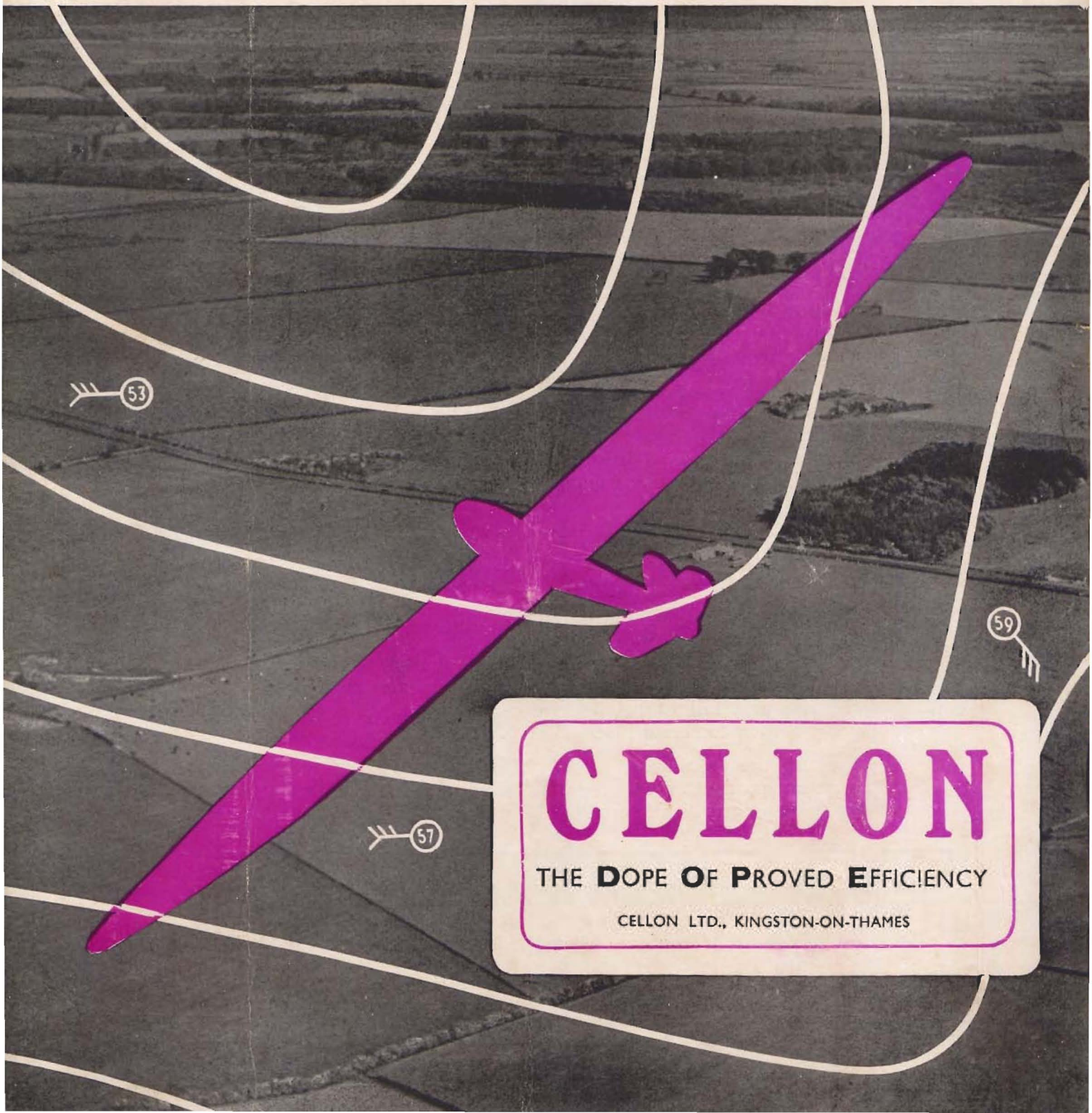
SAILPLANE AND GLIDER

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Official Organ of the British Gliding Association

EDITED BY ALAN E. SLATER



SLINGSBY SAILPLANES

KIRBYMOORSIDE, YORKS.

A Quarter of a Century in Aviation!

IN the month of March, twenty-five years ago, we joined the Royal Flying Corps; that was the beginning of a quarter of a century of participation in the development of aircraft construction.

NINE years ago the gliding movement was started in this country, and within a few months we were building spare wings and parts for gliders, almost as quickly as the newly formed clubs could smash them.

IN 1931 we produced our first sailplane, and flew it. During the last six years we have done nothing else but design, produce, fly and sell motorless aircraft of all sorts and sizes. Up to date we have supplied over three hundred machines and stacks of spares, to clubs and private owners in Great Britain, the Empire, and foreign countries.

THAT first sailplane, the "Falcon," built way back in 1931, set a high standard for workmanship and finish; this standard has been, and will continue to be, maintained.

ALTHOUGH we have equipped practically the whole of the gliding movement of this country with machines of various types, selling prices have been kept down to a minimum to encourage club development. Fluctuations in the cost of materials must result in the rise and fall of retail prices; but whichever way the market goes, our customers will be sure of sound value.

WITHIN the next two months, we shall be moving into our new factory, our production will then be trebled. This will, perhaps, allow us to keep pace with demand. If not, we shall build more factories.

SLINGSBY SAILPLANES, KIRBYMOORSIDE, YORKS.

All types of Motorless Aircraft, Spares, Material, Equipment

Telephone: 205 **Telegrams: Sailplanes, Kirbymoorside**

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Coming Events

A LIST of sixteen instruction courses, open to non-members, to be held by various clubs from April to September this year, was given in THE SAILPLANE last month.

Club Meetings

At Easter, starting on Friday, April 7th, is the aero-towing meeting at Ratcliffe Aerodrome, Leicester, organised by the London, Derbyshire and Lancashire, and Midland Gliding Clubs, to which machines from other clubs may be brought by arrangement. We mentioned this meeting last month, but would like to draw attention once more to the hospitality of Sir W. Lindsay Everard, M.P., who acted as host at the similar party last year, and has again, most generously, put his private aerodrome and its facilities at the disposal of those taking part.

It is announced that no one will be allowed to take a car on the aerodrome beyond the members' car park unless it has an official label, and no person will be allowed on the aerodrome without a member's badge obtainable from his club or the organisers.

The Cambridge University Gliding Club's camp in Wiltshire, to which visiting private owners are welcome, is from April 2nd to 16th, both Sundays.

The Surrey Gliding Club is holding a meeting, with facilities for cross-country flying, at Whitsun (May 27th to 29th at least).

National Contests

The Derbyshire and Lancashire Gliding Club has agreed to organise this year's National Contests at Bradwell Edge, Great Hucklow. The club has fixed the date as Saturday, July 8th, to Sunday, July 16th.

B.G.A. General Meeting

The eighth Annual General Meeting of the British Gliding Association, Ltd., will be held at 119, Piccadilly, London, W.1, on Friday, April 14th, 1939, at 6 p.m. Nominations for the Council must be in writing and received at the Registered Office of the Association at least 28 days before the Annual General Meeting.

International Meeting

An international sailplane meeting has been organised in connection with the Annual Conference of the International Commission for the Study of Motorless Flight (Istus) at Warsaw in May. The Aero Club of Poland is organising the meeting, which will be held at Katowice aerodrome from May 14th to 20th, 1939.

The regulations have been issued in German, French, English, Italian and Polish. From them it appears that one of the objects of the meeting is to acquaint the participants with the kind of performances which will be expected at the Olympic Games next year. So there will be goal flights, on which the pilot will have to reach the goal in the shortest possible time, or else climb to the highest possible altitude on the way, or both.

Each national team is to have a leader, and not more than three sailplanes may be entered, with three pilots and one reserve pilot. Each team is also advised to bring a towing aeroplane, ground transport, towing cables, etc. Two-seater sailplanes will be admitted. Entries must reach the organisers (Aeroklub Rzeczypospolitej Polskiej, Warsaw, Krolewska str. 2) by March 31st at the latest.

Air Cadets' Camps

Training courses for the Air Defence Cadets of the Air League have at last been arranged, with the help of a special Government subsidy. This is additional to the subsidy scheme already in force for gliding clubs, which will be continued as heretofore.

The camps will be held at existing gliding clubs; they will last a fortnight, and 20 cadets will attend each camp. These will be taken from the first 50 cadet squadrons to be formed (there are now about 80), and as each squadron will contribute 10 cadets, 500 will be trained altogether this year. In future years the number will be raised to at least 700. The individual squadrons will have to contribute travelling expenses only, as the camping expenses will be paid. A cadet officer will be present at each camp, one squadron supplying one officer for a period of a week. The amount of subsidy required for all this is expected to reach about £5,000.

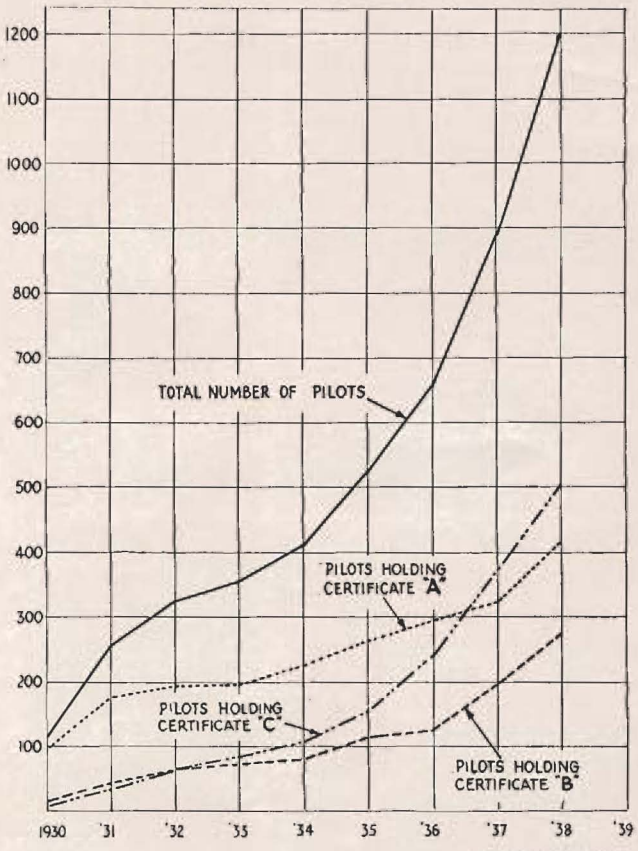
Gliding Certificates

THE Royal Aero Club has compiled, from the files of the British Gliding Association, a table showing the gliding certificates in each category gained by the different clubs in past years. From these figures the progress made as a result of the Government subsidy stands out very clearly.

We reproduce it below, as comparative tables of this kind never fail to arouse interest. Sometimes they even give rise to trouble, as when someone demanded to know, at his club's annual meeting, why a smaller proportion of "A" pilots progressed to "C" stage than at any other club. (There was an awkward silence until someone thought of Summer Camps as the answer.) Then there was the excitable reader who described one of these statistical lists as "an article attacking the smaller clubs"; also the club which claimed more certificates than it had, and sent a letter explaining away the table as merely "official." Anyhow, here it is, and we are prepared for the worst.

Certificates Gained by Clubs

Gliding Club.		Total 1930-34.	Subsidy Years. 1935.	1936.	1937.	1938.	Total 1935-38.	Total 1930-38.
Bristol	A	—	—	—	—	—	—	—
	B	—	—	—	—	—	—	—
	C	—	—	—	—	—	—	—
Cambridge University	A	—	4	8	18	29	59	59
	B	—	1	5	10	22	18	18
	C	—	—	—	1	10	11	11
Channel	A	7	—	—	1	1	2	9
	B	1	—	1	2	1	4	5
	C	—	—	—	2	1	3	3
Cornwall	A	—	—	1	—	—	1	1
	B	—	—	—	—	—	—	—
	C	—	—	—	—	—	—	—
Cotswold	A	—	—	—	1	—	1	1
	B	—	—	—	—	—	—	—
	C	—	—	—	—	—	—	—
Croydon	A	—	—	—	—	1	1	1
	B	—	—	—	—	—	—	—
	C	—	—	—	—	—	—	—
Derbyshire and Lancashire	A	—	3	19	26	24	72	72
	B	—	3	13	23	17	56	56
	C	—	—	13	19	20	52	52
Manchester Ae. Soc.	A	9	1	—	—	—	1	10
	B	4	1	—	—	—	1	5
	C	1	1	—	—	—	1	2
Dorset	A	21	5	—	—	4	9	30
	B	11	5	—	—	1	6	17
	C	3	—	—	—	—	—	3
Essex	A	11	—	2	—	—	2	13
	B	6	—	—	1	—	1	7
	C	—	—	—	—	1	1	1
Furness	A	12	2	1	3	5	11	23
	B	7	—	3	4	1	8	15
	C	2	—	1	3	1	5	7
Hull	A	—	—	—	—	7	7	7
	B	—	—	—	—	—	—	—
	C	—	—	—	—	—	—	—
Inverness	A	—	—	—	3	3	6	6
	B	—	—	—	2	4	6	6
	C	—	—	—	—	—	—	—
Kent	A	8	3	1	2	—	6	14
	B	5	—	—	1	1	2	7
	C	1	—	—	—	—	—	1
London	A	125	58	51	80	95	284	409
	B	86	52	32	69	63	216	302
	C	66	30	25	43	42	140	206
Imperial College	A	16	—	4	5	1	10	26
	B	6	—	5	5	1	11	17
	C	1	1	5	1	1	8	9
Midland	A	—	20	19	14	20	73	73
	B	—	7	19	14	20	60	60
	C	—	2	27	14	16	59	59
Newcastle	A	—	—	6	26	12	44	44
	B	—	—	—	24	4	28	28
	C	—	—	—	6	3	9	9
Norfolk and Norwich	A	—	—	—	—	9	9	9
	B	—	—	—	—	9	9	9
	C	—	—	—	—	2	2	2
Oxford	A	—	—	—	—	34	34	34
	B	—	—	—	—	28	28	28
	C	—	—	—	—	6	6	6
Scottish Gliding Union	A	—	—	—	1	5	6	6
	B	—	—	—	—	3	3	3
	C	—	—	—	—	—	—	—
Southdown	A	2	1	4	8	5	18	20
	B	—	1	4	5	5	15	15
	C	1	3	—	6	2	11	12
Surrey	A	—	—	—	—	3	3	3
	B	—	—	—	—	—	—	—
	C	—	—	—	—	—	—	—
Ulster	A	10	—	—	7	4	11	21
	B	7	—	—	9	4	13	20
	C	7	—	—	9	5	14	21
Yorkshire	A	1	10	15	25	45	95	96
	B	1	9	17	26	29	18	82
	C	2	10	13	29	23	75	77
Ryedale	A	—	10	1	1	—	12	12
	B	—	—	2	1	—	3	3
	C	—	—	2	—	—	2	2
Bradford and County	A	12	—	—	—	—	—	12
	B	7	—	—	—	—	—	7
	C	4	—	—	—	—	—	4
Leeds	A	6	—	—	—	—	—	6
	B	2	—	—	—	—	—	2
	C	1	—	—	—	—	—	1
Clubs taking Certificates during Subsidy Years	A	240	117	132	221	307	777	1017
	B	143	79	101	196	213	589	732
	C	89	47	86	133	133	399	488
38 other Clubs defunct by 1935	A	166	—	—	—	—	—	166
	B	42	—	—	—	—	—	42
	C	17	—	—	—	—	—	17
Taken abroad	A	5	—	3	8	3	14	19
	B	2	—	1	5	3	9	11
	C	1	—	—	—	—	—	1
Total, per Class	A	411	117	135	229	310	791	1202
	B	187	79	102	201	216	598	785
	C	107	47	86	133	133	399	506
Total Certs. issued		705	243	323	563	659	1788	2493



This graph, prepared by the Royal Aero Club, shows the total number of holders of gliding certificates at the end of each year, together with the number who have progressed to each of the three stages. Like the table on the opposite page, it is based on the dates of qualifying flights, not of issue of the certificates.

[Courtesy of "Flight."

The following gliding certificates, for which qualifying flights were made on the dates shown, were granted by the Royal Aero Club on February 21st:—

"A" Certificates

No.	*Name.*	*Club.*	*Date.*
1205	F. G. Buckle	Oxford	9.1.39
1206	E. G. Gaze	Oxford	30.11.38
1207	L. L. Hanks	Oxford	31.12.38
1208	Mavis D. FitzRandolph	Oxford	31.12.38
1209	J. H. Vickers	Oxford	3.12.38
1210	Barbara M. Nicklin ...	Oxford	4.12.38
1211	R. W. J. Clarke ...	Oxford	4.12.38
1212	K. I. Pritchett	Oxford	26.11.38
1213	C. H. Eagle	Oxford	9.11.38
1214	W. R. A. Knocker ...	Oxford	8.11.38
1215	R. V. Selenyi	Cambridge	6.2.39

"B" Certificates

No.	*Name.*	*Club.*	*Date.*
1189	A. G. Douglas	Surrey	8.1.39
913	W. H. Thompson ...	Newcastle	23.10.38
1181	J. P. Elton	Cambridge	1.2.39
1194	M. C. Crosfield... ...	Cambridge	1.2.39
620	G. L. Coates	Newcastle	29.1.39
1175	R. S. Bramwell... ...	Cambridge	31.1.39
1179	P. H. R. O. Beckett ...	Cambridge	10.2.39
1191	A. R. Turpin	Surrey	5.2.39
1178	L. G. Drew	Cambridge	10.2.39
1010	J. Harrison	Newcastle	22.1.39
907	H. D. Philipson ...	Newcastle	22.1.39
1161	J. M. Flint	Cambridge	6.2.39
1200	C. E. D. Gibson ...	Cambridge	8.2.39
1155	J. B. Wagstaff	Derby and Lancs. ...	5.2.39
1172	P. S. Fowler	Cambridge	29.1.39
1214	W. R. A. Knocker ...	Oxford	4.12.38
1210	Barbara M. Nicklin ...	Oxford	11.12.38
1176	J. D. Pile	Cambridge	16.2.39

"C" Certificates

No.	*Name.*	*Club.*	*Date.*
1025	B. A. Powell	Surrey	5.2.39
1141	Joan Burchardt... ...	Oxford	9.1.39

From Here and There

Mr. Buxton Honoured.—The Busk Memorial Prize of the Royal Aeronautical Society has been awarded to Squadron Leader G. M. Buxton for his paper on "The Development of Sailplanes," read to the society in December, 1937.

* * *

Prelude to Flight.—The film with this title, described last month, has its first public showing at the Regal, Marble Arch, London, on March 10th, but as the whole programme changes on the 17th it will then be taken off and will be available for general release. The film was made by D'Arcy Cartwright, Grahame Tharp, and Geoffrey Bell at the London Gliding Club.

* * *

Weigh Your Trailer.—Some time ago we published an article giving the regulations applying to trailers. Readers are reminded of the fact that, as from last October, any trailer which, by virtue of the fact that its unladen weight is under one ton, is allowed to use an automatic brake, must have its unladen weight plainly marked upon some conspicuous place on the near side.

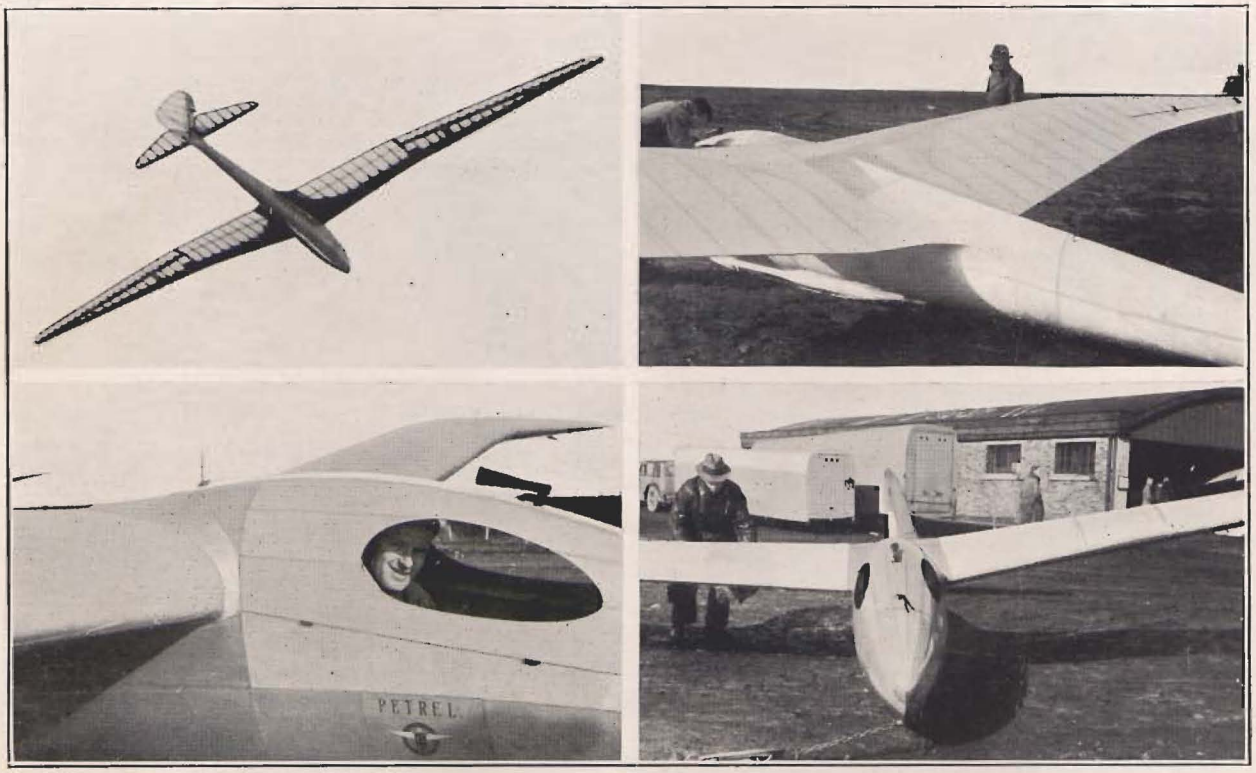
* * *

Swiss Gliding.—The statistics given in THE SAILPLANE last month did not apply to the whole country or the whole year, as a news agency now gives the following figures for Switzerland in 1938: There were 20,764 launches with a total flying time of 2,112 hours. On January 1st this year there were 173 sailplanes and gliders and 1,100 pilots with certificates. The corresponding figures for January 1st, 1938, were 118 aircraft and 886 pilots. During 1938 there were four injuries to pilots and one fatality. The 18th "Silver C" in the country has just been granted to the pilot Derendinger of the Grenchen group.

* * *

Wolf Hirth.—After flying over to Paris for the Aero Show, with a sailplane in tow, Wolf Hirth encountered such bad weather that he had to leave both machines there and go home by train, instead of proceeding to England as he had intended. He has now branched out on a new line and set up the *Wohnwagenbau Wolf Hirth* at Kirchheim-Teck for making "Aero-Sport" trailer caravans. Needless to say, they are streamlined, and the prospectus contains a scientific diagram showing the air flow. As to the Schempp-Hirth sailplane factory, it is still turning out four or five MINIMOAS and four GOEVIERS a month, and a few days ago the 91st MINIMOA was test-flown.

The Slingsby "Petrel" is Test-flown



The first example of the new "Petrel" high-performance sailplane has now been flying from the site of the Furness Gliding Club, where it is seen in the above photograph. In the left lower picture Mr. Frank Charles, its owner, is inside the cockpit which has been built specially for him; in the production model the cockpit will have the usual transparent roof.

THE latest British high-performance sailplane to take the air is the PETREL, designed and built by Slingsby Sailplanes to the order of Mr. Frank Charles, of the Furness Gliding Club. The machine was described, with general arrangement drawings, in the January SAILPLANE on page 5. The cockpit cover of the first machine has been specially made to Mr. Charles's requirements, and the cockpits of subsequent models, of which we believe two are already on the stocks, will have the type of cover shown in the drawings, which resembles that of the Slingsby GULL. The elevator can be either of pendulum type or with a fixed fin, as desired.

On February 19th, at the Furness Club's site, Mr. Charles flew his new acquisition in the presence of the B.G.A. inspector, Mr. W. Butterfield, and we give below some extracts from a letter from Mr. Butterfield describing how the machine behaved, and how its performance compared with that of a KIRBY KITE which was being flown at the same time:—

. . . . The wind was blowing from the west and the day was bright and sunny when Redshaw took off in the KIRBY KITE at 1.15 p.m. Charles followed in the PETREL at about 1.30 p.m. Both pilots flew very sedately, nursing every bit of lift, and it was an extremely interesting contest to watch from the ground. There was no fooling around, and if one found an extra good region of lift the other immediately shifted to that region; hence we had every opportunity to compare performances, as both pilots exhibited text-book technique and gave a polished display of winning height.

In 15 minutes the PETREL was twice as high as the KITE and had no difficulty in regaining this supremacy when operating in the same region of lift. The PETREL also proved its capacity to move quickly from one region to another with remarkably small loss of height; at times she appeared to be flown very slowly indeed, and an inverted plan view reminded one of Collins's RHÖNADLER at its best.

There was just a little cloud about and each pilot tried circling under these wisps, but undoubtedly the best lift was obtained by circling in hill lift. At the end of an hour both machines were landed perfectly on the hill top adjacent to the hangar and the pilots compared notes.

Charles had been to 1,300 ft. above take-off and Redshaw to 800 ft. Charles reported that the PETREL stalls at 29 m.p.h. on *his* A.S.I. and just falls back into a glide like a FALCON does, there being no tendency to drop a wing-tip, hence no tendency to spin. He has not, of course, deliberately crossed the controls to make her spin, but has dived her until the needle passed beyond the 80 m.p.h. mark, which is the limit of graduations on the dial. The machine can be circled beautifully in perhaps the tightest circles I've ever seen.

At 3.30 p.m. both machines took off again. Charles declared that if he reached 2,000 ft. above the site he would glide down-wind to Goadsbarrow on Morecambe

Bay, 8 miles distant, where the trailer was to pick him up. There was not a cloud in the sky, and the wind had either dropped or steadied; it was devoid of gusts on the hill. In 20 minutes he had reached 2,300 ft. and Redshaw was not 200 ft. above start when Charles set off on a dead straight course for his goal. He arrived at Goadsbarrow with a loss of only 500 ft. He did *no* circling and says that the green ball [of the variometer] was never showing.

Goadsbarrow is at sea level and the site where the altimeter was set at zero is 800 ft. above mean sea level, so he would be at 2,800 above M.S.L. when over the beach at Goadsbarrow. So he carried on over the foreshore to Rampside and back again to a nice landing on the beach at Goadsbarrow.

The proof of the pudding is in the eating, so I append the following figures :—

Site to Goadsbarrow, distance 7 miles = 36,960 ft.
Time, 7.5 minutes = 450 seconds.
Ground speed, 55.98 m.p.h. average.
Wind speed, 10 m.p.h. average.
Flying speed, 45.98 m.p.h. average.
Sinking speed = 1.11 ft. per sec.

Truly a remarkable performance even if we assume that the air through which he passed had a slight upward component. . . . One fact is clear: that on such a day, with such a machine, in the hands of a pilot of Charles's calibre, it is possible to travel 35 miles from a height of 2,500 ft.

Cross-Country Flights

THE list of cross-country flights between July and December, 1938, published last month on page 28, needs two additions.

On September 10th, in a light north-east wind, D. G. O. Hiscox flew his GULL from Dunstable Downs to Windsor Great Park, where he landed at Flemish Farm. He started from a thermal caught at the top of a winch launch, which he picked up by design and not by accident. He waited till the wind sock sagged, showing that a thermal was approaching from up-wind. During the launch the sailplane tipped over towards the hill, so, on the assumption that the thermal had got under the opposite wing, he turned away from the hill and, sure enough, caught it.

The other flight was made by S. G. Stevens on July 27th in his KIRBY KITE, from a point just east of Ditchling Beacon, on the South Downs north of Brighton. He went 17 miles along the line of the Downs to the west, crossing the Steyning Gap, and landing just outside Storrington. According to the weather map there was a south wind of force 3. Mr. Stevens also made a flight of 9 miles eastwards from the Southdown Club's site at Devil's Dyke to Mount Harry, near Plumpton, at the eastern end of the line of Downs, on August 13th. There was a wind of force 3 from west by north.

This year's cross-country flying began in January, when A. P. Pringle went 9 miles in cloud lift from Cambridge. In February four flights have been done from the London Club, and the longest of these, 35 miles, is described below by the pilot, R. Pasold.

Dunstable to Chigwell Aerodrome

After hill-soaring for nearly two hours with odd bits of lift, struck a good thermal and steadily climbed to cloud base at 3,700 ft.—Drifting away and keeping under a good cloud, came straight over St. Albans and realised that we would soon be over London with this wind.—Flew cross-wind east and made for some promising-looking clouds, which soon got us back to cloud base.—Passing Hatfield Aerodrome, wondered whether to land and tell them, "I just dropped in to inspect my brother's machine which is getting a new C. of A." (a good excuse for landing one of those unpopular gliders at Hatfield).—Making use of the clouds, which always provided a steady 2 ft. per sec. lift, came over Enfield and made for what looked like a perfect landing ground and which turned out to be a large reservoir.

Visibility became poor and also the altimeter reading, so we picked out a nice field next to a row of greenhouses—but suddenly the green ball appeared once more.—Flying carefully in very weak lift, we seemed to be circling for ever, while I just glanced down on Epping Forest—circling and circling and climbing at approximately 1 ft. per sec.—Getting to about 2,500 ft., I looked down to see what was ahead of us and—what a horrible sight—a balloon barrage—and we dead over it; balloons around us in a circle and we over it like an insect over a spider's web.—The balloons appeared to be coming up to grab us (imagination, of course) and—"damn the lift and the good cloud"—I pushed the stick hard forward, the parachute being the only comforting thought, and soon we left.

Flying down-wind now (the wind was practically due north) lost not more than 6 ins. per sec. and passed over an aerodrome with Sunday aerobatic pilots chasing us up.—Spotting a machine on the ground resting on the wing tip, with gull wings, I thought it was Dudley Hiscox's GULL (who had left under the same cloud with me).—Ilford passed and the Ford Motor Works and the Thames appeared in the mist.—We made for a dark cloud towards London, but the lift proved not strong enough and so decided to turn back to the aerodrome which we had passed.—Visibility was—milk, or we would have tried for Gravesend.—Arriving at the aerodrome with just enough height to fly a circuit, landed at 4.40 p.m., about 2 hrs. 40 mins. after leaving Dunstable and 4½ hours in the air.—(What I took for Dudley's GULL was a four-engined bomber with a broken undercarriage and broken wings.)

I was very surprised to find such constant lift under all the clouds, and there were no down-currents flying from cloud to cloud. It also surprised me that the thermal activity continued as late as 4.40 p.m. in winter time.

R. PASOLD

The Fox Cloud-Base Predictor

THIS instrument is a new device from which a direct reading of the height of low-lying cloud can be taken above any observation point. Its advantage over some of the existing and elaborate methods is obvious, particularly when it is remembered that the condensation-level of clouds often rises and varies during the course of a day.

The amount of low cloud in the sky, and also the height at which its daily condensation is likely to take place, is naturally dependent on the humidity of the air; and since low clouds are almost invariably caused by the cooling and condensing of moist air which has risen from the warm ground, it is therefore possible, by testing the condition of the air before it starts on its upward journey, to assess with considerable accuracy the height to which such air must rise for its natural condensation to take place.

The Predictor is, in effect, a wet and dry bulb hygrometer, and is influenced both by the temperature and the humidity of the air surrounding it.

Instead, however, of being used to indicate the relative humidity of the air, readings are obtained from a chart which has been developed from available data correlating this factor with the altitude at which condensation occurs.

This chart is arranged on the drum situated behind the wet bulb thermometer, so that using the dry bulb temperature scale around its bottom edge the drum can be set to a position at which a fixed index coincides with the dry bulb temperature, as determined by a reading of the dry bulb thermometer. The cloud-base height can then be directly determined by observing the relationship of the chart with the meniscus of the mercury in the stem of the wet bulb thermometer.

The Predictor relies on the daily function of rising air currents which, in their turn, regularly condense into cloud.

Whereas it was originally expected, however, to be reliable only on days when strong up-currents were present, it has since been shown to be reliable on almost every kind of day, even when cloud condensation is being caused by the very weakest of rising currents.

Beyond its capacity for direct reading of the height of the cloud base, it can, if correctly understood, be put to other purposes of considerable value, in connection with which Mr. J. S. Fox, the inventor of the instrument, has written the following notes :—

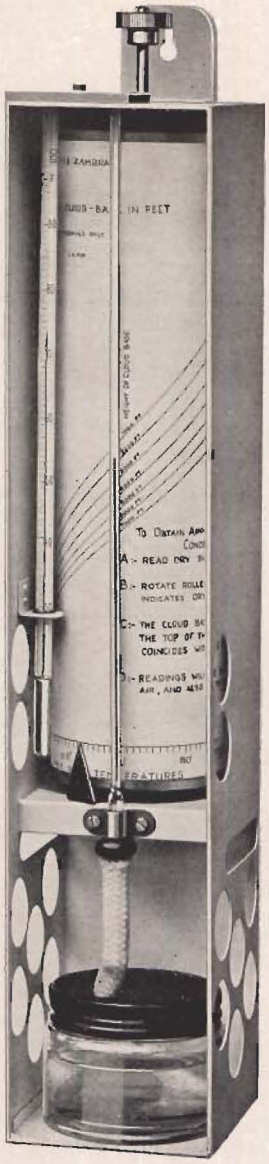
THE VALUE OF THE INSTRUMENT AS A PROPHET.—"Fine before seven—rain before eleven" is an old slogan, and often a true one. If, for example, on a bright cloudless sunny morning the humidity of the air happens to be considerable, and the instrument gives a cloud-condensation reading at, say, 1,000 or 1,500 ft., one can then only expect, when the sun's warmth causes the usual morning convection currents to start rising, that this damp air will quickly reach its condensation height, and soon cover the blue sky with a low layer of grey cloud. The result may be a rainy morning, instead of the hoped-for fine one.

AS AN INDICATOR OF AN INVERSION.—Supposing cloud-condensation level is predicted at, say, 2,000 ft., this then means that condensation will take place at this altitude only in so far as the rising currents succeed in reaching this 2,000 ft. height.

If, as the day goes on, no cloud-formation takes place, and the sky still remains clear blue, it is then obvious that no rising currents have been able to reach the required height. This, to the meteorologist, indicates the certain presence of an "inversion," or layer of warm air which checks the rise of all convection currents.

To an aeroplane pilot it forms an indication that smooth flying conditions may be expected at 2,000 ft. or over, while very bumpy conditions may be encountered below this altitude.

Finally, to a sailplane pilot, who has to rely entirely on rising convection currents, it shows plainly that the day is useless for high soaring flights or for long-distance cross-country flying.



RELATIVE HUMIDITY. — A scale for wet bulb temperature is provided on the chart drum, and by turning the latter to bring the scale adjacent to the wet bulb thermometer, this temperature can be easily determined. In conjunction with the temperature indicated by the dry bulb thermometer from its own scale, this permits the relative humidity to be readily ascertained from suitable tables.*

NOTES ON INSTALLATION AND MAINTENANCE.—(1) Mount the Predictor vertically in a position which is always in the shade and where the air has as free access as possible to the bulbs, and is not stagnant. Do not fix the instrument close to brick or iron work.

(2) Fill the reservoir with distilled water, or, if this is not available, with clean rain or other soft water.

Thorough "irrigation" of the "wet" bulb is essential for satisfactory results, and if the wick becomes hard or dirty, it must either be well washed or boiled, or changed.

Care must be taken when fitting a new wick so as not to damage the thermometer, and it should not be handled excessively or allowed to become greasy. The wick should be pushed on the bulb and not drawn on, as the latter treatment tends to reduce its diameter and make fitting more difficult.

* Meteorological Office Hygrometric Tables, 1927. H.M. Stationery Office, price 2s. *Or:* Negretti & Zambra Pocket Tables on Celluloid, No. 6,503. Price 3s. 6d.

Reviews

The Air and its Mysteries. By C. M. Botley (Fellow of the Royal Meteorological Society). With a foreword by Sir Richard Gregory, Bart., F.R.S. G. Bell & Sons, Ltd., London, 1938. Price 8s. 6d.

There is an individual going about by the name of Bob Ripley who has made it his mission in life to convince the world that truth is stranger than fiction. Selections from his vast store of amazing facts and happenings are published every week, sometimes broadcast, and at intervals collected into books.

Miss C. M. Botley might well be called the Bob Ripley of Meteorology, though her book is a lot more than a mere collection of strange tales. It is a very readable, yet accurate, account of all the principal branches of meteorological knowledge. A delightful feature is the number of ancillary sciences, ranging from Astronomy to Physiology, which are brought into the book as occasion demands, for the author is one of those infrequent people who take the whole world of knowledge in their stride.

Among the strange tales is one of a Mr. David Gregory, who possessed the first barometer in Scotland, and whose weather forecasts as a result became so accurate that he narrowly escaped being brought to trial for witchcraft. Would the lives of our modern forecasters, in similar circumstances, be in equal danger?

Then there was the cold front which crossed the English Channel on July 20th, 1929, and was so violent that it set up a tidal wave, estimated as 20 feet high, which swamped the coasts all round south-east England.

Medicine-men and witches, we are reminded, used to claim that they could control the wind, and as late as 1822 "old hags in Norway used to sell winds to sailors." If only gliding clubs had existed then, they would have done a roaring trade.

The author mentions that, in certain circumstances, lighting a grass fire may cause a cumulus cloud to form and give a shower. It is interesting to learn that some scientists believe that a similar "trigger" action may start a depression forming, and even the updraught from a burning ship and the melting of an iceberg have been suggested as possible causes.

Cattle, frightened by a storm, herd together in large groups from which rises a column of warm, moist air; this is mentioned, not as a possible source of thermals, but as an explanation of the animals being killed by lightning, which is attracted to them by the hot column being a good conductor.

In discussing local differences in temperature caused by the flow of cold air downhill at night, the author suggests that a team of observers from, say, a natural history society should take simultaneous observations with thermometers at different parts of a town, or on the Derbyshire moors, which, she says, "might yield surprising results." They would not surprise the pilots of the Derbyshire and Lancashire Gliding Club who go up to 4,000 feet in the "evening thermal"; nevertheless, it is to be hoped that the suggestion will bear fruit. The author also mentions that, in Lancashire manufacturing towns, the driest day of the week is Sunday, because then there are no heated gases rising from the mill chimneys to provoke increased rain.

Mention is made of an interesting theory of the late Professor Exner, of Vienna. He held that the atmosphere is never really uniform throughout, but is full of pockets and layers of air of greatly varying density, which have a length of from ½ to 8 inches, and are carried about by the wind. They act on light as so many convex or concave lenses; hence the twinkling of the stars. But how do they act on aerofoils?

In the preface the author refers to "new and fascinating lore" which has "remained buried in the pages of specialist periodicals from which it has been my pleasant task to extract it . . ." But the periodicals evidently did not include The Sailplane and Glider. Gliding is mentioned only twice. First, on page 50; "These currents [disturbances set up by hills] can be used by glider pilots, who have made some wonderful flights under their influence." Such a turn of phrase betrays a lack of contact with the gliding world. The second mention is on page 244:—

"Gliders . . . revel in the currents caused by hills. More recently, too, following the lead given by the late J. Nehring, they have begun to use the ascending currents under cumulus clouds, and when these clouds occur, as they often do, in long rows, the conditions are then so favourable to gliding that such formations have earned the name of 'cloud streets.'"

Second-hand knowledge again, and, moreover, inaccurate. Nehring piloted the aeroplane which, in the spring of 1928, investigated and measured the lift under cumulus clouds; but Kronfeld, in the summer of the same year, was the first to make deliberate use of them in a sailplane.

The loss of the "R 101" is attributed by the author to the airship's nose coming into a down-current in the lee of the 500-foot hills near Beauvais. This theory sounds plausible, although one does not recollect it being in the official report—not that that renders it unlikely.

Finally, it is stated that the soaring of birds "cannot be often seen in Britain, for the birds that have mastered it are now confined to . . . comparatively inaccessible districts. . . ." Has the author, who lives at Hastings, never watched the local gulls?

Moral Rearmament. Edited by H. W. Austin. William Heinemann, Ltd., London and Toronto. Price 6d.

The book consists chiefly of reprints of letters to the Press. One, specially marked in the copy sent us for review, is signed by 37 people prominent in the world of sport, including one aviator, who is not, however, a sailplane pilot. The idea is that people might be able to avert a war by introducing certain high and noble principles into their professional work. Among its alleged supporters are some professional politicians who, twenty years ago, were in a position to influence the future of Europe.

Developments in Japan

THE FIRST TWO-SEATER

IN April last year we illustrated an intermediate type sailplane designed by Mr. Yosio Yamazaki, of Tokyo. Mr. Yamazaki now sends us the accompanying photographs and general arrangement drawings of his latest design which, he tells us, is the first two-seater sailplane made in Japan. It is his ninth design.

The machine is designed as a high-performance sailplane, with cantilever gull-form middle wing. The cabin is enclosed, and an unusual feature is the raising of the rear seat to enable its occupant to see over the head of the one in front. Air brakes are fitted, and the single wheel of the undercarriage, which is fitted with low-pressure tyres (12½ by 4¾ ins.), can also be braked. The structure of the machine is of wood, with fabric covering for the wings and control surfaces and plywood for the fuselage. It is licensed for winch, auto and aeroplane towing and for aerobatics.

The wing section (including tips) is Göttingen 535.

The dimensions, etc., are:—

Span: 18.2 m. (59 ft. 8½ ins.); middle portion 8.2 m. (26 ft. 11 ins.), and outer portion 5 m. (16 ft. 5 ins.).

Length: 7.81 m. (23 ft. 7 ins.).

Height (maximum): 1.3 m. (4 ft. 3 ins.).

Wing area, including ailerons: 18.7 sq. m. (201 sq. ft.); ailerons 2.86 sq. m. (30.8 sq. ft.); elevator with fin 2.24 sq. m. (24.1 sq. ft.); rudder 1.04 sq. m. (11.2 sq. ft.).

Weight empty: 218 kg. (481 lbs.). Flying weight: 368 kg. (811 lbs.). Wing loading: 19.7 kg. per sq. m. (4.03 lbs. per sq. ft.).

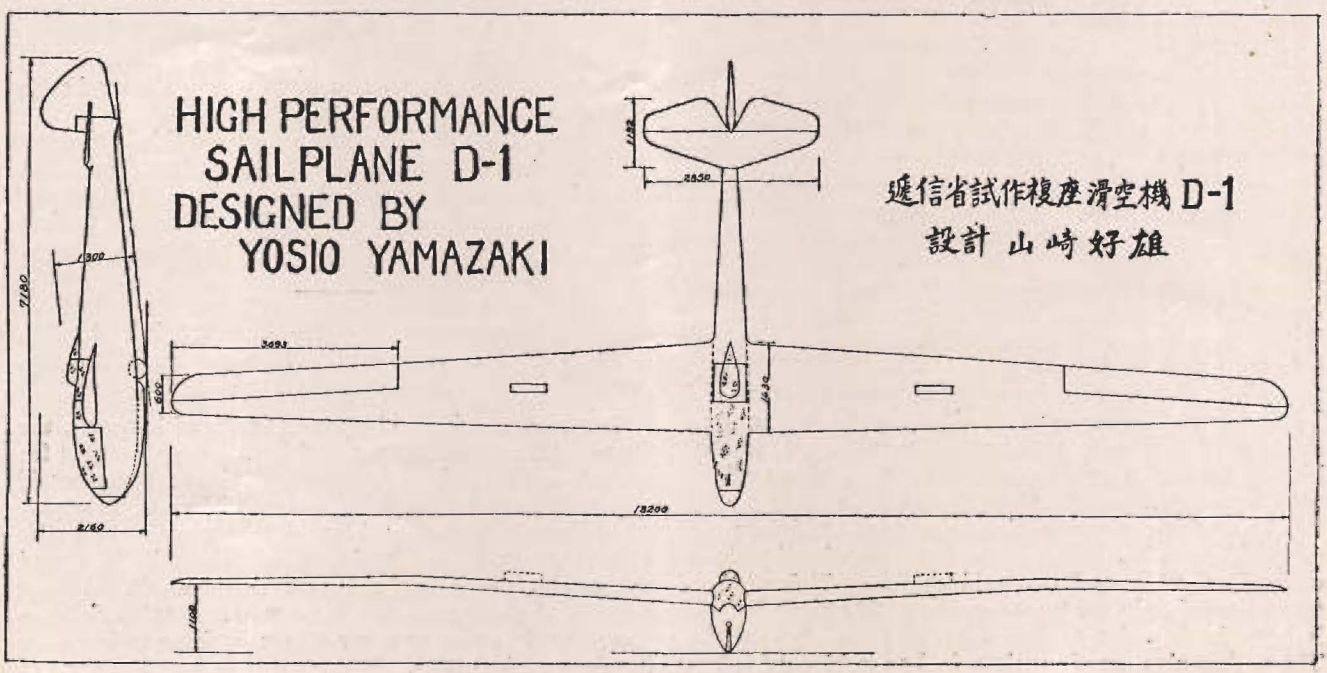
The gliding angle is 1 in 24.5. Sinking speed 0.71 m. (2 ft. 4 ins.) per second. Speed at best gliding angle: 70 km. (43½ miles) per hour; at best sinking speed, 57.5 km. (36 miles) per hour.

The D–1, as it is called, was built at the works of Messrs. Ito. Its first test flight was made on October 12th, 1938, and Mr. Yamazaki states that the results were very satisfactory as to performance, stability and manœuvrability.

The date when practical gliding began in Japan is doubtful. A recent article in a Japanese paper printed in English gives 1922 as the year of manufacture of the first glider by the Ito works; but an historical summary in *Flugsport* some years ago gave the date of the first glide as May 5th, 1930. It was made over an aerodrome by Kataoka, lasted 5 seconds, and covered 80 metres. In August that year the first gliding competitions were held, and the longest flight lasted 4½ minutes. In 1932 Kataoka did a glide from Fuji-yama mountain; he held the air for 4 mins. 55 secs., but crashed at the end of it.

At the beginning of 1932 a gliding club was formed among the students of the Imperial University of Kyushu. In August that year its chief pilot took off from the Aso volcano in southern Japan and flew for 20 minutes; he is stated to have travelled 21 miles. The pilot Shizuru, of the same club, soared for 1 hour 26 mins. in 1934; the following year he made a flight of over 4 hours during which he climbed 1,800 ft. This university group is still going strong, and is one of the four chief gliding clubs in the country.

Another leading organisation is the Kirigamine Glider Association. It was started about 1933 by Dr. Fujiwara, a world-famous meteorologist who has some rather original views about air currents. His "vortical theory" supposes that cyclones are formed by the amalgamation of small vortices, which are associated with local variations of wind, into one big vortex. He found that, in water, whirls going round in the same direction tended to amalgamate, contrary to classical





The Japanese two-seater high-performance sailplane "D-1" had its aero-towed test flights from the ground shown in these photographs, which looks like wet sand. The designer, Mr. Yosio Yamazaki, is standing behind the wing in the left top picture, and is in the centre of the group of five shown on the right.

hydrodynamic theory. The idea conjures up a picture of rotating thermals joining up in the same way.

Wolf Hirth and two companions visited Japan at the end of 1935, taking with them a GRUNAU 9 primary, a WOLF intermediate, a MINIMOA sailplane, and a "Klemm" towing aeroplane, and went around the country teaching people how to fly these machines. He was, on his departure, decorated by the Emperor with the Order of the Holy Treasure.

An interesting flight is reported to have been made on August 7th last year in a sailplane of 51 ft. span designed by Sato. After an aero-tow to 6,500 ft., it flew 21 miles to the Tachikawa aerodrome in 20 minutes and continued to soar above the aerodrome at over 3,000 ft. for another 20 minutes. On September 26th it created what is alleged to be a record for thermal flying in Japan by climbing in a thermal from 1,000 to 2,000 ft., and remaining in the air 1 hour 10 minutes.

But those who know say that Japan is not a good country for thermal soaring. A prize of £600, offered by two newspapers in 1936 for a flight of 245 miles from Tokyo to Osaka, is still waiting to be won.

Japan now possesses 106 gliding clubs operating on 92 different grounds. In the last year great impetus has been given to the construction of gliders by the Imperial Aviation Association, under whose orders 200 primaries, 30 secondaries and 15 sailplanes are being built. The Aviation Bureau of the Ministry of Communications offered a subsidy for the encouragement of the industry last year, by ordering nine high-performance sailplanes from three different factories: the Ito Aeroplane Co., the Nippon Small Aeroplane Laboratory, and the Fukudu Light Aeroplane Manufacturing Works. It is under this arrangement that Mr. Yamazaki's new two-seater sailplane has been built.

If the Japanese atmosphere is too stable for good thermal conditions, it does at any rate favour stationary waves, for on October 26th last year a single-seater of similar design to the D–1 climbed by this means to 1,850 metres (6,070 ft.), setting up a record.

Correspondence

The Nyborg Sailplane

SIR,

I hardly like to make such an obvious suggestion, but has Mr. Nyborg allowed for the area of his fuselage and tail in estimating his wing area? If the present machine has the same dimensions as that described in THE SAILPLANE of May 2nd, 1932, it would seem not. The total lifting surface on this assumption should be nearly 70 sq. ft. Granted that the lift coefficient of the fuselage, etc., will be less than that of the wing, even at high incidence, still the added lift may be considerable. It seems possible that the ground effect on the fuselage may result in a fairly high C_L.

Assume, for example, that:—

C_L of wing = 1.6.
C_L of fuselage, etc. = 0.8.
Wing Area = 50 sq. ft.
Total Lifting Surface = 70 sq. ft.
Then the velocity works out at about 42 m.p.h.

W. E. HICK,

29, Brentwood Avenue, Newcastle-on-Tyne, 2.

Books on Sale

Wolf Hirth's *Art of Soaring Flight*, the only modern text-book in the English language on advanced soaring, is on sale at THE SAILPLANE Office, 13, Victoria Street, London, S.W.1, at 5s. (post free 5s. 4d.).

The more extensive text-book, *Handbuch des Segelfliegens*, edited by him, has not been translated into English, but the German edition is also on sale at THE SAILPLANE office at 12s. 6d., post free.

News from the Clubs

Waikerie Gliding Club

A South Australian Centre.

This club was formed a little over 18 months ago. We acquired a partly completed RHON RANGER primary and, after completing the machine, began instruction, using the auto-towing method as this is a practically flat country.

Our launching site is on the eastern bank of the Murray River, with some miles of irrigation settlements to the west and north, which in this arid climate should give quite strong thermal activity.

We secured the Government subsidy in November of last year, and so have become the recognised controlling club for gliding in this State, with branches at Barmera and Renmark on the Murray and McLaren Vale in the south of the State, the latter branch having their own primary and the other branches being run from here.

We now have an additional two machines. One is a secondary designed and built in Victoria, very manœuvrable and possessing a good gliding angle. With our longest run this machine can get 1,000 ft. auto-towed, using ½ in. manila rope. We hope to improve on this considerably when we get our winch going The other machine we have is a 62 ft. sailplane, up to date only flown by the writer (E. R. Barratt) in low test hops as it is as yet somewhat of an untested design. Later on, with this machine, we hope to put up a really good performance.

As the immediate country around here has no hill lift, when we get to the soaring stage the members will have to concentrate alone on thermal flying.

Yorkshire Gliding Club

February 4th.—The dinner and dance at the Golden Fleece, Thirsk, was well attended by a good turn-up of members and more guests than ever. It was a very successful affair, and thanks are due to our chairman, Maurice Verity, who works so hard in arranging these functions.

On the afternoon before the dance there was a south-west wind, about 20 m.p.h., and Shaw, Sharpe, Pearson and Gibson, flying KITE, GRUNAU, TUTOR and FALCON III, put in 2 hours and 35 minutes soaring. There must have been a little more than hill lift, because the two-seater was at times up to 1,500 ft.

Despite storm, fog and microscopic thermometer readings, some members have foregathered at the club each week-end in the hope of something doing. Applications for membership are constantly being received, and already enquiries for the advanced course and other instruction courses are being dealt with.

February 5th.—Again a south-west wind, variable at times in force and direction. Soaring was possible for the more advanced machines. Various members in KITES and GRUNAU did about 2½ hours' flying. Flying was brought to an untimely end by an accident to the GRUNAU from which the cable failed to disengage, was cut at the winch, and the free end became entangled in trees and telephone wires causing the machine to be pulled into the ground. Hastwell suffered severe injuries to his feet, and whilst at the time of writing his condition is still serious, we are pleased to say that he is making good progress towards recovery. We are very sincerely grateful to a doctor who was passing at the time and did all that was possible until the ambulance arrived.

February 12th.—Shaw turned up alone and flew the KITE for 20 minutes. Weather conditions deteriorated later.

February 18th.—Short flights in a failing W.N.W. wind.

February 19th.—A fairly useful day. North-west wind of moderate strength, and the first sign of thermal activity this year. Between 2 and 3 o'clock in the afternoon, N. H. Sharpe and Hinchliffe were launched in the FALCON III, and a lull in the wind force kept the machine on the ridge—about 300-400 ft. above it—for twenty minutes. There was definitely no room for any other machine! It was noticeable that the air was decidedly warmer at 400 ft. than at 500 ft., and various rough bits of lift were found. Eventually a thermal came along which carried the FALCON smoothly up to 3,000 ft. (barograph) and cloud base. The question of a flight to York was discussed, but as a little exploring revealed no further lift, it was decided to return "home." Shaw endeavoured to find similar conditions whilst the two-seater was so engaged, but found nothing at all. There were a number of non-members at the club and bookings for two-seater flights became embarrassing in number!

Training went forth with gusto. Espley qualified for his "A" and a "45" towards his "B." Leakey had his first solo flights since his crash last year. Flying time 4 hrs. 45 mins.; 23 launches.

February 25th.—Rudolf Haslinger (of Germany), who completed his "Silver C" here in 1937, spent the week-end with us (or more correctly with John Wordsworth) and to-day had a ride in the two-seater. Frank Charles stayed the week-end along with Mrs. Charles and friends and flew his PETREL, newly delivered from Slingsby. The new machine excited great admiration. Saffery, flying Slingsby's KITE, had the misfortune to misjudge his approach and get in a down-draught. He touched a wing at speed and damaged the machine very extensively. Horsley and Gibson flew TUTOR, and Fleming qualified for his "A."

February 26th.—W.S.W. wind, 30 to 35 m.p.h., gusty. Lucas, Charles, Haslinger, and Shaw flew; total flying time 4 hours. Haslinger was very happy to be flying at Sutton Bank again and put up a very good show. It was hard to believe that he has not flown for quite a long time. However, he has been very busy getting engaged to be married, and that requires a little time and attention in any country!

Miss Johnson, Reilly, and Edwards (of the Midland Club), and several intending members visited us during the day, and the monthly committee meeting in the evening concluded what seems to us all to have been quite a decent February. No news is to hand from either of our branches, but we understand that several certificates have been earned during the month.

Durham County Branch.

We have made a start for the year in February, but weather permitted only one week-end's gliding. All other available days were wet or gales were blowing—or both.

On looking back over the twelve months the branch has been in existence, we find that we occupy seventh place (with Newcastle) for the number of certificates obtained. We are rather gratified with the results for our first year, especially as our active membership is small relatively to most clubs.

British Gliding Association

Auto-Launching Round Pulleys

The Technical Committee has examined reports from clubs following an accident when a machine was being launched by this method, and it considers that this type of launching may be continued providing:—

(*a*) The elastic launching rope is not attached direct to the machine;

(*b*) There are at least 40 yds. of wire rope between the elastic and the machine;

(*c*) An open type quick-release is fitted.

B.G.A. Inspectors

At a recent meeting of the Technical Committee it was decided that a B.G.A. Inspector, or Ground Engineer, should draw the manufacturer's attention to any item considered unsatisfactory, even if it is in accordance with the drawings.

A B.G.A. Inspector should not recommend a machine for Certificate of Airworthiness until he is satisfied that any modifications which he considers necessary have been carried out. The Inspector should also inform the B.G.A. of the action taken.

HAROLD E. PERRIN, *Secretary.*

Cambridge University Gliding Club

Training has been progressing steadily at Caxton during the last month. Our toll of DAGLINGS due to spinning has been greatly reduced by fitting differential ailerons and nacelles, but drift landings are proving almost equally destructive.

Kiting.—This method of launching is now being used regularly when a sufficiently strong wind is blowing. Our record stands at 2,600 ft. by Blake in the CAMBRIDGE; and there have been numerous launches of over 1,500 ft. We hope in the summer to make contact with thermals by this method. That this should be possible has been proved by Cole, who soared in the CAMFRIDGE for a quarter of an hour in weak lift before having to return to the flying ground.

Thermal Flights.—The "Moth" has been out of commission, as it is having its C. of A. renewed. Nevertheless thermal flights of short duration have been made from the winch by John Pringle and Pirie. Morison qualified for his "C" certificate from a winch launch. He achieved a good height and made for a promising line of cloud under which he remained until it passed on. His time for the flight was 9 mins. 50 secs.

In the workshop good progress has been made with the GRANTA; the fuselage is now on the stocks and nearly all the wing ribs have been completed.

With regard to our camp from April 2nd to 16th, may we remind prospective members that accommodation is limited and that application should be made without delay to the Camp Secretary, 1, Bene't Street, Cambridge.

In the Middle West

Two private owners, formerly leading lights in the Cambridge University Gliding Club, have formed themselves into a sort of "Cambridge from Cambridge" group (membership: two), and spend their week-ends going around the Wiltshire and Dorset hills. John Simpson keeps his KIRBY KITE at Clayesmore School, Blandford, and Fred Gardiner has his H–17 at Yeovil.

On February 4th there was a very gentle south wind, so Simpson had his KITE carried up the side of Hambledon Hill in portions (there being no road to the summit) and was bunjied off into one of the bowls on the S.W. side. He made a hill-scraping flight and had to land ten minutes later at the bottom.

On February 19th Gardiner and Simpson took the KITE to Win Green, which is a very fine N.W. bowl (used by an expedition which went to Wiltshire in August, 1936). Simpson was surprised to find that he could hold height at about 200 or 300 ft. in a gentle wind, and that the beat was not nearly as restricted as they had expected. He chased a seagull along the hill, and landed on the top after half an hour; then Gardiner did half an hour, but found no seagulls to chase.

On February 26th each had his own machine, and they flew for half an hour each from Compton Down, three miles from Blandford, but were unable to start till the thermals had died out. So now they have a selection of hills for winds from S.W. to N., and intend to take the first opportunity to fly to Dunstable.

Surrey Gliding Club

Friday, February 3rd.—Winch slides all day. Wind east and light, except for an hour in the afternoon, when clouds came up from the south, and the windsock blew strongly from the north.

Saturday, February 4th.—Wind south, very light. Winch hops with PRIMARY and KADET. Briggs flew his KITE, and Dent flew the GULL, both for the first time here.

Sunday, February 5th.—Wind south, 8 m.p.h. Slight mist in the morning, clearing later. The PRIMARY bungy-bounced all day, and a very nice "C" flight was made by B. Powell in the KADET, which pleasantly surprised everybody by staying up in such a light wind. He was followed by Turpin, who did a 7-minute "B" flight in the same machine.

The blue GULL and Briggs's KITE put in several hours' soaring, until Briggs appeared down the hill, less KITE, having deposited it, off a circle, on to the golf course on top.

E. J. Furlong, Higson, Lavington and Ann Edmonds flew her GRUNAU, which somehow seems to have gone on to the club.

New members: Col. Murray, Miss Murray, P. Vaux, R. G. Cracroft, H. Cracroft, R. Williamson, R. Frye, and Miss Ascroft.

Club flying days: All except Tuesdays and Thursdays.

Friday, February 10th.—Four of the Tank Corps members turned up, and we got in forty primary flights between lunch time and 5 p.m. Their efficiency in retrieving is terrific. This was also the first day of the club's magnificent new retrieving car, by Arnold, which is fitted with tractor back wheels, and would go straight up the side of the hill if given its head.



A view of the trees on the slope of Buckland Hill, the Surrey Club's site. On closer inspection a "Kadet" will be found roosting in them; also its pilot, lit up by a patch of sunlight on his clothes which marks the site of a subsequent rent.

Saturday, February 11th.—Wind west, 10-15 m.p.h., 5½ hours' soaring. Most of the day spent de-rigging the KADET 20 ft. above the ground in the arms of a yew, on top of the hill, where it had been planted by B. Powell after a 15-minute flight. Total damage four bent ribs, and it was flying again before dark with the TUTOR wings.

Sunday, February 12th.—Wind N.W., 20 m.p.h. Soarable but turbulent. Best lift (800 ft.) well out in front of the hill—probably the air rebounding from the down-draught of the S.E. slope of Box Hill in this wind. Stephenson, in the GULL, connected with front lift about 12 o'clock, but was unable to use it for long owing to the strength of the wind. The back of this front, as seen later, showed well-developed anvil cloud, and cumulo-nimbus on a line about 25 miles long.

Saturday, February 18th.—Primary training (car-bungy) on Wednesday; also on Friday, to the detriment of the PRIMARY. Spot-landing competition in TUTOR; twenty minutes' free flying won by R. E. Pears, who landed on the spot three times out of three! Bucknall arrived and gave the GREY KITE its first airing here.

Sunday, February 19th.—Spot landing competition won by A. W. Higson. Wind again too northerly for soaring.

Tuesday, February 21st.—Wind south, 20 m.p.h. Copeland and Hatcher came over and flew their CAMBRIDGE.

Primary winch training on Friday. One circuit on TUTOR in heavy rain on Saturday.

Sunday, February 26th.—Wind west, 20 m.p.h. Soaring on CAMBRIDGE and GRUNAU; bouncing on PRIMARY.

New members in February: Frye, Thom, Campbell, White, Stirling, Straus, Gaman, Miss Rowan, Miss Ascroft, Banks, Mrs. Murray (making three in the family—father and daughter are already learning); also Bergel, Nicholson, E. J. Furlong, Hiscox, and L. R. Robertson.

Two more training machines have been ordered for club use; also a VIKING two-seater, of which delivery is expected about the end of May.

Mondays have been added to the regular club flying days.

Whitsun Meeting.—The club proposes to hold an open meeting at Whitsun for cross-country purposes, launching with two winches. Ann Edmonds's GRUNAU will be put to the same use (if still in one bit) for selected non-"Silver C" members.

A Group in Galloway

Mr. G. V. Vaughan, of Castle Douglas, and Dr. J. A. Mains, of Creetown, both on or near the south coast of Scotland, have acquired the PRÜFLING, which formerly belonged to Mr. Copeland and Mr. Hatcher, of the Surrey and Southdown Gliding Clubs for many years. The south-western corner of Scotland has some excellent ranges of hills and mountains which (when free from Scotch mist) should prove excellent for sailflying.

The machine was collected from South Norwood, London, by Mr. Vaughan and towed 440 miles to its new home during the period of the Christmas snowstorms. We have received a letter alleged to have been written by the PRÜFLING itself, describing its five days of crowded adventure on the journey. Much of the first day was spent in a snowstorm, going at 10 m.p.h. in second gear. Descending the hill to Henley they saw a bunch of lorries and cars which had slid down to the bottom, and were compelled by the law of gravity to join the happy party, charging broadside into a lorry. After repairs next day, they got stuck on a hill by Chipping Norton and held up traffic in both directions, till a garage car with tyre grips towed the trailer to the top, whereupon the rope broke and it slid down the hill again. After that the only anxious moment was the ascent of Shap, which had been blocked by snow, and the PRÜFLING finally arrived at Creetown at 9 a.m. on the sixth day, still in airworthy condition.

London Gliding Club

The cross-country flying season started on February 18th, just a month earlier than the previous earliest date, which was the famous March 18th, 1934.

The first week-end of the month the wind was somewhat southerly. We were visited on Sunday by Philip Brown, who had left Derbyshire that morning and come by road via the bottom of the Long Mynd, where he broke his journey to walk up to the top and down again; after leaving us he was back in Derbyshire the same evening. With an earlier start it should be possible for him to visit all the British gliding clubs in one day.

The second week-end brought half a gale from the west, in which it was easier to stay up than to stay down. A pilot who thought he had landed the Desoutter GRUNAU found himself lifted off again by the next gust, and his second landing was not so neat, as the DESOUTTER's nose is now undergoing plastic surgery. Manning and Kearney did "Silver C" duration flights.

Twice this week-end and once the following Sunday a machine has flown off with the bungy after a hill-top winch launch. In each case the reason was the same: the driver, on seeing that the cable-bungy junction was about to reach the pulley, let out his clutch so that the winch cable unwound again, pulled by the stretched bungy, which thereupon flew back at the glider and wound itself round the hook. Others may find this lesson useful.

Four Cross-country Flights.

Saturday, February 18th.—Just about noon, Greenshields astonished everybody by getting up in a thermal to 2,500 ft. He had the GRUNAU nearly into the cloud base, and was still going up strongly, so to avoid trouble came down aerobatically. At times, on the way up, the variometer needle was "off the dial."

At 2 p.m. Stevenson, in the blue GULL, got a thermal to 1,200 ft. and decided to go away, finding another which raised him to 1,700 ft. After that thermals gave out, and he had to land 8 miles away in a field just short of Hemel Hempstead.

Withall, who normally flies "Spitfires" at Duxford, went in the club BUSSARD 20½ miles to Barnet, landing just south of the Elstree Road, half a mile west of the town. The journey, after leaving Dunstable, took him 37 minutes. His maximum height was 3,200 ft. when he was inside cloud base, but he didn't want to stay inside and do blind flying because he found the turn and bank indicator too sensitive for proper use. Lift in or near the clouds was 2 to 5 ft. per sec., but was 10 ft. per sec. at times at lower levels. He gradually lost height under further clouds, which soon degenerated into a few melting scraps. It would have been possible to go 3 miles further but for absence of landing grounds. After Withall had landed a boy of 14 came up and remarked: "Unusual to have thermals at this time of the year!" and sauntered off again.

Sunday, February 19th.—Best day of the year so far, with wind, as yesterday, starting N.W. and backing to W.N.W., and thermals once again. The hangar rapidly emptied till only an open primary was left. Although the weather was just like yesterday, a depression had passed over in the night, bringing behind it quite different air. Clouds were on the hill-top until 10 a.m. After that thermal lift gradually increased, but did not take anyone up very far. Between 2 and 3 p.m. some patches of cirro-stratus came over, and where the sun shone through the gaps good cumulus started to build up. These got better still as the upper sky cleared, and some quite fierce bouts of lift, as well as down-draughts, were encountered along the hill. The lift was quite obviously related to sunlit patches near the larger cloud shadows. One had the impression that the cirro-stratus, by destroying the uniformity of ground-heating, was really responsible for setting up all this activity, after which the cumulus shadows kept it going.

Rolfe Pasold got away in his BUSSARD and went about 35 miles to Chigwell aerodrome, near Romford, east of London. He said it took him four hours to get there. On the way down, near the end, he suddenly caught sight of a balloon barrage only about 200 ft. below; the silver-grey balloons had been invisible till he was right on top of them. They were arranged in a circle, and it was touch and go whether he crossed the far side or would have to spiral down in the middle of them all.

Hiscox went away in his GULL and made cross-wind for Luton, expecting to get thermals off the town, but there were none whatsoever, so he had to land on the aerodrome.

His GULL now has on its strut a novel "thermal indicator," designed by a friend. This is in the form of a thermo-couple, one junction of which is in the open and the other enclosed, so that it should register any sudden change of temperature. The sensitivity depends on the degree of enclosure of the enclosed part, but it seems at present to be too sensitive; perhaps it is too openly exposed in the air stream.

Sunday, February 26th.—Yet another day of good west wind with thermal lift, a cold front having gone over during the night after a rainy Saturday.

The highest lift was in the morning, when few were up to catch it. At 11 a.m. Kearney, in a GRUNAU, found hill lift to 400 ft. and thermals to 900 ft. Shortly afterwards Greig, up for two hours in his GULL, reached 3,250 ft. in the base of a cloud, at which level there was lift of up to 20 ft. per second.

In the afternoon no one could get more than half as high, and the best lift came just before the arrival of a rainstorm over Whipsnade at 3 p.m. There was nothing regular about it that looked like a front; nevertheless Stephenson, in GULL, began to get lift from it (apparently) when it was still some way off. As the clouds came over the air became very rough, and the lift, though still strong, was only to be found in patches. Murray, in FALCON III with a passenger, made for the cloud mass and rose under it to 1,600 ft., but said the areas of lift were not large enough to circle in. Davies, in his CAMEL, found himself going up at 15 ft. per second as the storm approached, though he was trying hard to get away from it, not wishing to risk cloud-flying in the CAMEL. Davie, visiting the club with his H-17, also had a nibble at the storm.

An aeroplane pilot, having his first flight in KADET at the Dunstable end, started with a stalled turn off the bunjy launch, continued to fly stalled until he had climbed above nearly everything else in the sky, including a BUSSARD, finished with a stalled approach to a stalled landing, and still got away with it.

One pilot hit a car with a GRUNAU's wing-tip. GRUNAU got the worst of it.

Total flying for the day was 38 hours 52 mins., on about 18 different machines. Just this once, perhaps we might be allowed to give a list of who contributed to this total:—

Ground-hopping PRIMARY: 8 different pilots.

Hill-top PRIMARY: E. Adams, V. Adams, Shreuder.

NACELLE(s): Roake, Fender, Wheatcroft, Cramer, Lee, Worton, Arnold, Huxley.

KADET: Peill, D. Mortimer, West, Smith, Arnold, Huxley.

TUTOR: Scrase.

FALCON I: Peill, Wilbur, Tovey, Latto, Koch, Lee.

Two GRUNAU BABIES: West, Kearney, Sellar, Waghorn, Briscoe, Cole, Humphries, Greenshields, Dixon, Lassam, Bergel, Jones, Adcock, Burnett, Kendall.

RHÖNBUSSARD: Murray, Burnett, Grant, Furlong, Lacey, Withall.

FALCON III: Lacey, Furlong, Edmunds, Murray.

So much for club machines. Privately owned were:—

GREEN WREN: E. Read.

SCUD II: Horsfield.

BLUE GULL: Greig, Dent, Stephenson.

GULL: Hiscox.

CAMEL: Davies.

H-17: Davie, Pringle.

Cream RHÖNBUSSARD: Pasold.

The Thermal Book.—Manning has deposited in the club a book in which all pilots are invited to enter particulars of thermals which they catch, either at the club site or on cross-country flights. It is ruled for entries under the following headings:—Pilot, machine, date, wind direction and strength, cloud type, height of cloud base, visibility, humidity of the ground, type of weather, map location, time, up or down-draught, rate of same, size of thermal or down-current, height found, height left, remarks.

Experience will show whether other headings should be substituted, but a start can now be made. To identify the map location, Manning has ruled with squares a "Land Utilisation Map" of the district. This, by showing in different colours, grass land, cultivated fields, heath land, built-up areas, etc., should to a certain extent show where thermals are most to be expected.

It is to be hoped that pilots will co-operate. About two years ago the Imperial College Club began to work out a similar scheme in conjunction with the Professor of Meteorology, but it was never put into execution. So it is about time something was done.

List of Machines.—In this, published last month, we got a bit mixed with the colours. Bucknall's KITE is the well-known "Grey Kite," and is not really blue.

L. S. Bullwinkle.—We regret to see a report of the death, in Transjordan, on February 13th, of Pilot Officer Lawrence S. Bullwinkle, R.A.F., who was aged 22. He took his "A" and "B" with the London Gliding Club in the summer of 1935, and "C" in July, 1936, his certificate number being 438.

Summary of Flying.

Week ending:	*Days of Flying*	*Ground-hops*	*Timed Flights*	*Flying Time hrs.*	*mins.*
February 5th ...	3	88	28	4	16
February 12th ...	4	14	79	37	26
February 19th ...	3	21	144	56	51
February 26th ...	2	82	85	38	52

Totals since January 1st: 651 launches, 164 hours 47 mins. flying time.

Certificate Flights.

February 11th.—Manning, part "Silver C" (duration)
February 12th.—Kearney, part "Silver C" (duration).
February 15th.—Arnold, "C."
February 18th.—Miss Wakefield, "A"; Lewis, "A"; Peill, "A"; Davie, "B"; Wheateroft, "B"; K. Lee, "B."
February 19th.—Peill, "B"; Lewis, "B"; Fender, "B"; Straus, "B."
February 26th.—Cramer, "C"; Peill, "C."

Midland Gliding Club

Saturday, November 12th.—A day of high wind from the south, low cloud and drizzling rain. A fair crowd turned up, however, and succeeded in enjoying itself; in the evening rockets were fired to disappear from view and burst inside the clouds, lighting them from above with rather eerie effect.

Sunday, November 13th.—More high wind, still from the south, so no flying. In the teeth of a 30 m.p.h. wind "Mike" Edwards climbed to the top of the hangar and fitted a new chimney to the slow combustion stove. During the day the new launching gear was inspected, and there was speculation as to its success. The scheme is a heavy trolley, about three feet long and nine inches wide, fitted with small ball-bearing wheels and running in a wooden track, which starts on the brow of the hill and continues some distance down the side. The trolley attains a speed of some 15 m.p.h. without aid. It will be interesting to see how the idea, which is the President's, works out in practice.

Saturday, November 19th.—A strong S.W. wind but rather a small turn-up. These winter nights do not permit one much time in which to do any flying, when a start from Birmingham is not made until after lunch. It is worthy of note, however, that there has been a steady increase in the number of week-enders during the last few months in spite of the rigorous conditions.

Sunday, November 20th.—S.E. wind blowing 5 m.p.h., having gone round through the north and blown itself out. (Inquisitive boy: "Did you sit up through the night to see which way it went?" "No, we rang up the Met. Office.") During the day the electric lighting plant was assembled and run for a few minutes, and all that remains to be done now is the wiring and piping up the radiators.

Saturday, November 26th.—Members arrived to witness the damage wrought by last Wednesday's gale. The force of the storm, according to Colcombe, had to be experienced to be believed. It would appear that it was impossible to stand up on top of the Mynd, and Colcombe had to approach the hangar on his hands and knees. The GULL trailer was blown from its moorings and almost completely wrecked. It had rolled on its side for about seventy yards and then been lifted clear of the ground for nearly fifteen yards. Colcombe could not stand up to drive stakes in the ground to anchor it, so he tied it to a long rope fixed to the hangar palings. The trailer eventually ended up towards the centre of the landing ground, a hundred yards behind the hangar. Two sheets of roofing succumbed to the beating of lead flashing from a window and a pile of asbestos and broken glass descended on the club room roof.



Mr. E. R. Wilson, who formerly ran a Pwllheli Gliding Club in North Wales, is here seen flying his "Scud I" after a successful launch, at last, from Llanbedrog Head, four miles west of Pwllheli. The wind was oblique to the slope, so the flight only lasted a few minutes. The view is looking west, and in the distance Rhiw Mountain can be seen with its excellent east slope. Mr. Wilson's home is on the left of the picture. He described this district, from a soaring point of view, in "The Sailplane" last June.

Despite the chaos, we put in several hours' very pleasant flying during the afternoon. Price and Rowe were up first in the KITE and TUTOR, and they reported extremely smooth conditions. Espin Hardwick found a good lift area just to the north of Myndtown, in the KITE. He says he reached 1,200 ft., but we suspect the altimeter; it really looked more like 1,800 ft. or over, judged from the ground. The brothers Edwards then sallied forth in the KITE and TUTOR, Mike endeavouring to coax Gerry to fly formation, but the latter voiced his objection to rubbing noses in the sky and he sheered off at a higher speed than the TUTOR could manage. Reilly took off at 5.01 p.m., had eleven minutes in the dark, and landed by car headlights after surviving a mild hailstorm.

All the launches were accomplished on the new ball-bearing trolley, with two men pushing on the wing tips. The results were highly successful, but we think that, used in conjunction with a half-inch shock cord, it would be more so. The chief difficulty is that the men on the tips run at different speeds, a contingency which would be remedied by the shock cord launch.

Sunday, November 27th.—No flying; south wind and drizzle. Jack Rushton came up again. He is looking extremely well and in very good spirits. We were also visited by Amy Johnson, Squadron Leader Atcherley, and Mr. Nyborg. The latter reports that he is building two new machines and is contemplating a much more advanced design embracing a gliding angle of something like one in seventy.

December 10th and 11th.—A light west wind tempted us on Sunday, but treacherously let down Theo Testar in the KITE; he was forced to land in a small field in the valley.

Tuesday, December 27th.—A most successful party was held in the evening, twenty persons in all sitting down to a goose supper, Christmas pudding and unlimited trifle.

Wednesday, December 28th.—The male members of the party were still asleep in the club room at 10.30 a.m. Despite the party, four members enjoyed flights in the KITE and TUTOR.

Sunday, January 1st.—A good day's flying for the time of the year, three club machines being in the air most of the day. The regular members, Amy Johnson, Reilly, Price and Edwards, took advantage of the conditions. Sheffield also took charge of the TUTOR. Hodgson and Arthur achieved their first solo flights off the Mynd. Hodgson flew a trifle too slowly but made a perfect landing after a good flight. Arthur also made a good flight but had the misfortune to get in a down draught at the north end and landed near Pole Cottage.

Sunday, January 8th.—Strong wind, S.W., and very rough flying conditions for Amy Johnson, Reilly, Edwards, Price and Beck, who each managed to keep up for about 10 minutes. Weather conditions eventually drove everybody under cover.

Derbyshire and Lancashire Gliding Club

Saturday, February 4th.—Wind W.S.W., 15 m.p.h. A few short flights in the KADET. Adler, misjudging a circuit, descended rapidly into the valley, for our site allows very little margin of error where down-draughts are concerned.

Sunday, February 5th.—Wind S.W., 15 m.p.h. A steady wind with altostratus completely covering the sky about 1,500 ft. above the hilltop brought the New Year's training into full swing, and this continued until dark. The comparatively warm day was a welcome change, Wagstaffe completing a well-earned "B" with a flight of 68 secs. Soaring flights on the S.W. slope in the morning and the S. slope in the afternoon were mostly of the steadily descending variety until Coleman's G.B. disappeared in the direction of Eyam, and some 15 minutes later, much to everyone's surprise, reappeared with considerable height, whilst G. O. Smith was making the GULL perform very well. Gerry's recent approaches in this machine remind one of the SPERBER in playful mood. Whilst circuiting the NACELLE, Adler made a display by cutting in too close to a privately owned KITE, which had just landed, and colliding first with the wing and then removing the complete tail assembly of the unfortunate KITE.

A diversion occurred during the afternoon when two sheep were discovered in a snowdrift on our landing ground. They had been there for 10 days, but after being dug out and given some food they revived with amazing rapidity.

Saturday, February 11th.—Wind W.S.W., 20-30 m.p.h. Three soaring flights only were made before cloud and rain put an end to the proceedings, but no one minded much as there was general preparation for the annual dance which took place at the Marquess of Granby, Bamford, on this evening. It was attended by over 100 members and friends, and the evening was a complete success, thanks being due to Stanley Dickson for his untiring efforts on the floor. We were glad to welcome the Editor again, and understand that with true homing instinct the famous Austin had practically found its own way from Derby in the dark. Next day a west wind blew at 50 m.p.h.

Saturday, February 18th.—Wind W., 10 m.p.h. A few soaring flights before low cloud and rain again sent everyone in for the rest of the day.

Sunday, February 19th.—Wind N.W., 25 m.p.h. With the passing of a cold front in the early morning the whole of Bradwell Valley was transformed into an area of smooth steady lift, very like our "evening thermal." The first launch was made at 10.30 hrs., and from this time until 17.45 hrs., when darkness descended, every machine which could fly was in the air. All machines stayed at 1,000 ft. to 2,000 ft. without any trouble, and toured the district up to a distance of four miles away. The club FALCON I excelled itself during the afternoon by reaching 2,400 ft., and the chief difficulty was to lose height when wanting to land. The two-seater in the able hands of G. Smith and A. Davies flew continuously, and gave many new members their first taste of soaring in these delightful conditions.

Sunday, February 26th.—Wind W.S.W., 35-40 m.p.h. Bungy launches from the N.W. slope were the order of the morning, and some excellent, though rough, soaring took place. Isolated cumulus passing overhead showed definite activity. In the afternoon wind fell to 25 m.p.h., and several storms of sleet and hail passed over, or close to, the site. Each storm was heralded by all machines rising up to 1,000 ft. above the normal hill lift, which was 600 to 800 ft. This lift continued along the side of each storm, and a definite rolling motion of the cloud was observed, up on the sunny side and down on the dark side.

The two-seater with Gerry Smith again at the helm gave many rides, and flew on level terms with the best of the single-seaters. Each passenger was treated to a series of stall turns over the back wall; most of them appreciated it—or didn't they? Our two youngsters, Slater and Swale Junrs., are proving themselves to be capable pilots, and are piling up a very creditable number of hours in the club G.B.

Summary of Flying During February.—Bungy launches, 31. Winch launches, 102. Flying time: 35 hrs. 21 mins. Certificates: 1 "B."

Annual General Meeting.

This was held at Camphill on Saturday, February 18th, at 7.30 p.m. Our chairman, Mr. Basil Meads, took the chair. The following are extracts from his report:—

The year under review is one in which considerable progress has been made in the development of Camphill as a gliding centre, and the extension of flying and other less urgent facilities for club members.

An increase in the number of flying members is recorded, but as this increase does not come up to our requirements an appeal is made to all members to introduce new pupils.

So far as flying is concerned the results must be regarded as very satisfactory. Total number of launches for all types of machines were 2,843 as against 1,949 in 1937. Seventy-four certificates were gained, soaring time was increased by 306 hours to 625 hours, though some part of this increase was due to the additional number of private owners. Number of training days 113, soaring days 93. Unfortunately primary instruction has suffered, due to the wet and windy summer of 1938.

During last summer the club organised its first training camp, open to non-members, and as this coincided with the two wettest and windiest weeks of the year, great credit was due to the instructors and their assistants for the results achieved.

The committee has spent much effort to ensure that the fleet of aircraft in use is sufficient to meet all needs, and during the year it has been augmented by one KADET, one FALCON I, one G.B., and a GULL, whilst further additions to the primary fleet will be shortly required. The club's appreciation of the services of our ground engineer, Mr. Boultbee, and his assistant Harold Walton, were expressed.

Major improvements carried out during the year include the completion of the new workshop, equipment of the bunkroom, additions to the canteen equipment, and the concreting of the hangar floor, all being carried out with a minimum of expense, and the work done as far as possible by club members.

Special mention was made of the work done by our representative on the B.G.A., Mr. Alan Goodfellow, and hope was expressed that the Air Ministry would see its way to give the gliding movement further assistance, as the claim for subsidy was a strong one from the point of view of results achieved.

The financial position has improved since 1937, and there is no reason why the club should not be entirely free from debt by this time next year, and in this connection the work of Mr. Bernard Thomas during the past twelve months has been greatly appreciated.

The meeting closed with an expression of thanks to the chief instructor, the secretary, Mr. Bowles, and Allied Newspapers, without whose assistance we should have been very badly off, and also to L. R. Robertson, whom we shall greatly miss, and who has been elected our first honorary member.

Newcastle Gliding Club

With the receding of winter members have shown increasing activity in various directions. On February 12th O'Grady lectured to the Tyneside Geographical Society on "Gliding and the weather"; Horsley has completed arrangements for fortnightly broadcasts from the local station on "Air News," including gliding; and Hick, always more venturesome, has married.

February 5th.—Training commenced at 8 a.m. and continued all day, some of the "B" pilots getting useful experience of rather boisterous conditions.

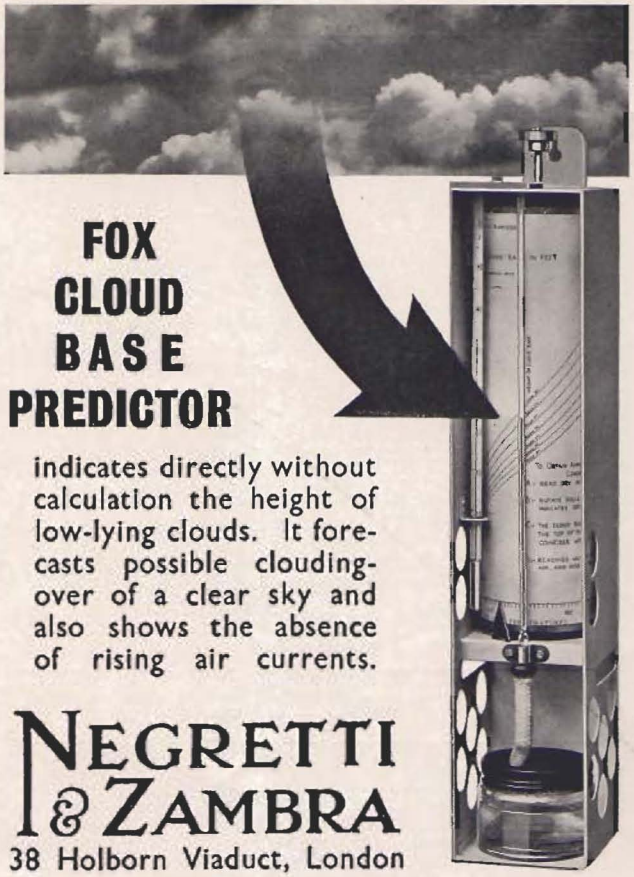
February 11th.—Conditions were again too rough for primary training, but the GRUNAU and KITE were flown, O'Grady in the KITE succeeding in soaring for over 8 minutes from a winch launch.

February 12th.—The KADET was the only machine flown at Cramlington, and a party who took the GRUNAU and TUTOR to Hartside met with no better success. Conditions were too rough for the TUTOR, and P. Taylor, still pursuing his elusive 5 hours, had the bad luck to hit a stone on the first and only attempt at a launch. Fortunately only a skid fitting was damaged, but it washed out flying.

February 18th and 19th.—Training again renewed at Cramlington. Mather, who joined the club a fortnight ago with no previous experience, took his "A."

Three members made a further expedition to Hartside and completed temporary arrangements for the use of a field which promises possibilities as a launching and landing point; this would solve some of the difficulties under which we have been working for the past few months.

In the morning a light northerly wind prevented soaring, but by 3 p.m. it had backed to west, and although it was no more than 10 to 12 m.p.h., the KITE was launched (O'Grady pilot), and soared for 1½ hours in company with two very interested buzzards. The ceiling in this light wind was about 1,200 ft., but the area of lift extended about 3 miles out from the ridge.



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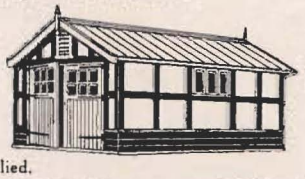
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GLIDING AND SAILPLANING. A Beginner's Handbook. By F. Stamer and A. Luppisch. Authorised translation by G. E. Startup and Frances Kinnear. Price **5s.** (postage 6d.)

GLIDING AND MOTORLESS FLIGHT. By L. Howard-Flanders and C. F. Carr. Price **7s. 6d.** (postage 6d.)

KRONFELD ON GLIDING AND SOARING. The Story of Motorless Human Flight. By Robert Kronfeld. Translated by J. Manchot. Price **8s. 6d.** (postage 6d.)

SAILPLANES: THEIR DESIGN, CONSTRUCTION AND PILOTAGE. By C. H. Latimer Needham. Price **6s.** (postage 6d.)

MOTORLESS FLIGHT. Edited by J. R. Ashwell-Cooke. Price **7s. 6d.** (postage 6d.)

GLIDING AND SOARING. By C. H. Latimer Needham. Price **5s.** (postage 6d.)

CLOUDS. By G. A. Clarke. Price **10s. 6d.** (postage 6d.)

THE ART OF SOARING FLIGHT. By Wolf Hirth. Translated by Naomi Heron-Maxwell. Price **5s.** (postage 4d.)

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