

# THE SAILPLANE

Price  
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## AND GLIDER

(Founded in September, 1930, by THURSTAN JAMES)

### ROYAL INTEREST IN THE GLIDING MOVEMENT



Their Majesties the King and Queen of the Belgians inspecting Herr Kronfeld's sailplane "Wien" at Brussels. Mdll. Lippens is seen to the right of the photograph.

### THE SAILPLANE AND THE FUTURE

In the issue of November 6, reference was made to the loss which THE SAILPLANE has sustained in the resignation of Mr. Thurstan James from the post of Honorary Editor. It would not be unnatural if there were found to exist, at the present moment, a certain amount of uneasiness among the regular recipients of the paper with regard to its future. Mr. Thurstan James admittedly set a high standard, and it is no easy task to follow in the steps of an Editor who combined rare journalistic talent with devotion to the cause of the Gliding Movement. It may not be out of place, therefore, to take this opportunity of reaffirming the role which THE SAILPLANE should fill in the Gliding Movement and of indicating the main features of the paper as, it is proposed, it should appear in the future.

First, let it be remembered that the British Gliding Association has now acquired, and publishes THE SAILPLANE, so that the latter becomes at once the official organ of that body. This does not

mean, however, that THE SAILPLANE belongs to, and expresses the views of, a few individuals who happen to live in and about London but that it is the property of the British Gliding Movement as a whole. The Chairman of the Association, in fact, in taking over the paper on behalf of the Association, made it quite clear to the late Editor that he would regard it as most unfortunate if the latter were to feel that the change imposed any curb on him in the matter of freedom of expression of views.

The Movement must realise that although THE SAILPLANE is now the property of the Association, it is still the medium of free expression of thought and opinion, however much the views expressed may clash with the official view.

The Chairman has assured the present Editor that he still adheres to this view, and has promised him his whole-hearted support in maintaining full freedom of expression in THE SAILPLANE.



The Headquarters Organisation is essential to co-ordinate the work of the affiliated clubs, to guide and advise with regard to their activities and to foster the Gliding Movement so that it may become a real, live factor in British Aviation. But the main responsibility of furthering the Gliding Movement in this country lies with the Clubs themselves; however perfect the Headquarters Organisation may be, the Movement will come to nought unless the Clubs do their part and do it well.

It is essential, thus, that THE SAILPLANE should reflect the opinion of the whole British Gliding Movement. This ideal cannot be attained unless every Club and every individual Member recognises his responsibility in regard to the Journal. Frank discussion on any matters affecting the Movement—without, let it be added, rancour or bitterness—constructive criticism and ideas for improving and enhancing the value of THE SAILPLANE will always be welcome. News of the activities of Clubs or of individual members, particularly reports of new achievements or of new records will ever find a prominent place but it rests with the Clubs to see that this information reaches the Editorial Department. If any particular article or item of news does not find its way into publication, the contributor may rest assured that it has not been overlooked or lightly cast aside but that it has received full and sympathetic consideration.

It is hoped to continue the series of technical articles which have been a feature of THE SAILPLANE hitherto. And, in this connection, regular subscribers must bear with the Editor if it is found that there is a bias towards Meteorology. The Gliding Movement cannot progress far without this science; every potential sailplane pilot must, in fact, be something of a meteorologist. The acquiring of an "A" or "B" or even of a "C" Certificate is a good beginning but it is by no means the end. The aim of every member should be not only to get into the air **but to be able to stay there**, thereby opening up for himself a new vista filled with endless possibilities. This cannot be achieved without Meteorology. Appreciation of the meteorological conditions which give rise to upward currents and of the conditions associated with different cloud formations, ability to read a weather map and to pick out the types of weather suited to sailplaning must form part of the equipment of every would-be soaring pilot. But he must not be satisfied merely with information culled from the totally inadequate literature on the subject; he must be prepared to acquire knowledge first-hand and

to use it. THE SAILPLANE will do everything possible to assist towards this ideal.

Let it be stated at once, lest the reader is becoming apprehensive, there is no intention of making THE SAILPLANE a purely meteorological journal. This aid to soaring flight, important as it is, will be kept in its proper perspective. The aim is to make THE SAILPLANE a truly representative and worthy organ of the great Gliding Movement and not to confine it to one small aspect of the subject or to make it the mouthpiece of one particular faction. The news section, including up-to-date information from both British and foreign gliding centres, articles designed to help beginners as well as those who are more advanced, details of the design and performance of new machines, notes dealing with instrumental aids to soaring flight and reviews of new books which are likely to be of interest will all continue to find a prominent place in THE SAILPLANE. In the section under "Official Notices" announcements regarding new rules and regulations or similar items which amend or add to the information contained in **The Handbook of the British Gliding Association** will be indicated as such and, whenever possible, will be printed in such a way that they can easily be extracted for permanent retention.

It will be gathered that there is no intention to revolutionise THE SAILPLANE but rather to maintain with unabated vigour the policy which has marked it throughout the period of Mr. Thurstan James's able editorship. But there is another aspect of the subject which must not be overlooked. If the Gliding Movement is to continue to flourish there must be a steady flow of recruits from outside. Further, the Great British Public in general and Aviation circles in particular must be kept alive to the national importance of the Movement. It is here that THE SAILPLANE can render signal service. In addition to meeting the needs of its immediate supporters it must continue to propagate the gospel of the Gliding Movement in no uncertain terms. Here, again, Clubs and individual members can assist, not only by suitable contributions as referred to earlier, but also by helping to increase the circulation of their journal. There are many ways in which the latter can be done; in the first place every Club member should subscribe individually to THE SAILPLANE and secondly he can advertise it as widely as possible among his friends and in his locality. The future of the Gliding Movement and of THE SAILPLANE is assured if all concerned will pull together whole-heartedly for the good of the Movement and all that it represents.

## For Beginners Only

By A BEGINNER.

Do not be unduly alarmed by the photograph of a ZOG-LING in a vertical bank. The pilot emerged unscratched and no doubt said that "a gust blew up the right wing." Actually what happened was this: At launching, the nose of the machine was held up and up and up. Somewhere round about stalling point the left wing began to drop. The left aileron was therefore depressed; in the photograph you can see that the aileron is hard down.

To the stupefaction of the pilot, **the left wing continued to drop** to the rapid and bitter end. The depressed aileron had ruined the last trace of proper air-flow at the left wing-tip, while the raised right aileron, working in more rarefied air above the wing, failed to achieve an equal blue ruin at the right wing-tip; if it had, then the nett result would not have been so grim, and the machine might have pancaked on a fairly even keel. With a more ticklish machine, these conditions would have led to the first movements of a spin.

Hence the evolution of differential ailerons, slots, and the floating ailerons used on the CURTIS machine in the Guggenheim Saffet Competition. (For full details of such devices see Bradbrooke's "Light Plane Manual." The R.A.F. Training Manual is also explicit.) With differential ailerons a movement of the stick to the left depresses the right aileron less than it raises the left aileron, and vice versa.

Slots open near stalling speed and guide the air-flow over the upper surface of the wing, retaining the flow in the required direction long after it would otherwise have strayed.

Floating ailerons of the CURTIS type are not flaps hinged to the rear edge of the wing, but are complete wing-tips pivoted on their centre and left free to float, so that they automatically line themselves up with the downward to upward air-flow of a pancaking machine. At the same time lateral movement of the joy-stick still controls

the movement of the floating ailerons relative to each other.

The moral is that ordinary ailerons must be treated with respect. They are extremely deceptive unless the machine is definitely travelling faster than its stalling speed.

Power-plane pilots need not be bothered too much by these considerations, but glider pilots are distinctly interested, since a glider is never far above its stalling speed unless it is put into a hearty dive. In fact a skilful pilot attempting to soar in a feebly rising air-current is playing tip-and-run with his stalling limit the whole time.

Assuming that you are deliberately flying near stalling speed and that your left wing begins to drop, what are you going to do about it? If you instinctively bang your stick over to the right, your wing may drop even more (see photograph) and in no time you will be in difficulties, especially if you are near the ground.

If you have ample height, ignore the ailerons temporarily, ease the stick forward, pick up speed, temporarily ignore any side-slip toward the lower wing and only ease the stick to the right when you have picked up ample speed. Or, at a height, if you do not like side-slips, ease the stick gently forward to pick up speed, and simultaneously put on gentle bottom rudder, turning into the slip. When you have speed, lift the lower wing by normal use of the ailerons and resume your course. Ignorant critics will accuse you of vacillation, but your instructor will say, "Oh, pretty work, Sir!"

When you are within a few feet of the ground the situation is not so gay. While you are picking up speed, you will hit the deck, and bang goes what little reputation for reliability you have collected. The old moral immediately emerges: good flying consists of avoiding impossible situations. Therefore, when nearing the ground, have plenty of speed. You will recover your lost seconds by a long float a few inches above the daisies.

But, if you are caught out, you still have some methods of escape. You may have been trapped quite legitimately by sinking out of a fast-moving air-current into the comparatively still air which lies immediately above the





The Last Flight of the Day.

ground. You have failed to put on the extra ground-speed that will compensate the comparatively sudden drop of air-speed; always assuming, of course, that you are landing up-wind. Your left wing drops. You dare not slam on the ailerons.

If you have a large-span machine with sensitive rudder, slam on the rudder. This will check the forward travel of the upper wing, and correspondingly increase the forward travel of the lower wing, which will now be given the extra lift required to raise it. Your cross-wind landing will be a harmless affair compared with the alternative of a smashed wing.

If you are flying a more elementary machine and your left wing drops at the last moment, then your best hope is to slam on bottom rudder. Your left wing-tip will

touch the ground; but, since you are now pivoting on it, its forward travel will be very slight and you have a sporting chance of keeping it intact. Your machine will twirl round to the left, and finish with its tail into the wind. This form of landing is practiced as a legitimate trick by one of the most experienced glider pilots in the country.

Best of all, go like smoke when nearing the ground. Ease her back at the last moment. If you touch and bounce, be careful that you don't let your nose fly up. Aim to float along with the oat-heads or grass-tips or dandelions just tickling your skid. It is huge fun and helps you to sneak another certificate, inasmuch as the Official Observer cannot detect your exact moment of landing and therefore hands you the benefit of any doubt!

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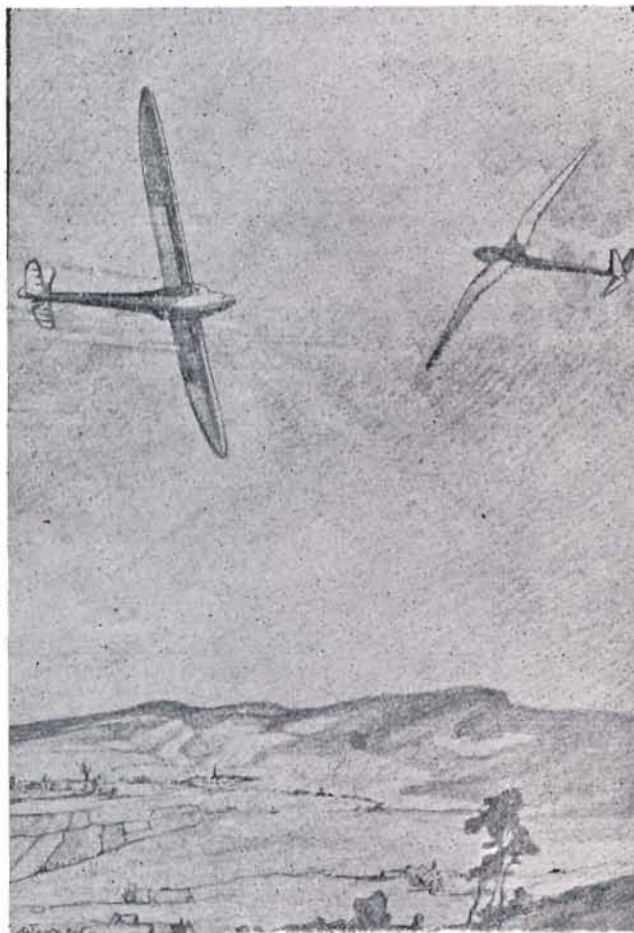
# ONE HUNDRED & TWENTY MILES ON THERMAL CURRENTS

By WOLF HIRTH.

[Wolf Hirth needs no introduction to readers of THE SAILPLANE; his exploits are too well-known and widely appreciated. We count ourselves lucky to have obtained this excellent account, translated by Roland Hirth, of the flight from the Wasserkuppe to a little village called Brohl beyond Coblenz which Wolf Hirth made this summer during the Rhon Competitions. This flight, of 119 miles to be exact, is the longest soaring flight yet made by the aid of thermal currents. Perhaps we should explain for new readers of the paper that thermal currents are the invisibly ascending columns of air due to the heat from certain types of terrain raising the temperature of the air over it to a greater degree than the cooler air round about. These thermal currents are regarded as likely to increase largely the scope of motorless flying, for by their aid soaring may be done far from hilly country and without the aid of clouds. The great exponents of soaring flight, however, have all found that these currents are impossible to detect without the aid of sensitive instruments.—ED.]

During the year 1931, as in previous years, there have been fresh achievements, and an improved understanding of the art of motorless flying. The flights under purely thermal conditions which were made during the 12th Annual Contest in the Rhon mountains, came as a surprise to those not closely in touch with the subject. For Kronfeld, Groenhoff, and myself they were practical tests of carefully worked out theories.

Otto Fuchs, who might have had a word to say in our exploration of thermal currents, was, by reason of a very regrettable accident, set *hors de combat* on the first day of the competitions. Let us hope he will soon be flying again.



"To the observer below our apparently endless double spirals may have given the impression of an air fight."

In the Jan., 1931 issue of THE SPORTSMAN PILOT, I described the American Distance Record I made last year. The 33 miles air line was covered in 2½ hours (Elmira to Apalachin). The flight was made under a cloudless blue sky at altitudes of between 1,800 to 3,000 ft. above my starting point. It was my first flight in pure thermic. In character and execution it was exactly similar to the

recent flights from the Wasserkuppe, and only lack of experience prevented me from reaching a greater distance.

On Aug. 2, meteorological conditions occurred which were very rare in the history of Rhon Meetings: "Strong East Wind." Adverse circumstances prevented me from reaching the starting place before noon. Some of the boys, under leadership of Pfeiffer of the Marcho-Silesia Club of Breslau, had been soaring their machines all the morning at altitudes of almost 3,000 ft. above the East-Hang (ridge) of the "Eube."

Groenhoff, after reaching a great height, had disappeared behind the horizon.

When I started, the wind had noticeably decreased, so that my ship could be kept aloft only with great difficulty. In the company of two other comrades, I manoeuvred along the ridge not much above the tree tops, only once in a while were we carried up somewhat higher by a gust of thermic. Finally, after about half-an-hour of this more or less cheering pastime, I found an upwind channel which, although affording but little climbing speed, was expansive enough to allow circling.

By applying this method, which by the way I had tried out for the first time in America last year and which I had practiced very thoroughly in the course of five flights at Grunau, I succeeded once again in climbing steadily without the aid of clouds or hill up-winds. When I had attained an approximate height of 650 ft., I left the hill-sides of the Wasserkuppe and reached in seemingly endless spirals an altitude of 1,900 ft.

When the first chimney of rising air was completely spent and would give no further altitude, the peak of the Kuppe was lying some 5—6 miles behind me. Some butterflies which had been carried into the "Upper Regions" showed me, that a new up-wind zone must be near by. Although this proved to be of no great strength, it helped to carry me forward a few miles without losing height.

I had reached a point south of Fulda, when a buzzard, circling some 300 ft. below me, called my attention to new up-streaming masses of air.

Hardly had I begun to circle in this newly discovered field of activity, all the time admiring the beautiful landscape underneath, when I noticed a machine approaching from the north. Soon I was able to recognise it: Groenhoff's FAFNIR. Again we had met as by appointment.

The previous occasion had been during that memorable flight before a thunder-storm which carried me to Halle a/S., a distance of 115 miles. On that occasion it was quite natural that, cruising up and down the "front," we should meet sooner or later; but in this instance it was a remarkable coincidence that, having started at different times and after flying all over the map for over an hour, our quest for thermal currents should bring us together again.

Of course we stayed together from now on, to our mutual advantage. As soon as one of us had found new up-currents, the other would promptly take part in the exploitation of this discovery.

It was like playing tag in the vastness of the blue sky. To the observer below, our apparently endless double spirals may have given the impression of an air-fight, in reality it was closest air co-operation.

Gradually the scenery below changed and became unfamiliar to me. I suppose that Groenhoff would know this part of the country and as we were travelling in a general direction towards Frankfurt a/M., I did not pay very much attention to our whereabouts. So we kept on moving at altitudes of 3,000 to 3,500 ft. above the level of the Wasserkuppe. Now and then we separated, searching for better up-currents and very often one of us flew a few hundred feet higher than the other.

When we had flown together for about an hour or one hour and a half, we crossed a fairly wide river. At first I took it for the Main but then I thought, I must be mistaken. While I was still wondering what river it might be, I happened to think of the FAFNIR. It had vanished completely as if swallowed by the earth. In vain I searched back and forth for a short time, my travelling companion was nowhere to be found. Feeling a bit lonely, I resolved to continue the trip alone.

By this time the fine feathery clouds, that sometimes had crowned the thermal columns, became scarcer; soon with the approaching evening they would disappear entirely.

Immediately after losing sight of Groenhoff, I had fallen to 200 meters (650 ft.) above my starting point: This was, as I learned later on, near Limburg a/Lahn. Bright



fields of wheat, partly harvested, gleamed from the distance and gave promise of new soaring possibilities. I knew, there must be thermic over there if it was to be found anywhere.

As soon as I was over this vast area of corn-fields, my variometer showed me that I had made no mistake in altering my course. Anew a steady and continuous up-wind which radiated from this ideal heat reservoir not only carried me for many miles towards an approaching chain of hills but afforded enough altitude to clear this new obstacle on the road to my unknown goal somewhere in the West.

At this time, about 3½ hours after start, I perceived straight ahead a broad silvery ribbon winding its way snake-like through the distant landscape. A presentiment soon became conviction and with a feeling of happiness and pride I whispered to myself: "Boy, boy, now you've just got to make it, you've got to get there, to the Rhine."

Gradually the countryside became more and more unfavourable. Slowly but surely I was losing precious height, the hills ahead appeared taller and steeper. Near Bad Ems I had fallen to a bare few hundred feet above ground. In desperation I looked and searched for a way out; the decision which way to turn became more and more pressing, but once more, luck was with me! After sailing for some time in the shadow of one of the dented "Lahn" mountains I "struck" a very useful thermal column in which I spiraled to a considerable height so that I could reach and pass "Old Man River" Rhine at a height of at least 3,000 ft.

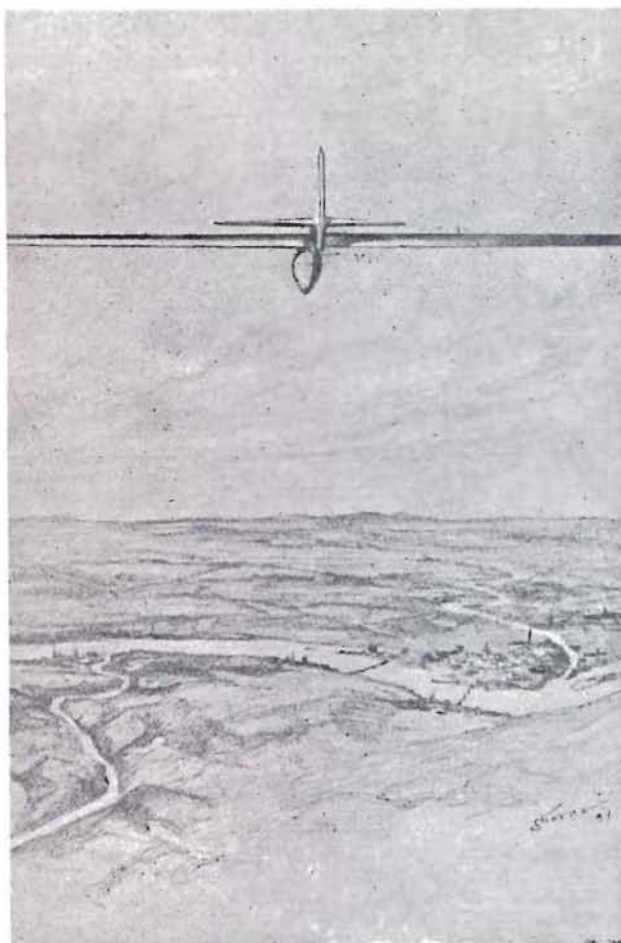
It was between Oberlahnstein and Coblenz. Tugs and passenger boats were steaming up and down the river. Above Coblenz both banks of the Rhine were covered with dense masses of humanity in search of air and sunshine. Many, perhaps most, saw for the first time a sailplane in flight. The question of one of the bathers whom I met next day in Coblenz on my way home was significant: "Tell me, is it possible to fly a sailplane in a straight line?" He and all the others had seen me appearing over the hills and disappearing in the direction towards the Moselle and all the time I was curving around in even circles.

When I crossed over the Moselle, the day had advanced so far, that I could expect no more thermal up-currents. As I had done considerable motor-cycling in this part of the country, I was quite familiar with the general topography. I knew that if I could reach the "Eifel," its high slopes would afford enough up-wind to keep me going. I therefore directed the nose of my wooden bird towards North.

But the Eifel was too far away! I was sinking! Faster than I expected I lost my height and had to turn south back to the Moselle.

It was now time to look around for a suitable spot to land. The fields far and wide were very small and surrounded with fruit trees and orchards besides. There were altogether too many telephone and other electrical lines to suit my taste in regard to a landing field but with a bit of good luck I succeeded in finishing this distance flight (my 23rd by the way) like all its predecessors, without the slightest damage to my ship.

I was less fortunate in the choice of the village near where I landed. There are three more Brohls in the vicinity so that my transport-crew in the 6/30 h.p. "Wan-



"I perceived straight ahead a broad, silvery ribbon."

derer" had to search all night before they discovered me in this hidden little mountain nest.

The distance of 119 miles (192 km.) was very satisfactory but more important than the distance was the fact of having flown from the Rhon to the Rhine. For the first time in the history of Rhon meetings we had reached far into the West.

Farther and farther we fly without an engine, more and more independent we become of the formation of terrain and air-currents.

The most astonishing flight during the Rhon meeting of 1931 probably was the one which Kronfeld made on the last day of the Competitions. The distance was 156 km. (196 miles), the direction north-west into Westphalia, and the weather was clear and practically windless.

Next year, maybe, we will fly into France, Belgium or, who knows, into Russia.

One thing is sure: Motorless flight is progressing.

### THE AMERICAN GLIDING MOVEMENT

Some interesting figures have come to hand regarding the status of gliders, and glider pilots in America up to July 1, 1931.

State	Gliders	Pilots	State	Gliders	Pilots
Alabama	...	2	Montana	...	1
Arizona	...	3	Nebraska	...	8
Arkansas	...	0	New Hampshire	...	5
California	...	257	New Jersey	...	38
Colorado	...	93	New Mexico	...	1
Connecticut	...	12	New York	...	119
Delaware	...	3	North Carolina	...	5
Dist. of Columbia	...	9	North Dakota	...	3
Florida	...	11	Ohio	...	104
Georgia	...	1	Oklahoma	...	12
Idaho	...	6	Oregon	...	10
Illinois	...	71	Pennsylvania	...	39
Indiana	...	30	South Carolina	...	2
Iowa	...	21	South Dakota	...	11
Kansas	...	54	Tennessee	...	6
Kentucky	...	2	Texas	...	16
Louisiana	...	2	Utah	...	7
Maine	...	1	Vermont	...	1
Maryland	...	9	Virginia	...	6
Massachusetts	...	22	Washington	...	16
Michigan	...	121	West Virginia	...	4
Minnesota	...	23	Wisconsin	...	22
Mexico	...	10	Wyoming	...	3

### NOTICE.

We are asked by B.A.C. Ltd., to announce that their assistant demonstration pilot, Mr. C. J. Longmore, will be available during the winter months for the purpose of giving gliding instruction, either on one of their two-seater dual control machines or on existing club equipment. Their terms are as follow:—

#### Dual Control Instruction.

Seventy lessons for the sum of Ten Pounds payable in advance or £5 down and balance on completion of term. The seventy flights must not extend over a period of more than six days, this to include one week-end. These flights may, of course, be retailed to members of Clubs at any price as fixed by the committee.

#### Instruction on Club Equipment.

Six days attendance of Instructor, who will be at the complete disposal of the Club, for the sum of Six Guineas. Longer terms pro rata, or nine days including two week-ends for the sum of Ten Pounds.



## CLUB CONSTRUCTED MACHINES

By "SEGELFLIEGER."

(A new series of articles designed to help Clubs to build their own machines.)

### I.—CLUB INSPECTORS AND MATERIALS.

Amateurs have already proved themselves capable of building sailplanes and primary gliding machines. Now, during the short winter days, every go-ahead Club ought to be meeting at least twice a week for constructional purposes.

The hackneyed cry, originating generally from manufacturers, that it is impossible for Clubs to build their own machines, has long since been exploded. So much so that one enterprising firm (British too) is offering drawings and semi-built parts for that intermediate machine which every Club will need next summer. Now is the time to build that machine if the club cannot afford to buy one outright.

There are always a good many difficulties to surmount at first, and in these short articles, I hope to be able to help go-ahead Clubs with a few suggestions and hints picked up by experience at home and abroad.

First of all, before any expenditure is required, the Club should obtain drawings which the B.G.A. has already passed, or will pass, as air-worthy. If the drawings are certified by the B.G.A., the Club may rest assured that the machine will fly, if properly built.

Having obtained the drawings, the Club must have definite organisation and a definite method of construction. Above all, it must have a certain standard of workmanship to which it must endeavour to keep.

#### ORGANISATION.

If a Club undertakes the building of a machine, it should first make definitely certain that the drawings of the machine have been approved by the B.G.A. Some Clubs overlook the possible complications that might arise in the event of a fatal accident in a machine of their own construction having no Certificate of Airworthiness. This point is, in my opinion, most important and cannot be stressed too much.

The next thing a Club ought to do is to find a Club Inspector. It is no good building a complete machine and then having it condemned by the B.G.A. Inspector as unsafe, due to faulty workmanship.

The Club Inspector ought to make his inspection of each integral part at least as severe as that of the B.G.A. Inspectors. Thus, when the machine is finally inspected, there ought to be very little to alter and work can go straight ahead on the covering.

The position of Club Inspector ought not to be difficult to fill. Such men who, during the war, worked in an aeroplane factory, are quite capable of filling the position,



A 60 ft. spar machine built, and eventually flown by a boy of seventeen.

as also are men who belong to the wood-working trades who have had war experience on aeroplanes. Failing such a man, who would be willing to inspect the Club's work once a week, an engineer who has some experience of materials might be pressed into the position. Possibly the Club might entrust the position to its official B.G.A. Rigger.

When looking for a suitable man the Club should point out that there is no responsibility attached to the position since the final inspection still remains in the hands of the B.G.A. Inspector. On the other hand, the Club Inspector will be doing the Club a very valuable service, by pointing the way to raising the standard of work, and so making the resulting machine a REAL credit to the Club. By his careful inspection, he will incidentally save the Club as much as 25 per cent. of the total cost.

Hence the Inspector's job will also be to stimulate a pride among the Club enthusiasts for their work; once he has got the right spirit in the Club, his work, as well as the work of building the most difficult machine, will become comparatively easy.

#### MATERIALS.

For these the Club should refer for advice to either the B.G.A. or the manufacturer who has supplied the drawings.

One intermediate sailplane which has already been built by a Club, and has obtained a Certificate of Airworthiness, was built of the following materials which were found to be in every way satisfactory.

**Timber:**—Spruce Wood, commercial A1 quality. Care was taken to choose the sound straight-grained variety.

**Three-ply:**—Aircraft three-ply was used for all spar webs; commercial ply was used everywhere else.

**Metal:**—Commercial mild steel.

**Bolts:**—Commercial auto bolts.

**Glue:**—Cold water glue; the ordinary Casein glue was used throughout.

**Finishing materials:**—Clear varnish, carriage varnish.

**Fabric:**—Special light and cheap cloth is now manufactured for sailplanes.

(To be continued)



The possible outcome of a go-ahead Constructive Section—an experimental light single seater aeroplane built entirely on sailplane lines.



## AN INSTRUMENT FOR SAILPLANE PILOTS.

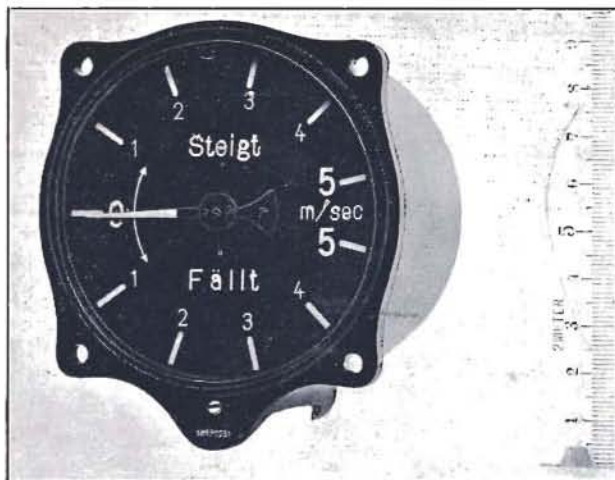
Everyone who has followed the latest developments of Motorless Flight with care has realised that after a certain stage has been passed the pilot can only progress further with the aid of properly designed instruments. The lesson was driven hard home at the this year's Rhon Competitions when the elaborate instrument equipment of the successful machines showed how much the leading pilots rely on instrumental aid.

If we are to progress beyond our present stage of soaring in hill up-winds we must learn how to use thermal up-currents. Before this is possible we must learn how to find such up-currents. This can only be done with the help of an instrument so delicate that it will indicate small differences in the vertical speed of the machine in which it is fitted. These indications must show the movement of the machine either up or down. As the approximate sinking-speed of the sailplane is already known the strength of the up or down-current can immediately be ascertained. So important is this instrument, generally called a variometer in Germany, that when Herr Wolf Hirth came over here for the International Meeting, he brought one with him together with a compass, in the hope that he would be able to fit them in a borrowed machine and do some thermal soaring.

The German firm of instrument-makers, Askania-Werke A.G. (whose London office is in charge of Mr. G. Karlowa, at Abford House, Westminster, S.W.1.), after years of careful work have produced a very sensitive Variometer which is particularly suitable for use in sailplanes.

It consists of a highly sensitive pressure-gauge connected by a tube to a flask protected as far as possible from the influence of temperature. The whole is also connected to the outer air by means of a calibrated capillary tube. The gauge measures the difference between the pressure of the air in the flask and the pressure of the atmosphere. When climbing the inner and outer pressure decreases but the air in the flask can only escape slowly, thus creating a difference in pressure. This is used to indicate the velocity of climb. When descending, this procedure is reversed.

The value of a variometer depends on the sensitiveness of the measuring element to extremely minute differences of pressure. The ordinary variometers used hitherto have been constructed on the principle of a liquid gauge, or where diaphragm instruments were used the diaphragm



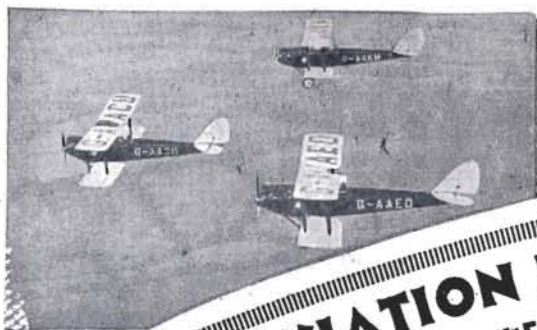
The Askania Variometer.

consisted of a rubber membrane. Both these systems, however, have serious disadvantages.

It is obvious that a liquid manometer cannot be used for the purpose in question and instruments with a rubber diaphragm are not sufficiently reliable as the diaphragm wears out after a very short time.

The Askania Variometer is based on the metal diaphragm system, which has been perfected after years of experiments. Variations in altitudes are easily observed as the pointer moves upwards when the machine climbs and downwards when it falls.

The instrument which is shown in the photograph will indicate rates of climb and descent up to 5 m/sec. (16.4 ft./sec.), which figure is some way above the strength of current **usually** met. People who are interested should get in touch with Mr. Karlowa but only responsible persons with adequate means should do so as these instruments cost a certain amount of money. One imagines that they could be calibrated in feet if so required.



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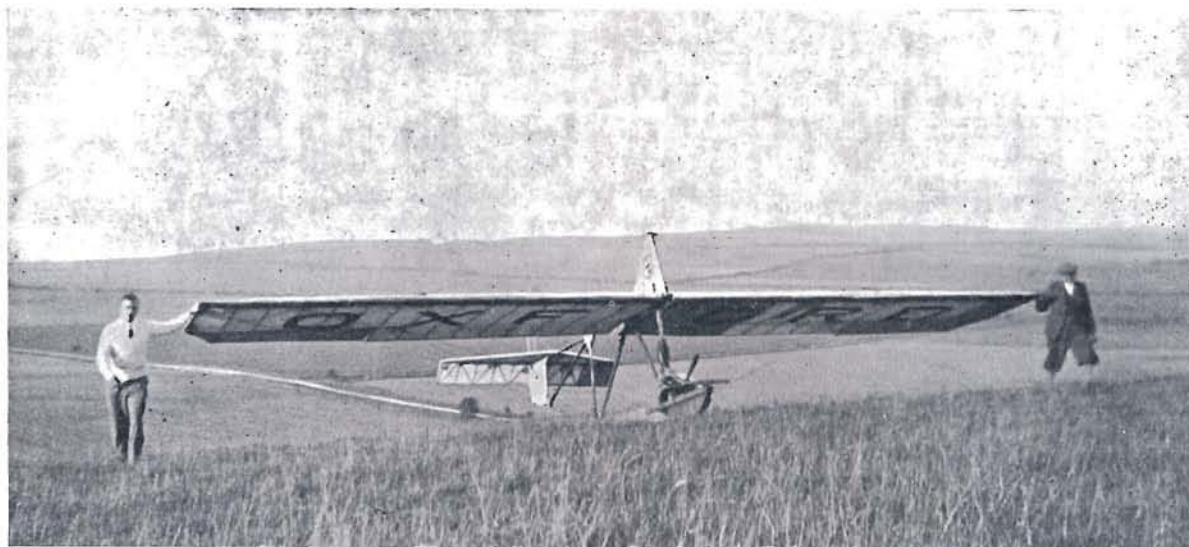
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## A SIMPLE RETRIEVING GEAR

By A. F. HOULBERG.



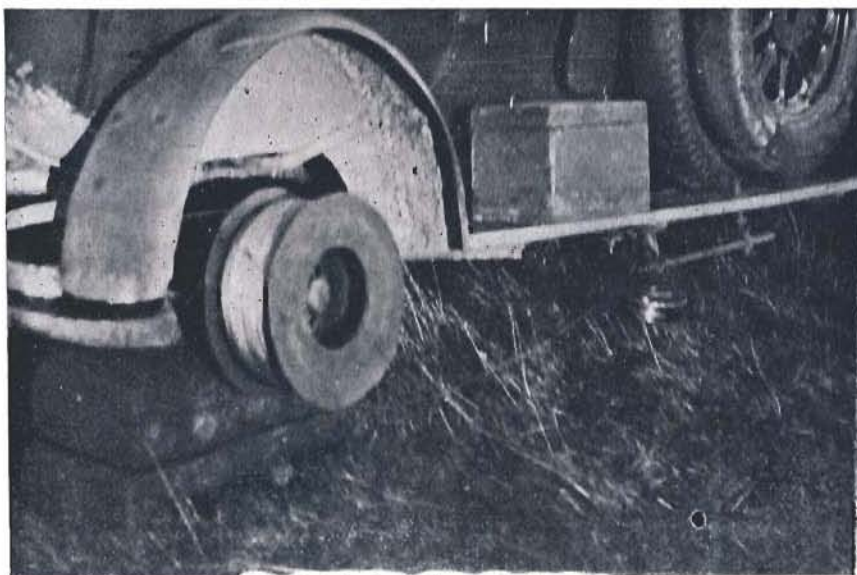
Retrieving a machine by the aid of the Oxford Club retrieving gear.

The two photographs which are illustrated here show the very simple retrieving gear which the Oxford Club has in use, consisting of a drum of wire cable mounted in place of one of the wheels, and a detachable hinged pulley mounted below the running boards. This particular arrangement enables the machine to be retrieved within the range covered by some 300° and the length of the wire, which in our particular case is about 600 yards. With this arrangement it is possible to retrieve the machine in ten minutes from the time of launching in the majority of cases. The other photograph illustrates the easy way in which the machine is returned. The pilot is steadying one wing tip, while the other member, whose duty it was to take the end of the wire rope down to the machine, steadies the other. Utilising this retrieving gear for launching purposes it is quite a simple matter for only four persons.

The method of employing this retrieving apparatus for launching purposes is to anchor a pulley on the edge of the hill some 150 feet ahead of the machine, a stout hemp rope being hooked on to the usual hook for the launching-rope, and passed round this pulley. Between the pulley and the car is the rubber launching rope, to which is attached the end of the retrieving cable after the machine has been brought back. The car then extends the rubber rope, and as soon as sufficient tension is applied to it the machine slides forward and takes the air. We have found this method of launching more gentle than the usual

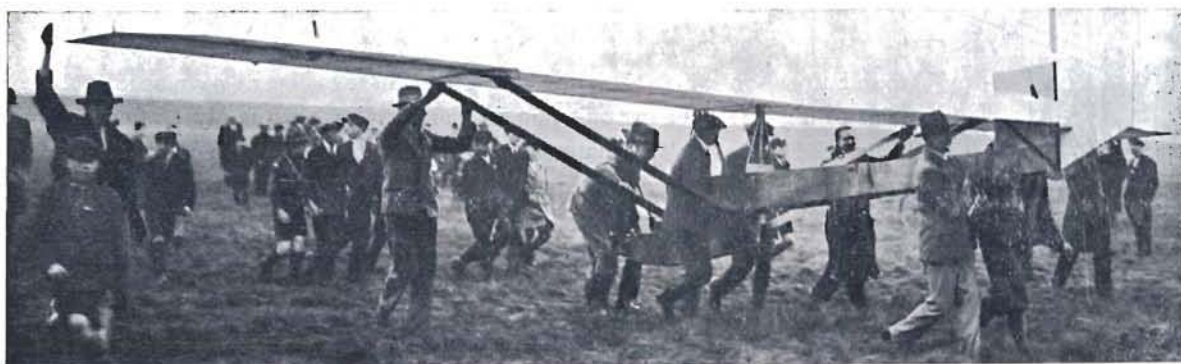
launching party method and in many ways to be preferred.

Another advantage of this method of mechanical launch-



The Retrieving Gear Mechanism.

ching is that there is no risk of damage to pilot or launching party should the launching rope break. We have used an old rope for the purpose of experimenting and broken it several times without indication of the slightest danger. We have also broken the hemp rope several times without damage.



An older and more laborious method of retrieving.



## CORRESPONDENCE

## Mr. Norway Replies.

Sir,—May I reply as briefly as possible to Mr. Gordon England and Mr. Culver?

First, I much regret that my casual remark about the soaring season was ill-timed. Soaring, of course, is possible throughout the winter, though perhaps it requires a little more of the "he-man" spirit than it does in Spring or Summer. From the Club point of view continuity is essential, and I have no doubt that those Clubs which continue soaring through the winter will reap the benefits of fresh membership.

About Balsdean. Soaring flights have been made there on many occasions in the past, but only, I think, in unusual winds. For the prevailing South-West wind I would consider Balsdean a poor site for soaring. In a North-East wind, blowing from Lewes on to the back of Itford Hill, it should be moderately good in spite of its low altitude, but that wind is not common.

About precipices. I used that word advisedly, because it seems to me that too much has been made of the hill with the smoothly rounded top. A rounded top to a hill is probably necessary for training, but does not appear to be at all necessary for "C" Licence pilots. For good soaring in a light wind, however, it is absolutely necessary that the light wind should be given a good vertical velocity—which means a very steep hill. The majority of the TERN's soaring flights have all been made off what I should describe as precipices—hills so steep that one could hardly climb up them without the assistance of the hands. We have never had the least trouble with eddies, though I have no doubt in a very strong wind eddies exist and would be found down wind from the cliff. On a gentle round-topped hill in a light wind, soaring tends to become an incessant struggle to keep up. In a wind of the same velocity at a steep cliff, soaring becomes an effortless cruising some hundreds of feet above the starting point. Which is the better for a competition?

Lastly, about the B.G.A. I had not realised that the necessity for a good "gate" played quite such a part in choosing a competition site. It is up to everyone to support the B.G.A. in its efforts to make money for the movement, and to attend its meetings with machines if possible even if it proves necessary to hold them nearer to good towns than to good hills. But may we not have one meeting next year where we can really fly upon the sort of machine that we have got? I feel myself that a real soaring meeting is quite feasible upon the lines that I suggest, and would do a lot of good. But it would not bring a "gate" of any magnitude. Suppose we had one such meeting, and three of the other sort. Would not that meet the case?—N. S. NORWAY.

## A Club Member Gives a Lead.

Sir,—Your Editorial in the issue of Nov. 20, of THE SAILPLANE, has brought to the fore a subject that I have heard much discussed in the Club to which I belong, viz.: the circulation of that mine of useful and interesting gliding information THE SAILPLANE.

Do people realise what a large circulation of a paper like this can and will do for the Movement?

Every Club member should be a subscriber, and for my part I intend to offer a year's subscription to THE SAILPLANE for the best or most deserving flight (as judged by our official observer) next Sunday by a member of my Club, with the proviso that if the winner already subscribes it should go to the best non-subscriber.—R.L.Y.

[A very sporting offer! We hope that many others will follow our correspondent's lead.—Ed.]

## A Tailless Aircraft developed from gliders.

Sir,—While power 'planes are not strictly within your sphere of interest, there has been considerable interest taken in Germany in tailless aircraft developed from gliders, and I thought that your readers might be inter-

ted in a tailless aeroplane built in this country, by which, possibly, glider design might be influenced, particularly as the machine has been designed, built and flown purely by amateurs.

The "Archæopteryx" was designed and built by my brother, R. J. T. Granger and myself with occasional help from friends, great assistance being rendered by Capt. C. H. L. Needham in the stressing. It was started in 1926, and being purely a spare time job took three and a half years to build. It was badly crashed in an early trial, and did not take the air successfully until about a year ago. Since then some 20 flights have been made totalling over 5 hours; many difficulties were placed in the way of our flying it, but these have recently been overcome and we are now flying it regularly.

The design is based on the "Pterodactyl," but by making it a tractor machine, the landing gear has been greatly simplified, and the rudder has been placed in the slip-stream, excrescences on the wings being thus avoided, giving clean entry, and extraordinarily good manoeuvring power on the ground.

The top speed over a measured course has been found to be 97 m.p.h. without a special propeller or any "hotting up" of the engine, and we expect to pass the 100 m.p.h. mark when sundry details are cleaned up. It can be flown stalled at a very steep angle under perfect control and with a very steep angle of descent. The ease with which it can be handled may be illustrated by the fact that one of its pilots has had only 7 hours solo experience.

The main features are these: Span, 30ft.; Length, 14ft. 10in.; Area of main planes, 102 sq. ft.; Engine, 24 h.p. Bristol Cherub Mark I; Wing-Loading, 5 lbs. per sq. ft.—R. F. T. GRANGER.

## A Defence of the "Zogling." ...

Sir,—Since Mr. L. P. Moore wishes to see his views concerning instruction debated, I should like to offer a defence of the ZOGGLING.

Personally, I learned to fly on a box-kite with an instructor sitting behind me, shouting orders in my ear and making an occasional grab over my shoulder for the top of the joystick, but there was no dual control. I was the possessor of my R.Ae.C. Certificate before I had completed 3 hours in the air. I then put in 10 hours solo flying and was kept on at the school as an instructor first by the shouting method and later by dual.

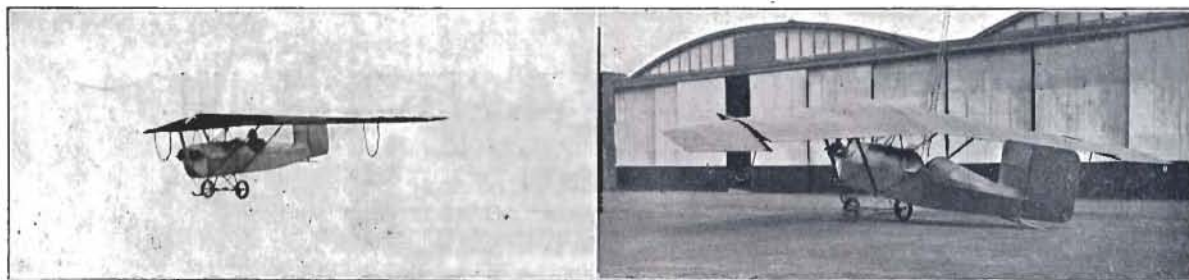
For nearly two years now, I have been one of the London Club instructors, and the ZOGGLING method is similar to the shouting method and is equally effective, judging by results to date.

The London Gliding Club has 7 *ab initio* "C" pilots, and I think I can safely say that the next soaring day will give us another 3 at least. All these and innumerable "A" and "B" licence pilots have been given their training on one Segel ZOGGLING which, although somewhat patched, is still going strong, so the equipment cost is not so very outrageous. The R.F.D. has been kept for "A" and "B" licences and is now fitted with a nacelle which we hope will enable our members to take their "C's" on the same machine.

Let me take a few of Mr. Moore's statements. He says: "Some people have been trained, successfully but inefficiently." Why the qualification? Has he seen these "inefficient" pilots soaring at Dunstable and elsewhere quite capably in high winds and light winds?

He then gives a list of disadvantages of the ZOGGLING: No. 1 I quite agree with, but the effect soon wears off. No. 2 is also true, but I do not agree that this occurs at a height. "An inherent inaptitude for flying," is discovered by any self-respecting instructor before the pupil ever gets to a height.

Continued on next page.



The "ARCHÆOPTERYX"—a tailless aeroplane built by the Granger brothers.



No. 3 I disagree with because I know from experience that proper instruction can be given from the ground.

I agree that the two-seater sailplane should provide excellent instruction, but maintain that the ZOGLINE already does so. Finally, pity the poor instructor on the two-seater, with a ham-fisted pupil, and no engine to help him. Instruction on power machines can be emotioning as well I know. May I be preserved from being required to give dual instruction on a sailplane! I think honorary instructors would rapidly retire. Professionals might consider the risks worth while if the pay were sufficiently high.—D.C.

#### An Outspoken Appeal for the Recognition of Local Records and for a Higher Standard of Certificate-flying.

Sir,—I have been asked by responsible parties to accept the onus of ventilating the following matters.

**Records.** Outstanding soaring flights are naturally achieved only when weather conditions are exceptionally favourable. Such conditions can rarely be foretold, and even the pilot may not be aware of them until he is actually in the air. To establish a national record, a flight must be witnessed by official observers. The consequence is that the national height record is less than 1,000 feet, while Buxton has actually reached 2,100 feet above his starting-point. Similarly, the national distance record is less than ten miles, while Kronfeld's flight to Portsmouth exceeded sixty miles. I am not certain about the duration record, but gather that Mole's last long flight greatly surpassed the national record. Again, Lowe-Wylde, at Dunstable, soared for something like a quarter-of-an-hour with a passenger; this flight was not observed officially.

Record-breaking for its own sake, is not treated in this country as particularly meritorious, but it is a pity that all the best flights should remain unrecorded, i.e., unregistered. It is therefore suggested that, if a good flight should be reliably witnessed, as distinct from officially observed, it should be definitely recorded in THE SAILPLANE rather than committed to oblivion.

As a corollary, such witnessed flights should be recognised as local records. For instance, the South Downs flights should include those of Maneyrol, Gray, Kronfeld, and Mole. The Dunstable Downs flights should include Buxton and Petre. The North Country flights, subdivided

suitably, should include Magersuppe and Petre. Other localities could be headed under Folkestone, Dorset and Wilts, the Welsh Hills, and any other area that gives efficient soaring conditions.

After all, the only merit of records is the establishing of the truth, and there are several million people in this country whose honesty is as far above reproach as is the honesty of an official observer.

**Certificates.** It is felt that certificates do not always serve their original purpose. A single observer of a flight sometimes lacks the moral courage, or ferocity, needed to refuse the granting of a certificate which has not been fairly earned. An "A" flight sometimes ends in a vile landing, a "B" flight sometimes lacks a couple of honest turns; a "C" flight can be miraculously bad. It is therefore suggested that no certificate should be obtained without the sanction of two accredited and reasonably fearless observers, and also that the conditions governing the granting of certificates should be tightened up. Nothing but good can come from a raising of the standard of certificate-flying.

The danger of this tightening-up lies in the logical development of the idea. Should flying-style be assessed? Should a "C" flight be permitted in a comfortable old kite like HOLS DER TE'FEL or DAGLING TWIN, or should it be in something resembling a real aeroplane, e.g., PRUFLING, KASSEL 20, or PROFESSOR?

The answer is probably: "Any style; any machine, right down to an airworthy tea-tray." All the troubles of the gliding movement are caused by too little time in the air and too much cackling on the ground. Therefore it is probably unwise, at this juncture, to cast a slur upon any machine, or upon any pilot who does everything that he can, by hook, crook, HOLS or TWIN, to increase the total flying time of the whole movement.

SEBERT HUMPHRIES.

#### A CORRECTION.

In Mr. E. C. Gordon England's letter—"Answering Mr. Norway"—on page 109 of the issue of Nov. 20, the following corrections, due to misprints, should be made:—

**Second column, line 3.** For "curses of the club" read "curses of the clubs."

**Last paragraph, line 3.** For "quite unnecessary amount calamity of profits" read "quite unnecessary number of prophets of calamity."

## SOLID ACHIEVEMENT

On August 24th, the 'Tern' set up an official British Distance Record of 8.3 miles, flown by Herr Magersuppe.

On September 27th the 'Tern' set up an official British altitude Record of 780 feet above the starting point, flown by Major H. Petre.

On October 4th the 'Tern' won the Rig and Fly contest at the International Gliding meeting in 3 minutes 36 seconds with a crew of five men. No previous practice had been made for this event.

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## NEWS FROM THE CLUBS



Gliding on the Imperial College Club's ground at Preston (North London).

## BRISTOL AND DISTRICT GLIDER CLUB.

## FIRST MEETING, NOVEMBER 28, 1931.

The first meeting of the Bristol and District Glider Club was not a success from the point of view of soaring flight. The wind, which had been blowing from the Bristol Channel for the last 6 months suddenly changed to North, and only blew in puffs of about 2 mi/hr.

It was due to the courtesy of Messrs. E. D. Abbott, of Farnham, that Bristol was able to watch gliding for the first time. The Scud sailplane received an enthusiastic welcome.

Flying-Officer Mole told us he intended to land in the corner of one of the lower fields, and he packed the Scud so closely into the corner that it could have not been placed there more neatly by hand. This display of ability was responsible for converting local power-pilots into gliding enthusiasts!

The Club intends to buy the Scud at the earliest possible moment. Mr. L. E. Baynes, the designer, does not recommend the machine for primary training, but as we have a great many power-pilots in the neighbourhood, and F./O. Mole thinks the Scud admirable from the power-pilot's point of view, we hope to woo our local lights from their legitimate game.

Both Mr. Baynes, and F./O. Mole consider the Club's site at Crook's Peak in the Bendip Hills the best they have yet seen in England.

I take this opportunity of offering to any pilot, club or firm the use of the site at any time they care to avail themselves of it. The Bendip Hills afford 25 miles of excellent soaring country, and visitors will receive a cordial welcome.—ANTHONY McLOUGHLIN (Hon. Sec., Bristol and District Glider Club).

## SCOTTISH CLUBS.

We understand that the Edinburgh, Falkirk and Border Clubs have gone over to auto-towing. The Kilmarnock Club is having an uphill fight owing to lack of flying members; the use of shock-cord launching is thereby handicapped. The work of the constructional Section, however, is being carried on. A complete trailer suitable for transporting the glider has been built.

## THE HUDDERSFIELD CLUB.

This Club is in a flourishing state and has absorbed some of the Sheffield Club members. The Club has a well-equipped workshop in which anything up to the building of a machine can be carried out.

Mr. Frank Booth has presented a Shield made by himself, to be won by the first member of the Club who makes a soaring flight of five minutes in an amateur-built machine. The trophy will be passed on to any member who breaks the local duration record. The following extract from a letter written by Mr. Booth to the Secretary of the B.G.A., may be of interest.

"It is only natural that certain people take up a new pastime for the novelty of the thing and after a time when they find it hard work and slow progress, as in Gliding, they gradually drop out and I think all Clubs in this country have lost quite a few members in this way.

"Therefore if the study of Motorless Flight over here is to benefit by the store of knowledge gained during the last year, some new stunt or novelty must constantly be introduced by each Club Committee to keep up the active interest of its members.

"It was this thought that gave me the idea of making and presenting to the Huddersfield Club the small trophy which has been received with enthusiasm far in excess of its monetary value, and the receipt of your kind letter coming as it does from the Headquarters of the Movement, shows that the B.G.A. is alive to the interests and efforts of its smaller Branches in the Provinces."

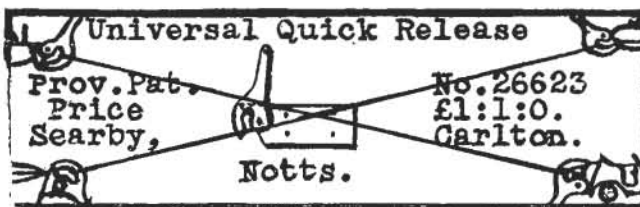
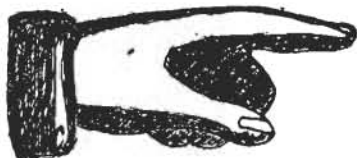
## THE LONDON CLUB.

The total number of certificates obtained by this Club is now 19 "C's," 31 "B's," and 52 "A's." (THE SAILPLANE of Nov. 20 gives the country's totals as 26, 64 and 220). *Ab initio* "C's" have been flown by Allan, Bolton, D. F. Dent, Humby, Moreland, Robertson and Smith. As a general rule the PRUFLING is used for "C" flights.

A healthy "B" was obtained on Sept. 6 by Grice, who waited until he had perfected his ground-hops and then

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## Christmas Greeting to our Oversea Readers

The British Gliding Association and The Sailplane take this opportunity of sending distant overseas readers heartiest Greetings for Christmas, and of Wishing them "Many Happy Soarings" in the New Year.

in the DAGLING made all three flights in one day, ending with 2 min. 40 sec., and averaging 1 min 55 sec. An abnormally good "A" was lately obtained by Grimstone in the DAGLING; during a flat calm and from a point short of the top of the hill he exceeded one minute. This gives a sinking-speed so fantastically low that one dare not suggest the actual figure. On the other hand, a marvellous imitation of rocket-propelled flight was given by a heavyweight who scrambled through his "A" before returning to Chile, his native land.

On July 18 and 19, Buxton, in a soaring test of the Cloudercraft PHANTOM, unofficially raised the duration record to 4½ hours, landing near the Zoo; Bolton, Culver and Scott Hall flew their "C," Slater and D. F. Dent their "B" and Humphries his "A."

We have now obtained from Buxton some of the essential details of his cloud-flight. In the Club PROFESSOR, and during the last summer-camp, he left the ridge immediately after launching and proceeded over the flat 3½ miles W.S.W., the wind being 28 m.p.h., westerly. He climbed all the way and touched 2,100 feet over Ivinghoe Aston, his aneroid having been set at zero at the launch. He then flew 2 miles N.E. to Eaton Bray, losing most of his height on the way, and thence returned to the ridge, now 2 miles east. Without landing, he worked up to 1,000 feet on the ridge up-current and flew down-wind 6½ miles east to Luton Hoo Park, where he landed. Duration, about three quarters of an hour.

The ridge runs almost north and south, and the launching point is about one mile from its northern extremity. The height of the ridge is about 230 feet, the country at the foot is a plain many miles wide, and the country behind the ridge a plateau. It should be noted that this cloud-flight was therefore necessarily different in technique from the continental type. For instance, the Wasserkuppe is so high that a cloud-soarer can float off the top in a gentle breeze nearly on a level with the cumulus clouds, and enter the cloud currents forthwith; whereas our low ridge necessitates very suitable conditions to enable the machine to work up into contact with the clouds many hundred feet above.

The previous duration record was obtained by Major Petre in the same machine on the same site, at Whitsun. As the wind was southerly and therefore flowing almost parallel to the ridge, he was obliged to tack over the projecting Bowl for the whole of the 3½ hours, a pretty handy feat of endurance, especially as he repeatedly

found the PROFESSOR trying to spin at the low air-speed imposed by the extremely narrow limits of the soaring area and by the mildness of the wind.—S.H.

## OFFICIAL NEWS and NOTICES

### DIARY OF FORTHCOMING EVENTS.

Tuesday, Dec. 15, at 5.30 p.m.—Lecture on "Design of Gliders," by Mr. E. H. Lewitt, B.Sc., M.I.Mech.E., in Room 15, the City and Guilds (Eng.) College, Exhibition Road, South Kensington. Joint meeting with the British Gliding Association and the London Gliding Club. Chairman:—Mr. E. C. Gordon England.

Monday, December 21, at 6.30 p.m.—Council Meeting, British Gliding Association. EXTRACTS FROM PROCEEDINGS OF COUNCIL MEETING OF THE BRITISH GLIDING ASSOCIATION, HELD ON NOVEMBER 15, 1931.

Present:—E. C. Gordon England (in the Chair), P. A Jordan, Leo Roy Brown, D. B. Culver, F. Entwistle, A. F. Houlberg, L. O. Kekwick, D. Morland, H. Petre, F. Pilling, A. N. Stratton, C. M. C. Turner, H. Ward, S. Whitborne, and the Secretary.

**Constitution of the B.G.A.** The draft rules and memoranda, having been considered by the Rules Committee, will be circulated to members in due course for consideration at the next Council Meeting.

**Finance.** It was reported that the value of each share of the proceeds of the Balsdean meeting available for distribution would amount to between 4s. and 5s., and that the distribution would be made immediately after the next Council Meeting.

**The Sailplane.** The Chairman reported that Mr. Entwistle had undertaken the Editorship of THE SAILPLANE in succession to Mr. Thurstan James. The Council decided by a unanimous vote to send a letter of appreciation to Mr. Thurstan James for his valuable services.

**Technical Committee's Recommendations.** The recommendations regarding the position of release gears, and those regarding licences for carrying passengers for hire or reward, were approved. The recommendations regarding power launching were considered further.

**Accident Reports.** A special accident form had been prepared and circulated to Clubs with a request that it should be completed and forwarded to the Head Office in the event of an accident occurring during their activities.

**Membership of the B.G.A.** Capt. R. L. Yates was duly elected.

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