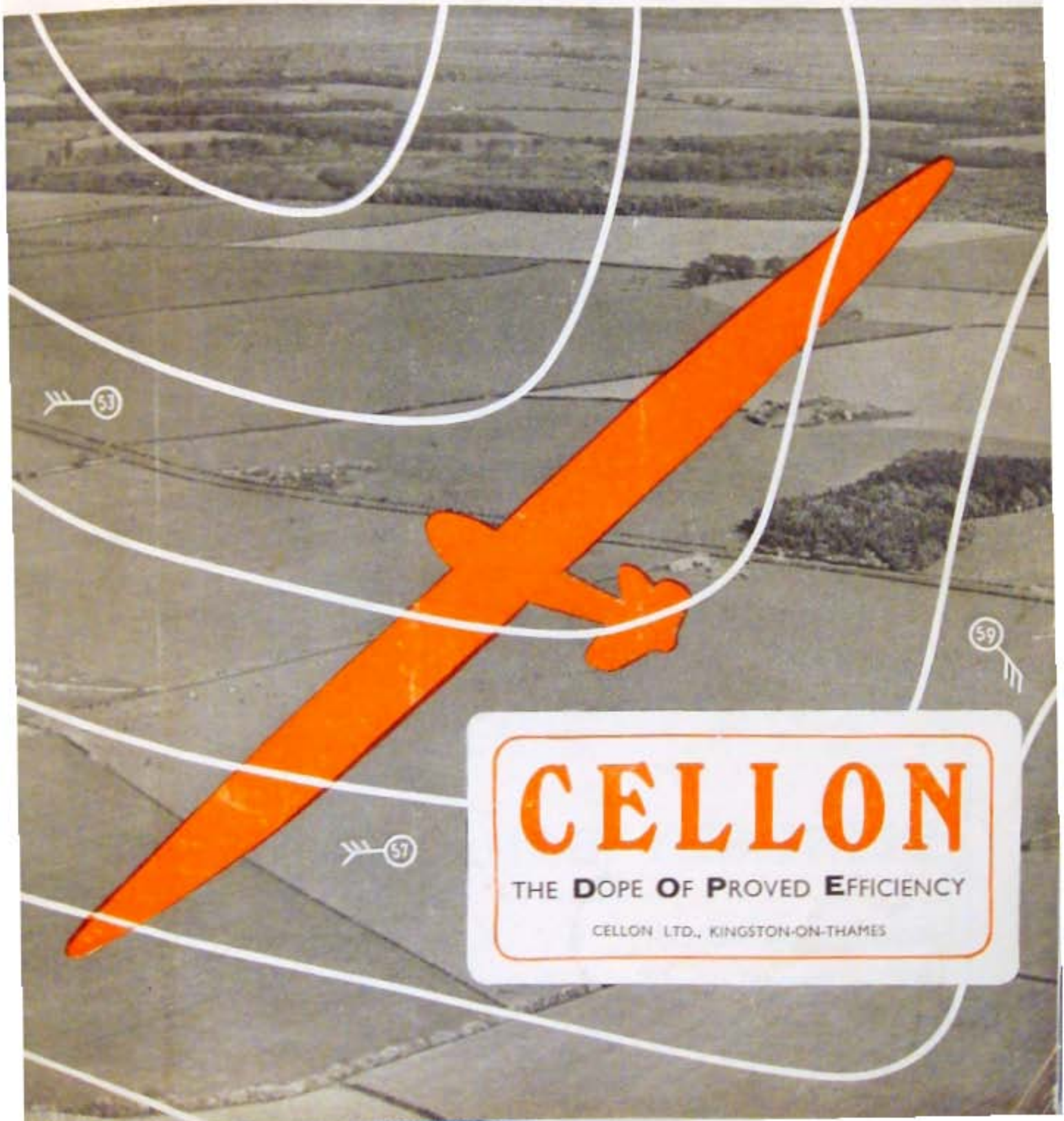
SAILPLANE AND GLIDER

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Official Organ of the British Gliding Association

EDITED BY ALAN E. SLATER



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THE SAILPLANE *and* GLIDER

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Editorial Offices: 13, VICTORIA STREET, LONDON, S.W.1 Telephone: ABBey 2615

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"Verboten"

IN Germany gliding is again in full swing. A report published in the *Daily Telegraph* on December 9th showed that 100,000 boys from 15 to 18 years old are being trained up to "C" certificate stage.

In Great Britain and Northern Ireland (but nowhere else in the British Empire) gliding is banned. On this page is reproduced a letter from the Directorate of Civil Aviation. It will be seen that this letter goes out of its way to mention that even ground-hopping, which can harm no one, is included in the prohibition. The authorities have the power to stop all gliding and have therefore stopped it.

It is, alas, of no use to protest that those of the world's workers who fly for recreation have as much right to fly in their spare time, in so far as they do not incommode the Armed Forces, as Mr. Chamberlain has to fish. Our propagandists have exhibited the ground-hopping of Cadets as the crowning glory of ten years' development of British sailflying, with the result that any authority who considers this of no "national value" is thereupon unable to see why anybody should ever fly a glider or a sailplane at all.

The uses of gliding as a preliminary training were stressed by several correspondents of the *Telegraph* as a result of its announcement; for instance, that it is "an economical way of selecting the temperamentally unsuitable from among would-be aeroplane pilots already selected as physically fit." An anti-gliding leading article in *Flight* (using arguments in which that paper demonstrably does not itself believe) called forth another correspondence. One sound idea put forward was that the best pilots have got the spirit of the air into their blood, and that sailflying is *par excellence* the way to achieve this. Thus Mr. Hardwick (though in different words, which we have not by us at the moment).

We have just received from the chairman of the Yorkshire Gliding Club the draft of a memorandum which, it is suggested, should be submitted to the Air Ministry on behalf of all the clubs. The first part points out that if the organisation which has been built up were to be suspended for the duration of the war, "the whole of what may be described as the culture of gliding would perish, and could only be built up again at great expense by the laborious processes of the last ten years," and recommends the granting of permission to fly within limits and the continuance of the subsidy for a trial period of one year.

The second part of the memorandum advocates the institution of gliding and lecture courses of a month's duration for Air Defence Cadets, to be run on service lines by a special branch of the R.A.F. Volunteer Reserve.

Meanwhile, those clubs which can are trying to keep alive by other means, and some are succeeding. The secretary of the Newcastle Club suggests that ideas for such activities should be sent to THE SAILPLANE for everyone's benefit; his own club is, for instance, trying to run a construction group.

Just as we go to press, the *News Chronicle* has an exclusive announcement that the gliding ban may be removed "for the summer months." Unfortunately the Air Ministry, telephoned by the B.G.A., replied that they knew nothing about it.

British Gliding Association

Prohibition of Gliding

The following letter from the Air Ministry, dated January 5th, 1940, has been received by the Secretary of the British Gliding Association:—

SIR,

I am directed to refer to the semi-official letter, addressed to you by the Director-General of Civil Aviation on 26th September, 1939, on the subject of gliding.

In this matter it has been brought to the notice of the Department that some Gliding Clubs are under the impression that certain forms of gliding are permissible. I am accordingly to inform you that the prohibition of flying or attempting to fly under the Air Navigation (Restriction in Time of War) Order, 1939, covers all forms of gliding, and that it has not been found practicable to grant a dispensation for gliding or any kindred activity. This decision applies to the form of gliding known as "ground hopping."

I am to ask that you will be good enough to convey this information to the Gliding Clubs and to say that, after a careful and sympathetic review of all aspects of the question, the Department regrets that the National requirements leave no alternative to a cessation of the activities of the Gliding Clubs, other than those of a social nature.

I am, Sir,

Your obedient Servant,

DIRECTOR OF HOME CIVIL AVIATION.

From Here and There

Italian Record.—The former Italian soaring duration record of 8 hrs. 21 mins. has been raised to 9 hrs. 10 mins. by Constantine Gada, according to a Press report published on January 10th.

* * *

A Loophole?—It is announced that "Owners of civil aircraft who wish to remove their aircraft to another location for purposes of storage must obtain from the Director-General of Civil Aviation a Permit to Fly." In present circumstances this would seem to be the only legal method of making a cross-country flight in a sailplane.

* * *

Second-hand Gliders.—Enquiries for second-hand gliders are reaching the British Gliding Association from overseas, and those who have any for sale should send particulars and price to the Secretary of the B.G.A. at 119, Piccadilly, London, W.1. Better still, make sure of catching the market by advertising in THE SAILPLANE.

* * *

Christmas Cards.—Among the many Christmas cards gratefully received, not more than one had been produced as a sailflying picture—such, alas! are the times we live in. This, as befitted the season, was a truly international card, for it came from Wally Setz, of U.S.A., and showed a Swiss sailplane flying in Germany at the 1937 International Contest.

* * *

Artificial Thermal.—When half the city of Shizuoka, in Japan, was destroyed by fire on January 15th, a pilot who was crossing it in an aeroplane reported that the heat was intense at a height of 5,000 ft. The fire, which broke out in the morning among some wooden houses, was fanned by a strong northerly wind, and was only got under control in the evening.

* * *

Unlawful Assembly.—Albert Racicot, who owns a private flying field near Montreal, missed some parts from one of his aeroplanes. Next time he looked in the hangar, two wings had gone from another, so he informed the police. A search revealed the culprits as two Montreal boys, who told the police that they had hoped to assemble a glider from the stolen property.

* * *

Censored Weather.—British weather is censored until it is two weeks old, but observations from Eire and Iceland are still available to Germany, says the *News Chronicle* Air Correspondent, who adds: "In our weather department the limited information which is available to Germany is supplied to an expert forecaster who does not know the rest of the story. He prepares what might be the German weather chart. The 'German' chart and forecast are then compared with the British." Meanwhile the following letter has appeared in the *Daily Sketch*: "Sir,—I was surprised to read in the *Daily Sketch* a suggestion that we should resort to deceiving the enemy as regards our weather at home. Would that not be to lower our standard to that of the enemy?—Lover of Truth."

Midland Cadets' Certificates

In the last issue of THE SAILPLANE the figures of Air Defence Cadets trained by the various clubs and the number of certificates gained by each club were given. These figures were taken from *Flying*, which was known to get its information on such matters direct from the Air League; but it turns out that they were inaccurate, at least as regards the Midland Club. The president of the club sends us the correct figures, which are:—



Where the Midland Club's cadets were trained on the Long Mynd, Salop. From left to right: the original hangar (including clubhouse); marquee for cadets; and the new Primary hangar which includes dormitory accommodation for 22, including 6 ladies. The sock shows a soaring wind from the west.
[Photo by W. E. Hardwick.

MIDLAND GLIDING CLUB.

Cadets trained	50
"A" certificates obtained	21
Percentage gaining certificates	42

Thus, among the eight clubs which trained cadets, the Midland comes second only to the Cambridge club, whose percentage was 48.

The Midland Club's figures per squadron were: Bath Squadron, 50%; Islington Squadron, 60%; Cardiff Squadron, 100%. Wembley and Mostyn Squadrons struck such rough weather that certificates were impossible, but in their case every boy and officer had at least 1½ hours' dual instruction in the Two-seater.

Out of five Cadet Officers, two gained "A," "B," and "C" certificates.

The "Baby Albatross"

In the last issue of THE SAILPLANE, at the bottom of the article on the American Contest (page 224), appeared a statement that "the BABY ALBATROSS is in the same class as the WOLF or KESTREL, but slightly inferior to either of them." Mr. Henry Wightman, general manager of the Soaring Society of America, writes to correct this statement, which is contrary to his belief and was probably due to his not having read the manuscript after dictating his article.

The BABY ALBATROSS, he writes, is somewhat slower than either of the types mentioned, but has, very probably, a much lower sinking speed. It is, from all reports, ideal for use where the weather is unfavourable. It holds the American distance and goal flight record of 263 miles, and altitudes of over 10,000 ft. have been made with it.

We hope to get a description of the machine from the manufacturers, the Bowlus Sailplane Co., so will defer publishing further details till then.

News from South Africa

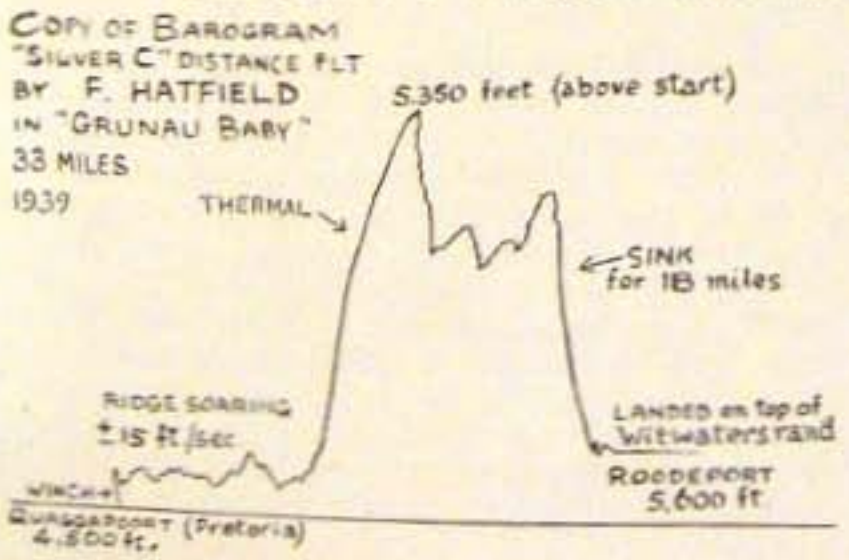
By A. H. YATES

[That there is at least one part of the British Empire where sailflying is going strong, is shown by these extracts from a letter to Mr. P. A. Wills from Mr. Frank Hatfield, of the Rand Gliding Club. Mr. Hatfield will be remembered for his delightful account of a South African National Rally which was published in THE SAILPLANE *just over a year ago. Mr. Wills's visit to South Africa with a* KIRBY KITE, *referred to by the writer, took place in October, 1936.]*

HJORDIS, you will be pleased to hear, after being bust in October with bad ailerons and a cross-wind landing, has been repaired by Everard Domisse of our club, and put in the air again. At first she wanted a lot of handling, and an aileron flap was composed out of a biscuit tin to overcome a tendency for the left wing to misbehave. Domisse, who has flown her a good deal, complained that she had no pretensions to stability, and was nicely bitten on one occasion when she spun off a turn. (Note.—Earnest efforts on my part failed ever to get a spin out of HJORDIS at our lower altitudes.—P.A.W.) He made some nice cross-country flights and marvelled at her ability to turn on a sixpence and soar in no wind at all.

Then he decided to cut the wing-roots and pull them up a 32nd of an inch, rewelding the cut and adding a safety bar across. This raised the wing-tips four inches and gave a sort of dihedral in place of the suggestion of anhedral which she had. HJORDIS is now beautiful. Aileron trouble is cured, she is as sweet and stable as could be, to everybody's great comfort. Apparently her rigging had been the trouble all along. Domisse is going to go after his "Gold C." He now lands on top of the hill where you used to rig your KITE. It has been cleared and is about the size of a tennis court. It is all right in an emergency, but we will not permit it even for our crack spot-landers.

I got my "Silver C" in a GRUNAU BABY, that ancient machine which Pidsley flew when you were here. I scrambled 33 miles across country and landed in some outcroppy sort of country amongst power lines and a barbed wire fence. I didn't get a hint of a thermal for 18 miles in a sky as clear as it could be—no cumulus at all but a strong wind. I managed it with some very rough ridge-soaring, a decent thermal and a couple of kicks. The enclosed barogram tracing is interesting only for the rough ridge soaring—bumps off those rocks in hot weather are plain murder, and the lovely thermal to 5,300 ft. odd without a flicker. The flight was done late in the afternoon. We used to reckon we could get away not later than 13 hours and fade out by 15 hours, but this year we were in the air much later. Dr. Redge Rainey (of Dunstable) did a horrid bit of slope-soaring over a mine dump over some very built-up country criss-crossed with power lines in order to wring enough lift out for a glide to Baragwanath Aerodrome. He got in by flying through the top strands of the fence. It was a stout effort. He has done some remarkable work in conditions when we were all down and stayed down. Last year he landed on a fashionable golf course next to a 12-story block of flats and some 50 ft. gum trees.



A recent expedition to Mulders Drift—a text-book soaring ridge 1,000 to 1,200 ft. high and at least 14 miles long—suggests that this is our future site. There is a clear sweep of 30 miles from Pretoria without obstruction. The countryside is rich in thermals and even the swallows soar. The weather is always different there, and I am sure the huge escarpment affects it. There is a lot of development work to be done—anthills, rocks, and huge suga bush. But when we are there we'll be home, with whopping flights of 6,000 to 8,000 ft. in the bag nearly every Sunday. And it's six to eight miles from Jo'burg instead of nearly 40.

Our flying is greatly improved. I am the fourth South African to collect a "Silver C," the others being Domisse, Peirce, and Rainey. The Germans have five or so. I don't suppose I will ever see the badge though. What is the position with the headquarters of the F.A.I. in Paris and the Maginot and Siegfried lines and a lot of unfriendly persons between them and their sub-committee ISTUS?

FRANK HATFIELD.

New S.A. Height Record.—Just as we go to press, the *Evening Standard* publishes news of a flight in the HJORDIS by Mr. E. Dommisse, by which he climbed to 12,000 ft. above Quaggapoort, which is itself 5,800 ft. above sea level. The account says that he took off at 10 a.m. and landed at 5.20 p.m., and continues: "After he had left Quaggapoort Mr. Dommisse had to struggle for about six hours before he was in a position to attempt the record. Over Quaggapoort he could not see any cloud likely to give him any big lift, but he noticed that conditions were better over the Reef, so he headed in the direction of the Rand Airport. Immediately above the airport he saw a cloud which would give him plenty of lift. He entered it at approximately 8,000 ft. above ground level, and circling, finally came out at 12,000 ft. The flight was the more remarkable because Mr. Dommisse had no blind flying instruments, but managed nevertheless to fly blind with the aid of his air speed indicator and cross-level bubble."

Ten Years Ago

THE FIRST BRITISH PRIMARY

[In January and February, 1930, about a dozen British gliding clubs were in process of formation, but only one of them, the Kent Gliding Club, reached the flying stage. Miss R. H. Sinclair, the club secretary, describes below this historic occasion. In January Lord Wakefield gave the B.G.A. £1,000; in America Hawley Bowlus at San Diego raised the national duration record to 6 hrs. 19 mins., and Edward B. Heath looped a glider four times after an aero-tow. In February Professor Georgii and Herr Stamer came over to lecture to the Royal Aeronautical Society on ten years' experiences at the Wasserkuppe; the B.G.A. announced its intention of "charting the air"; and Ralph Barnaby in U.S.A. made the first glider descent from an airship.]

"DESIGNED, built, and flown in five weeks"—such was the beginning of "B.G. 101," the first Primary to fly in England. The late C. H. Lowe-Wylde was determined to prove that it was not essential for a machine to be brought from Germany to inaugurate the revival of gliding in this country, and shortly after forming the Kent Gliding Club on January 4th, 1930, he and five other stalwarts set to work on the ZÖGLING-type machine which he designed.

They worked every evening and well into the small hours in a big room at the back of the Nag's Head Inn in Maidstone, and finally COLUMBUS was declared ready for its test flights. (Those who knew "Jimmy" Wylde will remember his colossal drive and energy, and will appreciate the amount of work which was put into those few weeks.) The machine was exhibited partly-rigged in the show window of Messrs. Haynes Bros., and a notice was put up to say that an attempt would be made to fly on Sunday, February 23rd, at Detling. The day arrived, and COLUMBUS and its escort approached the aerodrome to find the roads crammed with motorists, cyclists, and pedestrians—to say nothing of the Press—a positive Derby Day traffic jam, all hoping, apparently, to see the "intrepid" COLUMBUS soaring some 5,000 ft. or so above their heads.

No one was quite sure as to how COLUMBUS was to be persuaded to take the air, and eventually a crew was lined up "in line ahead" with a single bungy. The first few launches resulted in slides and hops, but finally a flight (maximum length 30 yards, maximum height about 10 ft.) was made, and the first British club-built Primary had flown. The enthusiasts (among whom were members of the newly-formed London Gliding Club, including Capt. Latimer-Needham and Mr. Ashwell-Cooke) were duly satisfied, but unfortunately the crowd was not, and a riot nearly developed; so much had been expected (though not promised) that the disappointment was very great, and gliding in Kent received a setback that took a long while to live down.

The subsequent history of COLUMBUS included visits to Itford, Guildford, Ivinghoe, Portsmouth, Ditchling, Folkestone, Wingham, and Eastchurch, two outstanding flights (for a Primary in 1930) being those made from Itford Beacon (a 600 ft. drop) and Caesar's Camp at Folkestone. At Itford Beacon an R.A.F. pilot flew COLUMBUS straight down the hill almost "following the contours" in what must have been the nearest approach to a T.V. dive a Primary ever got away with. The speed was estimated at 70 m.p.h.

COLUMBUS was later joined in the Kent Club's hangar by the first B.A.C. machine (B.A.C. I) and a B.A.C. IV and VI. Shortly before war was declared the club acquired a KADET and had one of the Chryslers converted into a winch. COLUMBUS was still in use for training flights up to the outbreak of war—it has had many minor modifications in its long life, but except for the conversion to strut-bracing and the replacement of the rudder by one of an improved type in 1931, the machine still has its original main components and is waiting rigged in the hangar. Only the present hostilities have prevented the completion of this doughty veteran's ten years of flying.

R. H. SINCLAIR.

Book News

Lewin Barringer's Text-Book.—Mr. L. B. Barringer, third American "Silver C" and first editor of *Soaring*, has been working on a text-book of sailflying, in collaboration with other American experts, and it should be ready for publication any day now. Mr. Ivanoff, who visited America recently, brought back a prospectus of the work which arouses great expectations. Mr. Barringer himself writes on launching methods, soaring technique, the future of gliding and soaring, etc.; Karl O. Lange on meteorology; Charles H. Colvin on instruments; Paul and Ernest Schweizer on design, construction, and maintenance; H. Randers-Pehrson on history; Milton Stoughton on aerodynamics; and a voluminous appendix contains a list of American and British clubs and "Silver C" pilots, list of records, bibliography, glossary and other matter. The publishers will be the Pitman Publishing Corporation, 2, West 45 Street, New York City, and the title "Flight Without Power."

Aviation in Four Tongues.—We have received from Messrs. Gale & Polden, Ltd., Aldershot, the prospectus of a "Quadrilingual Aviation Phrase Book," by H. J. Day. The specimen page given, which carries us from "Enough bank" to "Faulty running," contains only one misprint: *Aufnehme* for *Aufnahme*, meaning "Exposure (photo)." "Faired" is rendered *reveté*, *revestido* (Spanish), *verkleidet*, all of which mean literally "clothed," which may be good enough in most contexts, though a fairing is more than its clothes, and other parts of aircraft are clothed besides the fairings. The book will certainly justify the claim in its Foreword, which is (you've guessed it) "to satisfy a long-felt need."

Conversion of a Glider Pilot

By P. A. WILLS

(Reproduced by permission from "Aeronautics")

THE onset of war has meant largely the suspension of flying for fun, for most of us anyway; and many glider pilots have taken on serious flying jobs. The writer joined a ferrying organisation, and was sent to a Central Flying School for a "conversion course." This omnibus word means, in this case, that one is trained in a few short flying hours to fly military types.

Those who haven't flown military types may think this is easy. Well, it is and it isn't; in practice it has proved impossible from a pilot's record to forecast how he will get on. On the one hand a pilot with over a thousand hours' civil flying may fail to cope entirely. On the other, a pronounced amateur with experience in the early two hundreds passes through all types with flying colours. Even age doesn't determine it, though generally speaking a pilot in the thirties with thousands of hours on civil types may be slower to adapt himself to the new technique than a younger pilot with less habit-forming experience.

The writer's flying record was a bit unusual, being as follows:—

Up to the end of	1935	1936	1937	1938	1939	Total
Power ...	479	20	none	3	6	508 hrs.
Gliding ...	75	45	50	70	60	300 hrs.

In fact, for three years I had simply kept my "A" Eence alive by doing the minimum amount of flying on an "Aeronca" or an Avro "Cadet." To some degree, therefore, my case may provide a pointer as to the value of gliding experience for powered flying on advanced types of aeroplanes.

One's first introduction to the "Harvard" trainer certainly inspires confusion and horror. The panoply of dials and knobs reminds one of nothing so much as of an organ. Both hands and the toes and heels of both feet are called into play for its manipulation.

One's first dual does little to lighten the gloom. Everything seems so drastic—the speed with which you have to push and pull and twiddle so many things for a simple circuit and landing; the sledge-hammer which hits the wing and flings you into a spin when the machine is stalled; the violent flick roll it executes if the wing loading is increased, even at high speeds, by a sudden pull back on the stick; the noise, which is one of the special functions of the "Harvard" and must have taken years' research to have achieved; the speed with which the scenery passes, after my leisurely and tortuous wanderings on the MINIMOA at averages around 20 m.p.h.

Then the flying technique is back to front. MINIMOA flew, turned and banked entirely on the rudder: these things are manipulated entirely with the stick; the rudder seems to have become practically a convention. A light aeroplane landing is, after many years' practice, achieved without assistance from the engine from a considerable height; now one has to learn to motor on to the ground like a taxicab. Instead of lift-spoilers on top of the wing, which can be put on and off during the approach and used as a throttle to steepen or lengthen the glide as required, one has flaps which, once on, cannot be turned off under 400 ft. or so under pain of immediate personal disintegration.

We went and did our spins, which took 35 minutes or so, and then it rained. When it cleared up next day and I got in, something went wrong with the carburettor. Then it rained again. However, a time came for circuits and landings. I did two with the instructor, which took 20 minutes; then to my immense surprise was sent off solo, and after a total of 55 minutes dual on the "Harvard" and an hour and a quarter solo on both the "Harvard" and "Battle," was passed out fit to fly all single-engined types.

From what I could discover, this was about normal, compared to other pilots nearly all in recent powered practice. So it seems as if gliding experience does go a long way to help the power pilot. One can hardly imagine poles further apart than the flying characteristics of, say, a MINIMOA and a "Skua." But one thing is the same in both, and that is the air. Even when attacked so passionately it seems to retain its general characteristics. In a strange new world, the air was an old friend. And that is the whole point.

Spider's Altitude Record

A SPIDER has been found at 15,000 ft. by an aeroplane fitted with apparatus to trap insects floating in the air. Evidently it was migrating by the usual method of suspending itself from a length of its own thread to reduce its sinking speed in convection currents.

This find is reported by Professor Cockerell, who summarised the results of an investigation by aeroplanes sent up from two stations in Louisiana. One 'plane, in the course of 1,314 flights, caught in its traps 24,559 insects in 51,178 minutes by day, and 3,955 in 6,790 minutes by night. Thus the distribution was thicker by night than by day, an unexpected result considering that most of the insects must have gone up in convection currents; but before drawing conclusions one would like to know the exact times and heights at which the aeroplane flew. A number of insects did not rightly belong to the ground area above which they were caught.

There has been much research on this subject in recent years, and it should furnish valuable data on convection currents but for a most lamentable lack of co-ordination among those interested. No one journal appears to specialise in reporting the results, which have to be sought in the most unexpected places—in fact, the above information comes from the *Children's Newspaper*. Similar research has been done by a member of the Rothamsted Institute at Harpenden, but when somebody from the London Gliding Club tried to tell him about thermal currents, he replied: "I'm not in the *least* interested in gliding." Another scientist, some years ago, discovered that more bacteria are found inside cumulus clouds than outside them, but instead of asking a meteorologist for the obvious explanation, he put forth a hypothesis that the germs preferred to congregate in a cloud because they drew sustenance from its moisture!

A.E.S.

The "Horten" All-Wing Sailplanes

HEINRICH and Walther Horten, who lived at Bonn, a few miles up the Rhine from Cologne, spent much of their boyhood making flying models. As they grew older they found that the tail-less ones flew best. In time they became old enough and experienced enough to build a full-sized tail-less sailplane. Not many years later, an improved version got up to over 26,000 ft. in the Rhön national contests, coming within a few hundred feet of the world's height record set up by someone else in the same cloud.

Thus did these two amateurs, with an entirely original and unorthodox design, evolved largely on hit-and-miss principles, put in the shade a host of real experts working along the well-trod paths of convention.

Their first man-carrying machine was built in the parental abode (*elterliche Wohnung*) in only four months during 1933. Still more surprising for an experimental type, it took them only 1,200 man-hours of labour, and the materials cost RM.320 (£16 at par). The absence of a fuselage had a lot to do with this.

The machine's dimensions are given, along with later types, in the accompanying table, and its shape is shown in the drawing. The whole thing was built in three parts, a centre section and two outer ones.

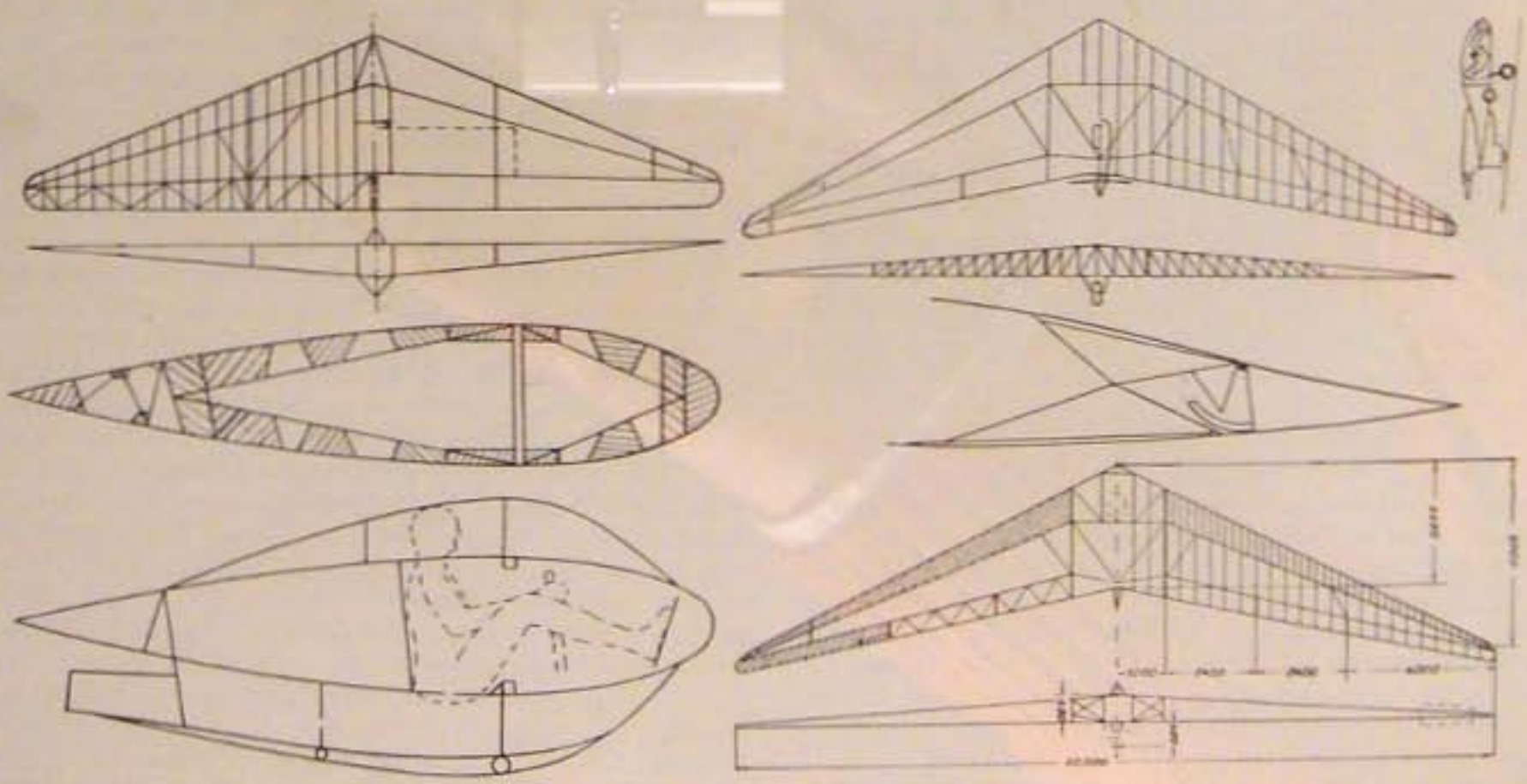
At the trailing edge the wing was divided into four flaps, the two middle ones being coupled to act as an elevator, while the outer ones were ailerons. All were hinged at the upper surface; their lower surfaces were of plywood, and the lower gap kept closed by wind pressure. The elevator was worked by push-rods at its lower surface, thus avoiding a projecting horn. Cables moved the ailerons, and cables also actuated the air brakes on each side which, when used singly, acted as a rudder.

Dimensions, etc., of Horten Sailplanes.

	I.	II.	III.
Date completed	1933	1935	1938
Wing span	12.4 m. (40 ft. 8 in.)	16.5 m. (54 ft. 2 in.)	20 m. (65 ft. 7 in.)
Root chord	3 m. (9 ft. 10 in.)	3.5 m. (11 ft. 6 in.)	3.25 m. (10 ft. 8 in.)
Tip chord	50 cm. (1 ft. 8 in.)	—	40 cm. (1 ft. 4 in.)
Root thickness	20%	20%	—
Tip thickness	10%	10%	—
Wing area	—	32.3 sq. m. (348 sq. ft.)	36.2 sq. m. (390 sq. ft.)
Incidence washout	7°	8°	—
Empty weight	—	120 kg. (926 lbs.)	215 kg. (474 lbs.)
Flying weight	—	530 kg. (1,168 lbs.)	315 kg. (694 lbs.)
Wing loading	—	16.4 kg./sq. m. (3.37 lb./sq. ft.)	8.7 kg./sq. m. (1.78 lb./sq. ft.)
Sinking speed	—	1.0 m./sec. (3 ft. 3 in./sec.)	0.5 m./sec. (1 ft. 8 in./sec.)
Gliding angle	—	—	1 in 32

The wing section was a symmetrical one developed by the brothers Horten. A plywood leading edge took the torsion loads. All ribs were made in three sections, as shown in the drawing. The spar near the root had diagonals instead of a complete web, as the wing there was practically 2 ft. thick. This was, however, not thick enough to house the whole of the pilot, so the machine was not strictly a "flying wing" like the later models.

Trials began with bungy launches on the flat; then auto and winch launches were tried, but the elevator could not cope with the downward pull of the winch and only 50 to 80 metres of height could be got on a 1,000-metre cable. Finally, it was aero-towed. About



Above are general arrangement drawings of the three Horten all-wing designs, but not to the same scale. On the left the "Horten I." or "Hangwind," with, on four times the scale, drawings showing the rib construction and the position of the pilot. Right, above, the "Horten II." or "Habicht"; below it a section through one of the flaps, showing how the lower gap was kept closed. Right, bottom, the "Horten III." which nearly achieved a world's bright record.—*From "Flugsport."*

two hours' total flying were done up to March, 1931, and later that year it did some thermal soaring in spite of being christened "HANGWIND," and was aero-towed to the Rhön for the Competitions, where it won a prize of RM.600 as an original design.

Test flights went off pretty successfully until it came to trying to stop a turn, whereupon the turn would merely become sharper, especially if flying speed was slow. Pushing the stick was then no cure, and in fact the brothers do not explain how they ever got the machine flying straight again when this happened; perhaps they "put on opposite air-brake." In straight flight, directional stability was specially good in gusty weather; in general, it was good at "normal flying speeds" of 55 to 60 m.p.h., but at speeds of 37 m.p.h. and less yawing became noticeable, and might lead to an unintentional turn of 360°. This would also happen, instead of the usual dive, if the machine was stalled while turning.

Lateral stability was good, and if, when flown "hands off," the machine was tipped over by a gust, it would quickly right itself after a short side-slip.

Longitudinal stability is the real snag with most tailless designs. The Horten brothers seem to have had no trouble with it except when the speed dropped below 37 m.p.h., when it would begin to fail, and at still slower speeds the elevator was working in burbles and had no effect at all. Otherwise the elevator control was "comfortably sensitive" and only small control movements were needed. The only trouble, at first, was that the air brakes, being on the under surface only, caused a nose-heavy moment when they were used; this was cured by putting similar ones on the top surface also. The braking action then became much too violent, and the brakes had to have their movement curbed by strong springs.

Carrying a weight of 75 kg. (165 lbs.), the machine was nicely balanced, and an addition of 20 kg. in the cockpit caused only a small amount of nose-heaviness.

On landing, the machine had rather a long float, due partly to the fast landing speed necessitated by the symmetrical wing section, and partly to the cushioning effect of the wing being so near the ground.

The "Horten II"

After the Rhön contests the first machine was scrapped to make room for a new one incorporating the lessons learned. This, called "HABICHT," took nine months to build, from September, 1934, to May, 1935. The brothers then found that they could not enter it for the Rhön, so they went and put a 60 h.p. Hirth motor into it, making the usual excuse about getting up to the thermals in the morning and returning to the aerodrome at sundown. The figures in the comparative table refer to the machine with the engine on board, though not in use. However, two examples of the type, without engine, were entered by the *Luftwaffe* for the Rhön contests of 1937, but confined themselves to slope-soaring while there. One was entered again in 1938 and did two short cross-country flights.

In flight, this new design showed no tendency in a stalled turn to skid, and turns were entered and left as with a conventional sailplane. The Hortens do not reveal how this improvement over the first machine was achieved.



The two boyish faces on the left, near the top, belong to Heinrich and Walther Horten, photographed in 1934 with their first full size tailless sailplane "Hangwind," which is seen in flight just above them. As the trailing edge is straight in plan, the photo reveals a dihedral angle.

At the very top is a front view of the "Horten II," or "Habicht," in 1935, showing the steel tubing of the middle section as seen through the transparent nose. Below this, on the right, is the same machine before being covered, showing the wooden construction of the outer portions.

In the next two photos it is seen at the Rhön National Contests of 1937, complete with swastika and registration number. On the right is Lieutenant Horten, three years older than in the former photo, climbing into the cockpit with his barograph.

The last two large photos show the "Horten III" at the 1938 contests, when it performed so brilliantly. Two of the type were entered, but only one was fitted with the auxiliary aerofoil shown (not to be confused with wings of other sailplanes in the background). The lowest picture shows the other "Horten III's" undercarriage. The front wheel retracts, but the casing of the rear wheel is fixed and forms, but for the cockpit roof, the only keel surface the machine possesses.

Inset in the lowest photo (top left): the cockpit cover of a "Horten IIIb," of which four examples were entered for the 1939 contests.

(Photos by Horten Bros. and "Flugsport," reproduced from "Flugsport."

Construction was in three parts as before, but the middle section was of steel tubing, the framework of which took over the torsion loads which could not be taken by the leading edge owing to the celluloid panels provided as a window for the pilot. The outer wing portions were single-spar.

This time a different arrangement of trailing-edge flaps was tried. A single outer pair functioned as ailerons and elevators, with adjustable Flettner tabs at their ends to lighten the control effort. Adjoining these, to their inner side, were a pair of "landing flaps," extending as far as the centre section of the machine. All these control surfaces were plywood-covered; the outer ones were worked by push-rods and cables, thus avoiding pulleys, and the inner ones by push-rods and a torsion tube. The air brakes, used also for steering, were near the leading edge, above and below; they worked against springs. Neither the landing flaps nor the brakes disturbed the longitudinal balance of the machine when in action.

The wing section at the tips remained symmetrical, but the section at the root was S-shaped: i.e. the mid-line of the section had a double curvature, presumably concave downwards at the front and concave upwards at the rear.

The undercarriage had wheel brakes, and the front wheel was retractable.

Pause for Reflection

Having got thus far, the Horten brothers apparently thought it about time they did some theoretical thinking, and a long article on "The Problem of the All-wing Aircraft" was published by them in *Flugsport* for June 10th, 1936.

One of the points they make is that, although a fixed centre of pressure precludes the use of a high-lift wing-section, with its beneficial effect on the sinking speed, this disadvantage is offset by a saving of weight in the wing structure, since with a fixed c.p. "no turning moment arises in the wing in particular flying attitudes." It is to be noted that, if the wing section is of the type which has a fixed c.p., then a good gliding angle involves flying at comparatively high speed, so that all-wing sailplanes are best for distance flights but unsuitable for leisurely slope-soaring.

In an all-wing sailplane the wing root must be thick enough to accommodate the pilot, and must therefore have a correspondingly great chord. This, of course, reduces the aspect ratio, so the authors set out forthwith to de-bunk the belief in high aspect ratios. They argue that skin drag, which forms 75 to 95% of the total drag in all-wing aircraft, increases only with the 0.8 power in the fore-and-aft direction, but in the direction of the span it increases linearly with the area of the upper surface. Reduction of skin drag by laminar flow, which increases with the span, plays only a small role, they say, at speeds of over 50 m. per sec. (110 m.p.h.).

Longitudinal stability and manœuvrability can, the authors point out, be varied in seven different ways: by changing (1) size of elevator, (2) alignment of elevator, (3) gearing of elevator, (4) distance of elevator from c.g., (5) concentration or dispersal of masses about the c.g., (6) surplus aerodynamic stability of machine, (7) other damping arrangements. With these seven factors any degree of sensitivity can be provided, according to the purpose of the machine and the type of pilot using it.

Finally, they compare the drag of all-wing aircraft with that of tail-less aircraft which have a spindle-shaped fuselage into which the wing roots are faired, and conclude that the all-wing style is best for large machines, but for small machines the question must be left for the future to decide.

The "Horten III."

The final HORTEN had a bigger span and aspect ratio than the second, but was in many ways similar, with retractable front wheel, air brakes at the front of the wing tips, and the whole built in three sections, the outer ones of wood and the centre one of steel tubing, fabric-covered. The outer sections were secured to the inner at four points of attachment.

The designers say nothing about their wing section except that they developed it themselves, and that it changes to a symmetrical section at the tips.

There are now three flaps at the rear of each wing. The middle one, fabric-covered, increases the camber for landing. The two outer ones, plywood-covered, work with differing differentials as elevators and ailerons, and are fitted with Flettner tabs. The differentials are so arranged that, when the stick is moved forward for fast flight, the wash-out of incidence of the wings remains as before. All controls work on ball bearings.

The pilot's head pokes out above the top surface to improve its view, and is enclosed in a streamlined transparent cover.

Two of the type were entered for the 1938 Rhön contests and flown by Blech and Scheidhauer, and made goal flights of 231 and 227 km. respectively. But most astonishing were the altitude flights. Werner Blech has made a special study of cumulo-nimbus clouds for high altitude soaring, and his machine was fitted with an extra aerofoil out in front to enable him to perform tight circles "without the air flow at the wing-tips beginning to break away." Early in the contest he climbed in cloud to a height of 4,650 m. (15,256 ft.) from a cast-off at 100 metres, and in spite of ice formation two inches thick the machine was still under good control. On the way up it "put itself almost automatically into the most favourable flying position." Later it climbed to heights of 3,330 m., 6,380 m., 5,400 m., and finally, on August 6th, to a height estimated at 8,000 metres, or over 26,000 ft. A large number of sailplanes went up in the same cloud, and several of the pilots had to take to their parachutes, including both Blech and Scheidhauer, who probably got iced up. Unfortunately Blech was hit by his machine during his descent and was dead when he landed.

In 1939 four sailplanes of type HORTEN IIIb were entered at the Rhön—evidently a modification of HORTEN III, but the modifications have not been published. The best performances were put up by Scheidhauer with a flight of 332 km. distance (207 miles) and 3,060 m. height (10,040 ft.) on August 2nd, and Flakowski with 3,260 m. height on the same day.

In 1938 each HORTEN needed two trailers to transport it, but now the trouble has been mastered with a trailer whose sides lift up to enable the outer wings to be put in.

Squadron-Leader P. M. Watt



It was a great shock to his many friends when "Willie" Watt, as they always called him, appeared in the casualty list published on December 8th as having been killed on Active Service. It is hard to express the loss that we all feel, for he had so many engaging qualities. His gliding friends were as widely scattered as the places where he flew, and embraced many clubs and more than one country.

Squadron Leader Watt was born in 1907 in Argentina. He joined the Royal Air Force as a cadet in 1925, and in 1929 qualified as a flying instructor, attaining category A.1. He was a highly skilled pilot, both of aeroplanes and sailplanes. Most of his sailflying was done at the Yorkshire Gliding Club, where he took "A," "B," and "C" certificates all in one day in the summer of 1935. He quickly attained "Silver C" standard, earning this badge with a flight of about 60 miles from Sutton Bank to Brough, near Hull, on April 4th, 1936 (arriving there at 4,500 ft.), and the five hours duration flight two days later. His "Silver C" number was 241 in the international series, and No. 8 on the British list.

In July, 1937, he was a member of the team which went to Germany for the International Contests. Among the flights he made there was a magnificent one in a KING KITE from the Wasserkuppe to Jena, during which he flew blind in cloud for 1¼ hours and reached 7,644 ft. above the start, this winning him the Daily Prize and being the second highest altitude attained by any pilot during the meeting. He landed as late as 6.30 p.m. on a military aerodrome, and was most hospitably received by the officers, who showed him round the university and sat up with him till the retrieving team arrived in the early hours of next morning.

Another outstanding flight, among the many he made, was a cross-wind flight from Dunstable into Kent by way of Brooklands during the 1938 National Contests.

Like many recruits from the R.A.F., "Willie's" devotion to soaring grew with the years, and his widow is quite determined that their small son and daughter will have every opportunity of carrying on the tradition, as he would certainly have wished it.

Pilot Officer D. L. Payne

Desmond Payne, who was killed on Active Service on January 8th, was one of the most enthusiastic pilots gliding is ever likely to have. He spent every possible minute in the air, and then implored to be allowed to stay up all night.

He obtained his "A" and "B" with the Midland Gliding Club and "C" with the Southdown in 1938 and then became one of the earlier members of the Surrey Club, with whom he did most of his gliding.

He loved flying solely for the sake of flying, and was a natural pilot with a beautiful pair of hands, and a very happy temperament.

But for the war, he would by now have been the certain possessor of the "Silver C" for which he longed, and tried so hard to obtain.

A.C.E.

H. F. J. Brunning

The Kent Gliding Club regrets to report the death, after a few weeks' illness, of Harry Brunning, its chief instructor, at the early age of 23.

Brunning joined the club in 1934, and from the start showed a special aptitude for flying. He was one of the keenest members, and spent most of his week-ends at Lenham, camping in the hangar in the summer, and was, with Mr. Sanguinetti, instrumental in keeping the club equipment in good order. He was an especially able instructor, being calm and confident under any circumstances, and the club's almost entire lack of even minor "crashery" was largely due to his careful tuition. He spent his holidays whenever possible at the Competitions, helping anyone who needed assistance.

R.H.S.

A. H. G. Fokker

Anthony Fokker, who died in New York on December 23rd, made his mark in the world of soaring as well as that of power flying. When the 1922 German Contests were in preparation, Fokker, in mid-Atlantic on his way to Europe, cabled to his works the designs for a pair of gliders. They were ready in 10 days and in another three had arrived on the Wasserkuppe. Both were biplanes. One, a two-seater with a nacelle, had a span of 40 ft. and weight of 198 lbs., and the other, a single-seater in which the pilot sat in the open on the lower wing, a span of 30 ft. and weight of 176 lbs.

On August 24th, 1922, the two-seater made the world's first gliding passenger-carrying record of 12 mins. 53 secs, piloted by Fokker.

Both machines were then brought to England for the Itford soaring meeting. On the first day, October 16th, 1922, Fokker flew the two-seater solo, with 140 lbs. of ballast, for 37 minutes—the first prolonged soaring flight ever made in England. He then lent the machine to G. P. Olley, who raised the world's record to 49 minutes with a passenger on October 21st.

News from the Clubs

Australian Gliding Association

An Australian Gliding Association has been provisionally formed, and we have received copies of some circulars which the Pro-Tem. Secretary, Mr. R. Duckworth, has sent out to the subsidised gliding clubs in the various States.

One of the chief objects of the association is to deal with questions regarding the Government Subsidy. The subsidy is paid on the basis of the number of aircraft in use, which has now increased to the point at which more than the subsidy limit of £600 per annum for the whole of Australia is likely to be claimable. It is thought better to form an association to arrange the distribution of the subsidy between the various clubs, rather than leave the decision in the hands of the Civil Aviation Department, which knows little about gliding.

In reply to a circular, the New South Wales Gliding Association, Waikerie Gliding Club, Gliding and Soaring Club of Tasmania, West Australian Flying Club, and Gliding Club of Victoria are willing to join the association, and all approve of the general basis of the subsidy, though making minor suggestions for improvement; while the Queensland Gliding Association is unwilling to join at present, claiming that subsidy should be paid according to "club membership and activity."

The question was broached whether, in the event of more than the £600 being claimed, this should be divided into six equal parts or should be distributed in proportion to the population of the various States, in which case New South Wales would get £235 and Victoria £165. Victoria is willing to limit its claim to one-sixth of the total, and N.S.W. has not yet replied.

Gliding Club of Victoria.—Normal training activities were carried out during September, 1939, with only one flight of note.

On Sunday, September 10th, R. Roberts released from car tow at 1,000 ft., and proceeded to give an aerobatic display. Momentarily levelling out at 500 ft., he found himself rising, and immediately commenced circling. At 4,000 ft. he reached cloud base, which happened to be a particularly black storm cloud, with very turbulent conditions. In spite of diving he was sucked up into the cloud, but being without a parachute, could not risk climbing through the cloud, and dived out the side after a minute inside, toured the countryside, gave a further display of stunting over the R.A.A.F. Aerodrome, and landed after 37 mins. in the air.

September also saw the 60th hour of flying registered for the year, and the overhaul of the primary was completed. Early in October, however, the club received a severe setback, when the R.A.A.F. expansion made it necessary for the Air Board to stop all gliding activities at Laverton, and it is now necessary to find a new training ground and dismantle and re-erect the new hangar which was only completed a few months ago.

Yorkshire Gliding Club

At present all that has been, and is being done at Sutton Bank, is the periodical inspection and maintenance of our aircraft and other stock, care of the lighting plant and other such jobs. It is proposed to lick the property with paint in the spring, if petrol can be obtained to take some of us there (and, of course, provided that they haven't rationed paint and brushes!). However, we intend to be in a position whereby we have only to open the doors and fly.

We have not been able to manage a dance at the Fleece, in Thirsk, although a number of us foregathered there at the Thirsk Hockey Club Dance in December. We would like to arrange something, but transport is the main difficulty, and the Fleece is rather busy just now.

Imperial College Gliding Club

To celebrate its tenth birthday, the club is holding an informal dinner in the Imperial College Union on Saturday, February 24th. The dinner is at 7.30, and will be followed by a short programme of gliding films. It is hoped to make this a reunion of all those who have been connected with the club since its formation.

South African Gliding Association

Durban Gliding Club.—Mr. C. J. McGrane, of the Umtali Gliding Club, passed through Durban on his way back from England, and has described his visit to the local gliding club in a letter to Mr. Zander. The club is about eight miles out from Durban. They haven't a suitable ridge as yet, and were auto-towing along a disused tarmac road in the centre of an open patch of ground. They had a Grunau 9 primary and "an American intermediate called Albatross" (evidently a Bowlus Bird Albatross). Mr. McGrane had a launch in this machine and tried to pick up thermals from about 500 ft. With lateral control by a half-wheel on top of the stick, and a balanced tailplane, he found it a very sensitive machine.

The club has about 20 members.

Umtali Gliding Club.—Mr. McGrane states that things at this club "are pretty dead as many of the younger fellows are on military training or have left for service in the north, and our funds are pretty well exhausted."

Derbyshire and Lancashire Gliding Club

We regret to say that all flying has now been stopped; even the flying of kites is now forbidden, much to the disappointment of our meteorological experts. [According to the *Sheffield Telegraph* the club was planning to build a man-carrying kite.—Ed.]

Theoretically we are now only a social club to which the tired and worn-out workers of the world can retire for an occasional week-end's relaxation amidst the rugged grandeur and primitive life of the Peak, but in actual fact we are operating as a very successful sports club. We have a very fine Equestrian Squad, which is to be seen most week-ends cantering and galloping round the district, and our winter sports section includes a skating team all capable of doing spins, rolls, and other turns on the ice, together with a ski-ing club, every member of which can keep the beastly things under control for at least three yards at a time. And, of course, there is still our famous selection of bar supporters, but we regret to say that in this respect we have lost some of our most worthy members, although we know that they will always carry on the club's traditions in whatever part of the world they may find themselves.

Our chairman, Second-Lieut. B. A. G. Meads, was with us at Christmas and looked very fit. Sergeant Pilot A. Davies has at last finished his leave and is now in East Anglia.

A dance was held by the club on December 16th at the George Hotel, Hathersage, and proved to be a great success.

On December 30th we had a sausage and mash supper at the club, after which the diners played roulette and other sinful games.

January 13th and 14th.—Many hours' skating were put in at Longshaw by various members; no "C" certificates were taken, but most of them made excellent glides on their "B's."

January 20th and 21st.—Much snow; ski-ing took place on both days. On the 21st the Vicar of Higher Winchurn was good enough to conduct a select ski-ing and lugeing party to Highlow, where some very successful runs were made.

We regret that we are unable to publish all the technical details of our doings, but owing to the highly secret nature of our activities it will be obvious that they might be of great value to the enemy.

Southdown Gliding Club

We are still strenuously trying to get permission to reopen, but so far without success. Meanwhile, here is some news of club members.

W. E. Filmer, B.Sc., one of our tireless instructors, has been appointed to the Meteorological Department of the Air Ministry. We are expecting him to edit an "Old Filmer's Almanack" after the war so that the Southdown Club will have foreknowledge concerning "Thermals, and which day to find 'em."

A. York Bramble, F.R.Met.S., A.R.Ae.S.I., our Founder Vice-President, who was in the original Royal Flying Corps, has again received a Commission in the R.A.F.V.R.

L. J. Huggett, our Assistant Secretary, has received a Commission in the R.A.F.

Scottish Gliding Union

When the summer camp came to a conclusion in July it was suggested that a short winter camp be run if at all possible. With the coming of hostilities all thought of this matter dropped, but in early December, one Saturday evening, John Gardner suggested a New Year Camp and also a Christmas Party for all the young folk, including those up to 70.

Christmas Eve Party.—This was responded to manfully and many absent members sent cheques to go to the purchase of presents for the tree. Gliding by agreement ceased at 3 p.m. on the 24th and the arrival of children of members began, together with children from the surrounding farms and crofts with, we are happy to say, their parents. The table looked magnificent, the centre piece being a large iced cake, the crown of which was surmounted by a sailplane, sugar-coated, standing outside a hangar beside which flew a windsock. Pilot Officer Hal Thorburn, on leave from his Bomber Squadron, gave away the presents.

After the departure of the children the exhausted members sat around and decided to discuss in detail the question of the camp to be run from Saturday, December 30th, until Tuesday, January 2nd. In due course Saturday arrived together with about 20 members who had proposed to stay over the four days, whilst others arrived daily.

New Year Camp.—The Saturday evening was spent by visiting Kirkcaldy Ice Rink and watching and participating in an Ice Carnival from which the return journey was made to East Feal about 12 midnight.

By 2 a.m. on December 31st we had all retired to bed, and when Sunday morning broke with the frost as keen as ever, with a brilliant sun, the skies were blue, green, and orange, the surrounding hills coated with snow and the snow itself appearing purple in the hard light; colourings throughout the sky and the landscape were such that they rivalled the best that Switzerland could produce. Gliding in the way of ground-hops, "A" and "B" flights, was indulged in until darkness. Some members spent the time in thawing out the water supply, the ram of which was frozen. As midnight approached on the 31st it was evident that New Year was going to be heralded in the traditional method known to Scotsmen the world over, and the corks began to pop and the traditional scotch bun and shortbread made its appearance.

On the morning of January 1st after breakfast it was seen that strong black coffee would be required for quite a few before any flights could be made. Machines were early out of the hangars and all present were able to engage in some ground flying of the "A" and "B" categories until nightfall. The New Year dinner was timed for 7 p.m. and a matter of 25 members participated in this function, the first of such to be held in the history of Scottish Gliding. After dinner another expedition was made to Kirkcaldy, returning safely about 3 a.m.

Tuesday morning, January 2nd, broke as magnificent a day as its predecessors, and more gliding was put in until the late evening, when most members departed, vowing that it was the best week-end they had spent.

Burns Supper.—On Saturday, January 27th, about 20 members arrived to attend this notable supper. Originally the time was set for 10 p.m., but as much trouble was confronted in digging out snow-bound transport the supper was delayed until 1 a.m. on Sunday, and when it came all were ready for it. By 4.30 a.m. all with one accord decided on bed.

Sunday morning came with breakfast over by 10.30 a.m. and no gliding because of the B.G.A. ban. Ski-ing, tobogganing and general winter sports were indulged in. In the afternoon the wind freshened and it was seen that the fine snow was beginning to drift and our roads were speedily becoming impassable. A quick meal was indulged in and then armed with spades an attack was made upon the drifts. Three-quarters of a mile of drift were removed in a matter of a little over an hour.

A General Meeting of the club is being held on February 11th to discuss what we shall do in the future in connection with the B.G.A. final letter regarding the Air Ministry ban on gliding, and it is certain that efforts will be made to do as much building work as can be done and, if possible, have constructed a two-seater machine for the days *"apres la guerre fini."*

College of Aeronautical Engineering

The Gliding Club of the College (Brooklands) has had to suspend operations owing to lack of petrol. The Essex used for towing was scarcely economical, and other methods of propulsion have little chance on a flat field.

Midland Gliding Club

A meeting of members, followed by supper, was arranged for January 30th at the Market Hotel, Station Street, Birmingham. Some thirty members notified R. N. Thwaite of their intention to be present, and, in the (meteorological) circumstances, we did well to have an attendance of 18. The Market Hotel gave us a very good supper, after which Messrs. Hardwick and Oliver entertained us with some excellent films of gliding in all its glory. Though we all enjoyed the films they left us with a slightly bitter-sweet taste in our mouths. The response to this first meeting being satisfactory, we are thinking of arranging a small dance to be held some time in March.

Unfortunately the private flying group has been unable to do any flying because, almost immediately after it was formed, the club was in trouble with the Birmingham police through the ground-hopping activities at Handsworth. Particulars were sent to the Air Ministry, and although no proceedings were taken, we obviously could not risk any further trouble by flying at the Mynd until the position was clarified. It is now only too clear!

There is not very much news from our members serving with the Forces, but the following details may be of interest to our many friends in the other clubs:—

The Chairman, Major Bill, is in command of a prisoners' camp.

Mike Edwards, Joshua, Jolly, Durose, Stanford, Holland, Huggett and Robson are in the R.A.F.

Gerry Edwards is a sergeant in the R.A.O.C. and is now with the B.E.F.

Roper, Fawcett, Pardoe, and three members of the Wembley Air Defence Cadet Squadron who camped with us, are in the Fleet Air Arm.

Saunders is completing a course at Cranwell; Horrell and Dugdale have commissions in the Army, and Oliver Goodman in the Navy.

G. Elwood, our apprentice, is in the R.A.F. Norman Price is doing his bit by increasing the production on his farm.

Newcastle Gliding Club

Now that we have ample time to write notes, it is unfortunate that we have little activity to describe. We more-or-less sit from one month to another waiting for THE SAILPLANE to tell us what other gliding enthusiasts have found to do. This, of course, is unfair, so we will announce what we have done, and what we so far propose to do during the black-out of our main activities.

Our premises were taken from us four days before the declaration of war, and our equipment has been spread about the district. Fortunately we had a workshop in the city, where machines under repair were despatched, and where the club engineer was installed, to continue the good work. Members were asked to attend here in an endeavour to keep together, and to assist in repair work.

Unfortunately this scheme has not been successful, and therefore new arrangements have been made.

We have now obtained large premises in a park in Heaton, where all of the club equipment can be stored. These premises were recreation rooms, and social equipment such as table tennis, darts, and a piano are already installed. Trailers will be stored outside under part cover, and all flying equipment will be stored in the main hall, which has a good wood floor and a gas fire.

It is our intention for members to meet once a week in one of the social rooms, for entertainment and lectures, and Tuesday evening has been selected for this.

The main work room will be open every day, including Sunday, and under such ideal conditions it is hoped that many members will attend. This is a period during which we should not be content to mark time. Much spade work can be done, which has always been shelved through lack of time during activities. We should be preparing in all ways so that at the end of hostilities we can launch out again at a great speed and make up for the lost time.

Since writing the above notes, and after receiving several letters from members asking us to do something, we have experienced a few meetings in the new headquarters. These meetings started with sickeningly low attendance of 10 members, which up to last Tuesday had dwindled to the ridiculously low attendances of three—the secretary, treasurer, and the chief instructor.

To our knowledge only two members have been called out of

the country: L. B. Tate, somewhere in France, and Jack Harrison, somewhere on the high seas. Several members are serving at home in various branches of the Army and Air Force, but full details are not yet to hand.

We still manage to get a little flying, and on November 19th, "somewhere in England," three members shared four flights at a new soaring site. Hick flew the TUTOR for one hour and attained 2,000 ft. Allan flew for three-quarters of an hour at 1,100 ft., and A. Lucas had two flights of 20 and 40 minutes, which was the first flying for him since his very serious motoring accident early this year.

Several more weeks later. Still sickening turnouts at the "Park" headquarters. One when only the secretary and treasurer turned up (with no ideas of collecting anything), and two when the secretary himself didn't. Disgusting.

On January 2nd we had the pleasure of a visit from Mrs. Allen (*née* Miss Naomi Heron-Maxwell) who is now in this district for the first time. We have also been visited again by that old stalwart of the club, J. M. Feeny, now of the Derby and Lancs. Club. He met several members by arrangement at the Grand Hotel on January 17th.

Earlier in this account we anticipated more flying, but the only meeting to report took place on December 24th, when one member had a flight in the TUTOR lasting 1½ hours. He had to land at the bottom due to low cloud, and as the machine had to be dismantled that finished the day. Since this we have received a copy of the letter from the Air Ministry to the B.G.A., and hence there will be no more club flying during the existence of this ban. We will spend our time trying to discover how essential this is.

Mr. O'Grady has delivered a course of lectures on Navigation to the Tyneside Air Defence Cadets.

For the benefit of members who do not attend on Tuesday evenings on account of the black-out, as well as for official club purposes, Mr. Allan and our young engineer will attend in the main hall at "The Park" every Sunday morning, from the first Sunday in February, between the hours of 10 a.m. and 1 p.m. This meeting is not for social purposes.

We have heard of a few more members who are now serving in H.M. Forces. There may be slight errors in the statements as this information has not been received first hand from the members conterned: Peter Cochran-Carr, Mercantile Marine; George L. Coates, R.A.F.; S. C. O'Grady, R.A.F.; L. D. Grice, B.E.F.; A. R Lucas, Navy; Fred Lucas, R.A.F.; K. S. Morton, A.A.; W. R. Welch, R.A.F.; F. J. Wood, R.A.F.

Annual Meeting.—It is proposed to hold the ninth Annual General Meeting of the club in the Grand Hotel, Haymarket, Newcastle, possibly on Friday evening, February 23rd. This meeting will be followed by a club dinner. Notices will be sent to all members.

London Gliding Club

That great day, November 19th, when 40 pilots flew for 29 hours in all, turned out to be our last flying day, as was feared at the time. We had a final reply from the Air Minisrty, in answer to an enquiry made by our Chief Instructor at the onset of war, telling us that flying was against the law (in case we should be so presumptuous as to think of doing any). On top of this the Chief Inspector of the Dunstable police called on us on Sunday, November 26th, and, after explaining (as he sipped his beer) that he bore us no ill-will, etc., said that some person unspecified had asked him to find out what our authority was for flying. Hiscox explained the position to him as best he could. Some enthusiasts then dragged two GRUNAUS out of the hangar, but were persuaded to put them away again. So half a gale of lovely soaring wind from W.S.W. blew up the hill to no purpose. It continued to blow up the hill for at least a week.

Meanwhile the club keeps alive. In reasonable weather the week-end attendance varies between 20 and 30, and even in the recent Finland-like conditions the Sunday attendance has never fallen below 10. Walker, in his capacity of ground engineer, is building a land yacht, more or less after a published design, though he is strutting the mast with DACRON outriggers. There are doubts whether our ground is flat enough for it, and it may have to be launched by winch, but anyhow enough should be learnt to make a better one at the next attempt. Another idea is to organise a sailing group. Our nearest sheet of water is the Tring reservoir, but sailing is probably banned on it, and enquiries are being made about the next nearest, which is at Elstree. While these schemes are maturing, the usual week-end activity is for the assembled party to go for a "good brisk walk."

To make things more difficult when we resume flying, a new line of high-tension cables is being put up, crossing the north-west slope nearly 100 yards nearer than the wires already there. All the pylons are already in position, and no doubt the wires will be hung on them as soon as flying starts again.

Club Dance.—Saturday, January 6th, the day fixed for this event, started foggy and got foggier till by opening time, 8 p.m., you couldn't see across the road. Also there was no moon. In spite of this, 64 people turned up, among them several who had foolishly left the journey till late and spent a couple of hours blindly groping along the last few miles. The band, from Luton, were only an hour late. Lawrence Wright's "nursery rhyme" posters, resuscitated from a year ago, were as fresh and funny as ever.

Sunday, January 14th, was a day for meteorologists. In the morning a light west wind blew over the club while a bank of fog slowly descended the hill from the east. Hervey launched his 6-foot span model sailplane repeatedly by towing to about 200 ft. with cotton. Whenever it encountered the meeting-place of the two currents it received a violent jolt. By the afternoon the fog had found its own level and occupied all the low ground, but a walking party which went up the hill emerged above its top surface, which was sharply defined. Just before dark, a layer of grey fog, not more than 12 ft. thick, could be seen cascading down the hill like a waterfall; walking through it one got chilled to the marrow as in a blizzard. A hundred yards further on it rebounded up again. Was it a miniature Helm Wind?

The Great Frost burst a few pipes, but brought Waghorn and friends with skis, who descended from our hill-top launching point at a speed equalling that of a Primary "following the contours."

What they are doing.—Geoffrey Wardle, Sub-Lieut. R.N., who lives locally, was known to have been in one of the three submarines which were all lost in the same week, and there was great relief when Hamburg announced by wireless that he had been rescued from H.M.S. Starfish.

Viscount St. Davids, who has large interests in Scott Aircraft, was recently discovered by the newspapers to have become batman to a chaplain of the Royal Engineers.

T. T. Davies (of the CAMEL) has a commission as air gunner in the R.A.F., and is doing a training course.

Alec Fletcher, formerly A.A.F., is now Flight Lieutenant.

N. W. Burnett is flying "Gladiators" somewhere in England.

L. C. Withall is now duly married, and his wife (formerly Beryl Simen) wishes it stated that he is not Flying Officer but Flight Lieutenant.

Zita Paddon and Anne Wakefield are in the W.A.A.F.; each is Aircraftwoman Second Class.

Kendall and Toby Fisher called in on December 23rd; both are employed near Liverpool. Carl Beck has moved to near Bishops Stortford.

Subscriptions.—These become due on February 1st. The Finance Committee have instructed the Secretary not to insist upon Flying Members paying the full three guineas subscription if they feel that they cannot afford to help the club over this difficult period by doing so, and he may accept a reduced subscription so long as it is not less than a guinea, but in that case double fees will be payable for flying or land yachting.

Members should keep the club informed of changes of address so that they may continue to receive club circulars and be kept in touch with what is going on. Those who call at the club on week-days and find no one there should proceed to Whipsnade and look up the Editor. Whipsnade Zoo has now reopened.

Cambridge University Gliding Club

Pat Pringle called at the *de facto* Editorial Office at Whipsnade in January and disclosed that he is still waiting to be called up for the R.A.F. His brother's work is highly interesting, but just as highly confidential.

We have received the following: "Contrary to the information in the Cambridge Club News, 903259 A/C2 Morison, W., is not on leave for the duration, but is under training as a towing pilot and will be available as such as soon as sailflying recommences."

The general rule for engagements and weddings is that they are only news for THE SAILPLANE if both parties are members of a gliding club, or first met as a result of gliding activities (e.g., if he finished a cross-country flight by crashing through her window). We hear that Mike Thomas is engaged, but do not know if he qualifies as above.—ED.

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RECOMMENDED GLIDING CLUBS

London Gliding Club
(Affiliated to the B.G.A.)

Address:—Tring Road, Dunstable, Beds. (Tel.: Dunstable 419.) Flying ground, Dunstable Downs (1¼ miles S.W. of Dunstable). Primary training and soaring. Clubhouse and hangar; sleeping accommodation; 20 gliders and sailplanes for members' use. Subscription, 3 guineas p.a. (country member, 2 guineas); entrance fee, 2 guineas. Associate member, 2 guineas p.a.; no entrance fees. Flying charges, from 3s. per day. Resident full-time instructors. Flying on Sundays and every week-day except Thursday. London Secretary: Arthur Sweet, F.C.A., 11, Bow Churchyard, E.C.4. (Tel.: City 5997-8.)

Derbyshire and Lancashire Gliding Club
(Affiliated to the B.G.A.)

Address:—"Camphill," Great Hucklow, Near Buxton. The perfect hill soaring site, wind direction of no consequence. Evening thermals to 5,000 ft. a speciality. Comfortable club-house with sleeping accommodation. Hangar, full flying equipment, workshop and ground staff. Subscription, flying members, £3 3s. p.a., associate members, £1 1s. p.a. Flying charges from 3d. per flight, soaring 7s. 6d. per hour. Secretary, C. A. Kaye.

Southdown Gliding Club
(Affiliated to the B.G.A.)

Secretary:—S. G. Stevens, "Southerlea," Meadow Close, Hove. (Tel.: Preston 3284.) Soaring at Devil's Dyke and Atlingworth Ridge. One of the finest Primary and Secondary training sites in England. Clubhouse and hangar ½-mile S.S.W. of Devil's Dyke Station. Subscription, 2 guineas and 1 guinea entrance. Auto towing and winch launching facilities. Very moderate flying fees and expert tuition.

Oxford University and City Gliding Club
(Affiliated to the B.G.A.)

Secretary:—Miss B. M. Nicklin, 532, Banbury Road, Oxford. (Tel.: 58300.) Primary training and soaring site at the Lambert Arms, Aston Rowant, Oxon, 15 miles E.S.E. of Oxford on the Oxford-High Wycombe-London road and 39 miles from London. Resident full-time Instructor: R. Kronfeld, A.F.R.Ae.S. Flying every day except Mondays. Subscription, 3 guineas p.a. Entrance fee, 1 guinea. Flying charges, 1s. to 2s. per winch launch. Temporary (course) members, entrance fee, 1 guinea. Subscription, 1 guinea per week. Flying charges, 1s. to 2s. per launch.

Scottish Gliding Union
(Affiliated to the B.G.A.)

Patron: Lord Weir. President: Hon. A. R. Boyle. Secretary and Treasurer: R. B. Rogerson, 20, Blythswood Street, Glasgow, C.2. (Tel.: Central 4209 and Shettleston 1328.) Main training and soaring site and clubhouse: Feal Farm, Bishop Hill, Lochleven, Kinross; also other training sites in other parts of Scotland. Primary training and soaring. Full residential accommodation, including rooms for married couples. Flying and training every week-end, together with organised camps. Flying charges from 6d. per flight. Soaring flight from 2s. 6d. Subscription, £3 3s. flying member per annum. Associate, £1 1s per annum. Entrance fee, £2 2s. Full range of machines for members' use. Large hangar accommodation.



With acknowledgments to SAILPLANE, *Dec., 1937:—*

TAILPIECE—One of our members was tackled by an acquaintance who had read in a newspaper of a cross-country flight of forty miles. Like this:—

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