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Official Organ of the British Gliding Association

EDITED BY ALAN E. SLATER



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Ten Years of "The Sailplane and Glider"

ON September 6th, 1930, appeared the first issue of THE SAILPLANE AND GLIDER. It was a weekly, costing threepence, and its founder and editor was Thurstan James, technical expert on the editorial staff of *The Aeroplane*. Although that journal gave him time off for his new activities, and put its office organisation at his disposal, Mr. James discovered, nevertheless, that the new venture swallowed up all his leisure hours as well. After a year and a bit he found the double task impossible. He had to decide between earning a living and editing THE SAILPLANE, and chose the former, for he had family responsibilities, as well as his career, to think of.

At the end of June, 1931, THE SAILPLANE AND GLIDER was handed over by Aeronautics, Ltd. (owners of *The Aeroplane*), to the British Gliding Association, who turned it into a fortnightly at sixpence. Mr. James resigned his editorship in late October; two issues were got out by the B.G.A. staff, and then a new editor was found in Captain F. Entwistle, Superintendent of the Aviation Division of the Meteorological Office, who had been in charge of meteorology at the Itford soaring meeting of 1922 and retained his interest in soaring flight ever since.

For a year and a quarter Captain Entwistle worked valiantly, finding he had to give up not only his leisure hours, but sometimes his sleep as well. But an additional complication arose when the R.A.F. decided to attempt a world's distance record, and needed Captain Entwistle's presence at the starting point to decide the exact moment when the weather was favourable over the whole route to the Cape. Unfortunately the weather refused to oblige for months and months, and the editorial office was continually on the move between London and Lincolnshire.

By January, 1933, the same choice faced Captain Entwistle as had earlier faced Mr. James, and, being similarly circumstanced, he made the same decision.

At this point it becomes necessary for once to discard, on this page, the editorial "we." Being asked to take on the job, I listened to the usual "friends" who are always ready to discourage one from doing anything enterprising, and decided as usual to discard their advice.

It was three years before I was faced with the same dilemma as the two previous editors, and the choice had to be made between THE SAILPLANE and "a job." This time THE SAILPLANE won, and it remained to find living quarters on top of the soaring ridge of the nearest gliding club, and there to try and scrape together a living entirely out of gliding.

THE SAILPLANE AND GLIDER ceased to appear fortnightly in August, 1933, when the B.G.A. could no longer afford it, and changed it to a monthly at a shilling, and when that also became financially impossible in July, 1934, the paper became the property of Mr. H. O. Davies, who has kept it going ever since.

Throughout all these changes the editorial outlook has remained consistent in regarding the gliding movement as its own justification. After all, anybody who looks on it as a means to some other end is not likely to be sufficiently interested in its doings to edit a paper on the subject.

Mr. James's first editorial, ten years ago, starts with a résumé of gliding history, in the hope of drumming some sense of tradition into new recruits. He then tells the clubs they have given quite enough public demonstrations of open primaries: "These aerial toboggans have lost their power to thrill, which was chiefly due to the absurd accelerations produced by excessive man-power applied to ropes. Clubs should see that their shows at least demonstrate the elementary principles of soaring flight." And in a later issue he is still hard at it: "Air-currents, meteorology and kindred subjects are the stuff of which our dreams are made come true."

In Captain Entwistle's first leading article, on December 4th, 1931, we find him saying: "The aim of every member should be not only to get into the air *but to be able to stay there*, thereby opening up for himself a new vista filled with endless possibilities."

My own first editorial, on February 3rd, 1933, begins by taking up a phrase used by a correspondent: "gliding and flying proper," and asks: "Why this distinction? . . . . It is, indeed, only too true that the public has always regarded as something not quite 'proper' the idea of flying without an engine; it is, unfortunately, equally true that we are all to some extent infected with the same point of view, and have never really shaken it off. It should be the aim of THE SAILPLANE to change all that."

I was hoping, in this article, to go on to describe the difference between THE SAILPLANE as it has been, and my ideal of what it should be, but there is not enough space. There never has been enough space, and that is one reason for the difference. A.E.S.

Flying Officer J. T. M. Parker

We regret to report the death on Active Service of John T. M. Parker, who was one of the leading British sailplane pilots, and more recently an instructor in the R.A.F. Volunteer Reserve.

John Parker was the eldest son of Commander the Hon. Trevor and Mrs. Parker, of Turners Hill, Sussex. His "A" certificate was obtained at the Southdown Club, but most of his flying was done with the Cambridge University Gliding Club, where he made unusually rapid progress as an *ab initio* in 1937. In the National Contests of 1938 he flew an H-17 and the club KIRBY KITE, and in the latter achieved "Silver C" height and distance by flying 56 miles from Dunstable to Southend, reaching 4,200 ft. on the way. He thus became the 41st British "Silver C" pilot, with the international number 1,008. He flew again in the 1939 Contests at Bradwell Edge. John Parker's strikingly tall figure was thus familiar at a number of different clubs, and his genial personality will be missed by a large circle of friends.

Lieut. A. N. Young, R.N.

We regret to read that Lieut. Anthony N. Young, holder of the British soaring duration record, has been reported killed from "hazard of war, not connected with any particular operation or ship." A pilot in the Fleet Air Arm, his first introduction to gliding was when he joined the summer camp of the Midland Gliding Club in 1938. After only four days' gliding experience Anthony Young was put into the FALCON II, which he had never flown before, and launched an hour before sunrise on August 18th. He landed at 9.2 p.m. after staying up 15 hours 47 minutes.

The Latest Text-Book

The book, "Flight Without Power," by L. B. Barringer, which appeared this year, is now on sale in Great Britain, published by Sir Isaac Pitman & Sons, Ltd., at 17s. 6d. Copies can be obtained from the offices of THE SAILPLANE AND GLIDER, at 68, Victoria Street, London, S.W.1. Postage is 7d. extra.

We reviewed the book in the May/June issue. It is written by a number of American experts, and is easily the most complete and up-to-date book on the subject in the English language. The following are the chapter headings :—

I. History of Motorless Flight, by N. H. Randers-Pehrson. II. Aerodynamics, by Paul Schweizer and others. III. Types of Gliders, by Lewin B. Barringer. IV. Design, Construction and Maintenance, by Paul and Ernest Schweizer (the longest chapter in the book). V. Launching Methods, by L. B. Barringer. VI. Soaring Meteorology, by Karl O. Lange. VII. Instruments, by Charles H. Colvin.

L. B. Barringer then writes the remaining chapters : VIII. Flight Training. IX. Soaring Technique. X. Soaring Sites. XI. Clubs (including lists of American and British clubs). XII. Future of Gliding and Soaring. The Appendix includes Contest Statistics, Tables of Records (International, American, British, French and German), Lists of American and British "Silver C" and all "Gold C" pilots, Bibliography and Glossary.

Correspondence

The "Horten III" Sailplane

SIR,

Mr. Yates' curves[1] comparing the tailless HORTEN III with an orthodox sailplane cannot fail to interest every reader who is a student of sailplane design. May I suggest, however, that the comparison he has chosen is not an entirely fair one, for the following reasons :—

(1) FAFNIR II is seven years old. As a more suitable standard of comparison I suggest the three "tailed" sailplanes whose performance figures, obtained from various reputable sources,[2] are given in the accompanying table. All three are roughly contemporary with the HORTEN III. The WEIHE is interesting in that it not only has two metres less span than the HORTEN III, but is a standard production high-wing type designed for club use.

(2) Mr. Yates' estimate that at 85 m.p.h. only 5% of the HORTEN III's drag is induced, implies that the induced portion is very little more than the ideal minimum value associated with elliptic loading. Surely this is rather optimistic! With a wing of such high taper and twist, might not the induced drag at that speed be at least two to three times the ideal value? If so, the HORTEN's performance at high speed would not be quite so good as the curve indicates.

Lest I be suspected of trying to belittle the possibilities of tailless sailplanes, let me conclude by pointing out that they are *not* condemned to use wing sections with stationary centres of pressures. If the wing has washout, a pitching displacement of the sailplane will cause a spanwise shift of the load distribution; and if the wing also has sweep-back, this shift will have a fore-and-aft component. This will exert a stabilising influence, which, like that of an orthodox tail-plane, can be used to overcome the inherent instability of the wing section. For instance,[3] a wing with 30° sweep-back and 8.5° twist can use the section N.A.C.A. 2415 and still be stable. The aspect ratio of this wing was 6; with higher aspect ratios the problem becomes simpler.

KEITH TURNER.

	DARMSTADT 30	HORTEN III	REHER	WEIHE
Span (ft.) ...	65.9	65.6	62.3	59.1
Min. sink (ft./sec.)	1.6	1.6	1.7	1.9
Max. lift/drag ratio	36	32	33	29
at (m.p.h.)	45	40	42	44

References :—

[1] SAILPLANE, July/August, 1940, p. 53.

[2] *Flugsport*, Vol. XXX (1938), Nos. 14, 15, 16; also SAILPLANE, September, 1938, September, 1939, January/February, 1940.

[3] N.A.C.A. Tech. Report, 572, Fig. 16.

American News

NEW American records were set up at the eleventh National Soaring Contest, held at Elmira from June 29th to July 14th.

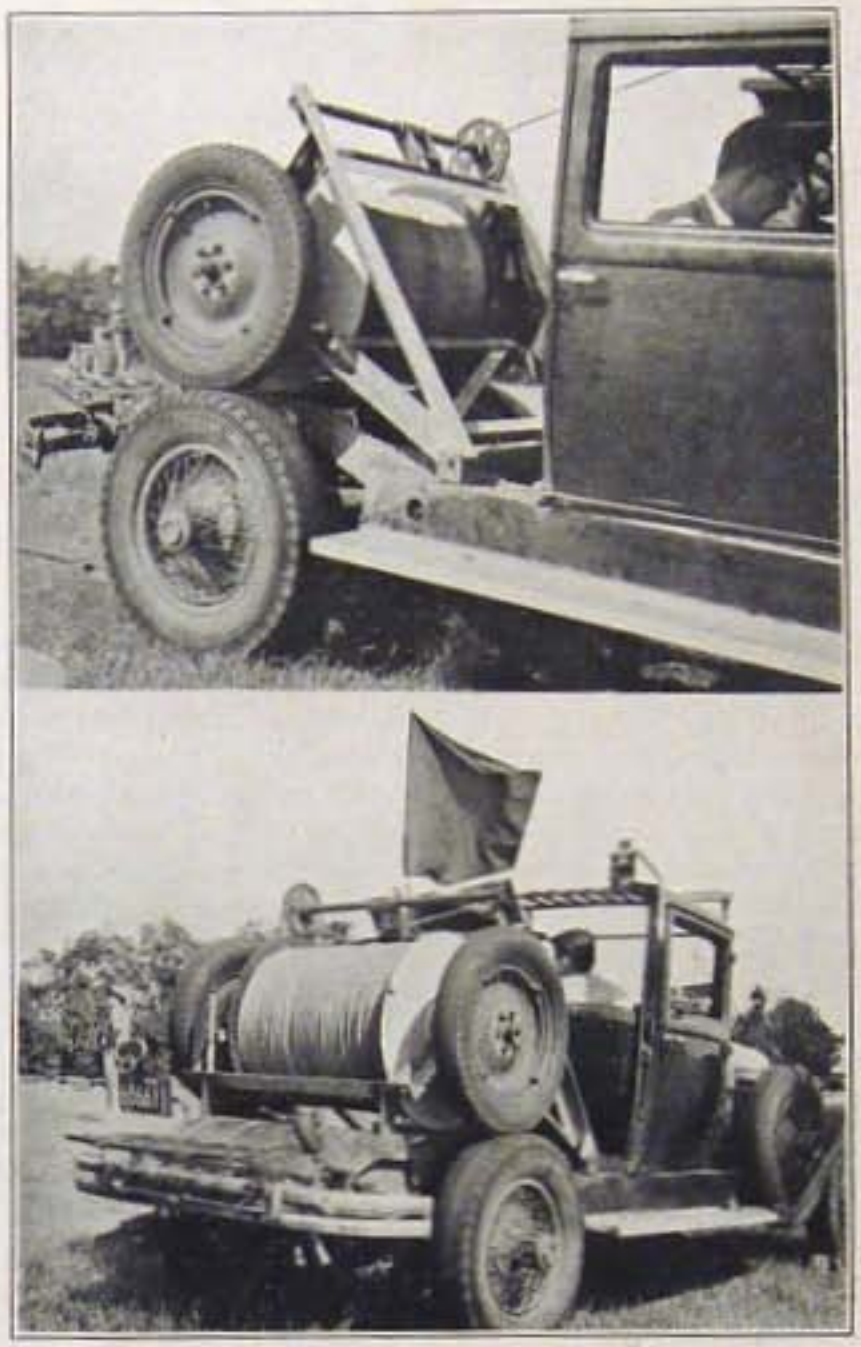
John Robinson flew a ROSS-STEPHENS sailplane 290 miles, gaining the record and also first place in the contest. Robert Stanley set up a new two-seater record of 216 miles in a SCHWEIZER. A women's altitude record was put up by Helen Montgomery, who took a WOLF up to 4,183 ft. Thirty sailplanes and 72 pilots were entered for the contest, and the total mileage of cross-country flights was 3,166.

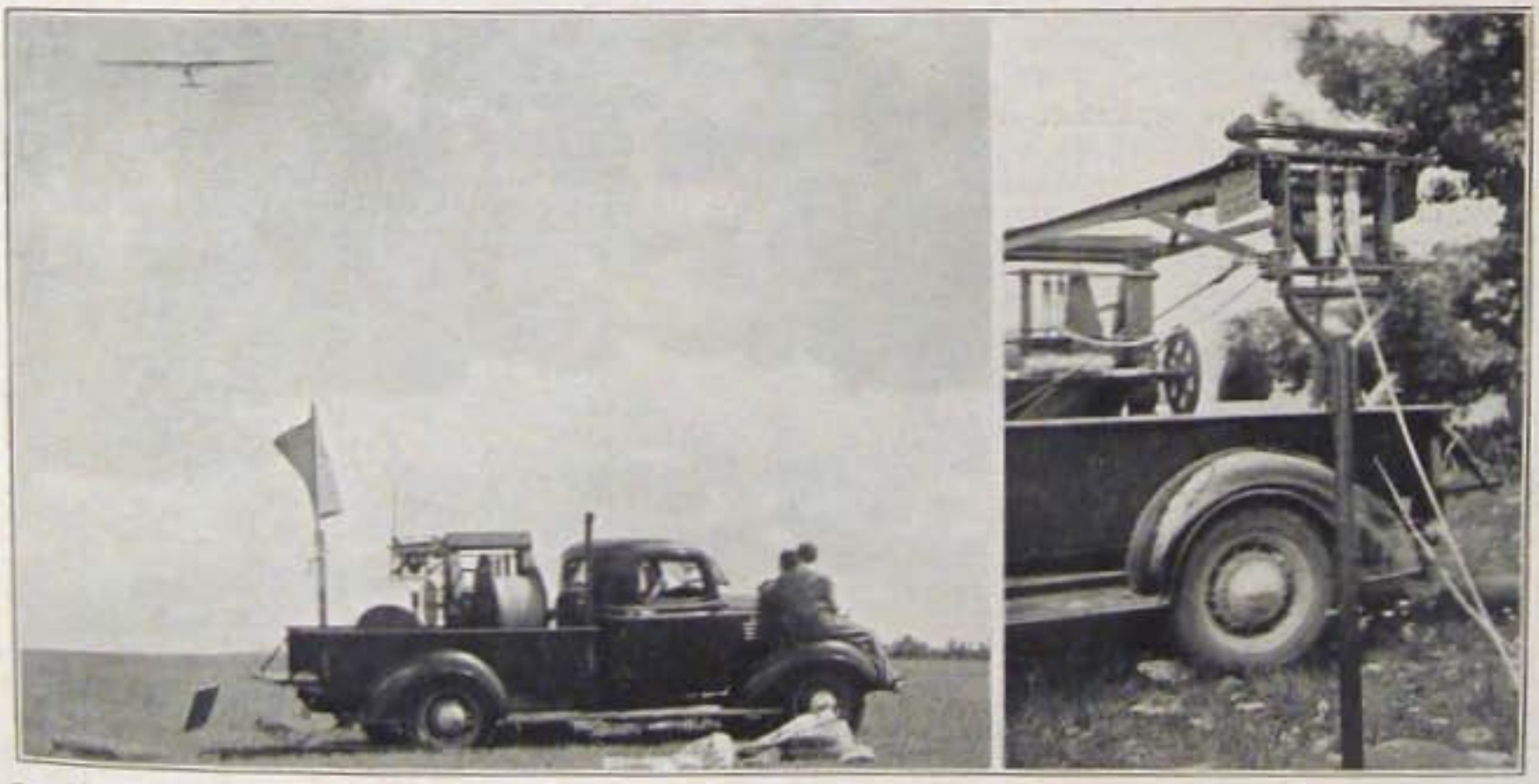
A silver trophy, offered by the *Aviation* magazine for the best technical design contributed to gliding in 1940, was won by the G-2, designed and built by Aero Industries Technical Institute.

Rolf Pasold, British "Silver C" pilot, looked in at the contest. Writing on July 16th, he said the weather at the time was poor, but it had been better in the first week, when Chester Decker flew a MINIMOA 230 miles to New York and made another flight of 200 miles. The prizes, he wrote, "are really good."

International Two-Seater Record

A Press message on September 14th stated that the international two-seater altitude record is "believed to have been" broken by Lewin Barringer, above the "Jawtooth" Mountains, Central Idaho (no doubt a misprint for Sawtooth Mountains, a western offshoot from the Rockies, between 6,000 and 8,000 ft. high). His sealed barograph registered 14,100 ft. The previous record was 10,839 ft., set up by E. Ziller in September, 1937, in the "Moazagotl" wave.





Some American winches. The upper pair of pictures shows that built by the Massachusetts Institute of Technology. The car is an old La Salle. The drum, of welded steel plate, is driven by friction between two pairs of tyres pressed together. The operator faces the glider and works everything, including the guillotine on the roof. Note flag signal. The lower two photos show E. Paul du Pont's winch: in one it is launching Chester Decker in the "Albatross." The guide rollers are on a telescopic stand, adjustable for height and steadied by sandbags. Behind the rollers was a two-bladed guillotine (note danger sign), but this has since been replaced by a heavy blade actuated by assisted gravity.

(Photos by Fred T. Loomis (Elmira) and Oswald Barry (Montreal).

Circling in Thermals

By G. O. MANNING

THE best rates of turn for circling in thermals of various strengths and diameters can, of course, never be exactly laid down. This article only indicates the general effect of varying the rate of turn in several possible thermals. The conclusions arrived at are not exact, but are merely a general guide that happens to check fairly well with practice.

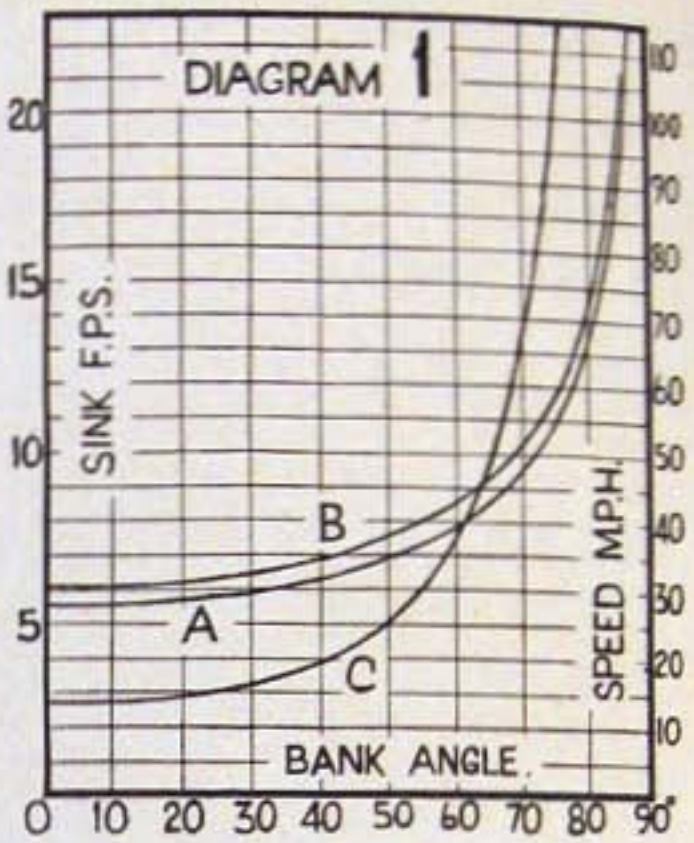
Thermals, like rivers, flow faster in the middle, and it is often reckoned that it pays to do very tight circles in order to fly in the stronger up-current and so climb faster. The rate of climb of a sailplane is the difference between its sinking speed and the strength of the up-current, and in a thermal this gets more complicated because, although the up-current gets stronger in the middle, the sinking speed of the sailplane increases as the circle gets tighter. The sinking speed of the sailplane can be quite accurately calculated for various rates of turn, and it is feasible to "guesstimate" the lift across an ideal thermal, and so concoct a reasonable idea of the best angle of bank under various conditions.

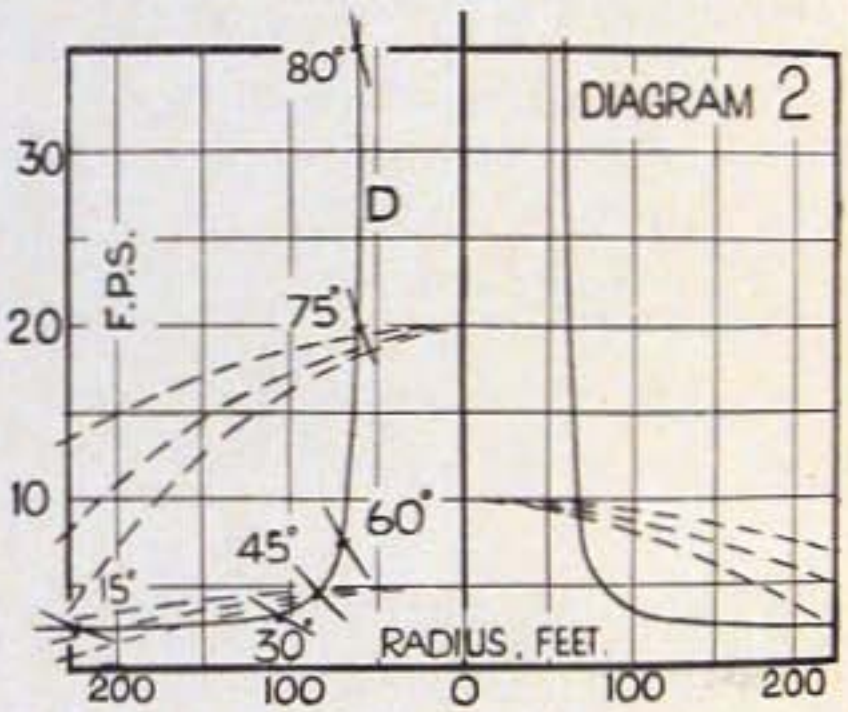
The sinking speed increases as the circle gets tighter, because the stalling speed increases due to the higher wing loading caused by centrifugal force. It is most efficient to fly near the stall for minimum sinking speed when flying straight, and the same applies when circling. Curve "A" of diagram shows how the stalling speed varies with bank angle, from 28 m.p.h. in level flight, 33 m.p.h. in a 45° bank turn and so on. That helps to explain why so many crashes occur through stalling on a turn. The spin is accentuated because the natural reaction is to hold off bank as soon as the wing drops, which lowers the aileron of the inner wing, not only thoroughly stalling that wing-tip, but also increasing the drag, thus swinging the 'plane into a spin—the fate of too many DAGLINGS.

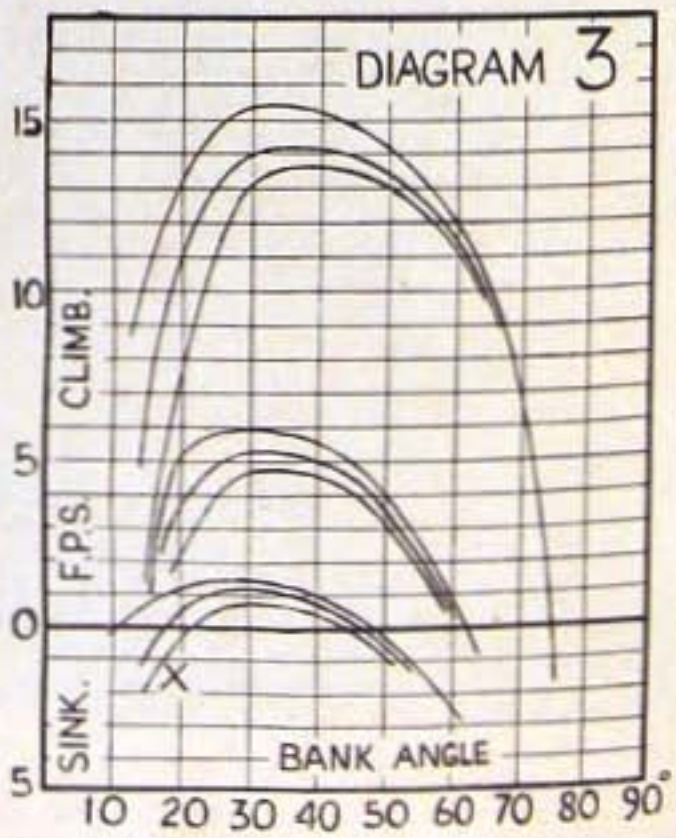
The actual figures are typical of a 'plane of the GRUNAU BABY or Bowlus BABY ALBATROSS type, but as stalling and sinking speeds are important when circling, not the best gliding angle, they roughly apply to all types. All curves assume perfect turns with no slip in or skid out.

Curve "B" of diagram 1 shows the speeds just above the stall that give the minimum sinking speeds at various angles of bank, and actually represents pretty slow flying. All the curves are based on the flying speed according to curve "B," which represents a constant lift coefficient or angle of attack. Curve "C" of diagram 1 shows the rapid increase in the minimum sinking speed as the bank increases, from 2.7 f.p.s. in level flight to nearly 4.5 f.p.s. in a 45° bank turn, and 20 f.p.s. in a 75° bank!

Curve "D" of diagram 2 depicts a cross-section of the circle, and shows how the sinking speed varies as the radius of turn. The positions on the curve that correspond to various bank angles are shown by a head-on view of a 45-ft. span sailplane drawn to scale at the correct bank angle. So it will be seen that up to 30° bank, 106 ft. radius, the circle is tightened without a great increase in sinking speed; but around 45° bank, 85 ft. radius, the curve takes a bend, so







that over 60° bank the sinking speed increases rapidly without much decrease in the radius, and the 'plane is really doing a tight spiral dive.

Considering diagram 2, it seems fairly obvious that the best angle of bank in any thermal is not likely to exceed 45°, but in order to get some sort of a check it is necessary to plot the up-current of various thermals across the "circle" in diagram 2. In practice, of course, the distribution of up-current across a thermal is at least fairly hay-wire, but in order to get comparative results it is worth being academical and "guesstimating" the distribution as being parabolic. The dotted curves in diagram 2 show the resulting distributions for thermals of various strengths and diameters. The rate of climb of this perfectly-flown sailplane in a pluperfect thermal is shown by the difference between the sinking speed and up-current distribution curves. The diameters and maximum strengths of the thermals considered are given below.

Dia., ft.	Max. strength, f.p.s.
800	20
600	20
500	20
800	10
600	10
500	10
800	5
600	5
500	5

The next stage is to plot the actual rate of climb or sink of the sailplane against the angle of bank, and diagram 3 is the result. The optimum angle of bank



The start of a circle in a thermal: the late G. E. Collins flying his "Rhönadler" in 1934. His angle of bank is 40 degrees, and he is 150 ft. above hilltop level.

does not seem to be very critical, but 30° seems to be a good average, except in the case of the extreme small-diameter strong thermal, where the gain by tightening the turn to 40° bank is 5%. Incidentally, 45°-bank turn gives the minimum height lost per circle, but that does not have much bearing on thermal soaring. A 30° bank turn corresponds to a 15-second circle at 32 m.p.h., and this checks fairly well with practice. The case of the extreme small-diameter weak thermal, marked "X" in diagram 3, is interesting as it requires at least 20° bank to climb at all and 45° bank is the other limit. It may be an extreme case or it may help to explain why some pilots are so good at wriggling into thermals off the winch.

Cumulo-Nimbus Clouds

CUMULO-NIMBUS may be briefly described as a cumulus grown big enough to produce rain, snow or hail. (But the official definition runs to 36 words.) It can be produced in a body of air lifted from below by a cold front, or else when unusually cold air above cumulus stimulates it to go on growing. The change from cumulus to cumulo-nimbus may catch a pilot out, as in the case of Hermann Seele in 1936. He was launched into a sky of cumulus and unsuspectingly rose into one, only to be carried up beyond the world's height record till his machine broke up on him.

Officially there are two stages of cumulo-nimbus, the *calvus* or bald, and the *capillatus* or hairy. This hairiness is a characteristic feature. The cumulus tops grow to such a height that they "freeze"; their outline becomes fuzzy, and the complexities of the domes are smoothed out. By the time a large mass of frozen cloud has accumulated, it has usually reached a "ceiling" of stable air and has to spread out sideways, thus producing the familiar "anvil" shape. The frozen part is commonly but incorrectly called "false" cirrus; its official name is *cirrus nothus*. Most amateurs are content to call it "the anvil," however little its shape resembles one.

Another way of classifying cumulo-nimbus is: (1) the isolated, or local, or "instability" shower, or, if large, the heat or "air mass" thunderstorm, and (2) the cold front storm. The first occurs at various places within a single air mass, and is chiefly useful for altitude flights inside the cloud. The second is strung out along the boundary between different air masses, and can be used for distance flights by soaring in the clear air in front. In addition, an air mass shower may produce a cold front of its own.

Little is known about the life history of an instability shower, as its study would need team work, though the late Werner Blech did his best as a single investigator till he lost his life soaring in one. A. W. Clayden states that a shower-cloud "seldom maintains its showery character for more than ten or twenty miles, often for much less," and C. K. M. Douglas writes that "the shower is sometimes maintained by fresh masses of rising air at its boundary, usually in front of it but sometimes also or alternatively behind or at the sides."

L. B. Barringer's advice for using cumulo-nimbus for an altitude flight is that it "should be utilised before it reaches the dangerous proportions of a nimbus and becomes a thunderstorm," and P. A. Wills, in his last altitude record, left the cloud as soon as "the roughness of the air increased," taking this as a sign that he was near the top, "where the rising fountain of air turns outwards and downwards."

Cumulo-Nimbus Clouds

(Illustrating the Article on pages 71-74)



A mass of *cumulo-nimbus calvus* approaching in a high wind, seen from the railway near St. Albans. Although a typical "instability shower" formed in polar air, it is approaching from the south, the air having circulated half-way round a depression without losing its polar characteristics.



A day of thunderstorms at Dunstable with profuse formation of "anvils," which spread out as thin layers of cirro-stratus covering large areas of sky, as in the top half of the picture. An anvil at an earlier stage is seen two-fifths of the way up the left side, with a cumulus mass below it.



The top of an approaching cumulo-nimbus is almost hidden by its outlying low cloud. The complexity of its domes shows how much higher and further off it is than the clouds in the foreground. This feature allows a cumulo-nimbus to be recognised even when there is so much low cloud that only a fleeting glimpse can be caught of a tiny portion of its top.



The same shower, receding. The top of the cloud mass is invisible, but, even if its approach had not been seen, cumulo-nimbus could still be diagnosed from the localised rain on the left. Note that the cloud base in the rainy part is lower than that outside; this is commonly the case. In this storm a sailplane climbed 7,200 ft. from Bradwell Edge.



Panoramic view of a "secondary cold front" approaching Bradwell Edge from the west during the 1936 Contests. It includes cumulo-nimbus in every stage of development, distributed not only along it but also from before backwards. On the left are small cumulus masses, backed by larger masses, backed by high anvils at an apparently late stage of evolution. Extending



A "secondary cold front" thunderstorm over Dartford, one of a series of three which came from the north-west (right) in spite of a surface wind from south-west (left). The advanced clouds have already passed over and the rain is about to arrive. Note the dark downward bulge on the right, like an enormous mammato-cumulus. At Dunstable, on this day, a Scud II was raised 1,000 ft. when a similar storm arrived.



A "front" receding over Dunstable Downs, with ragged projections from the dark base which are rapidly ascending into it, while others form in their place—an appearance characteristic of violent lift. The roll of cloud resembles the "cylinder" which occupies the "snout" of cold air in text-book diagrams, and sometimes also in nature. This cloud was marked on the weather map as an occluded front.



The front lower edge of a line of cumulo-nimbus has passed over and is receding eastwards. In the photo it is already four miles away and shows dark against the sunlight beyond. This is an example of the officially-called *arcus*, but its arch-like shape is an illusion, helped by printing the panoramic view (spanning 135 degrees) on a flat surface.



Secondary fronts passing St. Gall, Switzerland. The view stretches from east to south-west and shows on the left the cirriform top of a front which passed over an hour before; note the partial transformation into cirro-cumulus. On the right the advanced clouds of a new front are approaching. A cold front is apt to become irregular among mountains.



from the centre leftwards, at cloud base level, is a curious line of tiny cumulus, suggesting a straight belt of soarable air. In the centre is a vigorous mass of cumulus, still rather young (not very complex), partly hiding a much larger mass. On the right are two almost perfect anvils. The whole front seems to be extending forwards by growth, as well as being carried on the wind.

How to soar along a cold front has been described often enough, but in British latitudes the nimbo-stratus of a depression usually continues right up to the cold front, and only the "secondary" fronts, which may follow the main one at intervals, are preceded by clear air in which to soar. Meteorologists took little interest in secondary fronts until compelled to do so recently by air-line pilots, who have to fly through them as they are too long to fly round. They seem to be best understood by G. F. Taylor, who states that their formation is favoured by a fast-moving cold current with a strong "latitudinal temperature gradient"; that is, the air of a polar current passing one particular spot gets colder and colder. Owing to the wind blowing faster up above, the *rate* at which it gets colder is greater at a height than at ground level. It is easy to see that this increases the lapse rate, and that a strong wind hastens the process.

The sudden drop of temperature in these secondary squalls is attributed to an outrush of descending air cooled by the rain, snow or hail within the cloud. The same process in an isolated cumulo-nimbus can create a localised form of cold front, and probably explains why pilots so frequently find extra lift when such a shower arrives at a soaring site.

According to R. C. Sutcliffe, "local showers over the land almost invariably clear at night, but a secondary front is likely to persist."

Cumulo-nimbus can produce almost any other type of cloud. Its anvil may thin out into cirro-stratus, cirrus or cirro-cumulus, or may turn into alto-cumulus. Shelves of alto-cumulus or strato-cumulus may project from its sides where it has penetrated inversions; J. P. Dewsbery once had an awkward moment when, in BLUE WREN, he got sandwiched between two such shelves which rapidly thickened towards each other. Mammato-cumulus may bulge below some part of the cloud mass, usually at the side or rear; K. Lingford once found in its neighbourhood a "steady down-current of 20 ft. per second."

Then there is the cylindrical whirl of cloud or "storm collar" which may form in the most advanced part of the cold front air, if any, 1,000 to 2,000 ft. up. Somebody ignorant of spherical geometry has given it the official name of *arcus* because, if produced, it meets the horizon at both ends; but it is nevertheless a straight line, not an arch. Its striking feature is the way little dark wisps form below it and rush up into it. The late P. M. Watt once flew a PETREL among these wisps and was so violently thrown about that he prepared to jump. The storm collar may break down and re-form, or may amalgamate with the rest of the storm cloud; it is about the only certain indicator of the external soaring area, which should start just in front of it.

A.E.S.

Gliding Instruction III

NOTES AND PATTER FOR INSTRUCTORS

Stage 4.—Climb and Release

PATTER.—Ease machine off ground and climb gently to desired height. Do not climb too quickly or the flight will be shortened by the driver in order to prevent you getting too high.

When power is shut off, ease down *at once* into the glide and, when enough speed is gained, adjust for best gliding speed. The best guides for this are wind on the face, which should be of the order of a pleasant breeze, and definite pressure on the stick. Land as previously.

Remember that the steeper the climb, the greater the angle to be altered before attaining the correct gliding angle.

WINCH DRIVER'S NOTES.—It is advisable to keep the cable still attached for the first one or two of these flights until the pupil is certain of the gliding angle. The winch driver should keep pace with the machine and if it stalls can usually give it enough speed to land with a well-timed burst of engine.

These should be followed by one or two medium high flights with the pilot permitted to release himself.

Appendix 1.—Stalls, Spins and Corrections

A stall occurs when the aircraft gets too slow and loses flying speed (similar to a sailing boat losing way and becoming uncontrollable). Different machines have different stalling speeds. On primaries the stalling speed is low, about 25 m.p.h.

(1) If a machine is stalled gently it will just sink on an even keel like a parachute.

(2) If it is stalled sharply, but straight, the nose will drop and as soon as the machine gains enough forward speed by gravity it can be pulled out of the dive, unless the ground interferes.

(3) If the machine is stalled with rudder on, or if a turn is attempted when nearly stalled, a spin may result.

The nose drops sharply and the turning motion continues. On an aeroplane the method of getting out is to centralise all controls and put the stick forward to gather speed. On a glider this is a dangerous practice, as a spin usually occurs in the early stages at low altitude, and ground level may be reached in the dive for speed before the nose can be pulled up.

The safest method, therefore, is to centralise rudder and aileron controls, but keep the stick *back*. So very little speed is needed to regain flying speed that, provided the spin is stopped, the nose will come up.

The machine should be put into the normal gliding position immediately the nose begins to rise, otherwise the same will occur again.

[Note that this is not recommended as a general method of recovery from all spins, but only in the circumstances here assumed, when the machine is too low to recover by diving, and the spin is due to

inadvertently having the stick a little too far back (not *hard* back). With it in this position (not any *further* back), a properly rigged NACELLED DAGLING should recover, provided the other controls are central.—ED.]

Stage 5.—"A" Straights

INSTRUCTOR'S NOTE.—On PRIMARY or NACELLE. The pilot should be flying the NACELLE between this and the end of the next stage.

PATTER.—This time take off as soon as possible and climb more steeply than usual. If you are climbing too steeply you will find the machine has a tendency to buck fore-and-aft. Stop this by easing the stick forward slightly. As soon as winch stops, down with the nose, glide as usual, and land.

WINCH DRIVER'S NOTES.—Take machine off as usual and take it up as high as possible, remembering the length of field and that pilot will be worried and may do something rash if flying towards a fence which appears close in front of him.

It is advisable to give a small burst of power just before stopping the winch in order that the pupil will have plenty of speed in case he is slow in getting the nose down.

Stage 6.—Turns

INSTRUCTOR'S NOTES.—It is quite a good thing first of all to ask the pupil how he would do a turn. He will invariably say: "Put on rudder and then stick over." Actually, bank should be put on just first and rudder after, and only a little of each.

It is advisable to make clear to the pupil that a turn on a glider is not a flat one. The amount of bank needed is relative to the speed. An aeroplane needs to bank more as the speed is greater. The speed of a glider is very low, so the bank necessary is little. It is, however, a correctly banked turn.

Denote positions of turns on field to pupil, e.g., left, then right, landing straight ahead as for previous flights.

PATTER.—As soon as gliding angle is settled after releasing, try a gentle left turn. Bank gently to the left and put on enough rudder to make the nose of the machine travel sideways across the horizon. Almost immediately correct and do the same to the right, as turns on a straight flight do not need to be steep. Correct and glide straight before landing from at least 20 ft. up.

The object of putting on bank with rudder is that rudder alone makes the machine skid outwards, and you will get a draught on your face from the *outside* of the turn. Bank alone will make the machine slip inwards, and you will get a draught on your face from the *inside* of the turn.

It is very easy to lose speed on a turn, so make certain of having plenty before starting.

WINCH DRIVER'S NOTES.—As for Stage 5 flights. It is not advisable to take the machine higher than previously, in case the pilot just doesn't do any turns, due to some reason best known to himself.

Appendix 2.—Drift Landings

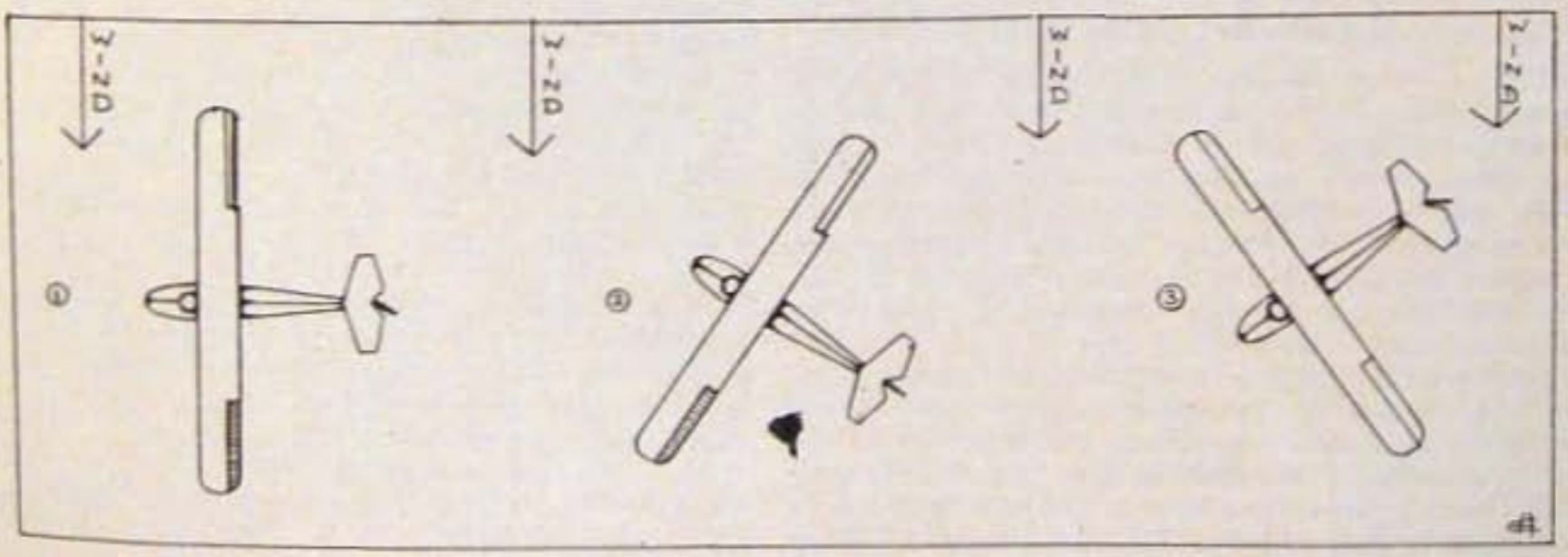
The numbered paragraphs below refer to the positions shown on the accompanying diagram.

(1) At 90° to wind, ground passing from left to right fast. The only way to correct drift when in this position is to bank slightly to right, watching right wing-tip for nearness to ground, and apply slight left rudder; in other words, sideslip into the wind and try not to bounce, as this would remove the into-wind slip of the machine.

(2) Almost into wind, ground moving left to right but fairly slowly. Apply as much bank as possible without touching ground with wing, and very little or no rudder in same direction. This will have the effect of the machine doing a slipping-in turn into wind, and although the resultant landing may not look very pretty, it will be safe and, unless done violently, nothing will be broken. If the wing touches just first it will not matter as the ground speed will be very low and that wing only moving at very little speed. If, however, not enough bank is applied, the skid will be worse, due to two drifts added together.

(3) Almost down wind, ground passing from left to right, speed over ground apparently very fast. Apply slight left rudder *only*, so that machine turns further downwind. (It is impossible to turn into wind at low height, and any bank with the rudder will only make matters worse, as it will force the machine over sideways on to its left wing-tip.) It is very easy to stall when flying downwind near the ground, as the apparent speed is still high.

A.C.E.



News from the Clubs

Derbyshire and Lancashire Gliding Club

Subject to the following information being passed by the censor, we have to disclose that the rainy season has now commenced at Camphill, and our members and many of our past visitors will know the full meaning of that. It is now possible on most days to remain well above cloud-base for an almost indefinite period, so that, if any glider pilots are pining away through lack of contact with the clouds, we can thoroughly recommend a few days' stay at Camphill, which is now entirely free from the whirr of winches and the crash of DAGLINGS, and is, in fact, peace itself.

It has now been decided to have an informal gathering at the "Marquis of Granby" Hotel on the first Sunday of every month, so that any gliding folk who happen to be in the district are invited to turn up where they will be able to swap all the latest gliding scandal. Everything is entirely free when one has paid one's customary remuneration to the landlord.

We regret to have to announce that one of our few lady pilots, Miss R. Rowlands, has left us for Canada, where we hear that she is now adorning a Canadian club. We hope she will have many happy landings, but the thoughts of training another member of the fair sex to take her place are very disconcerting, to say the least.

Annual General Meeting.—This, according to the *Sheffield Telegraph*, was held on September 1st at the "Marquis of Granby," Bamford. Mr. E. Taylor reviewed the club's activities for 1939, and reported that they had let the land for grazing and had got it de-rated. They were faced with the problem of holding out for the period of the war, but he was very hopeful that they would succeed.

Mr. B. Thomas, acting secretary and treasurer, said that, although there had been no gliding, members had paid this year nearly £100 in subscriptions, and they had at the present time about £250 in hand. Their expenses, however, were very heavy, and he pleaded with members to keep up the subscriptions as far as possible.

Mr. G. O. Smith presided, and the committee was re-elected *en bloc*.

Newcastle Gliding Club

A very remarkable event took place on Saturday, October 26th, when seven members were to be seen all at once working in the main room in the "Park." Such a rare occurrence has not been witnessed since the days when Gerry Bennett started a production push on the old DICKSON machine. However, these gallant members had arrived with the intention of working on this one Saturday afternoon only—in the capacity of labourers and not semi-skilled aircraft hands.

The work on hand was the re-arrangement of the machines in the "Refreshment Room," and to instal the KITE and the TUTOR inside the building for the winter months. These two machines have been in their trailers ready to make a dash for the wide open spaces immediately we were given the opportunity. We have now reluctantly formed the opinion that this opportunity will not arrive until after the war.

The only new member we have enrolled since our activities were stopped, had the opportunity of meeting a few of the members and seeing some of our equipment for the first time. He is Mr. W. N. Lambert, of South Shields. (It would be interesting to know if any other clubs have enrolled new members since the war.)

Members in H.M. Forces.—It is now known that A. B. Starksfield is in the R.A.F., and that J. Mather is a cadet officer in the R.F.A. Bill Taylor has also joined the R.A.F. since our last news.

All told, at least 44 per cent. of our members are known to be serving in the Forces. Three are now out East, including Mr. O'Grady; 10 per cent. are in the Home Guard, and another 10 per cent. are known to be serving in other voluntary capacities during their spare time; 5 per cent. are working out of the district. That leaves 31 per cent.—the odd 1 per cent. is active. We can therefore console ourselves that it is just as well we are not allowed to fly.

Basil Mau is now known to be safe on a desolate Yorkshire Moor after a hectic trip from France via Dunkirk.

We report with regret that W. E. Gore, who, as reported in our May/June news had been awarded the D.F.C., is now posted as missing.

Full-time Student Engineer.—We have now lost the services of Maurice, who has taken on work of more national importance. Plenty of work has been left for the 31 per cent. of our members, most of whom are neither seen nor heard.

Midland Gliding Club

We have received news of several club members engaged in various capacities in H.M. Forces.

First, H. Robson, an Australian who did a lot of soaring with the club in 1938–9, won the Distinguished Flying Cross for a low flying attack on Wilhelmshaven, but is now reported missing. He was, says our informant, "a good pilot and a fine chap in every way."

Another member who, we regret to hear, is missing, is Pilot Officer Adrian Bouwens, whom we met at the Easter Camp in 1938, at which he took his "C." According to a Press notice, he only passed out of Cranwell just before the war. His machine was lost in a raid on Hamburg in May, and "its exact fate is not known. Over five months having elapsed, it may be presumed that he perished."

Anthony Rooper, the first pilot to get a "Siver C" with the club in 1938, is flying "Skuas" in the Fleet Air Arm.

Theo Testar and Sheffield are now fully-fledged instructors on Link trainers and blind flying in the R.A.F.; they were among the five out of fifteen candidates who got through the test. The former is on the south coast, and the latter in East Anglia.

Roger Thwaite is doing his pilot's course; he went solo in the record time of three hours odd. Jolly is now a fully qualified pilot.

A. A. J. Sanders, who soared from the club to Tamworth last year, has passed through Cranwell with honours, and is believed to be an air gunnery expert on the staff.

Cecil Reilly has gone into the Navy, and is on a M.T.B. off the S.E. coast. Billy Hardwick, also in the Navy, is on an escort destroyer, and hopes to get his commission early next year.

Tim Healy and Ketch Colcomb (just become a father) are with Rushton at Wolverhampton.

The club hangar has passed into other hands for the duration.

London Gliding Club

Did you know that our club is a nest, cell, or hotbed of fifth columnists? For long this has been no secret in all the villages around. They have been too polite to tell our steward, who lives among them (he is one of the suspects, anyway), but a club member who came to live here unrecognised has discovered the awful truth. Have we not bought gliders from Germany? And did we not invite a whole lot of Germans over here to a gliding camp, where they flew around learning to find their way about the district by air?

It follows automatically that any German aircraft heard in the distance is invariably piloted by one of these former campers. Why, only the other day a German airman, brought down near here, actually claimed to be a member of our club and gave his name. Curiously enough, one's informant can never remember the name, although it was invariably given him by *his* informant. It is equally impossible to discover where the airman landed and who spoke with him; nevertheless, rumour has already become fact within a radius of 15 miles.

However, we are still outside Brixton Gaol, so the clubhouse at Totternhoe is open as usual on Saturday afternoons and all Sundays. Remember, when you come to the entrance to the former club ground, turn sharp right instead of left and continue for half a mile. In addition to the bar, stove, dartboard, etc., already announced, we have in the grounds a deep ditch which provides adequate protection against blast, but it will save unpleasantness if you use only the part where the bottom of the ditch is spanned by a hurdle, and see that your neighbour does not bump into you in the confusion and spill his beer down your neck.

We get the best turn-out of members on Sundays, varying between two dozen and half a dozen, and the earlier arrivals keep up the established war-time custom of a "good brisk walk" along what isn't at the moment the club's soaring ridge. Recently we have often been visited by gliding people and their friends who happen to be stationed at a Bedfordshire aerodrome; these include several former Cambridge members, and L. R. Robertson (Derby and Lancs.), Burns of the Midland Club, and A. A. J. Thorburn from the Scottish Gliding Union. Our two former instructors get over occasionally, and at other times are represented by their wives, of whom Mrs. Dixon never misses a Sunday, and Mrs. Hervey has the Ashwell-Cooke family staying at her cottage.

All members who could turn up were invited to an enjoyable cocktail party given by Mrs. Dixon in Redbourn, on August 24th, when colour photos of our former activities were shown on a screen by our hostess.

Annual General Meeting.—This was held in the clubhouse at Totternhoe on Sunday, September 15th, at 6.30 p.m. There were 15 members present, others having gone home while we were awaiting our secretary.

Mr. D. G. O. Hiscox explained how he was once again chairman in spite of an "unwritten law" that a chairman should serve for only two years. Last year's chairman, Mr. J. S. Fox, had felt a call to other work and resigned; Mr. P. A. Wills, who took his place, also resigned later owing to war work taking all his time.

The chairman began by recording the wonderful treatment we had had from Mr. Turvey, who, although the hangar which now housed the club was his property, had nevertheless given it to us rent free for the duration of the war. The meeting conveyed its gratitude to him.

Our most notable flights during 1939 were those of G. H. Stephenson to France, P. A. Wills's height record which won him the "Gold C," and P. B. N. Davis's unofficial height record. More "A," "B," and "C" certificates had been gained than in any previous year; this was largely due to the cadets. Flying time, however, was less than the year before, probably owing to northerly and north-easterly winds; but these in turn had caused us to improve our technique of catching thermals off winch launches.

The club's assets were £8,732, having decreased from £9,106 owing to the usual "writing down." But liabilities had also gone down, our indebtedness to the bank having dropped from £1,700 to £600. The Luton Town Council had scheduled our ground as an "open space" in return for allowing us to put up works on new land we intended to acquire.

The club cost £3,500 to run in a year. Subscriptions and entrance fees were £999 19s. 6d. Other chief receipts (the previous year's in brackets) were: Flying money, £453 (717); camps for members, £405 (490); hangar rents and trailer park, £25 (121); bar, £194 gross (225). For the Air Defence Cadets we had received £1,520 from the Government for training them, and £649 from the Air League for housing and feeding them. The club's profit on the year's running was £292.

From the present occupiers of the club property we are receiving £425 a year rent and they are paying the rates, tithes, and insurance amounting to £126; we have been promised recompense for depreciations and dilapidations. The rent of the barn which houses the club fleet is 25s. a week.

Awards and Trophies.—The Dent Cup for the most meritorious flight goes to G. H. Stephenson for his flight from the club ground to France. For the Desoutter Trophy for amateur construction there were no candidates. The Derry Trophy, for voluntary work for the club, goes to H. E. Hervey for the immense amount of work he has done over and above that we pay him for.

Owing to the difficulty of keeping a full committee going, the meeting unanimously agreed to leave the club's affairs, for the duration of the war, in the hands of a small committee composed of D. G. Hiscox, J. R. Ashwell-Cooke, H. E. Petre, D. C. Culver, and H. E. Bolton. It also agreed to suspend the minor sub-

committees. Mr. Arthur Sweet, having been re-elected secretary-treasurer, finally delivered a welcome message from our president, Captain Lamplugh, that there would be drinks all round on him (cheers).

What They Are Doing.—W. B. Murray, now become a Wing Commander, gave a broadcast in late September which revealed that he has been leading a squadron of "Blenheims" which have made many raids on the "invasion ports" of the European coast.

H. E. Hervey has become Squadron Leader, and has been transferred to a more open-air life. R. M. Dixon has succeeded at last in getting transferred from the army to the R.A.F. C. L. Ruffle has left his balloons to do some flying. Laurence Wright's special talents are also being used in the R.A.F.

C. A. P. Ellis has returned from Finland, but O. W. Neumark is staying on there as an English teacher.

Joan Price has a daughter, born on August 30th during an air raid warning but nevertheless not to be called "Sireen," but Annette Elizabeth. Her husband, Ronald, has moved from Merseyside to take charge of an aircraft repair depot. Beryl Withall has twin boys; regarding her husband, missing since August, we regret there is no further news. Anne Wakefield, W.A.A.F., is engaged to a Flight Lieutenant. Peggy Thring, lady almoner at West Middlesex Hospital, turned up on a walking tour in October and was parked in the club house for the week-end. Joan Collins is working full time as an A.R.P. driver in St. Albans; she has let the cottage at Flamstead which she and Eric Collins took six years ago, and her home is a caravan parked in Mrs. Dixon's grounds at Redbourn.

From Air Transport Auxiliary news filters through that P. A. Wills has achieved a great reputation by his blind flying, being able to "get through" when nobody else can; also for his gliding, when he succeeded in putting down a single-seater fighter, with dead engine, into an extremely small field. Apparently as a reward, he doesn't fly any more, but is in charge of others who do. H. Bergel is also in the A.T.A. Another ferry pilot, though not in the same racket, is J. S. Sproule, who has joined the Fleet Air Arm in that capacity.

G. O. Manning, when at his preliminary "discipline" course, ran across Millar, of the Southdown Club, and E. Lavington, doing radio in the Signals branch. Now a Pilot Officer at a Midland aerodrome, he has been joined there by A. W. Lacey. D. A. Smith is learning to be a Link Trainer instructor. D. F. Greig is also doing an R.A.F. instructor's course in an eastern county, having been transferred from the army.

Others who are trying to change over from the army to flying are R. P. Cooper, bored with controlling non-existent traffic and now in the North Midlands, and G. H. Briggs, whose blue KITE must be the last machine to have done private flying in England. Content with army life are E. A. S. Barnard, just made a Second Lieut., and E. P. Zander, of the Pioneers, who is in London helping to tidy up the East End.

Vigers is at Percival's. Wheatcroft has left Grice's and is trying for the R.A.F. K. W. Turner has had his eyes fitted with these new "contact lenses" instead of spectacles and hopes to get into the R.A.F. J. E. Simpson is taking up ambulance work.

We are sorry to see that H. L. Greenshields, who was in the Fleet Air Arm as Temp. Sub-Lieut., R.N.V.R., has been posted as missing. His name is included in an Admiralty list of "casualties which have arisen from the various hazards of war, and are not connected with any particular operation or ship." He has done a lot of soaring with this club and was one of our ablest pilots. He has been missing since mid-September.

We regret to report that one of our former members, Pilot Officer J. V. Gurteen, was killed in action at the end of September. He first came to the club as a result of the late Eric Collins' landing after a cross-country flight near Gurteen's home at Haverhill. He learned to fly with us and then moved on to the Midland Club two years ago.

Cambridge University Gliding Club

We congratulate Bill Assheton on his marriage to Miss Dorothy Andrews, who will, we are sure, make an excellent trailer-driver; and also on his neat escape from a fiery "Spitfire" by merely standing on the seat and being blown out by the slipstream. Fred Gardiner also had recourse to jumping from a "Spitfire," and, owing to a burnt right hand, did a delayed drop to within300 feet of the ground; we hope that by now he has recovered.

We regret very much the deaths of Flying Officer J. T. M. Parker and Pilot Officer N. Barry. John Parker was killed in a mid-air collision while instructing, and "Nat" Barry as the result of enemy action.

John Pringle left soon after the outbreak of war on important Air Ministry work, whilst brother Pat, we believe, is still an A/C 2. Norman Lee and Wally Morison have both just got their wings, and by now are either Officer Cadets or Pilot Officers.

Bobby Cole has followed in the footsteps of Mike Thomas, H. H. Ricketts and Michael Maufe, with a commission in the R.A.F. technical branch.

Flying Officer Duggie Davie seems to be enjoying his work. Colin Pinckney has shot down and been shot down by "Me's," but is recovering satisfactorily. Ralph Slazenger has definitely left the R.A.F. D. MacClement has returned to Canada. George Pirie is engaged on optical work in the North, and L.A/C Derek Bolton is Tigger-bouncing at an E.F.T.S.

Surrey Gliding Club

A welcome Gliding Reunion was organised by Ann Douglas on August 31st at the Lansdown Club in Mayfair, which she appears to have joined for the purpose. Guests were chiefly members of the Surrey and London Clubs; in fact, most of them belonged to both clubs. The terrific buzz of conversation drowned the sirens outside, and as the party got worked up towards midnight it moved on to the Corner House in Coventry Street.

Graham Douglas, having been threatened with promotion to Wing Commander and consequent confinement to ground level, decided that the evil outweighed the good, so he is leaving his training school in the north and has volunteered for "operational duties." He hopes to fly "Spitfires." This has led to Ann applying to join Air Transport Auxiliary; she has been accepted and has started training.

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



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

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

"Did you say he was launched by catapult . . . ?"
"Yes."
". . . and he went forty miles?"
"Yes."
"Gosh! What a catapult!"

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Whilst every endeavour will be made to continue the publication of SAILPLANE AND GLIDER at regular intervals, circumstances may arise in the near future which will prevent this being done. It is hoped that, should such a condition arise, subscribers and regular readers will give every helpful consideration to those responsible for the publication. At the same time it is the sincere desire of the publisher to revert, as soon as possible, to a regular monthly date of issue.

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