the dawn of a new era for the Gliding Movement.

The new Constitution involves alterations considerably more drastic than have been previously proposed. Primarily, however, the Ministry have laid down that the B.G.A. must in future be controlled by the club who must at all times have a working majority over "outside" members. This is a complete vindication of the policy pursued by this journal.

But, further to this, a club, to qualify for affiliation must have a minimum of 25 paid-up flying members; a flying member being defined as one who pays a subscription of not less than £2 per annum, and is thereby entitled to the full flying facilities of the club. This will mean that some clubs now affiliated to the B.G.A. will no longer be eligible; perhaps the best way to regard it, however, is that it will provide a powerful incentive to clubs to increase their membership, and hence may prove a blessing in disguise. The minimum subscription of £2 should prove an easy matter, as it certainly costs three or four times the sum to provide a year's flying facilities to each member.

We may point out that there is no evidence that only affiliated clubs may qualify for subsidy. We should imagine that any scheme put forward by the new Council may recommend for assistance certain clubs which at the moment fall short of the required minimum membership, but whose past records show their soundness. The only stipulation which appears to us as fundamental to any sound scheme is that, to qualify for subsidy, a club must have, or be able to get, security of tenure of a suitable site.

From Here and There

Snake goes soaring.—A report from Shanghai last November stated that, during a whirlwind there, a six-foot snake fell from the clouds into one of the principal streets of the foreign quarter of the city.

French Duration Record.—On November 25th last, the pilot Nessler soared for 11 hrs. 27 mins. on an AVIA 41-P near Avignon. The previous French record was held by M. Massaux with a flight of 10 hrs. 27 mins. at Vauville on July 26th, 1925. The latter was a world's duration record at the time, but it was beaten nearly 10 weeks later by the German, F. Schulz.

Activity in Vienna.—The Academic Flying Organisation of Vienna, founded in March, 1933, has obtained 42 "A," 20 "B," and 9 "C" certificates, which is about a quarter of the total gliding certificates held in Austria. Members have built 5 ZÖGLINGS (two with nacelles) and a GRUNAU BABY, and now propose to add a RHÖNADLER and a sailplane of their own design to the fleet.

The Kronfelds.—Robert Kronfeld, the Austrian soaring pilot, hopes to take over the assets of the B.A.C., manufacturers of the "Drone" ultra-light aeroplane, which was essentially a B.A.C. VII. sailplane fitted with a Douglas motor-cycle engine. His wife, Gretl Kronfeld, obtained her "A" gliding certificate on October 22nd, and "B" on October 23rd, having had only seven days' flying instruction, spread over two weeks.

Nothing Doing in India.—In the course of a Press interview in India on aviation matters, according to *Indian Aviation*, Lord Sempill deplored the fact that no gliding was done there, and opined that its introduction would do a great deal for flying in India. The same journal states that the proposed visit to India of Sir Alan Cobham's Air Display (which was to have included sailplane demonstrations) has been postponed till the cold season 1935-6.

A Book by Riedel.—Peter Riedel, one of the leading German sailplane pilots, has built up such a reputation for giving useful advice to budding motorless aviators that his friends have persuaded him to put it all into a book. But he is finding it none too easy to write when his questioners are not there in person to stimulate the flow of wisdom, so he is asking pupils at every stage of progress to send their questions along in writing, and thus help him to compile his book.

D.C.A. to D.-G.C.A.—The Air Ministry announces that the Director of Civil Aviation will in future be designated the Director-General of Civil Aviation; this is in order that he may be on an equality with the military members of the Air Council. It is his department which has had to decide the manner in which the gliding subsidy should be made available for the movement. The present Director (and future Director-General) is Lieut.-Colonel F. C. Shelmerdine, who was President of the British Gliding Association from 1931 to 1933.

Northants takes it up.—A report from Market Harborough states that the Northants Aviation Club is having a glider built for it by the Brooklands School of Flying, as "it has been found that for instruction purposes a glider is as useful as a machine-driven aeroplane, with the added advantage of a considerable saving in expense."

Three duration flights.—It is reported from Berlin that the pilot Gutsche, head of the gliding school on the island of Sylt in the North Sea, has within two months made three soaring flights aggregating 55½ hours. The times were 21 hrs. 40 mins., 20 hrs. 10 mins., and 13 hrs. 40 mins., and all were ended solely by the changing or dropping of the wind. The news agency adds with apparent surprise that "on each occasion Gutsche landed without accident."

Warren Eaton

THE Soaring Society of America has had the misfortune to lose its president, Warren Eaton.

We had the pleasure of meeting Mr. Eaton at the German Soaring Competitions last July. On the way there from America he had passed through London, where he had met Mr. Wills, Mr. Gordon England, and also C. G. Grey, of *The Aeroplane*.

Warren Eaton was aged 46. He was partner in a large chemical works at Norwich, N.Y., but since the gliding and soaring revival in the United States he had given practically all his spare time to the cause. His first two soaring flights, which were carried out at the 1930 Elmira meeting, were of 5 and 7 hours' duration (he was also an aeroplane pilot). At the end of 1931 he became the first private sailplane owner in the States, and at the same time founded a gliding school in his home town, where primary instruction was given by auto-towing. His ingenious adaptation of a Ford chassis for the purpose was described in *THE SAILPLANE* of March 1st, 1932. The car had a seat for the instructor facing backwards, from which he could not only watch his pupil, but work the accelerator, gears, brakes, and the cable release hook; all the driver had to do was to steer a straight course meanwhile.

When the Soaring Society of America was formed in February, 1932, Warren Eaton at once became its president, and to him has fallen the task of organising the soaring competitions run by the society. He was an expert soaring pilot, and at the meeting in Shenandoah National Park last September carried out a distance flight of 30 miles on a BOWLUS-DU POST sailplane. He also served as chairman of the Gliding Committee of the National Aeronautic Association.

A month ago Eaton was carrying out a towed flight over Biscayne Bay, Miami, Florida, at about 1,200 feet, when he was seen to come down apparently out of control and hit the water where it was only 3 feet deep. The cause of the fatality is not known, but it is suggested that he may have been taken suddenly ill. The aeroplane was towing two gliders at the time, and the flight was being photographed from another machine.

On behalf of the British gliding movement we tender our sympathy to the Soaring Society, whose members have lost a great enthusiast and a very hard worker.



The "Stormarn" (type Felix) flying at last year's Rhön Competitions in Germany. The wings, which are slightly arched according to the latest practice in large-span sailplanes, have a span of 59 feet.

Photo by Hans Schaller.

Sailplane Construction for the Amateur

By W. BUTTERFIELD

SINCE the demand does not warrant the mass production of machines, and the amateur is yearning for a job of work, I offer the following articles, hoping that they will at least stimulate ideas for the future, and even provoke discussion.

Lay-Out

No matter what type of machine you decide to build it is imperative that detail drawings be prepared or purchased. Unfortunately these so-called working drawings are often very sketchy, incomplete and primitive, requiring much thought and scheming before an actual start on construction can be made.

Whenever possible set out the job full size on a large drawing board or on sheets of plywood which can be used as a jig or template. By doing so, drawing office errors (if any) will present themselves and can easily be rectified. It is also a check which is well worth while, thus obviating waste of material on the actual job. In this way slight modifications in design are easily embodied if approved.

Unless experienced in design, be careful not to alter any essential features of the machine, because even slight changes in size, area or shape, may ruin the performance of the finished product. You may, however, keep a watchful eye upon simplicity of assembly and dismantling, and design your fittings accordingly. This offers ample scope for the ingenuity of the craftsman without danger of spoiling the performance characteristics of the finished machine.

If the machine you are building is to be flown or

rather used by *ab initio* pupils, it will be subjected to much rough handling and many heavy landings. Too often parts which are exposed to severe shocks are permanently attached to parts which otherwise would not be stressed. The portion of the chassis carrying the runner or skid can be arranged in sections, with connections which, although strong enough for normal purposes, will not transmit severe loading to other parts, yet are simple to replace in themselves. Another example is the attachment of landing wires to the cabane by means of pins that shear at a load which will not inflict too severe a stress in the wing spars.

The taping together of wing ribs often results in damage to half a dozen adjacent ribs in the event of one rib being accidentally broken.

The size of the available workshop or hangar may necessitate building in smaller sections than was originally intended. In any case an intimate knowledge of the theory of structures is essential if radical changes are contemplated. These then are points for the designer to decide rather than the constructor.

(To be continued)

Investigation of Gusts.—The American airship "Los Angeles," according to *Science Service*, is to be moored in the open for at least a year for carrying out certain investigations, which will include research on the velocity and extent of gusts and their effect on the airship. It may be recollected that research work at Cardington Airship Station, carried out for similar reasons, led Mr. C. S. Durst to formulate his theory of large-scale circular eddies in a vertical plane, often referred to in this journal (see THE SAILPLANE for April, 1934, p. 59, Fig. 5A).

Those "Wrens": Then, Now, and To Be

An Antidote to Excess Politics

By DIE-HARD

IT must be nearly four years since the original but still surviving CRESTED WREN began to take her shape. Her first public appearance was at Balsdean in 1931. The general reaction then seemed to be that she was quite a nice little toy, but too small, light and crude to be of much account. The simplicity of the semi-external elevator- and rudder-wires, of her wing-section, non-differential ailerons, and bath-like cockpit (altered later), were almost beneath the notice of arm-chair critics, who thought in terms of hundred-foot spans and still failed to see that nimbleness of control and accuracy of pilotage were far more important than the theoretical efficiency of the machine. Even her coat of red paint was criticised, being looked upon as a method of camouflaging faulty material and workmanship rather than as an excellent protection against damp and a highly desirable stimulus to the pilot's morale. On this last point it is worth while to note Segrave's views on a coat of paint, given in his "Lure of Speed," pp. 120-1; fundamentally, it soothed his nerves and was, to him, vital. In any case a coat of clear varnish over a coat of paint is a first-class antidote to turbulent skin-friction.

Eventually the CRESTED WREN was used with a considerable amount of energy on a good many different sites and proved herself to be a very satisfactory little boat in all weathers. Her nimbleness enabled her to remain in the air when other more pretentious machines had been brought down by a weakening of the wind. In rough weather the "sharpness" of her controls allowed the pilot to remain aloft with confidence.

This asset of handiness acted under many other conditions. For example, a thoroughly tangled and misjudged approach could be straightened out at the last moment, by dives, slips and counterslips, while any final excess speed in landing could be wiped off harmlessly on the skid. And many other similar sins could be glossed over quite charmingly.

The debit side of the account consisted of her inability to travel fast at an economical gliding angle, her lack of inherent stability when compared with, say, a FALKE, and her somewhat sketchy construction which so far has precluded any attempt at slap-up aerobatics.

More "Wrens"

The next WREN, the WILLOW WREN, represented an effort to cure the first point by immersing the pilot more deeply in the fuselage, and by keeping the whole of the elevator-control inside the fuselage, while still retaining the small total weight which is so desirable when handling her on the ground and in a congested hangar.

The result was, to my mind, rather mixed. The controls, owing to increased size of rudder and elevator and high gearing thereof, were ferocious where her elder sister's were nicely sharp. Possibly this factor was solely responsible for her tendency to spin, a trait which has always seemed to be non-existent in the other machine, though she too had no appreciable wash-out at the wing-tips.

But also, apart from her smaller tail unit—and it is noteworthy that Fokker and Avro machines have a

generic small tail—the CRESTED WREN's centre of gravity is probably further forward than the WILLOW's. Thus, in a semi-stalled position, the original WREN's willingness to dive back to speed with docility would be reasonably explained, especially when flown by a thirteen-stone pilot instead of the intended ten-stoner.

In any case the WILLOW WREN always seemed to me to lack the CRESTED's general kindness, the difference in behaviour being similar to the difference between two saddle-horses, one sweet and easy to ride, the other harsh and tiring though definitely a better performer.

Then followed the BLUE WREN in which wash-out was introduced and in which the controls were geared lower. My second and last trip in her ended in a fairly thorough crash for which the machine was certainly not to blame, the factors in the formula consisting of damaged morale, high wind, deep heather, and a preceding tea of corned beef. This machine is far and away nicer to handle than the WILLOW WREN, but still not up to the CRESTED's docile standard. Again one would suggest that the answer is merely a reduction in size of tail and an advancing of the centre of gravity.

Her performance is really nice, and already she has twice wandered away from Sutton Bank to the sea. The wash-out has not affected her lateral control, and the pilot still retains a good view in spite of his low position inside the fuselage. In landing she is a little inclined to porpoise, like the YELLOW (or WILLOW) WREN, clearly because the skid is the wrong shape and the elevator harsh, so that both machines when brought in fast tend to imitate a rocking-horse—a very sickening and helpless sensation. The moral, of course, is to come in at a sober speed; but this, equally of course, is a counsel of perfection and, as such, merely irritating.

The "Golden Wren"

The next machine, the GOLDEN WREN, is a little gem built with loving care by three wizards. Structurally she is streets ahead of the other machines. The landing gear is typical of the work put into her. Here there are metal springs inside a case, their tension worked out with precision. They absorb any bang up to immense dimensions. I have proved it. Apart from structural details she is still essentially a WREN, pure and simple. In straight flight she flies dead true with hands and feet off. The lateral control is a joy. She gives the impression of being as true as a hair all over.

In tight circling she shows her only shortcoming. The tail-unit wobbles, only slightly, but in a way unknown in the other WRENS though similar to the shake in a KASSEL 20 tail. And it is hard to keep a constant speed in a circle. One either emerges too fast or too slowly, unless one listens intensely and all the time to the swish of the wind past the struts. It is possible that she may start spinning one day if handled carelessly, though emergence therefrom should be simple.

Here again one tends to blame the size of the tail



The "Crested Wren" seen from directly below.

Photo by G. M. Buxton.

surfaces, and possibly the position of the centre of gravity. If the wholly movable horizontal surface were divided up into half-fixed and half-movable, if the rudder area were slightly reduced, and if the machine were made a little nose-heavy, this minor vice might be wiped out. And then the machine would be near enough perfect.

She would be light and handy on the ground. She would be strong, simple and reasonably inexpensive. She would be nimble and sufficiently efficient. She would be easy and straightforward to fly. She would slip, swish her tail, and habitually finish up intact. Altogether she would be a good little crate for a reasonably capable private owner.

The Ideal "Wren"

For a long time several of us have racked such unskilled brains as we have to determine the logical outcome of this WREN design, an outcome which would preserve the attributes of the perfected GOLDEN WREN without wandering off into the complication of that dream-machine, the WINDSPIEL, where the wing is in one piece and where the design and workmanship are far too reminiscent of expensive watch-making.

The obvious change would be to a fairly slender monocoque fuselage, with comfortable accommodation for the pilot. He would not lie down, nor would his head be immersed in a transparent inverted bucket. The skid would be similar in shape to the CRESTED WREN'S, and in springing to the GOLDEN WREN'S. Ideally the wings would be pure cantilever, but little would be lost if, for structural reasons, they retained their old design with struts and drag-wire. There would be some wash-out, but the ailerons need not be differentially controlled, since one has never had reason to complain of the CRESTED WREN'S simple ailerons.

The distance between the centre of gravity and the tail would remain as in the CRESTED; so also would the size of the rudder. The elevator would include a fixed surface, set with such an angle of incidence as would give healthy fore-and-aft stability. It would be kept well clear of the ground, and would be mounted with maximum solidity as a pure cantilever unit—always

remembering that a heavy structure here will have to be balanced up by pushing the pilot further forward.

The rudder will be hinged stoutly, with hinges well spaced, to a Gibraltar-like fin. The control-wires need not be entirely internal; they can scarcely make much difference to the general efficiency. The tail-skid will be solid rather than ingenious, giving the tail-holder a good grip and the underside of the fuselage a healthy clearance from the ground.

All woodwork will be painted. The whole machine will be given plenty of seaplane varnish. The span and wing-section need not be appreciably altered. An increase of span could so easily destroy a joyful degree of nimbleness.

Any amount of thought would be given to the cockpit. The accommodation would be designed in conjunction with Saville Row and Harley Street; for mark you, comfort spells confidence, which spells results—and I feel extremely strongly on that point. Try leaving out your accustomed cushion on a day of aerial wrath and you will be lucky if you get down whole. Or, if at any time you retire to the Canadian prairie, buy your own saddle when you get there, and you can ride anything on legs. Morale is four-fifths of the battle, and springs from an easy mind and body.

Instruments are a perfect nuisance in a small machine. If you have an instrument-board the cockpit-opening can no longer fit tight, and it becomes wretchedly draughty. The only alternative seems to be to stick the minimum number of instruments on the outside of the nose, moulding their fairings as gracefully as possible. A finely marked, twenty-foot, aneroid can be strapped on the back of the left hand. It remains to set up an air-speed indicator and variometer. The *miserabile dictu*, will have to go outside, which is a draughted nuisance. In fact, I would prefer to continue to persevere without either of them, and rely solely on the aneroid, rather than mess up the shape of the nose. Anyway, whoever won the Grand National would you take the aid of instruments?

The absence of instruments brings about a wonderfully desirable quickening of the powers of observation. Can these powers be so quickened that the whole of a long and complicated cross-country flight be pulled off without instruments? I doubt it, but it might just possibly turn out to be an attainable ideal. Can a business be run without a costing system? Can a gunner, as well as a shooter of rabbits, work without dial-sights and tables of ballistics? It is all very difficult.

And, rather beside the point, which is: That the possibilities of the WREN design are far from being exhausted. Until they are, there is no need to be slavishly bound up with foreign designs, none of which obviates the supreme need for PERFECTED PILOTAGE and COURAGE.

In times of universal financial shortage it is hard to find a reasonably good pilot who is willing to stake £150 on a semi-experimental machine. Does he exist? Or must it be left to me to battle, possibly disastrously, with baccarat, horses, and wheat options, always in the dizzy hope of raising that mint of money? Life is devilishly difficult and tantalising at times. Tantalising, because I'm convinced that the machine would be a complete whizz—and incidentally home-grown, which in these retrograde days of rampant nationalism would be some little thing toward keeping our national end up.

The Technique of Safe Pilotage

By H. C. BERGEL

AS a glider pilot of very little experience I have long been hoping to read in THE SAILPLANE some really meaty articles on how to avoid getting into pilotage difficulties or—if the worst comes to the worst—how to get out of them safely and very quickly. No angel having appeared to tell us, it has been left for this fool to rush in. His only excuse is that he has done some hours of power flying. And, however objectionable an engine may be, it has the advantage of giving one at any time the ability to reach and hold a height safe for practice and experiment.

1. Stalling and Spinning

The first thing to remember here is that one can stall without spinning (thank Heaven), but it is strictly impossible to spin without first being in a stalled condition. The second thing to remember is that a machine will very rarely spin from a level stalled condition if both rudder and aileron controls are central. A stall will only, in practice, develop into a spin either if one wing drops seriously or if a certain amount of rudder is applied during the stalled state.

That sounds a bit academic—how can it help in actual flying? Well, it suggests, firstly, a very good rule of pilotage—treat the rudder with a good deal more respect than either of the other controls. Secondly, if a wing drops when you are in or very near a stall, the application of opposite rudder may be the most powerful antidote to a spin.

In other words, if you suddenly find yourself flying in almost complete silence and with very little control and the right wing drops and won't respond to the stick—try, as a last resort, putting on a fair amount of left rudder. But for goodness sake don't just jam the rudder over and keep it there, or you will almost inevitably cartwheel over and go into a really juicy spin to the left. For the effect of putting on opposite rudder like this is to convert the incipient right-hand spin into a left-hand one. But before the machine can oblige you, it has got to swing right over from one bank to the other. This will give you a second or so (it will seem like a week-end) in which to get the nose down, regain flying speed, and wipe the sweat away. But let me repeat—this is a last resort, and calls for a steady head and fairly quick action with hands and feet.

Another rule—an easier one. If at any time there should steal across your mind the feeling that the machine will soon want to stall, just put the stick forward (gently) and take off any aileron or rudder you may have put on. You may lose some hard-won height, and you may lose marks for neat flying, but your club or your syndicate partners will not lose the machine.

I should say that by far the most dangerous thing in gliding is the turn down wind at no very great height when the wind is blowing partly along the ridge, and you have reached the end of the up-wind beat. The change from minimum speed over the ground to maximum is very sudden and always disconcerting. Moreover, if the wind is not steady, a gust can easily overtake you and chop five miles an hour off your air-speed. And, in addition, your course over the ground

is so eccentrically unlike what you think a neat and steady turn should be, that the temptation to slow down, take off bank and put on more rudder, is very strong.

There's only one answer. Make up your mind that you are going to go down wind like a bat out of hell—and go! The sooner you can reach the turning point at the other end the better. Your friends on the ground may gloat over your loss of a few feet of height. Let them gloat—you've still got a whole machine in which to get them back.

A final suggestion under this heading. If you are flying across wind (as one generally is), and you get into difficulties, *always* turn into wind if you can turn at all. This will not only ensure the lowest possible ground speed, but will bring you directly away from the hill side and therefore into a blessed reserve of height. *Don't turn at all if the only turn you can do is a down-wind one.*

(To be continued)

The Technique of Unsafe Pilotage



This is how an Austrian pilot "landed" his "Hols der Teufel" after a 15-minute glide off the top of the Hohe Kugel (5,410 feet) near Lake Constance. Pilot and plane were recovered undamaged after the 55,000-volt current had been cut off.

The electric grid in Great Britain is now reported to be complete, with 26,000 pylons carrying 4,000 miles of wire.

From "Flagpost."

German subsidy figures.—Replying to a question in the House of Commons, Sir Philip Sassoon said: "The membership of the German Airsport Association is estimated at about 60,000. I have no information as to the financial or other assistance given to the association by the German Government apart from a grant of 1,230,000 RM. for gliding, and some small grants for prizes and free ballooning." This sum is equivalent to about £100,000 at present exchange rates, or £61,000 at par. The old Rhön-Rossitten Gesellschaft used to get £16,000 per annum.

Correspondence

Yesterday's Miracle—To-day's Commonplace

SIR,

When looking through some old aviation literature the other day I came across the following which is, I feel, of particular interest considering the comparatively recent date of its publication:—

"Pilots, engineers, and mechanics will always be cursed with a certain amount of engine trouble until we are able to soar upon the wind like birds, which will only be in one of the next worlds—and only for a few even then."—From *Aeronautics*, August 23rd, 1916.

E. G. SANGUINETTI.

[We would take this opportunity of asking any knowledgeable reader to verify a quotation from another false prophet—Robert Louis Stevenson. He was describing the sensation of gliding noiselessly along a quiet stream in a canoe, and said it was "probably the nearest man would ever get to flying like a bird." After widespread search we have failed to find the passage again; it is *not* in "An Inland Voyage." Like Mr. Sanguinetti's quotation, it would serve as a fitting prelude to a book on soaring flight.—Ed.]

The Memorandum

SIR,

I accept your suggestion that no good purpose can be served by continuing the discussion about the Memorandum, and I would adopt Mr. Wills's suggestion that eternal disputing does not make our convictions any more right or wrong.

I would in spite of this ask your permission to tell the world through your columns that I hold, among others, the following convictions:—

(1) That I have not been a party to any policy of making "every effort to hush up complaints," and that there is no evidence of this in my letter on page 230 of your December issue or otherwise.

(2) That there was nothing improper in obtaining statistics from the files of the B.G.A.

(3) That I wish you, and all my friends (including opponents) a very happy new year.

SEYMOUR WHIDBORNE.

[In reply: (1) We stated that complaints had been hushed up with the knowledge of Mr. Whidborne. His letter published in December, 1933, discusses the hushing up of complaints which had been made. He therefore knew of such complaints and knew they had been hushed up. Q.E.D.

(2) Nobody said there was. "*Qui s'excuse s'accuse.*"

(3) This sentiment is heartily reciprocated.—Ed.]

The Flight of the Albatross

We hope to publish next month two letters of great interest, one from a scientist and the other from an experienced soaring pilot, describing their first-hand observations of the soaring flight of the albatross.

News from the Clubs

London Gliding Club

Sunday, November 25th.—Rather a light soaring wind, sufficient to keep up the WESTPREUSSEN, which was given flights by Hiscox and Dewsbury, but not enough for the FALCON, which was therefore glided down by a number of pilots. Instruction proceeded as usual.

Sunday, December 2nd.—Weather too stormy for any flying.

Sunday, December 9th.—Pelting rain. Some involuntary ground-slides were done on the slippery mud without any assistance from club aircraft.

Sunday, December 16th.—A good soaring day. Wills flew the SCUD, Bergel and several others flew the FALCON, and Challier, Baker and Miss Davidson the PRUFLING. The new DAGNALL was taken off the top, and Mrs. Baker glided down in 1 min. 26 sec., this counting towards her "B" Certificate. About 10 people had primary instruction all day at the bottom.

Hiscox flew the WESTPREUSSEN twice (total about one hour), and tried out its latest fitting—an air speed indicator recently brought out by Smith's, specially designed for sailplanes and autogiros and reading from 10 to 80 m.p.h. It showed the WESTPREUSSEN to stall below 27 m.p.h.

Sunday, December 23rd.—Rain at first, but when it cleared a DAGLING was got out and ground-hops were made in a light south wind.

Boxing Day.—Some seven people turned up for, and were given, primary instruction.

From *The Observer*: "Ninety acres of unenclosed downland near Whipsnade have been added, as a gift by two anonymous donors, to the 64-acre property already in the possession of the National Trust for Places of Historic Interest and Natural Beauty. Both these stretches are part of the noble ridge of Dunstable Downs, and the only portion of the downs now left unaccounted for is in the safe keeping of the Tottenhamhoe Conservative Association." For "Conservative Association" read "Conservators"; then add, "and the London Gliding Club."

The club membership continues to increase; 22 new members have joined since October. The Hon. Secretary is Mr. H. O. Davies, 13, Victoria Street, S.W.1 (Telephone: Victoria 9153-4), and prospective members can either communicate with him or turn up at the club grounds, 1½ miles S.W. of Dunstable, during the week-end.

For primary training there are now four complete DAGNALL machines and a spare pair of wings for them in stock. A GRUNAU BABY is about to be added to the fleet.

The following proposals for a new hangar and club house are under consideration, but it should be understood that the scheme is conditional on sufficient support being obtained, and subject to any modifications that the local District Council may decree.

Proposed New Hangar and Club House.—The need for new and larger buildings, particularly the new hangar, becomes continually more pressing. Machines are damaged by being crowded together, time is wasted, and further expansion of the club's activities is prevented. In the opinion of the committee the proposed programme of building should be commenced at once, as if left over it would result in serious interference with next season's flying. A circular has been sent to all members asking for guarantees for the necessary overdraft, which is to run for a period of three years. The scheme is estimated to cost £2,500.

The particular design selected has been chosen as being an economical structure which will permit of future extension, if required, at low cost. The hangar is to have a floor area of 7,200 square feet (about double the present accommodation), the whole of which will be floored with concrete. There will be no interior pillars or other obstructions. There will be a main entrance 3 feet wide and a subsidiary entrance 24 feet wide, each with sliding doors. The club house, which is to be part of the same building, has been so designed that all the principal rooms command an excellent view of the hill and of the apron in front of the hangar. A lounge bar will be on the ground floor, and the first floor will include lounge and dining room (separated by folding doors), a dormer house, kitchens, and an outdoor tea terrace. Electric light and running water will be laid on.

When the new building is complete, the existing club house will be renovated and converted into a workshop and store room.

Furness Gliding Club

November 18th.—Wind, nil; weather, sunny. A party of 15 members have great fun on a flat field, using that good old primary machine, the B.A.C. II., now fitted with a hefty chassis. How a small group had worked to effect this robust repair is only known to themselves. It certainly stood up to the work in great style, and provided one more day's sport to its already long list of foolproof demonstrations. In all, 22 launches were made, using, first, a single, and then a double bungy.

Messrs. Len Redshaw, Cammell, Austin, Dickinson and Collins had their initial hops. Collins immediately inspired confidence as, with a broad smile, he sailed between the launching party, flying rock-steady. All the others improved as the day went on. Cyril Redshaw, Armer and Burnett did a little demonstration work with a double bungy. Hunter and McConnell followed, each showing improved form. W. A. Stevens was present doing his bit; but he steadfastly declined to go back to the nursery days. Had the launching party been really keen our grand old heavyweight, W. Butterfield, would surely have taken once again to the air. Some interesting clouds appeared, and there was nothing doing.

The lady visitors did a good day's work and, by the way, they can now become full-blooded members. The G.M. approves. The secretary meanwhile was addressing circulars—a real service.

December 2nd.—Ground-hopping in the nursery field. Wind S.W., 10 m.p.h. The old B.A.C. II. had a busy day under the direction of Ground Captains Cyril Redshaw and C. Armer. Once again it was proved that a double bungy can be used to advantage, providing the instructor knows his job.

Some delightful demonstration hops were made by the old hands, which served to inspire the new members present. Redshaw, Armer, Hunter, Butterfield and McConnell had a couple of launches each; whilst of the new members Collins excelled. Len Redshaw, Worsley, Cammell and Broadbent were all well and truly flying.

The Club Memorandum.—In addition to the club news given above, we have received particulars of the replies so far sent (up to December 7th) by other clubs to the circular asking for views on the memorandum sent out by the Furness Club, described in our last issue. Agreement with the memorandum is expressed by the Derbyshire, Dorset, Accrington, Harrogate, Leicester, Newcastle, Essex, Rugby, Wiltshire, Tees-side, and Kent Clubs. Opposition is expressed by the Ilkley Club. The Midland and the Imperial College Club are awaiting its submission to their respective committees.

Jersey Gliding Club

Sunday, 30th September.—It had previously been decided to really try out the ZÖGLING this Sunday, and she looked quite well in her new paint.

We have recently been given permission to try another field which should prove useful for initial training, for it has a fine surface. It can be used with most winds, and is more get-at-able for most of our members.

However, just when we were beginning to get the hang of things, and some decent flights were being made, a rather hefty member was given a shot, and on reaching his maximum speed on the ground she suddenly slewed right round, the skid still in contact with the ground. Sad to relate, she didn't stand the strain, and we now have a job in hand repairing the main frame. This happened about noon, and it was decided to pack away and go out to the other site and rig the DAGLING. Surprisingly, the wind was favourable the whole afternoon, and our best series of flights were made, five members having shots from well up the slope, and although no times were taken, at least 10 flights were made in the region of 15 seconds.

Sunday, 7th October.—After lunch the weather cleared, and although only a small crew turned up we contrived to have a good but hard afternoon's sport, ten flights being made round about the 12-second mark.

Sunday, 14th October.—A rotten day, so bad that we decided that this was to be the first Sunday, since we commenced operations, on which no flying was done. [Operations commenced on July 1st.—Ed.]

Sunday, 21st October.—Not too bright, but the wind was from the correct quarter, so out came the DAGLING and, as the weather behaved itself fairly well, operations were continued throughout the day. Over 20 flights were made better than 10 seconds, and two other members had ground shots. Actually the air was rather

turbulent, and we all enjoyed the experience, but found it rather difficult to fly to any pre-arranged plan. We are now shooting from pretty near the top of our slope, and as this is in the nature of an ever narrowing gully we are also getting a bit cramped for room.

The retrieving problem has been overcome for the time being by having a pulley at the top of our slope and pulling the machine up with the car going down the hill.

Unfortunately, we have now more difficulties both before and behind us. Our next step upwards means going over the top, as it were, which is another 80 feet or so higher, and then longer flights outward mean missing ditches, hedges, mound, etc.

Sunday, 28th October.—Another rotten day, considered unsuitable for flying.

Norfolk Gliding Club

The *Lynn News* reports that a club with this title was formed at North Walsham towards the end of last year. Dr. C. H. W. Page presided at the first meeting. Mr. G. M. Hick, the promoter of the scheme, stated that his idea was for members to build a machine. Mr. A. J. Richardson, the well-known airman, had offered the use of his field off the Norwich Road at North Walsham, and Mr. W. P. Cubitt offered the use of a 40-acre field at Bacton. The opinion was expressed that there were no soaring sites available in Norfolk as good as those in the Chilterns, and that the best places along the coast were already in use as golf links.

The provisional committee included Messrs. S. Honeywood (Kenninghall), G. Wilson Allen (Cromer), L. W. Humphrey (Norwich), W. P. Cubitt (Bacton Abbey), H. P. Coates (North Walsham), Dr. Page, F. W. Mason (Thorp St. Andrew), G. D. Parkinson (Norwich), and the Hon. Secretary, G. M. Hick.

Anglo-Palestine Gliding Club

A "Carmel Gliding Club" was started in September, 1932, by Capt. R. L. Yates, formerly of the Portsmouth and Southsea Gliding Club, and some flying was done on a B.A.C. VII. sailplane lent to the club by Capt Yates.

We now hear that a more ambitious scheme is in preparation for the development of gliding and soaring in Palestine, which is to include the use of high performance sailplanes and the assistance of German experts, with financial and other help from members of the Jewish community in this and other countries. The following particulars are taken from *World Jewry* for December 21st:—

The objects of the Anglo-Palestine Gliding Club are to found in Palestine an organisation for the development of gliding in that country both as a sport and for the purposes of scientific research. To carry out this object it is proposed to set up a school of gliding with which will be combined a station for meteorological research.

Investigations have proved that the climatic conditions in Palestine with its favourable wind current prevailing throughout the year to a greater extent than in other countries are particularly suitable for gliding.

The nucleus of the club is provided by a group of young German Jewish experts who are no longer able to carry on their activities in their country. It is hoped that a gliding demonstration by this group will be given at the Second Maccabiah in April, 1935, at Tel-Aviv.

The Anglo-Palestine Gliding Club, which will be affiliated to the Maccabi World Union, has been founded under the distinguished patronage of Lord Melchett. A distinguished committee has been formed comprising such well-known names in the Anglo-Jewish community and in aviation as Prof. S. Brodetsky, Mr. L. Lipton (third in this year's King's Cup Race), Dr. H. Meyersberg, an old war pilot, Mr. M. Lewin, of Handley Page, Ltd., and as technical adviser to the club Capt. H. M. Schofield, Schneider Trophy Pilot and winner of the 1934 King's Cup.

For the equipment of this club a sum of £3,000 must be raised. Of this sum £1,000 has been raised in cash and equipment in Germany, and £1,000 has been collected in Palestine. It is proposed to raise a further sum of £1,000 in this country. In order to accomplish this it has been decided to appeal for members for the club who will contribute to the funds, thus assisting in the foundation of an organisation which can contribute much to the progress of sport and science in the "new" country of Palestine.



A. Cox, the Yorkshire Club's Secretary, photographed from an aeroplane while doing his "C" test flight in the Club's "Hols der Teufel" over the west slope of Sutton Bank. He stayed up for an hour and five minutes.

Yorkshire Gliding Club

October and November.—During the past two months our activities have been concentrated on primary training. There has been a gratifying increase in our membership roll, due, no doubt, to the success of the competitions. The establishment of our quarters at Sutton Bank has given us a degree of permanence which has instilled a good deal of confidence in the minds of northerners, who like to foresee the results of their labours before they commence the job in hand.

It took a long time to convince our novices that we could train them, at least up to the "A" certificate stage, on the plateau on top of the Bank, and even now, though several of them are creeping steadily towards that 30 seconds' straight flight, a few are still hankering after slope training. They talk, longingly, of gliding down a slope for hours and hours (they think!) without once coming to earth.

Of course, the winch has been responsible, mainly, for the great amount of training and it has proved itself actually cheaper to run than the horse we used to have for retrieving up the Baildon slopes. During September we gave the winch a thorough test, employing the *Bar-Hols* as the victim. The *Bar* is as stable as a canal barge—and just about as unwieldy. On October 14th, Sharpe, Holdsworth, and Hastwell soared her over the bay, but towards dusk with the wind still good she decided she had had enough and settled down in bracken inside the hairpin bend, with a huge rock three yards ahead of her, a similar one behind her and a precipice within arm's reach of her port wing.

On October 28th Cox went up in a gale with the good *Hols*, newly done up and re-C of A'd. Battledore and shuttlecox, that's what it was, and what with a few hail showers, several quite involuntary slide-slips over the ruined farm house, constant rocketing and occasional parachute descents, half an hour was enough to have to pay for. Hastwell tried it too, but came in before it became the least bit expensive.

Practically the whole of November was spent on winch launching the novices on *Dickson*, and it is now no uncommon sight to see some of them slung up to 30 or 40 feet before they decide to bust another pair of landing wires.

[We hear that the Yorkshire Club proposes to hold a (more or less informal) four days' meeting at Easter. Details later.]

Dorset Gliding Club

Sunday, November 25th.—Maiden Newton. The almost negligible south-west wind and some welcome sunshine provided an excellent opportunity for those who had recently qualified for their "A" licences to be launched from the steep slope, straight down the valley, over the pumping station and the telephone wires running down to it.

Rolle (team captain) showed them the way with a flight of 42 seconds, followed by Davis (No. 1) with 55 seconds; then, by way of a diversion, Laver turned left and, by exploiting the lift from every possible ridge, put up the good time of 62 seconds. Lansdown (first flight since qualifying for his "A" licence) made a pretty flight of 45 seconds, thus taking one step towards his "B" licence. Shelton (first flight from this slope) followed with a flight of 41 seconds.

Training then started down in the valley and, after Rolle had tested conditions, Wall, after four preliminary slides, showed good progress in three short flights.

Wright then arrived and was given practice flights from this position and made two flights of 12 seconds. In these flights, owing to lack of space, he had to turn very sharply, and on one occasion did so with his left wing tip on the ground. Though this skilfully carried out manoeuvre added a touch of excitement, it was realised that these launches were quite generous enough for the restricted surroundings.

Davis (No. 2) had his first slides, and, to close the day's proceedings, Miss Wickwar, a prospective new lady member, had two slides.

Poole Gliding Club

This club, formed as the East Dorset Gliding Club, is now called the Poole, Bournemouth and District Gliding Club, and has settled on the Linden Hall Hydro, Boscombe, as its official headquarters. The Rovers' Den, Constitution Hill, Parkstone, is reported to be the meeting place for instructional purposes. Among the members are R. Potgieter, a South African airman, P. Foss, who got his "A," "B," and "C" certificates at the Wasserkluppe in 1930, and P. Buck of the Dorset Club.

Pwllheli Gliding Club

Although North Wales is one mass of soaring sites, its possibilities for soaring flight have hitherto been sadly neglected—except by the birds. Five years ago there was reported to be a Llandudno Gliding Club, but when we wrote to the alleged secretary the letter was returned by the Post Office. Last May a soaring expedition visited Prestatyn, and some interesting soaring flights were made along the east side of the Vale of Clwyd. A gliding club which promises well has now been formed at Pwllheli, which is on the south side of the Llyn Peninsula, and about 18 miles S.W. of Snowdon. The Hon. Secretary is Mr. E. R. Wilson, "Bryn Tawel," Pwllheli, Carnarvonshire. The Secretary writes as follows:—

A gliding club has been formed in the district and we have 18 members to date (November 27th). The subscription is three guineas per annum and we hope to commence flying in January. Our President, Lt. Evans, Broomhall, has offered us the use of his aerodrome for primary training by auto-towing, and we have also had permission to use Black Rock Sands—about two miles of firm sand. A German glider pilot has offered to assist us and we have three power pilots in the club. As we are west of the Snowdon range we are hoping that the district will prove ideal for soaring, if and when we get to that stage. We are negotiating for a Dickson glider which is complete except for the fabric. If successful we may have two machines.

Midland Gliding Club

We had the good fortune to be present at the inaugural flying meeting of this club on Boxing Day. A good day's work was put in on primary instruction, and the machine then put away intact in the hangar, which is nearly finished and will probably be complete by the time this is in print. News of club activities has been promised, but meanwhile it can be said that an excellent primary training ground has been obtained in the shape of a large field adjoining Hamstead Hall, on the outskirts of Handsworth, a short way from Great Barr station on the Walsall-Birmingham line, and only a few miles from the centre of Birmingham. Half the field consists of a gentle north-westerly slope, and the other half of flat ground at the bottom which will allow of launches in any wind direction. Near by is a huge conical pit-mound, looking just like the artificial hill which Lilienthal used to glide off in the eighteen-nineties, only it is five or six times as high. With a gliding angle of 1 in 7 one could reach the field off its top, after crossing a colliery, a railway line, buildings and telegraph wires, and steering between two tall chimneys. The club, however, is not going to allow its members to do anything so dangerous, but has secured a launching site on higher ground from which "A" test flights can be made with a landing in the club field, only two low hedges needing to be crossed. "B" test flights will also, it is believed, be possible in a westerly wind. The Secretary is H. T. Testar, 80, Gibson Road, Handsworth, Birmingham.

To Club Secretaries

News from the Clubs.—Matter for publication under this head should be sent in not later than the 20th of the month to ensure its publication in the next month's issue. A good scheme is that adopted by one club news writer, who sends in each week's news as soon as it is written, which means either Sunday night or Monday morning. This method costs 4½d. more in stamps per month, but saves a lot of worry.

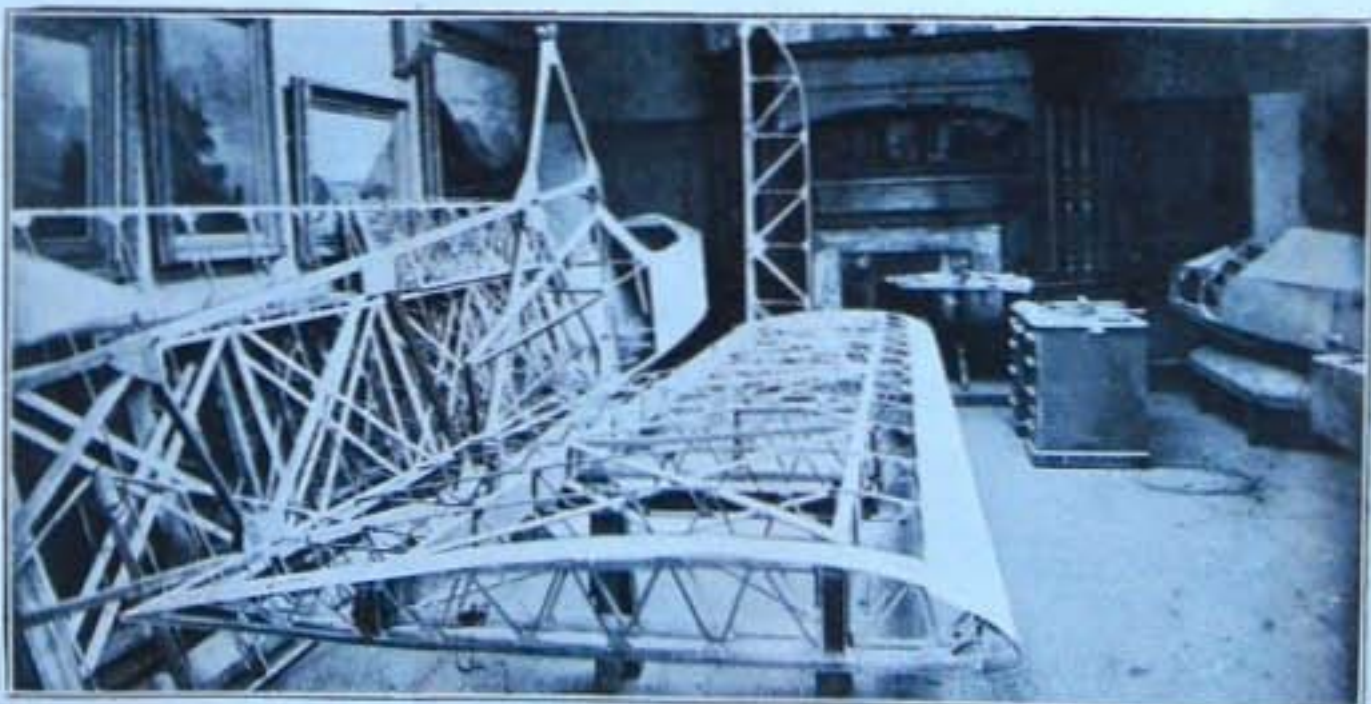
The printers will be pleased if only one side of the paper is used, and if there is double spacing between the lines, whether written or typed (this also facilitates authors' last-minute emendations). As the editorial work is now getting very heavy, it will be a help if Club News is written in the exact form in which it is to be printed, so as to save time on editorial revision. Thus, dates at the beginning of a paragraph should be underlined with one wavy line (which means heavy type) and, unless forming part of a sentence, followed by a full stop and a dash. Names of machines should be underlined with two straight lines (which means SMALL CAPITALS), and should be written without inverted commas.

Photographs.—Good photographs of club activities are needed. They can be returned if desired. They may be of any size, as enlarging or reducing can be combined with the process of reproduction. After use in THE SAILPLANE, the blocks of such pictures can be lent to clubs for use in club circulars, prospectuses, etc., without any charge other than postage.

Good close-ups of machines in flight can be got by standing a little beyond and outside the launching team which is nearest the sun, but, unless provided with a very fast shutter, the camera must follow the aircraft as it flies past; in a box camera this can be done by looking along one edge of the box, which should be kept aligned on the visual centre of the machine. If, owing to distance or to lack of light, the glider is likely to appear only as a silhouette against the sky, tree-tops or clouds should be included in the picture; the latter can be got most effectively by facing the sun when it is temporarily hidden, and photographs of this kind can often be obtained quite late in the day. Cloud photographers should note that slight contrasts in the light shades do not reproduce well.

Drawings are best done in black ink. If done in blue-black only those lines reproduce which contain black as well as blue. Best results are got when the original is larger than the reproduction.

New and prospective Clubs.—Anyone starting, about to start or wishing to start a gliding club should send the organiser's name and address to THE SAILPLANE, to enable other enthusiasts in the district to know what is going on and offer their help. We know of one club which decided (a) not to send news to THE SAILPLANE till flying commenced, and (b) not to start flying until a certain minimum of members were secured. Meanwhile somebody else knowing nothing of all this, started forming another club in the same town. Result: two gliding clubs in one town, neither of which did any flying.



The Harrogate Club's Workshop, showing, in the foreground, the club-designed and built training machine ready for covering.

Official Notices

Informal General Meeting

An Informal General Meeting of Members of the British Gliding Association was held on Monday, August 27th, 1934, in the Library of the Royal Aeronautical Society. Lord Sempill, President of the Association, took the chair.

Before commencing the business of the meeting, the President announced that he had urged upon those who had tendered their resignations after the Special General Meeting of July 16th, to withdraw them. Mr. Wills (Hon. Treasurer), Mr. Briscoe (Hon. Secretary), Mr. Gordon England and Capt. Latimer-Needham (Vice-Presidents), had consented to do so, but Mr. Hardwick had felt unable in the circumstances to alter his decision to resign from the Chairmanship of the Association.

Council Meeting

The 61st Meeting of the Council of the British Gliding Association was held on September 12th, 1934, at the Library of the Royal Aeronautical Society.

Present.—Capt. C. H. Latimer Needham, Capt. A. N. Stratton, Air-Commodore J. A. Chamier, and Messrs. W. W. Briscoe, P. A. Wills, C. H. Bergel, G. H. Lee, A. H. Reffell, L. Howard-Flanders, W. O. Manning, S. Whidborne, E. Seaward, and E. G. Sanguinetti. Lord Sempill, President of the Association, took the chair at 6.20 p.m.

Among the business transacted was the following:—

The Subsidy.—The President stated it had not been possible for the three members requested at the Informal General Meeting to meet the representatives of the Air Ministry to discuss the question of the subsidy. He had, however, seen Lt.-Col. Shelmerdine who had stated that the period of the subsidy would begin as soon as an agreement had been arrived at with the Air Ministry.

Mr. Whidborne presented a memorandum subscribed to by a number of members of the B.G.A. and others. The resolutions therein contained were then discussed at some length. Mr. Wills then stated that in his opinion the question of the Constitution was the most important question as the B.G.A. must satisfy the Air Ministry as to the fitness of the body entrusted with the spending of public money. Mr. Howard-Flanders proposed certain alterations to the rules limiting the representation of members other than those elected by the clubs. It was finally decided that the recommendations of the previous unofficial discussion should be adopted, and that the President, Mr. Gordon England and Mr. Wills should discuss proposals relative to the granting of the subsidy with representatives of the Air Ministry.

A discussion then ensued in which members stated their views as to the best use to make of the subsidy. Air-Commodore Chamier stated that the principal aim of the Air Ministry in granting the subsidy was to obtain more pilots and that there was probably no need to establish the proposed Central School for the next year or two.

Mr. Howard-Flanders then consented to carry on as Hon. Secretary temporarily, as the present Hon. Secretary had resigned and was anxious to be relieved. Air-Commodore Chamier also kindly consented to give a small amount of clerical assistance from the Air League. Lord Sempill very kindly promised a fortnight's assistance by a paid typist.

It was decided to congratulate Messrs. Buxton, Collins and Laver on their recent record flights. An expression of thanks was made to Mr. Dugdale and Miss Sinclair for their help at Sutton Bank.

Investigation of Accident

The Chairman of the Technical Committee of the British Gliding Association has issued a report on the Committee's investigation into the accident at Dunstable on June 17th, 1934, caused by the failure of the front port flying wire during the launch of a primary glider. From this report the following extracts are taken:—

Aircraft.—The machine involved was an R.F.D. elementary training glider. This machine was granted a C. of A./G114 on June 3rd, 1930, and was purchased by the Bedford Gliding Club at about this date. The C. of A. was renewed on June 3rd, 1931, for a further period of one year, after which it lapsed. It is believed that the machine went out of use on account of the Bedford Club being wound up, but was purchased by the London Club in November, 1933.

The Fractured Wire.—The flying wires on this type glider are 12 S.W.G. piano wire. The fractured wire appears to have been the original wire as fitted to this machine. If this is correct

it had been on this machine for at least four years. The fracture took place just inside the bottom ferrule. Little decrease in diameter or necking-out is visible so that the failure was due primarily to tensile loading. The surface of the wire showed considerable signs of pitting due to corrosion. Microscopic examination disclosed the presence of internal cracks across the section. The failure was due primarily to partial fracture by bending (not flight loads), followed by a suddenly applied tensile load.

It is reasonable to presume that the wires of this machine become bent during dismantling, housing and transportation, and are straightened on assembly. This is borne out by the fact that the wire near the fracture was curved, so also were other wires on the same machine. It may also be mentioned that the loops of the wires had become elongated and thus rotation fitting eyelet was made impossible.

Air Ministry Conclusion.—The assistance of the Air Ministry was sought and the fractured wire was examined by the Aircraft Establishment, Farnborough. The conclusions reached were stated briefly in a letter of November 23rd, 1934, from Major J. P. C. Cooper, Chief Inspector of Accidents, Air Ministry, as follows:—

"The surface of the fracture of the broken wire shows evidence of failure in compression and tension respectively on diametrically opposite areas. This type of fracture is consistent with a bending-tensile failure. Distortion of metal was observed in varying degrees at all parts of the edges of the fracture feature which eliminates any question of failure by fatigue. No defect of material was detected at the fractures.

"Since the fracture occurred at the lip of the wiring, it appears probable that the wire had been bent and strained a number of times and to a sufficient degree to cause rupture of the wire. The wire, so weakened, probably failed by a suddenly applied tensile load."

Tests with Piano Wire.—A series of tests were carried out to determine the effects of bending through various angles and strains prior to the application of tensile load. The results were consistent and bore no direct relation to the angle of bend, the number of reversals of bend. The corrosive effects could not be easily incorporated in these tests.

As a result of the above-mentioned accident the attached report has been issued by the Technical Committee:—

Airworthiness Requirements.

Lift Wires for Primary Type Gliders.

In view of certain unsatisfactory qualities of piano wire subjected to fluctuating loads, and the difficulty experienced in inspection for depreciation, it has been decided that all lift wires which are at present of piano wire, must be replaced by a cable or straining cord of not less than 20 cwt. strength.

Cables should be "extra flexible" with ends spliced round suitable thimbles as described in A.P. 1208 Part 1, Inspection No. 34, Appendix 1. This may be obtained from H.M. Stationery Office, Kingsway, W.C.2, or any bookseller, price 2d.

This modification shall be carried out before October 31st, 1935, and no C. of A. renewals will be effected until such change has been made.

Straining cord may be used to avoid the necessity of a joint in which case the joints shall be formed in the following manner. The wire is bent round a suitable thimble and turned back 5 in. 14 S.W.G. copper wire is bound round the doubled wire 5 in. close to the thimble, an interval of 1/2 in. is left, then 14 S.W.G. copper wire is wrapped round for 1/2 in., another 1/2 in. of 1/2 in., another wrapping, another gap, and another wrapping. This leaves four ferrules of copper wire, with three equal gaps between.

The joint is then laid in a grooved piece of wood and held in position with resin. Solder is run in with a heavy iron until the joint is formed with a continuous soldered joint 4 1/2 in. long. Care must be taken that the solder has run in and adhered to the whole surface of the wire and between the wires. Acid flux is not to be used; nor should a blow lamp, or other heat source be used.

WANTED—AIRWORTHY PRIMARY TRAINING GLIDER
Pwllheli and District Gliding Club
"Bryn Tawel," Pwllheli.

Gliding Club Statistics

Last November Mr. L. Howard-Flanders, Hon. Secretary of the British Gliding Association, circularised all the active gliding clubs in the country of which the B.G.A. had knowledge, asking for particulars of machines, buildings, members, gliding certificates obtained, subscription rates, and flying charges, etc. We reproduce below the particulars mentioned, as they will no doubt be of great interest. They apply to November, 1934.

Accrington and District.—1 Primary glider, 2 Secondaries. 35 members, including 2 "A" and 2 "B" Certificate holders. Subscription: shares. Flying charges: none.

Derbyshire.—1 Primary. Hangar. 27 members, 2 "C." Annual Subscription: £3 3s.

Dorset.—1 Primary, 1 Secondary, 1 Two-seater (building). Hangar and Clubhouse. 24 members, 3 "A," 6 "B," 2 "C." Subscription: £3 3s. Flying charge: Id. for 5 secs.

Essex.—1 Primary, 1 Secondary, 1 Sailplane (private, building). Hangar. 22 members, 3 "A," 7 "B," 1 "C." Subscription: £2 2s. Flying: hand launch, 3d.; auto launch, 6d.; auto tow, 9d.

Furness.—1 Primary, 1 Sailplane. Hangar and Clubhouse. 14 members, 13 "A," 7 "B," 2 "C." Subscription: £1 11s. 6d. Flying: 3d. per flight.

Guernsey.—1 Primary, 1 Sailplane. Clubhouse. 50 members, 1 "A." Subscription: £3 3s.

Imperial College.—Particulars not obtained. (We believe the Club has 2 Primaries; it has a hangar and uses the London Club's Clubhouse.)

Jersey.—2 Primaries. 36 members. Subscription: £2 2s.

Kent.—1 Primary, 1 Secondary, 2 Sailplanes (also private). 33 members, 3 "A," 3 "B." Subscription £3 (Associate 10s.). No Flying charge.

Leicestershire.—1 Primary (B.A.C. II.). Hangar. Workshop. 24 members. Subscription: £1 1s. Flying: 6d. whole day; 1s. half day.

London.—3 Primaries, 1 Secondary, 3 Sailplanes, 2 Two-seaters, 10 privately owned Sailplanes. Hangar and Clubhouse. 206 members, 130 "A," 85 "B," 60 "C." Subscription: £3 3s. Flying: 3s. per day. (Long soaring flights charged according to duration. Private owners pay 1s. for each winch haulage up the hill.)

Manchester.—Particulars not obtained. (The club has a Secondary.)

Newcastle.—2 Primaries, 2 Sailplanes (private). Hangar and Clubhouse. 36 (?) members. Subscription: £1 1s., to be raised to £2 2s.

Portsmouth and Southsea.—1 Primary, 1 Two-seater, 1 Sailplane (building). Hangar. Members: average attendance 15. Subscription: £2 2s. Flying: Two-seater, 2s. 6d.; Primary 1s. 6d.

Preston and District.—1 Secondary, 1 Two-seater. 20 members, 10 "A," 5 "B," 1 "C." Subscription: £3 3s. Flying 2s. 6d. per day.

Rochdale.—2 Primaries, 1 Two-seater. Workshop. Members average attendance 12. Subscription £1 1s.

Scottish Gliding Union.—5 Primaries, 4 Intermediate, 2 Sailplanes (private). Workshop. 100 members (approx.). Subscription: £3 3s. Flying: 2s. 6d. per day.

Southdown.—1 Primary, 1 Intermediate, 1 Sailplane, 1 Two-seater. 35 members, 51 "A," 26 "B," 15 "C." Subscription: £2 2s. Flying: 1s. 6d. and 2s. 6d. per day.

South Shields.—1 Primary, 1 Secondary (building). Hangar Workshop. 20 members. Subscription: £1 5s.

Tees-side.—1 Primary, 1 Sailplane (building). 35 members, 1 "A." Subscription: £2

Ulster.—1 Primary, 4 Sailplanes. 36 (?) members, 20 "A," 9 "B," 7 "C." Subscription: £4 4s.

Whitley Bridge and District.—1 Primary. Hangar. Members average attendance 12. Subscription: £1 1s.

Wilts.—1 Primary, 2 Sailplanes (building). 24 members, 1 "A," 1 "B," 1 "C." Subscription: £3. Flying: Id. for 5 secs.

Yorkshire.—2 Primaries, 1 Intermediate, 2 Secondaries, 2 Sailplanes, 1 Two-seater. 45 members, 4 "A," 3 "B," 18 "C." Subscription: £3 3s. Flying: 2s. per 30 mins., plus 6d. per 15 mins.

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Particulars of your nearest or most convenient Gliding Club can be obtained from the Hon. Secretary of the Association.

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