THE SAILPLANE & GLIDER

SEPTEMBER
1934
Vol. 5 No. 9

PUBLISHED MONTHLY

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

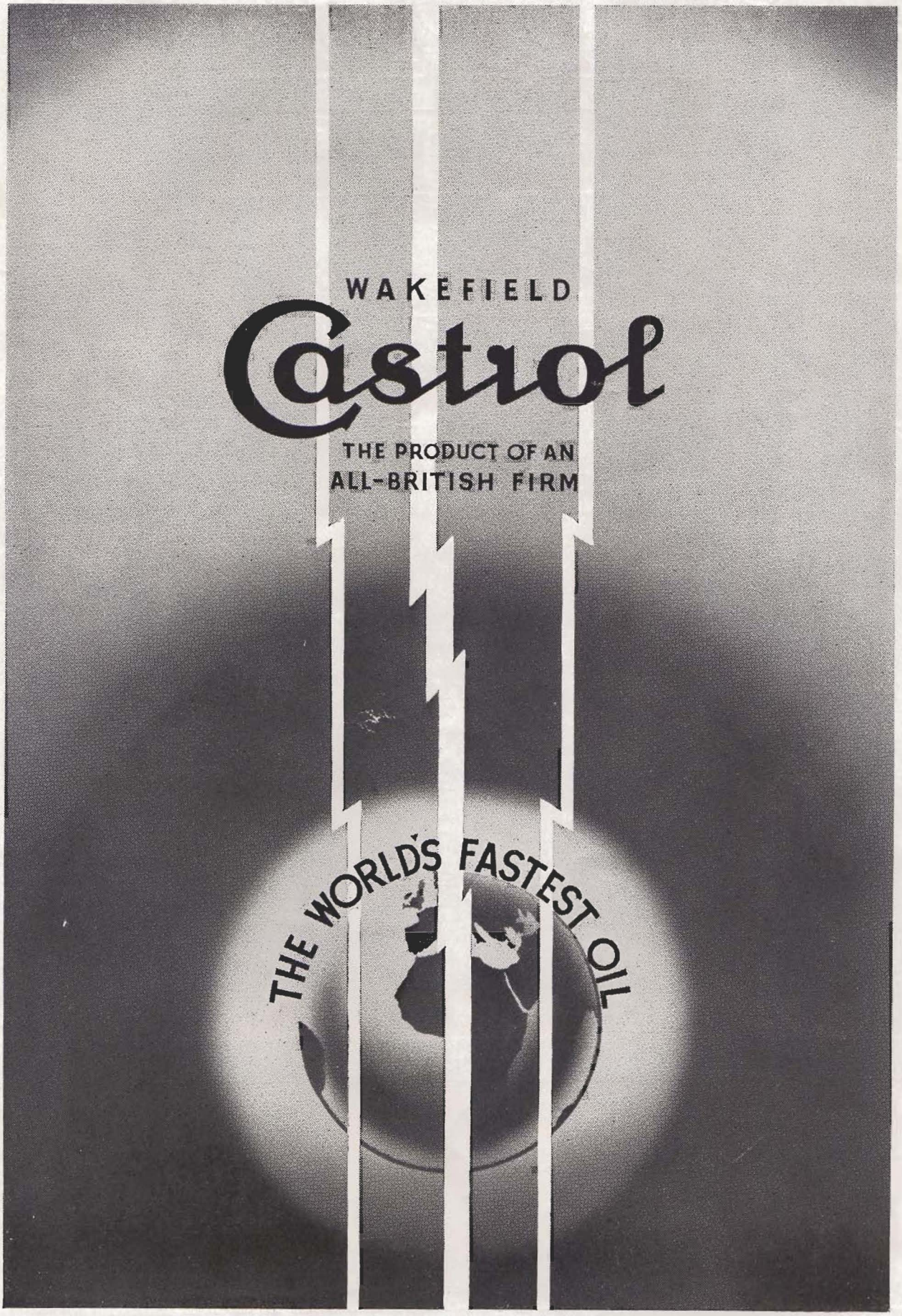


OFFICIAL ORGAN *of* THE BRITISH GLIDING ASSOCIATION
Editor: ALAN E. SLATER



A "Falcon" Soaring at Sutton Bank

CELLON DOPE
for SAILPLANES AND GLIDERS
Cellon Ltd., Upper Ham Road, Kingston-on-Thames
Phone No.: KINGSTON 6061 Telegrams: "AJAWB, PHONE, KINGSTON-ON-THAMES"


WAKEFIELD
Castrol
THE PRODUCT OF AN
ALL-BRITISH FIRM
THE WORLD'S FASTEST OIL

THE SAILPLANE *and* GLIDER

Official Organ of The British Gliding Association

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

Vol. 5 No. 9 SEPTEMBER, 1934 Published Monthly

NOTE.—*Details of the Sutton Bank Competitions will be found in the six middle pages*

More about the Subsidy

WHERESOEVER are public funds to be distributed, there also will be goings-on behind the scenes, and, while we are not at liberty to disclose all we know, part of this journal's function is to act as a newspaper and give some indication of what is, or isn't, being done about the proposed gliding subsidy.

Obviously any body which is to have the use of the money will have to satisfy the Government that it is fully representative of gliding interests in this country. During this year, even before the subsidy was announced, the efforts of the British Gliding Association have been directed towards making itself once more such a representative body and, at the Annual General Meeting, the Association appointed a committee to reconsider its rules with this object in view. Time brings its changes, and it was evidently felt that, with the increase of flying activities throughout the country and the growing accumulation of administrative experience on the part of the clubs, the time had come when those with the practical experience on the spot should take over the control of the Association's policy.

The urgent necessity of this course was shown by the recent secession of the largest and most active club from the Association. As, however, any change in the latter's constitution requires more than a bare majority of votes, it was possible for a dissentient minority to prevent the adoption of the alterations which the Committee set up by the Association had unanimously recommended.

There is now a large body of opinion in favour of the reconstitution of the British Gliding Association on the lines of the General Council of Associated Light Aeroplane Clubs, with the necessary difference that it would have to look after such matters as airworthiness and pilots' certificates if the Government does not want to take them over. (It has shown no desire to do so.) We have good reason to believe that the Air Ministry would favour this course as facilitating their wishes as to the manner of distribution of the subsidy. It would also have the effect of restoring that unity to our gliding movement which we all profess to desire.

The General Council, as it is called, is composed of representatives of the Royal Aero Club and of the Associated Clubs, the former to be not more than six and not to exceed one-third of the total. Each Associated Club has one representative for each 50 *flying* members (pilots or pupils), but not more than two all told. The Council meets at least twice annually. Other points are that the General Council elects one-third of the Racing Committee of the Royal Aero Club, that its Chairman is the Chairman of the R.Ae.C., and that it can appoint sub-committees with such powers as it thinks fit.

A memorandum has recently been circulated by a few signatories making suggestions for the administration of the subsidy which, when summarised, do not appear to be very different from the views of the majority. They suggest, however, that a central gliding school should be equipped and opened, with a technical and research station. This idea is evidently based on the German gliding centre at the Wasserkuppe, run by what was formerly known as the Rhön-Rossitten Gesellschaft. But we may point out that the R.R.G. school was not something brand-new, created out of nothing, but was developed out of an already existing school or schools on the site, which had till then been kept alive and run without a subsidy by a group of soaring enthusiasts. It is also suggested that the Air Ministry nominate a small independent committee of trustees "to approve the administration of the subsidy." If by "independent" is meant independent of any contact with the actual flying activities, we can only say that we have had more than enough of that sort of "independence."

Building Your Own Glider

SOME FATHERLY ADVICE

By ONE WHO HAS DONE IT

[*We get several letters from inexperienced enthusiasts who want to be told just how to set about building their own machines. Some of them, unable to pay for both drawings and materials, expect us to defray the cost of at least one of these items, but invariably fail to indicate the whereabouts of the money we are to use for the purpose. We therefore publish the following notes written by one who has not only built a machine and been flying it for the last three years, but is now at work on an improved version of his own design.*—ED.]

1. Don't do it! Not at least until you have had a couple of years' experience as a club member.

2. If you can't resist the urge, then remember the job represents from 500 to 1,000 hours' work, which will take quite a year's spare time, and is not nearly as simple as it at first appears or as some popular journals make out.

3. If you are still unconvinced, arrange to spend a week or two's holiday as an "apprentice" to those working in the London Gliding Club workshop. You will at least learn how to mix properly the special cement which is the only form of glue permissible.

4. At least five machines have been seen at Dunstable **made by enthusiasts** whose love's labour was lost because their babies turned out to be "wash-outs," if not actual **death-traps.** One was the creation of a talented scientist but whose knowledge was purely academic.

5. If still you want to build a glider, then get blue prints from the British Gliding Association. Many of the North London timber merchants stock and cut suitable spruce, but if, for instance, you want 4 spars, then you have to order 12, out of which you may find four good ones. The rest of the wood you will proceed to cut up for ribs, etc.

Possibilities in India

WHEN Lady Cobham, wife of Sir Alan Cobham, visited Simla in connection with plans for her husband's Indian flying tour this autumn, she is reported to have said to Reuter's correspondent: "Gliding in India should become a national sport. With the strong up-currents, due to the hot sun and cool breezes, it should be possible under favourable conditions to keep in the air all day, to climb high into the hills, and to manœuvre so that you can reach almost any desired spot. I hope some of the Indian princes will take to this new and glorious sport of 'air yachting,' and encourage the founding of an Indian gliding club. Once that is done India will soon be beating all the records set up in Germany."



Wolf Hirth flying his "Moazagotl" at this year's Rhön Competitions in Germany. He set up a new world's distance record, only to be beaten the next day.

Gliding Certificates

THE following Gliding Certificates were recently granted by the Royal Aero Club. The columns show: No. of Certificate, Name, Club, and date of qualifying flight.

"A" Certificates

No.	*Name.*	*Club.*	*Date.*
359	G. T. Bassett	London	12.5.34
360	E. Van Marle	London	9.6.34
361	B. J. Stephens	Dorset	10.6.34
362	G. W. K. Frayling	Dorset	16.6.34
363	P. R. Challier	London	28.6.34
364	J. W. S. Pringle	London	28.6.34
365	G. B. Baker	London	27.6.34
366	H. K. Seth Smith	London	27.6.34
367	C. J. Graham	London	27.6.34
368	J. D. Wood	London	28.6.34
369	F. R. Lamey	London	15.7.34

"B" Certificates

348	H. T. Testar	London	21.5.34
358	A. H. Curtis	London	13.6.34
360	E. Van Marle	London	1.7.34
365	G. B. Baker	London	12.7.34
367	C. J. Graham	London	4.7.34
363	P. R. Challier	London	12.7.34

"C" Certificates

367	C. J. Graham	London	13.7.34
365	G. B. Baker	London	14.7.34

To those who don't know: The "A" Certificate is given for a straight glide of 30 seconds; the "B" for a flight of 1 minute with S turn; and the "C" for a soaring flight of more than 5 minutes above the starting level.

Bank Holiday at the Bank

An Account of the Inaugural Meeting of the Sutton Bank Centre, August 4th to 6th.

By DIE-HARD

LET it be promptly stated that never in my life did I enjoy a week-end more. Everything was good, except the weather on the third day, and even then the company and the spiritual and physical refreshment remained unchanged. Generosity was universal. The height of the hill was generous; so were the Yorkshire Club, the thermals, Hardwick with his FALKE, the hotels with their welcome, the immense crowd on Sunday, the local journalists, the view, Wills's barograph (he won't mind me saying this!), and Slingsby's famous Slow Smile. As for our estimable Mr. Baynes, he was at the top of his form. Up and up went the SCUD II. on Sunday morning. Chattier and chattier grew Mr. Baynes. Then at last Dewsbery in the BLUE WREN saw a great light, and up and up went he too, until he passed into the lowest flecks of the clouds, the shadows falling on Mr. Baynes's amiable face.

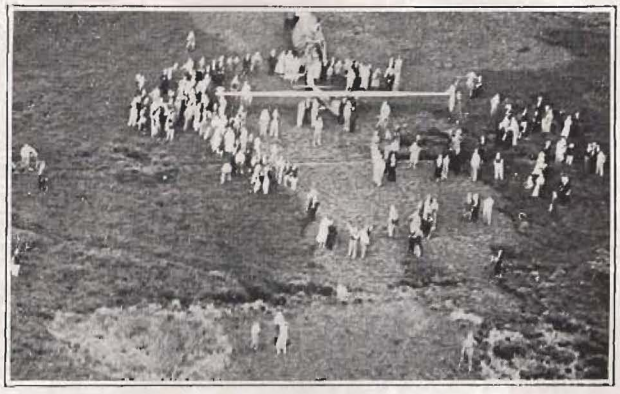
But, stay! The SCUD II. had a barograph (vide supra) and hence an Official-British-Record-Subject-to-Confirmation, while poor Dewsbery had merely a vast aneroid (3,800 feet), his two barographs being still in his motor-car. And hence a paltry (?) unofficial flitting from cloud to cloud for hours until the sun was blanked out by haze at tea time, causing him to drop thirty-seven miles away by the village of Rudston where the inhabitants did him proud.

Note in passing: This barograph-business wants looking into. I have twice carried an Official (sic) pocket-barograph. The first time it would not work. A year later it was thirty per cent. optimistic, compared with an aneroid which checks up exactly with map-heights to 3,000 feet (memories of horrid frights in the Lake District before the Askam meeting). And to-night a famous firm of instrument makers told me to mistrust all pocket-barographs on principle. So I have got to buy a grandfather's-clock-of-a-barograph and carry it in the back seat of the KASSEL two-seater in place of a passenger. Or else tie it to a kite-balloon and tow it behind the ANCIENT WREN. Bother the barographs anyway.

Revenons. On the first day, Saturday, the sun shone delightfully. We lay in the heather and laughed ourselves sick over Wills's article in THE SAILPLANE, concerning his flight to Abridge. Buxton, who is taking on a middle-aged spread, sank the SCUD remorselessly in the faint breeze to the foot of the south slope, whence a laborious return. In the afternoon the wind veered into the west and strengthened up to about six miles an hour. Wills flew briefly in the SCUD, scrambling back on to the top.

More strengthening. Bergel and then Hardwick soared the latter's FALKE with plenty of height in hand. Wills soared the SCUD comfortably. Dewsbery took the BLUE WREN up, temporarily fitted with the crudest pair of ailerons ever seen on a glider, and had not the heart to land for three-quarters of an hour. Nicholson sank the Yorkshire PROFESSOR, making a charming approach and landing into the accredited field (landing charge, three shillings).

A supreme gesture on Hardwick's part, for which



I love him evermore, gave your correspondent the enormous pleasure of placid circles and turns on the short beat to which, ultimately, the lift was confined. It certainly is a joy to fly a machine which is kept in such perfect condition. Pre-war Rolls Royce, as distinct from the RHÖNADLER's 1934 Rolls Bentley.

On **Sunday** a fresh south-westerly wind, brilliant sunshine and armies of brand-new cumulus clouds. Wills in brilliant form. Lovely circling, immense heights, landing eleven miles away at Major Shaw's private aerodrome at Kirby Moorside. Dewsbery champing on his bit. BLUE WREN auto-launched and up to the clouds after about twenty minutes on the ridge. Miles out up-wind and then on towards Brough, to within five miles of the east coast behind Bridlington, his technique consisting of steady circling up to cloud-level and then a scudding—or rather, a flitting—to the next cloud, with circles there, and so on.

During the day the Yorkshire HOLS sank; another three shillings for the farmer. Hardwick soared, but flew rather fast, and so was unable to reach a comfortable height. In the afternoon the crowds rolled up, but the wind dropped to a negligible speed.

Yet another spasm of generosity overcame Hardwick, who again earned your correspondent's undying devotion. Having easily floated a loan of three shillings against our presumed irrevocable end, we were astounded to find that the machine also floated with the utmost comfort, at a height of from 100 to 280 feet for the best part of an hour. Although conditions were now very feeble, with haze, the machine was sharply rattled by a thermal almost every time that she passed in front of the high wood by the top of the motor-road hill, a whirlwind giving the pilot a sharp slap in the windward ear on one occasion, the machine being strictly straight and level at the time. But there was no room for safe circling. An R.A.F. "Wapiti" was apparently immensely tickled and itself made futile efforts to soar, until finally it flew close up and took a full-plate photo of the FALKE—which was quite matey of it. (The photograph is reproduced on the front cover.—ED.)

Thereafter another pilot sank the FALKE, the calm being almost complete, and the day finished off with hoppings of the Yorkshire HOLS to the amusement of the proletariat, and of Stedman's battle-ship-like two-seater, a grand bit of work. Journalists ate out of Mr. Baynes's hand. "Premier British sailplane," etc.

Next day it rained and rained. News came through of Collins's gigantic flight to the Norfolk coast.

In brief, it was a grand party. Heaven forbid that we should ever grow sophisticated in our glidings.

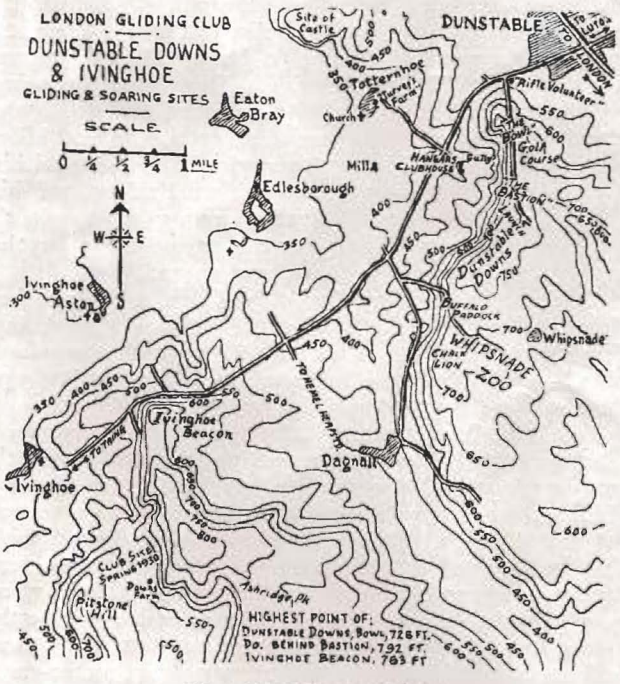
From Dunstable to the Norfolk Coast

A New British Distance Record

ON August 5th G. E. Collins, of the London Gliding Club, took off from the club's ground at Dunstable at 11.30 a.m. in his sailplane RHÖNADLER, and landed on the coast of Norfolk at Holkham Bay, near Wells-next-the-Sea, at about 4 p.m.

The distance, estimated as 98½ miles, greatly exceeds the previous British record of 56½ miles, set up by P. A. Wills, of the same club, on March 18th. The flight was made with the help of rising currents under cumulus clouds, aided by other occasional thermals. It was only brought to an end by the presence of the sea, since the pilot was still 3,000 feet up when he arrived there.

The wind was in the south, so that the area of lift at Dunstable Downs was confined to the Bowl at the



Where the flight started from.

north end, and Collins had to remain over it till thermal lift came along. He was then able to get out to Totternhoe, after a struggle, and then, having reached 2,200 feet, proceeded to Eaton Bray, 2½ miles west of the Bowl, over flat country. There he met a cloud street in the form of a continuous line of cloud, well shown in the accompanying photograph. He circled under it up to 2,500 feet, and then went away beneath it in a straight line to Ampthill, which he reached at about 3,000 feet.

After that, the cloud street stopped, and there was a switchback rising and falling, with a lot of circling, till at the end of the first hour's flying Collins found himself near Cardington, unmistakable because of the airship sheds below. Much circling was done here, and height was gained to about 3,800 feet. The flight was continued into Cambridgeshire, over Papworth (of medical fame), across the scene of David Garnett's first aerial exploits (see *A Rabbit in the Air*), and St. Ives on the Ouse, whose church steeple was knocked down by an airman during the war. Collins did not try to emulate this feat, but sailed on towards Earith, which lies at the beginning of an extraordinary 20-mile long straight artificial waterway known as the Bedford River. Here, as if in imitation of the landscape below, another cloud street appeared; it was a particularly dark one, and the RHÖNADLER was getting sucked into it. From a height of 4,800 feet under this street, Collins continued to Sutton, and there did some cloud-hopping among undulating small cumuli, having sunk to 4,000 feet and recovered to 4,800 again, due to the fact that these cumuli were very ragged.

The flight proceeded over typical Fen country to West Dereham, and thence to Castle Acre. Here the thermal conditions failed badly; the sailplane was forced down to only 1,500 feet owing to complete lack of clouds. Salvation came at last over an area of sandy heath land, where there were thermals in small quantities, until Collins found one good one which enabled him to get up to 4,300 ft. again. Thence via West Raynham and Dumpton, by which time he was up to 4,800 feet; he then glided in a N.N.E. direction, using a few minor thermals here and there, and arrived over Wells at 3,000 feet. The coast was then followed westwards to Holkham Bay, losing height to about 2,000 feet.

After this there was nothing left to do, so Collins amused himself by circling about, looping once, and going out over the sea, where he found there was no lift at all. He made an approach to a landing from the sea and touched down on the sand, about 4½ hours after the start of the flight.

About 150 people came up to offer help. The really useful ones were a party of East Molesey Boy Scouts, who helped to dismantle the RHÖNADLER and put a guard of three to look after it while Collins went in seach of a 'phone.



G. E. Collins in the "Rhönadler's" cockpit just before the start of the flight. Note the hinged cover with transparent roof.

A rescue party set out from Dunstable consisting of G. A. Little (of the Southdown Club), Mrs. Collins, J. M. Noble and Dr. Corbett, in two cars—the first being Mr. Little's fast M.G., and the second lumbering along afterwards with the trailer. The party did not get back home till the early hours of next morning.

By this flight Collins has, as one pilot put it, pretty nearly "sucked Dunstable dry." The distance was first given out as 95 miles, and subsequently calculated as 98½. We make it something between the two. (Such distances cannot be measured accurately on ordinary maps, which have a habit of shrinking slightly after they are printed.) In any case it will be difficult for anyone to beat this distance from Dunstable without going into the sea or crossing the Channel. Actually it is possible to do over 100 miles into Norfolk; a maximum of about 112 miles could be obtained by making for a point between Cromer and Gt. Yarmouth. By going into Kent, which Collins has twice tried to do but was foiled by weather conditions, the longest distance obtainable is about 97 miles—without crossing the Channel. But, since anyone reaching Dover from Dunstable will probably have a good W.N.W. wind behind him, he should be able to glide across from a height of 5,000 feet or so, allowing for the fact that there will probably be a mild generalised descent of air over the sea to compensate for thermal conditions inland. (This should be most marked near the coast, on the analogy of the down-draughts which are often found immediately adjacent to thermal currents, according to Peter Riedel.)

But another possibility is to go due north; this is, in fact, shown by Collins's flight, since the wind on that occasion was very nearly south, though the restricted soaring area in south winds at Dunstable

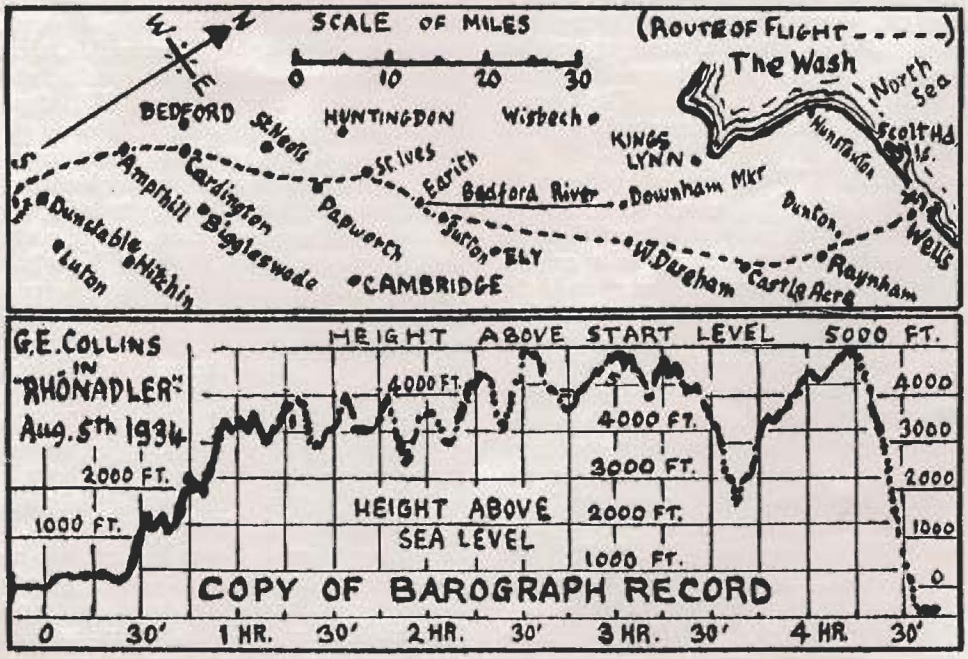


The actual "cloud street," or continuous line of cloud, which took the "Rhönadler" from Dunstable to Ampthill on the first stage of its record-breaking flight.

Photo by P. McC. Bond.

makes it none too easy to get away. Against this, however, there is that bugbear "the veering of the wind with increasing height." How this works was shown by Upper Air reports on August 5th, the day of the flight. At 11.00 at Cranwell, over which the pilot would have passed if he had gone due north, the wind on the ground was nearly S.S.W., 6 m.p.h. At 1,000 ft. it was south-west by south, 15 m.p.h., and at 3,000 ft. south-west, 8 m.p.h. (these computed speeds are probably very changeable during thermal activity). At 4,000 and 5,000 ft. it was again S.W. by S., the wind speeds being 15 and 19 m.p.h. respectively. Of course, an approaching depression might cause the wind to back towards south, after the pilot had started on his flight, but at the same time would cause a dying out of thermal activity, so would be of no advantage.

So which is it to be for the next record: up north, or over the sea to France?



OTHER CROSS-COUNTRY FLIGHTS

SINCE our last issue went to press, soaring pilots in this country have been up to the clouds and away over the landscape so many times that it is becoming no easy task to provide readers with the fullest possible details of their adventures, together with, as has been our custom when possible, an account of the meteorological conditions under which the flights were made. Yet it is a duty we owe to those in the more distant clubs, who are keen to start cross-country soaring from their own sites, but have not the advantage of seeing somebody else do it first, which makes all the difference in the world. It would surprise pilots who have given us details of such flights to know with what application their accounts are studied by distant readers, some of whom are able to recite large chunks of these articles by heart, many months after they have been published.

Mr. Collins's distance record into Norfolk is described in a separate article; the others will have to be lumped together, although but a few months ago any one of them would have got a page or more to itself. So do we progress.

Flights from Sutton Bank

On August 5th, during the opening Sutton Bank meeting, two pilots were able to connect with cloud lift and get away towards the sea.

J. P. Dewsbery went furthest, covering 37 miles and rising 3,800 feet in the Editor's BLUE WREN (see Die-Hard's account on another page). This flight would have brought him two-thirds of the way towards getting his "Silver C," if only he hadn't left his barograph behind. Dewsbery has been most unfortunate. Last year he got up to 3,000 feet, again without a barograph, and didn't go off across country because there were others waiting for the machine. However, the acquisition of his certificate is only a matter of time, as everyone has known for the past two years. What this latest flight does show is that yet another machine of British design and construction is capable of earning the "Silver C" for its pilot. The type is known as the WILLOW WREN, and is designed and built by W. L. Manuel.

On the same day P. A. Wills got up in his SCUD II. and, finding himself able to go across country but unlikely to do anything in the way of a local distance record, decided to make a spot landing at a private aerodrome 12 miles from the start. Unfortunately the owner was not there to be told that the pilot had "just dropped over to see him by glider," but the rest of the household were suitably impressed.

In the course of this flight Mr. Wills's barograph registered a climb of 5,100 feet, and the record has been sent to the National Physical Laboratory, via the Royal Aero Club, with a view to establishing a claim to the British height record. (For an *official* record the barograph has to be sealed, and we believe the last such record was that of 1,750 feet set up by Mr. Collins last year, though this height has been many times exceeded unofficially, both by him and by others.)

The wind on this day would appear to have been about S.S.W., yet it is to be noted that Wills travelled about E. by N., and Dewsbery E.S.E. This shows that there is not much in the complaint that you can't go more than 30 or 40 miles from Sutton Bank without reaching the sea. If Dewsbery had used similar tactics in a west wind, he would have had all the eastern side of England at his disposal.

Cold Front Flights

Many of the longest soaring flights in the world have been made in the rising air in front of travelling thunderstorms, which has been forced up by a colder body of air sweeping across the country. Yet these "cold fronts" do not necessarily always give rise to thunderstorms, as one might think after reading accounts of such flights in Germany. The cumulo-nimbus cloud associated with a cold front may produce merely a shower, without any thunder, and this seems the commonest form in England.

Such a cloud passed over Dunstable Downs on July 29th, but our information is that it was rather a circumscribed affair, and did not stretch right across the sky. There seems reason to believe that a cloud of this sort is not the effect, but the *cause*, of a cold mass of air moving across the land, the cold air having descended out of the cloud at a certain stage of its life-history. In fact, one observer said there were three separate "fronts," and, of the two pilots who made use of them, C. A. Cornell went up on the first and G. E. Collins, who did a cross-country flight, on the second.

Mr. Cornell, who has kindly sent a description of the affair, says that, before he started, he "noted that there was a limited or local mass of not very heavy cloud which appeared to be accompanied by rain, about two miles away beyond Tottenhoe." He went up in the FALCON and got up to 500 or 600 feet in the ordinary slope wind, which, however, was so fierce that he had to fly fast to keep over the hill at all. "The cold front then arrived and, although the immediate increase in height was definite and perceptible, there was no really violent heave." (It may be recalled that, when a cold front arrived over Pewsey Hill during last year's B.G.A. Competitions, H. E. Bolton, flying the HOLS DER TEUFEL, was suddenly heeled over to an angle of 45 degrees, and he none too high above the hill-top.)

Cornell proceeds: "A height of 1,000 feet was soon reached, and perhaps then the second front came, as Collins was at this moment launched and the rain started. From 1,000 to 2,000 seemed like magic, because I was not conscious of it at all and it appeared to take place very quickly. At one moment the aneroid said 1,000 odd, and the next time I looked at it it said 2,000. The rain kept stopping and starting, so far as I remember. . . I felt that, if I had kept the air speed down to 30 when facing into wind, I should have gone much higher, but this would have involved drifting back over Luton. However, Collins says that 2,400 feet was about the limit that day, and at this height he left for Ware. I saw him go into a cloud. . . The lift persisted for quite half-an-hour over our site, for I found it necessary to do all sorts of things to lose height. Below 1,000 feet, however, one was able to lose height normally."



The arrival of a "Front."

G. E. Collins, who was flying his RHÖNADLER, landed 25 miles away at Blakesware, between Ware and Bishops Stortford. This is the first cross-country flight made on a "cold front" in this country.

On August 12th another "front" passed over Dunstable and in it W. W. Briscoe, Hon. Sec. of the British Gliding Association, gained considerable height. The flight is described in the London Club Notes. The cloud was described as very dark, and a typical "front" cloud, and was remarkable in that it approached from the north-west in spite of the wind being south-west. It arrived at 4 p.m., and at the same time thunder was heard to the northwards.

At Dartford, 45 miles to the south-east, we observed a series of three "fronts" pass over on the same day. They also approached from the north-west in spite of the wind being S.W. on the surface and W.S.W. in the clouds, and there was no change of wind until the last one, which was accompanied by thunder. Since nobody photographed the clouds at Dunstable, we reproduce herewith a photo of the third "front" at Dartford, taken at 6.10 p.m. looking west, just a minute before the arrival of a thick wall of rain. Note that the cloud is spreading from the north, although the surface wind was at that time W.S.W. and that in the lower clouds W.N.W.

A Historic Landing Place

On August 19th P. A. Wills flew his SCUD II. 26 miles from Dunstable Downs to a point a few miles north of Ware, close to the spot where, just 150 years ago, the first balloon flight in England terminated. In fact, after his landing, he was entertained by Mr. Pullar, of Youngsbury, who has in his possession a tablet commemorating this historic balloon voyage, and showed Mr. Wills the exact spot where the landing took place and the tablet originally stood. The balloonist was Vincent Lunardi, and the flight was made from the artillery ground at Chelsea, on September 15th, 1784, with a cat and dog as passengers.

The flight of the SCUD was made with the help of cumulus clouds, whose base was found to be 2,500 feet above the starting level. It lasted 1½ hours, preceded by an hour's hill-soaring. At one point the machine was in a down-current of 12 feet per second. Later, the pilot observed a seagull at 2,000 feet when approaching Ware.

Contact with cloud currents was first made when a "street" of clouds passed over, orientated from S.W. to N.E., the wind being westerly. Although its base was at only 2,500 feet, Wills rose to 3,500 feet *alongside* of it, keeping on its south side. This suggests that the motion of the air may have been in the form of a spiral with a horizontal axis, directed along the cloud; we commend the idea to Sir Gilbert Walker, who has made a special study of such motion and believes it to be present in the atmosphere oftener than is generally realised.

On this day, also, G. E. Collins made a cloud-hopping flight to Luton and back. He has now made several such return trips to Luton, which we had hoped to discuss in this article, but our space has come to an end.

Soaring Flights in Switzerland

By OTTO FRISCHKNECHT

THE year 1934 is to become a markstone in motorless flight in Switzerland. Until now we had no experience of our own in cloud, thermic and cold front flying, but at Easter F. Binder succeeded in soaring for 1 hr. 12 min. by using thermals rising from a plain. He was flying the SPYR III., a Swiss high-performance sailplane of 16 metres span (52½ feet).

At Berne many good soaring flights were made after aero-towed starts: On May 3rd the GRUNAU BABY machine soared for 2 hr. 20 min. in the upwind of a cold front.

Whitsun, May 19th: 1 hr. 20 min. soaring flight in evening thermals.

May 20th: fine weather and cumulus clouds. At 12 o'clock H. Schreiber, chairman of the gliding section of the Aero-Club of Switzerland, took off for a cloud flight of 3 hr. 30 min. in the GRUNAU BABY II., while the KASSEL 20 circled for 2 hr. 15 min. under a cloud street. At 5 p.m. Dr. Aeschbacher was towed up to 500 m. (1,640 ft) in the BABY to try the evening thermals on the Belpberg. First, he lost height considerably, but then, 30 m. above the *wood* (!) the expected evening thermals began to work. At 6 p.m. the upwind became stronger, and the machine rose for 200 m. At 7 p.m. 2 m. per sec. lift was found, and the sailplane climbed to 1,200 m. (3,940 ft.). There was a large region of rising air. Meanwhile the KASSEL 20 took off again and circled underneath and inside of big cloud masses, probably of cumulo-nimbus type. The BABY then reached the same clouds and landed after 2 hr. 23 min. total soaring time. Later on, the KASSEL 20 soared over the Belpberg and returned at nightfall.

The use of evening thermals is mentioned by Wolf Hirth in his book: "Die hohe Schule des Segelfluges."*

On June 16th H. Schreiber put up a new Swiss duration record with a flight of 7 hr. 15 min. on the KASSEL 20. A steady upwind was blowing on the Belpberg. There were no clouds in the sky, but thermal "bubbles" were skilfully used by the pilot.

On June 10th F. Rudolf, of the "Cumulus Gliding Club," tried a first soaring flight over Zürich. The sailplane, a home-built machine, was launched from a hill near the town. After having reached some height by slope-soaring, the pilot left the hill for the town, where he found good thermals but, having no suitable instruments, he was forced to return.

[*See pages 41-42 and Fig. 16 in said book. The tendency for thermal up-currents to form over certain

types of land surface is often reversed in the evening. This is especially true of woods and stretches of water which are slow to get warmed up during the day, but retain much of their heat in the evening, and may then be warmer than their surroundings. It is seldom that "evening thermals" are used for soaring, but a notable example of such a flight was one by Wolf Hirth in 1930, over the woods on a *slope* near Elmira, U.S.A. Note that Hirth believes the best lift is got when the wood covers a slope, and that woods on flat ground give comparatively feeble lift; in Switzerland also a wooded slope was evidently used, the Belpberg being an isolated mountain 1,100 feet high above the floor of the wide valley running up from Berne to the Lake of Thun. Hirth's flight of 1930 did not start till 10 minutes before sunset, and it must be unusual for evening thermals to begin as early as 5 o'clock in May; there are, however, higher mountains to the west of the Belpberg, which may have cut off the sun's rays from it comparatively early.—ED.]

Some Details of German Practice

By D. G. HISCOX

THE machines at the Wasserkuppe, their pilots and performances, are no doubt described elsewhere. Here are a few notes of details that may be of practical use.

Sailplanes there are not towed about behind motor cars. The vibration is considered bad for the machines. Instead, they are lifted on to wheeled trolleys, most with very long handles that reach out behind the tail. The machines are then wheeled away backwards.

Launching ropes are supplied fully prepared by the makers. A large thimble is properly bound in at the centre with two rings interlocking, tandem fashion. The outer ends are properly finished off with rope extensions for the crews. There is also a string two metres long with a ball on the end, attached to the cord near the loop and passing through a ring fastened on one metre down one of the arms. The idea is for the pilot to avoid over-stretching the elastic by giving the release before the ball gets drawn to the ring.



Some of the 100 sailplanes present at the German Annual Competitions in the Rhön Mountains. This year the previous world's distance record was exceeded on four separate occasions, the longest flights being those of Hirth in the "Moazagotl," 210 miles, on July 26th, and Dittmar in the "Fafnir II," 232 miles, on July 27th, 195 miles was flown by Wiegmeyer (who recently performed the feat of casting off in a glider from beneath the "Graf" Zeppelin airship), and 192 miles by Hofmann, a newcomer to the ranks of the famous. (The photo shows a "Rhönbussard" in the foreground.)

Those wretched "Continental" rubber blocks for the skids (that break off so easily) have given place to heavy rubber rings, actually sections of heavy tube or hose. These are attached to the fuselages by the same fittings as used for the old "gummipuffers," or by straps, and to the skids by square U-shaped fittings as wide as the skid itself.

For advanced soaring every machine is fitted with air speed indicator, variometer, and turn and bank indicator, and every pilot carries a parachute.

Piano wire is distinctly out of favour. The school ZÖGLINGS have flexible steel cable for landing as well as lift wires. The five-bar-gate outriggers are steel braced with solid wire. The flying wire cables are about 3/16in. diameter and all control cables are at least what we call 10 cwt., approximately 5/32in. diameter. Splices are bound off with thin brass wire. These ZÖGLINGS also have rudder pedals, owing to pupils having broken their insteps on rudder bars. A bar is fitted nevertheless *behind* the king-post to take the strain of a heavy landing.

First soaring flights are made on well faired-in ZÖGLINGS with rounded wing-tips, just like small-sized wire-braced HOLS DER TEUFELS. FALKES are also used, but are out of favour somewhat and barred in competitions because of bad visibility, at least one fatal collision having taken place.

All launches are made by the "old" hand method. There is a winch, but it is now only used for retrieving machines up the hill. (Also owing to accidents having occurred.)

Seats invariably extend over the joy-stick pivot so as to protect the pilot in the event of a crash.

Varnish is no longer universally employed. A large number of machines are painted. Paint is recognised as a greater protection, but it can also hide a multitude of sins!

Our annual account of the German Soaring Competitions has been crowded out of this issue and will, therefore, appear in October.

What the Clubs have been waiting for

THE SILENT WING. *By* CHARLES ESPIN. The Monk Press, Ltd., Aston, Birmingham. 1s.

"I can't see what keeps them up." "How long would it take me to learn?" 'Will they ever be any *real* use?" "What do they cost?" "Aren't they at the mercy of the elements?" "What happens when one of them gets into an air pocket?" "How *can* you control them without an engine?"

To all who have spent their Sunday afternoons answering these interminable questions, the sale of this book to further potential questioners will come as a welcome relief. To harassed club treasurers wondering how they are going to carry on until the next

annual subscriptions fall due, it should come as an equally welcome relief. And that it supplies the public with that "long-felt want," a book about gliding that all can understand, the first few days' sales have already shown. On the last Sunday we were at Dunstable, one or two figures could be seen threading their way through the multitude laden with piles of green booklets. A few hours later the top of the Downs looked not unlike a vast reading room, and the London Club's exchequer was in funds to the tune of an extra £7 10s., minus the wholesale cost of 150 copies of this booklet.

The book is written to explain gliding and soaring



flight to the non-gliding public. Yet it is strikingly unlike the usual propagandist efforts towards that end. Soaring is not treated as a rather freakish by-product of the process of making somebody or other air-minded. On the contrary the chapters are written by a real soaring pilot who wants to communicate his enthusiasm to others.

The first deals with "Air and Air Flow," "How Hills are Used," and "The Effects of Sun Heat." The next is on "Machines and Their Construction, How They are Controlled," and describes the different types, the action of the controls, and the use of the variometer. Finally, in "How to Glide and Soar and Where," we are taken for two imaginary flights—one a "ground hop," and the other a short tour through cloudland. Both are treated as equally commonplace; which is as it should be, and, one day, may be.

At the end is a list of gliding clubs and their secretaries; it is not as complete as it might be, and new or little-known gliding clubs who want an increased membership would do well to see that their names are included in future editions.

Opposite every page of letterpress is a page of pictures, most of which are from THE SAILPLANE. Almost every type of machine known in England is included, and with hardly an exception they are shown in the air, alone with their pilots, not on the ground, being inspected by Personages. Some are even cloud-soaring.

Most gliding clubs have already been provided with copies of the booklet for sale, to interest their public and benefit their funds, so any desiring single copies should communicate with their local secretary.

The Design of "Hjordis"

IN 1932 there was a number of superb sailplanes in Germany, but the best were all of more than 60 feet span and heavy in proportion, and the smaller ones were not designed for great efficiency. Two forty-foot sailplanes were flying in England, both of which have a higher sinking speed than the PROFESSOR, and these had shown the advantage, for private ownership, of small size and convenience of erection, and what fine performance flights could be made with a small craft of high manœvrability.

Although both these qualities must be somewhat reduced with a larger craft, it seemed possible to design a sailplane of 50 foot span that would have a very good performance, and at the same time be manœvrable in flight and reasonably handy on the ground. The HJORDIS is designed to do this, and is now being constructed so that it should soon be possible to see if it succeeds.

From a number of calculations it appeared that with a small span it is advantageous to increase the loading that was usual on German sailplanes, and this result was accepted because, apart from the convenience of a smaller wing, the flying speed would be slightly increased. This is an advantage when doing an upwind movement in slope soaring, or when traversing areas of down current in cloud soaring; it makes the landing about two m.p.h. faster than that of my present forty-footer, but it should also help to make the craft easy to fly in high winds.

Apart from the tail-less type, which might prove to be troublesomely experimental, it seemed best to use the well-proved German type as the basis of the design. This was done, and the craft was designed with a full cantilever wing, with one main spar, carried on a neck well above the fuselage to minimise interference. The fuselage is a round ply-covered streamline body with a modified PROFESSOR type tail.

The differences from the usual design are, that the wing is covered with ply back to the rear spar for stiffness and for aerodynamic shape, and the elevators are carried in the fin to give good ground clearance at the tips. The pilot's head is faired into the front of the neck with celluloid so that the whole craft is streamlined.

The structural differences are, that the wings are made to take off separately, and the neck which carries them is designed to be exceptionally robust. The wing strength is considerably greater than B.G.A. requirements and is designed to satisfy the maximum German requirements as well. The shape chosen for the fuselage has an almost straight run behind the wing for ease of construction.

The pilot has a wheel control and there is enough room for reasonable comfort on a long flight even when wearing a parachute. The view with this design is, of course, very good.

As soon as the B.G.A. passes the design, construction will be continued, and I am looking forward to the tests to show if the craft turns out as robust, efficient and handy as it is intended to be.

KENTIGERN.

Correspondence

Biplane *v.* Monoplane

SIR,

Mr. Brame raises an interesting and little discussed question in his "Plea for the Biplane" (THE SAILPLANE, Vol. 5, No. 7).

One has spent many hours in endeavouring to work out a tail-less biplane design of the self-launch, self-carry, vest-pocket variety on the following lines:—

Cantilever tapered biplane of high aspect ratio—wide gap—heavily staggered—bottom planes swept back 15 deg.—rudders on tips of bottom plane—inter-plane bracing to prevent torsion of the fuselage. Ailerons fitted to all four planes provided conventional lateral control, while simultaneous depression or raising of the flaps on the lower and rear wing either increased or decreased, respectively, the lift of that wing, thus carrying the overall c.p. backwards or forwards, and providing thereby longitudinal control.

Several models were made and flown successfully.

The following conclusions were arrived at in comparing this biplane with the monoplane type.

(1) Owing to interaction between the air-flow over the two planes, the performance of the biplane should be slightly inferior to that of the monoplane (the lower plane being detrimentally influenced by the "down-wash" from the upper plane) assuming equality in weight between the two types. But—

(2) Area for area, and aspect ratios alike, the biplane should be lighter.

(3) By suitable mutual disposition of the upper and lower planes the longitudinal stability of the biplane was distinctly superior to that of the monoplane tail-less type.

(4) The inadequate clearance between the lower wing of the biplane and the ground was likely to be a great source of danger in launching, and expensive in landing.

The factor which decided very definitely against proceeding with drawings and construction in preference to the monoplane type, was that the biplane would have nearly doubled both the cost and time of construction. One did feel, however, that the tail-less biplane—nearly a "tandem" type, but not quite—might have possibilities and even advantages in the guise of a powered aircraft, where disadvantage (4) would be eliminated by the undercarriage, and where a pusher airscrew could be employed.

L. T. MOORE.

SIR,

Although my hat is only size $6\frac{3}{4}$, I should like to say a few words in favour of the small monoplane sailplane (by sailplane, I mean efficient soarer, not necessarily a machine of 40 ft. span or more).

Firstly, a monoplane wing can conveniently be made in three parts, each roughly equal in length to the fuselage less rudder. There is no point in having the parts any shorter than the fuselage.

The biplane, however, does not lend itself to the "tripartite" arrangement, and with the wings joining in the centre in the usual way, the sections will hardly be smaller than those of the monoplane, particularly when you consider the extra area necessary to compensate for the drag of wires and struts, etc. This extra area, struts, etc., will probably result in the weight being no less than that of a monoplane, for a machine of *equivalent performance*. No doubt a very compact biplane *could* be made, but it would be apt to fly like a parachute, although, of course, even these have been known to soar.

If your biplane is cantilever, you are practically bound to taper the wings, and with the small chord, any reasonable amount of taper will make the tips so small that scale effect will begin to raise its ugly head. This may be the reason why nothing more has been heard of the Bonnet biplane.

Then, of course, there is interference between the wings to consider as well. One imagines that this would be pretty serious at high incidence.

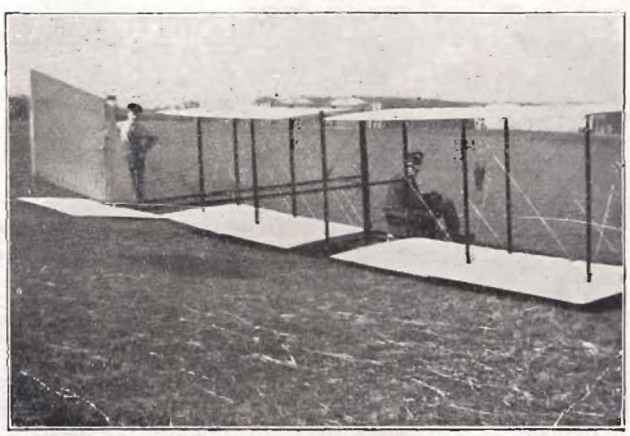
Talking about the idea of having part of the machine consisting of inflated fabric reminds one of the story of the small dirigible which was used for advertising purposes a few years ago. The story relates its adventures in Belgium, where a crow is alleged to have attacked it, and caused it to be brought home on a motor lorry.

My second word in favour of the small monoplane is that it *can* be made light. It so happened that, about a year ago, Mr. Hick, of the Newcastle and Harrogate Clubs, decided that the private owner's machine must be light, very portable, and at the same time efficient. He designed the MERLIN. This design he has improved upon considerably, and it is hoped that it will take to the air in the form of the KESTREL, a brief description of which appeared in the March issue of THE SAILPLANE. The fuselage of this machine is almost completed now, and complete with all controls weighs only in the region of 27 lbs., yet it is amply strong.

Now a few words about the Editor's idea for a swept-back tail-less biplane; one sees no reason why it should not take up about twice as much room as a well-designed monoplane of similar performance. When you consider the extra span necessary to make up for

---

WHAT PRICE BIPLANES?



The first glider built by W. L. Manuel, in the dim and distant past. His latest product, a monoplane, has soared 35 miles and climbed 3,800 feet.

the sweep-back, *and* the extra area necessary to make up for the inefficient stable section and/or wash-out, *and* the nacelle (which he didn't mention), *and* the extra area necessary to make up for the drag of the struts, wires, etc.; well, I mean to say, where is the advantage?

The idea of supporting the tail on booms or, better still, one boom, AUSTRIA-fashion, is worth considering. It could be detachable at its junction with the nacelle.

If Mr. Brame is still convinced of the superiority of the biplane, I suggest that he makes one weighing round about 90 to 100 lbs., so that a direct comparison could be made between it and the KESTREL, which seems to be the only other design, barring the SCUD I., which approaches his requirements in the way of portability, etc.

J. C. NEILAN.

SIR,

I was interested in "A Plea for the Biplane" in your July issue, and I gathered from it that the real plea was not so much for a biplane as for any efficient machine of small dimensions. May I, as one who has spent much time constructing and experimenting with models of various types and sizes, venture to suggest that the machine which Mr. E. Brame is looking for might possibly be found by building, and experimenting with, a full-size job from a model with which I have experimented a great deal. This is a monoplane with swept-back wings and a tail; span, 2 ft. 6 in.; chord (max.), 6½ in.; length (overall), 12½ in.; wing area, 1 sq. ft.; weight (empty), 9 oz.; ballast, 5 oz.; wing loading, 14 oz. per sq. ft.; speed (approx.), 28 ft. per sec.

This model (hand launched) has made many flights of more than 500 feet, and frequently the line of flight has been observed to be horizontal for more than 100 feet.

Now, if the scale of this model is increased eight times, could not the result be a machine: span, 20 ft.; chord (max.), 4 ft. 4 in.; length, 8 ft. 4 in.; wing area, 64 sq. ft.; weight (empty), not exceeding 80 lb.; wing loading, 3½ lb. per sq. ft.? This would allow 144 lb. for the pilot, which sum could be increased by the amount of any saving of weight in the construction.

G. E. CHUBB.

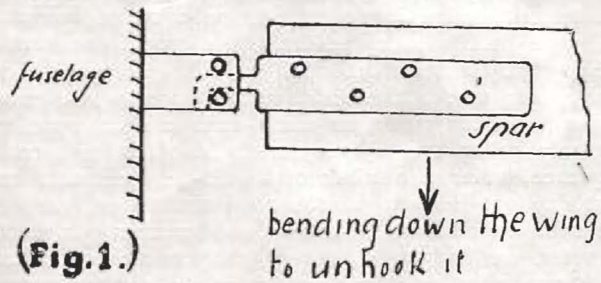
[There is evidently a body of opinion which believes in, at times, sacrificing aerodynamic efficiency to portability. In spite of Mr. Neilan, we still think it would be worth while trying to see what the biplane could do in this direction, and believe that such a biplane, if made, should be of the tail-less type. The advantage of the latter is not claimed to be one of aerodynamics, but of lightness and portability—the first because it hasn't a tail, and the second because it can be merely folded instead of dismantled. It also has the advantage, common to other tail-less machines, that the ailerons are at neutral or negative incidence, and therefore act like differential ailerons without the complication of making them differential. A powered tail-less biplane such as Mr. Moore describes was designed by J. W. Dunne in 1908, and was found to possess great stability: in fact, somebody flew one from Eastchurch to Paris "hands off." But Mr. Dunne has now unfortunately given up flying research, being too much tied up in working out a theory of his about foreseeing the future in dreams. The model described by Mr. Chubb would appear to be similar to a FALKE; but, though there is much to be learnt from models in the way of aerodynamic design, we doubt if they can teach anything useful as regards weight-saving construction. A model has to have an enormously greater "safety factor" than a full-sized machine, owing to the many kinds of unconventional landings it is expected to stand up to. The outstanding example of weight-saving combined with aerodynamic efficiency is the German WINDSPIEL, which was described in our issue of last March. But its trailer is 40 feet long!—ED.]

SIR,

On page 104, No. 7 of this paper, Mr. E. Brame is pleading for a light biplane glider. I am not expert enough to enter into any discussion, but I can give you the description of such a machine actually built and thoroughly tried out by several clubs in Switzerland. The biplane in question is the W.F. 7, of which some examples are existing.

The dimensions are: Span, 24 ft.; area, 117 sq. ft.; length, 18 ft.; weight, empty, 100 lbs.; gliding angle, 1 in 12.

Lateral control is obtained by two-sparred warping wings of rectangular shape with one strut on each side



(Fig. 1.)

and crossed tension wires. The wings are easily dismounted without opening bolts (Fig. 1). The fuselage is covered with plywood on its forward and with fabric on its rear portion. The elevator can be folded up without releasing the elevator cables.

This glider was used for primary instruction, but proved to be unsuitable, and the C. of A. was withdrawn some months ago. The calculated strength requirements are sufficient for flight, but the machine is easily damaged in any rough landing. In club activity spars were broken very frequently. In rough weather the machine is very unstable and should not be used for primary instruction. It is best for auto and winch-towing when pulled at a steady speed. Hand-launched there is great risk of stalling it, due to its extreme lightness.

All controls are very effective, but the warping wings were not satisfactory. They are too sensitive and render the already bad lateral stability even worse. To make it a suitable soaring plane the glider described should be stronger and have more stability in flight, and this would cause more weight and a greater span.

O. FRISCHKNECHT.

[This machine was mentioned in our last issue in a letter from the Hon. J. Phillips, who also sent us the manufacturer's specification. The area was there given as 16.2 sq. m. (174 sq. ft.) and loading 7 kgs. per sq. m. (1.4 lb. per sq. ft.); otherwise the figures were as given above. The flying speed was stated to be 12 m. per sec. (26½ m.p.h., landing speed 20 m.p.h., and sinking rate 1 metre per sec.—ED.]

Sutton Bank Gliding Competitions, 1934

NEARLY a year ago, on October 8th, 1933, the British Gliding Association held the annual gliding competitions at Sutton Bank.

These competitions are held, not so much as a public spectacle, but as the high spot every year in the calendar of the gliding fraternity. Neither the B.G.A. nor any of the gliding clubs have had the necessary funds to organise a meeting in a big way, and the insurmountable difficulty always arose that no really good site could be obtained to hold such a meeting. Good sites for gliding are as rare as gold mines, and whilst the owners of what few there are have been frequently good enough to allow occasional parties of soaring pilots to enjoy themselves from their grounds, it is obviously too much to expect that anyone could permit a full-sized meeting, with the attendant spectators, motors, and bustle, the free run of their land.

Consequently the 1933 meeting was not organised in the expectancy that large crowds would attend. To the amazement, and almost consternation, of the organisers, we were nearly overwhelmed by a crowd estimated subsequently as between 8,000 and 10,000 people, all really keen to see the new sport. No adequate provision had been made for a car-park to accommodate such a number, and we very much fear that, as a consequence, a large number of would-be spectators on that day got held up on the road and never reached the site. In addition, and even sadder from our point of view, we had no supply of programmes or other matter to offer, and as a result the gliding movement as a whole benefited financially hardly at all.

However, a lesson had been learnt: that soaring flight is a sport that is fascinating to all. The meeting, as regards the performance of the competitors, was the most successful ever held in this country. Nearly 50 hours' flying was done by 14 machines, and both competitors and spectators went home in a white heat of enthusiasm.

It was obvious that we had at last attained that degree of proficiency in the art when a properly equipped high-efficiency soaring site was not only necessary, but could be trusted to earn its keep. So negotiations were begun with the daring aim of procuring some security of tenure in a site of our own, and after long discussions, to our own incredulous surprise, we found ourselves our own masters, and our big chance was at hand.

The first step was to raise enough capital for the bare necessities of a hangar, club house and workshop. Certain sportsmen within the movement itself promptly came forward; all felt that this was a chance that must not be missed; and sufficient was borrowed to make a start. That start is being made to-day, and we all are going to try our utmost to repay those without whose help we should not be here.

Please remember, therefore, that *no one here is trying to make any profit out of the meeting*; we are simply trying to repay what we have borrowed. And when we have done that, the list of our wants is very long; for we are determined to build up this site until it is the equal of anything that Germany can offer. A plan of development has already been drawn up to this end.

Then, in the spring of this year, came the big surprise: the announcement that the Government would declare a subsidy up to £5,000 per annum to foster gliding. We had started work months before this help had been in the air; nevertheless it became obvious that, if we could prove our worth, here was an undreamt-of chance of attaining our goal. So this meeting attained a further importance still: we *must* put up a first-class show.

The first thing is to show that, given a first-class site and with adequate facilities, *there are lots of people mad-keen to learn the mysteries and joys of soaring flight*. Therefore, we ask for members, not only from those living near at hand, but also from people all over the north. Next season we expect to have a permanent instructor, and then it will be possible for people coming from distant places to take a fortnight's or three weeks' course here, and then go back fully qualified to start a local club, or buy and fly a machine of their own. Prospective members can either inquire at the club house, or of any official on the grounds, or can write direct to the Secretary, Yorkshire Gliding Club, Overdale, Boston Avenue, Kirkstall, Leeds. Short time membership can be obtained for those who can only attend during a limited period. Gliding is the perfect sport; an average person can become a safe and adequate pilot in a fortnight, but then he can go on learning for the rest of his life.

Next in importance is the goodwill of our neighbours and all others concerned. We ask especially, therefore, of our visitors, that they take care not to do any damage to fences, crops, etc.; that they keep off the centre of the landing ground for their own safety as well as that of the pilots and machines; and generally to realise that we are amateurs and sportsmen. This isn't a demonstration or an advertisement; we are here to enjoy ourselves, and we hope you will, too. And we can only do so with the goodwill and co-operation of everyone.

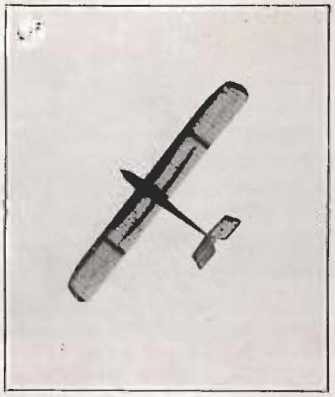
We cannot accept any responsibility for loss or damage to person or property arising from their presence on our ground. It is essential to keep the centre of the ground clear for machines to land and take off.

Remember that soaring flight is dependent on the wind. On this site soaring is possible in winds from the west, north-west, south-west, and sometimes from the south and south-east. In winds from north to east we shall only be able to practise gliding flight.

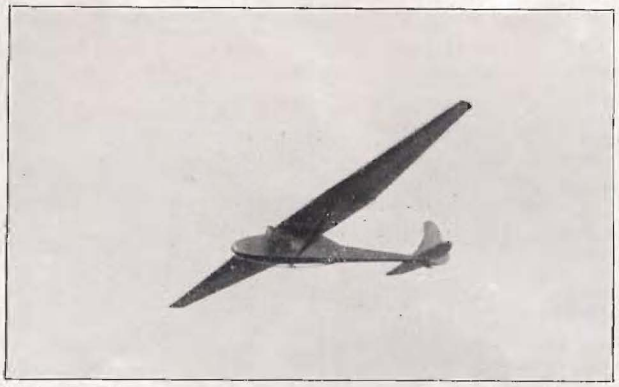
[N.B.—Soaring flight is continuous flight without loss of height; gliding flight is simply descending flight.]

SAILPLANES PRESENT AT THE MEETING

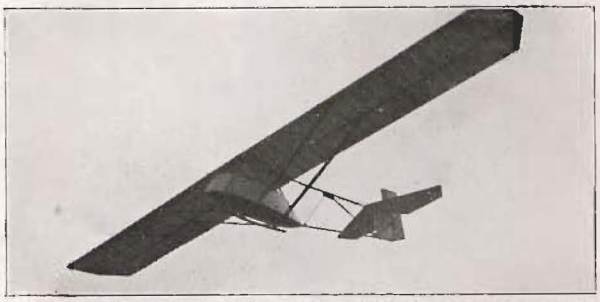
Yorkshire Gliding Club



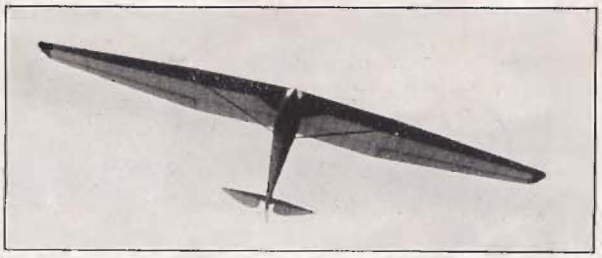
The new Stedman Two-seater, designed and built by Mr. Stedman and Mr. Holdsworth.



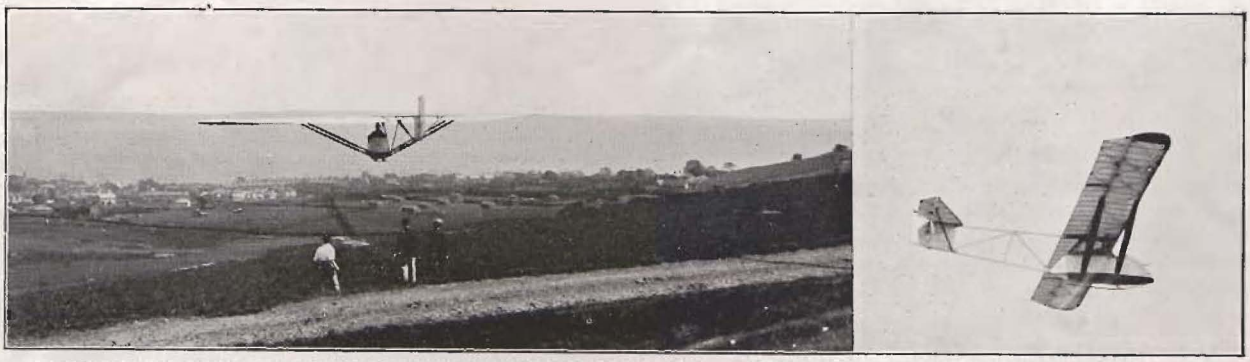
The "Professor" high performance sailplane, formerly owned by Mlle. Lippens, of Belgium.



"Hols der Teufel" Mk. I., acquired from the Ilkley Gliding Club.

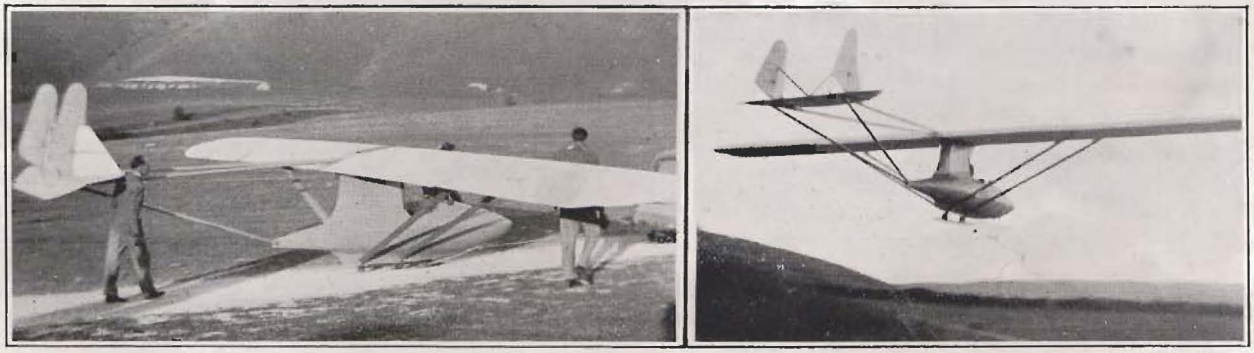


A. L. Slater and G. O. Smith, of Derby, have just finished building a "Willow Wren" of the type shown.



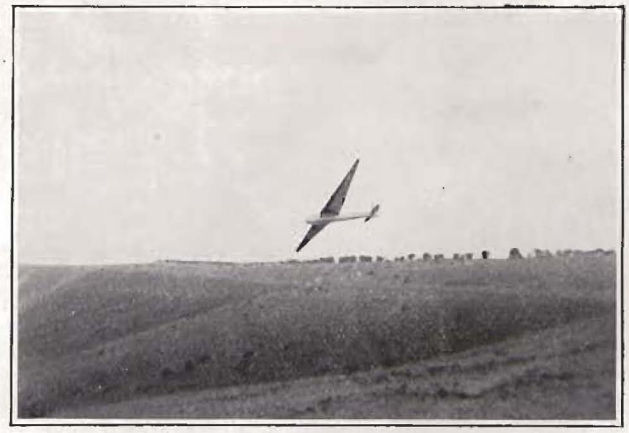
"Hols der Teufel" Mk. II., constructed by members of the club. This type is designed for soaring in light winds at slow speeds.

London Gliding Club

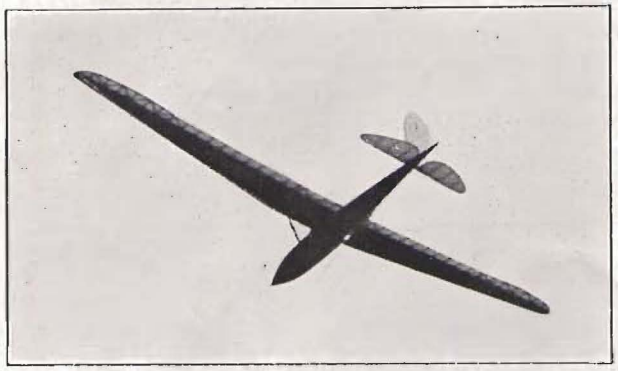


A development of the "Hols der Teufel" type designed by D. G. Hiscox, shown being given its first test flight by him. The twin rudders can act as air brakes.

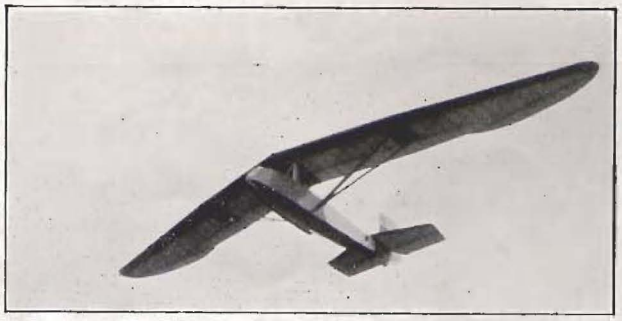
London Gliding Club



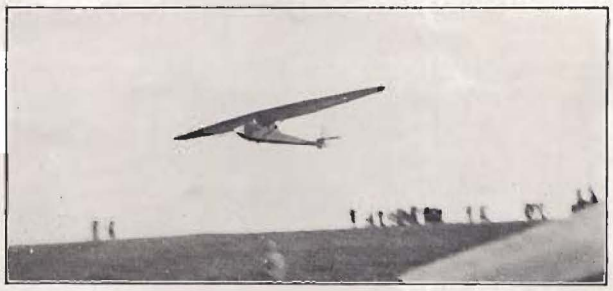
The "Rhönadler," owned and flown by G. E. Collins, who made in it the present BRITISH DISTANCE RECORD of 98 MILES. It is German built, and is probably the most efficient sailplane now in this country. Easily recognised by its triangular wings.



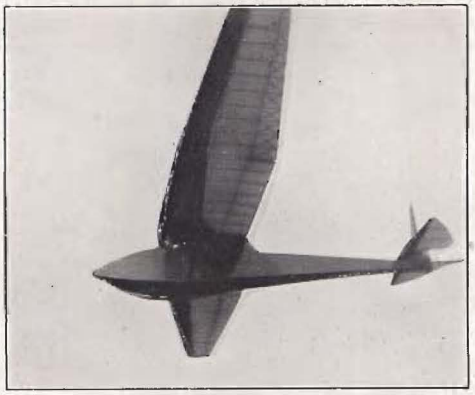
The "Scud II.," designed by L. E. Baynes, of Messrs. E. D. Abbott, Farnham; owned and flown by P. A. Wills and G. M. Buxton. Mr. Wills made in it the present official BRITISH HEIGHT RECORD, estimated as 5,100 feet climb above the start, and now awaiting confirmation.



The "British Falcon II.," a modification of a very successful German design, owned by C. E. Hardwick, of Birmingham. It will be flown by its manufacturer, F. Slingsby, of Queen Street, Scarborough. Recently, in North Wales, its owner soared it to a higher level than the top of Snowdon.

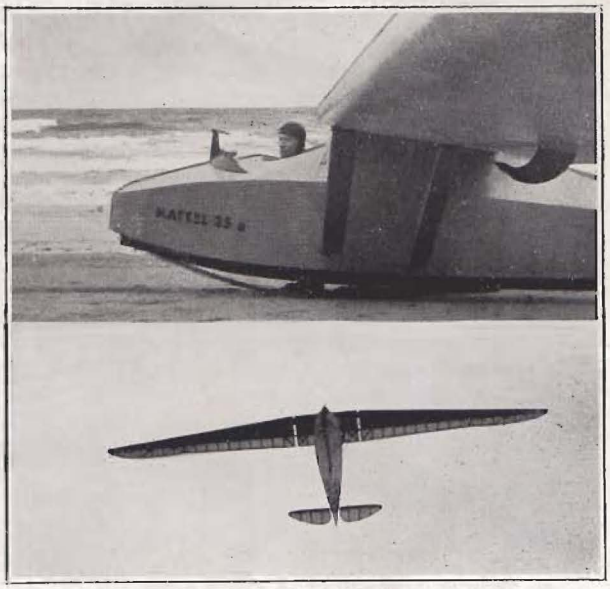


The "Crested Wren," owned by S. Humphries, J. P. Dewsbery, and Major H. Petre. The "Wren" series is designed and built by Corporal W. L. Manuel, of Reading. Distinguished by the colour of their woodwork, this one being red.



The "Willow Wren," also known as the "Yellow Wren," is owned jointly by a group of some half-dozen pilots.

The "Blue Wren," a slight modification of the "Willow Wren" type. Owned by the Editor, and to be flown by S. Humphries and J. P. Dewsbery. A month ago Mr. Dewsbery flew in it from Sutton Bank nearly to Bridlington-on-Sea, and rose 3,800 feet.

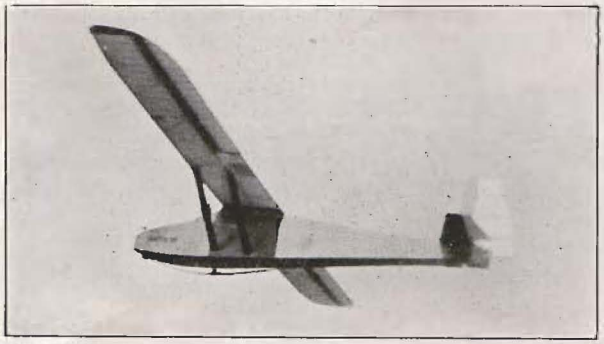


Two Ulster Club Machines.

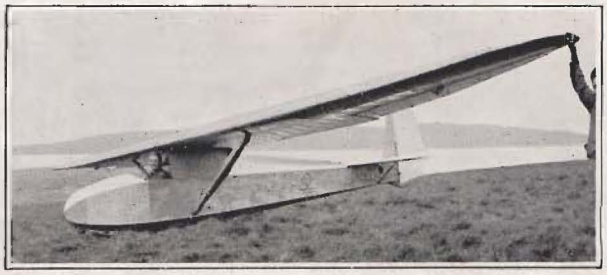
Ulster Gliding Club



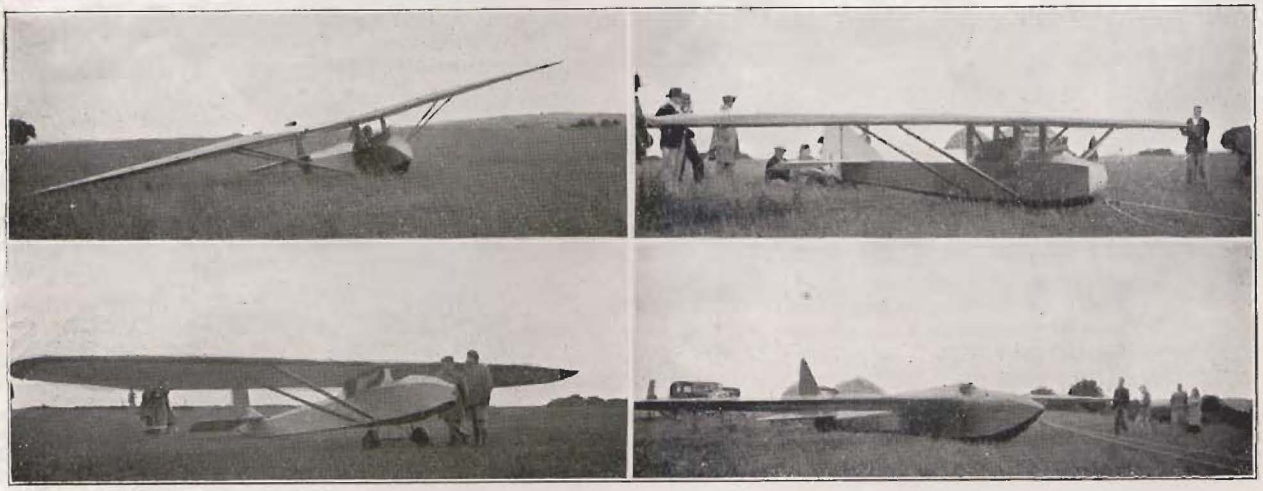
The "Scud II.," distinguished from the London Club's "Scud" by its straight wing, whereas that of the London machine is bent slightly upwards at a dihedral angle. It has made many fine flights in the mountainous regions of the north of Ireland.



"Kassel 20," obtainable for £50 in Germany in pre-tariff gold-standard days.



The "Grunau Baby II.," recently bought by Mr. Liddell, from Germany. It is a fine machine, but has not yet had a chance to show its mettle.



An Absent Friend

The "British Falcon I.," in which F/O E. L. Mole set up the British Duration Record of 8 Hours 8 Minutes. It will not be here this year, but Mr. Slingsby is bringing out an enlarged two-seater version (side-by-side) which it is hoped will be ready.

Dorset Gliding Club

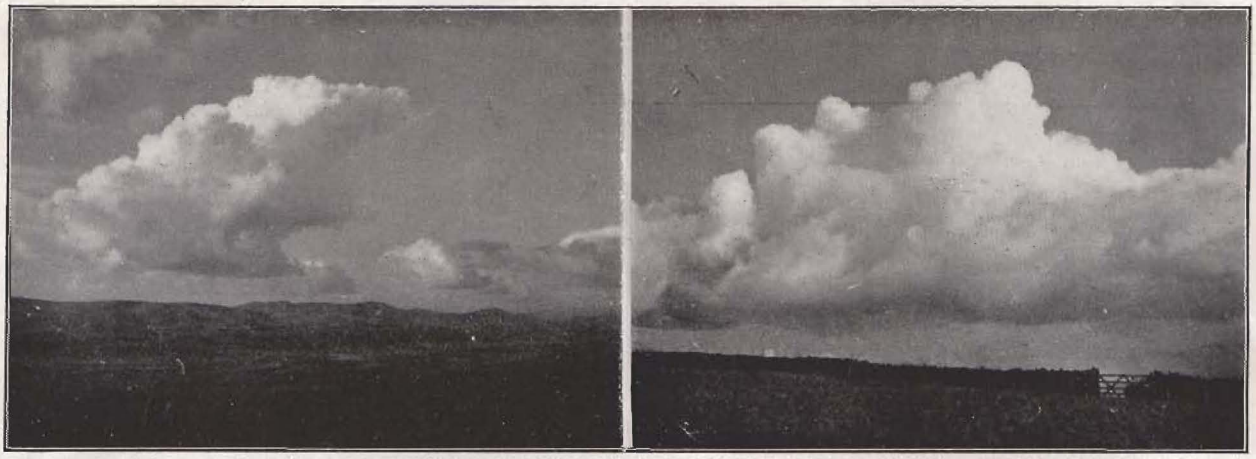
The "Dorsling," which formerly held the British Duration Record with a flight of 7 hours 22 minutes, at Sutton Bank, piloted by J. Laver, of Weymouth. Other pilots are R. L. Rolfe, N. W. Wright, and A. J. Solomon. Distinguished from "Prüfling" by the slight sweep-back of its wings.

Preston Gliding Club

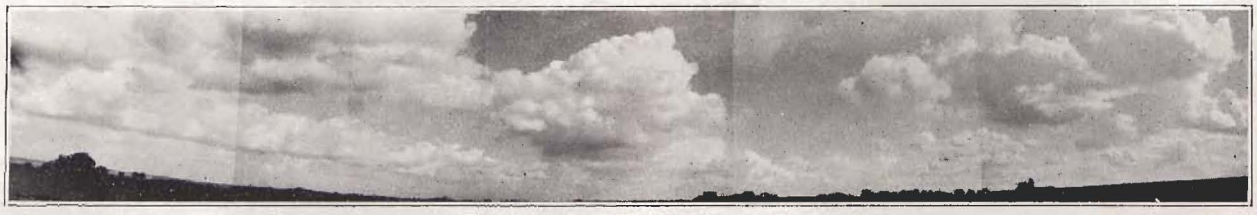
A "B.A.C. VII." The Preston Club recently completed a two-seater of this type, painted green and cream. On it L. E. Falla, the Club Secretary, has already been up to 1,000 feet with a passenger at Sutton Bank.

Southdown Gliding Club

The Airspeed "Tern," owned and piloted by A. H. Reffell, G. A. Little, and Dr. A. L. McGlashan. Designed by N. S. Norway. Like the "Rhönadler," it has a covered-in cockpit, known as the "conservatory."



At the commencement of a soaring flight, a sailplane is usually lifted by the upwardly-deflected air which is to be found wherever the wind blows against a hill-side. On a sunny day, if it gets high enough to start with, it may also be lifted by upward-moving columns of air rising from heated ground. If such a column goes up high, a cloud may form in its top, into which the sailplane may disappear. Soaring by this means is called "thermal soaring."



Clouds may form in long lines called "cloud streets." A sailplane can then go straight ahead and keep rising, instead of having to circle as it does under isolated clouds.



A rain squall may be preceded by a belt of rising air in which a sailplane can travel long distances. This is "cold front soaring."



The Manchester club's "Prüfling."



The Controlling Factors in the Design of a High Efficiency Sailplane

SPAN is generally considered to be the most important feature of design, and I will consider this first. The span will be made up of pieces of wing twenty feet long. We used to think that the length of trailers was limited to 22 feet by law so that this was a necessity, but now it is clear that we may make the pieces of wing longer; indeed a designer may make each section of indefinite length with a trailer to cause indefinite confusion in traffic.

We must now consider that the machine is made to be flown. The ardent designer will remember the saying that if you tie ten Englishmen in a sack the result is a free fight, but with ten Germans the result is a committee. So, allowing for the soothing effect of the open air and a factor of safety of about three, we can say that there may be as many as three who will work together to fly a sailplane.

In Germany the committee habit triumphs and sailplanes of sixty feet span are common, and one of a hundred and three feet span was made which weighed half a ton, though it may be noted that even in that land of co-operation the designer was careful to give it to a pilot who was often likely to land again on the top of the hill.

But for the English we may decide that, though twenty feet is too small to be fashionable, forty feet span is big enough.

For the wing section, I know of only one important consideration. It is governed by the climate, which makes it necessary that the wing shall in normal years act as a satisfactory roof during the rain which predominates on soaring days. (Figure I.) This factor was entirely neglected, and a bi-convex wing section was used in an otherwise successful British sailplane, to the acute dissatisfaction of the pilot and crew during the downpour which followed its first soaring flight. (Figure II.)

The decision between a cantilever and strutted wing is often discussed, but I think it can be decided by the same consideration. For it cannot be denied that the strut is a considerable obstruction to people who want to shelter under the wing, and is most inconvenient as a seat. And though the good-natured crowd will adapt themselves to this, the strut is liable to collapse and precipitate those who were sitting on it on to the wet ground.

For the fuselage, a round or oval, or an angular cross-section may be used. A round or oval shape has the greatest strength when covered with plywood, and has slightly less resistance to the air, and is said to be reasonably easy to make, so that it is very unfortunate that there is a final objection to it; for it is recognised everywhere that the round shape would be impossibly unconventional whenever it may be required for the alternative use as a coffin.

KENTIGERN.

List of British Gliding Clubs

NEARLY all of the clubs in this list provide facilities for Primary Training. In addition, soaring flight is possible on the sites of the Dorset, Furness, London, Portsmouth, Southdown, Ulster, and Yorkshire Clubs. Many of the remainder pay visits to soaring sites, or intend to provide soaring facilities as soon as their members are sufficiently trained.

ACCRINGTON: J. Nolan, 67, Eagle Street.
DERBY: R. E. Garner, Highfield, West Avenue, Shelton Lock.
DORSET: J. Laver, 9, Commercial Road, Weymouth.
EAST DORSET: R. Potgieter, "Wings," Arley Road, Parkstone.
ESSEX: W. Webster, 113, Coombes Road, Dagenham.
FURNESS: H. S. Gross, 106, Greengate Street, Barrow-in-Furness.
GUERNSEY: B. C. de Guerin, 9, Le Marchant Street.
HARROGATE: E. T. W. Addyman, The White House, Starbeck.
HULL: J. E. Raddings, 288, Cottingham Road.
IMPERIAL COLLEGE: G. P. Hebden, Imp. Coll. of Science, South Kensington.
JERSEY: A. S. M. Glassford, 3, Caledonia Place, Weighbridge.
KENT: Miss R. H. Sinclair, Lady Place, Sutton Courtenay, Berks.
LEICESTERSHIRE: W. Adcock, 79, Gartree Street, Leicester.
LONDON: H. O. Davies, 13, Victoria Street, S.W.1.
MANCHESTER: F. S. Coleman, 62, Edgerton Road, Chorlton-cum-Hardy.
MIDLAND: H. T. Testar, 80, Gibson Road, Handsworth, Birmingham.
NEWCASTLE-ON-TYNE: A. P. Miller, 25, Holme Avenue, Walkerville.
OXFORD: A F. Houlberg, "Midway," 160, Oxford Road, Cowley.
PORTSMOUTH AND SOUTHSEA: R. Robinson, 72, Copnor Road, Copnor.
PRESTON: L. E. Falla, "Lendor," Lawrence Road, Penworth Hill.
READING: C. H. Bohman, 35, Church Road, Tilehurst.
ROCHDALE: J. McLaughlin, 7, Clovelly Street, Marland.
RUGBY: A. C. T. Isaacs, "Killingholme," Hillmorton Road.
SCOTTISH GLIDING UNION: J. W. Gardner, "Journal" Office, Alloa.
SOUTHDOWN: A. York Bramble, 3, First Avenue, Hove.
SOUTH SHIELDS: F. Renaut, 139, Stanhope Road.
STOCKTON-ON-TEES: H. P. Dean, Redwing Lane, Norton-on-Tees.
TEES-SIDE AIR SCOUTS: W. Davison, 143, Stokesley Crescent, Billingham.
THAMES VALLEY: E. F. Camps, "Pensilva," Bolton Lane, Harlington.
ULSTER: Sydney Hanna, 17, Royal Avenue, Belfast.
WILTS: F. C. Smith, 55, High Street, W. Lavington.
WHITLEY BRIDGE: T. E. Armes, "Darrendale," Snaith, Yorks.
WORTHING: N. T. Whiteman, 101, Rowlands Road.
YORKSHIRE: A. Cox, "Overdale," Boston Avenue, Kirkstall, Leeds.

An American Distance Record

ON June 25th Richard du Pont soared 155 miles from Elmira, N.Y., taking 6 hours 10 mins. over the journey. This is only ten miles short of the world's record of 165 miles set up by the late G. Groenhoff. It is, in fact, claimed as a world's record, in that Groenhoff's flight was not "official" according to the letter of the law. This we believe to be the case.

Correspondence

(Continued)

Launching by Winch

SIR,

Perhaps the experiences of the Leicestershire Air Sports Club with winch launching will be of interest to other clubs, as I believe we are the first club to use it for training novices to fly. Our ground is not suitable for auto-towing as it is too small and rough and hand launches gave very short flights, so we turned to the winch to help us out and have not regretted it as it seems to have solved many difficulties for us.

The winch car is a 24 h.p. Chev. and cost the club £2, and the rest of the gear, including club-made wooden drum and 2,500 feet of (15 cwts. breaking strain) wire cable, cost less than £4, so it has not cost too much.

Our method of working is this: We have two men in the car, one "driving" it and the other standing by the ignition switch watching the instructor, who stands in mid-field but to one side of the line of flight. When the pupil is ready the instructor signals to the winch by raising his hand above his head. This is the signal to start. The instructor signals to stop winding when the glider is high enough or far enough for it to land within the field, by holding his arm at right angles to body. The observer, who is at the ignition switch, *watches the instructor and not the glider*, and when he sees the signal to stop he shouts "Stop" so the driver can hear him and switches off the ignition at the same time. The driver watches the glider, and if the machine gets into difficulties stops the winch by closing the throttle and applying the foot brake, which he also does when his observer says "Stop." We always *use an open type quick release hook*. Attached to the end of the wire cable we have about 30 feet of ½-inch diameter hemp rope with steel ring at end as this is much easier to see and drops off quickly.

Winch launching gives pupils a much longer flight without at any time gaining excessive height and because, once the machine is in the air, it tows it at a constant speed, making piloting much easier. Even when a novice puts on wrong rudder there is ample time in which to stop the winch and so detach the cable, leaving the glider to do its worst.

The chief dangers are:—

(1) Towing glider too fast in a strong wind.
(2) Using a closed release hook. Forgetting to release and being pulled into ground.
(3) Cable looping back and getting caught on glider.
(4) Climbing too steeply and so putting a heavy strain on the wings.

Using an open hook placed on the most forward position of fuselage obviates Nos. 2 and 4. In respect of No. 3 it is essential that a pair of shears or cutters are fixed in such a position so as to be able to cut the cable in the event of such a happening. When doing high altitude flying (i.e., over 100 feet) a man should be standing by the shears ready to cut the wire.

For training I think this method is best, and it is most certainly safer than auto-launching.

W. ADCOCK.

The Flight of the Albatross

SIR,

November, 1913, I studied the flight of the lesser Albatross between Cape Town and Australia, about 42° south lat. There was a following sea, speed of ship about 14 knots relative to sea, wind as usual or slightly high for this latitude.

The birds came up to the ship from the west (down wind) low, near the water, below the tops of the waves. I presumed that they were contour sailing. They advanced at the same speed as the waves.

When within the disturbance area of the ship they seemed to be free to soar in any direction as far forward as the forward end of the promenade deck.

On one occasion they all left and proceeded by flapping flight, about a mile to the south of the ship (cross wind) where they appeared to be feeding. To return they flapped to the nearest point in the ship's wake and then soared up to the ship.

For the greater part of the voyage it seemed as if the birds only followed by daylight and presumably went to St. Paul's or other islands at night. No birds were in sight in early morning or evening.

When they alighted on the sea to eat refuse they used flapping flight to reach a soarable area. As the sea and wind were on the quarter a few minutes on the water would leave them a little of their course to return to the ship.

I saw these birds (on a voyage Sidney to Suva) until about one day out from Suva, hence I presume 20° south lat. (January, 1914).

L. HOWARD-FLANDERS.

Mr. Cuss and the Wilts Club

SIR,

The announcement of my resignation of the office of Vice-President of "The Wilts Aviation Club" as then constituted has evidently caused a bitter form of insidious resentment by the author of the letter to which Mr. Firmin has appended his name.

My knowledge of Mr. Firmin is negligible and I must conclude after reading this letter that his knowledge of me is still less. The mentality exhibited confirms the decision I made when resigning that I had no desire or intention of being occupied with turbulence of a character which served no useful purpose and in which I found no interest. The motive for the invective and disclaiming liability for one kind of malice is furnished by Mr. Firmin himself in the last paragraph, but he omitted to state why I was elected a Vice-President of this Club. *Qui s' excuse s' accuse.*

In my view, space in THE SAILPLANE is far too valuable to be devoted to unfounded rubbish of the kind contributed over Mr. Firmin's name and I have no intention of imposing on a generous Editor for further space for a detailed defence of my action, but would direct attention to the first and last verses of Kipling's "If."

C. T. CUSS.

Realizable Climbs in Gust Soaring

SIR,

In my communication in the June issue (page 85), it was hoped to show how the wind of Fig. 6 of Captain Needham's April article (page 60) might keep soaring a bird of *mean effective* gliding angle no worse that 1 in $g/3.00$, or 1 in 10.72. That looks well as a preliminary encouragement, but it may also be shown there is an adverse something latent in the words "*mean effective* gliding angle," or drag/weight ratio, needing to be considered, especially if the glider is a fast one. A fast, *turning* glider can have a greatly increased drag resistance, and so demand too strong an air acceleration.

Looking again at the useful Fig. 6 for more data, there may be counted about 36 distinct peaks or valleys in the wind record, and on dividing the whole time of 207 seconds by 36 we find an average gust cycle of about 5.75 seconds. This means that on the average the bird or glider may need to wheel round 360 degrees every 5.75 seconds, if it does not intend to miss any of the gust soarability.

One way of bringing ensuing limiting matters into view in a moderately short communication seems to be to calculate a set of figures. It will be seen that the following slide-rule calculations are for a series of six 1 in 20 gliders, which gliders are supposed to have these ordinary straight-flight headways in miles an hour :—

0 10 15 20 23.1 25.....line (A),

—by the zero headway is really to be understood an indefinitely small headway. The headways of these gliders, when doing their 5.75-second circles, having regard to banking and to increased slanting lifts, can, by a method explained at the end, be calculated to be, in feet per second :—

0 15.6 25.3 37.3 46.2 52.4.....(B).

Then the gust acceleration, proportional to the drag and so to the headway squared and needed to maintain level soaring, is proportional to $(g/n) \times (B/A)^2$, or in feet per second per second it is $(32.2/20) \times (0.682 \times B/A)^2$, or $0.749 \times (B/A)^2$, which in each case is these feet per second per second :—

1.61 1.82 2.12 2.60 3.00 3.29...(C).

So, remembering that the given wind is offering 3.00 feet per second per second, the spiral or helical climbing slope, like $(3.00 - C)$ in g, or 1 in $g/(3.00 - C)$, is, in each case, 1 in

23.2 27.4 36.6 79.7 inf. −112...(D),

and the consequent rate of gain of height, like $(B/D) \times 12$, is in each case, in inches per second :—

0 6.8 8.3 5.6 0 −5.6.....(E).

Some may find it helpful to know that the banking angles are these degrees :—

0 28 41 52 58 61.....(F),

and that the mean effective helical gliding slopes, 1 in $20 \times$ cosine F, or alternatively 1 in g/C, are 1 in

20 17.7 15.2 12.4 10.7 9.8.....(G).

Attending now to the important line E, we see that in the given wind there is no upward or even level soaring possible for a 1 in 20 glider with a greater headway than 23.1 miles an hour, because, let us say, the mean effective gliding angle becomes poorer than the critical 3.00 in g, or 1 in 10.73, as seen in line G, or because the circling demands a greater acceleration (line C) than the 3.00 offer of the wind. But also notice that, while there can be no rate of gain of height for zero headway, there is in between a *maximum* rate of gain of height of about 8.3 inches a second for a glider of headway about 15 miles an hour.

Now a gliding headway of 15 miles an hour is hard to reach down to; but the gliding angle being no better than 1 in 20 is the greater fault, as may be shown by re-calculating the figures for the 1 in 30 gliders which are now said to be just possible. The similar lines of calculation for these can be stated as follows :—

0	10	20	30	31.3	40	m.p.h.	(A)
0	15.6	37.3	71.1	76.6	120	f.p.s. ...	(B)
1.07	1.22	1.73	2.80	3.00	4.51	f.p.s.p.s.	(C)
16.7	18.0	25.4	163	inf.	−21.3	cl. slope	(D)
0	10.5	17.6	5.24	0	−67.8	i.p.s. ...	(E)
0	28	52	67	69	76	degs. ...	(F)

Here we see from line E that the choice falls upon a 1 in 30 glider of about 22 miles an hour straight headway, which is fairly practicable, and that its rate of gain of height is about 18 inches a second, while we also see that the headways can be as great as 31.3 miles an hour without precluding at least level soaring.

Of course, more wind data needs collecting, much, it is hoped, with longer gust cycles and stronger accelerations; but even on the evidence of Captain Needham's one wind of Fig. 6 the *aid* of acceleration soaring might be hopefully practised with the now existing 1 in 30 gliders of headways as low as about 25 miles an hour. The procedure will really be that recommended in your April editorial (page 50)—that of turning aside to head each gust.

There just remains the question of how the circling headways of line B are so casually derived from the common straight headways of line A. The whole mechanics is too long and makes tediously unkind arithmetic, but entire practical simplification thus proceeds :—In this series of figures—x, y; 0.0, 1.467; 1.0, 1.497; 2.0, 1.592; 3.0, 1.764; 4.0, 1.996; 5.0, 2.292; 6.0, 2.649; 7.0, 3.026; 8.0, 3.419; 9.0, 3.823; 10.0, 4.232;—the x figures are before the commas and the y figures after the commas. Having divided the common *miles an hour* headway of the glider by the seconds in which it must circle the result is the x figure. Look that up and take out the corresponding y figure. That is then the factor by which to multiply the common *miles*-an-hour headway (A) to obtain, in *feet per second*, the headway (B) when circling. In-between values can be estimated, but a smooth curve connecting x and y, drawn on a large sheet of squared paper, is very convenient to use. The y scale of this may be additionally scaled with banking angles, 10, 20, 30, 40, 50, 60 and 70 degrees, where y is 1.477, 1.532, 1.577, 1.675, 1.827, 2.074 and 2.525 respectively, for $y = 1.467/\sqrt{\text{cosine } \zeta}$. For a set of gliders, all of one 1-in-n gliding angle but any headway, the y scale may be rescaled with a drag-resistance or with an acceleration scale (f.p.s.p.s.), by using $y = (\sqrt{n}/3.870) \times \sqrt{(\text{acceleration demanded})}$; and for a set of gliders all of the same headway but any gentle gliding angle, the x scale may be rescaled with time-of-circling markings (seconds), by using $x = \text{ordinary headway/T secs.}$ Of course, for *one* particular glider *both* x and y may be rescaled, the one for time and the other for acceleration or drag.

S. L. WALKDEN.

Gliding in Italy

By DOTT. ING. FIDIA PIATELLI

UNTIL 1931-32 gliding in Italy was only practised by seven or eight gliding groups, which were under the control and protection of the Royal Aero Club of Italy. At the end of the year 1932 the "Governo Naz. Fascista," which neglects nothing for the physical and moral education of youth, gave gliding an organisation of its own by stipulating an agreement between the R.A.C. d'I. and the *Comando Generale dei Fasci Giovanili di Combattimento.*

In this way the whole subject of gliding, from the psychological and physiological requirements of the pupils to insurance against risks, from instruction courses to the providing of material, became regulated.

On the basis of this agreement, starting from the year 1933, a Provincial Commission for gliding has been instituted at the chief place of each Province. Other local schools can be formed in the more important secondary centres of the Province, and some already have been.

The Provincial Commissions above mentioned discuss and provide for the necessities of gliding propaganda and the operating of the respective schools. These are organised and directed by the Provincial Aero Clubs under the direct control of the R. Aero Club d'Italia, which co-ordinates their activities, applying detailed and comprehensive supervision.

On this basis two instruction courses are instituted at each school, requiring the pupil to possess special aptitudes and abilities. After these have been recognised, first gliding certificate "A" and then certificate "B" are awarded. The third gliding certificate ("C") is given by the Air Ministry, instead of the Provincial Schools, because it requires greater capabilities.

Special courses for instructors and assistants are held at the Royal Gliding School in Pavullo by the Ministry, for preparing the teaching staff. Up to the present time this school has sent out to all parts of the kingdom a corps of about 200 instructors, all officers or N.C.O.'s of the *Riserva Aeronautica*, and 400 assistant instructors, all *Giovani Fascisti.*

The first year of the existence of this organisation has already produced notable results: 60 provincial gliding schools are already in full activity, the respective schools in the other chief places are being instituted and everything leads to the expectation that, where no insurmountable difficulties arise, during this second year each chief place will have its gliding school, thanks to the interest and assistance of the Royal Aero Club of Italy, and of the *Comando Generale dei Fasci Giovanili di Combattimento.* The school activity has been supplemented by numerous camps organised by the better provided institutions and the economically stronger schools.

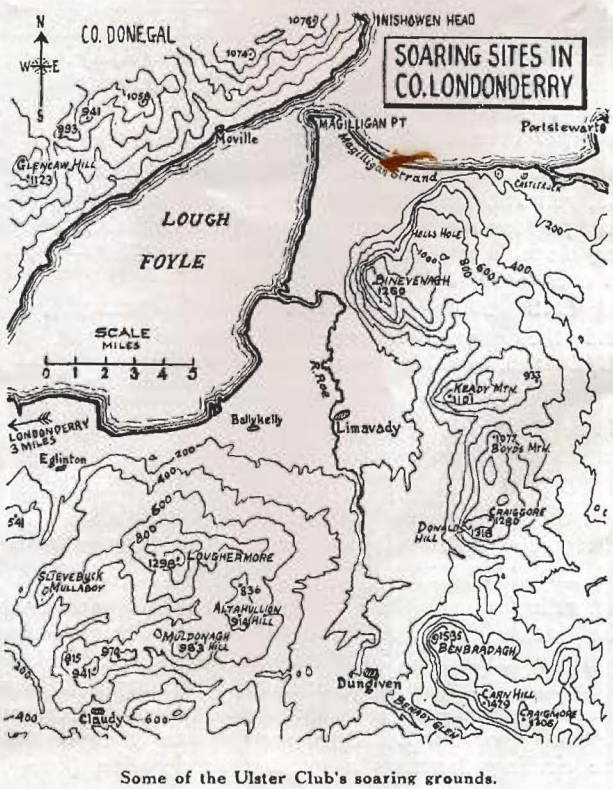
The total number of pupils attending the schools this year was about 2,000; 300 of these passed the tests for certificate "A," some of whom, having also passed those for the "B," are preparing to get the Government soaring certificate. The schools possess already 100 gliders and sailplanes, some of which have been built at the shops of the schools themselves. Many more machines are on order, and are now in course of construction.

In order to help and encourage the development of this form of flying on the part of the R. Aero Club d'Italia, last autumn a Gliding Reunion was held on the Campo di Ciampino, in which for a whole week intense activity was displayed by competitors from different cities. This reunion finished by the obtaining of certificate "B" by 15 participants. In future, beginning this year, these reunions will be organised periodically, and, from the experiences obtained at the first one, they are expected to turn out still more interesting with a greater number of participants and more comprehensive programmes.

Nor was the promotion of contacts with the greatest foreign gliding pilots neglected. In the spring of 1933 Herr Robert Kronfeld, the famous ace, came to Italy; he gave exhibitions at the towns of Turin, Milan, Rome and Naples, of soaring flights of great distance, aerobatics, and of launches by hand and towing by motor car and aeroplane.

To encourage and assure the organisation of the provincial and regional camps, National Gliding Camps will in the future be instituted at suitable times and places. Finally, as soon as possible, an Experimental Centre with a superior Central Gliding School will be instituted, to study and solve the problems which concern gliding, as is already done for power flying.

Certain of success, the *Governo Naz. Fascista* intends, by this organisation and by providing everything which experience shows to be required, to bring the Nation, in the field of Gliding also, to the place that belongs to her for the bold youth of her people and the vigilant and sagacious direction of the *Duce.*



Some of the Ulster Club's soaring grounds.

News from the Clubs

Yorkshire Gliding Club

On **July 22nd** we rigged HOLS merely as bait but none of the winds of heaven was biting that day. About 2 p.m. heavy rain came on, with still no wind, so we sheltered—we and HOLS and numerous spectators—in the hangar which is approaching completion. About 7 p.m. we derigged HOLS after an idle day, hoping that this would be the last occasion on which such a process would be necessary. I said "idle," but during the day we drove about 50 fence stakes, and fitted HOLS with new elevator control wires.

Saturday, July 21st, brought the realisation of a long anticipated event. The STEDMAN 2-seater underwent its first trials at Baildon. This new machine, which is exceedingly well designed and built, seems to combine all that is good in appearance and efficiency. With Stedman at the controls she was given a first lightly loaded "flat hop" which looked very promising. Then followed a "seven-a-side" flat hop. Her gliding angle was so good that she held off for 200 yards and then slipped over the east slope into a 6 m.p.h. wind. Her lift along the short ridge was quite perceptible before Stedman turned off and landed a quarter of a mile away at the 18th hole on the golf course. It is to be hoped that after such a promising start, arrangements be made for fuller trials at Sutton Bank at an early date.

On **Saturday, July 14th,** several members of this club attended a meeting called by Mr. Addyman, at Harrogate, in the name of the Association of Northern Gliding Clubs. After discussion it was decided that the A.N.G.C. could not now serve any useful purpose, and a resolution was passed winding it up.

A vote of confidence, supported by many letters from interested people in various parts of the country, in the action of the British Gliding Association and the Yorkshire Gliding Club, was passed unanimously.

[The A.N.G.C. was formed in 1930 and caused much excitement, many believing that it was set up as a rival to the B.G.A. Since then nothing has been heard of it, and it will surprise many people to know that it still existed.—ED.]

The last week-end in July was spent in making further preparations on Sutton Bank for our August demonstrations. Laborious driving of fence posts, apparently through solid rock, continued throughout the whole of Sunday, while a small party undertook the placing of dozens of notice boards all over the district, both on the plateau and below on the plain. Roy Watson collected HOLS II. and, after the usual vicissitudes *en route*, he delivered her safely into the hangar. And all the time weather conditions were excellent. It was very disappointing to see so much good wind wasted

Opening Demonstration at Sutton Bank.

On **August 4th** we were very pleased to welcome a good turn-up of visitors and machines. With a splendid display of energy they stripped off their jackets and shirts and got to work. A light S.E. wind blew over the back of the White Horse and in the afternoon Buxton was launched on SCUD II. and landed several minutes later near Ampleforth. By 6 o'clock the wind, such as it was, had moved round to west at no more than 5 or 6 m.p.h. Bergel took off the FALCON II and by some wizardry managed to keep aloft and reach about 440 ft. Immediately afterwards Wills followed him with SCUD II. and between them they put in about three hours soaring during the evening.

On **Sunday, August 5th,** the wind was again southerly, but Dewsbery with the BLUE WREN and Wills with the SCUD II. found sufficient thermals to lift them up to several small cumulus clouds forming at about 3,500 feet. Dewsbery went off to the sea-side for the day, landing at Rudston, near Bridlington, while Wills, after reaching 6,000 feet, went in search of lunch at Kirby Moorside, 11 miles away. Meanwhile, FALCON II. flown, I believe, by Hardwick and Humphries, entertained the crowds of spectators near the road by repeated tours along the face of Whitestone Cliff, accompanied for a time by an R.A.F. machine which soared like a stone and tore huge gashes through the warm breeze over the bay.

Pleasant fellows, these powered airmen. They came in again last Sunday to tell us how they had enjoyed buzzing round Humphries, but hoping their antics hadn't upset him. Had they, Humph?

On **August 12th** they buzzed round Cox on HOLS, while he was firmly establishing his "C" with a thoroughly enjoyable flight of an hour and five minutes, thereby breaking the duration record for the club's HOLS.

The STEDMAN two-seater underwent her first soaring trials on the same day, R. F. Stedman flying her solo on three occasions and doing about two hours soaring time. The promising performance shown by the new two-seater on her flat hop trials at Baildon was fully amplified by her exhibition to-day, which must have been very gratifying to Stedman and Holdsworth, who spent so much time and trouble in building her.

During the afternoon Hastwell did 58 minutes on HOLS and another 30 minutes later in the day. Falla's "salad and cream" two-seater flew several times, putting in close on two hours altogether. Sharpe and Holdsworth also flew.

London Gliding Club

Wednesday evenings.—This mid-week institution is still in full swing, people usually turning up in the afternoon instead of waiting till after 6 p.m., as in the old days.

Saturday, July 21st.—Instruction, the winch supplying motive power. Mrs. Baker got her "A."

Sunday, July 22nd.—A light breeze up the hill, hardly enough to keep up even the RHÖNADLER. After finding it insufficient in the morning, Collins went up again in the afternoon by winch and just managed to hold height until, coincident with a rush of wind across the club ground, he picked up a thermal and went up 4,000 feet into cloudland. (Problem: did the extra wind provide more slope-lift and enable thermals to be reached, or was it rushing in to replace Collins' thermal which had just broken loose?) Collins proceeded to hop from cloud to cloud as far as Luton and then hop similarly back again, finishing with an aerobatic descent from about 4,500 feet.

Meanwhile instruction proceeded in the DAGLING and PRÜFLING, sometimes off the hill-top.

Saturday, July 28th.—High wind blowing up the hill. Various machines soared. Morland took the FALCON to Dagnall cross-roads, and Smith and Slater (both of Derby) also soared it. Ivanoff found the KASSEL 20 rather clumsy in the rough conditions. After some mild "involuntary aerobatics" (as he called them), he landed and was complimented on the excellence of his side-slips.

Sunday, July 29th.—Smith and Slater (again of Derby) got up early (9 a.m.) and soared the FALCON. Later, Cooper in the WILLOW WREN did 25 minutes (power pilot, having his first soar). Robertson in the two-seater took up a passenger for ten minutes, and Major Petre then took up about 5 more passengers in turn.

The wind was fierce. An air-speed indicator, held in the hand outside the club-house, registered 25 m.p.h., rising to 30 in gusts. At the top of the hill it must have been a lot more. In the afternoon a real "cold front" came along from Totternhoe direction, and found Cornell soaring in the FALCON at 600 feet. So it just took him up to 2,000 feet and left him there to get down again as best he could. Meanwhile Collins had been launched in the RHÖNADLER and had soon come up alongside. He disappeared into the cloud, where Cornell thought it inadvisable to follow him, and was next heard of near Ware, having covered 25 miles, most of the way at 2,400 feet.

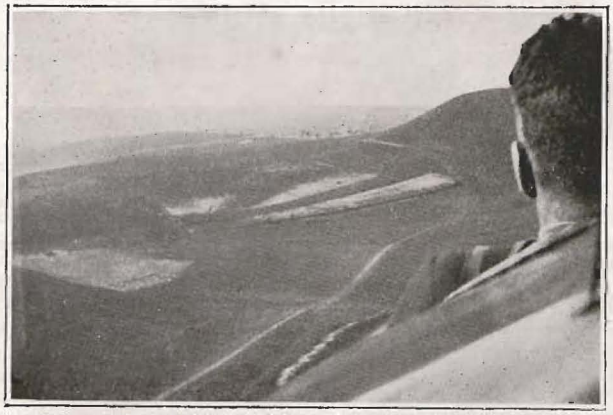
This is the first cold front flight from Dunstable. And to think of all the "fronts" that have gone over in the last 3½ years!

After all this excitement, the wind had practically blown itself out. Cooper managed another 35 minutes in the WILLOW WREN, and Ivanoff just maintained height in the FALCON.

Tuesday, July 31st.—Dewsbery, just back by air from the Wasserkuppe, soared the FALCON for a total of 3 hours. Cooper took it up for 35 minutes. Baker flew the PRÜFLING down after keeping height for one beat.

Saturday, August 4th.—Light wind up the hill. Instruction at bottom and off top.

Sunday, August 5th.—Wind nearly south. Another red letter day. Hitherto the quarter-inch map of south-eastern England, pinned up in the bar, has sufficed for plotting the various flights



S. Humphries piloting the "Kassel" two-seater over Dunstable Downs; photographed by his passenger.

into other counties which are now becoming a regular feature of the club's activity. It will suffice no longer.

By suitable organisation, plotted the day before, Collins arrived to find his RHÖNADLER already rigged and on its way to the hill-top. At 11.30 he was in the air and soon soaring over the Bowl. Before long he was up and away under a cloud street. At 4 p.m., after sundry adventures, described elsewhere, he had arrived a few thousand feet above the Norfolk coast, and was looking for a landing ground. At 8.50 p.m. (pardon, 20.50 hours) the B.B.C. Announcer was to be heard wondering why Sunday was such a good day for Gliding Records. At Sutton Bank a portable wireless set, undergoing physical ill-treatment in a vain effort to knock the stubbornness out of it, suddenly spoke up and observed that a new British distance record for gliders had been set up—to wit, 95 miles. And at 3.30 a.m. (or was it 5?) next morning, the RHÖNADLER in trailer, with pilot and rescue party, were back once more on club premises.

Monday, August 6th.—Light southerly wind. Instruction proceeded all day with usual intensity, and the PRÜFLING was glided off the top.

Saturday, August 11th.—Intensive ground-hopping, and some soaring in the FALCON and WILLOW WREN. The veteran KASSEL two-seater descended into the gully and wrote off its nose therein. Its passenger, who had been put on board specially to take a ciné camera record, stoutly kept on reeling off film right up to the moment of impact. The result should look good.

Sunday, August 12th.—About 16 hours' total soaring, as well as further intensive ground-hopping. Three "A's," two "B's," and one "C" test were passed, the "C" (and one of the "B's") being F. D. Bradbrooke, of *Aeropilot*.

PROFESSOR was flown by Robertson (1½ hours), Petre, Morland, and perhaps others. FALCON was soared all day long by innumerable pilots. The WILLOW WREN and the SCUD also had flights.

At 4 o'clock a pitch-dark line-squall cloud was seen in the N.W. It approached rapidly in spite of a S.W. wind. Rags of vapour were seen going up into it. Just before the dirtiest bit came over, Briscoe was launched in the SCUD II. He cruised up to 300 or 400 feet and then suddenly went straight up "like a rocket" to 1,000 feet, with his nose well down and an air speed of 40 m.p.h. When he remembered to look at the variometer, it showed 6 ft. per sec. rise, but it had obviously been a lot more than that on the way up. He then went out from the hill, well above the aforesaid rags, into the rain, still keeping height. Ten minutes afterwards the rain had stopped and he came right down again and landed.

The SCUD was launched just before the storm, but was too late to catch the lift. So was the FALCON. Collins also tried to do something about it, but couldn't get the RHÖNADLER rigged in time.

Saturday, August 18th.—Wind again west for the week-end. FALCON was soared by several people, and WILLOW WREN by Nicholson. Collins in his RHÖNADLER went up into the cumulus clouds and played hide-and-seek among them during a short tour to Luton and back, afterwards making his usual aerobatic descent.

Sunday, August 19th.—This must be very sketchy. Far too much happened. Collins twice exceeded five thousand feet, and in one descent threw ten perfect loops and uncounted Immelmann turns. Wills floated away and landed unemotionally at Ware. Nicholson took the WILLOW WREN up to 1,500 feet. The FALKE was flown beautifully by Bergel, Testar, Hardwick, Tangye, and others, whose names I forget, unpardonably.

[Petre, Buxton, Goldman, McGlashan, and himself.—ED.]

The PROFESSOR lumbered round, and then telescoped her beak in a brutal landing. The ground-hopper had many adventures before rupturing her five-barred gate. I ought to be smacked for turning the beginners loose on her in the gusts of Sunday, but those beginners, jointly, had such appealing blue eyes. The sister ship came to no harm in some rather startling descents through the final calm of a Sabbath evening.

The HYPER-HOLS at last emerged. She hopped, and then slid down unemotionally from the top of the hill in the evening (see above). She waves her wings on landing, has a long blue nose, and indeed looks rather like a cross between a peacock and a swan. Her subsequent career will be, as the Victorian journalists so neatly put it, followed with interest. Fr' instance, will she circle tightly? Can she roll? But her dinky little rudders are entirely sweet.

The real subject of debate is: Should Bell be shot or given a medal! People down below said: "Shot." People who were in the know, and who had launched him, said: "Medal." Henceforward he is to be known as Battling Bell. Nobody could soar the PRÜFLING. It is necessary to soar the PRÜFLING for some time before passing on to the perfect peace of the FALKE, unless an extra special dispensation is obtained from Rome (*vide* Testar, who was born and bred in Hardwick's FALKE, and Tangye, who, having done 1,500 hours in motor-assisted aircraft, stepped straight into her and soared her beautifully). Well, the PRÜFLING would not soar, so the official moaners moaned and groaned and miseried about the place. So we put Bell in and told him he had damn-well GOT to soar her. He did. He held her up. He pushed off from the hill-side with whichever hand was the nearer. He stood on his tail and he stood on his head. But he soared and soared, and he came down all in one piece. A member of the Finance Committee straightway rushed over to him in a large car and cursed him by bell, book, and candle. Poor old Bell. He slunk back up the hill with his tail down. And then we all fell upon him and beat him on the back and told him that he was our own Most Beautiful Bellikin, and how we loved him. Whereat he was entirely confused. But he gets the Order of the Steely Intestine, anyway.

It was a lovely week-end. We finally tried to finish the beer, but every time we got to the end of it, Mr. Walker produced another half-dozen. So after many efforts we went to a carman's pull-up, and ate eggs, bacon, sausage, chips, and fried bread, and argued and arrived home at 2 a.m. Will the subsidy spoil these things?

Imperial College Gliding Club

Summer Camp, July, 1934

Certificates gained: Lee and Royds, "B" Certificates; Robertson, "A" Certificate.

Total number of hill-top flights: 23.

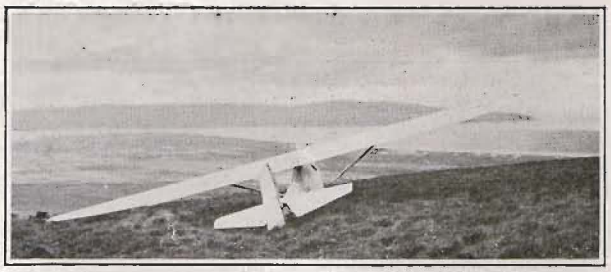
Total flying time: about half an hour.

Although the above summarises the Summer Camp as far as tangible results are concerned, it is by no means a real summary of what we did during July at Dunstable. One of the most important phases not shown by statistics is the great enjoyment everyone derived from their stay on the Downs. Of course the part we enjoyed most was the flying that we ourselves did, which is as it should be. But we also derived much pleasure from watching other people flying and trying to fly. To see a sailplane circle up and disappear into a cloud right above is an inspiration for any gliding club.

We flew the machine from the hill-top on about six days, and everyone who flew can truthfully claim to have made good progress. Our longest flight, made by Hebden, was of about eight minutes' duration, but was unfortunately terminated by a really typical spin, two or three turns of it being done before the ground was reached. The wings were unhurt, but the centre section badly bent and the pilot temporarily damaged. The machine was an un-nacelled DAGLING with, however, the gaps at the wing roots filled in.

We also gave two or three dozen ground-hops to those who needed them.

Besides flying, we had to do the inevitable repairs and maintenance work to the machines, and we also did some entirely *ab initio* constructive carpentry. Still, despite unhappy events, we left an airworthy machine in the hangars and departed wishing that we could put the clock back three or four weeks.



The Ulster Club's "Grunau Baby II" at Hell's Hole, Co. Londonderry.

In the distance is Magilligan Point, and beyond it Lough Foyle and the mountains of Donegal.

Dorset Gliding Club

Saturday, July 28th.—Maiden Newton. A boisterous westerly wind of 20-25 m.p.h. spiced every flight with a promise of adventure. Seven flights were made in the DAGLING, the durations ranging from 37 seconds to 2 minutes.

Sunday, July 29th.—Maiden Newton. A steady westerly breeze of about 10 m.p.h. prevailed, and rendered flying a series of joy rides, a pleasant change much appreciated after the hectic conditions of the previous day. Fifteen flights were made from the top of the hill, the longest duration being 1 minute 39 seconds.

B. V. Leak, of Yeovil, qualified for his "B" certificate with a graceful flight of 1 minute 5 seconds, making the necessary right and left-hand turns in a style which is rapidly becoming polished. In the course of five flights G. W. K. Fravling gave an indication of the rapidity with which he is gaining in form.

Gliding Camp at Smedmore Hill with "Dorsling"

Saturday, August 4th.—Kimmeridge. Wind W.S.W., 20 m.p.h.

The afternoon was spent in transporting ourselves and camping kit to Kimmeridge, and by the time we had got the DORSLING to the hill-top and assembled for flight, there was little time left before nightfall for gliding. However, Laver was launched at 8.15 p.m., and after spending some minutes working up a height of 200 feet above the launching point he flew to Swyre Head, where he worked his way up to 450 feet above the top. He came back again and landed at the starting point after 41 minutes, reporting conditions as being not too easy over the starting point but very good over Swyre Head; thus indicating that, with the wind in the quarter it was, launching should be carried out from the other end of the hill.

DORSLING was sheeted down under tarpaulins for the night, and camp was pitched beside her, working by the light of car headlamps.

Sunday, August 5th.—Kimmeridge. The wind this day was from the S.E., a direction not very favourable to Smedmore Hill. Wind strength about 15 m.p.h.

Laver (Team Captain) went up about 1 p.m. and was able to soar at 150 to 200 feet above the top, eventually landing near the starting point after 37 minutes. Other pilots were due to fly after lunch, but unfortunately rain set in and gradually worsened, so that further gliding was impossible. The wind freshened to gale force and heavy driving rain lasted all the afternoon and all through the night.

Two pioneer members of early days, A. L. Haslam ("C" pilot) and L. T. Smith, both previously of Yeovil, but now residing in distant parts, joined the camp by invitation; the party, eight in all ,was a happy one in spite of the weather, anecdote, song, and games keeping spirits high while the wind and rain howling around the tent provided a sort of running accompaniment as a background.

Monday, August 6th.—Kimmeridge. The gale having expended itself overnight, the morning found all quiet on the south-western front, with little promise of a soaring wind. However, a light breeze sprang up from the sea and provided delightfully smooth air for a series of "joy-rides" in the form of prolonged glides from hill-top to valley, just the right conditions for initiating into the DORSLING one or two pilots who had not previously flown her.

In all, six members flew this day, Laver taking off first for the usual test flight, in the course of which he tried hard to soar, but just failed, gradually losing ground on each beat until after 8 minutes he landed across the slope about two-thirds of the way down the hillside.

Two members, N. W. Wright (chairman of the club since its formation in 1930) and B. V. Leak, flew DORSLING for the first time, and were charmed by the way she flies. The other pilots were Haslam, Davis, and Solomon. All made good flights. Haslam was apparently out for a distance record, landing about a mile and a half from the starting point and quite near the coast. We wondered if he were contemplating a Channel crossing, but thought better of it before crossing the coast-line.

Tuesday, August, 7th.—Kimmeridge. The wind this day was quite fresh, but from the N.E., an unfavourable quarter for this site, so no gliding was attempted. DORSLING was, however, kept rigged and under tarpaulins in the expectation of more S.W. to W. wind within the next few days.

Friday, August 10th.—Kimmeridge. Wind W.S.W. 30-35 m.p.h. Half-a-gale, with hill-cloud forming and enveloping the hill-top at times. Only one member was actually camping at this date, all the others having work to go to. However, a Gliding Meeting was arranged at short notice for the evening, and about 6.30 p.m. Laver, Wright, and a few friends arrived, to greet the lone camper (Clewlow). There was by now a gale a few degrees south of west.

The hoisting of the windsock had been made a prearranged signal for some scouts camping in the valley below to assist, and their motto "Be prepared" was faithfully adhered to, as by the time the sock had been flying three minutes we could see the patrol en route. Whilst the machine was being uncovered Clewlow took the club car and met the scouts at the entrance to the site, returning with each running-board fully laden in the manner of a fire engine. With ample assistance to hold her down in the teeth of the wind DORSLING was got into position. Laver strapped himself in, and holding a pocket compass in his left hand, gave the all-ready signal.

The actual launch took place in a fine rain, but within seconds, what had been a clear sky was now a cloud, and we had launched poor old Laver right into it. Very naturally he did as the boy does in the Indian Rope Trick, i.e., disappeared, and for the next 10 minutes we all speculated as to where he would crash, as visibility at ground level was 10 yards. Suddenly we heard what might have been a "Bristol Bulldog" diving with its familiar high-pitched whistle, but it was only the DORSLING doing the knots, the lift in the cloud being so great that only by flying the machine nose down at between 60 and 70 m.p.h. could it be kept from going right inside. Any attempt to fly at normal speed resulted in an immediate climb at a colossal rate; however, we on the ground could only get fleeting glimpses, as visibility was now only 100 yards or so, but we often heard the machine during the half hour.

When the storm lifted Laver alighted, making the top. The maximum height above the start attained during their flight was 350 feet. Laver reported having experienced very turbulent conditions during phases of the flight, and was glad to be back on terra firma to take a breather. At various times he was lost as to his position, being unable to see anything of the ground, and on these occasions the compass enabled him to steer the machine in an upwind direction until such time as he could get a glimpse of something through a thin patch here or there.

After the storm had passed the wind veered to the west and dropped. However, another launch was affected, but owing to the bad angle of the wind in relation to the soaring face of the hill Laver was unable to gain any height, and after making one beat he came in over the top with little height to spare and made a cross-wind landing. In spite of his windward wing being well down he was unable to get rid of all drift with the result that the skid parted company with the fuselage at the forward buffer. However, the damage was slight, and the evening's operations were worth it since DORSLING received an introduction to cloud flying. The machine was towed back to Maiden Newton and camp struck the following week-end.

Saturday, August 18th.—Maiden Newton. In a light westerly wind ten flights were made in the DAGLING, the pilots being Leak (Team Captain), Wright, Fravling, Shelton, and Clewlow.

Sunday, August 19th.—Maiden Newton. Twelve flights in DAGLING in a light N.N.W. breeze. Pilots: Rolfe (Team Captain), Leak, Fravling, Clewlow, and Shelton. Our old friend Langdon was with us and showed us what an agile creature the club car is when in expert hands, darting out from nowhere towards the machine as it alighted, like a spider after a fly that had landed in a corner of its net.

Laver divided his attention between repairing DORSLING's landing gear, and repairing the club funds by extracting shillings for Gliding Handbooks from innocent spectators.

Scottish Gliding Union

Inaugural Meeting

A meeting of members of Scottish gliding clubs and those interested in the further development of the gliding movement in Scotland was held in Miss Buick's Tea Rooms, West George Street, Glasgow, on Saturday, July 7th. Among those present were the Hon. Alan R. Boyle (president of the Glasgow Gliding Club), who took the chair, Messrs. W. Cameron (Edinburgh Gliding Club), A. T. H. Tilston and H. M. Berry (Glasgow Gliding Club), E. T. H. Godfrey and J. W. Gardner (Central Scotland Air Yachting Club). There was also a fair attendance of members of the public.

The Chairman said that the idea of forming a national gliding club for Scotland, for which purpose they had assembled, had long been mooted, but only in recent months had they set themselves the task of constructing the policy to be adopted. There was still a lot to do before they could get settled down to a regular club routine. He added some words of advice to the many non-members of clubs whom he was delighted to see present. Gliding was a pioneering movement, and for that reason they would need optimism if they were to succeed. As an example he quoted his own pioneering work in 1910, when he was engaged in producing and experimenting with the first monoplane to be built in Britain; it had taken him three months to learn to fly, but he had ultimately succeeded on account of his optimism.

The wide interest being taken in the formation of this new body was shown by the amount of correspondence he had received from all over Scotland, as well as congratulations and encouragement from England. But if they were to succeed they must make up their minds to persevere and not allow themselves to be discouraged by any set-backs. He strongly advocated the formation of week-end and summer camps and was hopeful that it would shortly be found possible to establish these. As to Sunday flying, personally he was opposed to it, but he recognised the difficulties of others, so he would ask that no gliding be done on Sunday mornings, as in the summer the afternoons and long evenings would give ample time.

He suggested that they employ an instructor who could also effect all repairs and look after the maintenance of machines. He would be given full authority on the flying grounds, and be assisted by honorary officials elected on his recommendation.

Mr. Tilston drew attention to the splendid facilities now being placed at the disposal of the new recruit to gliding. Every club in Scotland had promised to hand over their entire equipment to the Scottish Gliding Union; this provided equipment which could not be purchased under £1,000. It included almost every type of machine they required. There were five open cockpit primary machines and five intermediate sailplanes, some fitted for auto-tow launching and some for shock-cord. A two-seater dual-fitted machine was to be purchased and in this the pupils would receive their initial instruction.

Sites.

Many gliding sites had been inspected: three at Kilsyth, one at Carronbridge, one at Balfron, one at Falkirk, and two on the Cleish Hills, Kinross-shire. The Kilsyth sites had been tested and were quite suitable for advanced purposes. If this site were selected, it would have to be used in conjunction with the one at Falkirk. The tenants and owners had given every assistance, so the decision lay with club members.

The promoters had gone into the question of finance, and were of the opinion that a subscription of 3 guineas would be necessary, and in addition an entry fee of 10s. 6d. and a day charge of 2s. 6d.

Mr. Gardner then outlined the proposed system of instruction.

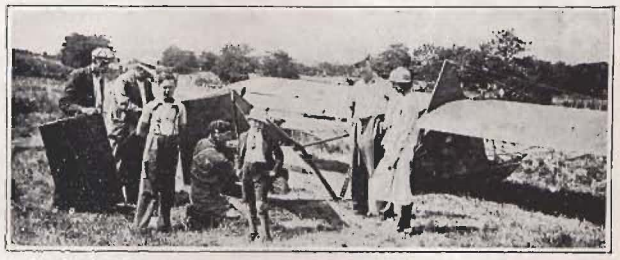
The meeting approved the name "Scottish Gliding Union," and a Committee was appointed to draw up the Constitution, consisting of A. Y. Paton, A. T. H. Tilston, and E. T. M. Godfrey (Glasgow), W. Cameron (Edinburgh), G. M. C. Wightman (Grangemouth), and the following officers: President, Hon. Alan Boyle (Fairlie), Secretary, J. W. Gardner (Alloa); Treasurer, H. M. Berry (Glasgow). These people had all been intimately connected with the movement since its inception in Scotland and before.

Twelve new members were then enrolled.

Guernsey Gliding Club

The two SCUDS owned by the Club are reported to have been both under repair together, but one will shortly be (or is already) flying again.

Whitley Bridge and District Gliding Club



The prime mover in the formation of this club has been Mr. Harold Poskitt, a well-known motor dealer, of Hensall. Some time ago he purchased an old bombing aeroplane, with which he amused himself, but found that running costs were heavy, 30 gallons of petrol per hour being the consumption. So he has turned his attention to gliding.

The club is to serve an agricultural district of Yorkshire, the committee being drawn from Whitley Bridge, Hensall, Askern, Ackworth and Snaith. At the inaugural meeting on June 7th, held in the Station Hotel at Whitley Bridge, Mr. Poskitt was elected chairman. Mr. T. E. Armes is secretary and treasurer, and on the committee are Messrs. H. W. Evans, G. Griffiths, R. Barker, R. Watkins, C. H. Sizer, and Sidney Hall (who has passed the *Daily Express* tests for flying instruction).

Several gliding sites have been inspected, but Brayton Barff, near Selby, has too many trees around it, and Wentbridge Hall, near Pontefract, has 33,000-volt electric cables at the foot of the hill. A second-hand DICKSON with trailer was bought, but needed repairing. The fuselage and tail were completed, but the wings were blown into a sand quarry during a gale and are now almost beyond repair. So a primary was advertised for, and one was delivered to the club one Sunday morning recently by Mr. A. C. Jervis, of Leicester, who stayed to supervise the day's flying. All got off the ground except Mr. Poskitt, who weighs twenty stone. In his second attempt the bucket seat became rather unstable. The secretary was the only one to reach an appreciable height, and on the last flight of the day he found himself heading for some trees and put the nose down too sharply from 20 ft., slightly damaging the machine.

I do not know, writes the secretary, whether this wrinkle would be of any use to clubs, as far as learners are concerned, but I give it for what it is worth. It seems to me that it might be a very useful thing if, during instruction, a stop were affixed, so that a pupil could not put the joy-stick too far forward, and thus prevent nose-diving. The learner does not realise, perhaps until some damage has been done to the machine, that the movement necessary to the joy-stick is so slight.

[The suggestion of fixing a stop to prevent the stick moving too far back (not forward) used often to be made four years ago by club members as they surveyed their damaged machines. But instructors have more experience these days, and pupils who are known to make exaggerated movements are given light launches that do not send them up high enough to do harm. New pupils should be either told to keep the stick central on their first hop, or warned against too sudden movements. These can also be avoided by holding the stick lightly in the hand rather than grimly with the clenched fist; also, sit at ease and do not tense up all the muscles into hard knots, as most beginners do unless told otherwise. If a stop were put on for some pupils and not for others, sooner or later it would get left on by mistake, and what then?—ED.]

Newcastle Gliding Club

The club is struggling valiantly against difficulties. The secretary writes that, after transporting the hangar to Mootlaw and erecting it there, the roof was blown in during the winter, when they were unable to get there owing to the weather, and crashed on the CRAMCRAFT inside and damaged it. The DICKSON has had to be kept in Newcastle, but should be flying again early in September. Mr. Hick's KESTREL will not be completed till early next year. Mr. Allen is building a machine stated to be similar to the RHÖNADLER, with a span of about 57 ft., which should be completed about Christmas.

The new enlarged buildings are expected to be ready in a week or two, after which work can be started on the CRAMCRAFT.

Jersey Social and Athletic Club

We received the DAGLING from Messrs. Slingsby on June 22nd, and were all very struck by her fine appearance and beautiful finish. During the following week we gave ourselves instruction on rigging and uses of control surfaces; then each member was strapped in the seat and had practice with aileron and rudder control with the machine at rest. We also encouraged the pupils to talk to members standing about, during instruction, the idea being to impress on them that until these controls became instinctive they would not be allowed to leave the ground. The tendency was for lateral control to be forgotten for a minute while one thought out the correct rudder movement.

We have no one in the club who has had any previous experience with gliders, so we are labouring under several difficulties.

On **Sunday, July 1st,** however, we carted the machine out to our proposed site and rigged up. In spite of restricted space available, due to unsuitable wind direction, we contrived to have a fine day's sport and about 14 members had an average of 4 shots each. The best distance flown was about 30 yards. We were very impressed with the DAGLING's response to its controls.

We commenced training with two on each side of the rope and no one holding, but we found as the skid got polished that the machine was inclined to start moving forward when about 5 walking paces had been taken. Actually we progressed something like this:—

First Shot: 2 men each rope, 6 paces walking, 1 run, let go (of the machine, not the rope).

Second shot: 2 men each rope, 6 walk, 4 run, let go.

Third shot: 2 men each rope, 5 walk, 6 run, let go.

Then start again and repeat with 3 men and again with 4 men each rope.

Naturally each pupil had to make a satisfactory first stage before going to the second stage. Actually we found that some pupils could be pushed along much faster than this and some reached the maximum in about 6 shots. On our first day out 14 members had shots, 8 reached the maximum and the rest were stopped at various stages for various reasons.

A point which might be worth mentioning is that each pupil had about 4 shots one after the other, as we think this gives a better chance of correcting mistakes while they are still fresh in the mind.

We were very pleased to be able to report to Mr. Slingsby that we had put the machine away intact. Mr. Slingsby has, by the way, given us a tremendous lot of help and we have found his hints *re* the difficulties we would probably encounter and how to overcome them have saved us a whole lot of time and worry, and as a matter of fact we look on him in a way as our invisible instructor. Any little thing we are stuck on, away goes a letter to Scarborough, and back comes the most lucid and understanding advice.

On **Sunday, July 8th,** we carried on with the good work but did not have quite such a good time. After the first 3 hours the wind began to increase in strength, and the machine had a gradually increasing tendency to take off like an autogiro. We had been warned against flying in anything over 20 m.p.h., so we reluctantly tethered the machine and waited for the wind to die down, but eventually had to dismantle it and cart it away.

At present we are housing the machine at an adjacent farmstead, but have quite made up our minds that a hangar is essential. We do begrudge the two hours it takes us to collect the parts, carry them to the field to assemble, and then start to pack up an hour sooner than we need.

On **Sunday, July 15th,** the wind had moved round to west, which suited us, if not as well as S.W., certainly better than the N.E. winds of the two previous Sundays, for it gave us the opportunity of using our longest flat patch. Nothing really spectacular happened, but flights of approximately 75 yards were made.

On **July 22nd** the wind was from much the same direction as before. Again no records were broken, but about 12 members had shots and there is no question that the quality of the handling shows all-round improvement.

Sunday, July 29th.—On looking out at about 6.30 a.m. there was nothing to see but sea haze scudding along at about 100 feet. Fortunately the weather cleared about mid-day and we got in about three hours of steady shooting. Two new members had initial instruction.

Some of our slowness is due to our making a fetish of the machine; we each worry terribly in case we are the first to do any serious damage, but then we do feel that when the wind does come from the right direction we shall really be at home enough with the controls to be able to think about the new conditions we are bound to meet with.

Our damage to date is hardly worth mentioning, for it is confined to a slight split on the skid, which has been repaired, and a new piece of 3-ply for the seat bottom which was dented on our first day out.

There are lots of questions we will have to face as time goes on, but there is one which we are optimistic enough to worry about already and that is retrieving the machine from 300-yard or longer hops. We should be glad to hear from other clubs how they get over this job in the speediest and easiest manner.

Sunday, August 5th.—At long last the wind came from the right direction (S.W.), and stayed there long enough to get in about 6 shots, which were our best flights to date. An Austin Seven was pressed into service for retrieving, since this now had to be done up-hill. Later the wind shifted to south and spoilt things a little.

On **Monday afternoon, Bank Holiday,** only 4 shots were taken owing to shortage of man-power, and rain. But this afternoon is worthy of mention inasmuch as our best timed flight of 10 seconds was made by Mr. Carter.

We have taken delivery of a ZÖGLING from the Manchester Club, and after the necessary repairs to it have been completed we are going to consider fitting a nacelle to our DAGLING and use same for advanced primary training.

[For a completely inexperienced group to carry on for all these weeks without any crashery is an astonishing performance and highly creditable to the Club. We are pleased to be able to print full details of how it was done, for the benefit of the many new clubs who are just starting, or about to start, flying operations.—ED.]

Accrington Gliding Club

The club's HANSEAT primary glider, damaged last March, is now reported to have been repaired and inspected for C. of A. The club members are at present engaged in building a GRUNAU BABY sailplane.

The club secretary, Mr. J. Nolan, has suggested to the Air Ministry that the proposed subsidy should take the form of gifts in kind, such as hangars, and assurance against loss of flying grounds.

Portsmouth and Southsea Gliding Club

Mr. C. Redman writes that, on August 19th, he and Mr. F. G. Enser took the WESTPREUSSEN to Portsdown Hill and were able to give it some test flights, thanks to the valuable and willing assistance of the Portsmouth Club members. (This machine was used in Messrs. Lyons' demonstrations in 1931, but was then crashed, and was not repaired until Mr. Enser took it in hand some months ago.) The wind was blowing up the Portsdown ridge, but had dropped by the time the machine had been rigged. However, Enser did three test hops, he having never flown a large-span sailplane before. On one of them he was able to keep going for some distance, and, just when it looked as if he would land, he found some uplift, giving him sufficient height to carry over the bushes and fence to a clean landing in a field of stubble, the whole flight showing nice handling under none too good conditions.



The "Westpreussen," just before a flight at Portsdown.

Leicestershire Air Sports Club

Training has been going on continuously every Sunday, with the exception of August Bank Holiday week break. Week-end camps have been held now for five or six weeks and will be continued whilst the weather is suitable; this allows of flying on Saturday afternoon and an early start on Sunday morning. We introduced a winch on June 17th; after extensive tests it was used for training, and no other method of launching has been used since. All training, from ground-sliding onwards, is done with the winch, and over 300 training flights have now been made with this method. Sunday, August 19th, we managed to get in 60 flights in the day. An open type quick release hook is used.

Since the advent of the winch, members have made such great progress that at the last Special General Meeting it was decided that a Secondary type machine is now essential, and every effort is being made to raise the very necessary £ s. d. for an improved machine.

Proposed Club for the Midlands

Soaring Flights at Long Mynd

A gliding club for the Midlands is in course of formation. It is hoped to start with at least 100 members, but in any case a minimum of 50 will be required before beginning operations We understand this figure is already almost reached. The club is to be centred on Birmingham, but many applications for membership have come from surrounding towns.

An excellent soaring site has been obtained in the Long Mynd, just west of Church Stretton and about 15 miles S.S.W. from Shrewsbury. There is an almost straight ridge, over four miles long, with an average height of 800 feet above the bottom, and facing about W.N.W. (The history of its acquisition is very like that of the London Club's site at Dunstable Downs, in that a launching site was obtained from a friendly farmer in spite of the rest of the soaring ridge being in hostile hands.) It must be one of the safest sites in the country, since there are no trees, no stone walls, no rocks—nothing but flat, even heather for five miles along the top. For landing near the starting place, a clearing has been made in the heather 15 ft. wide by 50 yards long, slightly up hill.

On **Saturday, August 11th**, a small party of pilots had a good day's soaring there with Mr. Hardwick's BRITISH FALCON II. F. Slingsby started off with a flight of ¾-hour, in which he got up to 1,200 ft. above the top. Subsequent flights were: C. E. Hardwick, 33 minutes, 600 ft.; H. T. Testar, 23 minutes, 650 ft. (which got him his "C" certificate—the first to be obtained on this site); Slingsby, ½-hour, 7-800 ft.; Hardwick, 20 minutes, 900 ft. All landed within 100 yards of the start.

Mr. Hardwick proposes to have his FALCON there again during the week-ends, September 15th-16th, and 22nd-23rd, and would be pleased to see any other pilots with their machines. Anyone wishing to use the site at other times should first write to Mr. Hardwick.

The Hon. Secretary of the proposed Midland Gliding Club will be Mr. H. T. Testar, of 80, Gibson Road, Handsworth, Birmingham, to whom those interested should write. The proposed subscription is £3 3s. per annum, entrance fee £1 1s.; non-flying members, £1 1s. per annum and 10s. 6d. entrance fee.

A primary training ground is to be obtained within 5 miles of Birmingham, while the Long Mynd will be the club's soaring ground.

A Club for Derbyshire

THE "Derbyshire Gliding Club" is reported to have been formed and to possess already 20 members, among whom is Mr. G. O. Smith, "C" pilot, of the London Gliding Club, who lives in the district. The Club has ordered a training machine, and is negotiating for a ground about 15 miles from Derby. The Secretary is Mr. R. E. Garner, of Highfield, West Avenue, Shelton Lock.

Official Notices

Council Meeting

The 60th Meeting of the Council of the British Gliding Association was held on July 16th, 1934, at 6 p.m. Present: Mr. C. E. Hardwick (chairman), Sir G. T. Walker, Messrs. W. O. Manning, S. Whidborne, C. Bergel, A. H. Reffell, E. G. Sanguinetti, R. C. Rainey, A. E. Slater, L. Howard-Flanders, D. M. Morland, W. W. Briscoe, C. H. Latimer-Needham, J. G. Grice, P. A. Wills, and A. N. Stratton.

New Members.—The following were duly elected to membership: Major H. Petre, Messrs. J. R. Ashwell-Cooke, S. Humphries, C. Fisher.

The "Sailplane and Glider."—Mr. Wills reported that the negotiations with Mr. H. O. Davies for taking over THE SAILPLANE had been brought to a successful conclusion and the final agreement duly ratified by the chairman.

Duration Record.—A letter was read from the Royal Aero Club confirming the British duration record of 8 hours 8 minutes, made at Dunstable on May 14th, by Flying Officer E. L. Mole.

Sutton Bank 1934 Competitions.—The recommendations of the Contest Committee were agreed to after being slightly amended.

The meeting was adjourned *sine die*.

Special General Meeting

A Special General Meeting of the British Gliding Association was held on July 16th, 1934, at 6.30 p.m.

The chairman referred to the sad loss that had recently been sustained by the movement in the death of Mr. Louis Desoutter, and the meeting stood in silence for a few moments as a token of sympathy.

Rules Committee's Recommendations.—The recommendations of this committee, which had been set up by the Fourth Annual General Meeting to reconsider the rules of the association, were discussed at great length. A proposed alteration to Rule 10 was found to be already incorporated elsewhere in the rules, so was deleted.

It was proposed that the remaining recommendations of the committee (which concerned the composition of the council) be adopted. This proposal secured 17 votes in its favour (including 5 by proxy) and 14 against; it therefore failed to obtain the requisite two-thirds majority. A proposed alteration to Rule 16 was carried, that the members (Founder, Ordinary, Life and Honorary) of the association, collectively shall be entitled to one member on the council for every 20 or part of 20 such members. (Formerly the representation was one for every 5, and the committee had proposed one for every 100.) The remaining alterations recommended were then accepted, with the omission of the alteration to Rule 15 affecting the vote of vice-presidents. (This was that vice-presidents shall vote by invitation of the chairman. The rule allowing the inclusion of "such other persons as the council deem fit to co-opt" had been amended by the addition of the words "for technical purposes.")

The meeting was adjourned at 10.15 p.m.

"MALLITE" or "APPCO" WATERPROOF
SPECIAL GLIDER- **PLYWOOD**
Manufactured by the
AERONAUTICAL & PANEL PLYWOOD Co., Ltd.
218-226, KINGSLAND ROAD, LONDON, E.2
Telephone: BISHOPSGATE 5641

NOTE

Place your orders with the Firms who advertise in these pages.

For Advertising Rates in this Journal please apply to the Publishing Offices, 13, Victoria Street, S.W.1

GLIDER ELASTIC LAUNCHING ROPES

for full particulars please write to the Sales Director:—

LUKE TURNER & Co., Ltd.
LEICESTER

Contractors to H.M. Government

The best known and most used sailplane in Germany is the

Grunau Baby II

It was in a machine of this type that Schmidt put up a **World's Duration Record of 36 hours.**

Numerous distance flights of up to 100 MILES have been achieved with it. It has been passed for **Unrestricted Aerobatics.**

The *GRUNAU BABY II* is being flown in ARGENTINE, CZECKOSLOVAKIA, HOLLAND, IRELAND, RUMANIA, and SWITZERLAND.

Every 3 Days another *GRUNAU BABY II* leaves the stocks.

Price ex Works - - **RM. 1350**

Delivered at Hamburg including crate for shipment **RM. 1650**

FLUGZEUGBAU SCHNEIDER, GRUNAU, RSGB, GERMANY

YOUR INTEREST *and* HELP *are* NEEDED

to secure the fullest possible development of gliding and soaring in this country.

Join the British Gliding Association and Join a Gliding Club

Particulars of your nearest or most convenient Gliding Club can be obtained from the Hon. Secretary of the Association (please enclose stamped addressed envelope).

The following is a representative list of Clubs possessing soaring sites:

YORKSHIRE GLIDING CLUB. *Sec.:* A. COX, Overdale, Boston Avenue, Kirkstall, Leeds. *Sites:* Hawksworth and Sutton Bank.

DORSET GLIDING CLUB. *Sec.:* J. LAVER, 9, Commercial Road, Weymouth. *Sites:* Maiden Newton, etc.

FURNESS GLIDING CLUB. *Sec.:* H. S. GROSS, 106, Greengate Street, Barrow-in-Furness. *Sites:* Ireleth, etc.

LONDON GLIDING CLUB. *Sec.:* H. O. DAVIES, 13, Victoria Street, S.W.1. *Site:* Dunstable Downs, Beds.

SOUTHDOWN GLIDING CLUB. *Sec.:* A. YORK BRAMBLE, 3a, First Avenue, Hove. *Sites:* Steep Down, Lancing, etc.

ULSTER GLIDING & AVIATION CLUB. *Sec.:* N. P. METCALFE, The Ulster Spinning Co., Ltd., Belfast. *Sites:* Magilligan Strand, Co. Londonderry, etc.

THE BRITISH GLIDING ASSOCIATION, LTD.

19, BERKELEY STREET, LONDON, W.1

CAMP IN COMFORT IN THE TENT OF TENTS



THE IMPROVED
"750"
PNEUMATIC TENT

A HOME FROM HOME IN FOUR MINUTES.
It practically erects itself and is now guaranteed the Most Perfect Tent in the World.

PRICE **£7 10s.** inclusive.

Liberal Discount to Club Members, Scouts and Kindred Associations. Size 7 ft. × 7 ft. × 6 ft. 3 in. high = 8 ft. high ordinary tent. Fitted with Window to open or shut, Coathangers, Pockets, Zip Fastener Door, Sunshine Roof, and has **No Poles.** Weighs only 18—20lbs.

FOR THE CAMP, GARDEN OR SEASIDE.
FULLY GUARANTEED.

PNEUMATIC TENTS,
26, Recreation Road, Guildford, Surrey.

ELLIS'S HANGAR

(No. A7)
£107 10 0



As supplied to many Gliding Clubs for the efficient housing of Sailplanes, Gliders and Small Airplanes. Carriage paid within 100 miles of works. Easy terms arranged.

SPECIFICATION 50 ft. long, 30 ft. wide, 8 ft. to Eaves, 15 ft. 6 ins. to Ridge. In complete sections for easy erection. Walls ¾ in. T.G. and moulded weatherboards on 3 × 2 framing. Iron-bound principals to roof, strengthened with iron tie rods and brackets. T. and G. boarding covered good quality roofing felt, finished with barge boards. Three windows, each side, 21 oz. glass. Max. door opening fitted each end single hinged doors and removable shutters.

Ellis's GARAGES



Other models include:
"Marvel" from £3 10 0
"Super" from £4 5 0
"Hendon" from £6 10 0
"Reliance" from £8 10 0
"Italia" (all steel) from £8 16 0
"Villa" from £10 11 6

From **£12/5/6** **The 'RAINHAM'**

12'x 8'x6'x 8'	£12	5	6
14'x 8'x6'x 8'	£13	13	6
16'x 9'x7'x 9'	£17	13	0
20'x10'x7'x10'	£22	6	3

Available on Easy Terms
Carriage paid in England and Wales.

Strong framing with 1 in. weatherboards to string course. Upper portion of asbestos sheets with broad wood overlays. Roof framed of principals and purlins with covering of Italian Pattern Galvanised Iron. Half glass doors strongly framed and braced. Despatched in sections, all nuts and bolts supplied.

Send for FREE CATALOGUE

G. ELLIS & CO. Bell Wharf, Gainsborough Road — London, E.9

"... unless you have *Confidence* in yourself and your machine, you cannot hope to be a successful sailplane pilot."

The
Strength & Reliability of Slingsby Sailplanes Inspire Confidence

ALL TYPES OF MACHINES, SPARES, MATERIALS AND TRAILERS

Improved Primary Trainers, complete with C. of A. ex works **£52 : 10**
(Special prices for quantities)

F. SLINGSBY
QUEEN ST., SCARBOROUGH
Telephone: 660

Maker of the well-known British "Falcon" series

The RICE CARAVAN

IS EASY TO TOW ANY WHERE

•

HIRE AT LOW RATES

•



An instantaneous movement develops the widest caravan on the market from a neat little trailer. Plenty of space and every facility. Luxurious beds. Sink, stove, cupboards, lockers, table, etc. Absolutely weatherproof.
Write mentioning "Sailplane."

2 Berth Standard (shown above)	69 gns.
2/3 Berth Long Standard - -	78 gns.
3/4 Berth Major - - -	88 gns.

RICE CARAVANS
Gargrave (26) SKIPTON
London Depot: 231, Westbourne Grove, W.11 (Bay 4685)

BRITAIN'S LEADING SAILPLANE

The A.B.

SCUD II

ALL BRITISH DESIGN AND CONSTRUCTION



£125 AT WORKS
Inc. C. of A. and A.S.I.
TRAILER £45

Our newly equipped glider works, staffed by picked aircraft craftsmen, is in a position to undertake any type of glider construction or repair work.

PRIMARY TRAINERS £52 10s.
Inc. C. of A. AT WORKS

MATERIALS, SPARES AND EQUIPMENT

FROM A SCUD PRIVATE OWNER

Dear Sirs,—Thank you very much for doing the work free for the renewal of the C. of A.

It may interest you to know that during the last two years my Scud has been flown at Askam near Barrow-in-Furness, at Dunstable, Ingleby Greenhow in Yorkshire and Sutton Bank in Yorkshire, from near Alston in the Pennines and from the South Downs.

The handiness of the Scud made these expeditions easy, and its robust construction was needed for the heavy landings that sometimes occurred in strange places.

You must have heard already of its flying qualities, efficiency and manoeuvrability.

May I say, therefore, how pleased I am to have this excellent sailplane, and how much pleasure I have had from it.

If this letter is of any interest and you would like to use it, please do so.—Yours sincerely.

● **STRENGTH** The only repairs required for C. of A. renewal on above machine after two years: repainting fittings.

● **EFFICIENCY** An A.B. Scud II recently attained an official British height record of 6,000 feet, and flew 35 miles cross country.

● **PORTABILITY** The most practical sailplane ever designed. Easiest to erect and launch. May be operated by two men and car.

ABBOTT-BAYNES SAILPLANES
FARNHAM . SURREY. - Tel. Farnham 682

GOLDEN FLEECE HOTEL

R.A.C. THIRSK **A.A.**

Headquarters Gliding Community

LUNCHEONS TEAS DINNERS

E. LEE, Proprietress

Telegrams: FLEECE, THIRSK *Telephone*: 8 THIRSK

BARGAINS

you should not miss

Each on approval for a small Deposit

Post Coupon To-day!



Reliable and Smart Lightweight Mac

MO 31 Stylishly cut in lightweight Indiana fabric, this 3-piece Coat allows ample walking room. It embodies a bold storm collar to button and all the seams are taped and the buttons stayed. Ideal for the "outdoor" man. Reliably proofed and finished.
Colour: Fawn. Sizes: (Chest and Length) 36"/43", 38"/45", 40"/46", 42"/46", 44"/48"

Bargain Price 10/6

On approval for just **1/6** deposit, refunded in full unless you are satisfied. Balance **2/6** monthly, if preferred.



Heavy Rubber Boot

MB 43 Made to give long and efficient service. Grey uppers, grey coarse diamond soles, knurled foxing, friction lining. Invaluable where water or excessive damp is encountered. Health's finest safeguard. Sizes range from 6 to 11 (no half sizes).

Bargain Price 18/3

On approval for just **2/-** deposit, refunded in full unless you are more than pleased. Balance **3/6** monthly, if preferred.

SPECIAL BARGAIN OFFER

MB 43 DETAILS	MO 31 DETAILS
Size	**Chest** .....
Sizes 6 to 11 (no half sizes)	**Length** .....

PLEASE send me, on approval, article indicated at Present Bargain Price stated above.
I enclose the necessary deposit, together with **6d.** for postage, and will pay balance of price either in one sum or by the stated monthly instalments. If I return the article unworn at once, you will refund my deposit.
Enclose Coupon with full name and address and Postal Order crossed thus / /. *Overseas and Irish Free State, full cash only.*
Sailplane & Glider. September, 1934. No. 899.

AMBROSE WILSON, LIMITED
899, Ambron House, 60, Vauxhall Bridge Road, London, S.W.1

Maintain Good Health . . .



Guy's Tonic builds up Energy banishing 'Nerves' & Lassitude

FOR many years Guy's Tonic has enjoyed a unique reputation as the ideal Tonic and Restorative for all forms of Nervous and Digestive Disorders, and General Debility.

Famed for a generation—Guy's Tonic maintains good health. There is no tonic so good to build up stamina after illness or to create the vitality necessary to resist prevalent epidemics of coming winter months. Get a bottle to-day, the cost is small.

From all good Chemists, price 1/3 & 3/-
Also in Pastille Form in 1/3 & 3/- tins

GUY'S TONIC

Famed for a Generation

272, LAMBETH ROAD, LONDON, S.W.8

Published by H. O. DAVIES, 13, Victoria Street, London, S.W.1, and Printed by HICKS, WILKINSON & SEARS, 4, Dorset Buildings, Salisbury Square, E.C.4.