SAILPLANE AND GLIDER

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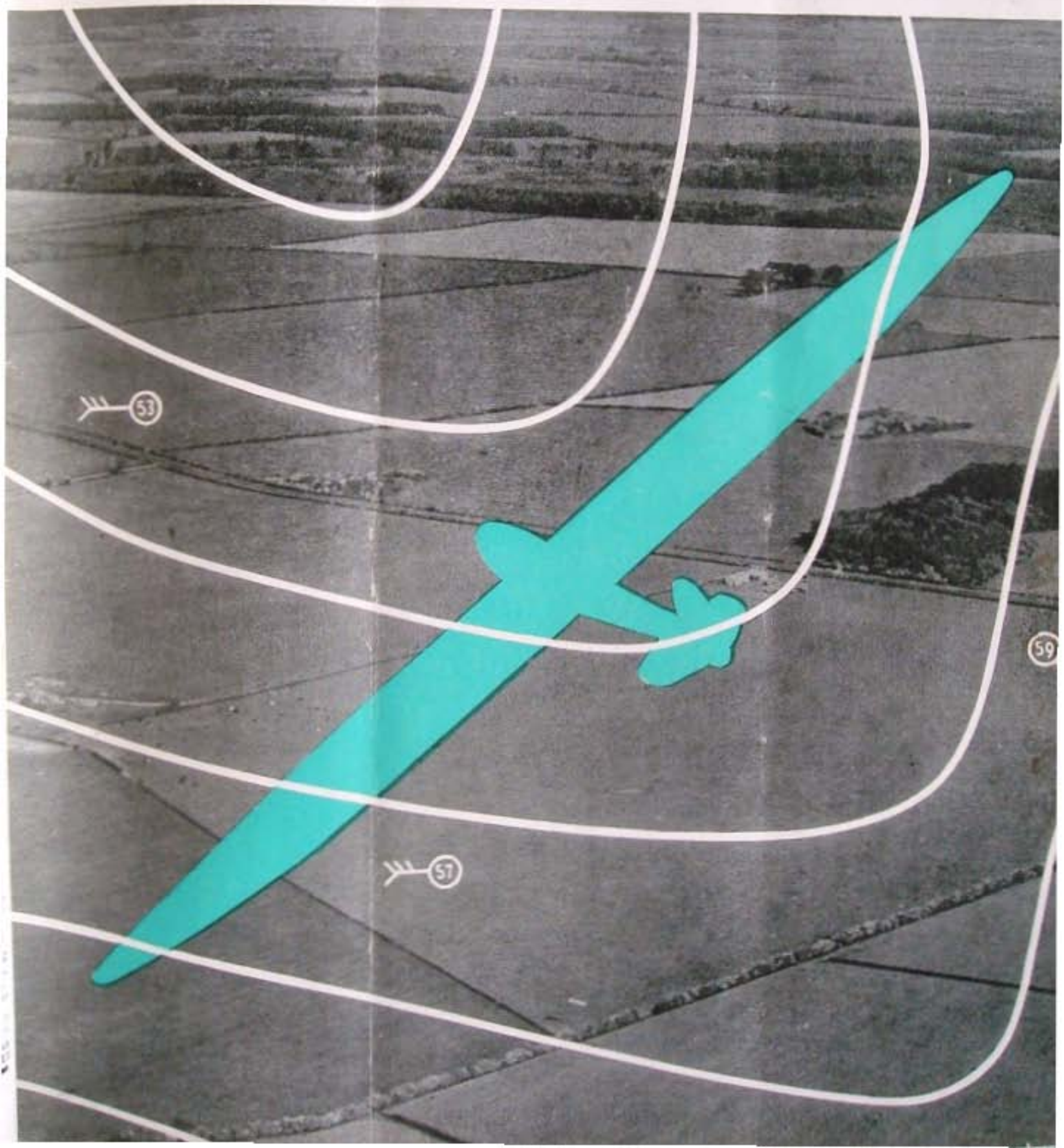
EDITED BY ALAN E. SLATER



THE SAILPLANE *and* GLIDER

Official Organ of The British Gliding Association

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Vol. 8 No. 1 JANUARY, 1937 Published Monthly

Progress

AN organised British gliding movement has now been in existence for seven years. On January 24th, 1930, the announcement was made of a gift of £1,000 by Lord Wakefield to enable the British Gliding Association to get under way. Precisely a month later the actual flying, which many considered the most important activity of the new movement, was inaugurated with a gliding demonstration near Maidstone by the late Mr. Lowe-Wylde.

Perhaps, when the seven years have increased to ten, it (and there) will be time to record in detail the history of soaring flight in Britain. Meanwhile, as the backward-looking mood is upon us, it would be amusing to compare the present state of motorless (or real) flying with the stage reached by mechanically-assisted (or aeroplane) flight a quarter of a century ago—bearing in mind, of course, that the two methods of flight have been developed for quite different purposes.

Such a comparison shows, oddly enough, that there is little to choose between the two types of aviation at the stages mentioned. During the year that has just passed, sailplanes in the world at large have done wonderful things. Twenty-five years earlier, in 1911, what were aeroplanes doing?

Take speed. At the end of 1911 the aeroplane speed record was held by E. Nieuport, of France, with 83 m.p.h. In last month's SAILPLANE the Hungarian pilot, Ludwig Rotter, described how, during his flight from Berlin to Kiel last August, he flew his sailplane NEMERE for considerable stretches at air speeds of up to 87 m.p.h.; while, during the second hour of the flight, his average ground speed worked out at 68 m.p.h., or precisely the same as the world's speed record for aeroplanes at the end of 1910.

As to distance in a straight line, we have been unable to trace the position in 1911; at that date most pilots flew in circuits when trying to break a distance record. Anyhow, it was not until 1913 that an aeroplane exceeded the straight-line distance of 313 miles which is the present sailplane record.

Cross-country circular tours by sailplane seem likely to come into fashion in the near future. The first one ever undertaken, which is described in this issue, covered a course of about 415 miles in central and south Germany, and those taking part were allowed ten days to get all the way round and back to their starting-point. Of ten participants, eight got away and four completed the course in the time allowed. Twenty-five years earlier, in 1911, circular tours by aeroplane were similarly coming into fashion; but, though the distances were usually greater, the machines taking part made but a poor showing, the proportion of finishers to starters being very much less than in the case of the world's first sailplane tour. There was the "Circuit of Britain"—1,010 miles—with 30 entrants, 21 starters, of which two finished within the prescribed five days and two later. The winner, Lt. Conneau, had just before won the "Circuit of Europe"—1,031 miles—for which 20 days were allowed, but only seven out of 43 completed the course. In Germany there were the *Deutscher Rundflug*—1,152 miles—in which only one out of 15 flew the distance, though a month was allowed for doing so; and a similar circular tour of Saxony, of just under 200 miles, in which 11 entered, seven started, and two finished, 11 days being allowed.

Twenty-five years before the present sailplane height record of 14,190 feet was set up in 1934, aeroplanes had not even attained the 1,000 metres now required of a "Silver C" pilot. Even in 1911 the record only stood at 12,828 feet, though it was raised to 18,305 feet in the following year.

When it comes to duration, sailplanes have no need of a 25 years' handicap. In 1914 an aeroplane could do only 24 hours; in 1927, 50 hours—little more than the present soaring record. But there is no reason why, provided re-fuelling were forbidden, a two-seater sailplane should not stay up for a length of time which would put aeroplanes out of the running for ever; there are parts of the world where suitable winds blow, and the only limiting factor would be the pilots' food supply.

From Here and There

Peter Riedel.—The German pioneer soaring pilot, Peter Riedel, is just off to Colombia (South American republic adjoining Panama), where he is to act as pilot of Scadta, Ltd., for the next two years. He sends best wishes to all *Segelflieger* at the London Gliding Club, which he recently visited.

* * *

Juan de la Cierva.—The inventor of the Autogiro, who lost his life in an aeroplane accident on December 9th, is recorded to have been building gliders from the age of fourteen. So he must have begun about 1909 or 1910. They were built in his home town of Murcia, but he actually flew in two of them from the hills outside Madrid.

* * *

Gliding Film.—The film produced by Bosworth Goldman, described in our issue of last November, is to be "trade shown" this month; we hear that, owing to an indiscretion of the distributors, it will probably be called "Plane Sailing." It is, nevertheless, an excellent film, and readers should induce their local cinemas to show it. The distributors are Messrs. Kinograph Distributors, Ltd.

* * *

The "Seeadler."—The amphibian sailplane SEEADLER, which was described in THE SAILPLANE last April (p. 58), has again been tried out on the Chiemsee, the large lake 40 miles S.E. of Munich. Piloted by Hanna Reitsch, and towed by a "Klemm" aeroplane on floats, it got off the water easily. Afterwards it was towed at 37 m.p.h. by a motor boat belonging to Major Braun, and rose to 30 feet. No soaring was done.

* * *

German Gliders for S.A.—The German Government has presented each of the German gliding clubs in South Africa (the Transvaal and Cape Pioneer Clubs) with a GRUNAU primary, a WOLF and a RHÖNSPERBER. The German Government, according to a Press report, emphasises that the gift has no political significance, but will foster comradeship among gliding enthusiasts. The gift, it is stated, is the result of a visit to Berlin by Mr. W. Kunze, who made a long aero-towed flight in South Africa last year.

* * *

The Channel Crossing.—We have come across a note by C. K. M. Douglas in the *Meteorological Magazine* for May, 1933, which is of interest in connection with last month's article on the possibility of soaring across the English Channel by the use of thunderstorms. He says: "I think the evidence is sufficient to show that south-easterly winds at high levels are normally associated with shallow depressions or troughs, or the intermediate regions between anticyclones and depressions, and that they are very favourable for thunderstorms. Many of the storms are of diurnal convection type, and affect the Midlands rather than the extreme south-east, but late in the day the continental storms sometimes cross the Straits of Dover."

A Quotation.—"Science, after all, has conferred some blessings, even of an æsthetic kind, upon our generation which, no doubt, some future Macaulay will celebrate—the monoplane, gliding at a great height, silent, pure silver, is one. . . ."—LEONARD WOOLF in *The New Statesman.*

* * *

The "H.17."—Drawings of this light-weight Austrian sailplane, with licence to build a machine, are now obtainable in the British Isles for the equivalent of 120 Austrian schillings (at present about £3 10s.), as an agent has recently been appointed. He is Mr. B. H. T. Olver, of 195, Sandwell Road, Handsworth, Birmingham 21.

* * *

A Lawsuit Recalled.—Mr. Max Wenner, who lost his life by falling out of an air liner over Belgium, may be remembered as having sought and obtained an injunction restraining the Midland Gliding Club from holding "gliding exhibitions" on a piece of land at the Long Mynd, Shropshire, over which he had shooting rights. The club, however, was later able to obtain another piece of land further along the hill.

* * *

Christmas Cards.—We acknowledge gratefully the many Christmas cards sent by readers. In these, gliding pictures are increasing in proportion year by year, and there were some effective views of the WHITE WREN against a "cloud pillar," the GOLDEN WREN high above the Derbyshire and Lancashire Club's wind sock, the CAMBRIDGE among fracto-cumulus, a KIRBY KITE surrounded by native African boys, the RHÖNSPERBER floating over an architect's drawing of the London club house, and the Midland Club's FALCON being anxiously watched by a group of members who were doubtless waiting their turn to fly it.

Gliding Certificates

THE following gliding certificates were granted at the meeting of the Royal Aero Club Committee held on December 9th, 1936:—

"A" Certificates

No.	*Name.*	*Club.*	*Date.*
615	R. A. Simmonds	Essex	1.11.36
616	E. R. Jarvis	Essex	1.11.36
617	L. H. Angus	Newcastle	22.11.36
618	A. W. Lacey	London	30.8.36

"B" Certificates

No.	*Name.*	*Club.*	*Date*
517	R. A. Goodwin	Southdown	22.11.36
618	A. W. Lacey	London	21.10.36

"C" Certificates

No.	*Name.*	*Club.*	*Date.*
618	A. W. Lacey	London	12.11.36

When the present month's list is published, it will be possible to count the certificates earned by each club during the past year, though not with full accuracy, since there are always some who put off applying for their certificates till long after making the test flight.

Gliding on the Gaisberg

By M. V. LAURIE

[The time for planning summer holidays will soon be at hand, and no doubt many gliding men will want to know what opportunities are available for attending gliding courses abroad. Readers' experiences in Germany and in Poland have been described in recent issues of THE SAILPLANE, *and in the following article Mr. M. V. Laurie, of the London Gliding Club, gives an account of the flying he did last summer at the Gaisberg gliding school in Austria. Only six weeks before going there, Mr. Laurie had taken his "C" certificate at Dunstable, subsequent to which he obtained a power-flying "A" at Broxbourne; yet he soon picked up the art of thermal soaring. Particularly interesting are his observations on thermal currents among mountains, as distinct from the low hills commonly used in England.—*ED.]

THE Gaisberg stands about 2,600 feet above the Salzburg plain and is sufficiently well separated on the south and west from the higher Tyrolean Alps to get the full force of the winds from these directions. On the north and east it is almost completely open except for a few foothills to the east. There are soarable slopes in almost any wind direction.

The equipment of the school is generous for a course of only about a dozen men. There were four FALCONS, two GRUNAU BABIES, and a RHÖNBUSSARD. The last was sacred and only flown by a chosen few. Two more FALCONS were under construction and another two were expected to arrive from Graz any day, but had not come by the end of the course. The G.B.'s and the BUSSARD are fitted with instruments—air speed indicator, altimeter, level bubble and a sensitive variometer. The BUSSARD has in addition blind flying equipment and an excellent compass, and the instruments are luminous. The turn indicator was air driven by a large venturi tube, and was quite sensitive. A number of barographs were always kept ready inked and loaded and no attempt at soaring was ever made without one. The school also has a parachute which was usually worn when soaring.

The course started with a day spent on the beginners' slopes at Koppl, on the lower south-east slopes of the Gaisberg, where everyone was given long ground-hops in a FALCON. (The beginners' course at Koppl is, incidentally, an excellent and almost infallible way of getting "A" and "B" gliding certificates in three weeks.) Next day everyone moved up to Zistelalm, where flights down to the Salzburg plain began. The others were given starts in the FALCONS, but I, to my surprise, was put straight into a G.B. As Herr Munz, the chief instructor, remarked, the G.B. is much easier to fly than the PRÜFLING, and so I found it.

There is a considerable thrill in being launched from a high mountain for the first time Beneath you are steep slopes with fir trees or rocks, and the landing grounds, consisting of a choice of several large fields, are about three miles away on the further side of a large river. The fact that the FALCON launched just before me had landed in a deep ditch, and, besides

A "Rhonbussard" belonging to the Gaisberg gliding school, in Austria, soaring in thermal currents rising from the east side of the mountain. Herr Robert Munz, chief instructor of the school, is the pilot.

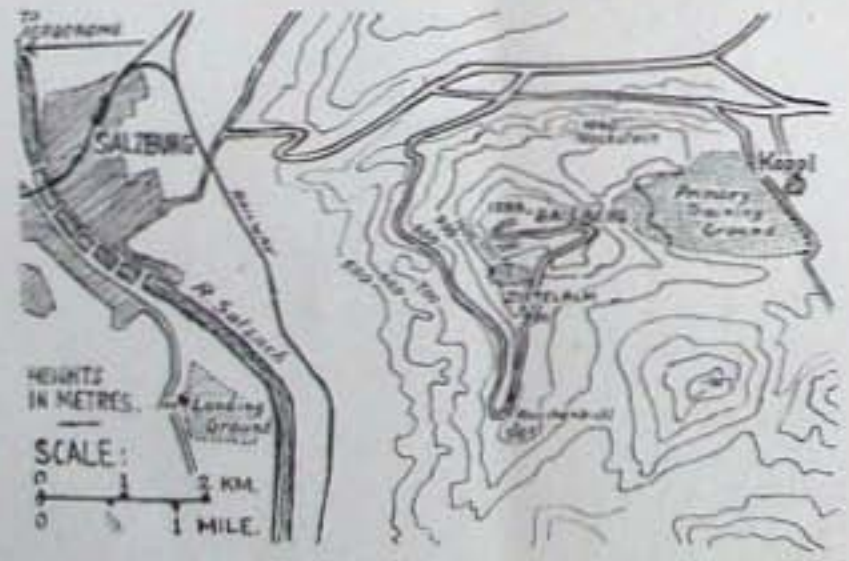
damaging the machine, its pilot had an unexpected bath, lent an additional excitement to the flight. It was, however, uneventful. There was no lift, and the glide, which lasted about eight minutes, gave one plenty of time to find the best flying speed of the machine, and practise a few turns and tentative side-slips. The landings had to be planned well ahead as there were various little obstacles such as small hay stacks on wooden poles, fruity manure heaps, patches of high wheat, telegraph and power wires in and around the fields, which made it more interesting. There was plenty of space, however, and landings are perfectly easy if properly thought out.

My next flight was on the following day. There had been a light westerly wind all morning with showers and mist at intervals, but the wind was not sufficiently strong to soar. In the afternoon, however, a rainstorm approached from the west, and some wind was expected with it, so the G.B. was got out ready and, fitted out with parachute and barograph, I sat in it waiting for the wind. I was launched shortly after the first good puffs, and lost height steadily during the first two beats to and fro. Then it came in great gusts, and the machine was heaved up in them to about 550 feet above the start where it was possible to soar for a quarter of an hour. At one time my variometer showed a rise of as much as three metres per second. Then came blinding, stinging rain and with it the wind switched round to the north. All lift disappeared and

in one beat I was well below the start and had to turn out from the mountain towards Salzburg. After four minutes of flying in a deluge the end of the storm was reached and a landing made in bright sunshine, only a few metres away from the spot where I had landed the day before.

Two days later I had my first taste of thermal soaring, which revealed another of the possibilities of the Gaisberg. It had been a roasting cloudless day, and when not working we had been basking in the flowery alpine meadows and getting burnt to various shades of dark brown or bright red. The sun, beating on the eastern side of the mountain all morning, heated it sufficiently to cause thermal up-currents on the warm side and down-currents on the cool side. By about two o'clock it was considered warm enough to have a try. There was a very light breeze from the south-east, but quite insufficient for soaring without thermal aid.

I was launched in a southerly direction from the summit of the Gaisberg about 750 feet higher than Zistelalm. It is a sensational place for a launch. The team disappears out of sight after a few steps, and all you see is a panorama of the Alps through a clearing between the tree tops across a deep valley whose bottom is out of sight. I got a bad launch and lost a lot of precious height. I had to fly along the south face and round the ridge to the east face, where I hoped to get thermal lift. Nearly 200 feet were lost before I got to the corner, and then followed an exciting fight for height. There were patches of thermal lift here and there, the best one being over a hairpin bend on the road. Other patches were found where strips of forest had been cleared recently, but it was impossible to rely on the lift anywhere—one time it would be where you expected it, the next time nothing. It was confined to a narrow belt near the hill, which necessitated flying very close to the tree-tops. An additional excitement was caused by the fact that I was flying between the Gaisberg and another lower peak, the Nockstein, which was connected to the Gaisberg by a saddle covered with tall trees. If I got too low, this saddle would cut me off from the landing grounds. The lift was insufficient to gain height, and it was a losing battle all the time. After about 25 minutes the decisive moment came when I had to cross the saddle. There was no lift at all that last beat back to it, and for a moment things were a bit anxious. However, there were about 15 feet to spare when I got there, and I crossed it into blessed space and freedom, gliding down to land again in almost the same spot as on the two previous times.



Mr. M. V. Laurie (in shorts and parachute), author of the accompanying article, about to start from the Zistelalm, on the Gaisberg, in a "Rhönbussard." Note cockpit cover on the ground, with large Venturi for driving the turn indicator.

So far, I had been having all the fun. Apart from the short period of my second flight there had never been sufficient lift to keep a FALCON up, and I was the only one allowed to fly the G.B. The three others, however, who had done some power flying and knew how to land safely, were promoted to the G.B. and had glides down in it from Zistel.

Then I got the surprise of my life. Herr Munz came up and asked me, "Would you like to fly the RHÖNBUSSARD?" Would I!! I had just been congratulating myself on my luck in flying G.B.'s straight away on coming here, and now they were asking me to fly their precious BUSSARD! Naturally I did not refuse, though it was with some misgivings lest I should damage it.

The flight was another thermal one on the afternoon of a roasting day, almost windless. There was no doubt about keeping up this time in a high efficiency machine like the BUSSARD. Sailing round the hill as before, it took only a couple of beats to reach the level of the top. Lift became more regular higher up, and I soon reached a height of about 690 feet above the top. This was the limit of the lift, but it left sufficient margin of height to go on journeys of exploration in search of other patches of lift. I found nothing, however, as good as the lift over the S.E. face of the mountain, and I always had to come back to it.

It was glorious floating about over the top of the mountain in perfect sunny weather, with the panorama of the Tyrolean Alps with their snow peaks, pine-clad lower slopes and valleys with vivid blue lakes, all spread out before one. Below were the crowds visiting the Gaisbergspitze in char-a-banc loads, and the rest of the launching crew who greeted one with wild yodelling as one flew by. The BUSSARD was sheer delight to fly; so sensitive on the controls, and so easy to handle once one had got the feel of her. The cockpit cover with its talc windscreen was a great comfort, and enabled one to fly without goggles and without any exposure except to the very top hairs of one's scalp. It was great fun to keep one's head down in the cockpit and fly by the instruments alone, and it was possible greatly to improve one's turning by this means.

After about two hours I began to become very much

aware of the parachute straps upon which I was sitting. I was rather tightly strapped in and was unable to alter my position an inch. They bit shrewdly into my soft parts, and I vowed I would never fly again without a cushion inside my parachute straps.

At about 6.30 p.m. shadows began to creep across the face of the mountain and lift gradually became less. I saw someone waving wildly at me from the top of the mountain and I took it to be a signal to go down, so I gave him a wave and turned away from the mountain towards Salzburg. I heard afterwards to my annoyance that it was only a tourist waving at me to come close, as he wanted to take a photograph! I could probably have stayed up for about twenty minutes longer. Having plenty of height in hand, and being above all anxious not to damage the machine, I flew round Salzburg and landed on the aerodrome 3¼ hours after I had been launched.

Two days later, a similar thermal flight had an interesting sequel. I had been launched rather later, at 4.10 p.m. Lift was not quite so good and I had had to leave the mountain at about 6.40 p.m. as the lift there had entirely disappeared. On gliding away downwind to land, I passed first through an area of downcurrent (minus 2 m. per sec. on the variometer), then for a short way through a region of still air (minus 0.6 m. per sec.), followed by a region of turbulence about two miles away from the mountain, in which the BUSSARD was thrown about quite violently. This lasted for about a minute, when I suddenly came out into an area of calm steady lift. This was away out over the plain to the south of Salzburg city. Circling, the BUSSARD rose steadily at a rate of from 0.7 to 1.0 m. per sec., until I reached a height of nearly 400 feet above the highest point I had reached when over the mountain. There was nothing on the ground to suggest any reason for this lift. I explored its boundaries, which were fairly definite. It was roughly triangular in shape, with the base nearest to the mountain and about three-quarters of a mile long, and the apex about half a mile downwind from the base. All along the base the air was turbulent, but along the other two sides the lift merely died gently away. I was able to fly about in it for three-quarters of an hour until nearly sunset, when the lift gradually failed.

The explanation of this suggested by Herr Munz was that the air over the plain was warm and rather unstable at the end of a very hot day, and that the wind blowing over the mountain was cooled in so doing, and on flowing down the lee slope pushed underneath the unstable warmer air on the plain, causing an area of lift. The distance of this lift area from the mountain is said to bear a definite relation to the height of the mountain and the strength of the wind. These conditions only occur at the end of a very hot day and where a large mountain is cooler on its lee side than the surrounding plain. It would be interesting to hear if any instances of this phenomenon have been experienced in Britain.

During the three weeks' course on the Gaisberg three of the others (those who had done some power flying) took their "C" certificates on the GRUNAU BABY. During the fine weather the winds were very light, and when it rained it was often foggy or windless or both. Those who were flying FALCONS (the FALCONS used were considerably heavier than the one at Dunstable) were unlucky, as they never had a soarable wind the whole time. This, I understand, is unusual. On the course they guarantee six launches from the mountain, either from Zistelalm or from the summit. Actually I had seven flights—three in the G.B. and four in the BUSSARD, totalling 8 hours 48 minutes.

Living on the Gaisberg was very pleasant. We stayed at the Zistelalm Hotel and were fed after the manner of the country—rather rough feeding but wholesome and plentiful. On wet days and other times when flying was impossible we had lectures on gliding and soaring which often developed into keen discussions. At other times we practised folding parachutes, or else maps were brought out and cross-country flights planned with much optimism. (I had everything worked out for a flight to Vienna should a strong W.N.W. wind come along, which, of course, it didn't.) When we had nothing better to do we all sat down and sang.

Reveille was at 5.30 a.m. in flying weather, and the first launch was often as early as 6.30 after assembling a machine. The first man to fly usually went without his breakfast.

The ordinary "C" certificate in Austria only entitles one to fly within the boundaries of the school flying ground which were laid out on the map. As I had done sufficient flights for it, the school authorities were very keen that I should complete the test for the "Amtliche C" by doing a written theoretical examination. My last day there was spent struggling with a long set of questions on such things as air-flow over wing sections, angles of incidence, meteorology, flying regulations, etc., etc. Many of the questions I could never have answered if I had not been a regular reader of THE SAILPLANE. As a result of this test I am now, in the words of the head of the school, entitled to fly "all over the earth."

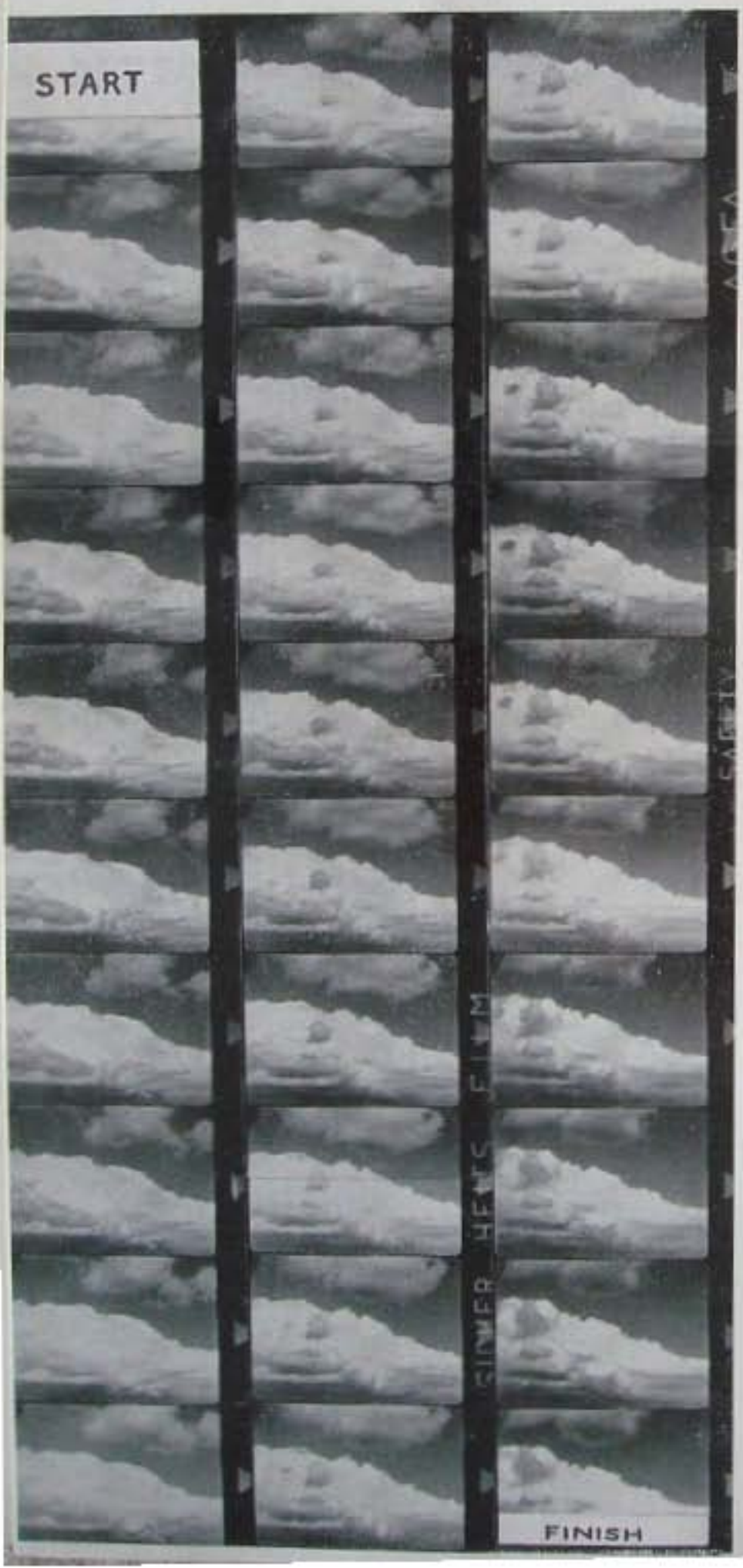
The west slopes of the Gaisberg photographed from the foot of the mountain, where a "Falcon" has just landed and is being packed on to its trailer for return to the top. Launches are made from the summit, 2,800 feet above the plain, and from the Zistelalm, which is the clearing on the horizon above the figure furthest on the left.

Fast Motion Cloud Pictures

By R. H. BOLTON

THE technique of producing fast motion films of cloud forms is not difficult, but the selection of suitable material on which to spend the necessary time and energy and the interpretation of the results obtained is likely to tax the patience of the most enthusiastic pilot-photographer.

Some of my findings may assist others who wish to try this game. The camera must give a fairly constant one-frame exposure, must be able to stop with the lens covered, and must keep extraneous light off the film loop behind the gate. An electric release operated by a clock at definite intervals would be a great asset. I get the best results by shooting from a distance, so that a long focus lens (e.g. 2" on 16 mm.) is desirable, unless the camera boasts a whole clutch of lenses on a turret. A really firm tripod is essential, and a panning head is a great convenience in setting up in a hurry, but it must lock firmly.



Panchromatic film must be used, and the best filter for darkening the blue of the sky is a "micro 5." An additional density filter may be needed unless the lens stops down to less than F/16 or the exposure is less than 1/50 sec. I have used successfully a "micro 5" with a "gamma," allowing about 10 times the exposure. With complex cumulo-nimbus cloud the grey of the clouds may simulate grey of the blue sky, and I find these subjects unsatisfactory.

Cumulus clouds should only be shot on a still or nearly still day, and then only into or down wind. The results from shots on windy days show a race across the screen, which is impressive and pictorial for the layman, but merely expensive for the scientist. Even if a mechanical panning head were available, I believe that the perspective change would be greater than the internal movement, except from great distance. The only exception is where cumulus is formed over a range of hills, when most spectacular effects are obtained with a good light. Even then, individual clouds will blow off the screen before their internal movement can be followed, though the wallowings of hill and thermal lift can be seen. A print from such a series is shown herewith.

Cold fronts are also best taken facing into wind from a considerable distance and a fair height. Otherwise the advancing grey clouds cut off the view of the higher rolling white clouds. The operator should be ready to start when the front is a speck on the horizon, say three-quarters to one hour before the arrival of the rain. Remember that a frame every half minute for an hour only lasts eight seconds on the screen. You will get better results and fewer colds in the head by using a narrow lens with well-spaced exposures, and getting finished well before the deluge. A shot every 15 seconds is recommended.

I have not so far tackled any pure cirrus formations, but they should be most interesting. I should be very glad to hear from, and exchange copies of results with, anyone else who has played this fascinating game.

Cumulus clouds formed by a south-west wind blowing on the Purbeck Hills, near the Dorset Coast, at Whitsun, 1935: a section of film taken by exposing one frame every half minute for 50 minutes.

Camera: Ensign Super Kinecam.
Lens: Two ins. diameter f/1.9, used at f/16.
Film: Agfa FF Pan., 16 mm.
Filter: Ilford Micro 5 and Gamma.
Exposure: Approximately 1/10 sec.
Speed-up on projection: About 500 times.

(Photographed by R. H. Bolton.

Filming the Clouds

THE idea of studying cloud formations by making speeded-up motion pictures of their development must have occurred to many people, but scarcely anyone has put it into practice, and, as Dr. R. H. Bolton shows in his article on the previous page, it is by no means so easy to get good results as may be imagined by those who have not tried.

The film reproduced, together with two others, was shown by him to a select but interested audience in the bunk room at the London Gliding Club some time ago. By joining up the beginning and end of each one, it was made to repeat itself over and over again so that it could be studied in detail.

The other two fast motion films showed more cumulus clouds, and the passing of a "front." The latter was most entertaining. Before the approaching bank of cumulus had been blotted out by lower clouds, the whole length of its top could be seen boiling as in a cauldron; there was a slight veer in the wind as it went over, according to text-book, but then, most astonishingly, the wind suddenly backed again.

There are other forms of cloud besides cumulus which would well repay study by the same method.

First, the "cell" clouds, such as strato-cumulus and alto-cumulus. These are cloud streets subdivided into a more or less regular pattern. According to theory, there should be continual motion from the centre of each cell of cloud towards its edges, where the cloud substance should be continually melting away. "Cloud streets" are also a cell formation, but since they are commonly formed only in high winds, they would be difficult subjects for slow photography by the cine-camera. However, even if it is not possible to follow an individual street throughout its life history, something might be learned of the way the streets become established. One's own impression is that they do not appear ready-made out of a clear sky, but become established gradually by an increasing orderliness in the arrangement of what started as a sky dotted with ordinary irregular cumulus.

Wave formations in clouds are a subject of controversy which might well be cleared up by fast motion films. Are they "cells" formed in a thermally unstable layer, or are they "Helmholtz waves," analogous to the waves of the sea, formed at the surface separating two layers of air of different density moving with respect to each other? If the latter, then the waves should be moving at a different speed from the cloud substance which forms them. If cells, then it is quite likely that similar cells may exist on a larger scale nearer the ground, with up-currents strong enough for soaring in.

Another wave formation is the "lenticular cloud," which is most frequently found marking the top of a stationary wave of air in the lee of a mountain or range of hills. Soaring has actually been done in such stationary waves, near the Grunau gliding school in Silesia. These clouds grow at their windward edge and melt away at their leeward edge; consequently they remain in one position while the wind blows through them. For this very reason they should make suitable "sitters" for the ciné photographer; but it would need a deal of patience to wait for the occasion, for no one quite knows when to expect them. Our own experience is that they form most often, if at all, in north-westerly winds, and rather late in the day; they can therefore be conveniently photographed against the sunset, showing good contrast.

"Turret clouds," or alto-cumulus castellatus, are like miniature cumulus floating at a high level—usually between two and four miles. They are said to precede thunderstorms; and with reason, as their presence shows instability in the upper air. The German sail-plane pilot Hanna Reitsch was once towed up to clouds of this type by aeroplane, and managed to do a little soaring. Sometimes they move quite slowly, and fast motion pictures should give some idea of the magnitude of the up-current, and the length of life of each cloud mass.

Then, of course, there is the vexed question: "Do thermals rotate?" But the cumulus at the tops of the thermals would have to be photographed overhead to get results of any use, so a calm day would be needed.

So far as one can find out, the only professional meteorologist who has applied himself successfully to fast-motion cloud filming is Professor Linke. At the British Association meeting of 1933 he showed such films to Section A. The demonstration was described thus in the *Meteorological Magazine*, by M. G. Bennett:—

"Photographs of clouds were taken at intervals of from 3 to 6 seconds throughout their life, and were put through the projector at the rate of 16 per second. The events of a whole afternoon were thus condensed down into a few minutes. It was indeed fascinating to see a cloud begin to form over a ridge of hills, to watch it grow, the whole mass 'boiling' furiously, and perhaps to see a big lump detach itself and float off as an isolated 'wool pack,' or to see an anvil form at the top. In another part of the film, typical heat convection, 'April weather,' clouds were seen to form and float away with the wind. One could have wished that the film was speeded up so much, for, although the film was repeated, some of the more interesting phases in the life-history were over before one could see clearly what was happening. This simple, but extremely convenient and dramatic method of cloud study was devised in the course of investigating the meteorological conditions necessary for successful 'gliding' and 'soaring' flights, and it is proposed to go on and study other cloud types in the same way. The tedium involved in watching clouds for long periods of time is no doubt partly responsible for the sparseness of experimental verification of the suggestions which have been made regarding the mode of generation and change of form of clouds; and the rapid fire of questions which followed Prof. Linke's film demonstration showed how keenly field observations are appreciated."

A final suggestion: since colour cinematography is now being brought down to popular price levels, why not a fast motion picture of a sunset sky?

A. E. S.

News from Germany

(Continued from Volume 7, No. 12, Page 263)

The Lost Barograph.

DURING the last Rhön Competitions an extraordinary story was going round about a pilot who, two months before, had made a world's height record, had to come down by parachute owing to his machine breaking up, and had since then been wandering around the countryside looking for the broken bits—especially the bit that contains the barograph record.

The story of what happened can be pieced together from the various accounts one heard, combined with the pilot's own account of the incident which he has since published.

Hermann Seele is his name, and the flight started from Hirzenhain, south of Siegen (the place where the Anglo-German Camp was held). It was on June 23rd, during the eliminating trials for the Rhön. There had been fog until 10 a.m., when cumulus appeared. At 2.40 p.m. Seele was towed up by aeroplane to 1,000 feet, cast off in an up-current, and rose towards a cumulus cloud. He twice tried to leave it for another cloud, but there was such a down-current the moment he left it that he had to return. "The cloud," he says, "had a milk-grey colour, its edges were smooth and did not hang downwards," and he therefore considered it was not a dangerous cloud. The base was at 4,600 feet, and from that height it did not look very big. Moreover, he had had some experience of cloud-flying in aeroplanes. So up he went into it in his Rhön-Bussard, and commenced circling.

His forward speed was 37 miles an hour, and the variometer showed 4 metres per second rise. The altimeter needle moved steadily from the 2,000 figure to 2,500 (8,200 feet). At this point the air became rough, and the rate of rise more than the variometer could register; the altimeter moved up to 3,200, beyond which it would not work, but luckily the barograph was visible. Soon this was seen to be showing just 5,000 metres (16,400 feet), by which time the pilot was feeling thoroughly frozen, not having dressed suitably for the occasion—in fact, he could hardly hold the stick at all.

At World's Record Height.

Now things began to happen. A nasty jar threw his face against the cockpit front. He pushed up the speed to 56 m.p.h. to get out of the cloud, but didn't. Hail began to fall. His air speed got erratic, and during a steep dive the wind screen bent out of shape and then flew off. Immediately he was bombarded with hail, and in a few moments his face, chest and hands became iced-up. He found himself talking to the Bussard in his distress, but it took no notice; one moment he was being forced down in the seat, the next he was hanging in his straps. He tried to make it spin, but it wouldn't. He tried again, without success. The hailstones hurt his eyes so much that he could hardly see. (His friends say they—the hailstones—were as big as hen's eggs, but he does not commit himself in print as to this.) Then, in the middle of another dive, there was a loud noise; he was thrown against the right side of the cockpit, and saw the left wing break off and vanish upwards into the mist.

It was time to get out, but Seele found his hands were too frozen to undo the straps. Fortunately these were rather loose, and he managed to extricate his legs and left arm and climb out. Then there was another violent bump, and he found himself hanging outside the fuselage, all except his right arm, which was held inside by the straps. Part of the right wing then broke off. The new holder of the unofficial world's height record tried to make it official by rescuing his barograph, but he could not get hold of it in his awkward predicament, and soon his right arm came away (from the cockpit, not from himself).

He was now free, and hanging from the parachute, which, however, was invisible—the parachute cords vanished into the mist above. His wrist watch, keys and knife dropped into the mist below. Then something appeared from below, sailed up past him and disappeared above: it was a wing from the Rhön-Bussard. Snow was falling; his arm was hurting, his face was burning, and his eyelids were so swollen that there was only a slit to see through. The snow changed to rain, and before long he was out below the cloud, but too blind to recognise details of the ground below. A dark shape appeared; he raised his legs and covered his face; his back hit something, and then he found himself in sitting posture. He put out his hand to discover what sort of ground he was on, but there wasn't any ground—only an empty void. He felt around a little more and found he was sitting on a branch of a tree.

Peasants came to look for him, but he was too hoarse to make himself heard. At last they found him, and he gave them the telephone number of the Hirzenhain Gliding School. His comrades arrived after an hour and a half, but it was another hour before they got Seele down to ground level and set off for hospital to get his arm seen to.

The barograph was never found.

It will be of interest to reproduce the Upper Air Reports from the two nearest meteorological stations on the day of the flight (June 23rd, 1936):—

Cologne, 6 p.m.			Frankfurt, 6 p.m.		
Height (feet).	*Temp. (Fahr.)*	*Rel. Hum.*	*Height (feet).*	*Temp. (Fahr.)*	*Rel. Hum.*
157	76	65	347	74	60
3,280	64	62	2,950	65	68
4,000	55	62	4,920	54	76
5,240	56	61	7,230	43	98
9,200	37	59	8,200	39	98
9,840	37	59	8,540	39	98
13,120	25	65	11,140	28	98
13,800	25	63	11,800	30	80
17,060	12	78	13,800	21	70
			17,390	10	62

These figures are for heights above sea level, and show that, apart from a few thin stable layers here and there, the lapse rate was nearly as steep as the dry adiabatic up to about 8,000 feet, and beyond that equal to the saturated adiabatic up to beyond 17,000 feet, thus allowing clouds to grow to at least that height.

A Sailplane Tour.

Ever since human soaring flight was thought of, let alone achieved, its devotees have looked forward to the day when it will be possible for a motorless aviator to tour around at his own sweet will, visiting the places of his choice. Something very like this state of affairs was achieved for the first time last summer, when the German Research Institute for Soaring Flight organised a circular tour for sailplanes, covering a course of about 700 kilometres (437 miles), starting and finishing at the Griesheim aerodrome at Darmstadt. The conditions laid down were that each separate flight was to start with an aeroplane tow to not more than 500 metres (1,640 feet), and that the course was to be completed within the ten days, June 12th to 21st.

The course is shown on the accompanying map. Ten pilots took part, and this is what they did:—

Ziegler, of Munich, flying the two-seater MILAN (which has a metal fuselage) with a passenger, reached Nürnberg on the first day. It took him three days to get on to Munich, the intermediate nights being spent somewhere between Inglostadt and Donauwörth, and at Dachau, respectively. By the end of the tenth day he had reached Mannheim, only 50 kilometres short of the finishing-post, and still carrying his passenger.

Wiesehöfer, a very young pilot from Munich, flew the MERLIN (a sister of the metal-fuselage ATALANTE). It was his first experience of cross-country flying. On the first day he lost his way to Würzburg; on the third day he got past Nürnberg, and on the fourth reached Eichstätt. But he appears to have improved with practice, for he finished the course at 6.43 p.m. on the very last day, having done the stretch from Munich to Mannheim without intermediate landing.

Friedrichs, of Berlin, and Petersen, of Hanover, both on RHÖNBUSSARDS, got no further than Munich, although both started well. Friedrichs got to Kitzingen the first day, and passed Nürnberg the third day. Petersen nearly reached Nürnberg the first day, but then crashed at Schwabach. Some gliding comrades there helped him to repair the damage.

Wiegmeyer, an experienced soaring pilot, flying a RHÖNSPERBER, achieved Würzburg on the first day, Nürnberg on the second, and got part of the way to Munich on the third. After ten days he had reached Bensheim, near Darmstadt, but had missed out one section of the route.

Osann, like Wiesehöfer, was a very young pilot doing his first distance flight. A Darmstadt pilot, he flew a RHÖNSPERBER, and his first four nights were spent at Nürnberg, Ingolstadt, Dachau and Munich respectively. He arrived back home on the ninth day, an hour and a half after Baur, and third in order at the finishing post.

Karl Baur, of Stuttgart, flying a RHÖNSPERBER, was on the heels of Dittmar (the winner) most of the way round. His progress was as follows: First day, Nürnberg; second day, Dachau; third day, Augsburg, and off again, landing finally near Ulm; fifth day, Böblingen, the aerodrome for Stuttgart; sixth day, Durlach, just before Karlsruhe; seventh day, had trouble with the towing and landed again at Karlsruhe; ninth day, back at Darmstadt.

Heini Dittmar, on a CONDOR II., did best of all, getting round in seven days, as follows: First day, Nürnberg; second day, non-stop to Munich; third day, landed at Augsburg and proceeded to Göppingen; fourth day in Göppingen; fifth day, landed at Böblingen and proceeded to Bruchsal; sixth day, landed before Mannheim with gastric trouble; seventh day, landed at Mannheim and went on to Darmstadt.

There were, in addition, two "also flew's" with RHÖNBUSSARDS, but landed again on the aerodrome.

It would be of interest to give the Air Ministry's reports of wind and cloud at Munich, the only station on the route of which records are given:—

JUNE 12TH.—7 a.m.: wind W., force 2 (Beaufort Scale). Sky ¾ covered with stratus or strato-cumulus; nearly overcast with high cloud. 6 p.m.: wind S.W., force 1; cloud the same.

JUNE 13TH.—7 a.m.: calm; sky half covered with high cloud. 6 p.m.: wind E.N.E., force 1; a trace of cumulus, and sky ¼ covered with high cloud.

JUNE 14TH.—7 a.m.: wind S., force 1; no low cloud; little high cloud. 6 p.m.: wind E.N.E., force 3; no low cloud; sky ¾ covered with high cloud. Conditions reported difficult for those making for Munich.

JUNE 15TH.—A cold front had passed in the night. 7 a.m.: calm; large cumulus and strato-cumulus; sky ¼ covered with low cloud, 9-10ths with high cloud. 6 p.m.: wind N.N.E., force 1; cloud types as before; trace of low cloud; sky ¾ covered with high cloud.

JUNE 16TH.—7 a.m.: calm; no low cloud; sky ¾ covered with high cloud. 6 p.m.: wind N.E., force 2; trace of strato-cumulus, formed from spreading out of cumulus; high cloud as before.

JUNE 17TH.—7 a.m.: wind E.S.E., force 1; no low cloud; 1-10th high cloud. 6 p.m.: wind E.N.E., force 2; large cumulus and strato-cumulus; sky, 1-10th low cloud, half covered with high cloud.

JUNE 18TH.—7 a.m.: calm; no low cloud, ¾ high cloud. 6 p.m.: wind N.E. by E., force 2; large cumulus; trace of low cloud, sky half covered with high cloud.

JUNE 19TH.—No weather reports from Munich. At Kahler Asten, north of Darmstadt, at 7 a.m., wind was E.S.E., force 4; no low cloud; ¼ high cloud.

JUNE 20TH.—7 a.m.: wind E., force 1; no cloud.

JUNE 21ST.—7 a.m.: calm; no low cloud; 1-10th high cloud.

Crossing the Alps.

Not much soaring has been done yet in Alpine regions, and with a view to further investigation of the possibilities, the German Research Institute for Soaring Flight held a series of trials in the latter half of August last year.

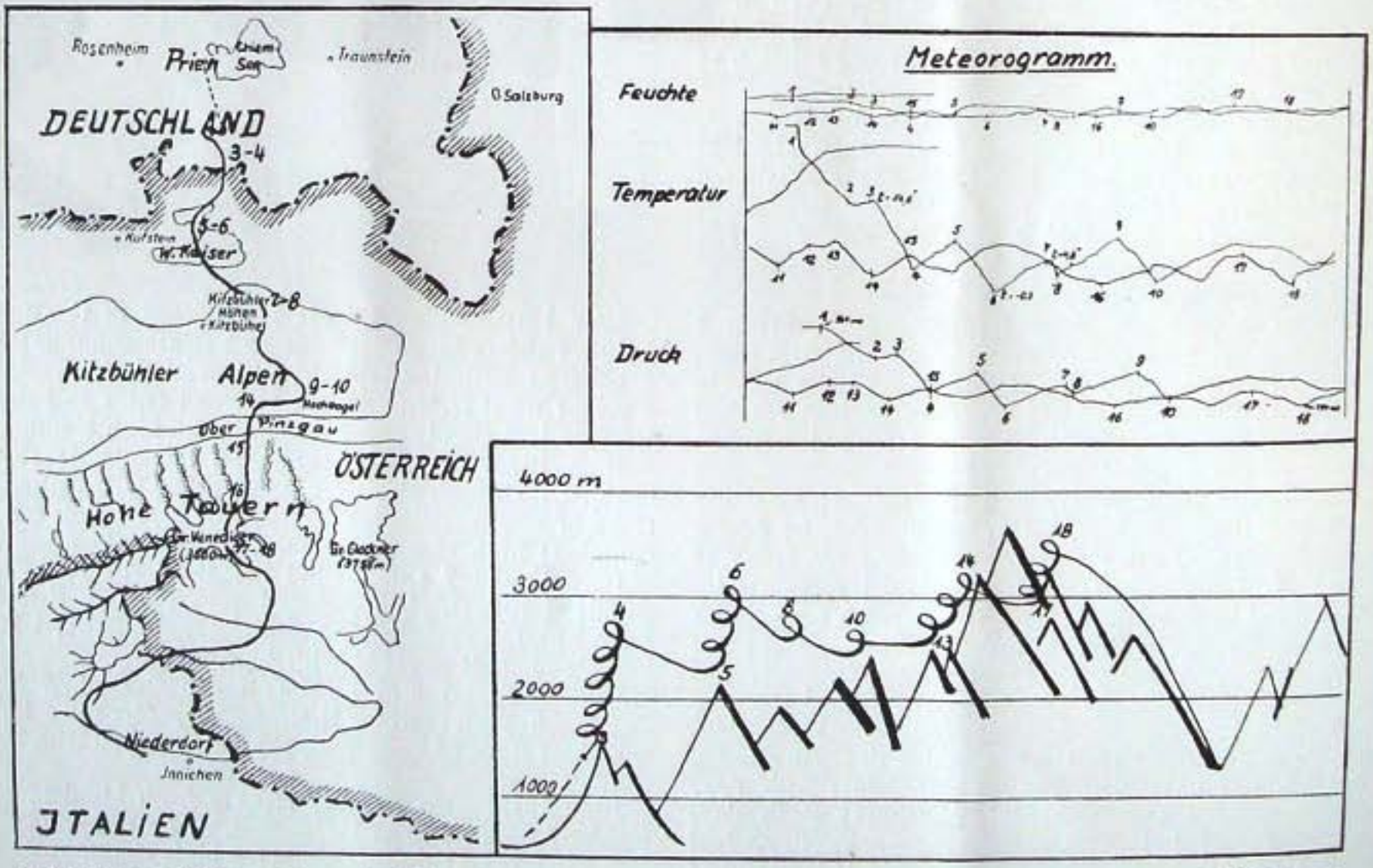
The base of operations was Prien, on the Chiem See, between Munich and Salzburg, and some half dozen sailplanes took part. Each was provided with a towing aeroplane, so that the pilot could make a start whenever he wanted. The most spectacular flight of all was made by Dittmar, who succeeded in crossing the Alps and landing at Niederdorf, near Innichen, in the Pusta valley.

The weather was anti-cyclonic. From August 15th to 18th conditions improved daily. While there were no up-currents over the plains, a small cumulus cloud stood over each high peak. Each day the clouds were larger and the cloud base higher, till at last, on the 19th, small thunder-heads were forming, and the base rose above the alpine summits. In addition, an aeroplane ascent showed that the upper atmosphere had become damper and slightly cooler.

So at noon Dittmar was towed up, and cast off at about 3,300 feet on reaching the first mountains. Here there was little lift at first, but after half an hour he began going up, and gradually rose to 8,900 feet. This decided him to try and cross the Alps, so he went on, partly by slope-soaring (there was a west wind of 4 to 5 m.p.h.) and partly blind-flying in clouds, across the Wilde Kaiser to the Kitsbühel Alps, where lift became difficult to find.

Dittmar's intended route lay over the Gross Glockner, but just at this time a thunderstorm began to form there. He guessed that this storm would draw in all the surrounding air, so that no thermals would form anywhere in the district for the present. This guess proved correct, so he found a suitable mountain and carried on with slope-soaring till the thunderstorm was over, three-quarters of an hour later. Then a big cumulus cloud appeared over his head, so he rose up into it and climbed to 10,200 feet. He needed all this height to cross the Salzach valley (Ober Pinzgau), and was very low down on reaching the Tauern massif the other side. Here he had to climb in the thermal current which, he knew from previous alpine experience, was to be found only a few metres from the sunlit rocky mountain-side. This meant flying as close to it as he dared, which was rather a strain. The inner wing often got most of the life, but he managed to creep gradually up to the top.

The highest point of all, the Gross Venediger, remained to be crossed, and on the way there he sank until he found himself in the most critical situation of his whole flying career. He was shut in by mountains, with no safe landing ground below, and was in desperate straits till at last he found a very turbulent bit of up-current which lifted him out at a quarter of a metre per second. Half an hour later he had reached his maximum height of 10,800 feet, with nothing left to do but a long glide to a landing.



Map, diagram and instrumental records of Heini Dittmar's sailplane flight across the Alps from Germany to Italy on August 19th last year, reproduced from "Der Segelflieger." The meteorogram shows records of humidity, temperature and barometric pressure, the last being equivalent to an altimeter record turned upside-down; it will be seen that each tracing goes "twice round the clock," but the numbers enable corresponding points on the map and diagram to be identified.

An Altitude Specialist.

Climbs of over 10,000 feet in sailplanes are becoming more frequent now in Germany. A pilot who has made a special study of conditions at such heights, owing to his having been a pilot in the meteorologiral service at Breslau since 1933, is Herr Blech, who holds also the qualification of chief gliding instructor. His first high soaring flight was done on June 20th last year, from Breslau. He noticed cumulus forming at mid-day, got into a RHÖNSPERBER, and had himself towed up to the thermals at 800 feet. From there he climbed at 1 to 2 metres a second to the cloud base at 8,530 feet, beyond which he went up somewhat faster. The flight was rather like Seele's described above; the air became very turbulent, and he was sometimes rising at 6 m. and sometimes falling at 6 to 8 m. a second. At 10,200 feet thick hail and sleet began, and it became difficult to keep level. At 11,000 feet he had had enough of it, managed to escape from the cloud over Zobtenberg, and flew back to Breslau.

On June 23rd, the day of Seele's flight in a different part of Germany, Blech tried for a cross-country. Again he got into a cloud of great thickness, rose to 11,220 feet, and again had to leave it because of the hail. It is curious that, on this day of such phenomenal lift, he was unable to proceed very far across country owing to inability to find up-currents, and that he then encountered a cloud street 19 miles long on the return journey—apparently *before* getting his immense height. After this flight Blech decided to make alterations in his RHÖNSPERBER to prevent it getting iced up; but for this difficulty, apparently, he has no objection to flying in hail. He also decided to carry out systematic research on cumulo-nimbus clouds: with what result has been already described last month, for Blech was the pilot who got within 200 metres of the world's height record during the Rhön Competitions. (The figure of 4,480 metres, by the way, was taken from *Der Segelflieger*, but cannot be quite correct, as the world's height record is only 4,325 metres, or 14,190 feet.)

A.E.S.

Accident Report

An accident on August 12th last, due to structural failure in a privately-owned sailplane flying on the Furness Club's site, was reported in this journal, but no details could be given at the time. Mr. W. Butterfield, who was then approved inspector to the club, had not been asked to inspect the machine before it flew, but he was requested subsequently by the Air Ministry to furnish a report and send them the remains of the machine for investigation. The Ministry, however, have not yet communicated their findings either to Mr. Butterfield or to the British Gliding Association; so, without waiting any longer, we think it advisable, in the interests of the gliding movement, to give such facts as were brought out at the inquest on Mr. E. S. Griffis, pilot of the machine.

On Sunday, August 9th, Mr. Griffis brought his ALBATROSS sailplane from Sale by road in an open trailer with no casing round it, and on the way was involved in a collision, whereby one wing of the ALBATROSS was damaged. He arrived late at the Furness site and was given accommodation in the hangar. Mr. Butterfield happened to see the machine that night, and, though not asked to inspect it, "noticed one or two things that needed attention," and "suggested that the only way would be to remove the fabric, turn it back, and inspect every part." Mr. Griffis agreed to give the whole machine a thorough examination, and during the following day himself repaired some ribs on the wing which had been damaged in the road mishap.

On Wednesday, August 12th, the pilot rigged the machine with the help of a club member, tested the controls and found them in good order. The ALBATROSS was launched into a 25-mile-an-hour wind by means of a car driven by Mr. Frank Charles, but after it had proceeded about 200 yards, and was flying at a height of 100 to 150 feet, the right wing was seen to fold upwards, and, according to one witness, become detached, and the machine dived to the ground. Afterwards, both wing spars were found "completely fractured, and this part had been dragged back like a hinge, lying parallel with the fuselage."

The facts suggest, therefore, as a possible cause of the accident, that the wing spars were damaged in the road collision, and that the damage passed unnoticed when the wing was being repaired. The machine was six years old, and, though it had been renovated and strengthened early in the previous year, it was alleged not to have been carrying a B.G.A. Certificate of Airworthiness label.

International Competitions

As we go to press, news comes of important decisions taken at a meeting of the Istus (International Commission for the Study of Motorless Flight) which has just been held in Paris.

Dr. Georgii, the President, announced that an international gliding meeting would be held at the Wasserkuppe, in Germany, from Sunday, July 4th, to Sunday, July 18th, this year.

Each nation is to be allowed five machines, though more than one pilot per machine may be entered. There are to be two classes, one for "Silver C" pilots and the other for "C" pilots.

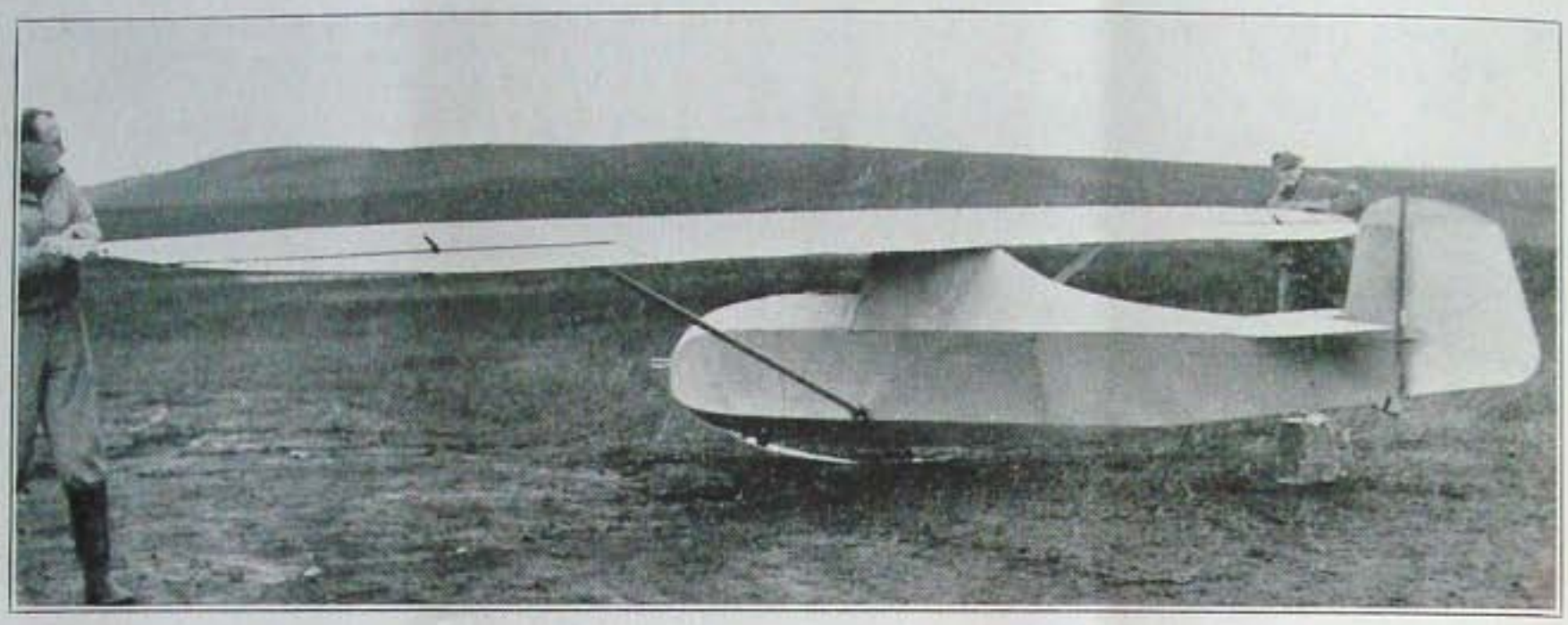
The organising body is to defray the cost of transport of machines and pilots within the German borders, also hotel and other expenses at the meeting. This is to be in place of the usual large money prizes, and is a policy which will be heartily endorsed in this country.

In view of this meeting, the Soaring Society of America has deferred its proposed international meeting until next year, when it will be held at Elmira, N.Y.

Further details will be published in due course.

An international meeting is to be held on the Gaisberg, near Salzburg, Austria, from Wednesday, May 26th, to Monday, May 1st, concurrent with the next Istus meeting, which is to be also in Salzburg. At the same time a meeting of model aeroplane enthusiasts will be held.

"Ha Siebzehn" Naturalised



"Nimbus" is the name given to this sailplane by its constructors, B. H. T. Olver and M. F. Barnes. It is the first machine in this country to be built to the well-known Austrian design "H.17"—pronounced "Ha Siebzehn" in its country of origin.

[*The small but efficient Austrian sailplane "H 17" aroused much interest when it was described in* The Sailplane *18 months ago, and two members of the Midland Gliding Club set about building one of the type. Last August one of them, Mr. Olver, described in this journal the problems he met with in its construction, and now his colleague, Mr. Barnes, gives an account of their experiences with the machine, and of the way in which it handles in the air.*—Ed.]

IT would be difficult to say just why Olver and I decided to build a machine hitherto untried in this country, and of which little information could be gathered, but no doubt the brief specification and photographs of "H 17" given in the July, 1935, issue of The Sailplane made a strong impression.

Early in the spring of 1936 we decided that we just had to possess our own machine, but as both our bank balances were circling in an overdraft, the only solution was to build one. Our choice of type was necessarily limited to those machines for which drawings were available, namely: Wren, Grunau Baby, or "H 17," as we knew not enough to risk our own designs. Finally, the latter machine was selected subconsciously for the following reasons:—

(*a*) Material costs were low (very important).

(*b*) The machine was of the intermediate sailplane class with moderate performance which suited our requirements.

(*c*) Design was simple and straightforward, making construction relatively easy—a major consideration.

(*d*) Apart from ease of handling, the small overall dimensions and low weight made an indefinable appeal.

(*e*) Perhaps a sneaking desire to possess a little something which others hadn't got!

Apart from undertaking minor repairs we had no experience of 'plane construction, but when building was started in March of last year, we rapidly acquired technique and encountered no serious setback. The work occupied all our spare time until July, when we had by then finished the fuselage, tail surfaces, ribs, etc., and assembled one wing. In the hope that we might enter the machine for the Annual Competitions, or at least have it completed before the summer ended, we packed off the bits to Slingsby for finishing. At the same time we co-opted Thwaite into the syndicate for rather obvious reasons. As it happened, "H 17" was not ready for the Competitions, but it was test-flown by Olver at Sutton Bank at the end of August.

A general description of the machine will be found in the above-mentioned issue of The Sailplane, but it might be well to mention that Hütter designed it as an intermediate sailplane of simple and strong construction, capable of withstanding the turbulent conditions met with in the Austrian Alps. He maintains that for such conditions, strength, ease of handling and rapidly responsive controls are more important than a super gliding angle. Moreover, as the inertia of a wing increases as the square of the span, it is necessary to have as small span as possible if rapid response to control is required. This last condition is the real reason for the tiny proportions of the machine.

The gliding angle is given as 1 in 17, which incidentally accounts for the designation of the machine, and the sinking speed is approximately 3 ft. per sec. at a flying speed of 33 m.p.h. A factor of safety of 11 is claimed, which makes "H 17" capable of aerobatics, aero-towing at 75 m.p.h., and auto-towing at 50 m.p.h.

It may be argued that the conditions met with in the Austrian Alps are not likely to be found in England, but the high winds of this last autumn have made the Long Mynd a particularly lively spot, and "H 17" has been flown when other machines have appreciated the hangar's shelter.

It is impossible to fly "H 17," or "Nimbus" (official) or "The Tiddler" (unofficial Wynnism)—as she is variously named—without realising immediately a sense of security and confidence in its strength and compact-

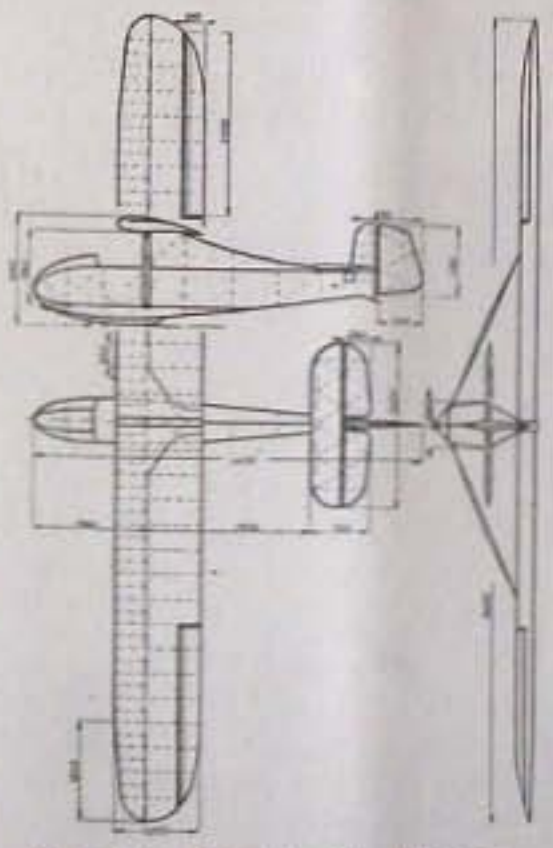
ness. By peeping round the main bulkhead, you can catch sight of the absurd little tailplane following you around, almost within arm's reach. The wings are but wee stabs to port and starboard—the control surfaces being just flippant suggestions of the real thing. But do they work! Think of turning, and you give a creditable impersonation of the "this is, that was" advertisement by Shell. The rudder is extremely powerful, making a flat turn quite possible, and when the stick is pulled back in a steeply banked turn the machine simply whips round. In a sideslip the nose comes up and stays up just as long as you wish. We have yet to find a single vice.

All this does not mean that "H 17" is a perfect machine. We are frankly a little disappointed to note how quickly her sinking speed increases with flying speed, but we suspect that the trim could be much improved, and modifications we have in view will no doubt minimise the disadvantage. The addition of a cockpit cover has helped both the performance and appearance considerably.

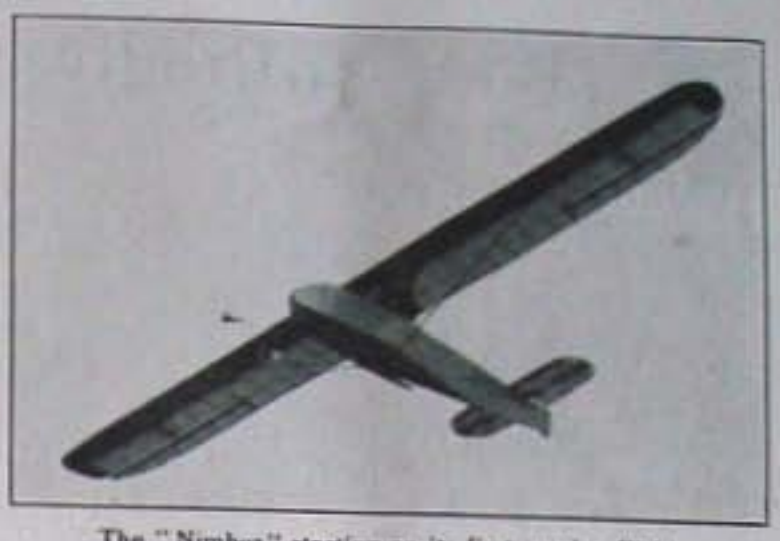
A few hours' soaring is necessary before you awaken to the real joy of the machine, for at first she appears restive, due no doubt to over-controlling prompted by the curiously buoyant response to variations of up-currents. Later you really do appreciate the instantaneous effect of the controls, which you feel sure would immediately extricate the machine from any exciting attitude or mess.

One of the most delightful features is the ease with which the machine can be handled on the ground. Two men can carry it fully rigged for appreciable distances without fatigue. We find, too, that a "push" launch is a simple affair in an appropriate wind, and this we often do, although the method has its disadvantages in the hands of the inexperienced.

Both the air-speed indicator and variometer are converted R.A.F. pattern A.S.I.'s, and they function admirably, although the variometer is not as sensitive as could be wished. However, by adjusting a variable leak fitted on the front of the dash, the instrument



Plan of the original Austrian "H.17."



The "Nimbus" starting on its first soaring flight.

becomes most useful. As a sales feature Hütter remarks that "der Rumpf bietet reichlich Platz für grösser Piloten," indicating that there is plenty of room in the cockpit for a fat pilot, which is quite true laterally, but he forgets the long-legged unfortunates—so that anyone building a similar machine should put the rudder pedals at least four inches further forward. We intend to do this shortly.

In detail the machine is a delight to dissect, and although we were inclined to argue with the Hütter brothers when trying to unravel the drawings, we eventually found good reason and sound design in every feature. Zinc templates were made of every fitting so that anyone wishing to build a similar machine may use them, and it may also be worth knowing that the metal-worker who made our fittings is quite prepared to make more at the same attractive terms extended to ourselves.

To summarise, "H 17" is in our opinion an ideal home-builder's machine of the intermediate sailplane class. Its simple construction and handiness make it well worth considering as a club training machine, and we know that many are being built elsewhere. We have already had letters from two Canadian builders seeking guidance, and we have no doubt at all that our first-born will be the forerunner of several more in this country and possibly, like the GRUNAU BABY, it will be the basis of several variations *de luxe*.

MARSHALL F. BARNES.

Correspondence

Publication of a few letters from readers every month would add variety to the contents of this journal. Most of those we receive, however, are too diffuse for inclusion, as we have not overmuch space to spare.

Unpractised writers should not send the first draft of a letter to the Editor, but should revise it with a view to saying just as much in half the number of words, which will often be found possible. Letters putting forward scientific theories should be short, unless the writer has given serious study to the subject he is discussing.

Readers who are in difficulties over questions of pilotage, construction, etc., are invited to seek advice from others through our correspondence columns.

Progress in Holland

DURING the past year the sport of gliding in Holland has been expanding steadily, due to the introduction of aero-towing, which made longer thermal flights and aerobatic demonstrations possible, and to the adoption of mechanical launching, which makes for better and safer instruction in this country without hills.

There are now clubs in all parts of the country, and new ones are being founded. The principal clubs are those of The Hague, Rotterdam, Leyden and Amsterdam in the middle west; Walcheren (near Flushing), Eindhoven, Heerlen in the south; Arnhem, Deventer in the centre; Twente in the east, and Groningen in the north of Holland.

Most of these clubs use winch-launching; four clubs employ car-towing with success, and at The Hague regular aero-towing is done.

The machines used for primary training are the GRUNAU 9, or E.S.G., which is becoming popular owing to its safe flying qualities, and the ZÖGLING. The GRUNAU BABY is the sailplane type used for secondary instruction and aero-towing. For dual instruction in aero-towing a GRUNAU 8 two-seater is used.

This aero-towing is done at the aerodrome of Ypenburg (pronounced "Ee'pin burgh"), an aerodrome on the outskirts of The Hague. For an aero-tow on the two-seater 6 guilders are charged; for a tow in a GRUNAU BABY about 4 guilders. Fifteen "C" licences have been obtained by aero-towing.

For the first time the gliding movement got a subsidy from the *Nationaal luchtvaartfonds*, and the costs of aero-towing were partially reimbursed, thus making it less expensive.

A National Competition

A meeting and competition were held in Twente, organised by the Association of Dutch Gliding Clubs. A great deal of instruction and aero-towing were done, and the best flight of the year was performed at this meeting by Mr. Hoekstra on a GRUNAU BABY, starting by aero-tow; he covered a distance of 120 km. (75 miles) in thermal soaring.

Another flight, specially hopeful for those clubs which are still trying to get thermal connection from winch or car launches, was that of a German "Silver C" pilot, Herr Ockers, flying a RHÖNADLER. After being launched with a winch, he got into a thermal and climbed in about five minutes from 600 to 1,400 feet. It was on June 2nd, a cold day with the sky covered with grey clouds, so nobody was expecting any thermal lift.

In 1937 a camp and competition will again be held, this time at Teuge, the aerodrome of Deventer. Money prizes and trophies are to be awarded for the best flights during the camp, the best team work of the clubs, and for the best flight of the year. This will bring all Dutch gliding enthusiasts together there during the camp, which is to be held from July 24th to August 15th. High performance machines may perhaps be there too, for there is an increasing interest in machines of better performance than the GRUNAU BABY, which is at present the only sailplane used in Holland.

So the Dutch gliding enthusiasts are beginning the year full of hope, and send their best wishes to their British friends and their sport.

J. HUGENHOLTZ.

Errata, 1936

The following corrections should be made in the 1936 volume of THE SAILPLANE AND GLIDER :—

FEBRUARY, page 25.—"B" certificate No. 364 (J. W. S. Pringle) should have been listed as a "C" certificate.

FEBRUARY, page 22, and MARCH, page 38.—In the table, the span of the GRUNAU BABY II. should be 44½ feet.

APRIL, page 54.—Add to the list of cross-country flights in 1935 the following: "July 21st.—G. O. Smith in GOLDEN WREN, Bradwell Edge to Staveley, 17 miles."

APRIL, page 64.—Under "Notes to Remember When Splicing": the fibre core should *not* be removed.

MAY, page 82.—Under "Flights on April 12th": the duration of Mr. Richardson's cross-country flight was 3 hrs. 30 mins., not 2 hrs. 45 mins.

JUNE, page 111, 2nd column, 7th line.—For "removing" read "displacing."

JULY, page 124, under "Stop Press"; and AUGUST, page 151, in the map.—Mr. Wills's distance record was set up on July 5th, not 6th.

AUGUST, page 157.—"B" certificate No. 270 (L. C. Dugdale) should have been listed as a "C" certificate.

AUGUST, page 160.—Under "Monday, July 13th"; in the line "descended vertically to a spot, landing like a lift," the comma should be a hyphen.

SEPTEMBER, page 170.—The span of the KIRBY KITE is 47 feet, not 57 feet.

OCTOBER, page 204.—"C" certificate No. 457 (C. A. Bill) was obtained on 2.8.36.

OCTOBER, page 298.—In the caption to the picture, the hyphen dividing the word "formating" between "r" and "m" gives the impression that it has something to do with the mating season; actually the verb "to formate" means to fly in formation.

NOVEMBER, page 237, end of last paragraph but one.—For "direction and rotation" read "direction of rotation." Page 238, last paragraph but one, five lines from end: for "clockwise spiral" read "anti-clockwise spiral."

News from the Clubs

List of Gliding Clubs

The last full list of British Gliding Clubs and their secretaries' addresses were given in our issue of September, 1936, page 192. Additions and alterations were published in October (p. 216) and November (p. 239). We shall shortly be publishing another full list, but meanwhile the following further additions and alterations should be noted:—

New Clubs.

BEACON HILL GLIDING AND AERO CLUB.—W. P. Harris, 22, Hamlet Road, Southend, Essex.

COTSWOLD GLIDING CLUB.—J. D. Pether, Culver's Close, Burford, Oxon.

Change of Address.

DERBYSHIRE AND LANCASHIRE GLIDING CLUB.—C. Kaye, 63, Clarkhouse Road, Sheffield.

HULL GLIDING CLUB.—R. E. Havercroft, 216, Park Avenue, Hull.

Midland Gliding Club

November 8th.—An unpromising day of low clouds and rain, but the slight S.W. breeze freshened enough to encourage Davies to be launched in the KITE. Before he had made half a beat it was evident that he would land at the bottom. Most of those available went down to collect the KITE. Olver arrived just after their departure and took FALCON II. into the air for the sole purpose of jeering at the descending caravan from above. He salted the performance by disappearing before the retrieving crew's return at dusk.

November 15th.—Blustering S.W. wind which chopped round to south at intervals. Edwards landed after the first flight in the KITE to report that conditions were fair at the north end but bumpy and unreliable at the south.

Wynne gave passenger flights in FALCON III. and managed to keep above all the other machines in spite of the very rough going. Reilly in the KITE and Barnes in H.17 were indiscreet enough to attempt to reach the south end of the Mynd; Reilly made it, but could not return before being pushed into the valley by really vicious down-draught. He landed in a horrid field and only missed the final hedge by dropping a wing tip and ground-looping. The barbed wire marks on the strut are convincing exhibits for his story. Barnes was driven down below the ridge, but managed to put the machine back on the hill-top by making a down-wind landing in a 30 m.p.h. following wind.

Thwaite, Testar, Stanford and others flew FALCON II. and the KITE, but undoubtedly Berlyn created the most interest by gaining his "A" and "B" in a KADET, although his previous experience of gliding amounted to two ground hops at Handsworth.

Berlyn has 3,000 hours power flying to his credit, and he made the agonised KADET bowl like a Schneider Cup machine. Wise-acres wagged their heads over him to some effect, and this light-heartedness was further damped by a low cloud and sticky bottom landing which finished the proceedings for the day.

December 5th and 6th.—As soaring had been impossible during the two previous week-ends, five members determined to sleep in the hangar on Saturday night and make an early morning start. There was a steady 20 m.p.h. westerly breeze blowing, and Olver managed to make a 15 minute flight on the Saturday afternoon.

The night was bitterly cold and in the morning snow lay six inches deep all over the Mynd.

Everall and Edwards flew FALCONS I. and II. respectively, and were in the air together, which was creditable considering that Olver, Thwaite and Stanford were the only crew. Apparently the lift was extraordinarily smooth, but whether this had any connection with the fall of snow or was just a coincidence, we must leave to the weather wise to decide.

December 19th and 20th.—The wind was rather southerly, which only allowed soaring over the Asterton Gully, Barnes, who has been wont to thump the tub to the tune of "Bottom landings are totally unnecessary," broke his hitherto clean record by taking FALCON II. and H17 down to the valley for a change of air. On the "Falcon" occasion he was found by the retrieving crew "shooing" off a herd of inquisitive bullocks (Barnes insists that they were bulls).

The Midland Club's hangar and clubhouse photographed from the club's "Falcon III": showing also the slope of the Long Mynd stretching away to the south. The entire soaring ridge is six miles long, and the steepest part of the slope is 700 feet high.

Later, Wynne, Jerry Edwards and Olver did about 30 minutes each in FALCON I. and H17.

December 26th and 27th.—A few optimists spent the week-end in the club house vainly hoping that the S.E. wind would move west. Phil Everall and Olver were given a winch launch apiece in a KADET, after which the winch clutch gave up the ghost. Reilly and John Everall rode up to the hangar on a hired pair of saddle horses; their lateral control lacked something, however, and the horses returned to their stables unattended. No certificates were granted, as the landings were not considered normal. "Doc" Slater paid us a visit and we were disappointed that no soaring could be done. He has promised to call again, when we hope that conditions will be better.

Handsworth Ground.

Training at Handsworth has continued as usual, and by means of strong auto-launches and auto-tows quite lengthy flights have been made. On November 29th Humphreys obtained an "A" with a flight of 38 seconds, and our schoolboy member, Sanders, made two excellent flights of 48 and 50 seconds respectively. On the second flight he just avoided the golf course by means of an almost professional side-slip. There is no doubt that he has studied the subject pretty thoroughly and is most promising.

December 19th and 20th.—A S.W. wind and a new launching car brought a batch of certificates. John Everall and Durose obtained "A's" with 40 seconds and 42 seconds respectively. Nyborg collected both legs towards his "B" with flights of 48 and 50 seconds, and Sanders passed his "B" test with a flight of 70 seconds, including the necessary evolutions. Young Bill Hardwick was given his first hops as a flying member and proved himself to be a chip of the old block. We expect him to be flying his father's FALCON quite shortly.

Hereford Branch.

Friends and acquaintances of Mr. L. C. Dugdale will be pleased to hear that he is out and about again. At present he is cheerfully dot-and-carrying around his old haunts in Kent (where some heretics are trying to convert him to the "little engine" heresy). The extensive repairs to his undercarriage have been a great success. Although not done at "Sling's" one member has a real, good-as-new workshop finish. The other, which had to be built up rather a lot, still has the clamps on

waiting for the glue to harden. We are hoping for the C. of A. shortly, so that we can get it—sorry, I mean him—into the air again.

The club is carrying on steadily with its primary training at Haywood, with occasional trips to Long Mynd for a spot of "dual" in FALCON III. We are patiently waiting for a spell of reasonable weather, when we hope to get a good crop of certificates.

The R. F. D. has stood up to hard knocks and ham-hands wonderfully. So far, in the eight months we have had it, it has had over 1,100 launches without a major crash (touch wood). Not even a landing wire has given up the ghost, though how they have stood it the Good Lord—and perhaps Mr. Slingsby—alone know.

London Gliding Club

Sunday, December 6th.—The season's first snowfall had been deposited during the night by an air current coming direct from the Arctic Circle, but most of it soon melted as the wind backed to W.N.W.

Nearly 20 hours' soaring was done. Neilan turned up and flew Hiscox's KIRBY KITE, getting 700 feet from hill lift, and up to 1,200 feet from slight cloud lift under ragged masses which could hardly be called cumulus. From this height he did a bit of looping. In spite of a stiff wind, all types of soaring machines went up, including DAGLINGS. Seth Smith, in his SCAUP (TOTTERNHOE type), found that he got no wind in his face when flying it; evidently the air stream gets lifted over his head owing to the shape of the nose (the SCAUP's, not his). Armstrong took his KITE to the top in its trailer and rigged it there; his original intention was to save time in getting into the air, but one of the main pins dropped into an inaccessible part of the fuselage.

The FALCON III. provided the day's excitement when its pilot neglected to drop the wheels after the take-off. (A FALCON pilot who thinks his wheels aren't there when they are, is like an aeroplane pilot who thinks they are there when they aren't.) His attention being called by gesticulations and hootings, he dropped them from 100 feet; they bounced prettily and remained intact.

Sunday, December 13th.—This time the FALCON III. dropped its wheels too soon and made an "intermediate landing" on them with another part of the fuselage. Neilan again looped Hiscox's KITE.

The forecasted wind was "north-west to west." The actual wind was south, backing to south-east. Soaring was just possible at first over the "Bowl."

A visitor was Cecil Lewis, author of that best-seller, "Sagittarius Rising." He was delighted with the atmosphere of the place: he could almost imagine his book had come to life, and he was once more in the world of "Camels" and "Longhorns."

Sunday, December 20th.—Soaring to-day and yesterday had to be done over the Bowl, as there was so much south in the wind, though to-day some pilots were able to creep quite a distance along the usual slope although the wind apparently blew parallel to it. They would then charge down-wind back to the Bowl, having to start turning back into wind long before they got there, so as to finish the turn just as the small area of lift was reached. A few seconds too late, and one would be too far down-wind to get back; the safest thing to do was to turn too soon, pull up the nose, and drift backwards into the Bowl.

It will be gathered that the wind was pretty fierce. It lifted the SCUD off the ground and deposited it gently again. But the DESOUTTER G.B. was blown right over, in spite of having two people in attendance.

Thomas took up his COXBOX three times on the winch. The first time he left the release till rather late; the winch team played for safety and cut the cable, and at that precise moment the pilot pulled his release; feeling a jerk, he thought the cable was off—but it wasn't. Being unable to see below, he cruised happily round with the cable just missing all the various bushes, and landed intact.

The FALCON III. slipped its cable while pointing skywards at a low height, but the machine has no vices, and Murray easily extricated himself from a difficult situation.

Slingsby and Sproule paid a visit from Yorkshire and both flew. Slingsby's steep climb on the winch caused a bit of emotion until someone explained that they always do it like that in Yorkshire.

Wills turned up for the first time after his South African trip, and had some amusing tales to tell.

The new Beacon Hill Gliding Club came in force, driven from Essex in a charabanc by one of their own members. Unfortunately it was too rough to show them any primary training.

Sunday, December 27th.—To get a balanced view of club activities, read the "Summary of Flying" rather than the above "News," which is only news because it is atypical. To-day, at any rate, all went smoothly, including the wind which, though strong, was free from thermal reinforcement, so nobody could get much above 300 feet.

New Buildings.—The cost of a new hangar and workshop is to be borne by the father of the late "Tony" Evans, as stated last month. The parents of Miss Goldney, who, with Mr. Evans, lost her life in a road accident in November, have also generously expressed a wish to establish a memorial to their daughter, and are defraying the cost of an office and store room. The hangar and workshop will adjoin the back of the present building, the northern half being the hangar and the southern the workshop. Against the outer, or west, wall of this will be built the office and store room. The club will be very grateful for these new buildings, which are urgently needed.

Summary of Flying.

Date.	Ground-hops.	Winch launches.	Hilltop launches.	Flying Time. h.	m.	s.
Dec. 1, Tuesday ...	—	—	2	—	59	5
,, 2, Wednesday ...	9	—	3	2	3	0
,, 5, Saturday ...	11	—	15	7	27	0
,, 6, Sunday ...	16	51		19	53	55
Dec. 12, Saturday ...	14	—	—	—	—	—
,, 13, Sunday ...	52	8	—	—	22	0
Dec. 15, Tuesday ...	4	—	1	—	2	0
,, 16, Wednesday ...	—	—	1	—	53	0
,, 19, Saturday ...	11	—	10	1	53	0
,, 20, Sunday ...	16	26		10	25	0
Dec. 23, Wednesday ...	3	—	2	—	2	39
,, 26, Saturday ...	17	—	—	—	—	—
,, 27, Sunday ...	24	6	—	—	12	—

Certificate Flights.

December 1st.—Lacey, "C."

December 6th.—Koch, "A"; Naylor, "A"; Rutherford, "A"; Holt, "C."

December 23rd.—Crease, "A."

Totals.

Week ending	*Launches*	*Flying Time*	*Certificates*
December 6th ...	107	30 hrs. 23 mins.	5
December 13th ...	74	22 mins.	–
December 20th ...	69	13 hrs. 13 mins.	–
December 27th ...	52	15 mins.	1

Flying Time for Year.—This amounts to definitely over 700 hours, but it is only since the appointment of our professional instructor, Mr. Hervey, last May, that full records have been kept. In the seven months from May 30th to December 27th inclusive, the total time, excluding ground-hops, is 535 hours 17½ minutes.

Cotswold Gliding Club

This club was formed just before Christmas at a meeting held in Burford, at which Captain Coutts, of Witney, took the chair, and Miss Sinclair, secretary of the Kent Gliding Club, acted as secretary. Mr. C. T. Cuss gave an account of a gliding club which he formerly ran in Wiltshire.

The club has obtained a DICKSON primary machine, and news of flying activities will be given in the next issue.

The Hon. Secretary is Mr. D. J. Pether, of Culver's Close, Burford, Oxon, who took his "A" in Germany last summer, and the club is fortunate in having the experience of Mr. A. F. Houlberg, Chairman of the former Oxford Gliding Club, to call upon.

Cornwall Gliding Club

The Cornwall Club's "Keebling" in action. The club hopes to soar this machine some day, having a slope facing south, but the necessary wind has so far failed to blow in the right direction on Sundays.

Southdown Gliding Club

November 1st.—Wind N.N.W., 5-10 m.p.h. Auto-towed flying in the PRÜFLING was done by Hatcher, Copeland, and Jameson. Owing to wind direction, no soaring was possible, but several minutes were clocked on each of the many flights made. Dunning's GRUNAU put in some very pretty work. Spot landing in the TWIN was carried on during the afternoon. The primary trainer operated over the entire week-end.

November 15th.—Wind W., 10-20 m.p.h., very gusty. Both the GRUNAU and the PRÜFLING were up in the morning: GRUNAU, Stevens; PRÜFLING, Hatcher and Copeland. Weather was far from comfortable, and pilots were put thoroughly on their mettle. Goodwin and W. Hatcher flew the TWIN from the West Slope, finding in one minute more bumps than in an hour's ordinary flying.

November 22nd.—Wind S.E., 5-10 m.p.h. The B.A.C. VII., after extensive repairs, was flown again by Little. In place of the undercart, a skid has now been fitted, giving her a very pleasing line. Several test flights were made from the E. hill, the machine being most easy in the air, keeping her height in an almost negligible wind.

Goodwin qualified for his "B" in the TWIN, doing a whole beat of the hill, making his turns, and "spotting" her. A member was delayed on his last flight, and landed in the dark with the aid of car lights.

Very good times would have been clocked had the wind been stronger, but Dunning, in his GRUNAU, put up the best show, doing five beats of the hill before having to put her down in the valley.

The trainer, Rubick i/c, put in a lot of good work both on Saturday and Sunday.

November 29th.—Wind W.N.W., 15-25 m.p.h., gusty. The Primary did a few hops in the valley, and the TWIN was flown from the W. slope, until a cold drizzle caused flying to be abandoned.

Jersey Gliding Club

November 29th.—We were delighted to have Mr. G. A. Little with us. He came down on behalf of the B.G.A. to make a report on our new site at Les Landes. This we are glad to state is favourable. We are now waiting for a few formalities to be gone through and hope to take possession of the site by the end of next month. There we sha'l be able to winch-launch and, with west and northerly winds, will have a large tract of cliffs for wind soaring.

We have also been rented the largest army hut on the site, for which permission has been granted to use as a club house, and to convert the rest into a hangar. This new site is going to be a great asset to the club, and we are greatly indebted to His Excellency, the Lt.-Governor of Jersey, Major-General H. de C. Martelli, D.S.O., for his great and sympathetic interest in the club.

In the morning Mr. Little was taken over the new site, and in the afternoon Messrs. Culley, Wagstaffe, and Thomas made flights from the Gulley in the DAGLING. Mr. Litt'e also made a trial flight, much to the delight of the spectators, who were greatly impressed by his superb handling of the machine.

December 13th.—Perfect S.S.W. wind. Carter was launched in his SCUD at 11.40 and came down at 12.45 on the top of the hill for the first time. Wagstaffe, Culley, Thomas, and Bisson flew the DAGLING from the Gulley. The wind increased in the afternoon and Carter was up again in his SCUD for just over one hour.

Decmeber 20th.—A bad day for us! With little wind, Carter was launched off the top in the GREEN SCUD; he made one beat up the hill, but on turning lost height rapidly. Seeing what was happening he endeavoured to make a sharp turn, but unfortunately got behind some fir trees, which are a definite disadvantage at our present site. In turning there he got right away from the wind and spun down from about 80 feet. The machine was very bad'y damaged, and Carter completely knocked out. At first his injuries were thought to be serious, but after a week in bed we are glad to say he is getting about again, and we hope to see him flying the FALCON soon, the arrival of which is impatiently awaited.

However, the accident did not deter our members from flying, and during the morning flights were made in the DAGLING. In the afternoon the ZÖGLING was taken out and flown from the Gulley.

Beacon Hill Gliding and Aero Club

The club has a site for primary work at Canewdon, Essex, where the president, who is also the landlord, has put down a hard road to the field. A training machine has now been practically comp'eted by members.

The instructor is Mr. N. L. Derham, who was trained at Rossitten, East Prussia, in 1930.

The club is operated chiefly for the benefit of the man who is unable to afford flying in the ordinary way, the annual subscription being 10s. 6d. There is a centrally situated workshop in Southend.

The secretary is Mr. W. P. Harris, 22, Hamlet Road, Southend.

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