April 14th, 1933. Vol. 4, No. 7.

THE SAILPLANE & GLIDER

Official Organ of the
British Gliding Association

6D



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THE SAILPLANE & GLIDER

(*Founded in September, 1930, by* THURSTAN JAMES).

The only Journal in the World devoted solely to Motorless Flight.

OFFICIAL ORGAN OF THE BRITISH GLIDING ASSOCIATION.

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The Offices of the SAILPLANE *viewed from the historic XVIth Century gateway of Lincoln's Inn.*

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The Mount Everest Flight.

The story of the flight over Mount Everest shows up once again the fundamental difference of outlook between the power plane pilot, who relies on his engine to keep him out of trouble, and the soaring pilot, who relies for his safety and his success on a knowledge of the medium in which he is flying. If, in bearing this in mind, the tone of our article on the flight, published in this issue, appears somewhat critical, it is through no wish to disparage either the courage of those who took part in what was undoubtedly a risky undertaking, or the expert knowledge of the technicians whose contribution towards the success of the flight was so valuable. But any reader of THE SAILPLANE who peruses the Expedition's dispatches will know that, in all their preparations, there has been one thing lacking, and will smile at the innocent astonishment with which the various writers record that this or that machine has got into a down-current at such a place and lost so many thousands—*thousands*—of feet of height.

Whose Fault?

The plain fact is that knowledge of soaring technique, or even of the fact that there is such a thing, has not yet penetrated into "powered aviation" circles in this country. Who is to blame for this state of affairs? Some may grouse because the public generally, and aeronautical circles in particular, refuse to take the Gliding Movement seriously. Others wring their hands and assert that, if only Sir Somebody Something would unload some of his spare cash and found a Central School of Soaring, all would be well for ever. But in our view the trouble is that nothing really outstanding in the way of soaring flight in this country has yet been done. And it will have to be done not once or twice, but repeatedly. There are far too many people who go about saying that all this gliding and soaring is too frightfully interesting, and they hear that this or that foreign pilot has kept up for so many hours or flown so many hundred miles. Somebody *else* has done this; somebody *else* has done that. But they will neither learn to fly sailplanes themselves nor come along and help or encourage others to do so.

Clouds on the Films.

In connection with Mount Everest, it may be remembered that a film was made of the last climbing expedition to the mountain in 1924. This film could still occasionally be seen here and there some years after it was made.

Anyone who happens to come across it should watch for the moment, near the end of the film, when the shadow of another mountain is seen creeping up the side of Everest at sunset. The motion of the shadow is very much speeded up, and a watch should be kept, not on this shadow, but on several strips of cloud which appear in the sky above the mountain top. Little scraps can be seen appearing suddenly at the windward end of each cloud strip, rushing through it at great speed, and melting away at the other end. Each cloud is, in fact, like a waterfall, in that it keeps in one position although the matter of which it is composed is continually entering it at one end (or on one side) and leaving it at the other. (Such clouds, by the way, are usually known as *lenticular*.)

Nobody seems to have realised that the study of such a film is an ideal method of learning how the wind flows over any particular mountain. The speeding-up of the motions of clouds on the films is becoming rather a favourite trick nowadays, and readers of THE SAILPLANE should watch for such effects when they go to the pictures. The film of the Kamet expedition is a case in point. Several times during the film, torn shreds of clouds could be seen whirling round mountain peaks and buttresses and up mountain sides. No soaring pilot could wish for a better method of studying the nature of air flow round obstacles, short of actually flying in it.

In Laura Riefenstahl's film, "The Blue Light," which was being shown recently in various places, there was one point at which a thin layer of strato-cumulus was shown receding towards the horizon, with its motion much speeded-up. Underneath this layer a small cumulus cloud could actually be seen growing, visibly swelling out in spite of the fact that it was receding from the camera. There was a "thermal bubble" for you.

Why don't we fly Aeroplanes?

The fact that, while Mount Everest is being flown over by a couple of aeroplanes, an expedition is on the way to reach the same place on foot, raises in acute form the question of "What is the good of it all?" Why should so many people want to undertake all those months of preparation, all those weeks of trekking across Tibet and acclimatisation in the Rongbuk Valley, in order that one or two of them might reach the top, when just as good a view can be got by getting into an aeroplane and flying there and back in an hour or two? The question is so similar to that of why anyone should want to learn to fly gliders all by himself in order to be able to keep up for an occasional hour or so by his own effort and skill, when he can so easily get a joy flight in an aeroplane and go up even higher, that we will reproduce an extract from Sir Francis Younghusband's preface to the book describing the Everest Expedition of 1922, asking readers to make the necessary alterations to suit their own case.

"The Good of It All."

"What, then, is the good of it all?" he asks. "The most obvious good is an increased knowledge of our own capacities. . . . In my own lifetime I have seen men's knowledge of their capacity for climbing mountains greatly increased. Men's standard of climbing has been raised. They now know that they can do what forty years ago they did not deem in the least possible. And if they reach the summit of Mount Everest, the standard of achievement will be still further raised; and men who had, so far, never thought of attempting the lesser peaks of the Himalaya, will be climbing them as freely as they now climb peaks in Switzerland.

"And what then? What is the good of that? The good of that is that a whole new enjoyment in life will be opened up. And enjoyment of life is, after all, the end of life. We do not live to eat and make money. We eat and make money to be able to enjoy life. And some of us know from actual experience that by climbing a mountain we can get some of the finest enjoyment there is to be had. We like bracing ourselves against a mountain, pitting our mettle, our nerve, our skill, against the physical difficulties the mountain presents, and feeling that we are forcing the spirit within us to prevail against the material. That is a glorious feeling in itself and a real tonic to the spirit—even when it does not always conquer.

"But that is not all. The wrestling with the mountain makes us love the mountain. For the moment we may be utterly exhausted and only too thankful to be able to hurry back to more congenial regions. Yet, all the same, we shall eventually get to love the mountain for the very fact that she has forced the utmost out of us, lifted us just for one precious moment high above our ordinary life, and shown us beauty of an austerity, power, and purity we should have never known if we had not faced the mountain squarely and battled strongly with her.

"This, then, is the good to be obtained from climbing Mount Everest."

And now, if you can write like that, tell us what is the good of learning to soar. In order that freight-carrying gliders can be towed through the air like barges along a canal?



"The Bowl" at Dunstable, and Thomas soaring the "Watson-Dagling."

THE NEW "SAILPLANE" COMPETITION

Entrants for this Competition are asked to send a short article of not less than 250 words, accompanied by either a photograph or a sketch illustrative of the article. The subject-matter must be related to motorless flight. More than one illustration may be sent, or verse (minimum five lines) may be substituted for the article. No part of the entry may have been published elsewhere.

Competitors should state that they are entering for the Competition, and give name, address and gliding club (if any). These will not be published if so desired. The best entry received during any one month will entitle the winner to receive THE SAILPLANE free for six months. In addition, the sender of any entry published, whether a winner or not, will receive two extra copies of the issue in which it is published.

The Editor's decision is final.

SOARING IN SILESIA.



Wolf Hirth soaring his "Musterle" for 5 hours 15 minutes at Schloss Silberberg, Silesia.

A QUOTATION.

"There are two ways of learning to ride a fractious horse: one is to get on him and learn by actual practice how each motion and trick may best be met; the other is to sit on the fence and watch the beast awhile, and then retire to the house and at leisure figure out the best way of overcoming his jumps and kicks. The latter system is the safest, but the former, on the whole, turns out the larger proportion of good riders. It is much the same in learning to ride a flying machine; if you are looking for perfect safety, you will do well to sit on a fence and watch the birds, but if you really wish to learn you must mount a machine and become acquainted with its tricks by actual trial."

WILBUR WRIGHT (in 1901).

Choose Your Holidays in either of these months....

Do not forget that the B.G.A. Competitions are to be held in June (site to be announced later), and the German Competitions in August.

Make sure that you attend one ✳ of these meetings ✳

GREAT EXPECTATIONS IN ULSTER.

We are thrilled to see from the Belfast Press that "a daring young Ulsterman is to make an attempt in April or early May to smash the British altitude record for engineless gliders." It is explained that such an attempt would be "fraught with considerable danger," as the glider might be swept out to sea if the wind should increase unexpectedly. And worse still may befall the daring one. If, as he intends to do, he gets lift under a cloud, he will run the grave risk of being drawn right into it, getting out of control, and descending "like a bullet," with his wrenched-off wings following at a leisurely pace behind. He proposes, therefore, to carry a parachute, and we don't blame him.

To get down to brass tacks, the machine is to be the Ulster Club's KASSEL 20, the pilot a member of the Club (he prefers to remain anonymous, but will no doubt change his mind when he has broken the record), and the taking-off ground the Cavehill, Belfast.

The foregoing account of the terrors of glider-flying is followed by an announcement that the Club is prepared to accept new members. Flying members.

The Ulster Gliding Club has long ago given up sending us reports of its activities, so we have to rely on our ubiquitous Intelligence Service for news. But it is a go-ahead and enterprising club, and, if it succeeds in snaffling the British height record, the success will be well deserved.

Dublin Activities.—A few Dublin enthusiasts are constructing a glider at the Cabra Farm, Cabra, under the direction of Mr. J. Gallagher (aged 17).

THE D.L.V. REPORT.

The Annual Report of the Deutsche Luftfahrt Verband, or German Aviation Union, shows that its gliding members passed 877 "B" tests in 1932, out of a total of 1,214 for all Germany, and 344 "C" tests out of a total for Germany of 558.

Of those who passed the "B" and "C" tests, 531 belonged to the working class, 523 were scholars still attending school or university students, 423 belonged to other professions, and 286 were classified as intellectual workers.

THE FLIGHT OVER MOUNT EVEREST

The pilots and all others concerned in the organisation and successful carrying-through of the flight over Mount Everest are to be congratulated on their achievement.

The risks were many, though in regard to most of them every effort was made to see that they were minimised as far as possible. The capabilities of the aircraft were thoroughly tested beforehand, the oxygen and the heating apparatus were tried out, and so on.

But there was yet another risk that was at least realised by those responsible for the safety of the Expedition. Lord Peel, the chairman of the Everest Flight Committee, writing in *The Times* before the Expedition left England, pointed out that the conditions under which the attempt would be made would differ profoundly from those of a straightforward attack made over ordinary flat country on a conventional height record, and he stated that no meteorological expert could foretell what turmoils and currents of air would be encountered in flying over the mountains. Apparently the intention was to leave it at that, and allow the pilots to proceed on the expedition with only the most elementary knowledge of the manner in which winds are deflected when blowing across mountains, and with absolutely no experience whatever of the only satisfactory method by which such knowledge can be obtained—that of actual practice in the art of soaring flight.

It occurred to us that this was a suitable occasion on which The British Gliding Association might step in and exercise its legitimate function as the only body in the country qualified to give expert advice on the subject. In consequence of this suggestion, the Chairman of the B.G.A. got into touch with the Chief Pilot of the Expedition and an informal meeting was arranged. This took place on Feb. 14th, two days before the pilots were to leave for India. There were present Lord Clydesdale (Chief Pilot of the Expedition), Flight-Lieut. D. F. McIntyre (Second Pilot), Sir Gilbert Walker, Capt. F. Entwistle, Capt. Latimer-Needham, the Secretary of the B.G.A., and the Editor of THE SAILPLANE.



North is at the top. The shape and position of Chamlang are uncertain.

In one brief hour there was hardly time to do more than try to convince the pilots that the influence of mountain air-currents on an aeroplane's performance was a matter of importance to them and well worth looking into. The Chief Pilot admitted to having heard something about such matters before, and had even observed queer things himself when flying over the Alps, but had never thought of investigating the subject further. The general distribution of up-currents over mountains was discussed, but the situation of the down-currents is a more complicated question, and there was hardly time to go into it, particularly as the meeting went on to discuss such matters as the comparative heat-absorbing capacities of bare rocks and snow, the general meteorology of Northern India, and the danger of colliding with vultures in the air.

Towards the end of the hour, the actual piloting of gliders was mentioned. One of the pilots was acquainted with a member of a gliding club, and had heard that it was considered a great feat to have kept a glider up for 5½ seconds, and that at the end of a typical flight the machine was usually put out of action by flying into a stone wall or other obstruction. It was explained to him that there was at least one club where actual soaring took place regularly, and where, on a recent Sunday, there had been soaring machines in the air all day long, sometimes several at a time, and they had all landed without breaking, not a single pilot being either killed or injured. But another member of the B.G.A. hastened to assure him that, even if nothing untoward had happened on that particular day, he had heard that there had been one or two narrow escapes from quite nasty accidents. So the subject was dropped.

One gathered (this is no exaggeration) that the two pilots went away with the impression that the only sort of gliding that goes on in this country consists of coasting down a short incline, more or less out of control, into a wall at the bottom; that the nature of wind flow over mountains is a subject of, perhaps, somewhat academic interest which, unfortunately, there was no time to go into thoroughly, owing to the more pressing need of attending to matters of real importance in connection with the forthcoming flight; and, lastly, that they must remember the B.G.A.'s advice not to fly among vultures.

And now to change the scene to India.

One of the chief risks of the flight was that of engine failure, or partial failure. This was considered such an important matter that the pilots were repeatedly put through a sort of catechism to ensure that they would know exactly what to do in any given emergency. For instance, "If my oil pressure falls below 60 lbs. per sq. inch, turn for home. If below 50 lbs., look for a forced landing ground." But there is no record of a single word of advice being given the pilots as to how, in such an emergency, the glide to safety might be prolonged by steering a suitable course through any available up-currents. Yet there is no reason why even a powered biplane should not be able to soar for considerable distances among the mountains of the Everest group, which are notable among the Himalayan mountains for the precipitous nature of their slopes. (Has not a MOTH soared at Dunstable?) The minimum sinking rate at the height of Mount Everest would, of course, be greater than that obtainable near ground level. At the former height the barometer shows a pressure of only a third of an atmosphere, and, to find the actual speed of a machine, that shown on the speed indicator has to be multiplied by the square root of 3. This suggests that the sinking rate at that height, compared with that at sea level, would be

increased in similar proportion, i.e., about 1.7 times, which is not too bad considering the high winds usually to be met around Everest.

An interesting photographic flight over the neighbourhood of Kanchenjunga was made on March 31st. The heavy "bumps" due to heat currents were found to extend up to 9,000 feet, but above that height the air was calm, even where it was less than 4,000 feet above the mountains.

When the time came for the actual flight to Everest and back, those responsible for deciding on the course appear to have merely laid a ruler on the map and drawn a straight line from the base near Purnea to the top of Everest. The only question that worried them was whether Chamlang, 24,012 feet high, whose precise position was uncertain, lay directly athwart the course or to one side of it. Whether it would turn out to be on the windward or leeward side appears to have bothered nobody.

There is some doubt as to the correctness of the position of Chamlang shown on the accompanying map, only the northern half of which has any pretensions to accuracy. The country to the immediate south of Everest has never been adequately mapped, and it was in fact one of the objects to the Expedition to remedy this defect.

On April 3rd, at 8.25 a.m., the two machines set off on the great flight, making a bee line for the summit of Everest. It will not surprise readers of THE SAILPLANE to learn that, when approaching their goal, they flew right into a strong down-draught. According to Lord Clydesdale, this happened on their approaching Lhotse, and the cause was a steady down-current due to the deflection of the west wind over the mountain. (It should be explained that, at this season of the year, the prevailing winds are between west and north-west.) Colonel L. V. S. Blacker, who was in the same machine as passenger, states that it was when climbing over the huge edge of Chamlang that both machines received the full force of the down-draught caused by the wind striking the steep side of Everest, being shot upwards over the summit and recovering in a steady downward sweep some 12 miles beyond. He says that something like 2,000 feet of height was lost in a very few seconds, and that the machines had only just enough height to creep over the ridge of Everest, and that there were only 100 feet to spare, but a later message puts it at 500 feet. (Even that would be none too safe for a pilot without soaring experience.) Arrived over the top, the pilots found the air extraordinarily smooth, though earlier in the morning, looking from a distance, violent gusts had been seen driving a snow plume high into the air.

Next day the same two machines flew to Kanchenjunga (28,150 feet), about 80 miles to the east of Everest. Air-Commodore Fellows, the leader of the Everest Flight Expedition, was piloting one of the machines. He approached the crest of Kanchenjunga, according to his own admission, from the south, while the wind was blowing from a little north of west, and got into a big down-draught, dropping quickly from 33,000 to 31,000 feet. Then, when he got round to the north-eastern side, the air there was found to possess a kind of corkscrew motion, and almost put the machine into a spin.

If the members of this Expedition intend to continue to explore the Himilayas in apparent ignorance of facts which are the stock-in-trade of every soaring pilot, we cannot but feel apprehensive as to their safety. Yet, if any one of them were asked to suggest some method of avoiding the dangers due to unexpected down-currents in any future expedition of the kind, it is a pretty safe guess that the answer would be, not "Learn to soar," but "Fit a more powerful engine to the machine"; for such are the lines on which the thoughts of aeroplane pilots usually run.

Incidentally, when is somebody going to *soar* over Mount Everest? Doubtless a special design of sailplane would be needed, and there might be political difficulties in gaining access to a suitable launching spot, but we are convinced that it could be done. What is more, if the wind suddenly failed, the pilot could glide a hundred miles to safety.

HOLDERS OF "C" CERTIFICATES

In response to a recent request of one of our correspondents, we give below a list of British "C" certificates obtained up to the end of 1932, as shown by the returns furnished by the Royal Aero Club.

The columns show respectively: No. of certificate, name, and date of qualifying flight.

	DORSET CLUB.	
60.	John Laver	13. 8.32
163.	A. L. Haslam	30. 7.32
	ILKLEY CLUB.	
135.	J. Keith Watson	17. 9.32
149.	B. Hartley	14. 9.32
	IMPERIAL COLLEGE.	
147.	J. B. E. Keeble	23. 4.32
	KENT CLUB.	
1.	C. H. Lowe-Wylde	1. 4.31
	LANCASHIRE AERO CLUB.	
16.	P. Michelson	17. 1.32
	LONDON CLUB.	
2.	C. H. Latimer-Needham	7. 6.30
3.	Marcus D. Manton	7. 6.30
4.	M. L. McCulloch	17. 1.31
5.	G. M. Buxton	26. 7.30
6.	E. L. Mole	19.10.30
8.	D. M. T. Morland	8. 7.31
9.	The Master of Sempill	14. 6.30
13.	T. G. Humby	21. 2.31
14.	L. C. Williams	15. 2.31
22.	R. G. Robertson	8. 7.31
24.	H. Allan	19. 7.31
26.	J. M. Symmons	5. 4.31
48.	J. B. G. Grice	4. 9.32
53.	D. C. Smith	21. 2.31
59.	H. Petre	4. 4.31
64.	D. G. O. Hiscox	13.12.31
67.	D. E. Culver	18. 7.31
69.	A. E. Slater	6. 8.32
84.	C. J. Donovan	4. 4.31
95.	H. E. Bolton	18. 7.31
134.	H. L. Richardson	11. 9.32
153.	S. Scott-Hall	18. 7.31
154.	H. G. Hall	17. 1.32
155.	E. Brame	4. 9.32
164.	C. A. Cornell	22. 5.32
173.	D. F. Dent	20. 8.31
178.	F. M. Hamilton	17. 1.32
180.	S. Humphries	13.12.31
193.	A. L. Slater	24. 9.32
241.	L. A. Dessoutter	11. 9.32
245.	H. M. Hedges	6. 8.32
246.	Miss A. M. Churchill	11. 9.32
250.	W. D. MacClement	23. 4.32
263.	J. P. Watson	24. 9.32
266.	F. B. Thomas	23. 4.32
269.	G. E. Collins	22. 5.32
272.	J. Grimston	23. 4.32
274.	J. P. Dewsbery	6. 3.32
312.	W. H. Vetch	25. 9.32
313.	W. H. Pidsley	16.10.32
	PRESTON CLUB.	
129.	L. E. Falla	28. 3.32
	SCARBOROUGH CLUB.	
30.	F. Slingsby	27. 9.31
	SOUTHDOWN SKYSAILERS.	
57.	LeeRoy L. Brown	25.10.31
83.	E. K. Robins	25.10.31
	SOUTHERN COUNTIES.	
227.	N. Cave	25.10.31
	SURREY CLUB.	
27.	A. N. Stratton	7. 3.31
28.	A. F. McGlashlan	2. 8.31
29.	A. H. Reffell	12. 4.31
37.	G. A. Little	30. 8.31
68.	C. M. Barter	6. 8.32
89.	A. K. Bindloss	25.10.31
	ULSTER CLUB.	
247.	J. P. Mackie	11. 7.32
289.	N. P. Metcalfe	11. 7.32



THE FIRST GLIDING MAIL?

It is evident that, in our efforts to discover who really was the first to carry mails in a glider, we shall have to probe still deeper into pre-history.

A paragraph on this subject in our last issue put the date of the first mail-carrying glide as 1925. In reply to this claim, we have now received from Wolf Hirth the postcard reproduced above. It was carried by him in a machine of early HOL's type, named ROTER TEUFEL, in 1924, and he had on board 500 similar cards. Although the flight lasted only 3 minutes 40 seconds, it was peculiar in that it was an inter-state flight, starting from a hill in the "Friestaat Baden" and finishing in Hirth's home state of Württemberg.

CORRESPONDENCE

SUMMER THUNDERSTORMS.

Sir,

The annual record of thunderstorms occurring in the six summer months is being continued. Many persons have very kindly given me most valuable assistance in the observational work in the past, and I venture to hope that some of your readers may be good enough to join in the census between April 1st and Sept. 30th of this year.

A note of the place, date, and time of the occurrence of thunder, lightning or hail, in any part of the British Isles, with the direction in which the lightning was seen, especially at night, will be extremely useful. In the case of actual thunderstorms additional information of the following character will be valuable:—

1. Time of first observation of thunder or lightning, with direction and estimated distance.
2. Time of commencement of very heavy rain or hail, *or* approximate time of nearest approach of storm, with direction and estimated distance.
3. Approximate time of final observation of thunder or lightning, with direction.
4. Severity of storm; changes in direction or strength of wind, changes in temperature, etc., during the storm.

It is essential that the position from which the observation is made should be specified by mentioning the approximate distance and direction from a railway station, and that the standard of time used should be stated. The shortest note for any of the days is of help. More data are particularly required from rural and moorland districts, and from thinly-populated areas generally.

S. MORRIS BOWER.

Thunderstorm Census Organisation,
Langley Terrace, Oakes, Huddersfield.

[Every year, at about this time, it has been Mr. Morris Bower's practice to write to the daily Press and certain scientific journals asking for reports of summer thunderstorms. Since readers of this journal have special reason to be interested in the occurrence of thunderstorms, particularly those of the "cold front" type, we have invited Mr. Bower to send us the above communication. In a covering letter he adds: "If any points occur to you on which we might be mutually helpful in connection with the investigation of fronts I should welcome suggestions."

It is, therefore, up to readers of THE SAILPLANE to give Mr. Morris Bower what help they can. In return, the Thunderstorm Census Organisation can be of the greatest help to us, for their records are able to tell us just what we most want to know, viz.: what proportion of thunderstorms in this country are of the "cold front" variety; how often such "fronts" cross the British Isles; what tracks they follow, and what are the characters of the "front," such as its persistence, or any tendency to split into separate portions.

Mr. Bower also encloses two most interesting pamphlets. One, a report on the summer thunderstorms of 1931 (obtainable by non-observers for 2s. 6d.), gives a series of monthly distribution maps, together with a general account of the chief storms recorded. It may be remarked that on April 17th of that year, under the influence of a shallow depression over the North Sea, "portions of three separate squall-lines may be traced" over parts of Norfolk, Lincolnshire and the coast further North, and two more squall lines were traceable over the south and south-east of England the next day. On the afternoon of Aug. 15th an observer in the Norfolk Broads reported seven separate storms, of which four, connected by arches of heavy cloud, were visible simultaneously; these and other storms on the previous and following days are stated to have been associated with a depression which reached Ireland from the S.W. on the 16th. Of many thunderstorms on the first four days of September, one on the 4th showed line-squall phenomena in Lincolnshire. There was at the time an elongated depression over Southern England with its axis running through Lincolnshire and Dorset, and the weather chart showed that "the line-squall marked the battle between a strong wind from the N.N.E. and a feebler current of almost opposite direction and of

a slightly higher temperature." These, then, were all the recorded thunderstorms of line-squall type that occurred in the summer of 1931—not very many, to be sure.

The other pamphlet gives an analysis of thunderstorms that occurred in the first three months of 1926. Quite a number are of line-squall ("cold-front") type. A very full analysis is given of a series of squall lines that occurred on February 16th, together with a map showing their actual positions at hourly intervals. We have not yet had time to study it all.

All this excitement over thunderstorms may seem somewhat academic, but it should be realised that in the past months several British soaring pilots have got up 700 and even 1,000 feet over quite low hills, and this height should be sufficient for connection with the rising air in front of a travelling thunderstorm. Further, the beginner of to-day, who is doing his short hops in a primary trainer, may next year find himself soaring across country, looking down silently on the green fields of his native land as they slip by into the oncoming storm. Did not Kronfeld first glide in 1927, and was he not in 1928, the very next year, the first to make use of a cumulus cloud for soaring across country?

So get to work and do what you can for the meteorologists, and one day you may be glad of their help in return.—ED.]

ON THE TRACK OF A "COLD FRONT."

Sir,

The following incident may be of interest to your readers to demonstrate the rising current before a "cold front."

Near Aldershot is a large, sandy plain, surrounded by pines, known locally as Long Valley.

On March 30th, at 1 p.m., after several days of brilliant sunshine, the western sky suddenly became very dark and a cold wind sprang up. The uninitiated could see they were in for a sudden wet squall. Thick dark cumulus built up overhead, and in a few moments cold rain and hail could be felt on the face. As the rain was seen advancing across Long Valley, a huge cloud of sand rose up ahead of it to fully 1,000 feet high, no doubt caused by the air rising from the warm sand and "bubbling" up through the approaching cold air.

The sand in question is of a very coarse variety and the air velocity to raise it must have been considerable.

I once saw a very violent thunderstorm build up over this area, and on another occasion, during the War, an aeroplane was carried up more than 1,000 feet, in spite of the pilot throttling back his engine and trying to descend. In his words, he "hit an aerial escalator."

E. BRAME.

R.A.E. Aero Club.

This letter is of particular interest as I happend to observe and take photographs of what was evidently the same storm at a later stage of its existence.

At Darenth, near Dartford, 46 miles E.N.E. of Long Valley at Aldershot, cumulus began to form at about 9 a.m., moving from W.S.W. A high layer of alto-cumulus, moving from S.W., faded away by noon. At 2.15 p.m. a dark, extensive mass of cumulus-like cloud approached from W.S.W., but it looked like a localised shower and not like a "front." Part of the "anvil" of a separate storm could be seen in the S.E. some way off. I set out eastwards for a bicycle ride, much assisted by several cold westerly squalls.

The photographs (Fig. 1) were taken at about 2.40, two miles further eastwards, looking to the S.E. The cloud was therefore moving from right to left and receding. The



Fig. 1. A line-squall in Kent on March 30th.

appearance was that of a typical text-book line-squall, with little dark scraps continually appearing from nowhere, just below the cloud, and rushing up to join it. It was hoped by taking photographs at 30-second intervals to include the same scraps in two successive pictures, and thus get an idea of their rate of ascent, which was evidently well in excess of the sinking speed of any known glider. But it will be seen that the under-surface of the cloud has changed too rapidly for this to be done.

The panoramic photograph (Fig. 2) was taken at 2.50 p.m. from a point three miles further east. It covers an angle from S.W. by S. to E. by N., and in the centre the height of the cloud base above the horizon, on the negative, divides eight times into the focal length of the camera; i.e., assuming a height of half a mile for the advancing edge of the cloud base, it would be four miles away, which is two miles west of Strood and 54 miles from Long Valley at Aldershot. As in Fig. 1, the cloud in Fig. 2 has passed overhead and is receding from the camera, while moving somewhat from right to left. The rain held off for 10 minutes longer, and then poured down and continued to do so for half an hour.

One may question Mr. Brame's explanation of the raising of the sand. Would it not be stirred up by the cold squall? The sand could hardly be carried up in the warm air unless it was already suspended in such air. I did, however, once actually *see* warm air ascending through cold. It was in the Vale of Llangollen, in September, 1925. The "cold front" of a big depression had arrived, and so much warm moist air had been imprisoned in the woods covering the hillsides that it took some time to disentangle itself. For several minutes writhing wisps of vapour could be seen everywhere rushing up at an incredible speed skywards. But nothing larger than a toy parachute could have made use of such currents for soaring purposes.

A. E. S.



Fig. 2. The same 10 minutes later. The darkness of the cloud has been exagerated to show the detail of its lower edge. It was not really as black as that.

THREE YEARS AGO.



March 22nd, 1930. The London Club's first instructional site at Downs Farm, near Tring, where the first British "A" certificates were obtained.

MORE ABOUT MAPS

In our issue of March 17th, p. 55, was given a description of a new map of the Isle of Wight, prepared by the Land Utilisation Survey, on which the land is coloured according to the use to which it is put, resulting in a "curious patchwork which almost gives the illusion of an actual view of cultivated land from the air."

The truth of this statement is demonstrated by a remarkable photograph published in *The Times* of March 30th, showing the entire Isle of Wight and the Sussex and Kent coasts beyond, as seen from an aeroplane flying at 18,000 feet above the east of Poole Harbour; in fact, it might almost be taken for a photograph of the actual map laid on the ground.

Those who see *The Times* regularly should keep a look-out for more of these high-altitude photographs, which are all taken on the latest kind of infra-red plates. Two previous ones in the series, published some months ago, showed landscapes dotted with small cumulus far away below. By comparing such a photograph with an atlas, some useful knowledge could be picked up about the distribution of cumulus clouds and their attendant up-currents, owing to the immense area covered by each picture.

A new colour-scheme for aviators' maps has recently been tried out by the American Geographical Society. An experimental sheet of the Pittsburgh-Cleveland area, on a scale of about 8 miles to the inch, was published in the *Geographical Review* for January, with the idea of inviting criticism of the map from aviators.

All water is shown white, so as to stand out conspicuously, just as it does from the air. The land is shown in grey of varying tints according to its height, a curious feature being that the darkest tint shows the lowest ground. Black hachuring is used sparingly for only the very sharpest relief features; if such hachuring could be used for *all* slopes above a given steepness, the map would become most useful, not only to soaring pilots, but to that small proportion of power pilots who are intelligent enough to realise that the proximity of a slope can have quite an appreciable effect on an aeroplane's performance.

As regards other features, railways are in black and roads in green, while dangerous obstructions, such as buildings and power transmission lines, are shown in red. Beacons and aerodromes are in yellow, and their names in black, other place-names being in red. The nature of the ground is shown by such descriptions as "forested uplands," "farming country," etc., which might perhaps give some clue as to the heat-absorbing capacity of the ground.

It is not generally known that the Ordnance Survey has recently started on a completely new one-inch map of Britain, far superior to anything that has been produced before. Many years ago, on the one-inch map, all the slopes were shaded with "hachuring" in dark brown, but contours were for the most part at intervals of only 100 feet. Then the Popular Edition was brought out, with contours every 50 feet, but with the hill-shading left out, much to many people's disappointment. The new map has not only the 50-foot contours but hill-shading as well, and of two kinds. "Vertical shading" is the term used when the depth of shading on a slope corresponds to its steepness, while "oblique shading" presupposes that a light is shining obliquely on to the land, so that the south and east slopes, for instance, are shaded more deeply than the north and west ones. The latter method shows up the hills more clearly, but at the expense of giving a false impression of the comparative steepness of slopes which face different directions. The new map makes use of both methods: the north and west slopes are hachured brown and the south and east slopes purple, and the shapes of the hills come out surprisingly clear in consequence. In addition, high ground is coloured a light brown, even when flat, and all woods are shown green, whether on slopes or not. A start has been made with the sheets of the Plymouth and neighbouring districts, but the mapping has not yet spread much further afield.

Perhaps one might suggest that, for soaring pilots, this multi-coloured shading might be carried a step further, and every slope be coloured according to the direction it faces, with varying depths of the same colour to show different degrees of steepness. One might start at North with red and then go right through the spectrum while moving round the compass, returning through violet back again to red. Anyone could then see at a glance which slopes face a particular direction, and the planning of a hill-to-hill soaring flight would be much simplified. The suggestion is put forward for what it is worth. A. E. S.

A TRANSATLANTIC SERVICE.

A propos the recent aeroplane-towed glider flight across the Alps, a correspondent of *Les Ailes* insists that the feat should not be regarded as a purely sporting enterprise, since it is capable of commercial exploitation, even on such a large scale as an Atlantic crossing.

"I visualise," he writes, "a roomy and comfortable motorless plane, noiseless and free from the risk of fire, drawn by a powerful and pulsating aerial locomotive. In mid-Atlantic, a second locomotive will rise from a floating base as the train approaches, and will take the place of the one which has brought it from the coast, which will have come to the end of its fuel. The aerial train will thus continue its journey non-stop and without the inconvenience of landing the passengers. The captain and navigator will remain in the glider with the passengers, and will be connected by telephone with the crew of the locomotive. Such a machine should be capable of a radius of action of 2,500 miles."

Kronfeld in Picardy.—The Aero Club of Picardy is celebrating its twenty-fifth anniversary this year. There is to be an International Rally at Amiens, and among the many features and displays Robert Kronfeld is to take part.

TUITION.

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THE BRITISH GLIDING ASSOCIATION
19 BERKELEY STREET, LONDON, W.1

NEWS FROM THE CLUBS.



Thomas soaring the "Kassel 20" at Dunstable.

BRADFORD AND COUNTY GLIDING CLUB.

During the last fortnight we have managed to get in two days of flying, which have proved most gratifying, producing two "A's" and two "B's." We are now looking forward eagerly to the completion of our HOL's in a few weeks' time, and meanwhile, particularly at our Easter Camp at Baildon Moor, our "B's" hope to get a good deal of practice on our nacelled DICKSON in readiness for attempts for "C" certificates on the HOL's.

Our Easter Camp extends for five days, from Good Friday to Easter Tuesday; and any friends from other Clubs who may be in our district at the time may be assured of a hearty welcome. It would perhaps be unwise at this moment to publish details of the menu as prepared by Mrs. Cox, as our own members would most likely be crowded out in the rush for places.

Sunday, March 23rd.—Wind S.E., 3 m.p.h. Jowett's "A," gained after four months of intermittent winter training, was deserving of great credit. It was one of the prettiest, steadiest and straightest "A" flights that we have ever seen. Alderson followed him with an "A" of 32 seconds, gained after much perseverance and determination in the face of previous disappointments caused by unavoidable breaks in his training.

Flat field training continued, with Elliott, Christian and Armstrong, who all made progress over the tips of the grass.

Saturday, April 1st.—Wind W., 12 m.p.h. This was our first Saturday meeting this year, and, as the wind was favourable for our best slope, concentrated training was given to Cox and Robertson in order for them to obtain their "B" certificates. Cox achieved his second qualifying flight with 59 secs., and Robertson obtained his "B" with an excellent 1 min. 17 secs. Cox broke the record with our REYNARD by remaining in the air for 1 min. 35 secs., following the ridge for nearly a quarter of a mile before attempting to turn again towards the plain for landing.



The Bradford Club's "Dickson" Intermediate being soared by Tillett along the ridge.

GLASGOW GLIDING CLUB.

After flourishing throughout last year, the activities of this Club are, it is reported, at a standstill, owing to the lack of a permanent training ground. The officials of the Club are engaged in looking for a site, as they do not intend commencing operations until a permanent training ground has been obtained.

THE AIRCRAFT CLUB, HARROGATE.

Ingleby Greenhow Soaring Site.—Through the kindness of Lord de L'Isle and Dudley, the shooting tenant, and Capt. Fawcett, the Aircraft Club has been granted permission to use the hills on the Ingleby Manor Estate for gliding and soaring. The Club is also permitted to make use of the old incline and buildings at the top and bottom, and to adapt them to its purposes.

Members of Club only and their guests (one of the party must wear the Aircraft Club badge) may use the old railway track from Battersby to the incline, but they must be extremely careful to close all gates after them. Members and their friends must not enter the coverts and must not stray over the moorland but keep to the road or railway track. It is desirable that the public should not approach the site from the Chop Gate to Ingleby Greenhow road, and members are asked to assist by directing the public to the road leading from Ingleby Greenhow to Burton House. During the nesting season and August pilots must not fly over the moorland. In dry weather the greatest care should be observed to avoid setting fire to the heather. Mrs. and Mr. Hodgson, near the Incline Foot, are prepared to cater for members. The Dudley Arms at Ingleby Greenhow is recommended for staying the night.

The best route to the top of the incline with trailers is *via* Kirkby Moorside, Gillamoor and Rutland Rig; to the bottom, the Incline by Thirsk, Ingleby Cross, Great Busby and Ingleby Greenhow. The Incline is impossible for cars at present; fully-rigged machines, however, could be manhandled up it, but they would have to be carried through the cutting sideways.

From the place where the road crosses the old rail track light trailers could be taken up Turkey Nab, but there are several sharp corners where it might be necessary to disconnect; it would be advisable to use a car which is a good hill-climber, and four people to help at corners. The very steep portion is very short.

At present there is no hangar accommodation at the top of the hill, and only thoroughly weather-proof trailers should be left there overnight. Arrangements for housing the lighter type of trailer (not usually weather-proof) are being made in or near Battersby.

Some of the emergency landing grounds in the valley, especially near the upper end, are rough and not too easy, and pilots should locate the good places before being launched.

There is a small cabin on the left at the top of the in-

cline, and members are asked to spend any spare time they have in putting the door on the hinges, boarding up the windows, clearing up the fireplace and generally making it cosy. Firewood should be stored inside to dry.—E. T. W. ADDYMAN, *Hon. Secretary.*

[Mr. Addyman writes to say that a camp is being held at Easter at Ingleby Greenhow by the Club, and several high-performance sailplanes and some good pilots are expected to turn up. The new light-wind sailplane ZEPHYR, designed and built by himself, is now practically finished; it is being shown to the public for a few days, to the financial advantage of Harrogate General Hospital.]

LONDON GLIDING CLUB.

March 25th-26th.—Glorious weather for picnics and for the instruction of beginners. On both days more advanced members had to put up with auto-launches at the foot of the ridge, but, as they descended with frost on their whiskers from great heights thus reached, they reckoned that life was still worth living. Four new members made a start, one with aeroplane experience being promoted to auto-launches. Of the other three, none with any aeronautical knowledge at all, one who started on Sunday morning was tranquilly flying his 300 yards in the evening of the same day. Which is indeed the stuff to hand out. In the ancient days we took months to do as much. Yet again the devotion to duty of the launching crews was priceless.

The Club machines are coming up together nicely, with Walker steadily wading through the work. Inside two months there ought to be three R.F.D.'s, one PRÜFLING, one PROFESSOR, and two 2-seaters. Any extra pressure is relieved by the private ownership of the HOL's, WREN, KASSEL 20, and SCUD II. Miss Lippens's PROFESSOR awaits the owner's return. But what we want is more new blood. The new WREN will do for a start.

April 1st and 2nd.—Starting on Saturday afternoon and taking things comfortably, we soared for 17¾ hours during the week-end. On the debit side, the HOL's hit a hedge and reduced one wing to a bag of small bits; the PROFESSOR also manœuvred herself into an impossible position behind the same hedge, landed hard and suffered accordingly; the KASSEL 2-seater got into a tangle and dislocated her keel and bows, and the PRÜFLING rammed the hill without material damage. Confession is good for the soul.

Fifteen pilots definitely soared; others either flew down or else ground-hopped. On Sunday the 2-seater flew for 3½ hours, the PRÜFLING for 3¾ hours, and the CRESTED WREN for 6 hours.

Derby-Smith obtained his "C" handsomely with a 19-minute flight. Robertson flew to the Zoo before breakfast. Hamilton and Richardson were downright masterly in the PRÜFLING. The HOL's twice soared after a car-launch at the foot of the hill.

In fact, Sunday was a gala day, with shoals of visitors, including Captain Lamplugh, Mr. Handley Page, Mr. Lowe-Wylde, assorted power-plane pilots, a man who is reputed to watch traffic jams from an auto-giro on behalf of the police, and rows and rows of ordinary people attracted either by the Club bar or else by the Zoo. (N.B.: You can't get a drink out of hours, and you have to be a pal of a Club member, or else a B.G.A. official.)

Sunday's wind was a masterpiece. Nominally, it was oblique to the ridge, coming from the south-west at about 20 to 30 m.p.h. The temperature was surprisingly low, and in the air a boiler-suit was not half a bad idea after all! The sky was almost constantly clouded over thinly with cirro-stratus. Yet the up-currents were extraordinarily unsteady.

In the first place, there seemed to be a definite ceiling at 300—400 feet, up to which the lift was strong, but beyond which nothing, so that you had the amazing sight of the fully-loaded 2-seater, the PRÜFLING and the WREN simultaneously battling for top-dog position. A P—pilot is reputed to have drawn a long nose at a W—pilot in mid-air; you can guess why. Toward sunset conditions steadied down and the W—pilot on duty was hoarsely laughing in a nasty way at the other machines below.

But during the day it was a licker. Hop, skip and a jump; bump up 50 feet with a wing down, and then flop like a brick with controls all cock-eyed and full flying-speed. And it was so utterly inconsequent. One minute, good lift at one place and a down-draught at another; five minutes later, *vice-versa*. Then you would tour quietly into a heretofore innocent area and suddenly one wing would go heavy and stay heavy for seconds, returning subsequently with a flick. All this at two to four hundred feet above the hill-top. It made one's heart ache for people who fly over Mount Everest.

The queerest phenomenon of the lot was luckily observed with an aneroid. A WREN pilot had plodded to and fro with varying luck for an hour and, finding the seat increasingly hard, was thinking about coming down. Suddenly, opposite the bastion, an agitated volcano blew up underneath him and kicked him jerkily to an authentic 660 feet above the hill, where he stayed until the baby "cold-front" had flitted by, say, five minutes. About a quarter of an hour later the same thing happened again at the same place, the machine heaving and wriggling up to 760 feet (a trifle more than 1,000 feet above the plain) whence the view was staggering.

The pilot, not without emotion, searched the sky for a sign with a view to circling away downwind, but the thin cloud-sheet remained entirely homogeneous and unhelpful. So, rather than cause all kinds of retrieving trouble uselessly, he put his ambitions in his pocket, rode out this second "cold-front" also, and returned to a normal level in due course. But it was all rather thrilling—and a wicked waste.

The worst of it was that, search how they could, no other pilots could stumble across any more of these patches—and Buxton was not at Dunstable. So we continued to tour about, meeting surprises at every unlikely place, with the ceiling gradually coming down to 250 feet above the hill at sunset.

It was grand.

And now for some more carpentry, drat it!

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"Crested Wren" and "Kassel" two-seater at Dunstable on April 2nd.



"Kassel" two-seater gliding into the sunset.

Special Notice to All Members.—As a step forward towards the ideal of providing the opportunity to fly on every suitable day of the week, an instructor will be in attendance from April 11th to 19th. There will be either hill-top launching or auto-launching at the foot of the ridge, weather permitting; also, if sufficient people are present, elementary training when the wind is not too strong.

Wednesday flying (all day from 11 a.m.) is starting again with summer time.

NEWCASTLE GLIDING CLUB.

Saturday, March 18th.—Wind E.S.E., 5 m.p.h. There was a good muster of members, and the day reminded one of summer. There were nine flights in the CRAMCRAFT, including the first for J. A. Allen, which was considered exceedingly good. Slight delay was caused due to the wire between the two cabanes breaking twice. There was a good attendance of prospective members.

Saturday, March 25th.—Wind E., 5—nil m.p.h. Both CRAMCRAFT and SCUD type machines were rigged. Hick, Hunter and Mewes in the CRAMCRAFT. Mewes's first flight in the SCUD type machine, after a test flight by Hick, resulted in the collapse of the seat, which locked the control wires and burst the side of the cockpit. Exceptionally large attendance of members.

Sunday, March 26th.—Messrs. Mewes, Hick, Guha and Batty ran up to Mootlaw and inspected the site for the advanced camp, which will be held during Easter.

Saturday, April 1st, 1933.—Wind N.E., 15-20 m.p.h. Flying operations commenced late as a result of the wind being too gusty. Eight flights were made in the CRAMCRAFT.

Repairs commenced on SCUD type machine, and preliminary work on improved ground training device put in hand.

Mr. John Bell, A.R.Ae.S.I., was appointed new chairman of the Club.

OFFICIAL NOTICES

COUNCIL MEETING

The 47th Council Meeting of The British Gliding Association, Ltd., was held on Monday, March 27th, 1933, at 6.30 p.m., in the Library of the Royal Aeronautical Society.

Present: Colonel the Master of Sempill (Chairman), Messrs. C. H. Lowe-Wylde, E. G. Sanguinetti, Capt. A. N. Stratton, Capt. C. H. Latimer-Needham, Capt. F. Entwistle, Sir Gilbert Walker, Messrs. F. Pilling, S. Whidborne, C. Grahame-White (Hon. Treasurer), and the Secretary.

1933 Competitions.—Mr. Pilling (Chairman, Contest Committee) reported that Competition sites had been inspected at Whernside (Yorkshire), Cheltenham, Newbury and Pen Hill (Yorkshire). The site known as Castle Hill, Lewes, had been reported upon as being unsuitable. Mr. Slingsby had sent in a further report on a new site known as Pen Hill, near Leyburn.

The Contest Committee had carefully considered the reports and had come to the conclusion that the sites at Newbury were the most suitable, and a further investigation was proceeding by the Contest Committee, who hoped to settle the matter forthwith. The Council, in thanking Mr. Pilling for his report, decided to give the Contest Committee permission to proceed with the arrangements for the Competition, but to report the progress made. Rules and regulations and the programme of events, as submitted to the Meeting, were accepted after various modifications had been made. The Secretary was requested to ask the Clubs if they would utilise the services of instructors if these were available.

1933 National Aviation Day Campaign.—The following resolution was passed:—

> "That we, the Council of the British Gliding Association, wish to accord Sir Alan Cobham's National Aviation Day Campaign full moral support."

Representation on Gliding Committee of F.A.I.—The Council appointed the Chairman to represent the B.G.A. on the Expert Gliding Committee of the Fédération Aéronautique Internationale for 1933.

Election to Membership.—Mr. J. Townend was duly elected a member.

The Next Meeting of the Council will be held on Monday, April 24th, at 6.30 p.m., in the Library of the Royal Aeronautical Society, 7, Albemarle Street, W.1.

Conference.—The Chairman said that the Council ought to give consideration to the possibility of holding a Conference similar to that held at Ilkley in 1931, and asked that the matter be considered at the next Meeting.

1933 B.G.A. GLIDING AND SOARING COMPETITIONS.

Rules and Regulations.

1. The Competitions shall be called the 1933 B.G.A. Open Gliding and Soaring Competition (under the Rules and Regulations of the F.A.I., and the Royal Aero Club, and the Open Competition Rules of The British Gliding Association, Ltd.).

2. The Competition is organised by the Contest Committee of The British Gliding Association, Ltd.

3. The Committee's Office is at 19, Berkeley Street, London, W.1.

4. The Competition will take place from June 1st to July 1st.

5. Prizes shall take the form of trophies or prizes in kind.

6. Pilots, not machines, shall be entered for the Competition but the trophies or prizes in kind shall be handed to the entrant.

7. Not more than one prize may be won on any one flight.

8. Entries, which may be received from any club, individual or group, are to be made in writing, on the proper form issued by the Contest Committee, which shall state, *inter alia*, the name and address of the entrant and the pilot's register number. Entry forms may be ob-

tained from the Secretary, 19, Berkeley Street, London, W.1. Any entry which is not accompanied by the necessary fee, or does not comply with the particulars required, or which is received too late, shall be null and void.

9. Entry fee shall be 10s. per session, or part of session, per pilot. Sessions are as follows:—

1st June—11th June inclusive.
10th June—18th June ,,
17th June—25th June ,,
24th June— 1st July ,,

10. Entries shall close 25th May, 1933.

11. In all events, an entry may be refused if the pilots or the aircraft does not satisfy the following conditions:—

(a) All aircraft shall be subjected to a technical inspection by a member, or members, of the B.G.A. Technical Committee, or person appointed for that purpose by the Technical Committee, both as to the aerodynamical and constructional qualities of the machine.

(b) All aircraft must possess a current B.G.A. Certificate of Airworthiness which has actually been issued before the machine arrives at the site of the Competition.

(c) A B.G.A. daily report sheet must be completed after assembly of the machine, and handed to a Member of the Technical Committee, or person appointed for that purpose by the Technical Committee, who will satisfy himself that the machine is ready for flight.

12. No person shall be eligible to enter a glider for, or pilot a glider in, any contest unless the name of such person is duly entered upon the Competitiors' Register of the B.G.A., which register shall be open for inspection at the Office of the B.G.A. at all reasonable times. The B.G.A. may refuse to enter the name of any person in the Competitors' Register without assigning any reason.

13. Aircraft shall be classed as follows:—

(a) Primary Training Machines—machines with a span of 40 ft. or under, pilot completely exposed.

(b) Secondary Machines—machines with a span of 40 ft. or under, or aspect ratio not greater than 10; pilots in fuselage, nacelle or partly streamlined.

(c) Sailplanes—machines with a span greater than 40 ft. or aspect ratio greater than 10.

14. Each aircraft shall be given a number. This number shall be that of the entry and shall be painted on both sides of the rudder.

15. The fee for registration of a person shall be 10s. except in the case of a member of the B.G.A., where there shall be no registration fee, or in the case of a member of a Club directly affiliated to the B.G.A. the fee shall be 2s. 6d. Each entrant in the register shall be given a number, and a certificate of registration, which shall hold good only till the 31st day of December next ensuing.

16. No handicapping system of any sort shall be operated.

17. Any competitor considering himself aggrieved by any matter connected with the Competition, or by the conduct of the promoters or officials, may make formal protest as provided by the Open Competition Rules of The British Gliding Association, Ltd.

18. The Contest Committee may, on any complaint being made to it, or on its own initiative, take cognisance of, and deal with, any breach or offence against these rules and regulations, or the Open Competition Rules of The British Gliding Association, Ltd., by the disqualification or suspension of any person or in such manner as it may think fit, subject only to an appeal to the stewards of the B.G.A., as provided in the Open Competition Rules of The British Gliding Association, Ltd.

19. Official observers appointed by the B.G.A. shall observe and time all flights, but the starting signal shall be given by the pilot.

20. Pilots may compete for any event in any order during the Competition provided due notice is given to the observer prior to commencing the flight.

21. On each day of the Meeting an easily recognised signal shall be given declaring the Competition open or closed.

22. All machines shall be launched by the usual hand-launched shock-cord method.

23. Only flights followed by normal landings shall be recognised.

24. Two gliders meeting each other end on, and thereby running the risk of a collision, must always steer to the right. They must, in addition to this, pass at a distance of at least 50 ft. taken between their nearest adjacent points. Any glider overtaking another glider is responsible for keeping clear, and must not approach within 50 ft. of the overtaken glider, and must not pass directly underneath or over such overtaken aircraft. The distance shall be taken between the nearest adjacent points of the respective gliders. In no case must the overtaken glider turn in across the bows of the other glider after passing it, so as to foul it in any way.

When any gliders are approaching one another in cross directions, then the glider that sees another glider on its right hand forward quadrant must give way, and the other glider must keep on its course at the same level, till both are well clear.

From 0 deg. (i.e., straight ahead) to 90 deg. on the right hand constitutes the right hand forward quadrant.

25. The transport of aircraft to and from the site of the Competition will be entirely a matter for the entrants. The B.G.A. will not be responsible for any damage to the aircraft from any cause whatsoever.

26. The Contest Committee reserves the right at any time, and from time to time, to amend, alter, rescind or add to these Rules and Regulations, and every person competing under these Rules and Regulations agrees to be bound thereby.

BY ORDER OF THE CONTEST COMMITTEE.

April 4th, 1933.

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