

# SAILPLANE

AUGUST  
1935  
Vol. 6 No. 8

## AND GLIDER

PUBLISHED  
MONTHLY

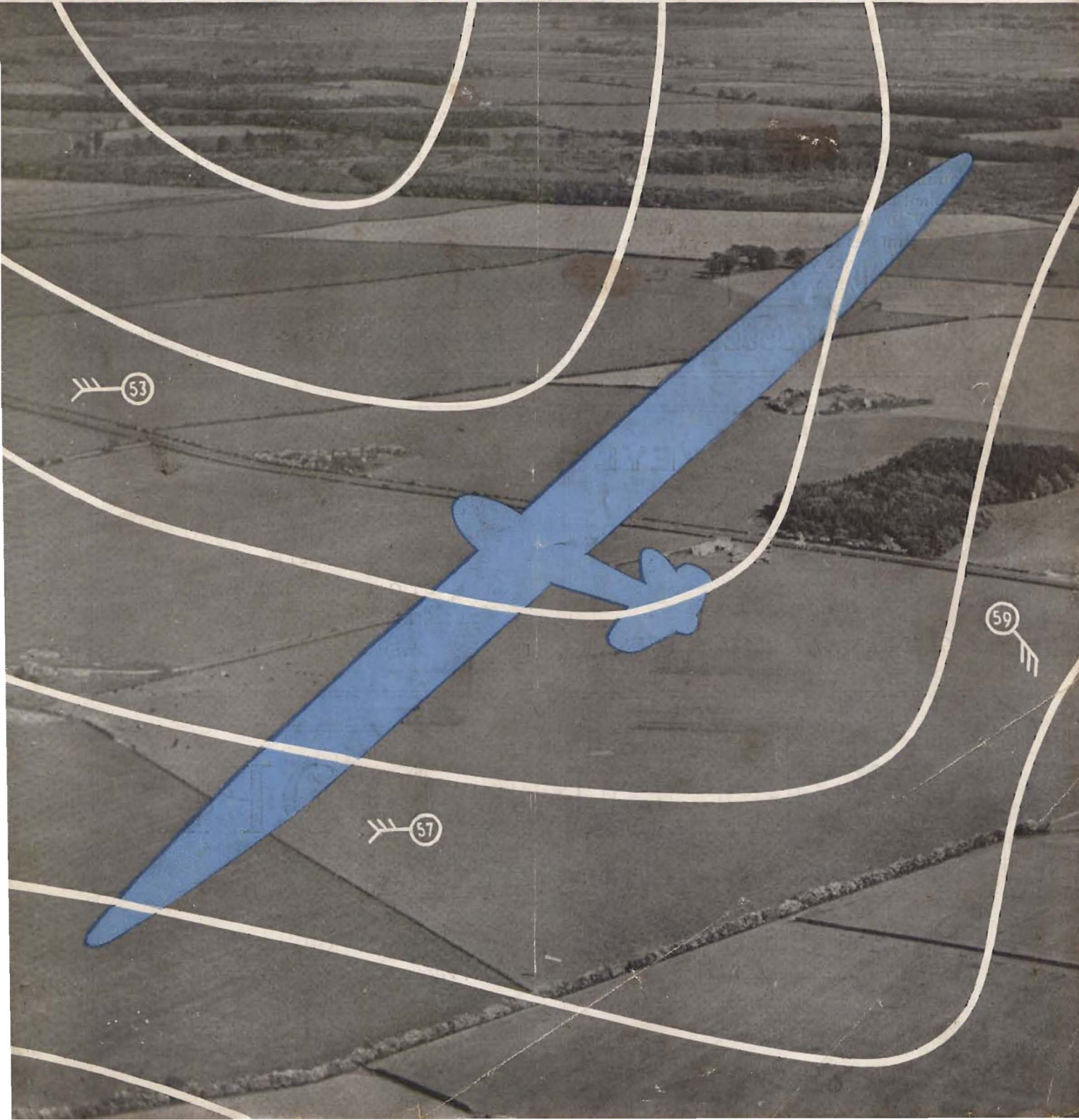
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*Official Organ of the British Gliding Association*



EDITED BY ALAN E. SLATER

**SUTTON BANK COMPETITIONS SPECIAL NUMBER**





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# THE SAILPLANE *and* GLIDER

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

Vol. 6 No. 8

AUGUST, 1935

Published Monthly

## Sutton Bank 1935

ONCE again, by incorporating the programme of the National Gliding Competitions in one of the regular monthly issues of THE SAILPLANE AND GLIDER, we hope to enable visitors to Sutton Bank to relate what they see here to the background of what is being done, not only in this country but throughout the world, to develop and popularise the art and science of motorless flight. It will be seen that, both in the quantity and quality of the flying, this country still lags behind the world at large; this is owing partly to the late start which was made here, and partly to the fact that the movement, unlike that in many other countries, has hitherto been entirely unsubsidised.

However, strenuous efforts are being made to catch up.

Last year saw the opening, at Sutton Bank, of the first permanent, equipped, high-efficiency soaring site in the North, and the beginning of the 1935 Competitions provides a good opportunity to examine the results of our first year's tenure of the site.

### The First Year

As all those who were here last year will see for themselves, the equipment of the site has improved apace, so that it is safe to say that there is no other site in the country at present nearly as well suited to the efficient running of the Competitions. This has been done almost entirely without extraneous financial aid, and as a result, the improvements which have been made are largely confined to those which could be brought about by members' own labours. In one vital direction, the urgent necessity for new machines, this and most other clubs in the country have been seriously starved.

A year ago the first competitions ever held in this country on an equipped gliding site took place at Sutton Bank, and in every way proved an immense success. Two out of the three British records were very handsomely smashed; over 100 hours' flying in motorless machines was done in the week; and last, but not least,

all those who had taken part went home afterwards unanimous that they had had the week of their lives.

### The Compelling Motive

We cannot too often repeat that gliding is, in this country at any rate, primarily a *sport*. We glide because we want to; because we like the feeling it gives; because we wish to learn to know and love the air as our ancestors learned to know and love the sea in the days when they adventured over it, not with mechanical aid, but by using the forces of Nature in all her changing moods. It is worthy of note that during the last two years the membership of the main gliding clubs in this country has been more than doubled, while the number of private owners of aeroplanes has increased hardly at all.

Having observed in how many other countries the gliding movement has been turned by the government in power to very different ends, there are those who see in the coming government support in this country a threat to the present state of things here. We must trust that the Powers that Be will realise that any movement will flourish far better as a sport than as that type of thing in which youth is spelt with a capital Y, and may welcome financial aid so long as it does not bring increased expense in the form of red-tape restrictions.

### An Appeal to Visitors

The gliding movement is completely amateur; no one of us is out to make profits, and we are here primarily to Have Fun. Last year we stated that, in order to start the equipment of the site, a loan was raised among certain enthusiasts. Of this loan, rather less than half was repaid from the proceeds of last year's meeting; the repayment of the remainder will enable us then to make more rapidly that advance for which we are striving. We are, therefore, still hard up, and hope that our visitors will assist us by not gate-crashing, and by observing the same few requests that we made last year, namely:—

1. Do not expect the impossible; soaring flight (prolonged flying without loss of height) is only possible in winds blowing up one of the slopes—that is, in all winds from east of south, through west, to almost due north. In north-east to south-east winds, however, only gliding (descending) flight is possible.
2. Please remember that we wish to keep the goodwill of our neighbours; do not therefore do any damage to fences, crops, etc., or leave litter about.
3. Please keep clear of the centre of the ground, or you may cause an accident.



# National Gliding Competitions

SUTTON BANK, AUGUST 24th to SEPTEMBER 1st, 1935

## CLASSES

For Competition purposes all sailplanes entered for the meeting will be divided into two classes:—

CLASS I.—Single-seater machines of unlimited span.

CLASS II.—Machines of span up to 43 feet, and all machines carrying more than one person.

A list of all machines which, so far as is known, are likely to take part in the Competitions, is given on this page, together with their competition numbers; while a more detailed description of each will be found on the following pages.

## PRIZES AND AWARDS

**Distance.**—The Wakefield Trophy will go to the British pilot who holds the British distance record obtained between September 10th, 1934, and September 1st, 1935.

CLASS I.—£5 for the longest distance flight during the Competitions; £2 for the second longest.

CLASS II.—£4 for the longest distance flight during the Competitions; £1 for the second longest.

**Height.**—The De Havilland Cup will go to the British pilot who holds the British height record obtained between September 10th, 1934, and September 1st, 1935.

CLASS I.—£5 for the greatest height attained during the Competitions; £2 for the second best.

CLASS II.—£4 for the greatest height attained during the Competitions; £1 for the second best.

**Duration.**—The Volk Cup will go to the British pilot holding the British duration record obtained between September 10th, 1934, and September 1st, 1935.

£4 in addition to the pilot (if any) who beats the existing record by the biggest margin during the meeting.

**Out and Return.**—The Manio Cup and £2 for the best Out and Return flight.

£2 for the best by a Class II. machine.

## NOTES

1.—The competitions will be held in accordance with the Rules and Regulations of the B.G.A.

2.—All competing pilots must hold a Competitor's licence; all machines must have a current C. of A., and must be covered against third party risks to a minimum of £1,000.

3.—Class II. machines can enter for both classes, if desired. In the event of insufficient machines being entered in either class to make the classification into two divisions unnecessary, the Association reserve the right to hold the Competitions on the basis of one class only, and to reduce the prizes accordingly.

4.—No distance flight of less than 20 miles or height of less than 2,500 feet will qualify for a prize.

5.—It is hoped to award, in addition to the above, daily prizes, details of which will be announced each morning.

6.—No flight shall win more than one prize.

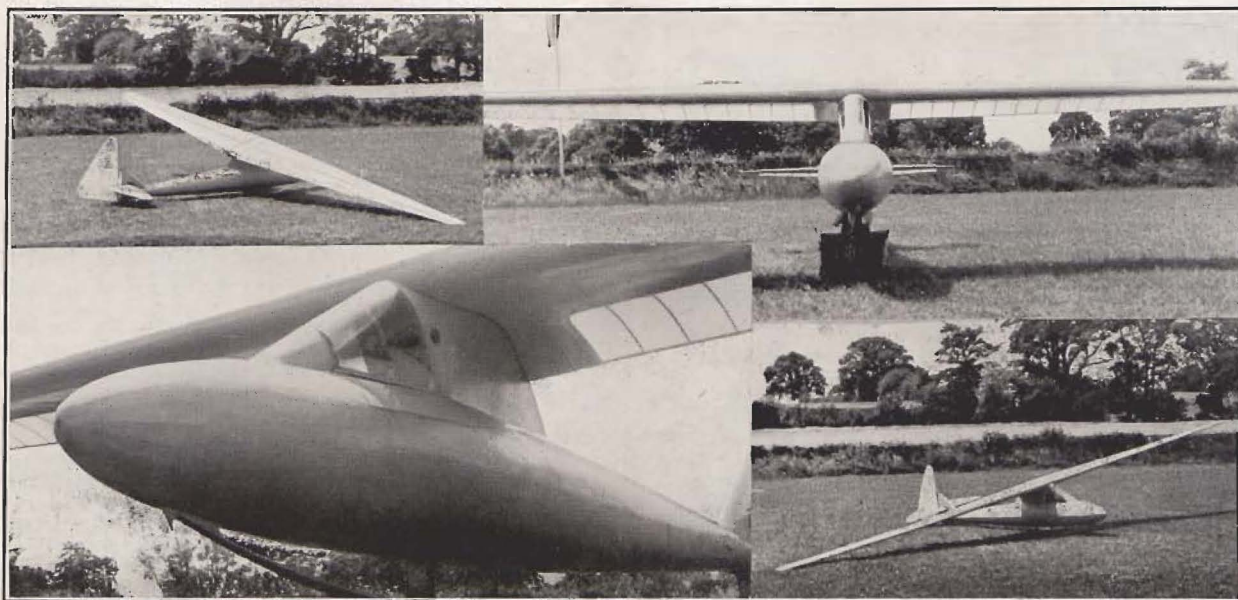
7.—Competitors are required to bring their own barographs.

## LIST OF MACHINES

No.	Type.	Entrant.	Class.
1.	HJORDIS ...	G. M. Buxton ...	I.
2.	RHÖNBUSSARD ...	J. P. Dewsbery, etc. ...	I.
3.	GRUNAU BABY II....	W. Liddell ...	I.
4.	GRUNAU BABY II....	G. B. Baker ...	I.
5.	GRUNAU BABY II....	Southdown Club ...	I.
6 & 7.	FALCON I. ...	Ulster Club ...	II.
8.	FALCON I. ...	Yorkshire Club ...	II.
9.	SCUD II. ...	P. A. Wills, etc. ...	II.
10.	SCUD II. ...	Ulster Club ...	II.
11.	PROFESSOR ...	Yorkshire Club ...	I.
12.	KIRBY KITE ...	F. N. Slingsby ...	I.
13.	TERN ...	G. A. Little ...	I.
14.	RHÖNADLER ...	— ...	I.
15.	FALCON III. (2-seater) ...	C. E. Hardwick ...	II.
16.	SCUD II. ...	L. H. Barker ...	II.
17.	SCUD II. ...	J. C. Dent, etc. ...	II.
18.	GOLDEN WREN ...	R. G. Robertson, etc. ...	II.
19.	BLUE WREN ...	A. E. Slater ...	II.
20.	DORSLING ...	Dorset Club ...	II.
21.	CRESTED WREN ...	S. Humphries ...	II.
22.	WILLOW WREN ...	Cambridge Club ...	II.
23.	STEDMAN (2-seater) ...	R. F. Stedman ...	II.
24.	B.A.C. VII. (2-seater) ...	L. Falla ...	II.
25.	FALCON II. ...	C. E. Hardwick ...	?
—	ALBATROSS ...	A. E. Colman ...	II.
—	PRÜFLING ...	Manchester Club ...	II.
—	SCUD III. ...	— ...	I.



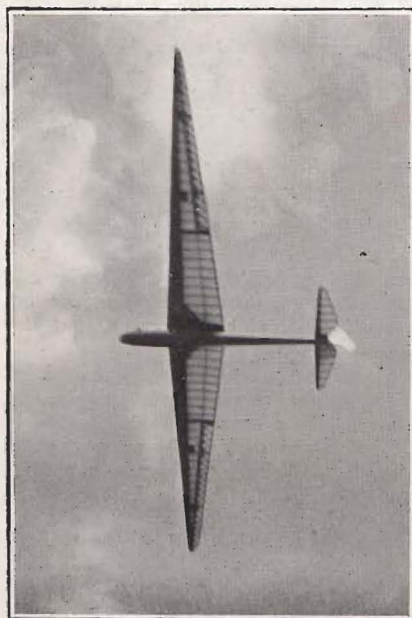




### 1—Hjordis

This new British design by Flight-Lieut. G. M. Buxton, illustrated above, is likely to excite great interest. So far it has only had a few test flights by the designer and Mr. P. A. Wills, who will both fly it during the Competitions; it has, however, already been up to 2,000 feet above Sutton Bank, and its perform-

ance appeared to be all that was expected of it, and more. It derives its name from the heroine of a Norse saga which Mr. Buxton was reading at the time he conceived the design. The dimensions are: Span, 51 ft.; area, 124 sq. ft.; weight, 310 lbs.; wing loading, 4 lbs. per sq. ft. Safety factor, c.p. forward (without ply):  $7\frac{1}{2}$  at wing root, increasing towards the tip. The speed range on the test flights appeared to be 30 to 55 m.p.h. Instrumental equipment: variometer, compass, air speed indicator and Pullin electric turn and bank indicator, while instead of an altimeter on the dashboard a pocket aneroid is carried. Control is by wheel instead of the usual stick. The wings detach separately, and two people can easily assemble and handle the machine. It was found, however, that the ailerons were rather flexible for ground handling, so the wing tips have been stiffened by adding  $1\frac{1}{2}$  lbs. of plywood; otherwise everything is satisfactory. A particular feature is the transparent cockpit cover, which is well streamlined and gives an excellent view forwards, sideways and upwards. The constructor is Mr. F. N. Slingsby, of Slingsby Sailplanes, Kirbymoorside.



The  
"Rhönadler"

### 14—Rhönadler

This is the sailplane on which the late G. E. Collins made most of his spectacular flights, including the present British cross-country record. He obtained it in April last year from its constructors, the Kyffhäuser Technikum of Bad Frankenhausen, Germany. As we go to press, the future of the machine has not yet been settled, but it is hoped to arrange for one or two of the leading British pilots to fly it during the Competitions. Span, 57 ft. 1 in.; weight, 364 lbs.; wing loading, 2.8 lbs. per sq. ft.; sinking speed, 2 ft. per second.

### 2—Rhönbussard

Like the RHÖNADLER, the RHÖNBUSSARD was designed by Hans Jacobs, of the German Research Institute for Soaring Flight; his latest design, the RHÖNSPERBER, set up a world's distance record on the first day of this year's German soaring competitions.

The machine here shown was brought over to England by aeroplane tow from Germany by Miss Joan Meakin, who afterwards gave demonstrations on it throughout Britain as part of Sir Alan Cobham's Air Display; she also did a cross-country flight on it from Bristol to Salisbury. Early this year it was bought by the three pilots who will fly it in the Competitions: J. P. Dewsbery, C. Nicholson and R. P. Cooper. Span, 46 ft. 11 ins.; weight, 298 lbs.; wing loading, 3.1 lbs. per sq. ft.; sinking speed, 2 ft. 4 ins. per second.



The  
"Rhönbussard"





"Grunau Baby II"



"Falcon I"



"Falcon II"

### 15—Falcon III

The FALCON III. is a two-seater machine with the seats side by side, this being the first time such an arrangement has been adopted in a sailplane, except possibly in Russia. It was designed and built by Mr. Slingsby on FALCON lines, to the order of Mr. C.



"Falcon III"

### 3, 4 & 5—Grunau Baby II

The GRUNAU BABY has proved an exceedingly popular machine in Germany for general utility, such as soaring training and aerobatics, and for its ease of construction. It has a span of 44½ ft. and a weight of 246 lbs. Many examples are now being built in England, of which three may be seen here:—

No. 3 is the property of Mr. W. Liddell, of the Ulster Gliding Club, who has flown it in many of the mountainous regions of Northern Ireland.

No. 4 was built by Messrs. Zander and Weyl, of Dunstable, for Mr. G. Bernard Baker, of the London Gliding Club, and was only recently completed.

No. 5 has already done some good flying at the Southdown Gliding Club's site on the South Downs, near Brighton, where its owner, Mr. Filmer, has taken it as high as 1,500 feet above the start.

### 12—Kirby Kite

Mr. Slingsby, after building numerous sailplanes to other people's designs, has now designed one himself for his own use. It has an oval section fuselage, while the wings have a span of 57 ft. and the weight empty is 260 lbs. The position of the pilot's head is level with the leading edge of the wing, which gives a good view both above and below the wing. A special feature, seen for the first time in England, though already popular on the Continent, is the slight bend in the wings, reminiscent of those of a gull.

### 6, 7 & 8—Falcon I

The FALKE, as it is called in Germany, has been in use there for the last five years as a secondary machine for soaring training; owing to its safety and ease of flying, it has proved a most popular machine for gliding schools. It was designed by Dr. A. Lippisch, one of the pioneers who started the German gliding movement some 15 years ago; the BRITISH FALCON, produced by Mr. Slingsby, is the same design with slight modifications. Span, 41 ft. 4 ins.

Nos. 6 and 7.—The Ulster Gliding Club has arranged with Mr. Slingsby to have the use of these two FALCONS during the Competitions.

No. 8 is the property of the Yorkshire Gliding Club.

### 25—Falcon II

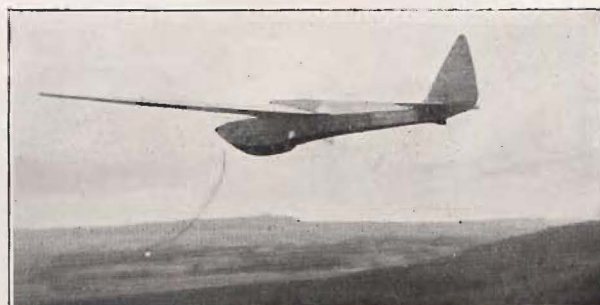
This machine, built specially for Mr. C. Espin Hardwick (now chairman of the Midland Gliding Club), resembles the FALCON I. except for a slightly greater span, due to the wing tips being rounded and more tapered instead of being cut off square.

Espin Hardwick, without whose support and enthusiasm the machine would probably never have come into being, as the idea was something of a leap in the dark. However, the flying qualities have proved excellent, being very similar to those of the single-seater FALCON. The span is 57 ft. 10 ins., wing chord 5 ft. 9 ins., total weight 400 lbs., and flying speed 34 m.p.h.



### 13—Tern

Built in 1931 by Messrs. Airspeed, Ltd., of York, this sailplane was designed by Mr. N. S. Norway, the leading spirit of that firm, which is well known for the production of commercial aeroplane types. (Mr. Norway assisted in the design of the airship R 100.) The wings sprout from the sides of the fuselage, an unusual arrangement at that time (except in birds), but now becoming popular on the Continent. In August, 1931, the machine was soared by Herr Magersuppe from Ravenscar to Scarborough, setting up what was then a British distance record of  $8\frac{1}{2}$  miles. It has been flown at previous Sutton Bank Competitions by members of the Southdown Gliding Club, and this year will be again flown by Mr. G. A. Little, its present owner. Span, 50 ft.; wing area, 201 sq. ft.; loading, 2.06 lbs. per sq. ft.



"Tern"

### 11—Professor

Designed in 1928 by Dr. Lippisch, this was for some years the standard type of high-performance sailplane used in Germany, though there it has now been superseded by the RHÖNADLER and other types. This particular machine was taken over by the Yorkshire Gliding Club from Mlle. Susi Lippens, of Belgium, who once held the world's soaring duration record for women. It is the sailplane in which Mr. J. C. Neilan recently set up a new British duration record of 13 hours 7 minutes, at Sutton Bank. Span, 52 ft. 6 ins.; area, 201 sq. ft.; weight, 341 lbs.

There are two other PROFESSORS in England, owned by the Midland and Channel Gliding Clubs respectively, which may possibly take part in the Competitions.



"Professor"

### 9, 10, 16 and 17—Scud II

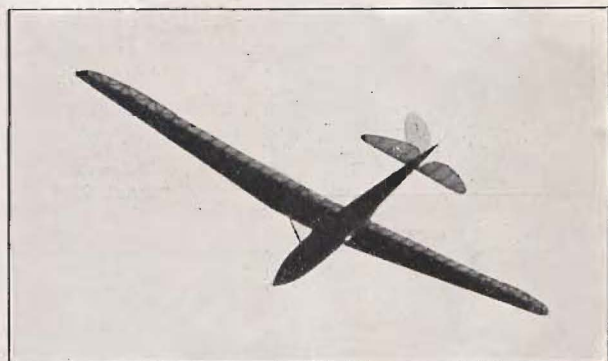
The SCUD series of sailplanes are the designs of Mr. L. E. Baynes, of Abbott-Baynes Sailplanes, Farnham, Surrey. They are all three quite different designs. The SCUD I., a secondary machine produced early in 1931, was remarkable for its small size and weight; two are still in use in Guernsey. The SCUD II., first produced at the end of 1932, is a high-performance machine of 40 ft. span with some remarkable performances to its credit.

No. 9, owned by P. A. Wills, G. M. Buxton and W. W. Briscoe, was flown by Mr. Buxton when he set up the British height record of 8,323 feet by flying in a thunderstorm during the Sutton Bank Competitions last year. All its three owners have used it for cross-country flights. It can be distinguished from other SCUD II.'s by the dihedral angle of the wings.

No. 10.—Mr. N. P. Metcalfe, of the Ulster Gliding Club, also owns a SCUD II.; it was present at the two previous years' Competitions, and will be brought here again this year.

No. 16, owned and flown by Mr. L. H. Barker, of the London Gliding Club, is painted a blue-green.

No. 17, unpainted, is under the joint ownership of J. C. Dent, T. G. Armstrong and S. Fox, all of the London Club. It was largely constructed by the late G. E. Collins at his home in Flamstead, Herts.

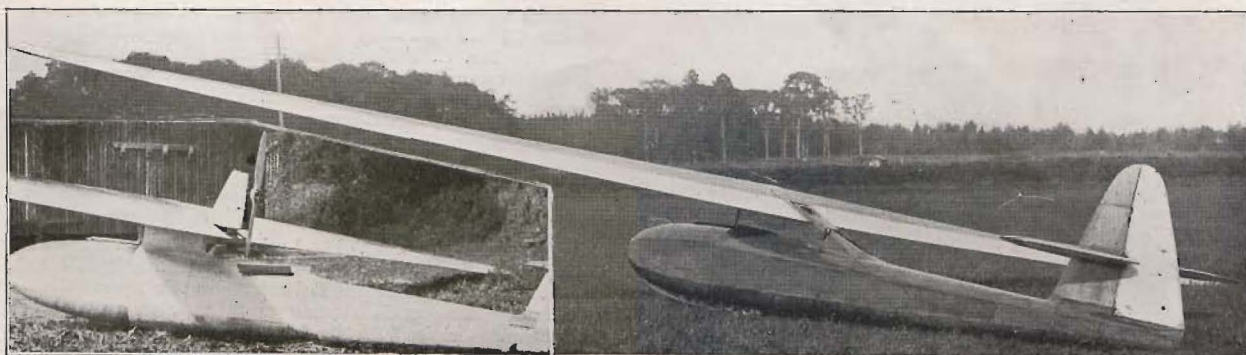


"Scud II"

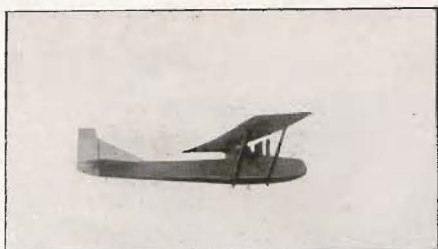
### Scud III

This machine is being produced in two forms, as a pure sailplane known as SCUD III., and as a sailplane with auxiliary engine. In the latter form it has already had some test flights, and the latest news is that Mr. J. P. Dewsbury has, with the engine running, taken it to 2,500 feet in 17 minutes; he then retracted the engine, but was unable to soar, as it was late evening and there were no thermals about. The purpose of the

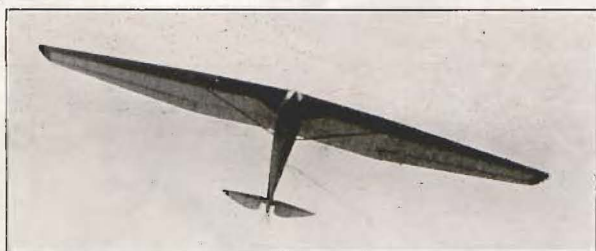
motive power is not to drive the machine along (as in the type of light aeroplane falsely described as a "motor-glider"), but merely to enable it to reach regions where it can then proceed to soar; for this purpose the engine is made retractable (see illustrations below). The machine is expected to be brought to the Competitions, but it is not yet known who will fly it. Span, 45 ft. 6 ins.; area, 120 sq. ft.; weight, with pilot, parachute, motor and fuel, 500 lbs.; loading, 4.2 lbs. per sq. ft.



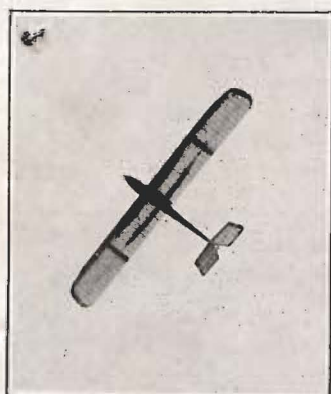




The  
"Dorsling"

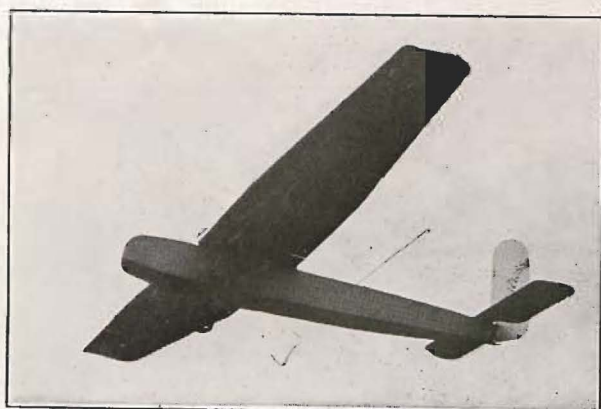
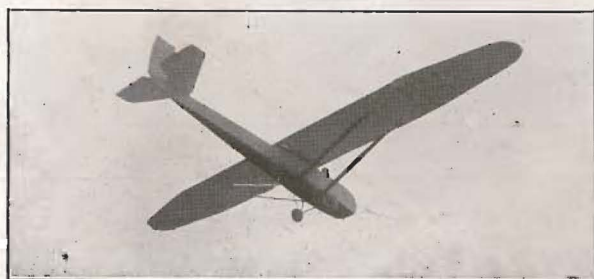


Above: the  
"Willow Wren"



Left: the  
"Stedman"  
Two-seater

Below: a  
"B.A.C. VII"



The "Albatross"

## 20—Dorsling

This is the Dorset Gliding Club's modification of a well-trying German secondary training type known as PRÜFLING; hence the name. Mr. J. Laver, of Weymouth, has done a great deal of flying on this machine, and has twice held the British duration record. His last record of 12 hrs. 21 mins., set up at the Sutton Bank Competitions last year, was recently beaten by Mr. Neilan by a margin of 46 minutes, but it may be confidently expected that Mr. Laver will do his best to regain the record on the DORSLING at this year's Competitions.

The Manchester Gliding Club will probably bring their PRÜFLING, which is similar in appearance except that it has a straight wing, while the DORSLING's wings are slightly swept back.

## 18, 19, 21 & 22—Wrens

The WREN type is the design of Corporal W. L. Manuel, formerly of the Royal Air Force. WRENS have done some fine flights, and are great favourites with their pilots. Of the four expected here, all are slight modifications of the same basic design; three were built by Mr. Manuel himself, and can be distinguished from each other by the colour of their woodwork, while the GOLDEN WREN, built by its owner-pilot, is unpainted. Mr. Manuel is now associated with the Dunstable Sailplane Co., Luton Aerodrome, Barton, Beds., who are producing an improved version of the WREN called the KESTREL.

**Crested Wren** (painted red), built in 1931, is owned by S. Humphries, J. P. Dewsbery and Major H. Petre. It has done an enormous amount of flying, and Mr. Humphries has made two cross-country flights on it, of 20 and 32 miles.

**Willow Wren** (green) was built in 1933, and is at present owned by the Cambridge University Gliding Club.

**Blue Wren** (blue) was built to the order of an officer stationed at Malta, but he changed his mind, and the Editor of THE SAILPLANE bought it. Last year, piloted by Mr. J. P. Dewsbery, it did two cross-country flights from Sutton Bank, to Rudston (37 miles) and to Whitby (31 miles). Probable pilots this year are G. L. Bell, J. S. Sproule and A. E. Slater.

**Golden Wren** was built last year by G. O. Smith and A. L. Slater, of the Derbyshire Gliding Club, who share its ownership with R. G. Robertson. It has a number of special features incorporated by them, including an enclosed cockpit. All three pilots have done a great deal of flying on it at Bradwell Edge in Derbyshire, and Mr. Robertson recently flew it from there to York, winning the "Cellon Prize," which was offered many years ago to the first sailplane of British design and construction to fly 50 miles.

Dimensions of the type are: Span, 40 ft.; wing area, 151 sq. ft.; weight, 190 lbs.; wing loading, 2.3 lbs. per sq. ft.

## 23—Stedman

This two-seater machine, designed by Mr. R. F. Stedman, of 67, Meadow Road, Leeds, is already well known at Sutton Bank, where it has taken up a large number of passengers, including pupils undergoing "dual" instruction. Span, 50 ft.; wing chord, 6 ft.; area, 295 sq. ft.; weight, 424 lbs. Wing loading, 2 lbs. per sq. ft.; flown solo, 2.48 lbs. per sq. ft. with passenger.

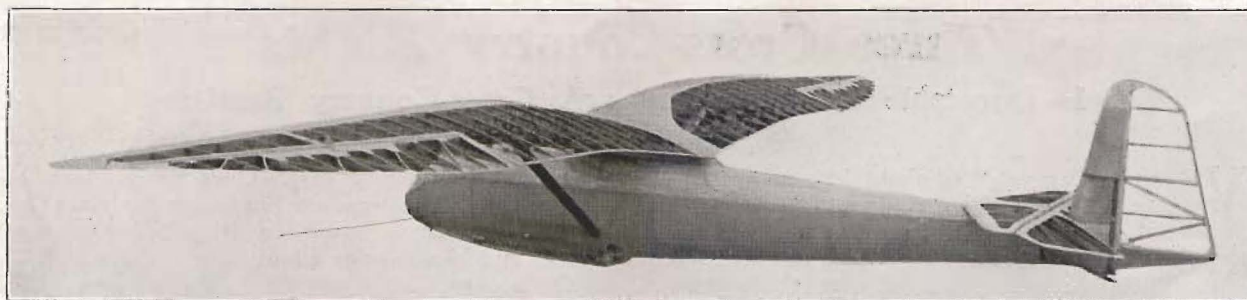
## 24—B.A.C. VII

Several examples of this two-seater, which was designed by the late C. H. Lowe-Wylde, have been built in England. That entered by Mr. L. Falla, of the Preston Gliding Club, is painted green and cream. Mr. Lowe-Wylde afterwards converted the type into the "Drone" light aeroplane, which has recently been in the news; in fact, Mr. Coltman (see below) has a "Drone" which he may bring to Sutton Bank.

## Albatross

Designed by Capt. C. H. Latimer-Needham, and built and flown by him in 1930, this machine has recently been bought by Mr. A. E. Coltman, of the Leicestershire Air Sports Club, who has already done some soaring on it at Sutton Bank and in Derbyshire. Originally built for extreme lightness, it has now been strengthened, and also provided with wheels. Span, 42 ft.





The "Kirby Kite" ready for covering. The first British sailplane of "gull wing" type, it has been finished just in time for the competitions by its designer-builder-owner-pilot, Mr. F. N. Slingsby.

## Methods of Soaring

**Slope Soaring.**—The wind, blowing against a hill-side, is forced upwards in order to rise over the hill, and the pilot flies by keeping over the windward slopes of the hill. This is the simplest method of soaring, and most of the flying seen at Sutton Bank will be of this variety.

**Thermal Soaring.**—The sun heats some patches of ground more than others. The air in contact with these warmer patches will periodically break away, since hot air rises, and will go on rising to a height which depends on the atmospheric conditions. Such a body of air is called a thermal current or "thermal," and a sailplane or a bird keeps within it by going round and round in circles. Thermals, once they have broken loose, drift away with the wind, so that cross-country flights made by this means are usually down-wind; it is only when crossing from one thermal to another that a pilot can make headway in other directions too.

**Cloud Soaring.**—The air in a thermal is comparatively moist, and if it rises to a certain level (usually about 4,000 feet) it may form a cumulus cloud. (Such a cloud is illustrated in the article on the German gliding competitions, pages 126 to 128). The cloud then shows the pilot where the thermal is.

**Cloud Streets.**—A strong wind will interfere with the formation of thermals; nevertheless the lower layers may get so warmed up by the ground that they want to change places with the upper layers. This may result in the formation of alternate strips of rising and descending air, the strips being parallel to the wind, so that the clouds, if any, will form in long lines known as "cloud streets" (see picture on page 137). A sailplane pilot, keeping in the rising air under a cloud street, can fly straight ahead instead of circling, and so can progress up-wind as well as down-wind.

**Thunderstorm Flight.**—When a change of wind brings a mass of colder air to replace warmer air, the cold air undercuts the warm and forces it to rise. Sometimes large masses of cloud will then form in the rising air and a thunderstorm will result. The boundary between the two masses of air is called a "front," and by keeping near this "front" a sailplane may travel with it across country.

## Gliding Records

### Duration

**World's Record.**—36 hours 35 minutes, by Kurt Schmidt in GRUNAU BABY, at Korschenuhe, near Königsberg, Germany, August 3rd and 4th, 1933. (A flight of 38 hours 20 minutes was reported to have been made by Ivan Khartashev in Russia last June, but the report is as yet unconfirmed.)

**British Record.**—13 hours 7 minutes, by J. C. Neilan in PROFESSOR, Sutton Bank, Yorkshire, July 16th, 1935.

### Distance

**World's Record.**—310 miles, by Rudolf Oeltzschner, in CONDOR, from Wasserkuppe, Germany, to Brno, Czecho-Slovakia, July 19th, 1935.

**British Record.**—95 miles, by G. E. Collins, in RHÖNADLER, from Dunstable Downs, Beds., to Holkham Bay, Norfolk, August 5th, 1934.

### Altitude

**World's Record.**—14,190 feet, by Heinrich Dittmar (Germany) in CONDOR, Rio de Janeiro, Brazil, February 17th, 1934.

**British Record.**—8,323 feet, by G. M. Buxton in SCUD II., Sutton Bank, September 4th, 1934.



The "A" badge, given for a glide of 30 seconds in a straight line, followed by a normal landing.



The "B" badge, given for a flight of 60 seconds, which must include a right and left turn.



The "C" badge, given for a soaring flight of at least 5 minutes above the level of the start.



The "Silver C" badge, for which flights must be made of 5 hours' duration, 50 kilometres distance (31 miles), and 1,000 metres (3,280 feet) above the starting point.



## Three Cross-Country Flights

### 1—Dunstable to Hornchurch: A Cross-Country Baptism

By H. C. BERGEL

WE got to Dunstable at about 10 a.m. on Saturday, July 6th. The wind was blowing up the hill from somewhere north of west, at about 15 m.p.h., and long streets of cumulus at an apparent height of 3,000 ft. or so promised a lot of lift—unless, indeed, they grew so quickly as to cover the whole sky, which looked possible.

Rigging and inspection of the London Club's GRUNAU BABY I. and transporting it to the hill-top took about an hour, by which time Wills in the SCUD had been launched. To our surprise and regret he seemed unable to get more than 200 ft. of height along the ridge, and he appeared to be soaring in absolutely smooth and stable air.

A three-a-side launch put me in the air ten minutes later, and then I could feel for myself that the air was unexpectedly stable. About that time Wills caught a thermal to 1,400 ft. As he came down I stumbled into one and went up to about 1,200 ft., where the variometer needle went back to 3 feet per second fall. Another ten minutes' slope soaring, and Wills caught another thermal—the one which started him off to Heston.

To my fury I was then deposited (with the GRUNAU BABY) at the foot of the hill. All lift had vanished completely, though there still seemed to be as much wind blowing up the hill as ever.

Using up all my stock of bad language I waited for the towing car. Very luckily (for me) no one else turned up to fly the G.B., and at 12.45 p.m. I was launched again, with no hope of doing more than another 20 minutes slope soaring, for by this time the clouds were thinning and becoming flatter and less promising altogether.

#### Success At Last!

About three minutes after the launch, when I was about 150 feet above the hill-top, I ran into a thermal. I was so angry with having apparently lost my opportunity that I threw my customary caution aside and circled. It worked, so I circled again. It went on working, so I went on circling interminably, till I found the base of the clouds at 3,200 ft., after what felt like  $3\frac{1}{2}$  hours of hard work. Taking a deep breath, I waved good-bye to Dunstable and tried to spot my position. It turned out that I was over Hemel Hempstead, due south of Dunstable—which was impossible.

It then dawned on me that the wind at 1,000 ft. and over was due north, or even east of north (against all the rules), and I got in a panic about being carried over London. So I set off east, where Wills in his greater wisdom had gone west.

Soon I was down to 800 ft. over Radlett, having conspicuously failed to find lift under the clouds, and having been reduced to just setting off into the blue in hope.

As a last resort before landing ignominiously at Radlett (a bare ten miles from Dunstable) I made for some red-roofed villas grouped together. Thank Heaven, it worked, and again I settled down to interminable circling, at last reaching cloud-base level at 3,400 ft. (the clouds were steadily going higher).

Once again I set off east. Once again I lost height very rapidly, till I reached Southgate (or thereabouts) at 1,200 ft. Once again, in desperation, I went for houses and in particular a burning rubbish dump. And again it worked (I smelt the rubbish dump half-way up), and I went on round and round and round till I got to 3,800 ft. (cloud level again).

#### The Landing Problem

After that it was a bit of a nightmare. With a howl of terror I found I was in sight of—London Bridge! I raced off east, circled a bit over the Mile End Road, got to Barking and circled a bit more. I now had my eyes on what looked like a usefully flat and open field running down from a main road to the Barking Power Station. As I was then losing height I kept my eye well on it as a hopeful landing ground. When I was down to about 1,800 ft. I looked a bit closer, and found that the whole field was one gigantic spider's web of 133,000-volt cables!

Shivering with fright and cold (but mostly fright) I pushed off east to the Ford Works at Dagenham and got another few hundred feet of lift, and was at last preparing to land in the first reasonable-looking space when I spotted Hornchurch R.A.F. aerodrome about  $1\frac{1}{2}$  miles up wind. I got there with about 800 feet to spare, and landed just half an hour before two squadrons were due to land there in formation after the Duxford Review!

Whereupon I was made very welcome by the R.A.F., who with limitless generosity gave me beer and tea and beer and supper and beer till I was rescued  $6\frac{1}{2}$  hours later by a trailer designed, apparently, to hold the "Mauretania"—with more room to spare for the "Queen Mary."

With the best will in the world, I simply cannot ascribe the flight to anything but luck. I did not know where I was (till afterwards), or where I ought to go, or what I ought to do, and blundered about, and Heaven sent me a thermal every time when things looked their blackest.

My chief impression was one of terror and helplessness most of the time. I was working frightfully hard going up, and praying frightfully hard coming down. My spare hand gripped the edge of the cockpit with such agony and emotion that it was still numb three days later.

The Royal Air Force were charming. They couldn't understand—being used to seeing "Bulldogs" approach at 3,000 ft. and just land over the edge—why it took me some five minutes of "S" turning to get rid of 800 feet. And they expected me to take off again after a beer or two and just go back to Dunstable—like that! It took much sternness to refuse the offer of a tow behind a "Bulldog" and/or a Hawker "Demon." Their beer and food were glorious.

Altogether much fun mixed with much fright—pleasant indeed to look back on, with the barograph record safe in one's pocket. But what a rotten route I picked for my cross-country baptism. Henceforth I shall study maps very, very carefully, and I recommend that to all aspirants.



## 2—Dunstable to Heston

WHILE Mr. Bergel was making a soaring flight from Dunstable to Hornchurch, as before described, on July 6th, Mr. P. A. Wills was similarly occupied in flying from Dunstable to Heston in his SCUD II.

Arriving at the London Gliding Club's ground at 10.30 he erected the SCUD at the hill-top with the aid of wife and son (age 2), and got himself launched by a scratch team of passers-by. Conditions looked good, and almost immediately a thermal took him up to 1,100 ft., but then failed. Then began a game of aerial see-saw with Bergel, who circled up to 1,200 ft. in a thermal as Wills came down. It was then Bergel's turn to come down as Wills found another thermal, over the Whipsnade Zoo, and circled up to 1,500 ft. On the way back from this Wills found that he had really only been in its advance edge, so he started circling again, noticing that Bergel, at the other end of the ridge, had lost all lift and was actually going to the bottom.

At 2,600 ft. the SCUD had reached the cloud base, so the pilot went off down-wind, finding to his surprise that the wind at that height was due north. He descended steadily until he actually found himself over his own house at Hemel Hempstead, where another weak thermal took him up to 2,000 ft. again. Proceeding to the railway station, where he thought he would have to land, he found a valley running up behind the station, with a wooded slope over which there was enough lift to slow up the SCUD's rate of descent till another thermal came along. Circling endlessly in this new thermal, he was carried horizontally to Rickmansworth and vertically to 3,500 ft., yet the cloud level here was much higher—about 5,000 ft.—so that the cloud previously encountered must have been exceptionally low.

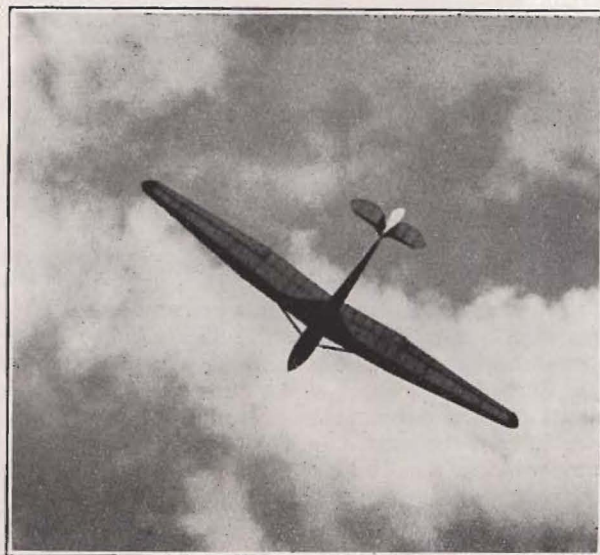
The areas of lift here were very broken, and the atmospheric conditions seemed to be getting more stable; the cumulus clouds were becoming quite thin and biscuit-shaped. The SCUD came steadily down over Northolt at only 1,100 ft. However, on the other side Wills found a very weak patch of lift over the houses, and circled in this for a quarter of an hour without either losing or gaining height, during which time the wind had carried him safely across the railway line and round the famous gasometer to the west boundary of Heston aerodrome. All lift had "died on him," so he circled round over the clubhouse and landed.

Comparing the two flights, it is interesting to note that lines joining Dunstable Downs with Hornchurch and Heston aerodromes, respectively, make an angle of just 40 degrees, Wills's course being roughly S.S.W. and Bergel's S.E. by E. We make the distances on the map 27 miles to Heston and 39 to Hornchurch.

## 3—Dunstable to North Weald

On Sunday, July 21st, another cross-country flight was made from the London Club's ground at Dunstable Downs, this time by S. Humphries in the CRESTED WREN. This is the second time this machine has been flown across country by the same pilot, the last occasion being March 18th, 1934, when he took it 19 miles from Dunstable to Hertford, making use of a "cloud street."

On this last occasion the clouds were looking more like strato-cumulus than the isolated cumulus which



The "Crested Wren."

thermal currents produce, and the presence of "streets" of lift is suggested by the fact that two pilots (P. A. Wills in SCUD II. and D. G. Hiscox in WESTPREUSSEN), also flying at Dunstable Downs at the time, were able more than once to go out about a mile or so up-wind without losing height.

The barograph chart shows that there were three main peaks during the flight, at 4,800 ft., 3,900 ft., and 2,400 ft., the actual curve giving the following heights:—0—400—0—400—1,400—0—400—0—1,700—4,800—1,500—3,900—1,700—2,400—1,800—2,000—minus 400. (These readings are relative to the launching point.)

Cloud level, the pilot relates, was irregular at about 4,600 to 5,000 ft., whereat the cold was staggering. The country between North Weald and the coast looked horrible for landings, so in the absence of a fourth heave he called it a day and landed on the aerodrome, which is two miles N.E. of Epping and 32 miles from Dunstable Downs. He could, however, have glided another seven or eight miles.

As regards the instruments carried, we have received the following letter:—

SIR,

The old CRESTED WREN was lately fitted with a Collins Variometer. On her next flight she reached 4,800 ft. and came down 52 kilometres away. This quaint phenomenon was made possible by the variometer, which worked laughably well and multiplied the pleasure of flying by about ten. Anybody who has taught himself to fly dispassionately and to circle tightly, and who takes off on a lively day in a handy machine, ought to be able to think in thousands of feet instead of hundreds, provided that he blindly trusts this variometer and acts accordingly.

To put paid to the "Silver C" business, take also a Richard barograph. It works with *sang froid*, makes a pretty chart, and in this case agreed precisely with a proved aneroid.

I take off my hat to that variometer. As for the old WREN, a couple of million pounds would not buy her now.

DIE-HARD.



## "That Duration Business"

[On July 16th Mr. J. C. Neilan set up a new British duration record of 13 hours 7 minutes.]

**H**APPENING to be without a job, I decided to camp at Sutton Bank, and fly whenever I could. I had once or twice nibbled at thermals and clouds, and was keen for more. One day while practising this thermal flying and stuff, I stayed up for over seven hours, and so the rumour was spread that I was to attempt a duration record. The Press would hardly believe that my intentions were set on other things than Records. Well, I woke up one morning, and noticed that the west side of the tent was bulging inwards, and the east side outwards, which indicated a west wind, a rare thing at Sutton, except during the week when no one is there.

PROFESSOR was assembled, two barographs were put in order and on board, pockets were filled with apples and chocolate, and I was car-launched, settling down to a rather bumpy 400 ft. beat for an hour or two. Then clouds came along, thin and rather raggy, but they supplied some good heaves of lift provided one remained over the hill lift area.

I got up to 1,600 ft. in one, and 2,000 ft. in another. I suppose I could have got higher, but I didn't feel like circling the PROFESSOR completely blind, specially in rather small clouds, so I just flew straight through them. My instruments, by the way, were one A.S.I., calibrated in kilometres per hour, one altimeter held in the hand, dangling from the end of a bit of string, and one small compass, stuck on to the A.S.I. glass by a rubber sucker. The compass and altimeter were useful, and a variometer would have been more so.

During the afternoon the cloud currents were more violent, but too small to circle in to any great extent, and the down-currents between the clouds were also pretty rapid, so I had quite an interesting time. My average height was about 1,000 ft. By about five o'clock the help of the cloud currents stopped, and I just had to plod up and down the slope until the end. From now on I noticed particularly how very uncomfortable one could be, even with two cushions under one. I flew "feet off" for a bit to ease my legs a little, and got Very Bored. When I was quite certain that I had actually beaten the record, I decided to practise aerobatics, so came down in a series of stalls, slips, and various unnamed evolutions, the tail fluttering gaily whenever I was doing something particularly pleasant-feeling, much to my annoyance. Believe it or not, the PROFESSOR was fully controllable with the nose right up, and the A.S.I. registering 30 k.p.h., which I work out to be 18'66 m.p.h. Great fun! And to think I always used to imagine she stalled at 25 m.p.h.!

In conclusion, given the wind and a machine, the chief worry in duration flights is comfort. I have since been to Kirby Moorside and sat on Slingsby's Super Sailplane Seating Stuff. It's great!

J. C. NEILAN.

## In Charge of Flying

CAPTAIN A. N. STRATTON, of the Southdown Gliding Club, has kindly consented to take charge of flying operations during the Sutton Bank Competitions.

## The "Silver C"

THE conditions for obtaining this international certificate are set out on page 121. Three British pilots have been awarded it: G. E. Collins (No. 26), P. A. Wills (No. 45), and R. G. Robertson (No. 75). By the flights just described, S. Humphries has now earned it, while H. C. Bergel has passed two, and J. C. Neilan one of the tests.

## ✓Lowe-Wylde Memorial Fund

**T**HE late Mr. C. H. Lowe-Wylde, who lost his life in 1933 in an accident to a "Drone" ultra-light aeroplane, a type which he had pioneered, will be remembered for the great services he rendered to gliding from the year 1930 onwards. He founded the British Aircraft Company which produced a series of instructional gliders and, finally, the B.A.C. VII. two-seater sailplane and the "Drone." He spent not only all his energy in this work, but also his personal fortune, with the result that, at his death, his widow and three small children, now aged between 3 and 7 years, were left almost totally unprovided for.

A few of Mr. Lowe-Wylde's friends have now been able to make arrangements on remarkably advantageous terms, if they can raise the necessary funds, for these three children to be given a good home all the year round and education up to the age of 16. All that is needed is the remarkably small sum of £1,100. It is intended to place the children in St. Elizabeth's House, Bullingham, Herefordshire; full particulars of the scheme are being circulated by Mr. E. C. Gordon England. The trustees of the fund are Lord Sempill, A.F.C., F.R.Ae.S., Kathleen, Countess of Drogheda, C.B.E., and Air Commodore J. A. Chamier, C.B., C.M.G., D.S.O., O.B.E.

We give below a list of subscriptions received up to July 31st, and hope this will encourage others to respond to the appeal. Cheques should be made payable to the Lowe-Wylde Memorial Fund, and may be sent to E. C. Gordon England, Esq., F.R.Ae.S., London Air Park, Feltham, Middlesex.

- £50.—Lord Wakefield.
- £26 5s.—Sir John Siddeley.
- £25.—C. R. Fairey; F. Handley Page.
- £20.—The Bristol Aeroplane Company; R. F. Dagnall.
- £15 15s.—British Aircraft Manufacturing Co., Ltd.
- £10 10s.—A. J. A. Wallace Barr; G. Brewer; J. M. Ferguson; Flight Publishing Co., Ltd.; H. Scott-Payne; W. S. Stephenson; Air Commodore J. G. Weir.
- £10.—Robert Blackburn; Captain G. de Havilland.
- £5 5s.—Aeronautical Educational Trust; Sir Herbert Austin; M. L. Bramson; F. J. Connolly; A. M. Desoutter; H. O. Short; Whitney Straight; Dr. A. P. Thurston.
- £5.—Her Grace The Duchess of Bedford; Sir Maurice Bonham Carter; R. F. Bulstrode; J. M. Burrell; Major H. Petre; E. W. Walford; Wolseley Motors, Ltd.
- £3 3s.—B. W. Brady; Lieutenant-Colonel H. Burchall; H. W. H. Moore.
- £2 10s.—H. Duncan Davis.
- £2 2s.—The Hon. Mrs. Victor Bruce; R. P. G. Denman; Squadron Leader T. H. England; C. F. Lumb; F. S. Moller; Major J. C. Savage; Dr. A. E. Slater; S. B. Wilkes; E. M. Wright.
- £2.—A. S. Butler.
- £1 1s.—F. R. Banks; Major T. M. Barlow; S. A. Dismore; A. H. R. Fedden; John Hopcraft; Ian C. Maxwell; H. Seaward; The Dowager Lady Swaythling; M. H. Volk; Laurence A. Wingfield.
- £1.—Captain Stewart Burt.
- 10s. 6d.—J. Kidston Allsop; H. H. Balfour.
- 10s.—Lady Mary Bailey; Norman Sykes.



## G. E. Collins

**B**Y a tragic accident this country has been deprived of its foremost soaring pilot, G. Eric Collins, who lost his life on July 30th while giving a demonstration at Sir Alan Cobham's Display at Upwood, near Ramsey, Hunts. He started to perform a "bunt," or outside loop, in the GRUNAU BABY II, in which he had been towed to 3,000 ft., and had just reached the inverted position when the greater part of the left wing broke off. The machine almost righted itself, and then came down in a spin; for the last few hundred feet the descent was more rapid, and the pilot must have been instantly killed. It is not known why he did not take to his parachute, but there is some reason to think that he had been rendered unconscious at the time of the breakage.

By a coincidence, a very similar accident had happened in Germany a few days before, where a pilot named Harth, also giving an aerobatic display in a GRUNAU BABY, broke a wing while doing a forward loop out of inverted flight; in this case, also, the pilot was unable to save himself.

So much has Collins contributed to the progress of gliding and soaring in this country, that a full account of his flights would amount, in effect, to a history of the emergence of the British gliding movement, from being despised by the flying community and misunderstood by the public, into its present state of aeronautical and national prestige; and, more particularly, of the unexampled development of the London Gliding Club in the last few years.

When Collins joined the club early in 1932, gliding in this country seemed almost to have reached a condition of stagnation. Both on the Continent and in America new methods of soaring were being developed, high efficiency sailplanes were being produced, and cross-country flights were being made in increasing numbers. Yet, even in Germany, this advance can only be attributed to the example of a few pioneers, such as Robert Kronfeld and Wolf Hirth, who had the enterprise to do what many others knew should be done, but would not try for themselves until someone had shown the way. The faculty of putting into practice ideas which few people have yet grasped, seems to require a mental make-up which is comparatively rare.

So it was with Collins. He spent 1932 in flying as much as he could on every possible occasion, until by the end of the year he already ranked as one of the foremost British soaring pilots. Then came Wolf Hirth to England to explain the new methods to pilots over here. It became evident that any further advance in our soaring demanded a mastery of the technique of circling. Yet still nothing was done. Collins, however, was biding his time. He collected every scrap of information he could, and at last, at the Huish meeting in June, 1933, his opportunity came, and he was able to perform the first British thermal flights. On one of these he took his wife, whom he had recently married, for a six-mile trip across country in a B.A.C. two-seater, on a calm and cloudless day.

Back at the London Club's ground at Dunstable, Collins began exploiting his new-found skill, and at once one or two of the leading club pilots began to do likewise; what is more, he actually showed the possibility of finding thermal currents without a variometer, which had formerly been regarded as a *sine qua*



A photograph taken during one of the late G. E. Collins's soaring flights from Dunstable to Luton and back, showing the type of cloud used. The cross marks the position of the "Rhönadler," which is too small to show in the reproduction.

non for thermal soaring. (A short article by him on this subject, over the pseudonym "Abnit," appeared in THE SAILPLANE for September 8th, 1933, and is of great historical interest.)

From this point onwards, gliding has never looked back. More and more British pilots are developing their skill and are refusing to remain earthbound within a few hundred feet of their home gliding ground. The vastly greater interest which this gives to the sport has done wonders in raising the enthusiasm of its devotees and in attracting the best type of pilots from other forms of aviation. And through it all Collins, with his extraordinary natural aptitude for flying, remained the master hand.

There is not space here to tell of all he did; fortunately, in THE SAILPLANE, his achievements have been recorded in permanent form. But we might mention a few of the lines in which he has been a pioneer. He was the first in this country to soar in pure thermals (without clouds), to pick up thermals without a variometer, to be auto-towed from below into a soaring area, and (more recently) to pick up a thermal from an auto-tow, to soar across country by means of a "cold front," to carry a wireless receiving set in a glider, to give aerobatic displays, and to carry out inverted flight. He twice held the British distance record, and at times the height record too.

As an example of the esteem and affection in which Eric Collins was held, we may quote the following appreciation from the Ulster Gliding Club:—"While we, over here in Ulster, had not many opportunities of gaining inspiration at first hand from watching him fly, we had, nevertheless, admired him from the time he first began to develop into, probably, the finest glider pilot in the country. His unassuming manner and willingness to impart information to all and sundry made ~~one~~ at once warm to him, and we regret his loss as much for personal friendship's sake as for the blow to the British gliding movement his death must undoubtedly prove."

He was 27 years old, and was the son of Mr. W. G. Collins, of Cambridge, who is an expert on scientific instruments, and recently designed a new pattern of variometer with his son's help. Eric Collins's wife, whom he married in 1933, has always been as well known in gliding circles as himself, and was an invaluable help to him in his career. To these two we extend our sincerest sympathy, and we are sure all our readers would wish to do likewise.



## The 1935 Rhön Competitions

FOR sixteen years now the Germans have held their annual gliding meetings on the Wasserkuppe in the Rhön Mountains. In 1920 nobody could keep up at all. Then, gradually, the various methods of soaring were introduced—first, slope-soaring, then cloud-soaring and thermal flying. The result has been that, up till a year or two ago, competitors at the meetings could always be divided into the few who had mastered the latest methods and the many who hadn't.

Those days would seem to have gone for ever. The whole character of the Rhön meetings has changed. Pupils have caught up their masters, and leaders lead no more. One watches the competitors as one would watch a flock of seagulls, admiring the skill of the species in picking out the up-currents, but not bothering about who's who, and finding it almost impossible to follow one individual for any length of time, for they all look so alike.

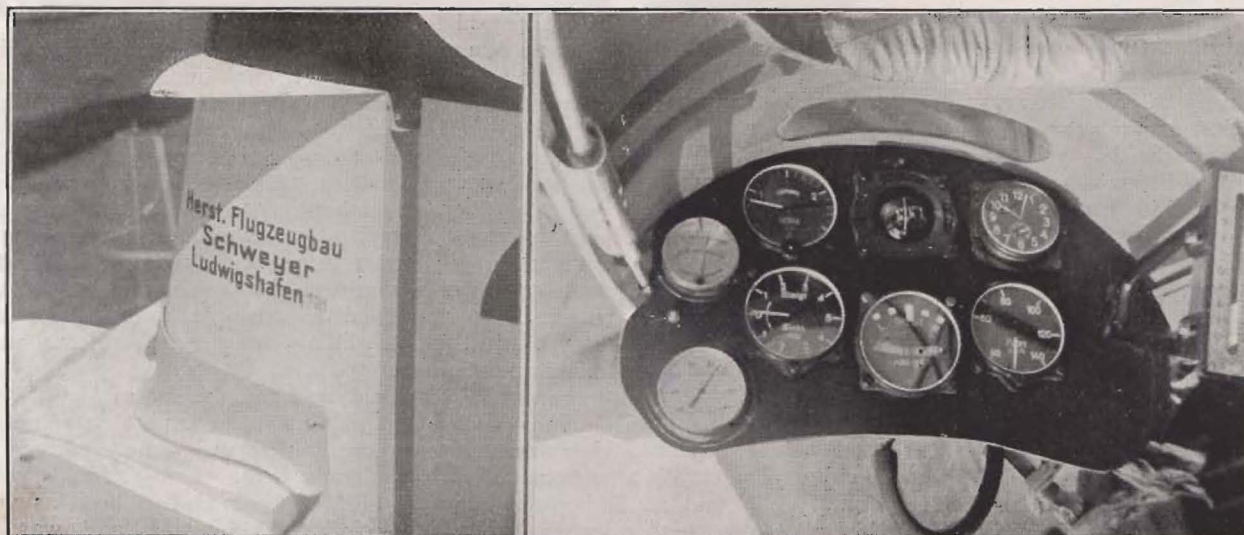
This illusion is helped by the progress towards standardisation of machines that seems to be going on in Germany. Of the 60 that were entered for the meeting, only six can be described as special creations; apart from these, all the rest belonged to four standard types—there were 23 RHÖNADLERS, 13 CONDORS, 9 RHÖNBUSSARDS, and 9 RHÖNSPERBERS. The quick popularity of the RHÖNSPERBER type is remarkable; it was only brought out early this year, yet it usually takes at least a year or two for a new type to become generally adopted.

This popularity is probably due as much to its pretty gull-wings as to any other quality; nevertheless it seemed to have an excellent performance, and this appeared to be confirmed by the fact that several machines of the type were being fitted hurriedly with lift-spoilers on top of the wings during the meeting.

The machine had other troubles, however. On the sixth day of the meeting a bombshell was dropped into the happy company, in the form of an order that some metal fitting was considered unsatisfactory and would have to be replaced by a stronger one, and no RHÖNSPERBER could be flown till this had been done. On receipt of this news, the owners of other types very sportingly agreed to stop flying while the change was being made, and even offered to assist in the work. By superhuman efforts, one gathers from the papers, they were ready to fly again next day.

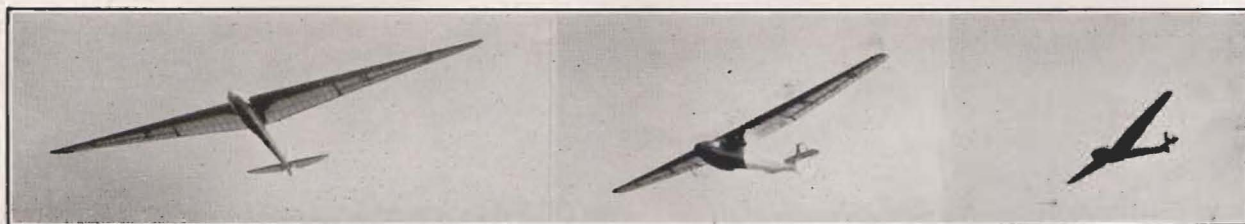
My own stay was limited to three days in the first week, all of them meteorologically alike. There was a light wind, just soarable, blowing up the north slope, which is rarely used, and has a very short beat. Instead of trying to soar in this, all machines flew out over the valley to look for thermals. Most of them lost height at first and then rose again, but a few went to the bottom. Among those that did the latter, RHÖNADLERS, CONDORS and RHÖNBUSSARDS seemed to be equally well represented; one can only surmise that the performance of the machine had less to do with it than the vagaries of the atmosphere from moment to moment.

The thermals appeared to be mostly rising off a collection of light brown fields where the corn had been cut. Actually the machines were nearer to the hill than they appeared, as was evident from an occasional glimpse of their shadows; this suggests that the thermals from the fields tended to be drifted in by the wind towards the hill before they could get up much vertical velocity. It so happened that most of the machines, at the critical moment when they were picking up their thermals, were about on a level with one's eye, so that one could see exactly whether they were rising or falling. One had the amusing experience of



Details of Ludwig Hofmann's record-breaking sailplane, the "Rhönsperber." On the left: a metal plate to prevent disturbance of the airstream between fixed fin and rudder balancing horn. Right: his instrument board, showing (top row) hygrometer, altimeter, compass, watch, and (bottom row) thermometer, variometer, turn-and-bank and air speed indicator. Outside, on the right, an inclinometer.





Three popular Hans Jacobs' designs: the "Rhönadler," "Rhönbussard" and "Rhönsperber." These types, together with the "Condor," accounted for 54 of the 60 entries at this year's German Competitions.

being able to read the pilot's thoughts. A machine would be flying straight ahead when it would suddenly rise above horizon level. Almost immediately it would start circling. Often it was above the horizon on one side of the circle and below it on the other, and one would watch the pilot shift the centre of the circling towards the side where the greater lift was.

Another novel experience was that often one could practically *see* the boundaries of a thermal in the way that one can when a quantity of rooks or gulls are all going round together in one. There were sometimes as many as 11 or 12 sailplanes all in the same thermal current—not in danger of collision, because they were all strung out at different heights. Once, when the highest machines were skirting the cloud base, I could trace the thermal practically all the way down from the cloud to the aforesaid cornfields. Sometimes the lowest machine of the bunch would suddenly begin to lose height rapidly; it had evidently dropped out of the bottom of the thermal "bubble," strictly according to text-book!

At the 1932 meeting I timed the circles of the handful of pilots who did them at all, and found Hirth going

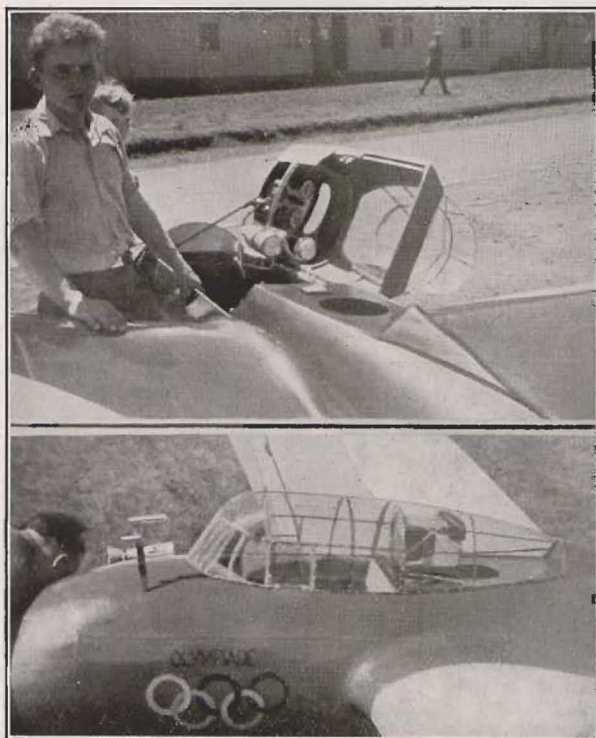
round in 20 seconds, which seemed presumptuously tight, while Kronfeld and Riedel were usually in the dignified thirties. (This was the meeting of which I wrote in *THE SAILPLANE*: "Apparently the time has not yet come when we shall see the human counterpart of dozens of gulls circling together in the same thermal current"—it hadn't, but it has.) This year, however, the following times for circles were counted: CONDOR, 14 seconds (bank 45 deg.); MOAZAGOTL, 13 seconds; RHÖNSPERBER, 14 seconds (45 deg. bank), half-circle in 5 seconds (60 deg. bank), and another in 6 seconds (50 deg. bank); while a RHÖNBUSSARD was seen going round in 12 seconds quite low down and rising fast.

Of new types at the meeting there were only two, the RHÖNSPERBER and GÖPPINGEN 3, quite a change from previous years. The GÖPPINGEN is like a small MOAZAGOTL without struts, unlike Miss Meakin's machine from the same factory, which has similarly shaped ailerons but is really more of a GRUNAU BABY. Talking of GRUNAU BABIES, there wasn't a single one there; the explanation seems to be that the *Landesgruppen*, which were the entrants, were each allowed only a limited number of machines, and of course they brought their most efficient.

Notable absences were the warping-winged THERMUKUS, which was crashed last year and has not been rebuilt, and the light-weight WINDSPIEL, which, I heard, was reduced to smithereens when a power plane landed on top of it at Darmstadt aerodrome. The pilot, Fischer, was inside it at the time, but miraculously escaped with only four broken ribs.

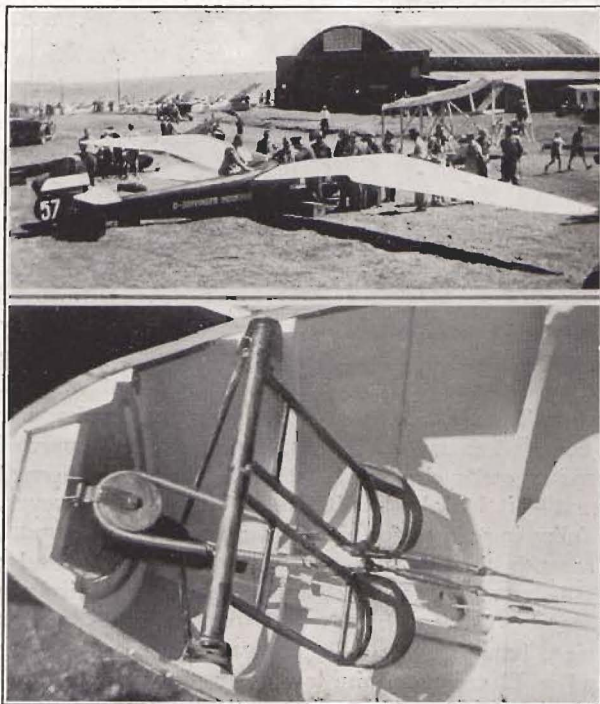
The wonderful FAFNIR II., or SAO PAULO, which won the world's distance record last year, was also missing, and thereby hangs a tale. It appears that, as this year's meeting is being run by the D.L.V., or German Air Sport Association, the D.F.S. (Research Institute), which contains many of the old pioneers who put the German gliding movement on its feet, has no say in the matter at all, and, being the owner of FAFNIR II., can't bring it along. In fact, neither Professor Georgii or Dr. Lippisch had any official standing at all, and, as far as one could see, were not even present. Instead of there being a central meteorological service, each D.L.V. group had to bring its own meteorology with it.

Wolf Hirth, whom I met, had some bad luck on the first day of the meeting, when Hofmann set up a new world's record of 296 miles in his RHÖNSPERBER. The MOAZAGOTL, not having the approved pattern of quick-release for towing, was not allowed to start that day, although all launches were by bungy. However, he put up a fine performance on July 28th, when he soared 261 miles in almost no wind at all, and landed at Zlabings on the Czecho-Slovakian border.



A "Rhönsperber" cockpit cover, shown open and shut. In the latter case, the barograph can be seen in position.





"Göppingen 3," Wolf Hirth's newest design. Below, its rudder pedals exposed.

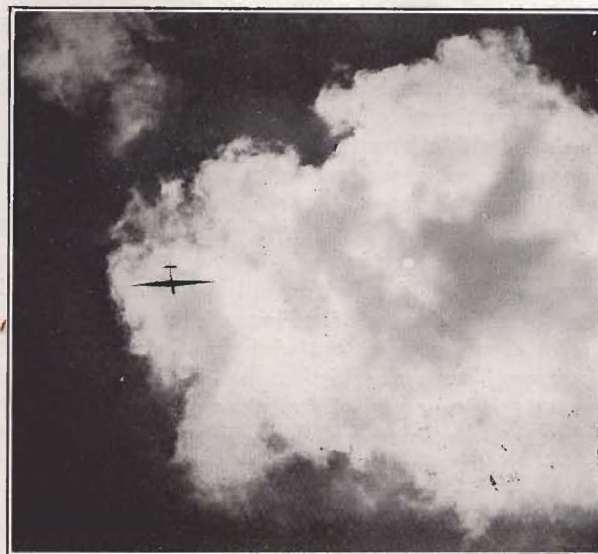
Considering that every single pilot at the meeting was an expert thermal soarer, and that on a day of good cross-country conditions the whole place became practically empty of machines before the afternoon, it is obviously impossible to give even a bare list of the various pilots' destinations and distances. On the first day of the meeting, when Hofmann put up the record, a new pilot of 18 years, von Miakisch, was his runner-up with 261 miles. On that day no less than six pilots landed in Czecho-Slovakia.

On the 24th Hirth did an out-and-return flight to the Oechsenberg and back, a most difficult flight which has often been set for a prize but hardly ever been done.

On the 25th there was almost a dead calm, and the best flight of the day was made by Hofmann, who had just got back from foreign parts. This time he went abroad again, but in the opposite direction, and after a flight of 199 miles landed in Belgium, near Arlon.

Another exciting day was July 30th, when four pilots set up a fresh world's record, all landing at the same

place, namely, Brno aerodrome in Czecho-Slovakia. Apparently they arrived at different times—it wasn't a "squadron flight"—and it was the sight of the first machine landed that induced the others to come down and join him. Their names were: Bräutigam and Oeltzschner, both of Dresden, Steinhoff of Bad Frankenhausen, and Heidemann of Hamburg. Unfortunately Oeltzschner lost his life while being aerotowed back again; it appears that the machine got into a very strong up-current and structural failure resulted, while the towing aeroplane was put into a dive and only just recovered before hitting the ground. His three



A "Rhönadler" under a cloud. Note the hard outlines of the rugged edges above the sailplane's tail, denoting melting cloud (down-current), and the softer raggedness at the bottom of the picture, with misty patches of newly forming cloud (up-current).

companions have now asked that he alone shall be regarded as the record holder.

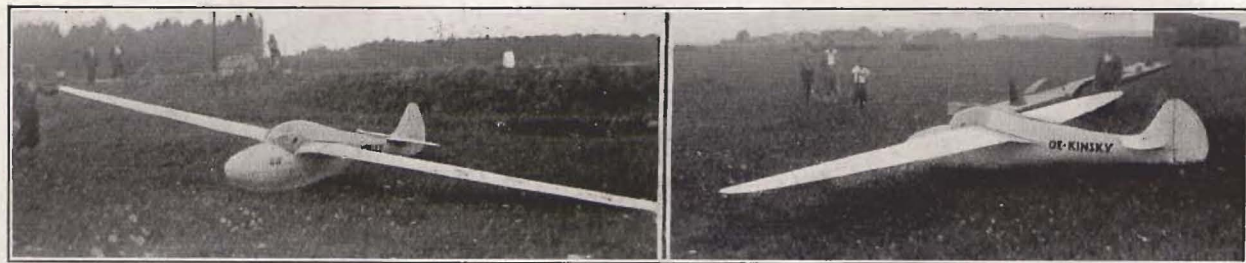
Some final facts: The total distance flown during the fortnight was 35,000 kilometres. Every pilot had to carry a passport. And finally, the number of launches was 513. Divide this into the total distance and convert into miles, and it will be seen that the *average* length of a flight (including those which went straight to the bottom) was 42 miles!

A.E.S.



Not insects buzzing round the tree-tops, but sailplanes circling in a thermal, seen from several hundred feet below. Note how, in the second picture, they have all got further up.





The "H 28": the latest product of the Hütter Brothers, of Salzburg.

## Gaisberg Revisited

THE first National Gliding Competitions ever held in Austria took place simultaneously with the Rhön meeting. Some 50 machines were entered, but they certainly were not all there. I spared two days from the Wasserkuppe to see what was going on, but unfortunately struck calm conditions; however, all the old friends of a month before were gathered on the aerodrome at Salzburg to watch the arrival of the air liner from Germany, and great was their surprise and my pleasure at the reunion. Some of them had glided down there from the Gaisberg top, and two were aero-towed back again to the Zistelalm half-way up. One of these was having his first aero-tow, and looked it.

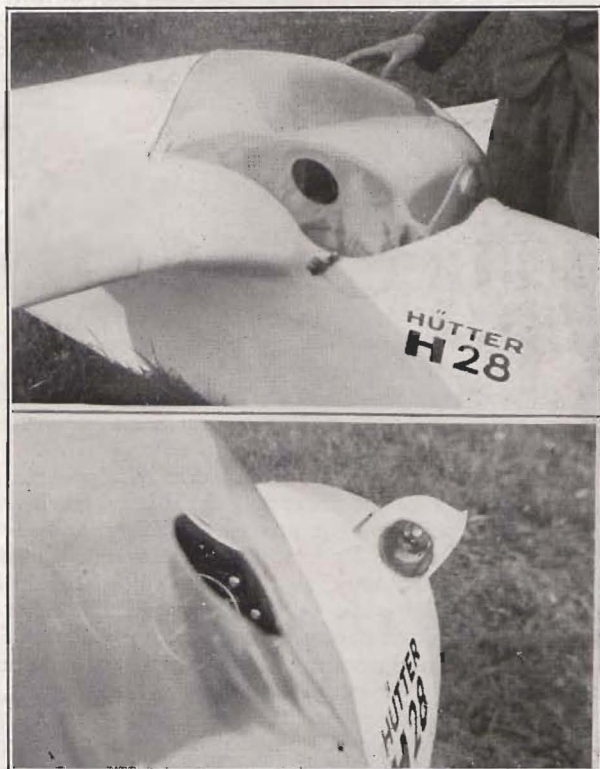
There had, however, been some good work done earlier in the week. In a wind of 45 miles an hour, the pilot Gumpert, of Vienna, flew a GRUNAU BABY 89 miles to Amstetten, near Linz, while Frena, the duration record holder, did a climb of 3,000 ft. in his

new CONDOR. Herr Koller, a fellow-pupil of mine at the Gaisberg in June, who had not then even got his "C," rose 2,400 ft. from the top of the mountain in a FALKE; this was his first time in the air since his "C" flight. One up to the local gliding school!

The Hütter brothers had sprung another surprise, illustrated herewith. This natty (German *nett*) little sailplane has the enormous wing loading of  $4\frac{1}{2}$  lbs. per square foot. Its span is 12 metres (just under 40 feet), empty weight 82 kg. (181 lbs.), and normal flying speed 43 or 44 miles an hour. I didn't see it fly, as it had hit a molehill on landing and broken a bulkhead. The astonishing cockpit cover, like an enormous soap bubble, is of 3-mm. "Plexiglas," specially made in Darmstadt. The machine has not yet gone into production; it is purely experimental.

I must thank the Salzburg Aero Club for a lift up the Gaisberg, and the Ikarus Gliding Club of Vienna for making a special journey down again.

A.E.S.



"H 28": a near view of the "bubble," showing how the Venturi for the "turn-and-bank" can be pushed out and in.

**Aeroplane into Glider.**—The three brothers Smith, of Glapthorn, near Oundle, built a glider out of an old aeroplane, the property of the eldest, who is a member of the Northampton Aviation Club. He tried several flights in it and then handed it over to the youngest brother, who forthwith stalled it at 50 feet and side-slipped to earth, sustaining nothing worse than a bruised shoulder. This the local paper described as "a miraculous escape from death." There has been much talk lately of turning gliders into aeroplanes, but this shows what happens when the process is reversed.

\* \* \*

**This Gliding.**—"With a whirr of wings we shot over the cliff. Looking down, I had a fleeting glimpse of Hood Grange, before we stalled in hair-raising fashion. With a sickening sensation I felt the machine drop. Looking to the side I saw we had lost height and had fallen several feet below the level of the cliff. A few yards away, in fact, were the mossy slopes of the Bank. 'Not a good take off,' was Mr. S—y's comment. . . Suddenly, I realised we were without the reassuring drone of engines and throbbing fuselage. . . I think I should prefer an auto-launch to a catapult take-off!"—"Yorkshire Herald" Special Correspondent, after a passenger flight at Sutton Bank.



# Sailplane Construction for the Amateur

## 7—Disposition of Material

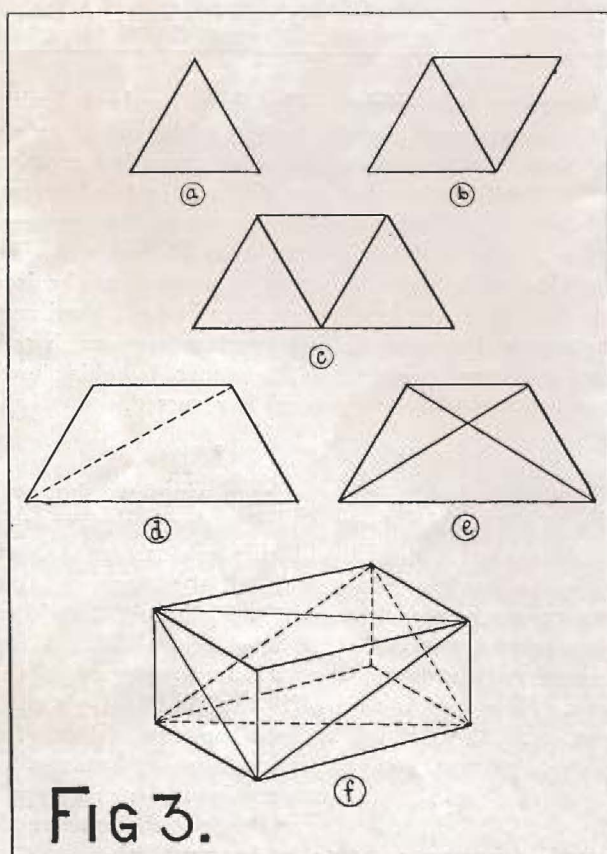
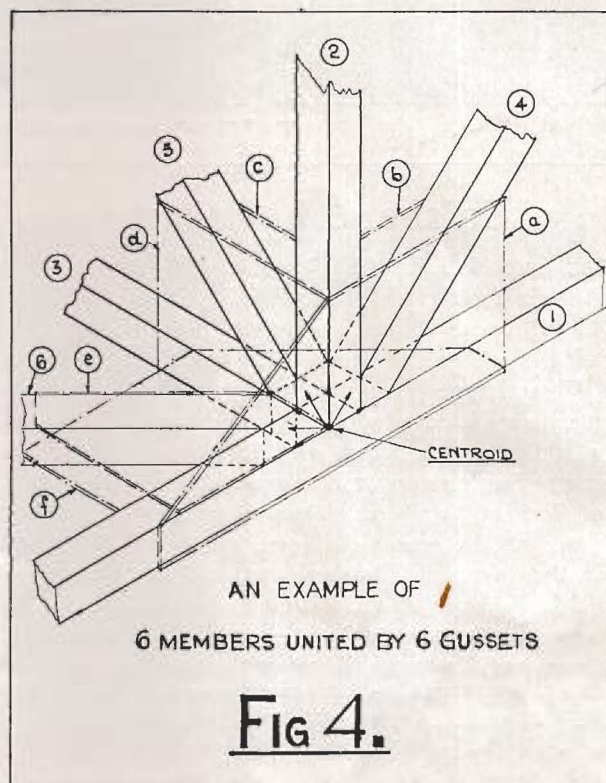
By W. BUTTERFIELD

[Mr. Butterfield's articles on Sailplane Construction have been appearing monthly since the beginning of the year, excluding February. Issues containing the previous six articles may be obtained from the Publisher of THE SAILPLANE at 1s. each, post free.]

A CONSTANT endeavour is made to arrive at a type of structure which will give the necessary strength with the least expenditure of material. A strut which is designed to be in compression during ordinary flight may be arranged to take tension under some altered condition of loading. Main members, such as spars in the wings or rails in the body, are built up to form economical girder sections. Sheet metal fittings have lightness holes drilled in them where the metal is not carrying a load; in fact, the ideal would be to eliminate all material which is not required to do useful work.

The structure of a primary training glider is a typical example of the application of familiar structural principles which are adopted to eliminate redundant material. The main components are often of the open braced frame variety, i.e. composed of a number of members suitably proportioned and arranged to withstand the external loads which are applied in service.

This form of construction is popular because the nature and magnitude of the stresses set up in the various members can be readily determined either by



calculation or graphically by a simple diagram, in which case the joints are assumed to be pin joints, even when they are actually secured by small gussets. If the axes of the various members pass through a common point at the joints (see Fig. 4), then the stress in the members will be direct tension or compression, which gives the lightest possible rigid structure.

Here are a few simple rules to determine the minimum number of members required to ensure rigidity in a frame structure:—

Three joints and three bars form a "firm" or stable frame. See Fig. 3, diagram (a).

Four joints and five bars (b), or

Five joints and seven bars (c) form a firm frame.

The fundamental figure in any framework is the triangle, and the following relation holds good for all firm frames: Let  $M$  = No. of members and  $J$  = No. of joints; then  $M = 2J - 3$ .

A rectangular or polygon frame does not possess a sufficient number of members to enable it to retain its original shape under all conditions of loading, and such a frame is said to be "incomplete." Diagram (d) has four members and four joints, but according to rule it should have five members; it therefore requires one additional member as shown dotted. If both diagonals be inserted as in diagram (e), we have one member too many; such a structure is known as "redundant," in which the stresses in the members cannot be determined by a simple geometrical diagram, and must be deduced from the relative amount of yielding of each member under load. However, if the diagonals



be of wire and capable of taking tension only, we can assume that a second diagonal will be necessary when the external loading is reversed, and indeed it becomes essential for *all* conditions of loading. If the joints are flexible and tension is set up in one of the diagonal wires, the frame will adjust its shape until the loads in the two wires balance, then, if initial stress is set up in the two wires, *all* members will be initially stressed.

A framework such as a complete primary glider is often termed a "space" frame; in other words, it is three dimensional. A space frame may be built up from a number of plane frames, each perfectly rigid in its own plane, and yet the whole may be unstable. A cardboard box with its lid off can be distorted by pressure applied diagonally across its top corners, but with the lid tightly in place it becomes a rigid structure. Yet each of the five sheets of cardboard from which the lidless box is made is rigid enough in its own plane. From this it follows that the previous rule for ascer-

taining if a structure is "complete" or not, does not apply in this case, and the modified rule becomes:

$$M = 3J - 6.$$

Let us examine diagram (f), Fig. 3, which may be taken to represent one bay of a square framed girder fuselage. There are eight joints, and the number of members required will be  $3 \times 8 - 6 = 18$ . There are exactly 18 members shown, and no member can be omitted without spoiling the stability of the structure. It must be noted that if wire bracings are used, then both diagonals in each of the six panels will be required to cater for reversals of external loading.

Fig. 4 shows the junction between one longitudinal member and one corner of a transverse frame, also the small gussets which are glued to the members to ensure symmetrical loading. All members 1 to 6 are capable of transmitting direct tension or compression, and, assuming that their axes pass through the centroid, the loads in them can be found by a reciprocal stress diagram.

(To be continued)

## The Care of Elastic Launching Ropes

By L. ROWLAND, B.Sc. (Lond.), A.M.I.C.E.

**I**N order fully to appreciate the details concerning the proper care of an elastic rope so that it may give its maximum useful life under service conditions it is essential to give some of the important physical properties of the materials of which it is composed, together with a few details of the process of manufacture.

The all important material in the composition of the rope is the rubber thread, and under normal conditions the rope should last as long as this thread retains its important physical properties intact, which is about three years.

The results of a considerable amount of experimental work prove conclusively that the ageing of rubber thread is due to the combination of the free sulphur, which is given off continuously, with the oxygen in the air. This oxidizing process causes an initial hardening of the rubber resulting in a loss of tensile strength, and later cracks appear on the surface followed by complete disintegration.

The greater the supply of oxygen the more rapidly does the rubber age, and it is possible to completely destroy good rubber thread in about four weeks by exposing it to a strong current of air.

In the case of the elastic rope the rubber strands are well protected from the air by the two layers of cotton covering material, but it is obvious that when exposed to a continuous stream of air oxygen will penetrate to the strands and oxidization will take place.

In order, therefore, to reduce this damaging process to a minimum, the rope should be stored in such a way as to be quite free from air currents and should not be allowed to lie on the floor of the hangar for long periods.

This is a very important consideration, and if due precautions are taken in this respect the useful life of a rope will be prolonged considerably.

The best method of storing a rope is either in a box or coiled on a drum which is well covered with a thick material.

It is interesting to note that increased temperature has the effect of accelerating the oxidizing process

referred to, and it is possible with the aid of special apparatus to destroy rubber thread completely in 200 hours. This is done by placing the rubber in a special bomb and injecting pure oxygen at high pressure, which is maintained at a temperature of about 150° F.

It is, therefore, inadvisable to leave ropes exposed to the sun for long periods. In this connection a number of experiments have been made by exposing naked rubber thread to strong sunlight with astounding results. It has been found that in four or five hours the elastic properties of the thread have been completely destroyed, and it has been reduced to a rigid material. It is interesting to note that a specimen of the same thread sealed in a vacuum in a glass tube and exposed under the same conditions retained all its physical properties intact even after many months of exposure. It is probable that the ultra violet ray, which is a constituent of sunlight, plays an important part in this process of sun perishing, but there is no doubt that the covering material prevents penetration of this ray to any appreciable extent.

Water has no effect whatever on the rubber thread, in fact the best way to store rubber goods is to keep them immersed in clean water which should be renewed every month or six weeks.

It is obvious that this is due to the fact that the water insulates the rubber from the oxygen in the air and so prevents the process of oxidization.

Unfortunately, the cotton covering material of a rope tends to rot when subjected to long periods of saturation; if, therefore, a rope becomes soaked by rain or wet grass it should be hung from a rafter in long folds until dry and then stored in a box or coiled in to a drum.

It should be noted that moisture has the effect of shortening the plaited cotton material and thus increasing the total length of the rope slightly. This is due to the increased compression of the covering material on the rubber strands, but it regains its normal length when dry.

Oil and grease have a very damaging effect on rubber thread. It can be demonstrated that a strand of



thread is completely destroyed in about three days if smeared with oil, so that special care should be taken to prevent the contact of any kind of oil with the rope because it penetrates through the cotton cover very quickly.

If immersed in petrol rubber thread will quickly swell to two or three times its normal size, and in this condition its tensile strength is reduced very considerably so that it breaks easily. The petrol, however, evaporates very quickly and the thread regains its normal physical properties.

The manufacture of elastic ropes involves some highly technical problems, and the calculations necessary in order to produce a rope of definite diameter, tensile strength and extension are by no means simple.

The high quality elastic thread employed is made of pure Para rubber with an admixture of 10 per cent. of sulphur for vulcanizing purposes.

In order to provide the necessary elastic properties of the finished rope and to facilitate manufacture the thread must have a maximum extension of 800 per cent., so that during the process of braiding on the covering material the extension in the rubber strands is about 600 per cent. This extension must be kept uniform throughout the process of braiding a particular rope, otherwise the tensile strength will not be uniform throughout its length.

The maximum extension that can be obtained on a finished rope does not exceed 125 per cent. even when the rubber, during processing, is extended to 600 per cent., because the covering material has to hold the rubber at a definite extension when the rope is relaxed in order to provide the desired tensile strength.

It is obvious that the rubber thread is by far the most important material of which the rope is made and it is on its elastic properties the efficiency of the launch depends. In this respect the covering material is valueless and its function is merely to serve as a protection for the rubber strands as well as hold the rubber strands at a permanent definite extension when the rope is relaxed.

During the process of a launch the rope is gradually extended and the whole of the pull is taken by the rubber strands, until an extension is attained when the covering material begins to take a part of the pull. The extension on the rubber strands at this stage will be the same as when the covering materials were braided or plaited on in the machine.

Beyond this point the whole of the increased load will be taken by the inelastic covering material, and because it is inelastic there is grave danger that it will fracture under increased load. When hauling by hand it is possible to sense this critical extension because the extensions feel flexible up to that stage and then suddenly become more or less rigid, but when hauling by power it is obviously impossible to locate this critical stage in the same way.

In order, therefore, to preserve the rope and prevent rupture of the cover, it should not be extended over 100 per cent., whether hand or power hauling be employed.

It is for this purpose that the best type of rope is fitted with an extension indicator which can be seen by the pilot. This indicator consists of a ball which is pulled by a string passing through a metal eye attached to the rope. When the ball touches the metal loop the extension in the rope is 100 per cent. and the pilot

gives the signal to release the glider. It is probable that more ropes are ruined by rupture of the covering material caused by excessive extension than from any other cause, so that the simple indicator attachment should prove to be a very valuable factor in prolonging the useful life of a rope.

When hand hauling it will be found that up to extension of 60 or 70 per cent. the covering material becomes loose on the rubber strands, and so tends to ruck up in the hauler's hands. To prevent this and also to provide a better grip ropes are now provided with rigid hemp ropes spliced into eyelets attached at each free end of the elastic rope. These are about 15 feet long and have knots at 2 feet intervals to give a still better grip. It is also found convenient to splice into the eyelet at the middle of the elastic rope a short length of hemp rope, the free end of which is attached to the hook in the glider.

Finally, if the soil on the launching ground is sandy it is advisable to drag the rope along the ground as little as possible because the particles of sand penetrate through the cover and tend to chafe the rubber strands.

To summarise, the following hints are offered for the preservation of launching ropes:—

- (1) Don't expose the rope to draughts, but store in a box or coiled on a covered drum.
- (2) Don't leave the rope exposed to the hot sun for any length of time.
- (3) Don't allow any oil, grease or petrol to come in contact with the rope.
- (4) Don't extend the rope more than 100 per cent.

## More Power to Your Elbow

A NEW power-driven golf club has been perfected, and its appearance is likely to cause a great stir in golfing circles (and other circles of wider range).

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The inventor informs me that he is now working on a pair of power-driven shoes, fitted with miniature tractor belts, and hopes to cut out the fatigue of walking across four greens for a second shot.

NORTHERN NOMAD.

Since writing the above, "Northern Nomad" has sent the following further information: "I have now been informed by my friend the inventor that, to comply with the law as it now stands, it may be necessary to hold a gun license before one can use his patent golf club, and a car and driving license for the shoes. He is sure, however, that all true sportsmen will raise a protest against such regulations likely to prevent the quiet enjoyment of innocent and healthy sport."



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## News from the Clubs

### London Gliding Club

**Friday, June 28th.**—Collins was up for three hours in his RHÖN-ADLER, going off to Ivinghoe, then still further afield over Tring reservoirs, and back to Ivinghoe, where he got stuck for a time and had to do slope soaring at only 100 ft. Then he picked up a thermal, climbed to 3,500 ft., and returned to Dunstable, where he gave an aerobatic display and landed, much to the entertainment of the navvies at work round the new building, which, by the way, is going up fast.

**Sunday, June 30th.**—The week-end was devoted to ground-hopping, except that two "A's" were obtained in the early morning calm before breakfast on Sunday.

**Tuesday, July 2nd.**—In the evening Fox soared the nacelled DAGLING for 54 and 9 minutes, Barker flew his SCUD for an hour, and Armstrong, Keeble, Sproule and Ivanoff each did half an hour in the FALCON.

**Wednesday, July 3rd.**—Furlong, Davis and Horrell tried for the "C" in the nacelled DAGLING; Furlong succeeded in keeping it up for 17 minutes. Half-hour flights were made by Keeble in the FALCON and by Ivanoff and Sproule in GRUNAU BABY, while Dewsbury and Nicholson each flew the RHÖNBUSSARD for three-quarters of an hour. Hill-top descents in the open DAGLING went on all the evening, and Marshall took his "A."

**Thursday, July 4th.**—Davis and Horrell each took their "C" certificates, Ivanoff and Sproule soared the GRUNAU BABY, Fox the FALCON, and Gardner glided the open DAGLING.

**Friday, July 5th.**—Yet again a soaring day. In the evening Fox had the FALCON up for 70 minutes, and GRUNAU BABY was flown by Sproule, Ivanoff, Keeble and Nicholson.

**Saturday, July 6th.**—The wind was soarable at first and then grew fitful, but there was enough of it to lift Bergel and Wills into thermals, and before long they had vanished into the distance, the next news of them being from Hornchurch and Heston aerodromes respectively. How they got there is described elsewhere. Wills, having to fly to Belfast in his "Monospar" next day, had landed conveniently at the spot where he keeps it, but Bergel wasn't allowed to get away from his landing place without leaving

his name and address. The trouble was that gliders are not included in the schedule of landing fees chargeable for aircraft making forced landings on R.A.F. aerodromes, so the matter has had to be referred to head office for information and necessary action. One can imagine all the various forms being banded about from one Air Ministry department to another, to be annotated, initialled and minuted, till finally the entire staff of Gwydyr House will have become aware that a mere glider has flown from Dunstable to Hornchurch. Which is all to the good.

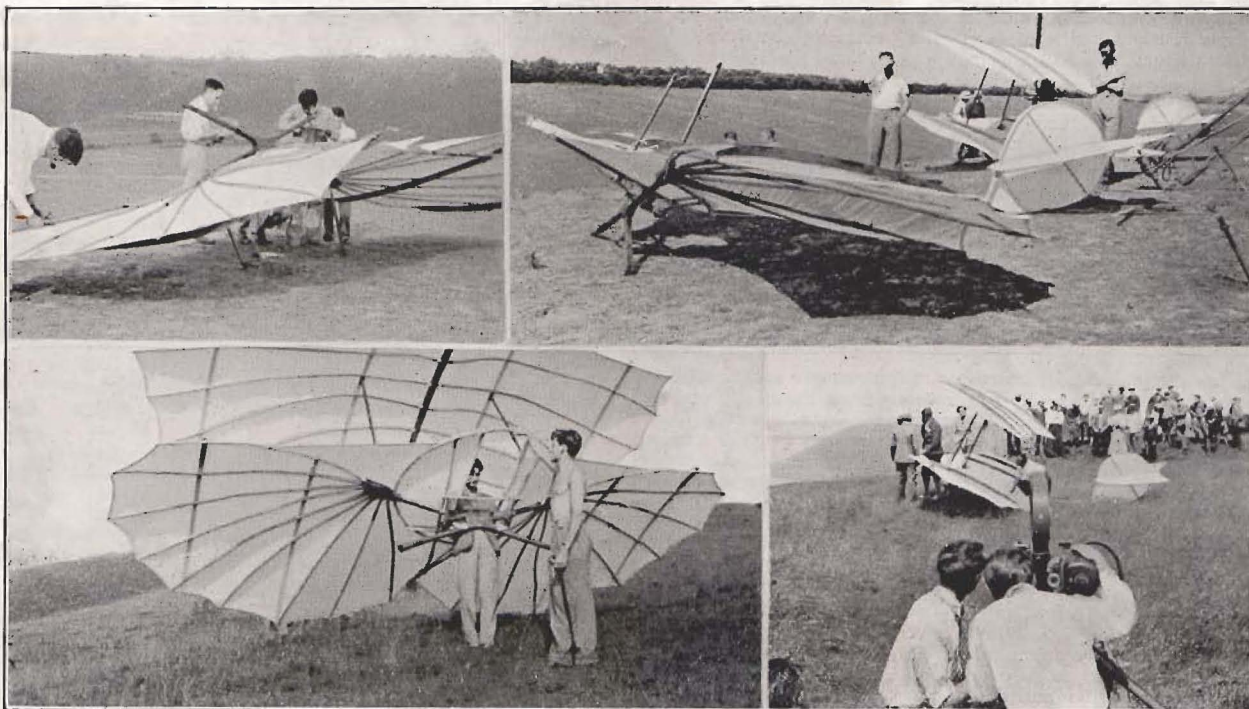
Wills was in the air for two hours and Bergel for three, but meanwhile much purely local soaring was going on. Several people flew the FALCON and nacelled DAGLING, some keeping up and some not, while Cooper soared the RHÖNBUSSARD, Barker his SCUD, and Hiscox the WESTPREUSSEN four times.

**Total Flying Time.**—During this week, from Monday to Saturday, 37 hours' flying was done by the club.

**Sunday, July 7th.**—Four descents from the hill-top before breakfast, then a north-east wind got up and only ground-hops were possible.

Our next news is that, from the 15th onwards, the club ground was overrun by film producers, world-famous cameramen, and quaint supers dressed in the costume of the "naughty 'nineties" (or whatever the corresponding period was called in Germany), not to mention the Continuity Girl, whose duties are too voluminous to mention here; finally, the great Zultan Korda himself. No less than two Otto Lilienthals, each as large as life and complete with beard, strutted about the hill-top, one to do the acting and the other the flying. The latter was almost unrecognisable under his whiskers as our own Mr. Payne; after his efforts with the LILIENTHAL biplane, we understand he has now a greatly increased respect for the ancient pioneer's airmanship.

On Wednesday, July 17th, the FALCON, PRÜFLING, two DAGLINGS (open and closed), and two LILIENTHALS (monoplane and biplane) all performed. Armstrong was filmed flying the FALCON, and when Frä. Emmy von Roretz (of Austria, who has joined the club after getting her "C" at Rossitten) took off in the PRÜFLING, delighted but far from nineteenth century ejaculations were drawn from the assembled supers.



The past come to life: replicas of a "Lilienthal" monoplane and biplane, constructed by Messrs. Zander & Weyl to the order of a film company, are brought to Dunstable Downs to be "shot." Right bottom picture shows the "shooting" in progress, with a group of Victorian spectators watching "Lilienthal" take off.

[Photos by C. A. Beck.





Scenes at the instruction camp on Dunstable Downs. Left, top: the Manchester Club's "Prüfling" and other machines at the base, showing "The Bowl" in the distance. Right, top: reassembling at the foot of the hill after lunch. Left, below: Mr. Bergel points out the way to a pupil about to try for his "A" test. Right, below: starting for a "B" in the nacelled "Dagling."

### The Dunstable Gliding Camp

The success of this fortnight's camp, organised by the London Gliding Club, has been too incredible. We have been along there several times to collect news (it is still continuing as we go to press), but have been simply left gasping. To one who remembers the early struggles of the club, in the lean days when the first flush of publicity had left it, the sight of all this activity is too much like a fairy tale come true.

Sixty-five campers arrived, all thirsting to take the air. Some had previously taken it in aeroplanes (including one with several hundred hours' flying to his credit); others had never been off the ground. One pupil was seventeen years old, another in his sixties. In addition to the "unattached," members of the following clubs joined the camp: Bristol, Derby, Elgin, Furness, Jersey, Kent, London, Manchester, Midland, Newcastle, Scottish Union, South-down, Tees-side, Yorkshire, and the Australian Gliding Association. And, apart from the actual partakers, visitors also came from the Channel, Dorset, Acerrington, Cambridge, Ryedale and Nottingham Clubs.

The tragic loss of G. E. Collins, the very day before he was to leave Sir Alan Cobham's Display to come and act as chief instructor, led to offers of help being received from all over the country, and there was no doubt of a general feeling that, as a tribute to his memory, the duty was to carry on and make the camp the greatest possible success. Sebert Humphries very nobly took on the job of chief instructor at a moment's notice, with the result that enthusiasm at once rose to fever heat and remained permanently at that level. He was helped by relays of assistant instructors, among whom J. P. Dewsbery and B. G. A. Meads should receive special mention. Mr. Meads and his fellow-members from Manchester actually brought their own PRÜFLING and generously allowed the more proficient of the camp pupils to fly it off the top.

The organisation appears to have gone without a hitch, and for this the credit must go principally to J. R. Ashwell-Cooke. Few people realise that to organise an affair of this sort means months of unobtrusive hard work, and has needed not only much organising ability but quite a lot of faith, since nothing so ambitious had ever been seriously attempted in this country before and there were no precedents to go upon.

"Undoubtedly the outstanding feature of the camp," writes one who attended it, "was the energy and enthusiasm of the *ab initio* squad under Humphries. When launching, they ran so hard and fast, with loud cries of 'Follow through!' that the distinction between a bungy launch and an auto-tow was barely discernible. Disdaining a car for retrieving—they said it injured

the machine—they towed the machine back after each hop by man power. But the most awesome sight of all came later when they were using the 'mantleshell' and carried the machine there *at the run*. They said it was 'easier'! Up above, almost equal energy was to be seen, and machines were fired off the top at an incredible rate, for which much credit is due to the excellent retrieving of Mr. Thomas.

"There was very little crashery, nor was there any worse case of personal injury than that of the lady member of the launching crew who was caught by a wing tip, and even she sat down to the next meal.

"The necessary concomitant of much gliding is much washing, and we shall never forget the sight of our jovial chief instructor standing in front of the tents as God made him, while willing hands poured the contents of the fire bucket over him, and he prayed to Heaven in a loud voice to keep the women inside. In the evenings the Dunstable swimming pool provided so great an attraction as almost to empty the bar.

"It has been a wonderful time, and the universal verdict is: 'There must be more of this.' Well done, the London Gliding Camp!"

The following obtained certificates during the camp:—

#### "A" Certificates.

Burnett	Gifford	Logan
Booth	Griffis	McIver
Brown	Heath	Powell
Bullwinkle	Hervey	Thomas
Cramp	Huddleston	Timings
Davis	Hutton	Vigers
Edwards	Jackson	Wagstaffe
Elwell	James	Wheeler
Foster	Feeny	Wise
Garner	Kaye	Winch

#### "B" Certificates.

Barnes	Griffis	McIver
Beeton	Heath	Powell
Burnett	Hervey	Simpson
Brown	Hutton	Thomas
Bullwinkle	Jackson	Vigers
Davis	Feeny	Wagstaffe
Foster	Kaye	Williams
Garner	Logan	Williams
Gifford		

#### "C" Certificate.

Hervey



## Yorkshire Gliding Club

**Saturday, June 22nd.**—Wind S.E. At mid-day Neilan was launched by car on PROFESSOR, but an unfortunate lull forced him below the hill top. He landed on top down wind. During the afternoon Roy Watson and Alderson received turning practice on HOLS I.

**Sunday, June 23rd.**—Wind S.E., 5 m.p.h. HOLS I. was winch-launched, R. Watson and Blakeston doing turning practice. Hastwell and Wordsworth made circuits. STEDMAN two-seater carried passengers round the moor, and Miss Horsley made several good straight glides after winch-launching on DICKSON. Clemons and Reid were given slides. They lifted occasionally and landed hastily, to the detriment of the landing wires.

**Saturday, June 29th.**—We were glad to welcome Hardwick, who arrived with Slingsby. The two of them took up the FALCON two-seater in very unfavourable conditions with a wind E.S.E.

They flew over White Horse Slope, where they remained for seven minutes before landing on top. Blakeston, Alderson, and Miss Horsley continued training on HOLS I.

**Sunday, June 30th.**—Wind light, variable. With no wind an excellent opportunity was provided for practising circuits after winch launches. Blakeston made half and three-quarter circuits and did two qualifying 45's towards his "B," and Miss Horsley and Alderson continued training on HOLS I. In the evening circuits were made on FALCON I. by Slingsby, Hastwell, Stedman, Sharpe, Cox, Holdsworth, and Jowett. Reid showed great improvement on DICKSON after winch catapult launches.

**Tuesday, July 2nd.**—With a wind slightly S. of W. at 10 m.p.h., conditions were ideal, and telephones were set buzzing early to arrange an evening meet. In the evening Sharpe took up FALCON I. for an hour and a quarter, and meanwhile Slingsby took a passenger in FALCON two-seater for 20 minutes. Holdsworth flew HOLS I. for eight minutes, Slingsby took up another passenger and later gave R. Watson 20 minutes dual.

On the following evening, with the wind still in the same quarter but stronger, Slingsby flew FALCON two-seater with passengers, and Hastwell flew FALCON I., each flight lasting about 20 minutes.

**Saturday, July 6th.**—Wind N.W., 10 m.p.h. FALCON I. was launched with Sharpe, who soared for 16 minutes. Holdsworth and Wordsworth took turns with HOLS I. for five minutes each. At 5 p.m. Holdsworth was again launched on HOLS I., reaching 300 ft. Afterwards Blakeston took his "B" with a circuit of 1 minute 20 seconds on HOLS I., and then he soared for two minutes, making three beats. The wind had dropped now, so primary training was continued on HOLS I. Hastwell and Slingsby both managed to hold FALCON I. aloft for seven and six minutes respectively, and both also managed to land on top by sneaking in over the edge down wind.

**Sunday, July 7th.**—Wind S.E., very light. Training continued with DICKSON and HOLS I. Heath took his "A" on the latter after winch-launch. PROFESSOR made winch-launched circuits with Stedman and Sharpe, after which Neilan soared her for 15 minutes on thermals—without a variometer. STEDMAN two-seater made circuits with passengers and Slingsby made one on FALCON I., just to keep his hand in.

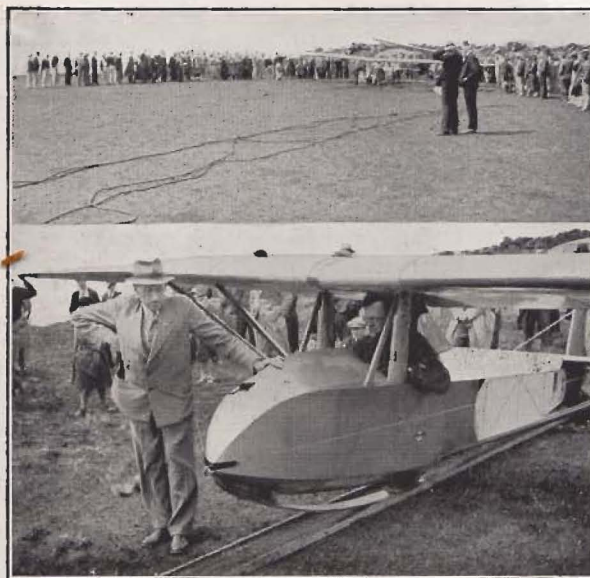
**Tuesday, July 9th.**—Neilan on PROFESSOR, with auto-launch, found that hill lift stopped at 200 ft. but he reached 1,400 ft. on thermals, spending 2 hours 17 minutes in the air.

**Wednesday, July 10th.**—Wind S., veering to N.W. Neilan was auto-launched on PROFESSOR at 10.45 a.m. During the morning he found thermals up to 1,100 ft., but only to 900 ft.



"Cloud Streets" in a west wind at Sutton Bank. The "Stedman" Two-seater is in the foreground.

(Photo by J. C. Neilan.)



A Reminiscence: Sutton Bank at Whitsun. C. E. Hardwick is standing by his "Falcon II," with P. A. Wills about to take off in it.

[Photos by H. O. Davies.]

during the afternoon. He found that hill lift reached 600 ft. at times, but that its limit was most usually 300 ft. After 7 hours 6 minutes he decided that the seat cushion was uncomfortable, so he landed voluntarily. About 9 p.m. FALCON I. made prolonged descents with Stedman and Neilan.

**Saturday, July 13th.**—Neilan was launched, by car, over White Horse Slope at 2.20 p.m. in an 8 m.p.h. S. wind. He found thermals quickly, always without a variometer, and he circled off across the West Bay towards Felixkirk, reaching 1,000 ft. At 4.50 p.m. he nearly repeated the performance, but found less thermal lift, and the flight was confined chiefly to the White Horse Slope. Miss Horsley continued training on HOLS I., making attempts up to 29 seconds for her "A." STEDMAN two-seater carried passengers in circuits and Fisher (Joe) and Clemons did slides and hops on DICKSON—brave old veteran.

**Sunday, July 14th.**—Wind N., 10 m.p.h. Miss Horsley took her "A" on HOLS I. with 33 seconds, after winch launch, and later made attempts up to 52 seconds, with turns for her qualifying flights for "B" certificate. STEDMAN two-seater carried passengers, and Neilan (Senior) made some straight towed flights on HOLS I. Jowett had his first experience of cloud flying by going into a low one on HOLS I. while still attached to the end of the winch cable. He released at 300 ft., but had altered his course by 90 degrees when he reappeared under the fog base.

**Monday, July 15th.**—Wind W. Neilan on PROFESSOR made an out and return flight of six miles to Black Hambleton, reaching 1,200 ft., but finding no thermals. In the evening Holdsworth was launched on HOLS I., but the wind had dropped and he landed below.

**Tuesday, July 16th.**—Wind W. to S.W. Neilan was up all day in PROFESSOR doing his duration record flight of 13 hours 7 minutes, with a voluntary landing. (Pilot's account of flight elsewhere in this issue.)

**Wednesday, July 17th.**—The Press having become interested, their photographers turned up at Sutton Bank on Wednesday in the hope that Neilan would be attempting to break his own record. He was launched at 12.30 and sported about for 15 minutes while the Press took photographs. In the evening a midweek party arrived while Neilan was up again on PROFESSOR, attempting to make cloud contact, in which he was unsuccessful. He reached 1,600 ft., however. At 8 p.m. Stedman on his two-seater took up his son Adrian as passenger. During an hour's flight it was observed that the machine made occasional switchbacks through the atmosphere, and it was learned later that young Adrian was responsible for these whilst taking over the controls to let his father warm his hands and stretch his legs. The FALCON two-seater carried several passengers with Slingsby, who on one occasion made a flight out to the reservoir five miles away and back. Stedman took up Dr. Neilan for half









Soaring over the Atlantic Coast: A photograph taken from the cockpit of the Ulster Club's "Scud II," while flying at 2,000 feet above the Umbra at Magilligan, Co. Londonderry. Far down below the waves are breaking on the famous Magilligan Strand, from which the machine was launched.

[Photo by N. P. Metcalfe.]

the pea soup as it formed below and surged up to engulf the machine. A huge stationary mass of cloud, on the windward side of Binevenagh, enabled the Scud to be flown along it for two miles, with the wing-tip literally buried in it. Height, 2,600 ft., at which (3,400 ft. above the beach) the visibility, in clear spells, was stupendous. Flying time, 2½ hours.

**Tuesday, July 16th.**—Benbradagh was tried to-day, and Wynne, launched in Scud, plodded around for 1½ hours at about 1,200 ft. in and out of cloud, experimenting with a new Perrin bank and turn indicator, battery driven. A really sticky mess of mist came down as he was about to land, and the ceiling at take-off point became about 50 ft. All one could hear was the subdued and rather ghostly "sough" of the wind, as it sounds on these occasions, and a somewhat worried voice from out of the void: "... this ... mist!" The wind failed soon afterwards and forced him down to the bottom. How he manages on such occasions to pick, almost invariably, the smallest field in the vicinity and with equal regularity, put the machine down safely in it, is with us a constant source of wonder. Flying time, 1½ hours.

**Wednesday, July 17th.**—Wynne and Metcalfe with Scud spent a pleasant afternoon at Magilligan. Another precedent created, when it was found possible to launch from the beach and soar in a west wind. For once we turned up our noses at gulls flapping below us. True, Metcalfe required two launches to get off, but Wynne excelled himself by reaching 3,600 ft., and doing a round tour of the district—Binevenagh, half way to Coleraine and back home inland to Downhill. Flying time, 3 hours.

**July 28th.**—Liddell and Metcalfe flew GRUNAU and KASSEL 20 from Castle Lecky, Magilligan, for about 2½ hours each. The veteran KASSEL is now resplendent in a new coat of aluminium paint and surprised us by maintaining an almost equal altitude to the GRUNAU, in fact there was practically no difference.

A dull, rather uninspiring day with lowish cloud and vicious wind. Liddell visited Binevenagh for his first experience of that wonderful "whoosh" and was duly impressed. Flying time, 4½ hours.

## Midland Gliding Club

**July.**—This month has shown much progress in the club. Four "B" certificates have been obtained and three more "A's," bringing the total up to 21 "A" and four "B" certificates, while several more members have made their "45's" towards the "B."

We are now back again at Handsworth, the hill being at last cleared of the hay. There is a possibility of soaring here now that the belt of trees along the ridge of the hill are in leaf, and there is some speculation as to who will be the first to soar on this ground.

A **General Meeting** was held early in the month to elect a new committee. It is hardly necessary to say that our chairman, Mr. C. E. Hardwick, was unanimously re-elected; all of the gliding fraternity who are acquainted with Mr. Hardwick will agree that anyone finer or more suited for the position would be difficult to find. The remainder of the committee were also re-elected with one exception. Mr. H. Testar, who has acted as hon. secretary, and who has done some splendid work in this capacity, retired, and his place is to be taken by Mr. L. Felton. Lieut.-Commander R. A. B. Williams (vice-chairman), Mr. G. Beeton (hon. treasurer), and Mr. C. Fisher were re-elected to the committee.

It was announced that a new branch of the club was in formation, several enthusiasts of the Austin Motor Co., Northfield, having approached the club with the object of forming a Northfield branch. This has been agreed upon, and some of them are being trained at the Midland Club ground, and when proficient will act as instructors to their own branch. It is proposed that the new branch will act as a separate unit, but will be supplied with a machine and tackle for primary purposes by the club, and also use the Long Mynd at Church Stretton for soaring.

Another announcement which caused considerable excitement was that of the removal of the difficulties, shooting rights, etc., which have prevented us using the soaring site at Church Stretton. Mr. Hardwick has had a very difficult task in procuring this ground for soaring, but he has again worked the miracle,



and the plans of the new hangars and club house have been made. Work on these has been started, and it is hoped they will be in use by the early autumn.

**July 2nd.—Castle Bromwich Aerodrome.** Conditions were ideal and our efforts were speedily rewarded. Olver and Healy both obtained their "B" certificates with flights of 78½ and 73 seconds respectively; these are the first "B's" obtained in the club. Three "A" flights followed in succession: by Barnes (32 seconds), Jefson (39 seconds), and Latty (39½ seconds). A new graduate then tried his hand in the cancelled DAGLING, with smashing results, and flying terminated for the evening.

**July 9th, Castle Bromwich.**—Conditions again in our favour. Everyone was expecting more "B" certificates, but unfortunately the DAGLING was again put out of commission by one of the members who, in attempting to obtain a "45," held the machine off and stalled completely at about 15 ft. Fortunately the damage was not extensive, and the rest of the members, fired with the prospect of more "B" certificates, set to work to repair it for the following night's activities, with very satisfactory results. While the machine was being towed back from the scene of the disaster the pilot, who was tendering his apologies to the members, was interrupted by a small boy who had climbed the rails and requested his autograph. The pilot, being modest, however, refused.

Two more "B" certificates have now been obtained, and the PRÜFLING has been soared at Handsworth as previously predicted, but details are not yet to hand.

[It is good news that the club's chairman has been able to obtain another site on the Long Mynd, and this, coupled with the necessary amendments to the Air Navigation Act, which we understand are being made, should throw open at last one of the finest soaring sites in the country.—Ed.]

## Jersey Gliding Club

The club's ZÖGLING was "written off" by an *ab initio* on March 31st, but by the following Sunday the DAGLING was ready to fly again, it having been out of commission for the fitting of a nacelle designed by Mr. Slingsby. On April 14th flights were made from the Gully, and afterwards, with a shift of the wind to north, on a new site which proved quite successful. Good Friday was a perfect flying day; only four members could come out, but visitors helped on the launching rope. Messrs. Glassford, Carter, Jenkins, Harvey, Bisson and Bacon had three flights each on Easter Sunday and two each on Monday, the wind on the former day being 20 m.p.h. After a period of unfavourable winds, May 19th brought good weather, and five members had a good afternoon's sport.

**June 2nd.**—We have gained two new members, so we gave them ground-hops. Later, we tried our West Slope, which we have cleared of gorse and bracken, and were able to make much longer flights, including one by Harvey of 20 secs.

**June 16th.**—An excellent 15–20 m.p.h. west wind, which greeted us, plus our new launching rope, enabled us to have really interesting flights up to 24 seconds (also by Harvey). Each flight consists of a turn to the right, landing straight into wind. When we are able to launch from the top of this slope, 30 seconds should be possible.

**Sunday, July 21st.**—As we have had only north winds for the last five Sundays, we were glad to see a west wind, which enabled us to try the experiment of launching with the car. This proved most successful, and five members had five flights each.

**Sunday, July 28th.**—West wind again, so we repeated the trials of last Sunday and had shots from ground level. Next time we will experiment from our slope.

## WHERE TO STAY FOR SUTTON BANK



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THE BLACK SWAN HOTEL is at Helmsley—only seven miles from Sutton Bank. It is a Trust House, which means comfort, good food and quick service. And we are happy to say that we have made special arrangements for gliders. You can have a 3/6 or 4/6 dinner—or bacon and eggs at odd hours if you prefer.

Bed, bath and breakfast cost 9/- a day. We will gladly take phone messages from cross-country gliders—ring up Helmsley 3. We can accommodate cars and trailers. You may have parcels and things sent here to await your arrival. If you can think of any other special services—tell us and we will arrange them if we can.

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**General Meeting.**—As it was evident that our membership was going to be greatly reduced this coming year, which dates from May 1st, we decided to call a general meeting for April 10th to find out how matters stood, and to our great disappointment found that our membership would be reduced to only 11 from an original 36; but we are not downhearted and are still determined to get off the "top."

The officers appointed for 1936 are as follows: Captain, Mr. Glassford; vice-captain, Mr. Bisson; hon. secretary, treasurer, and recorder, Mr. Carter.

The subscription has been fixed at £3 per annum and entrance fee 10/6. We have also found it necessary to charge members 6d. per flight for the first 20 flights and 3d. each subsequent flight, for maintenance and cost of new launching rope, etc.

### Elgin and District Gliding Club

The club's first machine, an R.F.D. Primary, by Messrs. Slingsby Sailplanes, arrived by road on Saturday, June 22nd. Mr. Slingsby very kindly sent along two men from his works to give a rigging demonstration. One of them, Mr. Jones, made a short exhibition ground-hop and supervised further ground-hops by members.

The next meeting was arranged for Tuesday, the 25th, and although it was raining the machine was taken out and some twenty-five members were given a hop and went home soaked to the skin, but happy. On Wednesday, the 26th, the machine was again taken out, but as it was still raining and a gusty wind was blowing from a different quarter every few minutes, very little was gained but rigging experience and some healthy exercise.

The club has rented a disused bacon factory just outside the town, and after much hard work it provides a club room, workshop, hangar, and small parking space. There is also a cellar or dungeon which, as the whole place is reputed to be haunted, has been suggested as a suitable repository for those members who have been unfortunate enough to have a major crash.

The club is fortunate in having among its members representatives of almost every trade which could be of service to such a club and, as they are all very enthusiastic, much work has been done for a very small outlay. For example, three members, an engineer, a blacksmith, and a wood merchant, between them built a first-class sprung trailer, complete with automatic brakes (which work), for less than the cost of a launching rope.

One member is going to Dunstable to attend the London Gliding Club's summer camp. The remainder of the club, like true Scots, are looking forward to his return and the benefit of his experience.

[**The Federation.**—The club president writes that the club has no knowledge of the "Federation of British Gliding Clubs" until the matter was brought to public notice in last month's *SAILPLANE AND GLIDER*, and states that his club has not signed any agreement with the Federation. We are glad to hear this, and regret that the club should have been upset. Since the organisers of the Federation did not choose to send us news of their activities, we were reduced to obtaining our information from such sources as were available, and some members of the Federation appeared to have been under the impression that the Elgin Club was to join. It should be explained that, in our last issue, the row of dots connecting each name of a club with that of a Federation officer was apparently put in to look pretty, and should not be taken as indicating any connection between the two.—Ed.]

## WHERE TO STAY FOR SUTTON BANK

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### Newcastle Gliding Club

**Sunday, June 23rd.**—Wind S.E., 8–15 m.p.h. Exceedingly hot and sunny. Unusual, but welcome. Much swigging of drinks, more income. Thirty-five launches.

**Wednesday, June 26th.**—Wind S.W., 8–0 m.p.h. Only three launches before wind ceased to function. Working on CRAMCRAFT wings.

**Sunday, June 30th.**—Wind W. and E., 8–12 m.p.h. Rain during morning and part afternoon, enabling further work to be done on the CRAMCRAFT. Many visitors. Thick mist covered the moors at tea time and prevented the continuation of flying. More work on the CRAMCRAFT.

**Sunday, July 7th.**—Air wafted from the east. No velocity. Good attendance of prospective members. No flying until late—still more work on the CRAMCRAFT by a large attendance of members. Twelve launches in the late afternoon—the twelfth being selected by one pilot to crumple a wing after a spin. Wing opened out and the surgical operation to the main spars was commenced.

**Sunday, July 14th.**—Wind N.E., 10 m.p.h. As would be expected, only the "all faithful" members attended to complete the wing repair (the "culprit" himself not even turning up to take an interest). The surplus members present set to work on the sleeping chalet and sorting tools. Super attendance expected next week when flying again.

### Pwllheli and District Gliding Club

It has taken us two months to repair the machine after our recent complete smash up and we have now recommenced instruction. We have been visited by Mr. Richards, of the Kent Club, and by Mr. Jarvis, of the Leicester Air Sports Club, and we welcome any visitors to the district as temporary members.

### New Gliding Clubs

**Inverness.**—Inspired by a display recently given by Miss Joan Meakin, a number of interested people have decided to form a gliding club for Inverness, provided a sufficient number of enthusiasts come forward. Write to Mr. F. Oliver, 18, Leys Drive, Inverness.

**Plymouth.**—"To Foster Gliding: Woman Hotelier Sponsors Movement," is the heading of a paragraph in *The Caterer and Hotel-Keeper*, which continues: "Mrs. B. L. Ashford, of the Strathmore Hotel, Plymouth, is anxious to sponsor a movement to establish a gliding club in every town and village in England." She is appealing for 600 people to form a Plymouth Gliding Club, and told the paper's representative: "I think there are plenty of young men willing to take up the sport if they are given a lead."

**Devon.**—The framework of the club's first glider has been finished, and examined by the B.G.A. representative prior to covering. A flying ground has been obtained at St. John's-in-the-Wilderness, Withycombe.

**Birmingham.**—The Midland Gliding Club is centred on Birmingham; nevertheless another gliding club has been started

in the district, according to the local Press. It is called "The Eagle Gliding and Flying Club," and has been using a site at Chaddesley Corbett, though this has now had to be given up, and new sites have been found to the north-west and south-east of the city respectively, both near the city boundary.

**Shropshire.**—Capt. A. E. Bowen, of "The Travellers' Rest," Affcott, Craven Arms, has supervised the reconstruction of a glider and carried out test flights on it. It is said to be "now perfect, and ready for the instruction of pupils," but there is no information as to whether an actual gliding club has been formed.

### Club Equipment for Sale.

The following items, the property of the undermentioned Gliding Clubs now being wound up, are for sale. All offers will be considered. Unless definite agreement is arrived at to the contrary it is understood that the purchaser will remove the items from their storage places.

**Poole and Bournemouth Gliding Club.**—Liquidator: Colonel Martyn, St. Hilary's School, Alexandra Road, Parkstone, Poole, Dorset; or P. S. Foss, Linden Hall Hydro, Bournemouth, Hants.

1. PRÉFLING complete. Spare pair of wings. Enclosed trailer. Fuselage slightly damaged in the nose. Approx. 20 man-hours to repair.
2. DAGLING centre section, less metal fittings. New; unused.
3. DAGLING tail surfaces and empennage complete but uncovered; new.
4. Set of metal fittings for DAGLING centre section, empennage, etc.
5. Approx. 50 yards of shock-absorber cord, unused but not guaranteed;  $\frac{3}{8}$  ins.

**Wiltshire Aviation and Gliding Club.**—Liquidators: R. Kelly, 23, St. Andrew's Road, Melksham; P. S. Foss, Linden Hall Hydro, Bournemouth, Hants.

6. ZÖGLING fuselage complete, or with stranded wire flying wires, detachable nacelle behind the pilot. Recently overhauled. The fuselage requires a new plywood panel in the nose; otherwise in first-class order.
7. ZÖGLING tail and tail surfaces all recently rebuilt and in good order.
8. ZÖGLING starboard wing in good order. Also port wing damaged but repairable.
9. Trailer, open type.
10. 150 yards of  $\frac{1}{2}$  in. shock-absorber cord; unused.
11. Port wing completed, less aileron, but uncovered, of HOLS DER TEUFEL Mk. II. Parts of starboard wing made but not yet assembled.
12. Stopwatch, single hand. In good order.
13. Sundry items of equipment such as plywood, spruce in various lengths, 400 feet wire cable with drum, tools, etc.
14. 2 trolleys for moving gliders, large and small.
15. Windsock and mast (marked "Wilts").

All these items may be inspected by arrangement with the liquidators, the P. and B. items in Poole and the Wilts items near Swindon. Mr. Foss will willingly give more detailed description of damage or condition of any of the above items on enquiry.

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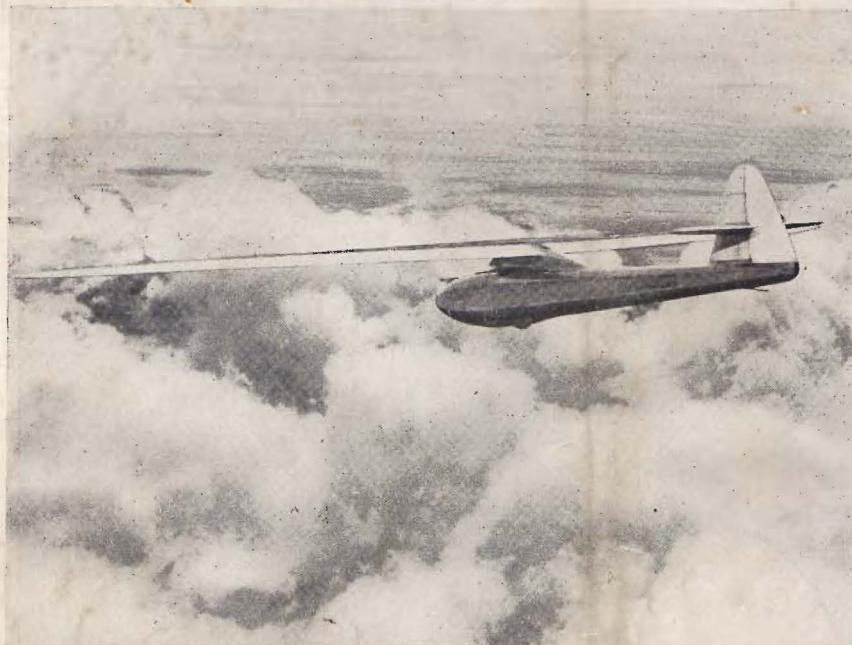
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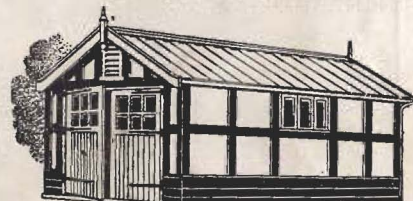
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