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EDITED BY ALAN E. SLATER



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THE SAILPLANE *and* GLIDER

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The Eighth Year

THIS year, 1937, is the eighth year in succession in which National Gliding Competitions have been held in England under the auspices of the British Gliding Association.

During these eight years there has been a notable improvement in the technique of motorless flying, as shown by the pilots taking part in this series of contests. It may be of interest to enumerate briefly these annual gatherings of the country's best glider pilots.

1930.—At Ditchling Beacon, near Brighton, October 18th and 19th. Flying consisted almost entirely of gliding flights down the valley.

1931.—At Balsdean, near Brighton, October 3rd and 4th. Mostly gliding; just a little soaring.

1932.—At Askam-in-Furness, Lake District, August 27th to September 4th. Several soaring flights, and a cross-country flight of 13 miles.

1933.—At Huish, Wiltshire, June 15th to July 16th. The first British soaring flights in pure thermal currents. Also some soaring over the hills.

Later, on October 7th and 8th, a meeting was held at Sutton Bank, in Yorkshire; in one day 22 hours' soaring was done, including three short cross-country flights.

1934.—At Sutton Bank, September 1st to 9th. The first meeting on an equipped site; 106 hours' soaring, including a duration record of over 12 hours; three cross-country flights in a thunderstorm, including a height record of over 8,000 feet; also some out-and-return flights.

1935.—Again at Sutton Bank, August 24th to September 1st. Twenty sailplanes took part, 134 hours' soaring, 10 cross-country flights totalling 233 miles. There was a marked increase in the number of pilots who could use thermal and cloud currents to gain height apart from the ordinary soaring along the line of hills.

1936.—At Bradwell Edge, Derbyshire, August 29th to September 6th. Eighteen sailplanes did 150 hours' soaring, with an average of over one hour per flight. The meeting showed a further increase in the number of skilled pilots, but only two cross-country flights were made—of 45 and 12 miles.

In Germany the eighteenth annual gliding contest at the Wasserkuppe, Rhön Mountains, concluded this month. Their national gliding meetings have therefore been running for ten years longer than ours. In this series, also, the first two meetings consisted almost entirely of descending gliding flights; then in 1922 the first prolonged flights over their hill slopes were achieved, while from 1928 onwards the art of using cloud currents was developed.

The gliding movements in the two countries cannot, however, be exactly compared. The Germans started their series of meetings before prolonged human soaring flight had been proved to be possible in practice; they were, in fact, the pioneers of this art. The rest of the world has learned from them.

It was to be expected, therefore, that at the recent international gliding meeting in Germany, the "home team" should carry off most of the prizes. But their British visitors learned many valuable lessons. One of these was, that there is nothing like a really strenuous competition for improving a pilot's technique.

Why should the technique of sailplane pilots be improved? The answer is, that the art of soaring flight has not yet reached stagnation point. Not only did recent experience show the pilots of other nations to be inferior in skill to the best of the Germans, but the latter themselves would be the first to admit that they have still a very great deal to learn.

Yet there has always been a tendency for many of the devotees of this new art to be satisfied with things as they are. There were those to whom short gliding flights gave such a thrill that they would take no trouble to develop an efficient soaring site. At a later stage there were those who were satisfied with pottering to and fro over a line of hills and would make no effort to reach up into cloudland. And is it not true to say that, now, there are pilots who are satisfied with going up and down in thermal currents without that burning desire to obtain more knowledge about them —the sort of knowledge which can only be obtained by making strenuous efforts to attain great heights and cover long distances in competition with rivals?

It is for this reason, among others, that the new system of allotting marks for all flights above a certain standard, copied from the recent international contest, and adopted in this year's British national competitions, is to be welcomed. This year every pilot will, each day, be able to see the placing of his machine, which should act as a strong encouragement to him (or her) to improve its position on the list.

The gliding movement is now growing up, and the careless joys of youth must give way in some degree to the more serious pleasures of maturity.

National Gliding Contests

GREAT HUCKLOW, DERBYSHIRE, AUGUST 28th to SEPTEMBER 5th, 1937

(Cancelling all previous notices.)

1. The period of the contests will be from 09.00 hours on Sunday, August 29th, to 17.00 hours on Sunday, September 5th. Practice flights may be made on Saturday, August 28th, but will not count towards the contests.

2. The contests will be divided as follows:—

(a) The Wakefield, De Havilland and Volk Challenge Cups will be awarded as previously for the best distance, height and duration flights respectively accomplished during the year, whether these have been accomplished at the meeting or not, together with the **Manio Cup** for the best "out and back" or "goal" flight during the meeting. No special entries will be required for these challenge cups.

(b) Club Team Contest for the L. Du Garde Peach Challenge Trophy.—This trophy will be held for one year and will be awarded to the club whose team gains the greatest aggregate of marks. The glider must be the property of the club or of a member of the club, and the team shall consist of three nominated pilots who must all be full flying members of the club with "C" or "Silver C" certificates. Only one team may be entered per club.

(c) Open Contest.—First Prize, £10 10s.; Second Prize, £5 5s. Awarded by the organisers to the entrant of the glider.

This contest is open to any glider to be flown by one or more nominated "C" or "Silver C" pilots (not exceeding five per glider). The aggregate points secured by each machine will decide the contest.

(d) Distance, Height and Duration Prizes.—Prizes of £5 5s. each will be awarded to the entrant of the glider recording the best distance, best height and greatest aggregate duration respectively during the contests.

(e) Daily Prize.—Special daily prizes may be announced by the organisers during the course of the meeting. No special entry form will be required.

(f) "Daily Dispatch" Prize.—The Manchester *Daily Dispatch* has offered a prize of £100 for the first flight to Blackpool. Full details obtainable from the *Daily Dispatch*, "Glider Competition," Withy Grove, Manchester 4. (The original conditions were: The prize to be awarded to the pilot of any type of motorless glider or sailplane who completes a flight with the starting point at or near to the headquarters of the Derbyshire and Lancashire Gliding Club at Camphill, Great Hucklow, Derbyshire, and terminating at Stanley Park Aerodrome or Squires Gate Aerodrome, Blackpool, or any other suitable landing place within the boundaries of the township of Blackpool. Failing this, the prize would go to the pilot landing nearest to, and less than 20 miles from, Blackpool Tower before the closing date of the competition.)

3. Any one glider may be entered for any or all of the foregoing contests on completion of the appropriate entry form (if any) and payment of the entry fee of 10s.

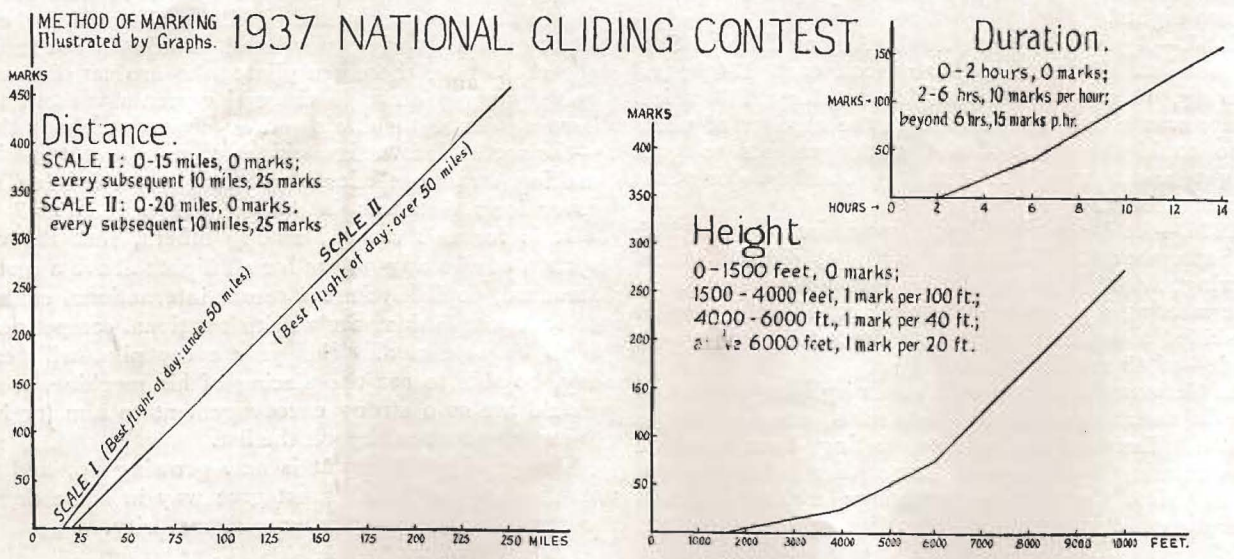
4. Nominated pilots may be changed subject to the discretion of the organisers at any time up to 12 hours before the commencement of the contests.

5. Competing gliders will be divided into two classes:—

(*a*) Single seaters with a span exceeding 46 feet.

(*b*) Single seaters with a span of 46 feet or less, and two seaters or multi seaters irrespective of wing span.

There will be no separate prize for the two classes, but machines in Class B will receive a bonus of 10 per cent. on the marks earned each day.



Method of Marking.

6. Marks will be awarded for duration, height and distance as follows:—

(*a*) DURATION.—No marks will be awarded for any individual flight of less than two hours' duration. For flights exceeding this period the marks will be:—

Over two hours and less than six hours at the rate of 10 marks per hour to the nearest six minutes.

Over six hours at the rate of 15 marks per hour to the nearest four minutes.

(Note.—Duration flights must be carried out within five miles of the launching point.)

(*b*) HEIGHT (i.e., the greatest height recorded above the starting point).—No marks will be awarded for height of less than 1,500 feet above the starting point. For heights exceeding this the marks will be as follows:—

Above 1,500 feet, but below 4,000 feet, 1 mark per 100 feet, between these heights.

Exceeding 4,000 feet, but below 6,000 feet, 1 mark per 40 feet, between these heights.

Exceeding 6,000 feet, 1 mark per 20 feet, above these heights.

(*c*) DISTANCE.—Marks will be awarded on two scales:—

(I.) When the best flight of the day is less than 50 miles no marks will be awarded for any flights of under 15 miles. For flights above this distance marks will be awarded at the rate of 25 marks for each 10 miles calculated to the nearest mile.

(II.) When the best flight of the day is over 50 miles no marks will be awarded for flights of less than 20 miles. For flights exceeding 20 miles marks will be awarded at the rate of 20 marks for each 10 miles calculated to the nearest mile.

7. The organisers reserve the right to announce "goal" flights or "out and back" flights on any particular day or days. When such flights are announced the method of awarding marks for distance will be in accordance with the nature of the flight and will be announced in advance.

8. Prior to the commencement of each flight the competitor must declare to the official observer or time-keeper the class of contest in which he is competing (i.e., height and distance, "goal" or "out and back," or duration). On a distance, goal, or "out and back" flight points may be scored for height and distance concurrently, but not for duration. On a duration flight points may be scored for duration only.

9. Before flying in the contests the entrant must produce a current certificate of airworthiness for the glider and proof that the glider and every pilot flying the same holds a "C" or "Silver C" licence and is insured against third party liability up to the limits of the Air Navigation Act, 1936.

10. Entrants and competitors are responsible for making their own arrangements as to retrieving after cross-country flights.

11. All entrants must bring their own barographs, together with calibration charts which must be produced to the organisers before the contests commence.

12. All barographs must be sealed before the commencement of each flight by an approved time-keeper.

13. In the case of distance flights landing points must be confirmed by the signature of an independent witness. If possible the pilot's map should be pin-pointed and signed for the purpose of verification.

14. No cloud flying must be attempted without parachutes.

15. All entries should be sent to Mr. B. A. G. Meads, 'Stonycroft,'' London Road, Alderley Edge, Cheshire, accompanied by the appropriate entry fees. The closing date for entries is August 21st, 1937. Late entries may be accepted by the organisers in their discretion at double entry fees up to 9 p.m., August 28th, 1937.

(Note.—To assist the organisers it is requested that entry forms should be sent in as early as possible. Competitors requiring accommodation should communicate direct and without delay to the secretary of the Derbyshire and Lancashire Gliding Club. Accommodation will be allocated in the order of application.)

16. The organisers reserve the right to add to, amend or alter these rules by supplementary notices to competitors and entrants.

The Competing Machines

It is impossible, at the time of going to press, to give a complete list of machines and pilots taking part in the meeting. A list will be posted on the notice board near the entrance to the club grounds.

The sailplane types which are expected to be represented are illustrated on the following two pages, where brief particulars are given of each.

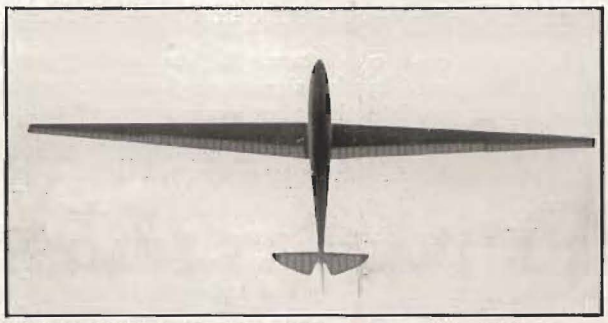
It is impossible to design the "ideal sailplane," since such a machine would have to possess qualities which are self-contradictory. It follows that, in actual practice, every sailplane design is a compromise; usually some qualities are stressed at the expense of others, so that the machine needs a particular type of weather to enable it to show at its best.

For soaring along a ridge such as Bradwell Edge with a wind blowing up the slope, a machine with the least possible sinking rate performs best; to obtain this a large wing span, such as that of the RHÖNADLER, is needed, and it will be noticed that, for competition purposes, the machines have been divided into two classes according to their span.

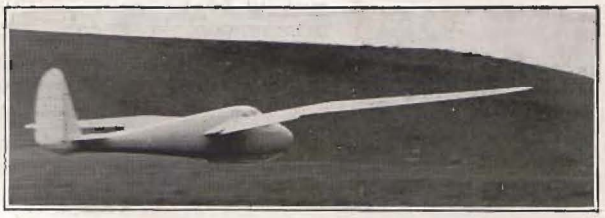
For keeping within very narrow areas of rising air, a small, nimble machine is most suitable; the H17 is an extreme example of such a type.

Most cross-country soaring flights are made by means of thermal currents—narrow columns of rising air going up from sun-heated ground. To keep within one of these, sailplanes, like birds, must fly round in circles; the machine which does this best has a slow flying speed and therefore light weight, with a wing designed for efficiency in turns. To be able to get quickly from one thermal current to the next without much loss of height, however, a sailplane of quite different design, such as the KING KITE, is wanted, which can travel fast with a good gliding angle.

Hence the need for compromise.



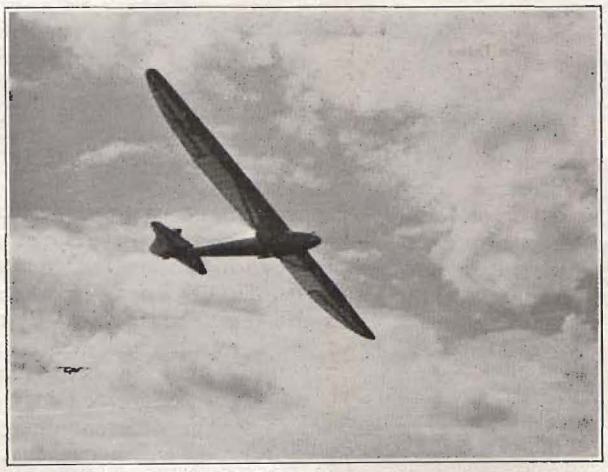
HJORDIS.—High performance sailplane, designed by G. M. Buxton, built by Slingsby Sailplanes in 1935, owned by P. A. Wills and G. M. Buxton. Span, 51 ft.; wing loading, 4 lbs. per sq. ft.



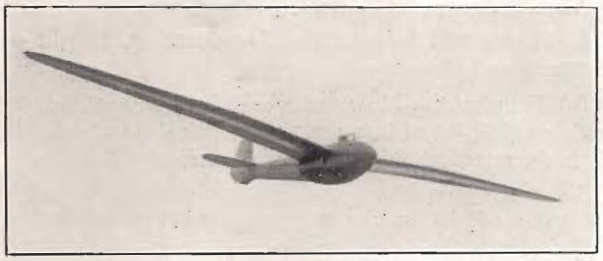
KING KITE.—High performance sailplane, designed and built by Slingsby Sailplanes for last month's International Gliding Contest in Germany. Span, 51 ft.; wing loading, 4 lbs. per sq. ft. (approx.). Rudder now larger than that in photograph.



KIRBY KITE.—A popular product of Slingsby Sailplanes, many examples of which are expected at the meeting. Span, 47 ft.; area, 157 sq. ft.; weight, 260 lbs. First produced 1935.



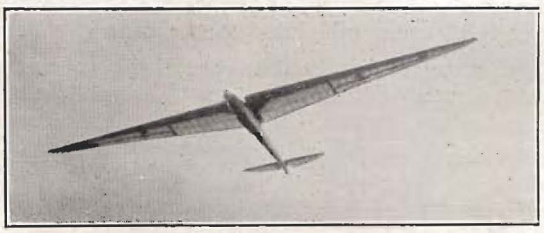
CAMBRIDGE.—Produced by Dart Aircraft, Dunstable. Span, 46½ ft.; wing loading, 2.81 lbs. per sq. ft. "Cambridge I" is unpainted; "Cambridge II" is painted white.



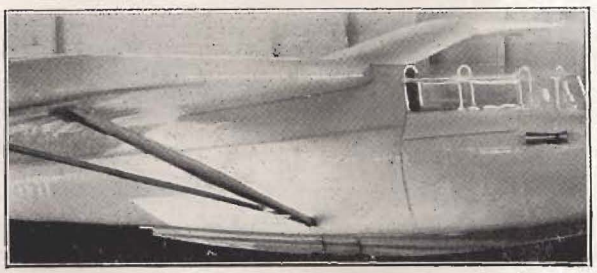
RHÖNSPERBER.—A successful German design by Hans Jacobs of Darmstadt; first appeared in 1935. Span, 54 ft. 4 ins.; wing loading, 3.1 lbs. per sq. ft.



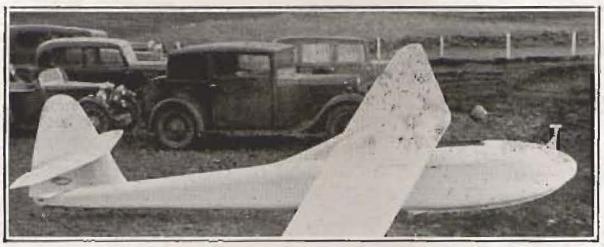
RHÖNBUSSARD.—An earlier design by Hans Jacobs. Span, 47 ft.; wing loading, 3.1 lbs. per sq. ft.



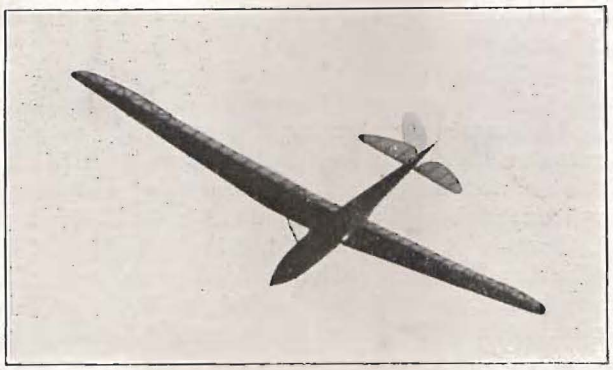
RHÖNADLER.—Designed by H. Jacobs in 1932. Span, 57 ft.; wing loading, 2.8 lbs. per sq. ft.



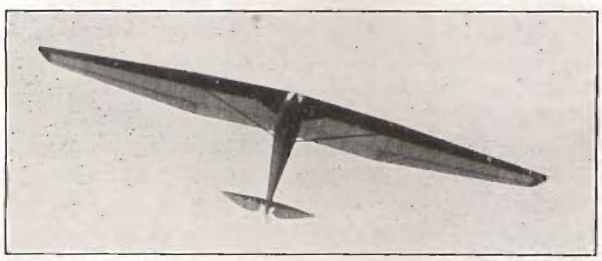
CONDOR II.—Designed by the brothers Dittmar, the younger of whom won the recent International Gliding Contest. Span, 56 ft. 7 ins. Owned by E. Thomas; painted red.



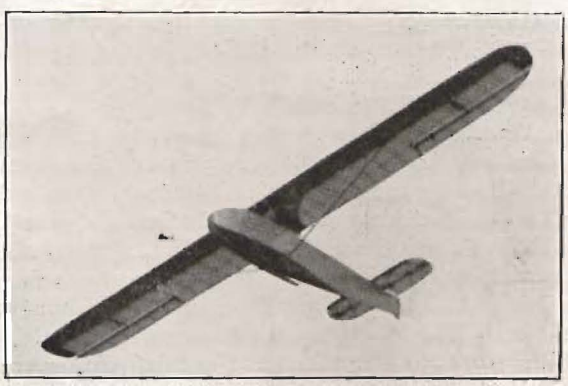
SCUD III.—Designed by L. E. Baynes in 1935, for use either as a pure sailplane or as a sailplane with auxiliary motor. The example present at this meeting has no motor. It is owned by L. E. Barker. Span, 45 ft. 6 ins.; wing loading, 3.75 lbs. per sq. ft.



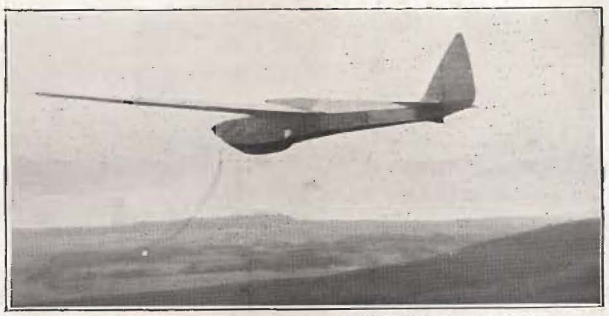
SCUD II.—Designed by L. E. Baynes in 1932; holds British height record. A small, compact machine, with a good performance in spite of its size. Span, 40 feet. Three examples are in existence, all under private ownership.



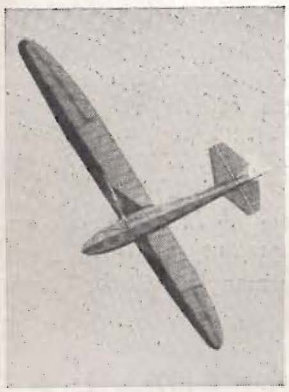
WREN.—Designed by W. L. Manuel; small, light, and easy to fly. Span, 40 feet. Four examples may be expected at this meeting, all slightly different. The "Crested Wren" (painted red) and "Golden Wren" are owned by members of the Derbyshire and Lancashire Gliding Club. The type is now marketed by the Dunstable Sailplane Co., Gerrard's Cross, Bucks.



H-17.—Designed by Ullrich Hütter, of Austria: efficient for its size and very nimble in the air. Several examples are being, or have been, built in England. Span, 31 ft. 10 ins.; wing loading, 3.44 lbs. per sq. ft.



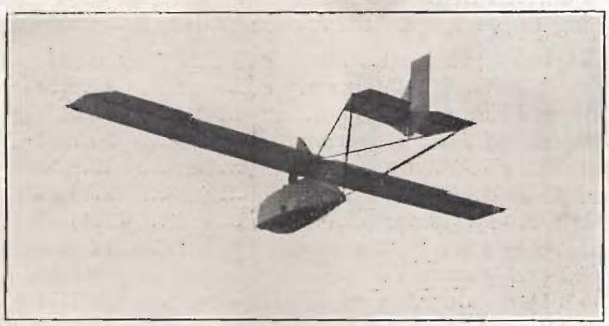
TERN.—Designed by N. S. Norway, of Messrs. Airspeed, in 1931. There are two examples in existence. Span, 50 feet.



GRUNAU BABY II.—A German design; the most widely used sailplane in the world; also manufactured in England. Span, 44½ feet.



FALCON III.—A two-seater sailplane with side-by-side seating; produced by Slingsby Sailplanes. Span, 58 ft.; area, 286 sq. ft.; weight, 500 lbs. The "Daily Dispatch" has presented the Derbyshire and Lancashire Gliding Club with a machine of this type, which recently attended the International Gliding Contest in Germany and there set up an international duration record for two-seater sailplanes.



SECONDARY SAILPLANE.—Several types of machine used for training pupils in soaring flight may be seen at this meeting, such as the "Falcon I" and "Kadet." The one shown above is a Dagnall primary training machine with a cockpit added; it may be used for "spot landing" competitions on days unsuitable for soaring.

Gliding Records

Duration

World's Record.—40 hours 55 minutes, by Ernst Jachtmann (Germany) in GRUNAU BABY II, at Sylt Island, North Sea; May 27th (10.45 a.m.) to May 29th (3.40 a.m.), 1937.

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

Distance

World's Record.—388½ miles, by Rastorguyev (Russia), from Moscow (Tushino Aerodrome) to Sickle and Hammer State Farm, Stalingrad Province; May 27th, 1937.

British Record.—Longest distance in Britain: 104 miles, by P. A. Wills in HJORDIS, from Dunstable Downs, Beds., to Pakefield, near Lowestoft; July 5th, 1936. Longest distance by British pilot: 111¼ miles, by P. M. Watt in KING KITE, from Wasserkuppe, Germany, to Cheb, Czecho-Slovakia; July 13th, 1937.

Altitude

World's Record.—18,753 feet, by Paul Steinig (Germany) in RHÖNSPERBER, Grunau, Silesia; May 22nd, 1937.

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

The "Silver C" Certificate

This is the highest award a sailplane pilot can get; to obtain it he must make soaring flights of 50 kilometres distance (31 miles), 1,000 metres climb (3,280 feet), and five hours duration. The distance and duration flights must be made separately, but the height can be combined with either.

Two years ago there were only 100 "Silver C" pilots in the world; four years ago 18, and six years ago six. Now there are about 500, mostly German pilots.

Fourteen British sailplane pilots have, at the time of going to press, qualified for the "Silver C" certificate:

No.	Name.	Awarded.
26.	G. E. Collins	17.5.34
45.	P. A. Wills	20.9.34
75.	R. G. Robertson	20.7.35
85.	S. Humphries	19.8.35
174.	J. C. Neilan	2.11.35
177.	C. Nicholson	17.11.35
208.	Miss N. Heron-Maxwell ...	17.5.36
241.	P. M. Watt	9.7.36
244.	H. C. Bergel	25.7.36
291.	A. L. Slater	18.9.36
298.	G. O. Smith	16.10.36
338.	J. S. Fox	1937
—	R. S. Rattray	—
—	P. B. N. Davies	—

Gliding Instruction

THOSE who wish to learn gliding and soaring flight can either join a gliding club or attend an instruction course; or they can do both.

A list of British gliding clubs is given on the opposite page; it is usually possible to join the club, or to obtain information, either by writing to the secretary or on visting the club site. At some clubs the pupil can progress through gliding to soaring; at others gliding only is done.

The larger clubs hold special instruction courses, to attend which the pupil need not be a permanent member of the club.

The Midland Gliding Club is holding an instruction camp at the Long Mynd, Church Stretton, Salop, from Monday morning, September 6th, to Sunday evening, September 12th. The fee for the course is £5 5s., inclusive of accommodation, food, and flying instruction. Applications should be addressed to Mr. D. C. Timings, 32, Bunbury Road, Northfield, Birmingham.

The London Gliding Club is holding an instruction camp from Tuesday, September 7th, to Thursday, September 16th. The fee, which includes full board and lodging, flying instruction with third party insurance, and use of club house, is eight guineas, plus one guinea special membership. Applications to the Secretary, London Gliding Club, Dunstable, Beds.

There are also instruction courses abroad, open to British pupils.

Three German gliding schools take foreign pupils, who must apply in the first place to: Aero Club von Deutschland, Berlin, S.W.11, Prinz-Albrecht-Strasse 5, Germany. They are:—

Grunau gliding school in Silesia: all forms of instruction from elementary work to soaring and aeroplane-towing.

Darmstadt: aeroplane-towing school at Griesheim Aerodrome.

Hornberg gliding school, near Stuttgart: specialises in instruction for advanced pilots. Activities continue all the year round, and there are four kinds of instruction course: Course "C," for "B" pilots who aspire to the "C" certificate; course "AC," winch-towing for "C" pilots; course "F," aeroplane-towing for "C" pilots; and course "L," for aspirants to the "Silver C" certificate. Each course lasts 15 days, and the charge is RM. 180 for a "C" or "AC" course and RM. 280 for an "F" or "L" course.

In Austria there is a gliding school, for both beginners and advanced pupils, in very pleasant surroundings on the Gaisberg mountain, near Salzburg. Particulars can be obtained from Anglo-Continental Express Co., Ltd., 177, Regent Street, London, W.1. A three weeks' elementary course, including tuition, board and accommodation, and travel from London to Salzburg and back, costs £19 18s. if booked through this firm.

Foreigners are also taken at the chief gliding school in Poland, which caters for both elementary and advanced pupils. Applications should be addressed to: Aeroklub Lwowski, Lwow, Dabrowskiego Nr. 2, Poland.

List of British Gliding Clubs and their Secretaries

This list is intended as a guide to those who wish to join a gliding club, or to see gliders and sailplanes in action. Not all the clubs mentioned are active, though it is hoped eventually to confine the list to active clubs. The list will be published as often as space permits, and club secretaries will oblige by helping to keep the particulars up-to-date.

For information as to the running of a gliding club, apply to The British Gliding Association, 119, Piccadilly, London, W.1. (Tel. : Grosvenor 1246-7-8.)

England.

BEACON HILL (Essex).—W. P. Harris, 22, Hamlet Road, Southend, Essex. Primary training ground at Canewdon, Essex. Workshop at Southend. Subscription, 10s. 6d, p.a.

BILLINGHAM.—J. Tunstall, Nth. Mt. Pleasant Street, Stockton-on-Tees. Primary training. Subscription, £1 p.a. (10s. for those under 21).

BRYANSTON SCHOOL.—F. W. Armitage, Bryanston School, Blandford, Dorset. Two-seater sailplane under construction. Subscription, 3s. 6d.

CAMBRIDGE UNIVERSITY.—J. W. S. Pringle and P. M. Thomas. Club rooms at 1, Benet Street, Cambridge. Flying ground at Caxton Gibbett (Tel. : Caxton 39) ; winch launching. Subscription, 3 guineas p.a. Flying charges, per launch : 8d. in primaries, 1s. 4d. in sailplanes. Limited number of non-University members admitted.

CHANNEL.—F. G. Whitnall, 16, High Street, Cheriton, Folkestone. Auto-towing at Hawkinge Air Station ; soaring at Arpinge, 2 miles N.W. of Folkestone. Hangar at Arpinge.

CORNWALL.—J. W. Graham, Red House, Tywardreath. Flying ground at Rosenannon Downs. Primary training ; soaring possible.

COTSWOLD.—J. D. Pether, Culver's Close, Burford, Oxon. Primary training at Kencott, or at Cassey Compton (near Northleach).

DERBYSHIRE AND LANCASHIRE.—C. Kaye, 63, Clarkhouse Road, Sheffield. (Tel. : 62463.) Primary training and soaring. Headquarters at Camphill, Great Hucklow, Derbyshire (between Buxton and Sheffield), adjoining flying grounds at Bradwell Edge and Eyam Edge. Clubhouse (Tel. : Tideswell 207) and hangar. Subscription 3 guineas p.a. ; non-flying £1 1s. (both include 5s. subscription to Royal Aeronautical Society, Manchester Branch) ; no entrance fee. Flying charges : from 6d. per flight ; soaring flights from 2s. 6d. Resident instructor-manager.

DEVON.—S. G. Tolman, Journal Office, Exmouth. (Tel. : 76.)

DORSET.—L. A. Lansdown, The Portman Arms Hotel, East Chinnock, Yeovil, Somerset. (Tel. : West Coker 01 Y4). Primary training and soaring at Maiden Newton ; soaring also at Kimmeridge, Isle of Purbeck.

EAST GRINSTEAD.—G. J. Smith, "Tolskity," Sackville Lane, East Grinstead, Sussex.

ESSEX.—W. Webster, 113, Coombes Road, Dagenham. Primary training.

FURNESS.—J. S. Redshaw, 18, Fairfield Lane, Barrow-in-Furness, Lancs. (Tel. : 803). Training sites at Hawcoat, Birkrigg and Gleaston. Soaring sites at Moorside (near Ireleth) and Bootle Fell, Cumb. Hangar at Moorside. Subscription, £2 p.a. and flying fees.

HARROGATE.—E. T. W. Addyman, The White House, Starbeck, Harrogate.

HEREFORD.—See Midland Gliding Club.

HULL.—R. E. Havercroft, 216, Park Avenue, Hull. Flying ground, Hedon aerodrome (auto-towing).

IMPERIAL COLLEGE.—L. S. Holt, Imperial College of Science, South Kensington, S.W.7. Members use London Gliding Club's machines and flying ground at Dunstable Downs ; also a sailplane for club's exclusive use.

KENT.—Miss R. H. Sinclair, Lady Place, Sutton Courtenay, Berks. (Tel. : Sutton Courtenay 46.) Primary training ground at Lenham, near Maidstone, Kent.

LONDON.—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 ; 13 gliders and sailplanes for members' use. Subscription, 3 guineas p.a. (non-flying, 1 guinea) ; entrance fee, 1 guinea ; flying charges, from 3s. per day. Resident full-time instructor ; flying on Sundays and every week-day except Thursday.

MIDLAND.—M. F. Barnes, 100, Holly Road, Birmingham 20. (Tel. : Smethwick 1181.) Resident Manager : J. B. Keeble, Whitcott, near Norbury, Bishops Castle, Shropshire. Primary training grounds at Handsworth (Vernon Avenue), Northfields and Hereford. Soaring site at Long Mynd, 3 miles W.S.W. of Church Stretton, Salop. Clubhouse and hangars ; 10 gliders and sailplanes for members' use. Subscription, 3 guineas p.a. (10s. 6d. junior membership) ; entrance fee, 1 guinea ; flying charges, 3s. per week-end for primary or secondary training ; 6s. per hour for soaring.

NEWCASTLE.—A. P. Miller, 25, Holme Avenue, Walkerville, Newcastle-on-Tyne, 6. (Tel. : Wallsend 63320.) Soaring sites at Chillingham. Auto-towing at Cramlington Aerodrome. Workshop in Newcastle.

NORFOLK.—"Ivy Cottage," North Walsham, Norfolk. Primary training at Skeyton, also at Mundesley (soaring possible).

PENRITH AND DISTRICT.—F. E. Kieser, Princes Street, Penrith.

PORTSMOUTH AND SOUTH HANTS.—R. E. Clear, York Cottage, London Road, Purbrook, Hants. Flying ground : Portsdown Hill.

PRESTON AND DISTRICT.—L. E. Falla, "Lendor," Lawrence Road, Penwortham, Preston. (Tel. : Preston 2301.)

ROCHDALE.—F. Hodgkinson, 114, Higher Birches, Whitworth, Lancs. Primary training at Shuttleworth ; hangar. Subscription, £2 p.a.

SHROPSHIRE.—G. B. Muir, "Ireland," Halford, Craven Arms, Salop.

SOUTHDOWN.—A. York Bramble, 7A, First Avenue, Hove 3, Sussex. (Tel. Hove 4335.) Primary training and soaring grounds at Devil's Dyke, Brighton. Clubhouse and hangar, ½ mile S.S.W. of Devil's Dyke Station.

STAFFORD (Gliding Section of Stafford Aero Club).—J. H. Simpson, 38, Newport Road, Stafford. (Tel. : 138). Primary training ; two gliders.

STOKE-ON-TRENT.—H. N. W. Goss, 36, Crewe Road, Alsager, Cheshire.

TEES-SIDE.—H. P. Dean, 11, Redwing Lane, Norton-on-Tees, Co. Durham.

WORKINGTON AND WEST CUMBERLAND.—C. D. Muntz, "Woodland," Ellerbeck Lane, Workington, Cumberland. Primary training ground at "The Hay," Cockermouth.

YORKSHIRE.—H. T. Blakeston, Spellowgate, Driffield, Yorks. Primary training and soaring. Flying ground, Sutton Bank, between Thirsk and Helmsley. Clubhouse and hangar. (Tel. : Sutton under Whitestone Cliff 19.) Resident Steward ; full residential facilities. Full range of machines for members' use.

Scotland.

ELGIN.—D. M. McRae, Park House, South Street, Elgin.

INVERNESS.—F. Oliver, 13, Leys Drive, Inverness.

PERTH.—R. Mackelvie, View Cottage, Union Road, Scone, Perthshire.

SCOTTISH GLIDING UNION.—J. W. Gardner, Journal Office, Alloa.

Northern Ireland.

ULSTER.—N. P. Metcalfe, c/o Ulster Spinning Co., Ltd., Belfast. Flying centre and hangar at Downhill, Magilligan Strand, Co. Londonderry. Auto-towing and soaring.

Channel Islands.

JERSEY.—A. J. Scriven, "Alcala," Samares, Jersey. Primary training and soaring at Les Landes, at north end of St. Ouen's Bay. Subscription, £3 p.a. Flying on Sundays and Thursdays.

Gliding Certificates

The "A" Certificate is given for a straight glide of 30 seconds duration followed by a normal landing. Badge: a white gull on dark blue ground.

The "B" Certificate is given for a glide of one minute duration which includes a right and left turn. The pupil must have previously made two glides of 45 seconds each. Badge: two white gulls on dark blue ground.

The "C" Certificate is given for a soaring flight of more than 5 minutes above the level of the start. Badge: three white gulls on dark blue ground.

The following gliding certificates, for which qualifying flights were made on the dates given, were granted by the Royal Aero Club at the committee meetings held in June and July, 1937:—

"A" Certificates

No.	*Name.*	*Club.*	*Date.*
697	D. S. Howie	London	21.5.37
698	F. R. Hynard	London	21.5.37
699	A. R. Gilbert	Southdown	17.5.37
700	H. Koch	London	23.5.37
701	T. L. Sanderson	Cambridge Univ.	29.5.37
702	B. R. Winstone	London	23.5.37
703	C. J. Wingfield	Cambridge Univ.	25.4.37
704	R. F. James	Yorkshire	11.8.36
705	L. E. Smith	Newcastle	2.6.37
706	A. A. Verity	Derby and Lancs.	2.6.37
707	W. R. Assheton	Cambridge Univ.	23.5.37
708	J. W. Leach	Yorkshire	30.5.37
709	J. I. Rogers	London	29.5.37
710	H. W. F. Jones	Cambridge Univ.	29.5.37
711	L. Wright	London	19.5.37
712	N. McClean	Newcastle	6.6.37
713	H. McCleery	Ulster	12.5.37
714	S. S. Henry	Ulster	15.5.37
715	W. L. Smith	Furness	23.2.37
716	L. Redshaw	Furness	14.3.37
717	J. Duthie	Derby and Lancs.	10.6.37
718	N. P. Anson	London	19.6.37
719	H. N. Murfin	Derby and Lancs.	19.5.37
720	R. S. A. Beauchamp	Furness	4.8.35
721	L. Adcock	London	19.6.37
722	R. E. Smith	London	16.5.37
723	J. G. Siderfin	Ulster	6.6.37
724	R. H. Gayner	London	23.5.37
725	R. A. Mills	Derby and Lancs.	13.6.37
726	P. G. Tovey	London	26.6.37
727	A. W. Jolly	Midland	6.6.37
728	J. J. McKeown	Ulster	Germany
729	P. S. Taylor	Newcastle	18.4.37
730	A. F. Leach	Newcastle	24.6.37
731	H. Bowler	Derby and Lancs.	20.6.37
732	C. C. Login	London	29.5.37
733	P. O. Middleton	Derby and Lancs.	3.7.37
734	A. J. Deane-Drummond	Yorkshire	17.5.37
735	H. A. Murrell-Woodhatch	Southdown	27.6.37
736	J. C. Lowson	London	27.7.37
737	H. M. J. Kittelsen	London	31.5.37
738	J. V. Inglesby	London	19.5.37
739	G. L. Raphael	Yorkshire	4.7.37
740	J. Hughes	Derby and Lancs.	2.7.37
741	N. H. Fresson	Yorkshire	1.7.37
742	E. B. V. Tolliss	London	12.7.37
743	W. L. Galton Bennett	London	8.7.37
744	J. A. E. Morley	London	7.7.37
745	G. W. Sommerhoff	London	12.7.37
746	F. Watts	London	16.8.37
747	S. D. Tuck	Yorkshire	Germany
748	C. R. Gray	Southdown	12.6.37
749	J. A. Else	Derby and Lancs.	18.7.37
750	R. S. Bussey	London	20.6.37
751	J. F. Cuss	Derby and Lancs.	20.7.37

"B" Certificates

No.	*Name.*	*Club.*	*Date.*
703	C. J. Wingfield	Cambridge Univ.	1.5.37
661	E. L. D. White	London	30.5.37
667	J. T. M. Parker	Cambridge Univ.	2.5.37
602	A. H. Bell	Newcastle	16.5.37
695	C. W. Verity	Derby and Lancs.	20.5.37
668	E. D. Widger	London	2.6.37
701	T. L. Sanderson	Cambridge Univ.	30.5.37
704	R. F. James	Yorkshire	11.8.36
705	L. E. Smith	Newcastle	2.6.37
706	A. A. Verity	Derby and Lancs.	6.6.37
636	R. B. Durose	Midland	6.6.37
601	L. L. D. Ormc	Derby and Lancs.	15.5.37
707	W. R. Assheton	Cambridge Univ.	30.5.37
708	J. W. Leach	Yorkshire	6.6.37
716	L. Redshaw	Furness	30.5.37
715	W. L. Smith	Furness	25.4.37
714	S. S. Henry	Ulster	15.5.37
713	H. McCleery	Ulster	12.5.37
711	L. Wright	London	2.6.37
710	H. W. F. Jones	Cambridge Univ.	30.5.37
696	J. J. Parker	Derby and Lancs.	10.6.37
611	C. M. Ratcliff	London	11.4.37
623	Miss M. N. Searl	London	30.5.37
397	G. T. Rubick	Southdown	16.5.37
491	D. Cramp	Derby and Lancs.	2.5.37
723	J. G. Siderfin	Ulster	19.6.37
720	R. S. A. Beauchamp	Furness	26.7.36
632	S. Hambling	London	31.5.37
719	H. N. Murfin	Derby and Lancs.	2.6.37
341	J. A. L. Royds	London	30.5.37
721	L. Adcock	London	27.6.37
619	L. de L. Humphreys	Midland	4.7.37
732	C. C. Login	London	31.5.37
734	A. J. Deane-Drummond	Yorkshire	6.6.37
737	H. M. J. Kittelsen	London	23.6.37
738	J. V. Inglesby	London	30.5.37
739	G. L. Raphael	Yorkshire	4.7.37
741	N. H. Fresson	Yorkshire	1.7.37
717	J. Duthie	Derby and Lancs.	13.7.37
448	G. W. Brown	Ryedale	11.7.37
655	D. Hobson	Derby and Lancs.	15.6.37
744	J. A. E. Morley	London	8.7.37
746	F. Watts	London	1.11.37
747	S. D. Tuck	Yorkshire	16.8.36
745	G. W. Sommerhoff	London	17.7.37
750	J. F. Cuss	Derby and Lancs.	27.7.37

"C" Certificates

291	L. A. Griffiths	Channel	23.5.37
141	F. G. Whitnall	Channel	23.5.37
695	C. W. Verity	Derby and Lancs.	29.5.37
545	W. E. Hick	Newcastle	23.5.37
541	J. A. Allan	Newcastle	30.5.37
660	R. M. Smart	Newcastle	30.5.37
576	A. L. Jones	Derby and Lancs.	27.5.37
715	W. L. Smith	Furness	30.5.37
716	L. Redshaw	Furness	31.5.37
470	J. M. Feeny	Derby and Lancs.	30.5.37
706	A. A. Verity	Derby and Lancs.	15.6.37
696	J. J. Parker	Derby and Lancs.	15.6.37
723	J. G. Siderfin	Ulster	19.6.37
588	G. R. B. Bell	Ulster	19.6.37
714	S. S. Henry	Ulster	19.6.37
728	J. J. McKeown	Ulster	20.6.37
708	J. W. Leach	Yorkshire	27.6.37
636	R. B. Durose	Midland	4.7.37
407	Miss M. S. Thring	London	28.6.37
703	C. J. Wingfield	Midland	4.7.37
619	L. de L. Humphreys	Midland	4.7.37
286	C. A. Back	Midland	4.7.37
603	A. A. J. Sanders	Midland	4.7.37
659	E. M. Read	London	28.6.37
627	W. E. Crease	London	28.6.37
734	A. J. Deane-Drummond	Yorkshire	22.6.37
747	S. D. Tuck	Yorkshire	18.8.36
713	H. McCleery	Ulster	12.6.37
670	P. E. A. Cowley	Imperial College	7.7.37
667	J. T. M. Parker	London	10.7.37
592	E. R. Kearney	London	7.7.37
739	G. L. Raphael	Yorkshire	7.7.37
704	R. F. James	Midland	3.1.37

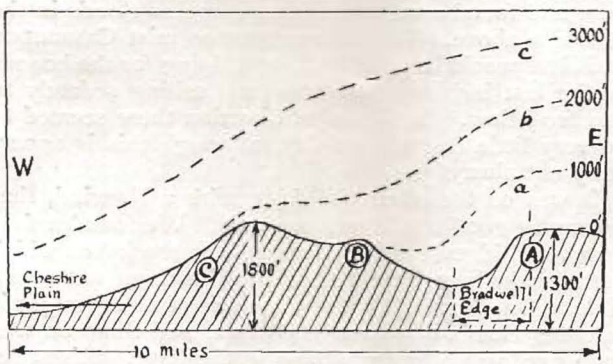
Local Knowledge

A BRADWELL EDGE PHENOMENON

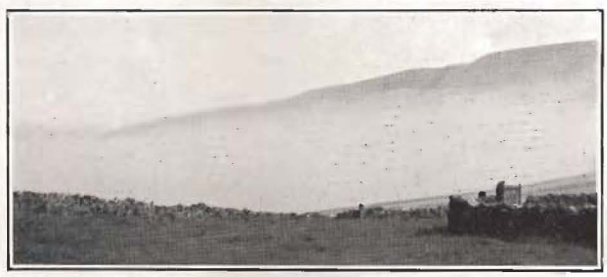
TWO flights made from the site of the Derbyshire and Lancashire Gliding Club on June 22nd confirm an interesting theory on the extraordinary hill-lift obtainable from the Bradwell Edge slope in a N.W. wind and in certain conditions.

It has often been noted, particularly in the pioneer flights on this site by the GOLDEN WREN, that in smooth, non-thermal conditions the normal hill-lift on this slope extends up to about one mile out and to 1,000 feet above the hill, after which a burble is encountered but more lift can be obtained by going further out from the hill, when, in a 20–25 m.p.h. wind, about 2,000 feet maximum can be reached.

In higher winds, up to 35 m.p.h., a further interesting phase occurs in which, after the 2,000 mark has been reached, another 1,000 feet of lift is available by pushing out into wind for one to two miles from the hill. Heights over 3,000 feet over the hill-top have been reached in this way, and at these heights the lift area extends over about six square miles.



The contour of the upwind country (C) is thought to be responsible for this latter phenomenon, and it appears that the normal lift "a" produced by the Bradwell Edge slope (A) is over-ridden by a second wave of smoother air flowing over the crest (B) of the hill on the opposite side of the valley, and that this second wave "b" gives the 1,000 to 2,000-feet height. In winds over 25 m.p.h. the third wave "c" develops, above 2,000 feet, in consequence of air being forced up by the high ground (C) jutting down into the Cheshire Plain ten to fifteen miles away. This air flowing over the Bradwell–Hucklow area still has an upward gradient, and by virtue of conditions already encountered in its journey from the sea, has been whipped smooth.

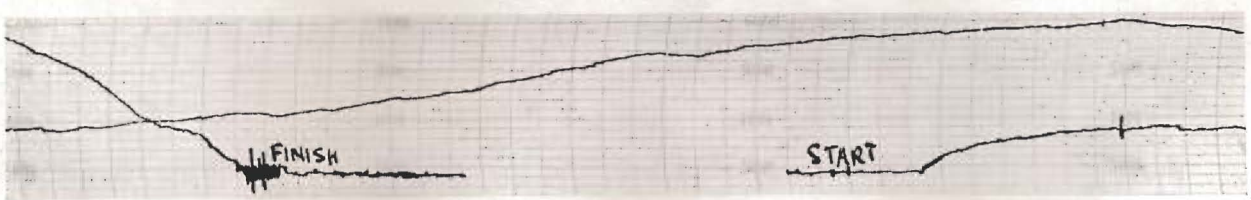


A photograph of Bradwell Edge from Windmill Village on Whit-Monday morning, about 9 o'clock. Cold air has run down into the valley during the night and shows its presence as a layer of mist, which takes some time to disperse even when thermal currents have begun to rise from the high ground, as they had when this photo was taken. When the cold air begins to collect in the evening, the displaced warm air may go up in the form of an "evening thermal" and take the pilots of the Derbyshire and Lancashire Gliding Club up with it to considerable heights.

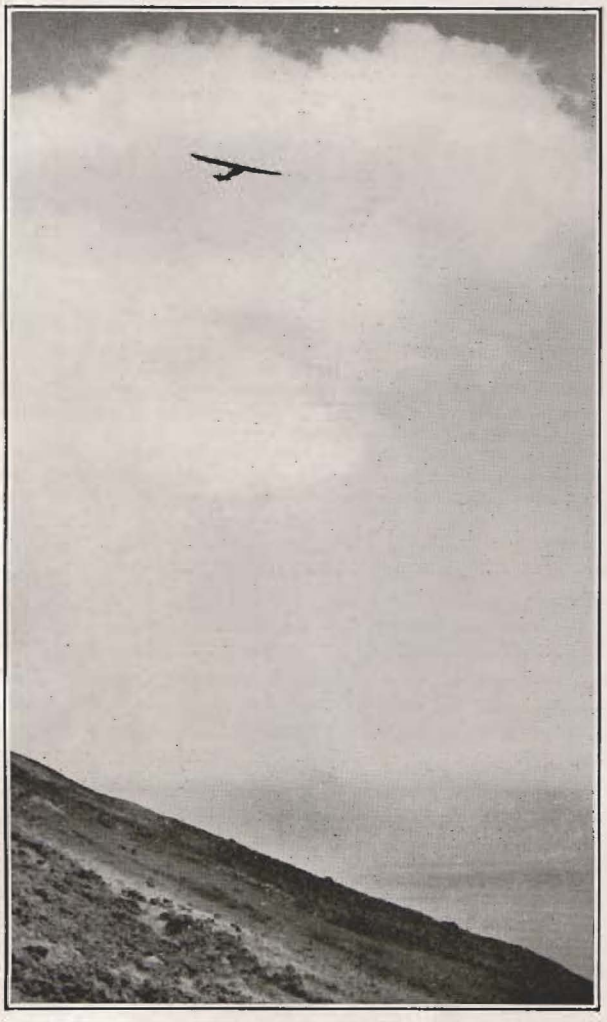
A. Davies and C. A. Kaye, flying successively in Hiscox's first KIRBY KITE on June 22nd between 7 p.m. and 10 p.m., found conditions as described, and reached over 4,000 and over 3,000 feet in turn, Davies gaining a trifle of assistance from stray clouds, but Kaye, taking off at 8.30 p.m., having a clear sky. Profiting by Davies's flight Kaye took a barograph with a view to recording something over the magic 1,000 metres, and obtained the chart shown.

At approximately 1,200 and 2,400 feet can be seen the breaks between the stages of lift, at these times the pilot being engaged in flying out further from the hill to reach the next wave. From the times taken to reach the 1,000, 2,000, and 3,000 feet heights it is interesting to note the type of lift encountered. Except at the start, very rarely did the rate of climb exceed five feet per second, and much of it was at six inches per second or less. Indeed, at 800–1,000 feet the aneroid suggested that all was over, and with the sun dropping behind the far hills and the moon rising on the other horizon there was little encouragement to struggle for the 3,000 feet mark. However, a Slater-Cobb variometer is a delightful instrument, and by burying one's head in the cockpit and flying with one eye on the A.S.I. and one on the variometer the aneroid was slowly coaxed up to the maximum, which, although it wouldn't stretch to 1,000 metres, was quite enough to have to lose before dark.

C.A.K.



Seaside Soaring



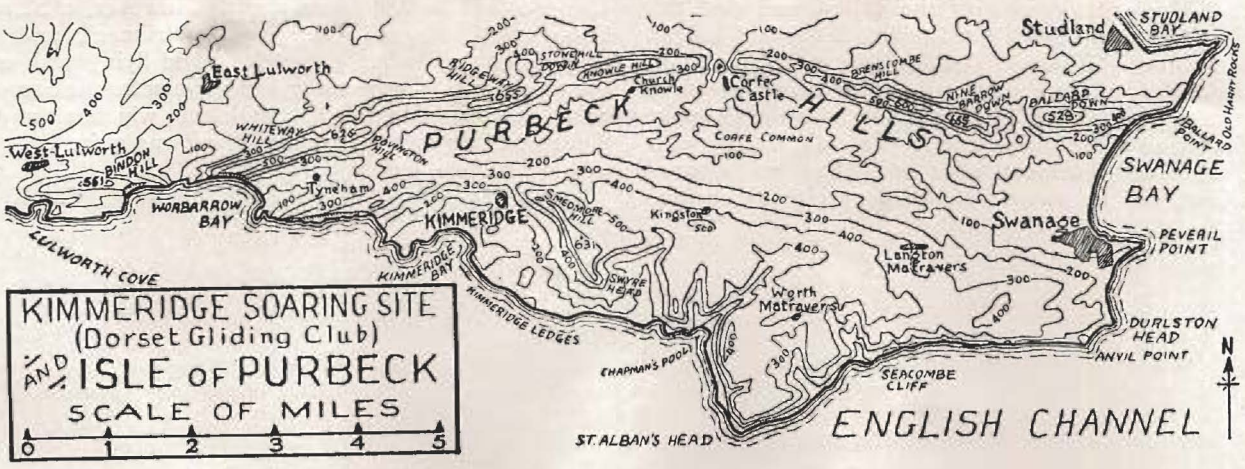
P. M. Thomas, in the "Cambridge I," soaring over the Dorset coast at Smedmore Hill, Kimmeridge.

[Photo by J. E. Simpson

A CAMPING holiday by the sea, on the top of a soaring ridge, with a fleet of sailplanes at one's disposal; what better post-examination tonic could there be than this?

There were about a dozen of us, and to the Dorset Gliding Club's delightful site at Kimmeridge we took the KIRBY KITE, CAMBRIDGE I, and TOTTERNHOE sailplanes, together with a winch to launch them with. Most of us went down by car, and Slazenger flew in his "Moth," but Griffin, carrying the motorless-flying dogma to its logical conclusion, cycled. We were lucky in having a soaring wind on each of our five days there (June 13th-17th inclusive). On three of them the wind was south-westerly and Kimmeridge Hill itself could be used; but it was interesting that often the wind direction higher up was at least 90 degrees different, and it was the local sea-breeze on which we were soaring. Sometimes this brought a low mist in with it, and one could then have great fun—and also a little practice with the KITE's blind-flying equipment—by allowing the hill lift to push one up into the mist, and then steering an up-wind course until the ground reappeared. Penrose, who was there for the week end with his PEGASUS, on one occasion climbed right up through the mist and found some tantalising cumulus clouds in the sunshine above. When there was no mist CAMBRIDGE and KITE would be up at 700 feet fighting for the honour of the last inch, with TOTTERNHOE sailing sedately to and fro below. In this wind direction there seemed to be very little thermal activity, although this is apparently not always the case.

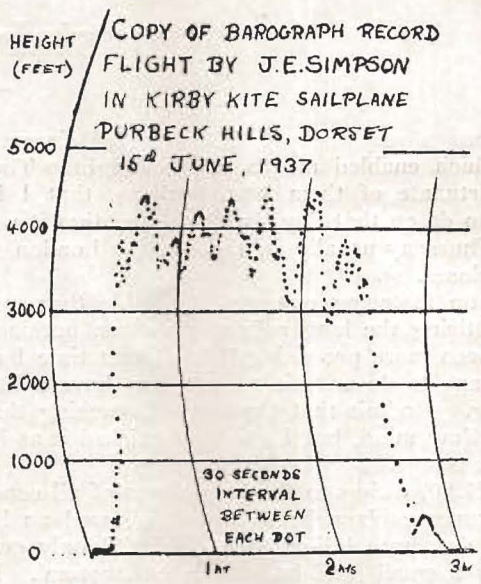
It was on the other two days, with a N. wind, that the really good conditions occurred. We found a field on top of Ridgeway Hill (part of the Purbecks) on which both bungy-launching and hilltop landings were possible. On June 15th the sky was full of majestic cumulus clouds at about 5,000 feet, and Simpson was soon circling up towards them in the KITE. His style, however, was somewhat handicapped by the presence of the sea only two miles down-wind! He therefore had to work up-wind, hopping from cloud to cloud; but this was slow going, and it was perhaps an hour before he finally dwindled from sight to the north, leav-



ing us to lie in the grass and watch the CAMBRIDGE sporting overhead.

Soon the cloud under which Simpson had disappeared reached us, and I watched it uneasily as it drifted on out to sea. Perhaps it still contained poor Simpson and, worse still, our nice new KIRBY KITE! But these melancholy thoughts were cut short by the reappearance of Simpson himself, still up-wind, from another cloud. After 2½ hours in the air he landed and told us all about it. He had several times reached cloud base at about 4,600 feet (above start), and flown straight at 55 m.p.h. without loss of height. If only he could have done this down-wind! As it was, he was unable to go further than Winterborne Zelstone, about 12 miles up-wind (and only five miles from Turner's Puddle).

Two days later somewhat similar conditions occurred, except that there was hardly any wind at ground level. There were, however, occasional faint puffs which, with a little imagination, could be attributed to the passage of clouds overhead. The patient ground-crew launched me into one of these in the KITE, and after losing height for one beat I caught the hoped-for thermal and managed to soar for 1½ hours. I reached about 2,300 feet three times, but could never exceed this. Later in the day the wind increased, and I tried again. After an hour over the slope, during which my greatest height was 800 feet, I accidentally observed what I have since learned from watching the pilots at the Wasserkuppe —namely, that it often pays to fly out into the blue over the valley even at the risk of having to land at the bottom; for when, having decided to land, I flew out to lose height, I almost immediately found a thermal which took me indirectly to 4,000 feet! By this time I had drifted over the coast and about three miles out to sea. On the way, at 2,000 feet, my anxiety to avoid a wetting made me leave my thermal, but I soon found another in which I kept, come what might, until the



magic thousand metres had been exceeded. Needless to say, it was a most wonderful experience—but, like much that is wonderful in nature, tinged with fear; and I must confess to deriving a certain comfort from the sight of the white sails of a boat a few miles further out to sea!

However, I got back with lots of height to spare, found another thermal above the launching point at 800 feet, and drifted seawards again, climbing slowly to 2,000 feet. This time I flew along the coast about half a mile out as far as our camping site on Kimmeridge Hill, where I turned in and landed.

A delightful holiday! May succeeding generations of the C.U.G.C. have many more like it.

KEITH TURNER.



J. E. Simpson, in a "Kirby Kite," starting his out-and-return flight to Winterbourne Zelstone from Purbeck Hills, June 15th, during the Cambridge University Gliding Club's camp on the Dorset coast. Note the clouds: by using the up-currents under successive clouds, the pilot was able to work his way 12 miles up wind and back again. Another pilot during the camp flew three miles out over the sea.

[Photo by G. Kidd

Dunstable to Southend

IT was a very lucky combination of circumstances which enabled me to do this flight. The most fortunate of them was, perhaps, that I had no work to do on that day, July 8th, and that it was not, as a Thursday usually is, the day the London Gliding Club closes.

So, on motoring over to Dunstable that morning, and noticing the long rolls of cumulus, nothing could have been more promising, but at that time I did not dare hope to do anything more than have a little fun circling. I admit that the idea of reaching the coast crossed my mind, but I quickly banished it as being a ridiculous one.

By 11.20, owing to the helpfulness of all concerned, the SCUD was launched. There followed an hour of rather desperate hill-scraping, relieved only occasionally by a small (and badly utilised) thermal. During that time I noticed to my disgust that another machine was more often circling, and was high above me. It was probably this that gave me the final impetus when the moment came for "burning my boats."

I was only just above the hill-top when that fateful thermal came my way. The SCUD went sailing up to 2,500 feet (per barograph—the altimeter stuck at 1,500 feet). Remaining at roughly this height I drifted slowly down-wind as far as Luton Hoo—and then began to sink. Fearing this might be the end, I made for Harpenden, my home town, and spotted a field to land in. But right over the town there was a nice thermal which took me from 1,000 to 3,000 feet.

It was now worth while making for Hatfield aerodrome, where I eventually arrived, all ready to land, with the altimeter reading 300 feet. Several people stood and stared, presumably waiting for my landing, which to me at any rate seemed inevitable. But no—a heaven-sent thermal took me from that height to the cloud base at 4,300 feet in eight minutes. It was very, very satisfactory to do that right over an aerodrome.

That thermal seemed to originate over the big Hatfield road junction. It got me nicely under the clouds, and for the next 25 miles or so my height did not drop below 3,700 feet. It was just a matter of dodging across the patches of blue, with very little circling, from one line of clouds to the next.

Soon after passing North Weald aerodrome I was startled by a tremendous roar, and a squadron of six Gloster "Gladiators" flashed by me and into the clouds. It seemed they passed only a hair's breadth away, and I could not help laughing at the thought of the very first rule of the air for aeroplanes, which can be so rarely applied.*

At the end of the cloud street there was nothing for it but to plunge off into the blue (literally). By this time I could just make out the Thames winding away on the right. At all costs now I must get to the coast. And it was an intensely exciting moment when the sea first dimly loomed in the distance. It was still possible to maintain a reasonable height with the aid of thermals, and soon I picked up a landmark and made my way across wind to Southend aerodrome. With 2,500 feet to spare it was tempting to try and work further along the coast cross-wind, but the estuaries and mud-flats looked very inhospitable, and so I contented myself with a little tour of the town and landed on the aerodrome at 4.0 p.m.

Now that any difficulties met with on this flight are fresh in my mind, perhaps it will be excusable to offer some advice, though perhaps it is obvious enough. The first thing, as Captain Rattray has said, is that it is fatal to be in too much of a hurry. Get every inch of height out of each up-current before proceeding to the next. Another point is the extreme importance of never losing contact for a moment with a thermal once it has been met. Turn as steeply as you like as soon as the lift falls away, and if necessary turn right through 180°. The chief consideration on these occasions is to stay inside the area of rising air; accurate flying is of secondary importance. Lastly, it is my opinion that a variometer, very efficient and placed where it can be easily seen, increases one's chance of doing a cross-country flight by at least 50%. Any other guides to thermals are far too unreliable, though it is claimed, I know, that they can be seen, heard, and even smelt. The variometer should be watched practically the whole time, and such things as clouds, cloud-shadows, roofs, and light-coloured fields should be used only as a very rough indication of where the lift is to be sought. Also, if the eyes are kept focussed on the instrument, it will be easier to describe true air circles, instead of circles over the ground. I am sure the importance of a sensitive and reliable variometer cannot be over-emphasised.

P. B. N. DAVIS.

* "Aeroplanes give way to airships, balloons and gliders."

Where to See "Plane Sailing"

Aug.	26	3	days	Monseigneur, Edinburgh.
,,	26	3	,,	Cinenews, Southampton.
,,	26	3	,,	Tatler, Liverpool.
,,	26	3	,,	Lyric, Guernsey.
,,	30	3	,,	News Theatre, Bath.
,,	30	3	,,	Elysian, Cheadle Hulme.
,,	30	6	,,	Tatler, Manchester.
Sept.	2	3	,,	Cinema, Wishaw.
,,	2	3	,,	Rex, Wilmslow.
,,	2	3	,,	Princess, Barnsley.
,,	2	3	,,	Spa, Buxton.
,,	2	3	,,	La Scala, Motherwell.
,,	5	7	,,	Gaumont Palace, Birmingham.
,,	6	3	,,	Picture House, Monmouth
,,	6	3	,,	Palace, Bridgwater.
,,	6	6	,,	Grand, Leek.
,,	6	7	,,	Rivoli, Whitechapel.
,,	9	3	,,	Palace, Chepstow.
,,	9	3	,,	Tower, Goole.
,,	9	3	,,	Picture House, Salisbury.
,,	9	3	,,	Langham, Hull.
,,	13	3	,,	Picture House, Cirencester.
,,	13	6	,,	Odeon, Warrington.

Cloud Flying

By KENTIGERN

THE first difficulty in cloud flying is to keep control of direction, that is to say, to know and to control the yawing. A man does not have much sense of direction, so that, for example, if he tries to walk straight on a flat place in the dark he walks in a circle.

The next difficulty is to keep control in pitch. The senses are not so much deficient for feeling this, but the control in pitch in a sailplane has to be so accurate that it is difficult to avoid large changes of speed.

The last and least difficulty is to control the machine in roll, and this is the least because some error in roll is not so important as errors in other ways, and it can easily be shown by some form of pendulum or it can be felt by the pilot.

The instruments used for cloud flying are: a turn indicator, with which is combined some form of damped pendulum to show side-slip; a pitch indicator; and the air speed indicator, which can also be used to show the attitude in pitch. The sensations of the pilot are also used, but are not always reliable, and the pilot must know which he must disregard and which he can use.

The turn indicator has a needle which shows the direction to which the machine is turning and the rate. This indication is true except when the machine is pitching up rapidly, when the needle is unstable and will show the full rate of turn to the right or to the left even though the machine may not be turning at all. As a pilot will not pull up violently when going fast, the turn indicator will not have this error above a certain speed which can be found by experiment. If the pilot judges that he may be pitching up rapidly while going at slow speeds, he centralises the rudder until he judges that the pitching up has ceased.

The pilot's response to the turn indicator is hindered by his senses. The pilot can feel when he is starting a turn, but if the turn continues steadily he seems to forget that he is in a turn; then when the turn stops, he feels that he is starting a turn in the opposite direction. This false feeling is unfortunately very convincing. A pilot may find that it is easier to combat it if he says to himself, when stopping a turn by centralising the turn indicator needle: "Now I am stopping a turn, which feels like starting a turn the other way."

If the machine is going straight, all the other controls work normally, so that the first thing for the pilot to learn is the use of the rudder to centralise the turn needle.

The pitch attitude is shown by three things: the pilot's ear, by which he can judge the speed and so know if he is at the right pitch angle or if he is climbing or diving; the speed indicator, which tells the pilot his speed (but which may freeze up in clouds); and the pitch indicator. The pitch indicator has the disadvantage that it only shows the pitch attitude of the machine when it is in steady flight. If, for example, the machine suddenly pitches down, it will begin to gather speed, and this acceleration acts on the pitch indicator in such a way as to prevent it from showing the change of pitch. As the machine gathers speed at the new pitch angle, the pitch indicator will begin to show, and will show the pitch completely when the machine has got its new steady speed. The pilot's reaction to this instrument must be slow, to give it time to tell him the truth; so that it is important to cultivate the use of the ear, which gives a quicker and reliable indication.

The angle of bank is shown by the top needle of the turn indicator, or by a ball or a bubble in some models. It can also, of course, be felt. So that the pilot can learn to correct any error in bank automatically, or he can go by the bank indicator.

The pilot has learned to fly by seeing the position of the sailplane, and partly by feel. For cloud flying he has to fly by the indications of the instruments, and also, to a lesser extent, by feel. This great change can be done most easily with dual instruction, which is a great advantage to anyone who can get it. The pilot who is not able to get dual instruction may teach himself gradually if he can put his head into the cockpit so that he cannot see out at all.

The instruments are used systematically in a definite order. When flying straight by instruments, the pilot:

(1) Looks at the turn needle and centralises it with the rudder.
(2) Looks at the pitch indicator (or the air speed indicator or, best of all, listens) and corrects the pitch.
(3) Looks at the bank indicator and corrects bank. Or he can do this by feel.

When the pilot is well able to do this, he can improve on it by correcting the turn by using bank and rudder together, though he should first concentrate on correcting the turn and not worry about the exact bank. So the pilot:

(1) Centralises the turn needle by using rudder and stick.
(2) Corrects the pitch.
(3) Corrects the bank.

The use of instruments becomes automatic with practice, but if the pilot finds he is getting in a muddle he can always go back to this system to get straight.

The pilot should arrange, if possible, that there is no load on the stick at the speed that he wants to fly. When learning by himself, he first flies ordinarily with all the instruments working until he is accustomed to the indications that they give. Then, when he is at a good height and clear of other machines, he puts his head into the cockpit for a moment and tries to fly by the system. (He may find it easier if he begins with the second system and leaves out the first step.) With practice he becomes able to fly by instruments for longer periods.

As soon as he can fly straight, he can try a gentle turn, and for this there is no difference except that the turn needle is kept at the figure 1, and later at 2, instead of central.

There is no need to see the ground for thermal soaring, so that, as soon as he can do turns, the pilot can

fly in thermals with his head in the cockpit and so increase the time he spends in blind flying practice.

It should not normally be necessary to do steep turns (at rate 3 or 4 on a normally adjusted turn indicator), but it may be a good thing to practise them. They are more difficult, as the bank must be held off and some backward pressure is usually necessary on the stick. Thus, while correcting the speed, the pilot must remember to hold off the bank, and when correcting the bank he must not relax the backward pressure on the stick. For practising this, the pilot decides on the speed at which he is going to fly, and he also must decide the maximum speed that he will allow, which may be 25 m.p.h. more. If the speed reaches this maximum, he goes back to straight flight, correcting strongly and, of course, using the system.

The pilot, when he is able to do steep turns, may consider himself able to fly by instruments. But it is a good thing to be able to get out of a spin by instruments.

The procedure to get an aeroplane out of a spin, if the aeroplane comes out of a spin easily by the use of rudder alone, is:

(1) Put on full opposite rudder until the turn indicator needle comes out of its corner and goes into the other corner.
(2) Immediately centralise the rudder.
(3) Ease the stick forward to its normal position.
(4) Tidy up the instruments by using the system.

When the opposite rudder is put on (1), the spin stops and the needle comes out of its corner. The machine is then going slowly with the stick hard back and so pitches up rapidly so that the turn indicator becomes unstable and the needle goes to the other corner. As the turn indicator has ceased to be true, the rudder is centralised (2). To avoid pitching up too far and stalling, or even doing a tail-slide, the stick is then eased forward to its normal flying position (3). With the stick forward so that the quick pitching up is prevented, the turn indicator again tells the truth and the pilot can use the system to tidy the turn, bank, and pitch indicators into their normal positions, as they will all be out of place.

There are two errors that the pilot may make. Either he may pull up too much or he may pull up too little. If he pulls up too much he must judge the moment at which the nose begins to sink, when the turn indicator tells the truth. He can then use the rudder boldly to keep straight and use the system. If he pulls up too little the speed rises, and when this has happened he can trust the turn indicator and use the system.

The technique of instrument flying which has been described here has been derived mostly from aeroplanes, and pilots may find better ways of flying sailplanes. In particular, the rate of climb indicator may be found to be useful.

The description so far assumes nothing about the stability of the machine, but clearly the task of the pilot is lightened by a stable machine, and it seems that sailplanes for flying in cloud should be rather stable.

It is very important to understand the instruments and to have a great deal of practice in using them before they are really needed. Many good pilots have got into predicaments in clouds, so that it is clear that possession of the instruments, without practice in their use, is not enough for success. In fact it is extremely difficult to learn to fly by instruments suddenly when in an emergency.

Flying by instruments requires the development of new reactions, which is only easy if it is done gradually by practice and with a good understanding of the action of the instruments.

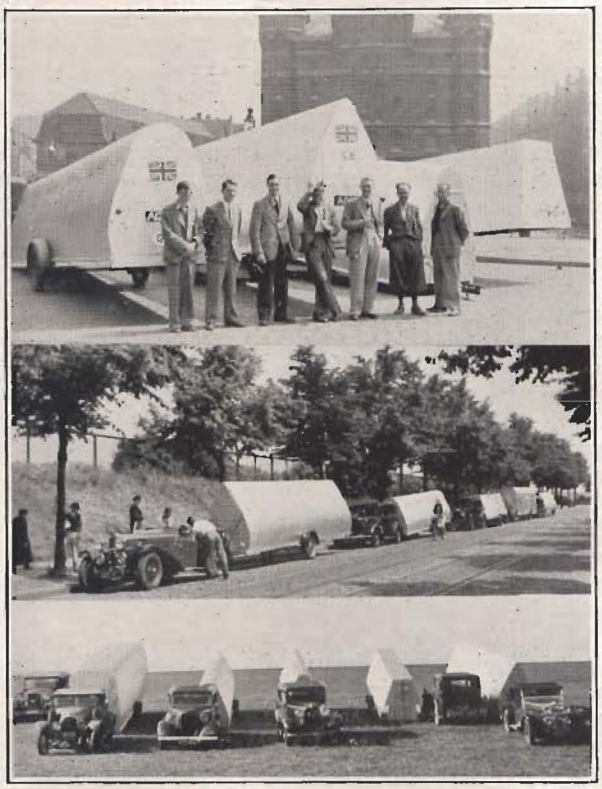
International Soaring

The articles and descriptions of the International Soaring Competitions at the Wasserkuppe, which follow on the next eight pages, are only a first instalment, as space cannot be found in one issue of THE SAILPLANE to deal with every aspect of the meeting.

Professor Brunt, to whom we are indebted for the first article, had the arduous and responsible job of acting as leader of the British team throughout the meeting. He is Chairman of the British Gliding Association.

Next month particulars of the flying will be given in fuller detail; we also have descriptions of some of the more interesting foreign types, and some technical notes by Mr. B. H. T. Olver.

The American National Soaring Contest at Elmira, which concluded recently, was an unusually interesting one, and we are indebted to Mr. L. B. Barringer, Manager of the Soaring Society of America and Editor of *Soaring*, for details of what happened, which will be published as soon as space permits.



Getting the British entries to the Wasserkuppe: three stages. Above, just arrived at Hamburg docks; left to right, J. S. Sproule, P. M. Watt, P. Shaw, R. Wills, B. H. T. Olver, G. O. Smith, C. L. Ruffle. Centre: stopping for adjustments *en route*. Below: arrived on the Wasserkuppe and lined up in the special pen provided.

The International Rhön Contest

By PROF. D. BRUNT



The flags of Czecho-Slovakia, Switzerland, Austria, Poland, Jugo-Slavia, Great Britain, and Germany displayed along the frontage of the Wasserkuppe Gliding Centre.

THE British team went out to the Wasserkuppe, not with the hope of gaining big prizes, but in order to learn, by observing the performances of other nations, something of the technique of the more advanced stages of soaring flight. We had in fact been warned that no nation could expect, on its first visit to International Competitions, to achieve striking success. We were therefore not depressed by the extraordinary achievements which we saw at the Wasserkuppe. The rather overworked word "extraordinary" is the only word which can be used to describe some of the things we saw. On July 10th conditions appeared so hopelessly bad for distance flights that in all only nine starts were made, of which eight led to flights of at most a few miles. But the ninth, that of Dittmar, led to a flight that ended 177 kilometres away.

The lessons which we learned at the Wasserkuppe will require careful discussion and digestion before we shall be in a position to state categorically what are the precise steps which must now be taken, in order to bring British gliding up to the standard of some of the competitors in the International Competitions. It is, however, obvious that if we are to take part in any future competitions with any hope of success, we must develop better sailplanes, and must give our pilots opportunities of gaining more experience in cross-country flying than have hitherto been available.

Major Shaw, who arrived at the Wasserkuppe some days before the beginning of the competitions, lent us his aeroplane for aero-towing, so that the pilots were able, during the two days preceding the start of the competitions, to get some very valuable practice in soaring. All who took part in this practice were impressed by the possibilities of aero-towing as a means of developing soaring in England. We are much indebted to Major Shaw for the use of his 'plane, and to MacMurdo, who piloted it, for his cheery co-operation.

The organisation of gliding in Germany is far beyond anything we have yet achieved in this country. One gained some idea of the thoroughness of this organisation from the magnificent organisation of the competitions themselves. But even more marked than the completeness of the organisation was the friendly spirit we found on all sides. Our German hosts spared neither time nor trouble to help us in any way they could, and they freely discussed with us any question on which we desired their advice. Even the busiest officials in the Groenhoff-haus always found time to help us in any difficulties that arose. And there were many points on which we wanted assistance from time to time. My own task as leader of the British team was made much lighter by the friendly co-operation I found on all sides, and I should like to take this opportunity, on behalf of the British team, of expressing to our hosts at the Wasserkuppe our appreciation of the hospitality, friendliness, and good comradeship which we found there. They made our stay pleasant and profitable, and we left the Wasserkuppe at the end of the competitions with the hope of returning there at an early date for a future International meeting.

Among the other five visiting nations also we made many friends, whom it would be a great pleasure to meet again at future meetings of any kind. Our conversations were frequently limited by the limitations of our vocabularies, but they lost nothing in cordiality by these limitations.

There is a final point which I should like to make clear to readers of THE SAILPLANE. The British team consisted, at least in the first few days of the competitions, of 24 people, who had all come out at their own expense to help to put up a show for British gliding. Later in the competitions, compatriots of both sexes who were there on holiday for a few days came and helped us in anything within their power. There were several whose names did not appear in any official list of the team, to whom we owe a debt of gratitude for their assistance. To those who worked unremittingly throughout the competitions in the ground teams it is impossible to express at all adequately our appreciation. But as leader of the team I feel it a duty, as well as a privilege, to draw attention to the services which these hard-worked men and women rendered to British gliding by enduring a close approach to slavery for a fortnight, with no reward or glory in return. Each of them can truly say in the words of a forgotten poet, "England, I have not bled for thee; but Oh! I have perspired." The loyalty of the whole team made the task of team leader a pleasure instead of the unbearable burden which, without this loyalty, it might easily have become.



The Opening Ceremony of the International Soaring Competitions on Sunday, July 4th. The British team can be seen on the left, lined up behind Professor Brunt, their leader, while on the right the President of the Aero Club of Germany, Wolfgang von Gronau, is seen welcoming the visiting teams and declaring the meeting open.

[Photo courtesy Aero Club of Germany

At the Wasserkuppe

LAST month we described how the British teams and sailplanes got to, or were got to, the Wasserkuppe. Once there, all was plain sailing (and sailplaning). Everything had been thought of: even to getting in a stock of Capstan and Gold Flake specially for the British team. Books of vouchers for free petrol and oil were supplied to the car drivers; books of tickets for free meals in the Groenhoff-Haus (though one member posted his by mistake, but got it back in time for the next meal).

Each pilot had a set of forms which, on landing in strange places, he merely had to hand to some authoritative-looking person, who was thereby instructed to do all the rest—telephone his whereabouts to the Wasserkuppe (receiver to pay), get the police, and generally look after the pilot. This was always done with zest, without waiting for instructions—in fact, anybody who landed anywhere in Germany could be sure of receiving the utmost hospitality and kindness until the retrieving team arrived to fetch him (or her) back to the Wasserkuppe and stern duty once more.

Each team had an English-speaking Hitler Youth to look after its comfort and act as a sort of liaison officer whenever it wanted for anything. Ours, for most of the time, was a lad named Mark, who, having been trained up to "C" stage at the Wasserkuppe itself, included in his duties that of telling our pilots how to come in to a safe landing in different wind directions—and very sound advice it was.



Watching the flying from the North Slope: a group, including Wolf Hirth (seated), Frau Hirth at his feet, with Mrs. Joan Price; standing from left to right: D. G. Hiscox, J. S. Sproule, and Wally Setz from U.S.A., who worked hard as an unofficial member of the British team.



The Wills Brothers, Philip and Richard, escorting the "Hjordis," of which the former was pilot; the latter's fluent German was a great asset to the British team.

The British ground teams, after the demise of one of the KING KITES, were re-distributed and finally settled down, more or less, to the following:—

HJORDIS (pilot P. A. Wills): Mrs. Wills (driver), R. Wills (interpreter), Peter Shaw, Toby Fisher.

KING KITE (pilots J. C. Neilan and Mrs. Price): J. S. Sproule (driver), A. Ivanoff.

KING KITE (pilots P. M. Watt and D. G. Hiscox): C. L. Ruffle (driver), P. Smith, J. E. Marshall, Miss Connie Leathart (the last two attaching themselves, as occasion demanded, to other teams also).

FALCON III (pilots W. B. Murray and J. S. Fox): J. B. Fenton (driver), T. Fox, H. Gerry, K. W. Turner.

Mr. McMurdo, who piloted Major Shaw's aero-towing "Cadet," was also officially recognised.

In addition, the team received useful help from Herr J. Benemann (who organises the Anglo-German camps), and from Wally Setz, of the U.S.A. Mr. Setz attached himself to the first KING KITE, and was a tremendous asset, during both work and play; he also accompanied the trailer party to Hamburg by road afterwards. We were delighted to have him with us, for he cheered us up no end.

Coming back to our German hosts, we have not yet finished cataloguing their good deeds. There was the repair workshop, which we understood we would just have the use of, paying for our own materials. But as things turned out, nearly all the work (which included putting together the broken halves of a KING KITE fuselage) was done by the German staff—luckily for us, or we should have had half our machines out of commission most of the time. Their lightning rapidity was little short of miraculous. And they wouldn't let us pay.

The various teams were not the only foreign visitors at the meeting. For instance, there were the secretary of the Polytechnic gliding centre at Milan; Harris Sachs, of Enschede, Holland, holder of his national height record; Mr. Spire, the French "Silver C" pilot who recently visited Dunstable; M. Cid, Dipl. Ing., of Portugal, now studying at Darmstadt; and Professor Sato from Japan. Among our German friends, Wolf Hirth and Oskar Ursinus were continually coming and going; they, more than anybody, had been looking forward to a meeting of this sort for years and years, and were really happy. And among short-period English visitors were Buxton, Slingsby, Nicholson, Ashwell-Cooke, Miss Heron-Maxwell, Major J. E. D. Shaw and Miss Shaw.

The Prizes

This month we can only give the bare list of prizes; not till next month will we have space to describe how they were won.

Prizes for total points:—

1. Dittmar (SAO PAULO), 1,662.5 points: RM. 2,500 and prize of the Führer and Chancellor.
2. Hofmann (MOAZAGOTL), 1,427 points: RM. 2,000 and prize of the Minister for Air.
3. Späte (MINIMOA), 1,325 points: RM. 1,500 and prize of the State Secretary for Air.
4. Sandmeier (SPYR III), 1,127 points: RM. 1,000 and prize of the Leader of the National Socialist Flying Corps.
5. Schmidt (ATALANTE), 1,116 points: RM. 500 and prize of the Aero Club of Germany.
6. Hanna Reitsch (REIHER), 1,104 points: Prize of Association of the German Aircraft Industry.

Prize for greatest distance: RM. 1,000, divided between Frl. Reitsch, Dittmar and Mynarski: 351 km. to Hamburg.

Prize for greatest height: RM. 1,000, Zabski, 3,295 m.

Prize for the greatest total duration: RM. 1,000, Frena: 19 hrs. 1 min.

Winners of Daily Prizes will be given next month.



Herr Oskar Ursinus was greatly perturbed at finding that the British team were without marmalade, their national breakfast food. So he thoughtfully presented them with a pot, inscribed "For good gliding angle," and was in the act of handing it over ceremonially to K. W. Turner outside his famous "Schlafwagen," when a sailplane passed overhead and distracted their attention.



A view from the top of the Wasserkuppe, during the International Meeting, showing on the right the "South Slope" where the world's first prolonged soaring flights were made 15 years ago. Since that date the small township, shown in the middle distance, has grown up to serve the needs of the gliding fraternity. Among the machines on the ground is the large-sized "Falcon III" two-seater.

[Photo courtesy Aero Club of Germany

Machines and Pilots

Poland.

Type.	*Sailplane. Identification.*	*Pilot.*	*Competition. No.*
ORLIK	SP-861	Baranowski ...	1
CW 5/bis/35 ...	SP-995	Zabski	2
ORLIK	SP-1002	Brzezina	3
PWS 101 ...	SP-1005	Petèrek	4
		Szukiewicz	
PWS 101 ...	SP-1006	Mynarski	5

Switzerland.

S 18 T	Nr. 213	Godinat	6
SPYR III ...	Nr. 109	Sandmeier	7
MOSWEY II ...	Nr. 204	Müller, Heiner ...	8
SPYR III ...	Nr. 39	Baur, Willi... ...	9

Czecho-Slovakia.

TULAK 37 ...	OK-gen. Cecek ...	Pitrman	10
TULAK 37 ...	OK-Cechy	Silhan	11
DUHA II ...	OK-Mario	Chlup	12
VSB. 35 ...	OK-Olomouc ...	Steyskal	14
		Prachar	

Great Britain.

HJORDIS ...	G-GAAA	Wills, P. A. ...	15
KING KITE ...	G-GAAB	Neilan	16
		Mrs. Price	
KING KITE ...	G-GAAC	Watt	17
		Smith, G. O.	
KING KITE ...	G-GAAD	Watt	18
		Hiscox	
FALCON III ...	G-GAAE	Murray	19
		Fox	

Germany.

MÜ 13	D-14-150	Schmidt, Kurt ...	20
MINIMOA ...	D-11-94	Späte	21
MOAZAGOTL ...	D-4-602	Hofmann	22
FAFNIR	D-11-78	Dittmar	23
REIHER	D-11-95	Frl. Reitsch, Hanna	24

Austria.

RHÖNADLER ...	OE "Florian-Geyer"	Fiedler	25
		Schaffran	
CONDOR II ...	OE "Tirol"... ...	v. Lerch	26
SPERBER ...	OE "Ziehrer" ...	Frl. v. Roretz ...	27
		Frena	

Jugo-Slavia.

Type.	*Sailplane. Identification.*	*Pilot.*	*Competition No.*
KOMAR	YU-Beograd ...	Stanojevic	28



A map showing all the flights of over 100 kms. (62 miles) made during the International Meeting. Note specially the three flights to Hamburg, the furthest point ever reached in a northerly direction; the flight to the outskirts of Berlin by the Polish pilot Baranowski; and the flights into Czecho-Slovakia, including one by Flight-Lieut. P. M. Watt to Eger.

From "Flugsport"

List of Flights

Flights on July 4th.

Name.	*Machine.*	*Landing.*	*Dist.* (km.)	*Height* (m.)	*Points.*
Schmidt	20	Sondershausen	118	1420	94
Hofmann	22	Kallehne	278	1205	246
Dittmar	23	Hamburg	351	2142	371
Mynarski	5	Hamburg	351	—	301
Reitsch	24	Hamburg	351	1550	334
Wills	15	Langensalza	89	1140	54
Baranowski	1	Braunschweig	200	1185	167
von Roretz	27	Grossenwiesen	194	1412	170
Zabski	2	Bergholzhausen	213	1330	186
Sandmeier	7	Peine	204	1360	178
Späte	21	Erfurt-Nord	97	1755	92

Also 19 flights which did not earn points.
Day factor: 1.0. Minimum distance for points: 50 km.

Flights on July 5th.

Hofmann	22	Nüdlingen	34	340	10

Also 8 flights which did not earn points.
Day factor: 2.5. Minimum distance: 30 km.

Flights on July 8th.

Schmidt	20	Sachsendorf	71	525	33.5
Hofmann	22	Pferdsdorf	52	160	9.0
Dittmar	23	Eibenstock	189	—	180.0
Reitsch	24	Wernshausen	39	521	—
Baur	9	Plauen	152	1310	156.0
Späte	21	Tannesberg	201	2245	273.0
Sandmeier	7	Etzgersrith	202	995	205.5
			Duration.		
Murray	19	Wüstensachsen	5 h. 19 m.		41.25
Frena	27	Wüstensachsen	6 h. 54 m.		77.0
Fiedler	25	Reulbach	6 h. 22 m.		62.7
Müller	8	Wüstensachsen	5 h. 48 m.		61.15

Also 17 flights which did not earn points.
Day factor: 1.25. Minimum distance: 45 km.

Flights on July 9th.

Schmidt	20	Strelln	228	1172	245.0
Baranowski	1	Bruchstedt	97	749	69.5
Müller	8	Stadtlengsfeld	35	890	8.25
Mynarski	5	Rotterode	51	970	17.0
Zabski	2	Mäbendorf	50	744	11.0
von Roretz	27	Helmershausen	23	708	4.0
Godinat	6	Kölleda	119	1075	106.0
Wills	15	Heidehaus	120	830	100.5
Peterek	4	Gotha	77	944	48.5
Reitsch	24	Auerbach	211	1479	237.0
Späte	21	Kolinetz	284	1850	350.0
Hofmann	22	Heyersdorf	174	1220	179.0
Dittmar	23	Oschatz	238	2305	325.0
Baur	9	Madelungen	64	765	29.0
Brzezina	3	Vieselbach	102	980	80.5
Sandmeier	7	Oberröbelingen	143	915	131.0
Watt	18	Jena	128	2330	190.0
Neilan	16	Waldorf	35	850	7.0
Fiedler	25	Neuhaus	95	1304	93.5

Also 10 flights which did not earn points.
Day factor: 1.25. Minimum distance: 45 km.

Flights on July 10th.

Dittmar	23	Meuselwitz	177	1968	222

Also 8 flights which did not earn points.
Day factor: 1.25. Minimum distance: 45 km.

Flights on July 12th.

Schmidt	20	Oberstreu	27	796	5.5
Dittmar	23	Kronach	102	745	75.5
Reitsch	24	Kulmbach	115	724	92.0
Baranowski	1	Kronach	104	791	79.5
Zabski	2	Aub	48	887	11.5
Hofmann	22	Ramspau	218	790	221.5
Sandmeier	7	Stulln	197	842	196.5
Neilan	16	Kl. Bardorf	40	600	2.0
Schmidt	20	Kauernburg	117	663	93.0
Späte	21	Sessbach	72	590	35.5
Frena	27	Wüstensachsen	10 h. 2 m.		184.8
Fox and Murray	19	Wüstensachsen	9 h. 48 m.		176.0
Prachar	14	Wasserkuppe	4 h. 16 m.		23.1
Baur	9	Wüstensachsen	8 h. 26 m.		117.5
Crujanski	28	(Not in competition)	5 h. 17 m.		—

Also 17 flights which did not earn points.
Day factor: 1.25. Minimum distance: 45 km.

Flights on July 13th.

Späte	21	Arnsbruck	265	1310	237
Dittmar	23	Taus	244	1626	231.5
Baranowski	1	Osvracin	247	906	205
Zabski	2	Chudenitz	258	1224	225
Hofmann	22	Arnstorf	300	1040	261
Schmidt	20	Teisnach	275	1029	236
Brzezina	3	Kulz	217	885	174.5
Wills	15	Bayreuth	132	920	90
Godinat	6	Welden	183	1070	145
Müller	8	Michelfeld	147	810	113.3
Watt	18	Cheb (Eger)	179	1000	139
Price	16	Schwürbitz	92	510	47.3
von Lerch	26	Kemnath	155	1071	117
Prachar	14	Zedersdorf	91	795	51.15
Baur	9	Bayreuth	132	950	91
von Roretz	27	Althausen	45	815	6

Also 17 flights which did not earn points.
Day factor: 1.0. Minimum distance: 50 km.

Flights on July 14th.

Sandmeier	7	Elsa	65	902	68
Hofmann	22	Neumarkt	174	750	283
Szukiewicz	4	Hildburghausen	61	602	54
Reitsch	24	Bamberg	94	652	121
Baur	9	Coburg	77	725	88.5
Steyskal	14	Grosseibstadt	40	675	14.85
Schmidt	20	Ebelsbach	77	723	88
Späte	21	Zeil	71	975	81.5
Neilan	16	Schweinshaupten	56	390	42
Baranowski	1	Haina	43	595	17.5
			Duration.		
Frena	27	Wüstensachsen	2 h. 37 m.		1.1

Also 11 flights which did not earn points.
Day factor: 2.0. Minimum distance: 35 km.

Flights on July 16th.

Schmidt	20	Nossen	244	1213	212
Baranowski	1	Ketzin	302	1306	274
Späte	21	Böhlen	189	1550	172
Reitsch	24	Oberndorf	144	958	103
Szukiewicz	4	Nahwinden	70	1377	65
Dittmar	23	Haselbach	188	927	146.5
Zabski	2	Schönau	210	2816	290
Mynarski	5	Marienbad	208	930	166.5
Hofmann	22	Zorbau	166	560	117
Neilan	16	Gotha	77	610	29
Schaffran	25	Utendorf	38	612	2
Baur	9	Etzdorf	151	907	109
von Lerch	26	Niederreisen	124	1194	91
Sandmeier	7	Unterröblingen	165	1153	131
Brzezina	3	Gebesee	99	860	56
Watt	18	Gr. Osterhausen	154	895	111.5

Also 11 flights which did not earn points.
Day factor: 1.0. Minimum distance: 50 km.

Flights on July 17th.

Hofmann	22	Lichtenberg	123	630	111.5
Reitsch	24	Beerendorf	206	1189	217
Brzezina	3	Eckards	31	460	—
Dittmar	23	Frankenhausen	126	1020	111.5
Schmidt	20	Rastenberg	129	753	109
Wills	15	Wutha	61	820	26
Zabski	2	Mäbendorf	50	520	6
Mynarski	5	Seibelsdorf	110	1000	91
Späte	21	Sundhausen	92	1380	120.3
Sandmeier	7	Leupahn	209	1061	217
Baur	9	Hasslach	99	928	76.5
Schaffran	25	Walchenfeld	57	651	18

Launch of a "King Kite"



[*Photo courtesy Aero Club of Germany*

Reflections on the Wasserkuppe

By P. A. WILLS

WE went to the Wasserkuppe, not with the idea of winning—we were not that optimistic—but of learning. So perhaps one of the pilot's impressions of the main lessons will be of use.

I divide the main headings of a gliding team into three: the pilots, the machines, and the ground teams. Let us examine our efforts in all three directions.

I

First, I think it is admitted that we were unlucky. The very first day of the meeting was the best, and the three longest distance flights of the meeting were made on that day. And it caught us completely on the wrong foot. We were new to the country, to competition work generally; we were also shy and extremely frightened (it looks suicidal country at first sight, after the smooth and kindly fields of England). To add to this, fifteen seconds after the first launch of our newest machine and brightest pilot, the latter was ruefully crawling out from the heap of spillikins to which the former had been reduced in a most unlooked-for spin.

I was next off. The circumstances were not calculated to produce the last ounce of skill, although they certainly required it. No wind, lots of thermals. Feeling like St. George for Merrie England being pushed over Niagara in a barrel to make a German holiday, I shot off the beacon, 2,000 feet above the valley, and started looking feverishly for lift before I reached the bottom.

Fortunate indeed that I was flying a machine I knew well, so that my reactions were partly instinctive, and fortunate that HJORDIS's performance was well suited to such conditions. Her very low sinking speed and abnormally flat gliding angle helped. I found lift, and after a short struggle was up and away. Our remaining KING KITES, together with more than half the remaining field, sank persistently to Poppenhausen.

Now, having once got going on a day like this, one might imagine that most pilots would go approximately the same distance. Did they Hell? Ten machines out of 28 got away. I followed Hanna Reitsch for some way, perhaps 20 kilometres. Then I thought I saw a better cloud than the one she was leading me to. She flew to Hamburg, 361 kms. I landed at Langensalza, 89 kms.

As the meeting went on, it was more and more noticeable how one's pilotage improved with constant practice. A fortnight was the longest consecutive spell that any one of us had ever experienced at sailflying. In that time I did over 30 hours, mostly thermal flying—as much as I ordinarily get in a year. Towards the end I was sometimes going half as far as the Germans!

Lesson 1, therefore: We *must* have facilities for more constant thermal flying, i.e., aero-towing.

II

A brief description of another flight. Conditions very mediocre: July 12th. Got a thermal which took me to the range of hills overlooking Wüstensachsen, some eight kilometres down-wind. These in a west wind provide a fair soaring ridge (which the Wasserkuppe doesn't, in any wind) and so a good waiting place for a thermal. After a while I got a weak thermal to 1,000 feet, and saw, out of the corner of my eye, Späte in his MINIMOA setting off across country about 400 feet below me.

Mindful of my *gaffe* with Hanna Reitsch the previous Sunday, I tagged on to him. As we went on, the country fell away, so we had a prolonged glide. For upwards of six kilometres I followed behind and above, steadily keeping my superior altitude, both machines flying at 38 m.p.h. Finally, "the cad," Späte landed, and I was left with a gruesome landing between wooded slopes in a water-meadow. Violent gusts threw the machine about; at last I got down. As we were about to stall, a small stream running across the meadow loomed up under my nose. A last minute heave, a zoom, a stall. A wing-tip dropped, and we spun round on the ground, on the far bank. Splash! The nose toppled over the edge into the water. Slowly we started to leak. I jumped out, deposited parachute and sundries on the bank, and heaved at the nose. No damage, miraculously, but it was embedded two or three feet in the soft mud of the farther bank, the machine straddling the stream. Slowly the tide in the cockpit came in. Soon I found that, by sitting astride the tail, I could just balance the nose out of the water, but then I couldn't go for help, which was hardly satisfactory.

At last, however, one man arrived; we shifted her temporarily above the waterline, and I ripped out the variometer rubber tubes and started to syphon out the cockpit.

The point of this story is, however, in the middle; at her best speed HJORDIS was quite up to international standards of sink. (No joke primarily intended, and none taken, I hope.)

III

My last cross-country, Saturday, July 17th, was quite the most instructive. Conditions had been poor all the morning, but about 1.30 they improved and we all took off, nervously, twelve machines finally getting away. I almost immediately struck a thermal, and with Dittmar in the SAO PAULO and Kurt Schmidt in the ATALANTE circled up to cloud base. Dittmar immediately shot off at great speed and vanished—no hope of competing with him. The ATALANTE, however, was quite within range. This remarkable machine had been first off every day, its sinking speed and manœuvrability outclassing everyone else in the light wind conditions which had in general prevailed, although its flying speed was not high.

As we went on together, conditions improved. Numerous cumuli formed with good up-currents below, and evidently an inversion at about 7,000 feet (4,000 feet above the start) prevented their vertical development, as they remained quite shallow. This meant that blind flying was not much use, and no-one got much above 1,000 metres on that day, the cloud base being 800 metres.

In the special conditions prevailing the ATALANTE'S greatly superior manœuvrability and slightly superior sinking speed were not important. I reached the top of each thermal a little after him, but very rapidly caught up and passed him on the way to the next. It was clear that at last I had a chance to follow a German pilot and find out how he did it.

For 20 kilometres I followed, then outstripped him. A bit of a struggle, a thermal, and a quarter of an hour later I spotted the ATALANTE plugging in *from behind!* I waited, let him go on, and followed again. Another 30 kilometres went by. At last, near Bad Salzungen, the ATALANTE went into a small cloud, and evidently came out round a corner, for, after waiting a bit, I went on to another cloud to the north-east and next saw him some way away having gone off south-east towards Erfurt.

I landed at Wutha at four o'clock, 61 kilometres; Schmidt at six o'clock, having flown 120 kilometres.

After the boos have subsided, let me say humbly that my effort was above the average flight of that day (always excluding the Germans), and that I eventually came out exactly half way down the list, so may perhaps claim to be the Average Pilot.

What Schmidt did was this: He flew to Erfurt and there found stable conditions ahead. Erfurt is roughly on a line with Wutha, where I landed. He sculled around Erfurt for a while, but conditions ahead did not improve. He therefore came back, flew east until the sky to the north looked better, then turned on his course again and went on.

Such tactics demand confidence, and an ability to judge areas of lift from the nature of the ground below and the look of the clouds *as seen from just underneath.* This is quite a special knowledge and can only be acquired by constant practice during actual cross-country flights.

IV

One got better at it as time went on. It was particularly noticeable during that fortnight that lift was to be found over every wood; frequently the cloud patterns seemed an upward reflection of the shape of the numerous woods and forests below. Professor Brunt told me that this was probably due to the fact that the woods were moister than the surrounding country, and



A group of members of the British team watching P. A. Wills soaring his "Hjordis" over the West Slope of the Wasserkuppe.



Waiting for wind? Members of the British team grouped round the "Hjordis." Left to right: G. O. Smith, P. M. Watt, Miss Connie Leathart, P. A. Wills (with hat), K. W. Turner (without shirt), Wolf Hirth, T. Fisher, R. Wills, with Gerhard Mark in foreground.

[Photo courtesy Aero Club of Germany

the air over them, thus containing more water vapour than elsewhere, was light and tended to rise. This was quite contrary to my own previous ideas, which were that the air over land surrounding woods would be warmer than that over trees, and so would rise and cause a compensating down-current over the trees. However, the reverse was very much the case, and I can only imagine that the wood has to be fairly large in area before the first set of conditions outlined above overbalances the second.

Motoring home at nights in the cool evening air, it was most noticeable how, when the road went through a wood, the temperature jumped up—it was like entering a heated room. I should imagine night thermal flights over wooded country to be possible.

V

My conclusions therefore are, that under the three headings: pilots, machines, ground teams, our greatest leeway is to be made up in pilotage. I say it without shame; my own pilotage improved so noticeably in a solid fortnight's flying; it cannot be expected that casual week-enders like we all are in England can cope with pilots who fly all the year round. But the standard of pilotage in this country can and must be improved.

I am not saying we were unduly or unexpectedly bad; as a matter of fact (as usual, apart from the Germans), we were above the average. But I am saying that, given the opportunity to get more advanced sailplaning in England, we would get much better. And by a re-orientation of our policy, which can probably be carried out within the terms of the present subsidy scheme, I am confident that this could be done without great additional expense and to the advantage of every section of the movement.

As for machines, ours were standard types, costing around £200 each, against—in the main—special jobs costing from two to five times as much. Our new type, pluckily built against time, was really unfinished. Slingsby bravely built three type machines instead of the usual one, and thereby made our participation possible. The KING KITE showed its great possibilities as well as its temporary teeth. The latter extracted, it will be a record-breaker. It already holds two worthwhile British records: for the greatest distance flown by a British machine, and the longest blind flight.

Lastly, ground teams. Our crews were marvellously keen and hard working. They rose most nobly to every imposition foisted on them by their pilots. They were, however, seldom seriously tested because we seldom flew far enough away from them.

VI

I do not want to call down on myself a democratic hate that I am anxious to pander to the tastes of a few "star" pilots. At present, after they have trained a pilot to the "C" stage, the clubs officially lose interest in him. They are there to produce "C" pilots and no more, and they don't profess to own the machines and equipment necessary for the pilot's further progress. So the risk is that that pilot will gradually lose interest, unless he is rich enough to buy his own machine.

If he knows that his progress as a pilot will in future be limited *only by his ability*, he will go on with a growing keenness which will permeate the whole movement.

Correspondence

SIR,

The pilots of the British team at the Wasserkuppe wish to record their deepest appreciation and thanks to the three men who enabled our participation in the International Competitions.

Lord Wakefield, with his magnificent generosity, made the whole scheme practicable.

Major Petre, by taking on the arduous and thankless task of selection and preliminary organisation, saw that the baby should be successfully born.

And Professor Brunt guided us with skill and tact which saw us through our difficulties and won the admiration of everyone at the Wasserkuppe.

It was a fortnight which no one will ever forget, and the experience gained must be put to the greatest possible use.

J. S. FOX, JOAN PRICE,
DUDLEY HISCOX, G. O. SMITH,
W. B. MURRAY, P. M. WATT,
J. C. NEILAN, P. A. WILLS.

Tailpiece



A member of the British ground team rests from his fortnight's labour on board *S.S. Macclesfield*, which is transporting the sailplanes home.

News from the Clubs

Ulster Gliding Club

June has been our best month so far this year. The weather gave us about six soarable days or evenings, all of which were utilised either by the local contingent who all live quite close to Magilligan and are now free to fly when they like (lucky blighters), and/or the Belfast contingent, who, on several evenings, made the 120 mile journey to get in an hour or two's soaring. It is gratifying to see this energy, and we hope soon to have some decent machines for them to fly.

There was comparatively little excitement during the month. Pat Webb had to be rescued off the top of the Umbra close to the waterfall, where a backing westerly breeze had deposited him suddenly and against his will. McCleery landed among the sandhills somewhere, miraculously without suffering any damage whatever. Baxter, who is an *ab initio* without his "A" as yet, went soaring, to the horror of those in charge. He did, we are told, one beat, then finding himself too far inland to regain the beach sent out a prayer to the KADET's Guardian Angel, who responded gallantly by putting her down on the only clear spot among the sandhills for half a mile in any direction. Well, well, well!!

It would be a shame to have to "ground" such talent. *Oyez, Oyez, Oyez!* Come, all you ticket aspirants, to Milligan and soar whether you want to or not!!

The high spot of the month was undoubtedly Saturday, June 19th, when the two-seater, KADET, GRUNAU and KITE did about five hours each. The exact total was 21 hours 24 minutes, with 19 flights. Three machines over Binevenagh together at 2,500 feet were amusing to watch as they circled up into the cloud base. No sooner had they disappeared than out they all came, all going in the same direction and all with their noses down. Metcalfe (N.) did his five hours. Douglas did four hours in the KADET. Liddell put in 6¼ hours in the KITE. The treasurer's delight at the flying fees was ludicrous to behold.

Some of us are now discovering weak thermals from various areas, which would appear to suggest a constant supply. Peculiarly enough, some of them seem to originate quite close to the sea. We are hoping to be able to call them by some sort of pet name, and can well imagine the following advice being given to an advanced pilot who is out to practise circling: "Now, So and So, take off normally and don't bother about Little Willie, he's not much good to-day, anyway. Try Mae East, but unless you get a really good lift, slip straight over to Mae West and concentrate on her, etc., etc."

Flying summary: 135 flights, 33 hours.
"A" certificates: Siderfin.
"B" certificates: Siderfin, Bell.
"C" certificates: Henry, McCleery, Siderfin, Bell, McKeown.

Furness Gliding Club

Wednesday, June 23rd.—A remarkably good soaring day. F. Charles, fresh from the finishing school at Dunstable, was renewing acquaintance with his home site. He put in three hours' soaring, then rushed back to Wembley to ride in a speedway championship. How this chap gets about the country is a marvel.

Saturday June 26th.—Wind west, not very strong, yet obviously unstable. Stevens, Redshaw, and Charles put in 10 hours' soaring between them. Stevens claimed the best altitude, Redshaw took the KIRBY KADET higher than it had ever been before, and Charles completed the first leg of his "Silver C" with a flight of 5 hours 10 minutes, taking off at 2.10 p.m. and landing on the site at 7.20. During the course of this flight he frequently traversed a distance of 7½ miles to the north and back, throwing us three consecutive loops to keep us entertained, whilst we kept ticking off the hours on the score board. The circling and manœuvring of all three pilots were magnificent to watch.

Sunday, June 27th.—Wind a little south of west, bright sun. It seemed a promising day, but lift was not good until noon. Between 12 noon and 5 p.m. the day proved to be a soaring pilot's paradise.

Stevens was first away and eventually made cloud contact by circling in and out of a patch of white fluff. What a chance for a cross-country! There was, however, no suitable ground organisation, and Stevens was aware of the fact.

Redshaw did some circles in KIRBY KADET and broke his own altitude record in this machine, in which he carried on for two hours.

Meanwhile, Charles had got away in the KIRBY KITE and, by superb circling, reached cloud base. About this time, with three sailplanes in the air, a small monoplane joined the group; first paying a salute to Redshaw, it then climbed to the level of Stevens, where it began to circle, but "Bill" joined in the roundabout, and it was a debatable point which was being chased.

The power pilot next spotted Charles bobbing in and out of the wisps of cloud. Up went the monoplane's nose, starting a climb in a steep spiral. Charles was also circling and for a time he appeared to be winning, then the cloud enveloped him. Without hesitation and with fine discretion, the power pilot cut out his engine and seemed to soar in a couple of wide circles, then with a dive and a trail of smoke, he set a straight course for Lancaster. It would be extremely interesting to hear that pilot's story of "Ships that pass in the Air," and a line from him would be welcomed in Furness.

For twenty minutes Charles had passed from our ken, there was blue sky up-wind, and the cloud was on its way following the monoplane, when the KITE appeared over Millom on the other side of the Duddon Estuary. The tide was full in, yet Charles brought the KITE across and down-wind with sufficient height to do a couple of loops before landing on the site. He had been to 3,800 feet by altimeter.

The two days, Saturday and Sunday, had yielded twenty hours' soaring for three pilots.

Sunday, July 4th.—Site clothed in low cloud. About noon a series of secondary fronts approached from the west. The first of these brought with it a flock of swallows and swifts obviously feeding on the insects carried up by the wave of warm air, which was immediately followed by a cold wind of increased velocity. It was then noticed that the birds were travelling away down-wind.

Just before this "front" arrived over the site, Charles flying the KIRBY KADET had been obliged to land far down the breast of the hill. Allan was next to be launched in KADET and made a flight of six minutes to a landing on the beach, thus gaining his "B" certificate.

Stevens followed in his own machine and rose quickly to 600 feet above the hill, where he was submerged in cloud. Fearing that the site would be blotted out, he dived in to make a terrifically fast landing quite safely.

Friday, July 9th.—Conditions remarkably stable. Wind 15 to 20 m.p.h. Stevens was launched at 7.30 p.m. Putting in an hour's soaring, he was back in Barrow by 9.30 p.m.

Friday, July 16th.—Wind W.S.W., very light. A deep belt of lift enabled Stevens to get a good start, climbing straight from the launch to 600 feet in three minutes. Thanks to a good hangar and a little organisation the party was back in town by dusk, having had 1¾ hours' soaring.

Sunday, July 18th.—Wind nil. Nobody seemed to want "A" training and the advanced chaps could not connect with thermals. Charles returned to London a disappointed man indeed.

Monday, July 19th.—Moderate west wind. Sky dotted with small cumuli. Stevens enjoyed 1¾ hours' practice at tight circling up to 1,000 feet above the hill. It was a delightful evening.

Tuesday, July 20th, brought active thermals. About 3 p.m. gulls could be seen circling over the town until they disappeared in the blue, but by 6 p.m. all this had ceased and was followed by two days of westerly gales.

Sunday, July 25th.—Much low cloud. Wind N.W. strengthening about noon to 20 m.p.h. Smith in the STEVENS SPECIAL enjoyed 2½ hours' soaring in and out of low cloud, which possibly caused him to ignore the elaborate precautions taken to guide him in to a landing on the hill top, for he eventually settled down on the beach.

Allan had an exciting 15 minutes in the KIRBY KADET before settling down to take his "C" certificate with a flight of just over an hour, thus keeping up our average of one "C" per month. We now look to Burnett to carry on the good work.

Meanwhile, Charles in his KIRBY KITE enjoyed some fine cloud scenes whilst chasing his shadow on banks of clouds, the profile of the shadow being picked out in all the colours of the spectrum.

London Gliding Club

Monday, May 31.—The week-day flying habit is spreading more and more. A wind with the least bit of west in it can nearly always be relied on to bring quite a large party, each one of whom wonders how on earth all the rest have been able to get away from work.

To-day Rattray was up in his CAMBRIDGE II for 3¼ hours; he rose in thermals several times to 1,400 feet, and could have gone higher but might then have been unable to get back to the site. Time brings its changes: it was for this very reason that, a few years ago, nobody ever dared throw a circle at all.

Wednesday, June 2nd.—A private owner, in landing, overshot into the enclosure in front of the clubhouse and just missed hitting a GRUNAU BABY parked within.

Saturday, June 5th.—In a light S. to S.S.E. wind a few people were winch-launched and occasionally got a little slope-lift over the "Knob," but none could get thermals, although the sun beat down from a clear sky. The Upper Air Report from Mildenhall at 11 hours shows that there was a 6-degree drop in temperature between 1,060 and 2,060 feet (above sea level), which should have produced tremendous vertical movement just between those levels; but at all other heights the air was very stable. We were in a "warm sector."

Sunday, June 6th.—Conditions much the same.

Wolf Hirth came over by car from Heston, whither he had flown from Germany for the week-end. Looking out of the window during tea, we caught sight of the RHÖNSPERBER doing an incredibly tight turn just above the hill top, then sauntering slowly on, getting lift out of nothing. Where had we seen that style before? There was only one explanation: the owners of the SPERBER had offered Hirth a ride. Afterwards he gave us a most interesting lecture, which was reported in THE SAILPLANE last month. Wolf Hirth's last visit, prior to this, was just after Christmas, 1932, when he gave a series of lectures on high-performance soaring; they bore fruit in the following summer, when the first thermal flights were made from the club ground.

Sunday, June 13th.—Rain, until a "front" passed over at 4 p.m. and changed a light S.E. wind to light S.W.

Frank Charles, from the Furness Club, flew his own KIRBY KITE for the first time on the club ground. This is the machine which made its appearance at the Sutton Bank meeting of 1935, and is the first KIRBY KITE ever built. In it Charles, an *ab initio*, taught himself to fly.

Just before sunset the wind freshened enough for Fox to be able to soar the FALCON III, flying solo. This he did in order to practise for the Wasserkuppe. He flew from 8.43 to 9.7 p.m., sitting in the middle of the double seat, holding one stick in each hand and placing his feet on the two middle pedals so that he had to use the left foot for right rudder and *vice versa*. He has found that the machine's stalling speed is 24 m.p.h. flown solo, 28 m.p.h. with a light passenger, and 31 m.p.h. with a heavy passenger.

Monday, June 14th.—Soaring went on all day in a W.N.W. wind, and some pilots got thermal lift up to 1,000 feet. At Mildenhall, at 12 hours, there was a drop of six degrees in the first 1,000 feet and four degrees in the next 1,000 feet. Cloud base was at 2,700 feet (2,000 above the Downs).

Frank Charles had his first soar at Dunstable, in the course of which he visited the Zoo. None of his large family, which he brought with him to Dunstable, accompanied him on the flight.

Rattray did 3 hours 27 minutes in the CAMBRIDGE, and Himmelreich 3 hours 6 minutes in a GRUNAU BABY. Hervey was up for 1¾ hours; he must have enjoyed it, for the poor man spends most of his life watching other people soar while he instructs at ground level.

Soaring was also possible the next two days. Himmelreich did another hour, and Fox practised for the Wasserkuppe, solo in the FALCON III, for a flight of 1¾ hours.

Cross-Country Flying.—For weeks past, or even months, Rattray has come along and been winched up almost every morning when the weather showed the slightest promise. His persistence has been rewarded at last. On Friday, June 18th, he set off across country, and all the newspapers next morning described how he had crashed among the busy traffic on Barnet by-pass. Actually he made a normal landing in a field beside the road. On Tuesday he tried again, but only got just beyond Luton. Next day, the 23rd, he succeeded at last in finally qualifying for his "Silver C" by going to Burnham-on-Crouch. For details, see last month's SAILPLANE.

Peter Davis went off in his SCUD II on Thursday, July 8th, and landed on Southend aerodrome. This time he carried a barograph, so has qualified for his "Silver C" at last. Last October, when he flew 48 miles in a thunderstorm, he was without one.

Another cross-country flight was done on Monday, July 19th, when Barker flew his SCUD III 19 miles to Watton-at-Stone, between Hertford and Stevenage.

Aero-towing.—On Sunday, June 27th, there being hardly any wind but a promise of good thermal conditions, Hiscox rang up Heston and got Captain Phillips to bring his towing "Avro" along on the understanding he was to get at least £6 10s. even if flying money did not total as much (but it did, and more).

It proved a tricky day for thermal-catching. In the morning, Stephenson managed to stay at 2,000 feet for an hour and a half in the grey KITE, but other aero-towed pilots failed to find anything good. Greig, therefore, paid an extra 5s. for a tow right up to 2,500 feet above Dunstable.

Later, Ivanoff asked Captain Phillips to take him to 1,500 feet over Eaton Bray, where he had caught sight of the FALCON III being circled by Murray at 2,500 feet. He was released in a thermal going up at three feet per second, and proceeded to climb to 2,900 feet, where the FALCON III, which had also been going up, was now 100 feet above him. The curious thing was that, at this height, they could see other clouds at a lower level, whereas their own cloud, at the top of their thermal, was still above them. To get up here, Ivanoff had gone round and round continuously for about an hour, the thermal being narrow and weak. While these two machines were thus disporting themselves, four others were towed up over the same spot, but were unable to keep height for long. Ivanoff then proceeded over Dunstable, finding neither up-draughts nor down-draughts, and then entered a column of sulphurous-smelling smoke going up from the cement works beyond, finding lift in it at three feet per second. He had to leave it owing to its drift down-wind, and return to the club ground, on the way spending 10 minutes in a thermal at 500 feet over the Bowl. All this was done in Captain Heath's GRUNAU, and the flight lasted 1 hour 49 minutes.

Of the other aero-towed flights, the next longest were by Grant and Simpson, of an hour each. Altogether there were 18 aero-towed flights totalling 11 hours 25 minutes—a pretty good average per flight in the absence of hill lift.

Record Week's Flying.—During the week ending July 11th, the club put up a total flying time of 81 hours 8 minutes, excluding ground-hops. As far as we know, this was a record, but we see that it has since been eclipsed by the Midland Club, which did 81 hours 54 minutes during the week end July 24th-25th. Their flying time of 52½ hours on a single day will also take some beating.

Instruction Course.—Ten members attended the course held from July 6th to 15th, and in addition four club members who had not actually joined the course attended on most days for primary instruction. All the members, except one, took one or more certificates, the total being 17, made up of: eight "A," six "B," three "C."

Talking of primary instruction, can any club beat this? A member without any previous flying experience started ground-hopping on Saturday, July 31st. On Monday, August 2nd, he passed his "A" test.

Sunday, July 25th.—Peter Davis went up at 10 o'clock in his SCUD II and stayed up 5 hours 20 minutes, thus completing his "Silver C." He had a busy time avoiding everyone else, for there was a good soaring wind but a stable atmosphere, which meant that all the machines (and at one time 11 were up together) were confined to within 400 feet of the hill top. At 2.30, however, a "front" came along, and Humphries, in Heath's GRUNAU, rose in it to 1,200 feet. This machine was flown by Ivanoff yesterday for 4 hours 50 minutes continuously.

A visitor to-day was P. Michelson, who, five years ago, spent a holiday with a sailplane near Dover with the intention of trying to soar across the Channel.

At the end of the day the club TOTTERNHOE was completely written off by a member from Halton who stalled it into the hill. The pilot was slightly damaged by the fitting at the base of the stick.

Machines.—Heath's GRUNAU BABY II, which he built, has not yet accompanied him to Egypt; instead, it is being looked after by Ivanoff and Burnett, who, with Humphries, have arranged to have flying rights in it while it remains here.

The GREEN WREN, renovated by Dart Aircraft, has been bought by the Read brothers.

The TERN, which Noble had bought in unfinished condition, has now been finished by Dart Aircraft and sold to Gardiner, who is gradually getting accustomed to it. It is painted white, and this will distinguish it from G. A. Little's TERN (Southdown Club), the only other one, we believe, in existence.

Barker has brought his SCUD III to Dunstable from Sutton Bank, and it is giving a very good account of itself. In the crowded conditions of July 25th, it was usually on top of everybody else. The green SCUD II, which he formerly owned, has now been painted white after an overhaul; Wood is its owner.

The Cambridge Club are keeping their new KIRBY KITE here during vacation.

One dark night at the end of July, one of the temporary assistants thought he would practise driving in one of the club cars. So he drove it into the hangar. The wheels went over the wing-tip of the CAMBRIDGE II, while the wind-screen ripped a hole along the underside of the RHÖNADLER's wing. Some private owners prefer to keep their machines in the trailers.

The Buildings.—The new office, which was given by Mr. and Mrs. Goldney, has now been generously furnished by them, the contents including desk, bookcase, chairs, and typewriter. The old workshop (formerly clubhouse) has been cleaned and distempered and converted to a dormy house to take 22 beds.

Summary of Flying.

Date.	Ground-hops.	Winch launches.	Hilltop launches.	Flying Time. h.	m.	s.
May 31, Monday ...	—	—	23	5	30	31
June 1, Tuesday ...	—	—	3	2	12	0
,, 2, Wednesday ...	—	—	25	1	6	17
,, 4, Friday ...	—	—	5	1	43	39
,, 5, Saturday ...	86	9	—	—	21	50
,, 6, Sunday ...	163	43	—	3	26	43
June 8, Tuesday ...	36	3	—	—	40	0
,, 11, Friday ...	24	3	—	—	4	0
,, 12, Saturday ...	25	—	—	—	—	—
,, 13, Sunday ...	49	25	—	1	33	0
June 14, Monday ...	—		33	11	37	35
,, 15, Tuesday ...	—		9	5	3	0
,, 16, Wednesday ...	—		18	2	18	0
,, 17, Thursday...	—	1	—	—	7	0
,, 18, Friday ...	—	1	—	4	30	0
,, 19, Saturday ...	52	11	6	29	25	0
,, 20, Sunday ...	83	40	22	2	7	0
June 21, Monday ...	—	3	—	1	29	0
,, 22, Tuesday ...	—	9	—	6	13	0
,, 23, Wednesday ...	—		20	7	50	22
,, 25, Friday ...	—		15	2	2	0
,, 26, Saturday ...	9		25	—	41	38
,, 27, Sunday ...	48	16	63	2	39	0
,, 27, Sunday (Aero-towed launches)			18	11	25	0
June 28, Monday ...	—	5	7	6	40	0
,, 29, Tuesday ...	—	8	—	10	20	0
,, 30, Wednesday ...	—	8	—	3	7	0
July 2, Friday ...	—	7	—	—	14	0
,, 3, Saturday ...	46	12	—	—	25	0
,, 4, Sunday ...	51	34	7	28	25	0
July 7, Wednesday ..	76	7	33	11	6	40
,, 8, Thursday...	80	3	28	13	12	45
,, 9, Friday ...	24	—	—	—	—	—
,, 10, Saturday ...	20	22	23	39	28	0
,, 11, Sunday ...	91	27	29	17	20	35
July 12, Monday ...	43	—	9	—	5	0
,, 13, Tuesday ...	33	—	17	7	34	8
,, 14, Wednesday ...	—	—	12	—	17	53
,, 15, Thursday...	—		3	1	13	59
,, 16, Friday ...	—	1	—	2	0	0
,, 17, Saturday ...	113	—	2	—	1	37
,, 18, Sunday ...	89	22	43	4	45	23
July 19, Monday ...	—	1	—	—	31	0
,, 24, Saturday ...	29	13	41	23	11	0
,, 25, Sunday ...	61	36	68	18	16	54
July 26, Monday ...	—	2	3	1	39	0
,, 27, Tuesday ...	—	—	7	—	14	0
,, 28, Wednesday ...	26	2	—	—	3	0
,, 29, Thursday...	—	1	—	—	3	0
,, 31, Saturday ...	73	2	—	—	4	0
Aug. 1, Sunday ...	118	16	—	—	46	0

Certificate Flights.

May 31st.—Kittelsen, "A"; Login, "B"; Hambling, "B."
June 2nd.—Widger, "B."
June 14th.—Morat, "A."
June 19th.—Davies, "A"; Ansen, "A"; Adcock, "A."
June 20th.—Bursey, "A."
June 23rd.—Kittelsen, "B"; Davies, "B"; Rattray, "Silver C."
June 26th.—P. Tovey, "A"; Adcock, "B."
June 27th.—Blesdale, "A"; Louson, "A."
June 28th.—Crease, "C"; Miss Thring, "C"; E. Read, "C."
July 7th.—Morley, "A"; Anderson, "A"; Miss Fox-Strangeways, "B"; Cowley, "C"; Kearney, "C."
July 8th.—Bennett, "A"; Morley, "B"; Anderson, "B."
July 10th.—Anderson, "C"; Hammond, "C"; Read, "C"; Parker, "C."
July 11th.—Mackenzie, "A"; Tovey, "B."
July 12th.—Phillips, "A"; Tolliss, "A"; Sommerhoff, "A"; Dunn, "A"; Hinton, "A."
July 13th.—Mackenzie, "B."
July 14th.—Hinton, "B."
July 17th.—Waghorn, "A"; Miss Paddon, "A"; Campbell, "A"; H. Tovey, "A"; Sommerhoff, "B."
July 18th.—Ansen, "B."
July 24th.—Lousen, "B."
July 25th.—Horsfield, "A"; Pinchen, "B"; Bussey, "B"; Dunn, "B"; Matthews, "C"; Rutherford, "C"; P. Davis, "Silver C."

Totals.

Week ending	*Launches*	*Flying Time*	*Certificates*
June 6th	357	14 hrs. 21 mins.	4
June 13th	165	2 hrs. 17 mins.	–
June 20th	276	26 hrs. 12 mins.	5
June 27th	226	32 hrs. 20 mins.	7
July 4th	185	49 hrs. 11 mins.	3
July 11th	463	81 hrs. 8 mins.	14
July 18th	387	15 hrs. 58 mins.	13
July 25th	249	71 hrs. 59 mins.	8
August 1st	250	2 hrs. 49 mins.	–

Totals since January 1st: 6,874 launches, 668 hrs. 51 mins. flying time.

Derbyshire and Lancashire Gliding Club

Owing to pressure of work in connection with the holding of the National Competitions on the club site, it has been impossible to find time to write up the club news for this issue. It will therefore appear next month instead.

Hull Gliding Club

The absence of notes in THE SAILPLANE during the last nine months has not been due to idleness or hibernation, but rather to the fact that constructional work has been proceeding on the new primary since the demise of our secondary in September last.

It may be of interest to many that this is the third machine constructed by the club since activities first commenced in 1930.

The machines were designed by the founder of the club—Ronald Coates—whose death at the early age of 21 in March of this year we record with great regret.

A half-crown, his total weekly pocket-money, went, for many months, into the club funds when the struggle for existence was hardest and membership was less than half a dozen. It is some consolation to know that it has not been wasted.

The success of dances held during the winter has raised our finances to a higher level than ever before, and we are looking about for another machine.

On **July 4th** Lawson gave the primary its initial tests in a stiff breeze and took it up without delay to try out its controllability. He pronounced all controls to respond readily, and after a few more tows at varying heights it was agreed that she was, in her class, a worthy successor.

July 11th saw training commence in earnest with three *ab initios* making good progress and the "old-timers" carrying on where they left off.

A good crop of prospective "A" pilots should soon be ready for the tests, and then we shall feel we have accomplished something which will make seven years' hard work seem worth the while.

Midland Gliding Club

With a total flying time of 135.55 hours, July has been our most successful month this year; with the KITE and FALCON II in dock this is a very creditable performance and speaks for itself regarding the management at the Mynd.

A total of 29.24 hours' flying was done on Saturday, July 24th, and 52.30 hours on Sunday, July 25th, which we believe is a record for any club in this country. Nine "C's" were gained during the month, besides several "legs" and "B's."

On Saturday, July 24th, Rushton attempted to break the British duration record, but sickness and bad weather brought him down, after a very stout effort of eight hours.

The standard of flying has shown a marked improvement recently, due chiefly to the tuition which the more advanced pilots have been getting in the two-seater, but a lot of people still have to realise the value of good circling, and that to do this requires practice. Please let us see a little less of mild cruising along the hill side.

The committee has decided to install a G.P.O. telephone in the hangar, and to lessen the expense members are being asked to help with the excavation of the trench.

The people who built the extension to the bar are to be heartily congratulated on their splendid effort.

Plans for the extension of the hangar and club house are now being worked on by the committee, and they hope to report something definite in the course of a few weeks.

Details of flying are as follows:—

Monday, June 28th.—A party was organised from Birmingham for an evening trip, which resulted in 7.32 hours' flying and two "C's," Rushton and Everall (J.).

Tuesday, June 29th.—Another party turned up, but the wind didn't play up and only 45 minutes resulted.

Thursday, July 1st.—This evening trip was more successful and the diehards got two hours' flying for their trouble. A duel between the owners of H17 and the GRUNAU enlivened the proceedings; this was fought both in the air and later on the ground.

Saturday, July 4th.—A thoroughly dud day with a very light N.N.W. breeze. Wynne had two winch launches in the GRUNAU, but failed to connect with any lift.

Sunday, July 5th.—A real beginners' day with a moderate west wind, although at first the cloud base was only 200 feet from the hill top.

Wally and Saunders (aged 16 years) got "C's," and Rushton disappeared in the two-seater into the cloud bank and was next heard of in Church Stretton, seven miles away. Total flying time, 25.38 hours.

Saturday, July 10th.—A nice west wind again visited the Mynd, together with Mr. and Mrs. Bergel from London. The two-seater was brought back, and that and the three KADETS put up 12.41 hours. Farmer Price got two "B" legs.

Sunday, July 11th.—A really nasty day; a west wind, but the hill was in clouds all day, until the Birmingham contingent left, when everything cleared and Davies and Barnes put in 1.30 hours.

Saturday, July 17th.—Another dud day, so the heroes built the bar extension.

Sunday, July 18th.—Several winch launches were made in practically no wind, until Wynne was lucky enough to catch a small "front" on the GRUNAU, which he utilised for 20 minutes.

Thursday, July 22nd.—The H17 team had an evening and put up 2.50 hours.

Friday, July 23rd.—Rushton and Price (who has now finished haymaking) got in 43 minutes, Price getting his "B."

Saturday, July 24th.—An excellent day, Price (farmer), Whitlock, and Ramsbotham-Wynn getting "C's," and Rushton making his attempt at the record. Total flying time, 29.24 hours.

Sunday, July 25th.—The day of days, 52.30 hours was accomplished by six machines. Nyborg (of NYBORG SPECIAL fame), Walker and Humphries obtained their "C's." Hannay flew the GRUNAU for the first time and was passed off O.K. by the other members of the group.

[The writer of the above notes suggests that Mr. Saunders (who is 16 years old and still at school) and Mr. Nyborg ("who must be about 65") may be the youngest and oldest "C" certificate holders, respectively, in the country. This may be true of the youngest, but Mr. Nyborg is eclipsed by Mr. Eustace Thomas, of the Derbyshire and Lancashire Gliding Club, who is alleged to be in his seventies. Mr. Nyborg, however, can probably claim to have been associated with gliding longer than anyone else, for he built his first glider in 1903.—ED.]

Midland Gliding Club

Hereford Branch.

After several months of hopelessly muddy conditions, the Haywood ground miraculously dried up in time for a grand opening at Easter.

Several new very enthusiastic members sorely tried our old warrior, but their well-meant efforts at total destruction came to nothing. The only damage done was to the nervous system of our chief instructor "Duggie" (now almost as good as new). One or two of them did suggest the necessity of a cushion, so perhaps the R.F.D. got some of its own back.

A laudable ambition of twelve months' standing was achieved—giving Picker his ground slides and getting him into the air. He was surprised to find that "knowing how" from the launching car is entirely different to "doing" when travelling at an incredible velocity through space with an altitude varying from thousands of feet to several inches negative within split seconds.

Gliding meetings have taken place every Sunday and one or two evenings each week, weather permitting.

June 6th.—Very good day. P. Pritchard at last had conditions suitable for an "A." He made no mistake and took it easily with a margin of several seconds.

June 17th.—Eades and Goodwin promoted to top hedge. Good work!

July 4th.—Conditions poor for primary. Moved to Long Mynd in the afternoon. N. Griffith and J. Whalley took their "B's" and "C's" on KIRBY KADETS without much trouble (barring a few heart attacks for poor old Keeble).

July 8th.—B. Griffith has made wonderful progress—promoted to top hedge on his fourth time out. His mistakes are yet to come!

July 9th.—Farewell Supper, at the Kerry Arms, to L. C. Dugdale (Duggie), who has been moved to Lincolnshire, much to the regret of the whole club. J. Brook, in presenting an inscribed album of photographs—a pictorial history of the club since its commencement, said that this was the most suitable presentation the club could find, because its whole foundation and successful progress was due to Duggie's energy and enthusiasm.

After the supper a general discussion was held about an intensive gliding publicity campaign in conjunction with the film "Plane Sailing," which has been procured for the end of July at the Odeon Cinema. Amongst other projects decided on was a competition for twelve months' free primary training, open to youths of from 16 to 20 years. This will be known as the Dugdale Scholarship.

July 18th.—Eades, Goodwin and B. Griffith had first flights from the hilltop. Also N. Griffith ("C" certificate).

July 22nd.—Much to the delight of the junior members, B. Griffith has started making mistakes. He has asked for a cushion! That'll larn him. Good old R. F. D.!

Yorkshire Gliding Club

Saturday, June 19th.—Wind N.-N.W., light. Circuits and training flights. Leach made an instruction-book dive to clear the fence but unfortunately stalled and broke the skid on landing.

Sunday, June 20th.—Wind variable, N.W.-N.E. There were peculiar conditions on this day; a cold front coming down from the north-east was successfully exploited by Barker in his SCUD III, who reached 2,000 feet and landed two miles south of Boroughbridge, a distance of about fifteen miles from the Bank. What a pity the occupiers of large country houses sometimes go away on holiday!

Wills flew HJORDIS, but was just too late to catch the best of the lift. Circuits and training were continued.

Tuesday, June 22nd.—Wind W., 20 m.p.h., decreasing. Hartness was rewarded for his interest in the club, and the hard work he has put in on the winch committee, by a very excellent "C" flight of 22 minutes in the KADET. Drummond followed him in HOLS and also made a very good "C" flight of 33 minutes. It is interesting to note that Drummond, who has never had any flying instruction of any sort previous to coming to us, has obtained his "C" exactly eight weeks after becoming a member and at the time of writing has done over four hours' soaring.

FALCON III, GRUNAU, FALCON I, and KIRBY KITE were also flown.

Next day training was continued.

Friday, June 25th.—Wind W., 15 m.p.h., decreasing. Lingford flew GRUNAU for three hours, reaching 2,000 feet at times in thermals, and was followed by Pick (A. O.) for 2¼ hours, and

Pick (R. C.) one hour. Sproule finished the day with 25 minutes in the KITE, including a loop.

Saturday, June 26th.—Wind W., very light. Lingford in GRUNAU flew to Welburn Aerodrome. He had plenty of height in hand on arriving there, but as there was no sign of thermal activity beyond he decided to call it a day and landed. Later in the afternoon he was aero-towed back to the Bank behind Major Shaw's "Cadet" piloted by McMurdo, and after releasing continued to soar in the light west wind for thirty minutes.

GRUNAU was subsequently soared by Heath, Pick (A. O.), Lingford (again), and Hastwell in a strengthening west wind, accompanied by the KITE piloted by McMurdo and Heath. Miss McMurdo received instruction in DAGLING. HOLS was circuited.

Sunday, June 27th.—Wind W., 5-15 m.p.h. A most surprising and disappointing day. In spite of a good west wind of 15 m.p.h. absolutely no hill soaring was possible. Several pilots going off the winch struck thermals immediately and were able to stay up for considerable periods, notably Stedman in GRUNAU for one hour twenty minutes, in which he reached 1,800 feet, and McMurdo in the KITE for three hours. But, once having lost the thermal lift, pilots were amazed to find no support at all below 300 feet. However, towards evening things became more normal and quite a number of people soared. Amongst these flights was a very steady twelve minutes in HOLS by Leach, which qualified him for his "C," less than seven weeks after joining the club. We venture to suggest that this is a record for training an *ab initio* to the "C" standard on week-ends only.

During the evening Wordsworth was passed out for flying the FALCON III. Amongst all this soaring and attempted soaring, training was carried on on HOLS and DAGLING.

Tuesday, June 29th.—Maufe had two half-hour flights in FALCON I, and Pick (A. O.) one hour in the same machine, landing in the dark by car headlights.

Wednesday, June 30th.—Wind W., 25 m.p.h. HOLS, FALCON I and FALCON III, were flown for a total of 3½ hours, and after 5.30 p.m. Fresson received his first taste of soaring in FALCON III.

Thursday, July 1st.—Wind W., 15-30 m.p.h. Lingford piloted the KITE for two stretches of over two hours each and Maufe qualified for the first leg of his "Silver C" with a flight of 5½ hours.

Fresson qualified for his "A" on HOLS and his "B" and "C" on FALCON I in eight consecutive flights and Dyson qualified for his "A" on HOLS.

Friday, July 2nd.—In a light south wind Lingford put in 1½ hours in the KITE. Next day one or two members circuited the FALCON I in unpleasant conditions.

Monday, July 5th.—Wind light, S.S.W. As the wind was blowing up Whitestone Cliff only a few of the single seaters ventured to soar, and one or two had great difficulty in making their way back to the club ground. Raphael took his "A" and "B" in the HOLS. Wordsworth tested our new KADET and passed it over to Hartness.

Wednesday, July 7th.—About eight hours' flying was done by Bond, Drummond, Verdon-Roe, Currie, and Wordsworth on the two KADETS, and Fresson, Pick, and Maufe on the FALCON I.

Raphael on KADET did a "C" flight of 1 hour 23 minutes, which was charged to him at a day's training rate. A very cheap ride!

Thursday, July 8th.—Wind light, W. Bond, who seems to prefer a field some distance along the ridge for his landings, did three short flights.

A new type, based on the KADET, but with tapered wings, was test-flown by Slingsby, who sees great possibilities in it for more advanced flying.

Friday, July 9th.—Wind W., 15-20 m.p.h. Drummond flew 1½ hours in the KADET and reached 1,200 feet.

Saturday, July 10th.—Wind W.-N.W. Low cloud during afternoon. Verdon-Roe and Raphael did 2½ hours each in FALCON I and KADET, during which time they flew in formation and conversed together. Rather a change from the "Heyfords" which they usually fly!

O'Grady, of the Newcastle Club, put in a late 26 minutes in the KITE, touching 1,200 feet in the "evening thermal" which seems to be a feature just before dusk these days.

Sunday, July 11th.—Wind light, variable. Throughout the day Lingford, Pick, Barker, Wordsworth, O'Grady, and Smart circuited GRUNAU, KITE, and SCUD III in search of thermals fruitlessly. Stedman caught one off the winch and circuited up to 2,200 feet in GRUNAU. He joyfully set off for his "Silver C" cross-country, having already done his height and duration. When over Oswaldkirk he thought he would verify that the barograph was working satisfactorily and felt in the place where it should be, when to his annoyance (very mild) he found it had been removed. He returned and landed after 45 minutes in the air and made loud inquiries for the criminal who had taken the barograph out.

Tuesday, July 13th.—A light west wind tempted Hartness, Pick and Drummond to the Bank. Pick flew GRUNAU for 45 minutes and the other two piloted the new KADET briefly.

Wednesday, July 14th.—KITE, GRUNAU and FALCON were flown by Pick, Lingford, Maufe and Raphael for short periods, there being very little lift.

Thursday, July 15th.—Wind N.W., 25 m.p.h., decreasing. Lingford in the KITE, after three hours' flying at the Bank, decided to set off across country. He landed eventually at Gardham, near Beverley, a distance of 37 miles, having flown there by way of Market Weighton, thus procuring the first leg of his "Silver C." Haslinger, in the FALCON I, touched 3,000 feet, but did not go off cross-country because Lingford had the only available barograph.

Maufe, Drummond, Wordsworth and Hastwell also soared during the evening until the wind dropped completely.

Kent Gliding Club

Our recent efforts to produce a report for THE SAILPLANE have caused the club much amusement. Whenever a suitable draft has been prepared new schemes (from "Drones" to fresh sites), overhauls, minor crashery, storms and/or acts of God, have resulted in frequent tearing of hair and script, with threats of strike action unless stability be restored forthwith.

Lack of reports, however, by no means implies lack of activity, and we now have more active flying members than ever, in various stages of training. During last winter a "Drone" was lent to the club (who was it who said: "Fit a little engine?"), but we have returned to unadulterated gliding plus some valuable experience. The acquisition of the latter entailed certain repairs to the "Drone," and as a result the normal winter evening overhauls to the gliding equipment got behind. However, the summer started with COLUMBUS and the B.A.C. I in full swing, the latter having been overhauled and fitted with new wings which improved the performance considerably. Result: "A's" for Walker and Draper, and a "B" for Brunning.

An extensive overhaul to COLUMBUS was begun, and immediately the B.A.C. I got mixed up with the Pilgrims' Way, following a prolonged slide through slippery grass after a fast landing. We believe we have mentioned before what we think of the pilgrims for having hiked along the foot of the few available sites in Kent. Result: two machines out of action at the same time. (Life is full of ups and downs, as the new member said after the fourth landing of his first flight.)

COLUMBUS (now over seven years old) has emerged from the workshop as fit as a fiddle, resplendent in new fabric and silver-and-blue finish, with nice shiny wires. May he be preserved from ghosties and ghoulies and long-legged beasties and things that go boomp in the day!

The repair section is now turning its energies towards the B.A.C. I. We are lucky to have members from Short Bros. and Pobjoys (such stalwarts as Brunning, Draper, Bennett, and Clark being particularly worthy of mention), and we are luckier still to have Sanguinetti as our G.E.—he has given us seven years of continual help, to say nothing of providing us (at considerable inconvenience at times!) with the loan of a workshop, etc.

The club is now considering the acquisition of a third site near by, and is in fact "exploring every avenue" towards the establishment of additional facilities and more varied flying conditions for its members.

H-17 **Working Drawings**

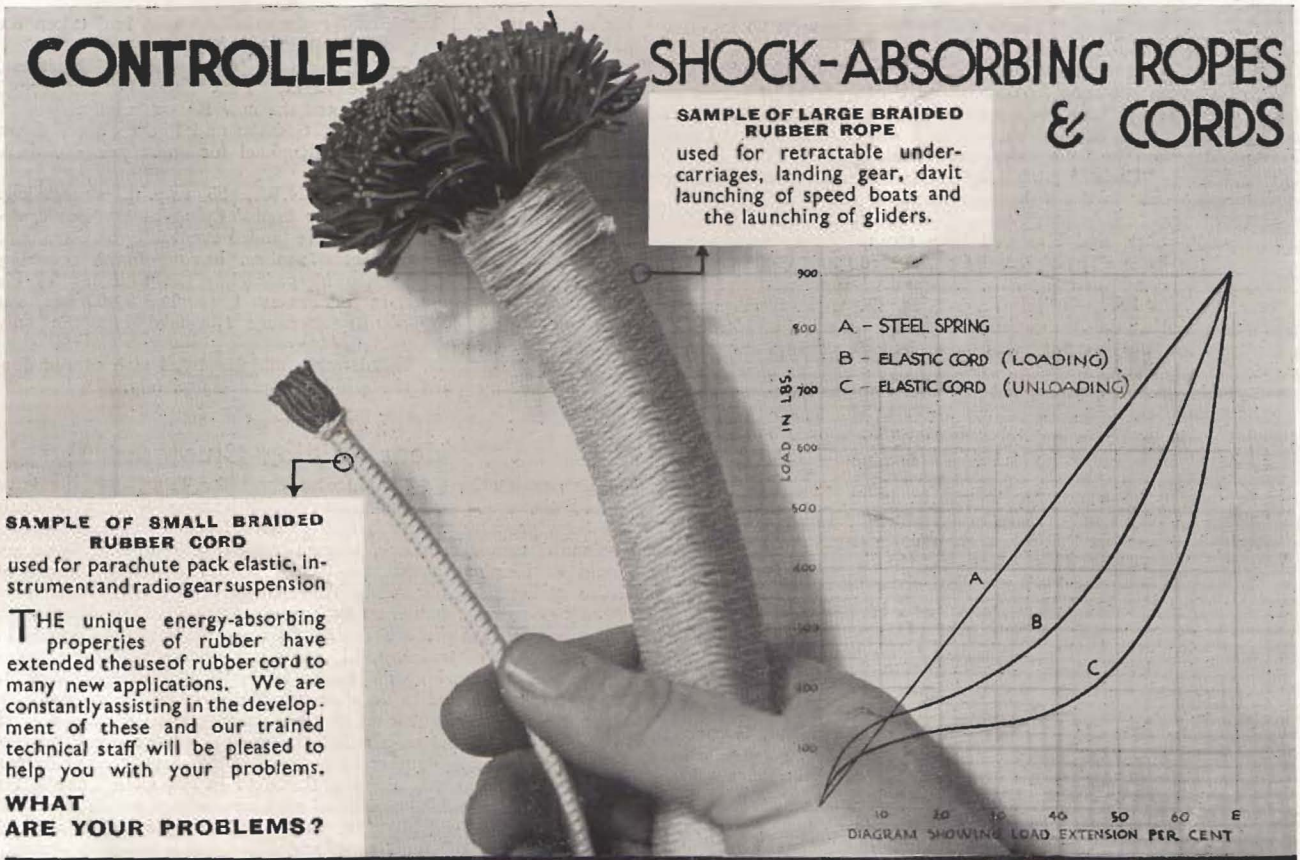
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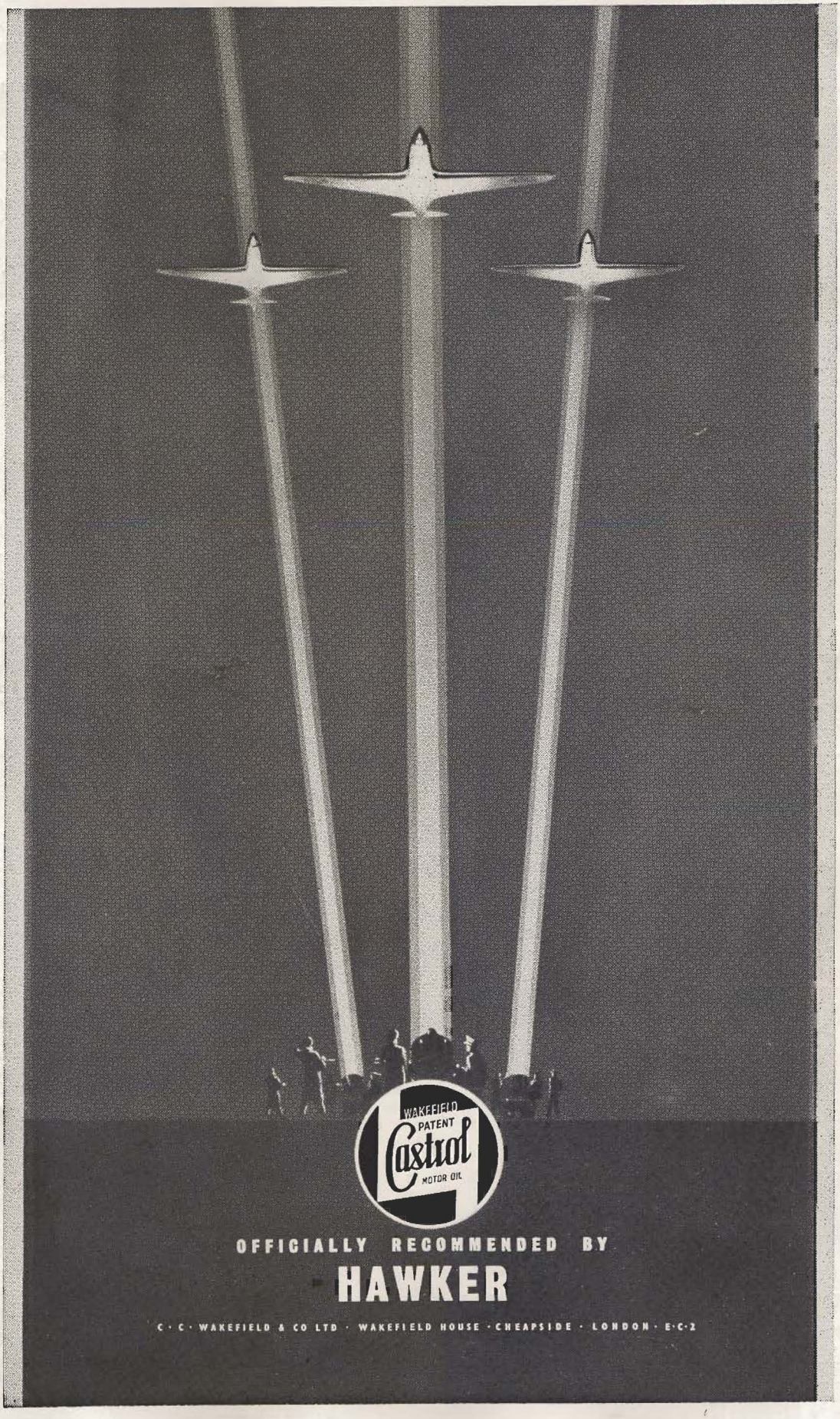
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