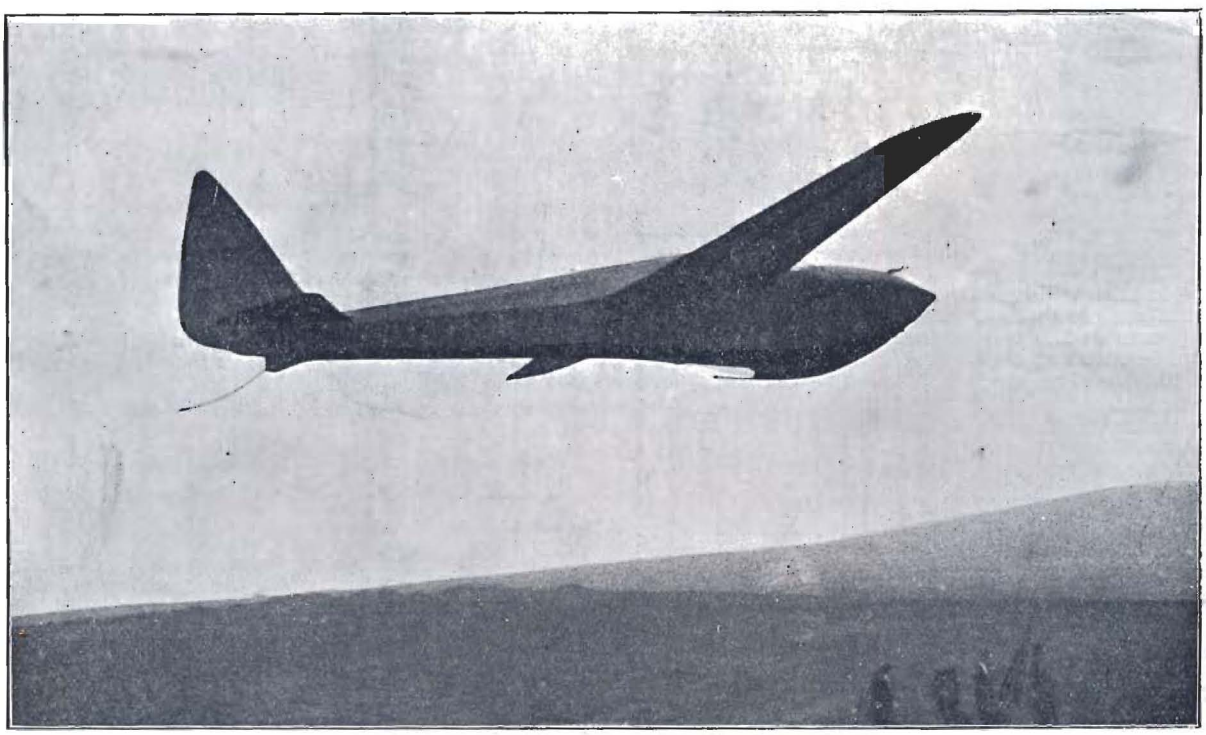
September 11, 1931 Vol. 2. No. 5

Price 6d.

THE SAILPLANE AND GLIDER

Edited by Thurstan James.

A new record holder



The Airspeed "Tern" starting off on its record-breaking flight.

IS YOUR CLUB READY?

In less than a month the International Gliding Competitions are being held at Balsdean close to Brighton and a gathering of distinguished foreign pilots are preparing to descend in a friendly invasion. But even if their presence is likely to daunt some Clubs there is no need for those Clubs to hang back. There are prizes for all classes of competitors and there is no reason why a team from any British Club should not carry off something really worth while.

Entries should be sent immediately in order to lighten the work of the Secretary who is already coping manfully with the burdens imposed as a result of the meeting of the International Commission for Motorless Flight which is meeting over here during the Competitions.

Certain Clubs are not taking any chances. Teams have been chosen for some time and are hard at work practising for the Competitions which have been specifically designed to prevent the same pilot from carrying off every event. **If there are any Clubs which have a team ready to enter but are deterred by the expense of making the journey to Balsdean, let them make a clear statement of their case and send it to these offices so that every effort may be made to help them in their laudable endeavours.**

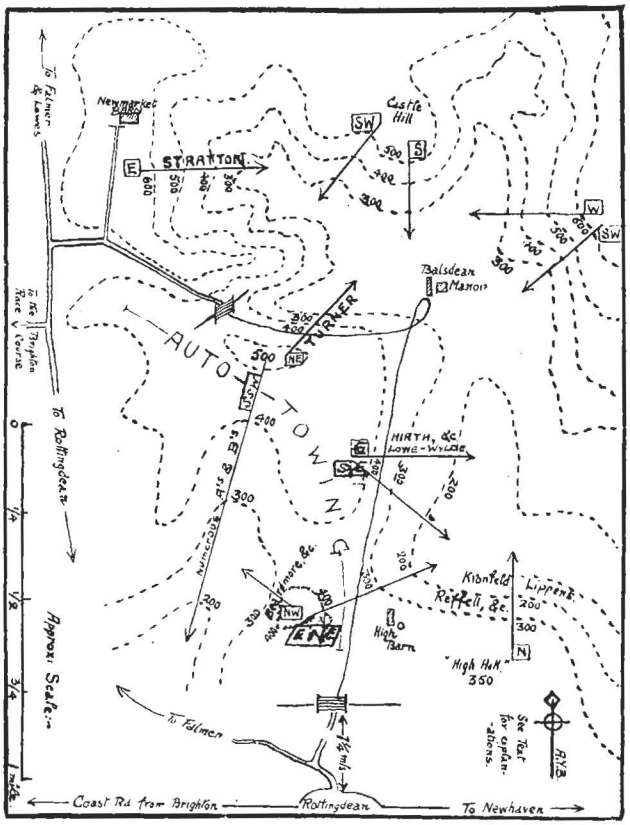
THE TERRAIN.

The site at Balsdean near Brighton is a very irregularly shaped depression running into the South Downs from the sea. Although there is a certain amount of gorse about and some very large ant-heaps (ought to be Mole-hills!) in the valleys, much of the surface is very good, good enough for auto-towing, in fact. It is most easily approached from Rottingdean.

The upper slopes are from five to six hundred feet, while the bottom drops to about 200 feet, above sea-level. The map shows the Contours (dotted lines) marked in feet.

There are "hangars" at the North-West end, the South end and in the middle of the site, as indicated by the two barns and the Farm House itself, respectively.

Practically a year's working on the site, during which time it has been visited and tested in flight by Herren Wolf, Hirth and Kronfeld, has shown that there are useful slopes to almost every point of the compass. The arrows drawn across the Contours in certain places indicate this more clearly; and if in imagination one stands at the tail of any one of these arrows one is looking down



The Balsdean Site

a slope in such a direction that a wind blowing directly up it is from the direction indicated by the letter in the small square at the tail of the arrow. Moreover these arrows are drawn at approximately the middle of the useful part of the slope along which soaring can be achieved at that point.

The names of several well-known Glider Pilots have been entered against some of these arrows as indicating the spots at which some notable soaring flights were made.

COMPETITIONS AT BALSDEAN

In order to facilitate Clubs who have not been able to get in much flying through the lack of practice grounds, arrangements have now been made whereby they can u the Balsdean site either on Friday evening, or early Saturday morning, before the Competition commences. This will afford an opportunity for Members to qualify for their "A" Glider Pilots Certificates in order to enter the Competitions.

CHRISTMAS CARDS

We are anxious to have some Christmas Cards designed which shall be available for members of the whole Gliding Movement. These will have to be designed and we are anxious to receive from suitable artists designs for such cards which should be available for retail sale at competitive prices.

Would artists therefore submit specimen drawings (pencil or ink roughs) at the earliest available opportunity, marking their letters C.C. in the top left-hand corner. The artist whose design is selected will be given an arranged proportion of the profits, probably 33⅓ per cent.

QUERIES I

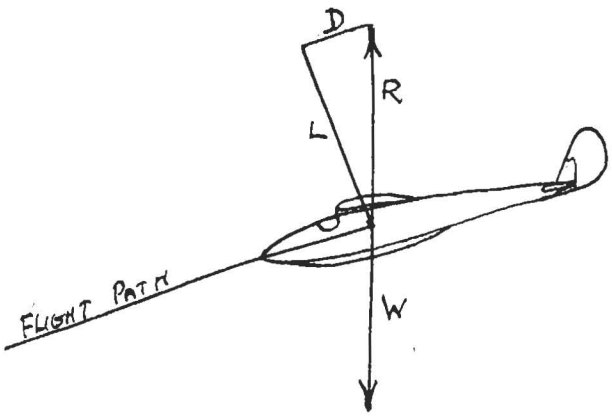
Q.1.—What is the best obtainable gliding angle for the wing section only, and at what load does this appear?

Q.2.—How is the best loading per square foot obtained?—T.G.N.

A.1.—The best obtainable gliding angle for the wing alone depends solely on the wing section under consideration and the aspect ratio employed. Lift, L, is measured perpendicularly to the flight path and drag, D, to the path (**see figure**); and therefore the loss of height over a given horizontal distance is equal to D/L, and the smaller the value of this the finer is the gliding angle.

The values of L and D vary for each wing section and for every angle of the wing to the airflow, and are obtained from wind-tunnel tests of each aerofoil.

The highest values of L/D for sailplane sections generally lie between 16 and 22 and are present at an angle of incidence of about 6 or 7 degrees above the angle of no lift. The above figures refer to the aspect ratio for which the tests are carried out, usually 5 or 6, and there is an increase in the value of L/D of about 8 per cent. for each unit increase in aspect ratio.



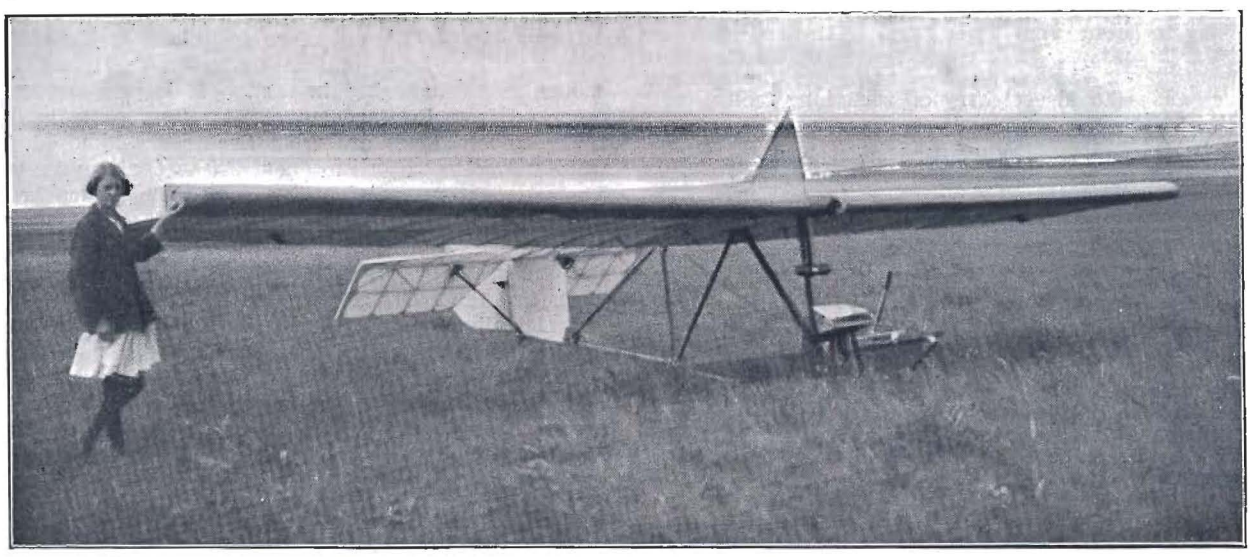
The weight (or load) is equal to the total air force, R, which is slightly greater than the lift ($R = V L^2 + D^2$.).

A.2.—It is difficult to say what is the best loading per square foot. An analysis of the most successful sailplanes to date shows that the loading vary between 2.1 and 2.8 lbs. per square foot.

If pure soaring is the aim, then a lighter loading can be employed beneficially, but, for cross-country work, a comparatively heavy loading is necessary to obtain the required speed for passing through unfavourable atmospheric regions, and it is of interest to note that practically all long distance craft have possessed a wing loading of about 2¾ lbs. per square foot.

Light loadings can be obtained by the use of a large wing area, preferably of braced construction, and by the employment of light structural design for the various units, but the result is not likely to produce the best all-round sailplane.

(See also the answers given in THE SAILPLANE of July 31).—C.H.L.N.



BUILT IN SOUTH AFRICA.—A Primary trainer built by Mr. Vine, of Germiston.

The Darmstadt Club's New Machine

The Darmstadt Academy Flying Group propose to build during the coming Winter, a new machine. The span is to be only about 40ft. and the fuselage will be of very small cross-section. To make this possible the pilot will almost lie in the machine with his feet forwards. It is hoped that the machine will not weigh much more than 130 lbs., and to keep within this figure the wing will be built in one piece and in plan will have a very fine taper. This will enable the structural weight to be reduced and at the same time provide the greatest possible span for a given surface, and so obtain the best gliding angle. The fuselage will be relatively long and the control surfaces large to ensure extreme manœuverability in order that full advantage can be taken of small areas of upwind.

The machine is to be built immensely strong to permit it to enter clouds without danger. It is expected to be strong enough to be "stunted." It is hoped that the machine will have a performance almost equal to the DARMSTADT, but with far greater strength and vastly increased manœuverability.

It will be seen, therefore, that the Darmstadt Academy Flying Group are not in agreement with the view of Dr. Kupper who designed the AUSTRIA. He seems to regard an improved gliding angle as the most desirable feature of a sailplane and is prepared to sacrifice manœuverability by increasing the span in order to obtain an extraordinarily good gliding angle.

TheDarmstadt Academy Flying Group appear to believe that manœuverability is of the first importance so that small areas of upwind can be used to the best advantage. To achieve this manœuverability they are reducing the span, but to minimise as far as possible the resultant increase in gliding angle they are doing everything they can think of to get the weight down.—ABEL ARD.

[This attempt in Germany to get away from the conventional sailplane and produce something more manœuverable is particularly interesting as the SCUD *has already shown the way. A machine of this type with a higher aspect ratio should be exactly what the Darmstadt people want.*—ED.]

ACTION AND RE-ACTION

The following letter appeared in THE WEEK-END REVIEW for Aug. 29, and is important in that it illustrates how public opinion may get biassed against gliding clubs.

A HIDEOUS DEVICE

Sir,—If "the invasion of country lanes by motor traffic raises problems" (p. 171 of your issue for August 8), what is to be said and done about a retail firm of tea dealers who send a car, on which is mounted a "loud speaker" which spreads vulgar noises, like those of a Euston Road music-hall, over a wide area of the South Downs, to attend a meeting of a "gliding" club held on a point 800 ft. above the sea?

From Ditchling Beacon to Clayton Holt nobody walking or riding on the Downs could escape the range of the hideous advertising device.—Yours faithfully, G. H. MILSTED.

New University Club, St. James's Street.

QUERIES II.

Under this heading Captain Latimer Needham, who is Chairman of the B.G.A. Technical Committee, will endeavour to answer such questions as may be sent to him. Questions should be sent to THE SAILPLANE, 44A Dover St., London, W.1., and marked "QUERIES."

Q. 1. *We have the use of an isolated hill over 100 ft. in height with clear slopes on all sides. Will this be suitable for obtaining gliding certificates?*

Q. 2. *Is a horse-shoe shaped hill suitable for soaring over?*

Q. 3. *What are the minimum and best heights for soaring?*

Q. 4. *What is the maximum wind speed required for soaring?*

Q. 5. *What is the best method of turning and does it make any differenee whether flight is up or down wind?*

Q. 6. *What is the best speed to fly at for maximum gain in height and is the speed altered for flying against or with the wind?*

Q. 7. *What is the height of hills used in England for gaining "A" certificates?*

AUSTRALIA.

A. 1. The hill mentioned should be ideal for obtaining "A" and "B" Certificates but is of little use for soaring unless the side facing the wind is at least 100 yards long and even with this length it is not easy to soar on an isolated hill owing to the loss of height on turns.

A. 2. A horse-shoe hill is good for soaring provided the wind blows well into the cup. Flying is rather tricky, and even dangerous, with a side wind, especially if the sides of the horse-shoe are close together. This is due to the eddies set up at the ends. A long straight ridge is best for soaring and can be used for winds through an angle of nearly 180 degrees.

A. 3. The minimum height of hills required for soaring is about 100 ft., 200 ft. is very good and above this excellent. The slope should be moderately steep but not bluff.

A. 4. The minimum wind speed, at the top of a hill, required for soaring is about 12 m.p.h., but higher winds give better results.

A. 5. The best method of turning is to increase speed slightly before the turn and then turn with full rudder and a little aileron. By pulling back the stick slightly the turn is greatly assisted. If the flying speed is slow at the commencement of the turn difficulty is experienced, stalling is likely, and the elevators cannot is used to assist the turn. The direction of the wind does not make any difference to the actual turn but when flying near to hills a down-wind turn should be started early as the machine drifts towards the hills with the wind.

A. 6. The best speed for gain in height in an up-current is generally about 4 m.p.h. above stalling speed and is not effected by the direction of the wind. For maximum distance in still air a slightly higher speed is best and this should be increased further if flying against a wind devoid of up-currents but can be decreased for a following wind.

A. 7. The hills at present used by English clubs for taking both "A" and "B" Certificates are about 100 ft. in height. A flight of 30 secs. can be made from a height of 30 or 40 ft. if a fair wind is blowing up the slope.

C.H.L.N.

CELLON DOPE

FOR

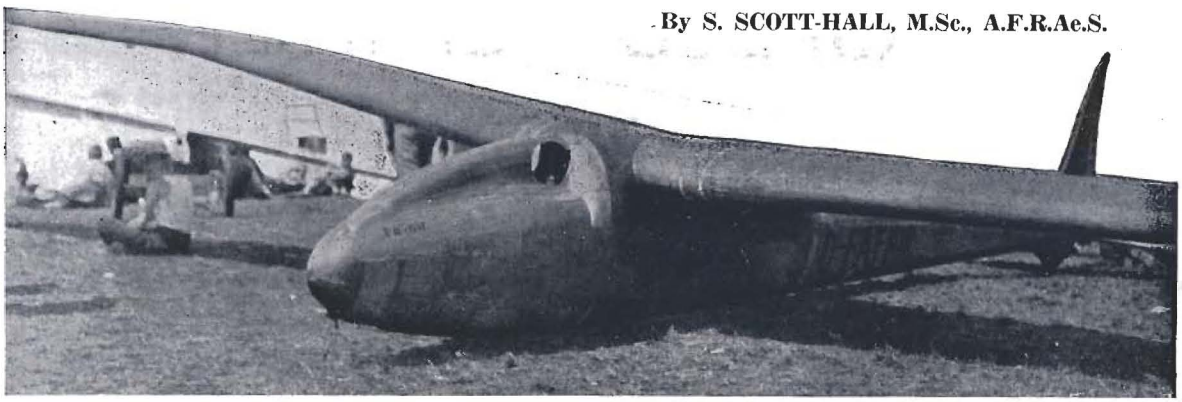
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TECHNICAL ASPECTS OF THE XIIth RHÖN COMPETITIONS

By S. SCOTT-HALL, M.Sc., A.F.R.Ae.S.



Note the latest way of fairing the wings into the fuselage of the "Fafnir."

[*Mr. Scott-Hall is a member of the scientific staff at Martlesham Heath where British aeroplanes of all types go for their official tests, and* THE SAILPLANE *is therefore particularly fortunate in having a writer of Mr. Scott-Hall's experience to outline the outstanding technical aspects of this year's meeting on the Wasserkuppe. But his observations are not only those of the scientist, he is a pilot too and recently gained his "C" certificate at Dunstable.*—ED.]

The 1931 Segelflugwettbewerbe of the Rhon Rossitten Gesellschaft at the Wasserkuppe were chiefly remarkable for the flights which were achieved with the aid of thermal currents.

It may safely be said that a thermal current is more difficult to detect with the ordinary instruments of the human body than the currents due to ground formations where the contours of the land beneath him tell the pilot immediately what aids to soaring he may expect. This is especially true at considerable heights, for the "thermal" has been drifted away from its source by the wind currents and, in all probability, is sooner or later broken up by secondary vortex action in the same manner as a smoke ring.

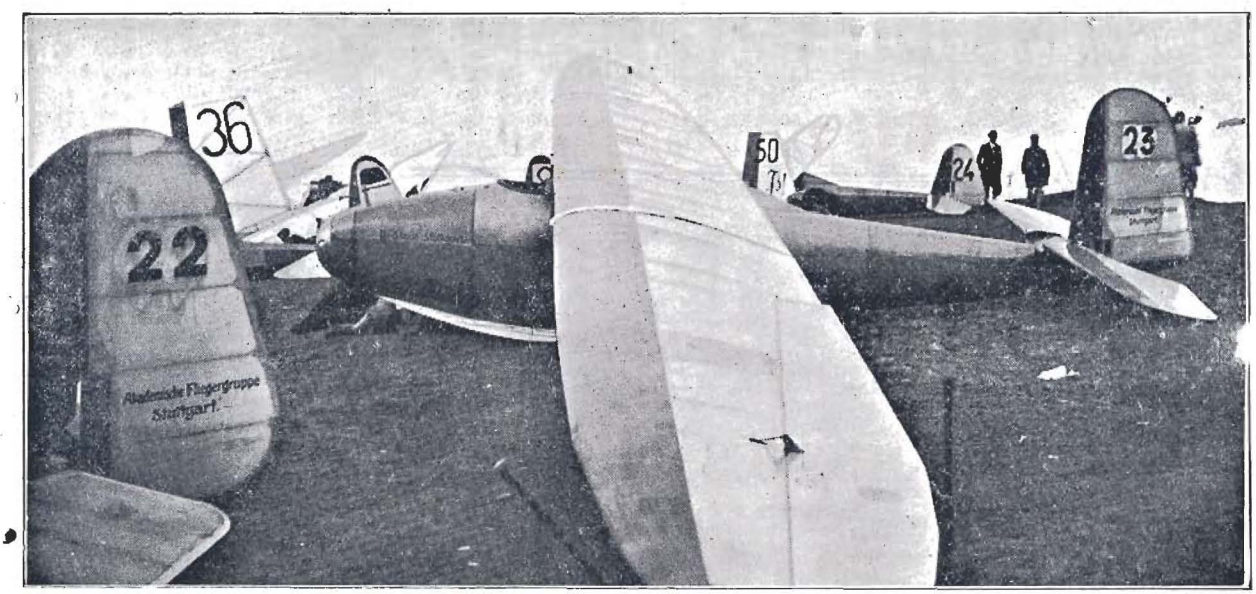
The formation and life of thermal currents are, however, as yet little understood, and are certainly outside the scope of this article. The difficulty of detecting their influence is quite definite and was reflected immediately in the equipment of those aircraft which had carried out successful flights with their aid. Just as the ultimate success of power flying under all weather conditions depends on the perfection of instruments so now it seems the success of soaring flight under all conditions depends on this same factor—the perfection of instruments.

It was significant that the WIEN, the FAFNIR, and indeed nearly all the sailplanes which made successful thermal flights were equipped with a most elaborate set of instruments, most important of which (next to the airspeed indicator) was undoubtedly the variometer giving rate of ascent or descent. There are several German types of this instrument with a considerable degree of sensitivity, one of which is developed by the famous firm of Askania.

It was given as his opinion by a well-known German soaring pilot that no really successful thermal work could be carried out without a variometer. Bank indicators and longitudinal bubbles were fitted to several aircraft in addition to the more common compasses thus making every provision in these machines for blind flying in clouds.

The instruments in the FAFNIR are worthy of special mention. In order to accommodate them all in the narrow space provided, types with vertical scales has been adopted throughout. The FAFNIR also carried an external instrument for the measurement of humidity, in connection no doubt with the research work which is a big feature of the programme of the R.R.G.

Since the question of the equipment has been deal with first it is interesting to note that a large number of aircraft now carry parachutes. It was understood that a suitable back type could be purchased for 800 marks (£40) weighing about 8 kilograms (17½lb.). In 1930 the only aircraft the writer remembers having seen equipped with a parachute was Kronfeld's WIEN and it is significant



A CONVENTIONAL TYPE.—The "Stadt Stuttgart" which is of typical Darmstadt design at the Wasserkuppe this year.

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We claim that the " Tern" is the most easily erected and dismantled sailplane yet produced. Each wing is removed by withdrawing two large bolts, no attention whatsoever being necessary to the aileron control. Each tail plane is removed as a unit with the elevator by with-drawing two large bolts, no attention being necessary to the elevator control. It is very easily possible for three men to erect or dismantle the machine completely in ten minutes.

The " Tern" is fully equiped for auto-towing, and an airwheel undercarriage with 7 foot track can be supplied if desired. The skid is sprung on rubber blocks and well faired to the body with leather. Owing to the absence of wing struts, the " Tern" is aerodynamically very clean, and has a theoretical gliding angle of 1 in 25. The machine has a B.G.A. certificate of airworthiness, and has been stressed for aeroplane towing at 70 m.p.h.

On August 24th the "Tern" piloted by Herr Magersuppe, flew from Ravenscar to Scarborough under B.G.A. record conditions, a distance of 8.3 miles from taking off place to alighting place. The flight took 33 minutes, the course being along the cliff edge in a north easterly wind. For this flight a distance record for a British built sailplane has been claimed.

The flight was actually the second soaring flight made by the "Tern," the first being a 15 minute test flight. It is hoped in the near future to demonstrate that the "Tern" can do better than this.

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that the sacrifice in weight is now considered worth while by so many.

The difficulty of getting clear from these very small cockpits especially in the case of structural failure of a wing or tail unit would be extremely great and render their successful use questionable. Whether any escapes have been made in Germany is not known to the writer but a case in the United States has been recorded.

Turning to the design features of the various competing aircraft, it must be admitted that in general aerodynamic characteristics there is little change from the standards of 1930. These were already so high in so far as good streamline form and those properties of the wing giving good soaring qualities were concerned, that they would be very hard to improve. The impression this year is that the tendency is now to produce a cheaper, less highly finished machine, in which only the essential high performance characteristics are retained.

An example of this, is the KASSEL 25, a very practical looking machine from the point of view of simplicity of construction but lacking something of the beauty of line of its forerunner the PROFESSOR, and certainly not in the same street as the WIEN, the FAFNIR or the MUSTERLE. It is, however, a very popular aircraft and is very cheap, costing only £75.

Five of the type were competing in this year's competitions. The span is 59 feet and Aspect Ratio, 21.1, so that the span-loading criterion and efficiency from this point of view should be very good. The detail design strikes one as a trifle crude. On No. 29, entered by the Kassel people themselves, it was noticed, for instance, that the fairings to the wing struts were cut off square at the ends and left open without any attempt to finish them off in conformity with accepted ideas of aerodynamic resistance.

On another machine, the ADEBAR, an unfaired diagonal strut had been inserted between the two parallel faired struts. The resistance of this combination, taking into account the large interference between the open-ended fairings and the wing at one end and the body at the other, must surely be at least as great as that resulting from leaving all three struts unfaired. The additional diagonal member on this machine had, however, been inserted at a date subsequent to the original design possibly to give additional strength for towed flight. It is not a feature of the standard aircraft.

Several sailplanes had additional strengthening for towing in the shape of cables from the nose to the wing fittings for the struts. Very many were fitted with the special release hook for towing, and one machine, the DATSCHI, was fitted with a controllable hook half-way down the body for auto-releasing.

The influence of Hirth's visit to America showed itself in the STANAVO (No. 8). This machine was fitted with a single Goodyear wheel sunk into the body near the rear of the skid so that the tread of the tyre projected an inch or so beyond the surface of the skid. The wheel was fitted with a brake controlled from the pilot's cockpit. The wheel is claimed to make the aircraft much easier to flat turn on the ground when moving at low speed, as in the case when avoiding an obstacle at the last moment of landing, and obviously makes ground handling much easier. The brake is almost a necessity—not a luxury. When applied the wheel is locked and the machine slides on skid and wheel, but the landing "run" of this combination is, it is said, no less than with the plain skid. Wheels are very popular in America where the widespread vogue of towing renders them a necessity.

A very clean looking aircraft was the SCHLESIEN IN NOT (No. 39) (illustrated on the cover of the last issue of THE SAILPLANE). Of semi-cantilever design, the wing is built with a very pronounced taper and very slightly bent up tips. The span is 59 feet and the aspect ratio 20.1. The wing struts are of steel and thus have a comparatively small frontal area. The body is of very good streamline form and altogether it was not surprising to hear that the machine had performed well in the competitions.

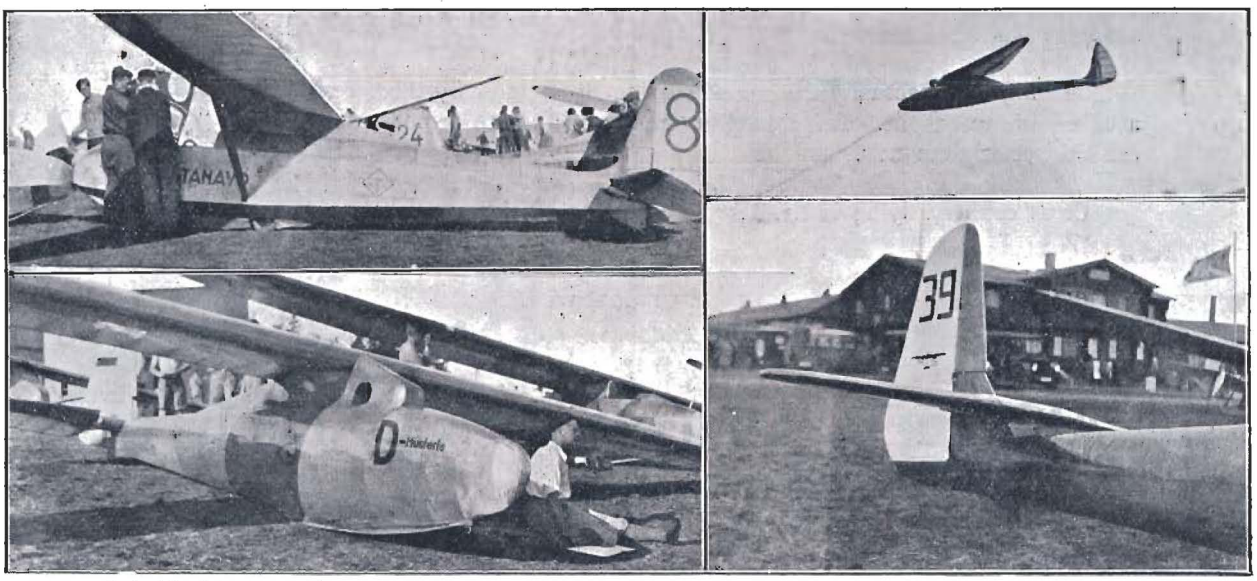
Another sailplane attracting immediate attention was Hirth's MUSTERLE (No. 9). The cantilever wing is of Gottingen 535 section—which is so popular for this type of wing—modified towards the tips to one of the classical Joukowski aerofoils. A streamline hood completely enclosing the pilot was being tried when the aircraft was inspected. It has an interesting feature in that the whole cockpit opening can be covered over with a wooden panel and locked. This must be very useful when the machine has to be left at the mercy of prying visitors to soaring meetings, as the only mischief left for them to do is to blow down the airspeed indicator. The MUSTERLE has a very complete set of instruments.

An interesting looking machine lying in the Darmstadt shed was the NAUTILUS (No. 10). Every effort had been made here to cut down body resistance as the fuselage was one of the narrowest seen and the pilot was totally enclosed. A crash had put it out of the competition fairly early.

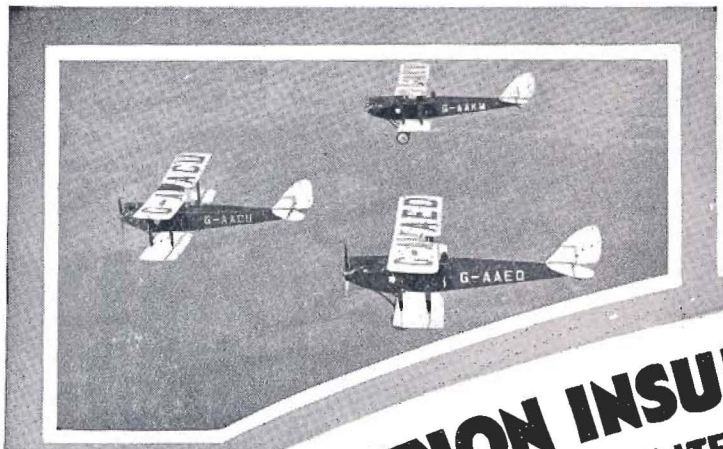
Of the sailplanes which have achieved outstanding fame, the WIEN remains unaltered except for the addition of a small fairing above the pilot's head and the release apparatus for towing.

The FAFNIR is most satisfactory as its long distance flight proved—now that the original lack of control has been cured by cutting away the curved fairing between the junction of body and wings. This fairing, although providing a very smooth entry, deflected the air outwards from the fuselage to such an extent that the tail was badly blanked. The new sharp angled junction is shown well in the photograph. The instruments on the FAFNIR have already been mentioned.

A curious freak was the STADT MAGDEBURG (No. 40). This tail-less glider had as complicated a wing as it would be possible to devise. It would be very difficult to describe without the aid of photographs and it seems unnecessary



Top left: **Hirth's "Stanavo."** Top right: **Kronfeld starts on his astounding flight in the thermal up-currents.** Bottom left: **Wolf Hirth sits in front of the "Musterle" with its new cockpit fairing.** Bottom right: **The cantilever tail unit of the "Schlesien in Not."**



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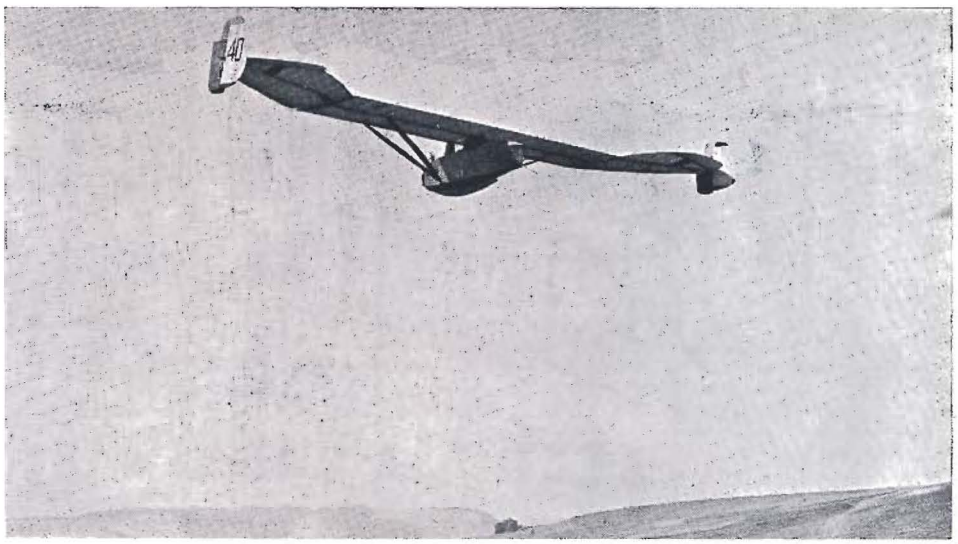
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as the machine was not outstanding as regards performance. The fundamental idea of the wing design appeared to be pronounced decreased incidence at the tips giving presumably good lateral stability. The elevator control looked very inadequate but this is usually the case on tail-less aircraft and is always a false impression. When inspected the aircraft had just made a flight with a main spar attachment fitting cracked right through—a good testimonial of the strength of the rest of the wing.

The large Dresden D-B9 (No. 51) was competing this year. It was flight tested for the first time during last year's competitions. It is a 2-seater designed for alighting on the water as well as onland. Its chief technical interest lies in the airbrakes with which it is fitted. These consist of small flaps in the upper surface of the leading portion of the wing midway between the centre section and the tips. When the brake lever is applied in the cockpit these flaps hinge forward destroying the circulation at their points of attachment. The aerodynamic effect of this is to divide the single wing into three wings with corresponding increase of induced drag. The scheme is based on theoretical premises and it would be very interesting to know how it works in practice.

[*Herr Lippirchi in his lecture before the Royal Aeronautical Society said the scheme* WAS *successful.*ED.]



The "Stadt Magdeburg."

Several well-known aircraft were not present or did not fly. Of these perhaps the AUSTRIA was the most notable absentee.

There was a large representation of the standard types such as PROFESSOR and AACHEN. These all put up more or less good performances according to the skill of their pilots but do not warrant any special description.

The illustrations are due to Mr. G. A. Little who very kindly placed them at the disposal of the writer.

THE "D" BADGE.

Some more information about the "D" Badge of the R.R.G., which is a silver-wreathed version of the "C," is now available. We understand from FLUGSPORT that the "D" badge established by the R.R.G. for special achievements in soaring flight has been conferred on the following in addition to Kronfeld and Hirth: Günter Groenhoff (Frankfurt-am-Main), Kurt Starck (Darmstadt), and Otto Fuchs (Darmstadt).

The conferring of this high-performce badge will in future be brought into conformity with the regulations which have been issued by the R.R.G. for towed glider flights. In particular, in the case of long-distance flights, the difference in height between the starting-point and casting-off point may not amount to more than one per cent. of the whole distance; further, the height and duration of the flight must be reckoned from the first moment of casting-off.—A.E.S.

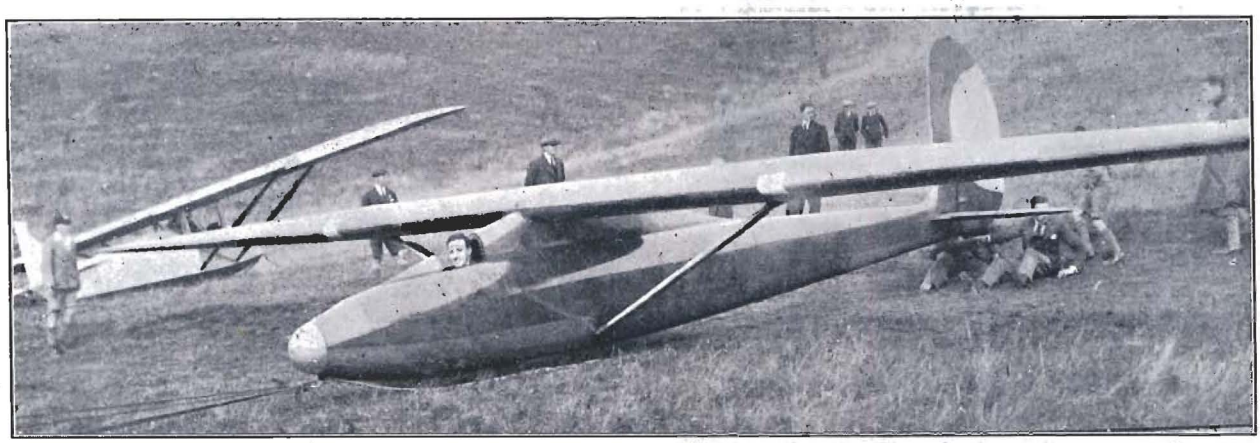
The Cloudcraft "Phantom"

The PHANTOM is designed to be a high performance sailplane for distance flights. The main features were described in THE SAILPLANE for July 31, and will not be described again here. The machine flown was built to special order for a private owner and so the fittings are somewhat lighter than would be suitable for a club machine. The time of assembly could be reduced by some minor modifications to the aileron cable connections and the elevator assembly.

As the machine is rigged to be most efficient at high speed, the take-off is somewhat impaired and care should be taken to launch it with a strong pull using the normal doubled elastic. In the air, the efficiency of the design it at once apparent for the sinking speed remains low even at first when the pilot is flying fast to get used to the controls. The minimum sinking speed appears to be comparable with that of the Professor and to be remarkably constant with increase of speed.

The aileron controls which have a differential action are sweet to work and effective. The action of the rudder which is of large area is noticeablly powerful; this is a considerable advantage on English grounds, many of which are small, and in addition provides a useful control if the pilot stalls on a turn.

At present the British Duration Record is officially held by a Frenchman, although the PHANTOM has actually beaten the figure and few of the more important records, such as height and distance with return to the starting point, have been claimed at all. The PHANTOM has the performance to attack all these records and thus to start the British soaring movement.—G.M.B.



TO CROSS THE CHANNEL?—Mr. Michelson in his Cloudcraft "Phantom" in which rumour avers he is to cross the Channel.

THE FIRST BRITISH DISTANCE RECORD

On Aug. 24, Herr Carli Magersuppe piloting the Airspeed TERN, flew from Stoupe Brow, Ravenscar, to Scarborough. The flight was officially observed and a barograph carried. The necessary proceedings are under weigh and although the flight has at the time of writing still to be officially homologated by the F.A.I., there is no reason to suppose that this flight will be recorded as other than the first British distance record. The actual straight line distance is 8.3 miles.

The TERN was taken off Stoupe Brow, and after gaining height was soared by Herr Magersuppe in the up-currents off the cliffs. The actual flight path appears to have been some sixteen miles but for the purposes of record only straight line distances count.

The TERN has been designed by Mr. Norway, who was second in command to Mr. Wallis, designer of the R.100, and is now the moving spirit of Airspeed Ltd., of York, a go-ahead concern which is not only making gliders but is also engaged on all forms of aircraft work.

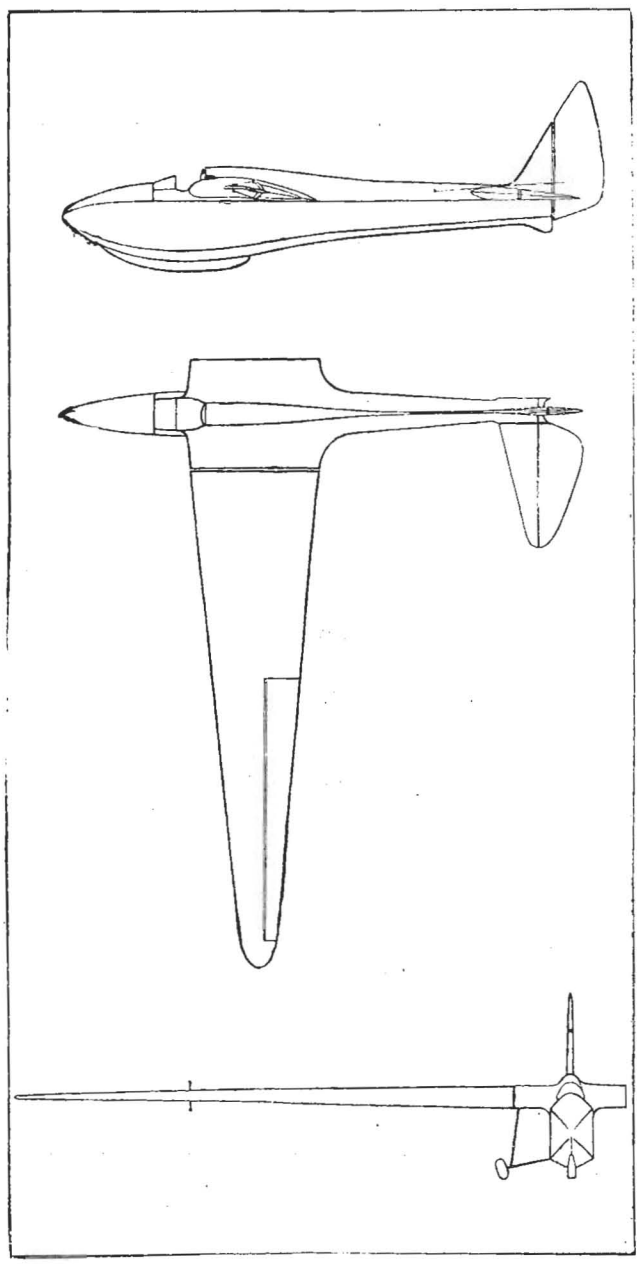
The TERN is interesting as it bears no resemblance except in its cleanliness to other high-efficiency craft. It is also stressed for auto- and aeroplane-towing and an undercarriage is available. The wings are attached to the sides of the body and the pilot's head which protudes above them has a fairing behind it which extends to the tail.

The great feature of the machine is the easy way in which it may be assembled or taken to pieces. The minimum of bolts are used and these may be easily extracted. It is of wooden construction and where plywood is not used for covering, fabric is.

Mr. Norway has promised to let us have a full specification as soon as this is ready. We gather too that to hold the distance record is not enough and the TERN is out to cover a really astounding mileage.



The "Tern" on its way.



General Arrangement.

ADVERTISEMENTS.

THE SAILPLANE offers a particularly effective way of selling or obtaining those materials and things which are of peculiar interest to those interested in gliding. Actually no other medium in the World is solely devoted to Motorless Flight and therefore no other medium is quite so intimately connected with the Gliding Movement. For *one shilling* a line you can advertise your wants or the goods you have to sell.

All copy must reach Mr. J. L. R. Waplington by the morning of the Saturday which precedes the Friday on which THE SAILPLANE is published. The rates for display advertising are extremely reasonable and particulars will be gladly sent on request from 44a Dover Street, London, W.1.

CORRESPONDENCE

Regulations for Preventing Collisions in the air

Sir,—I notice in the Editorial for Aug. 14, you ask for a ruling on the proper method of machines passing each other in the air. "Regulations for preventing collisions in the air" are incorporated in the Competition Rules of the B.G.A., which are set out in the B.G.A. Handbook, copies of which can be obtained from the writer. The particular rule reads:—

REGULATIONS FOR PREVENTING COLLISIONS IN THE AIR.
(See Air Navigation Regulations)

11.—CROSS-COUNTRY FLYING.

(a) Two gliders meeting each other end on, and thereby running the risk of a collision, must always steer to the right. They must, in addition to this, pass at a distance of at least 50 feet taken between their nearest adjacent points.

(b) Any Glider overtaking another glider is responsible for keeping clear, and must not approach within 50 feet of the overtaken glider, and must not pass directly underneath or over such overtaken aircraft. The distance shall be taken between the nearest adjacent points of the respective gliders. In no case must the overtaking glider turn in across the bows of the other glider after passing it so as to foul it in any way.

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

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

(Signed) J. L. R. WAPLINGTON.
Secretary, BRITISH GLIDING ASSOCIATION.

The Lateral Control of Gliders

Sir,—I have been very interested in the correspondence of late in THE SAILPLANE, on the ineffective lateral control of gliders.

A point which cannot be too strongly emphasised, is the danger of trying to correct bank, near the ground on a partially stalled machine, with opposite aileron, or aileron and rudder. An aileron above the trailing edge is working in a low pressure region, while an aileron below the trailing edge is in a high pressure region, so that if the machine is in a bank, and the lower aileron is depressed, instead of extra lift being gained, the aileron is merely transferred from the low to the high pressure region, acting as a very efficient air-brake which immediately slows the speed of this wing, considerably decreases its lift, and will, in addition, give the machine a decided tendency to slew round in that direction.

Should the misguided pilot attempt to correct this by adding top rudder, the result would be to lift the nose of the machine, and owing to the lack of forward speed, completely stall it, resulting in probably a broken wing, fuselage, or both.

The only effective way of regaining control from this position is by centralising the stick in a slightly forward position. With the stick in this position, all aileron drag is definitely removed, and the nose of the machine is prevented from rising. On applying opposite rudder, the speed of the lower wing is increased and that of the top wing decreased, so by this manœuvre, greater lift is obtained on the inside wing and less on the outside, and the machine very quickly regains an even keel.—(Signed) C. J. LONGMORE (Demonstration Pilot, B.A.C. Ltd.).

A word to the would-be Soarer

So many disasters, minor and even major, have ended attempts to soar that it seems possible that the effect of making down-wind turns is not generally understood. When flying in a wind whose speed is constant, the turn, or any other manœuvre, is identical with that made in still air. That is to say that if, for instance, a smooth turn through a full circle were made in still air it would look, from the ground, like a smooth circular turn. If the same turn were made in a steady wind, it would look quite another shape from the ground; though if observed from a free balloon or from a train travelling in the direction and at the speed of the wind it would still be seen to be a smooth circular turn.

Thus a downwind turn is made in the same way as any other turn but the effect of the wind is greatly to change the final position (relative to the earth) and also the ground speeds during the turn. This increase in ground-speed is frequently the cause of a pilot stalling on such a turn as he reduces his ground-speed to what he thinks his flying-speed should be.

The diagram demonstrates the effect. The circle shows a full turn observed from anything that has no motion relative to the air. A gliding speed of 34 m.p.h. has been assumed and a twenty degree bank which gives a radius, for a correct turn, of 215 feet. The numbered points are 112 ft. or 2.25 secs. apart.

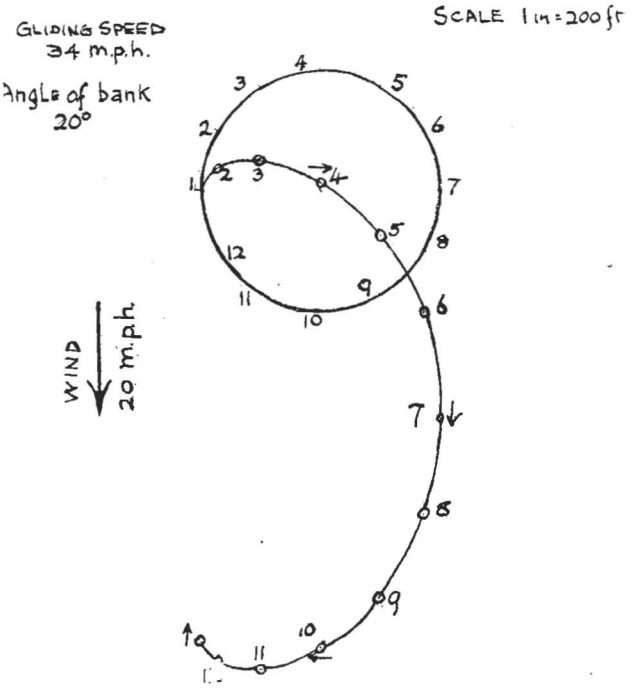
The curve shows the track over the ground made by the glider if a 20 m.p.h. wind is blowing in the direction of the arrow. It is got by working out the distance which the glider will travel down-wind during the time it takes to get to each numbered point. The small arrows show the direction of the glider's head at those positions.

The diagram shows some rather startling effects. The glider is down-wind of its original position **when only a quarter of the turn has been made.** The maximum ground speed is nearly **four times** the original ground speed and this must not influence the pilot's judgment of air speed which should remain constant. The maximum distance travelled down-wind is 860 feet of which the final 40 ft. are done after three-quarters of the turn has been completed.

The great amount of air room necessary and the good judgment required for a down-wind turn are shown by these figures. Care is all the more necessary in that so much gliding and soaring is done against the face of a hill where space is limited by the narrowness of the belt of available up-current.

It is for such reasons as are outlined here that a figure of eight track above the hill crest is generally used for early soaring flights as this track enables the pilot always to turn into wind.—KENTIGERN.

DIAGRAM OF GROUND TRACK



NEWS FROM THE CLUBS

THE BRADFORD GLIDING CLUB.

A meeting of the Bradford Gliding Club was held in the Midland Hotel, Bradford, on September 1, when Lieut.-Col. A. Gadie occupied the chair, in the absence of Sir Ben. Dawson (President).

Mr. N. H. Sharpe (Chairman of the Club) outlined a proposal to hold a Pageant at Yeadon on Sept. 26 and 27. He said that he and other members of the Club had obtained a promise of support from the Master of Sempill, Mr. Gordon England, and Capt. Worrall, of the Sherburn Aerodrome. Captain Worrall, he said, had been enthusiastic about the scheme, and had promised to send over aeroplanes, perform "stunt" flying, and give "joy rides." In all probability there would be parachute descents, and it was likely that firms manufacturing aeroplanes would be glad of the opportunity to give exhibitions.

The Bradford-Leeds aerodrome site (Yeadon) was suitable for the purpose by virtue of its position between the cities, and he did not think there would be any difficulty in their obtaining the site for the pageant. Mr. Sharpe added that it was reasonable to expect an attendance of 5,000 at the pageant.

The report of the treasurer (Mr. E. Craven) showed a balance of assets over liabilities up to July 31, of £38, and a resume of the club's activities during the first year of its existence was given by Mr. H. Jones, who said that 471 launches had been made. There were now 42 flying members, 10 associate members, and three junior members.

Mr. Sharpe said that the Club was in great need of a more advanced type of machine than the one they were now using. The second greatest need was for them to secure a really good flying ground where they could have flights on both Saturdays and Sundays, and possibly build a hangar there.

As a result of the refusal of the Bradford Corporation to allow the Club to use Baildon Moor on Sundays, there is some talk of an amalgamation with Halifax whose Corporation is more reasonable.

THE CENTRAL SCOTLAND AIR YACHTING CLUB.

For some time past the Committee of the Central Scotland Air Yachting Club, Stirling, have been busy endeavouring to secure a suitable site for their practices and it is gratifying to know that through the courtesy of the Right. Hon. The Earl of Mar and Kellie, K.T., and W. Drysdale, Esq., King o' Muirs Farm, they have now been granted permission to glide at King o' Muirs Farm, Tullibody, near Alloa.

There are many very useful and varied slopes available for use, and the members are confident that they will be able to make marked progress. The Club meets every Saturday and Sunday afternoon at 2 o'clock and when a sufficient number of members is found to be available for the purpose, a mid-week evening meeting is also arranged.

At present the Club are only in possession of a practice machine, but once sufficient headway has been made with this, arrangements will be made for the purchase of a more advanced type.

During the winter months a constructional section will be formed when members, if they so desire, will be allowed to build their own sailplanes at the Club's constructional headquarters.. King Street, Alloa.

New members are at present being enrolled and anybody desiring to join the Club should communicate with the Secretary, Mr. Charles S. Sharpe, Blairlogie Park, Blairlogie, by Stirling, or with the Assistant-Secretary, Mr. J. W. Gardner, "Journal" Office, Alloa, who will be pleased to give them full particulars of membership. The annual subscription for flying members is £1 1s. 0d., and the entrance fee 10/6, and for non-flying members 10/6, no entry fee.

THE ILKLEY GLIDING CLUB

High winds prevented the August Holiday Camp at Malham from breaking the records achieved during the Club's Easter Camp. A North wind prevailed and the speeds at times were said to have been well over 50 m.p.h. This made all types of flying impossible except short periods in the early morning and late evening.

This was all the more disappointing as there were quite a number of visitors. The Bradford Club turned up in force and representatives from the Preston and Barrow Clubs came to the Camp.

If the weather had been anything like respectable, there is no doubt that the Easter Camp record of 87 flights would have been broken, also the number of licences gained and the total flying time. As it was, the fact that there were no crashes goes to show that the method of instruction has improved, as well as the quality of the flying, in spite of the very dangerous wind. Moreover, the enthusiasm shown under these very adverse conditions proves that the Club is getting on to a very sound basis. The early morning flying was perhaps the greatest improvement over the Easter Camp, and should become a standard practice in future.

THE LONDON GLIDING CLUB.

The week-end Aug. 15-16 will be remembered by most people as a new standard of summer weather. On the first day of the camp, which thus began under unfavourable conditions. The wind was too high for training and the PROFESSOR was launched. The pilot did the Zoo flight successfully, and landed at the top. The uselessness of trying to force a high-efficiency machine down was shown by the pilot who tried to and failed although he flew at 70 m.p.h. in the attempt. The next flight with a different pilot ended at the bottom due to a bad launch.

At the third launch the take-off was excellent and half-a-minute later the PROFESSOR departed up a cloud street towards Ivinghoe at a ground speed of about 4 m.p.h. The glider passed near the Beacon and then turned to the West reaching its maximum height over flat ground beyond Edlesborough after a continuous climb. It then lost height and returned to Totternhoe, rapidly climbed to some 600 feet over the hill and, with the help of a cloud, departed incontinent past Dunstable and Luton to land in Luton Hoo park by the lake, which is 6¼ miles away over flat country.

[*Thus does Mr. Buxton describe the longest flight yet made in England.*—ED.]

On Tuesday, the weather was moderate, but five 45 second flights were made for the B test.

On Thursday evening, after two days of southerly gales and rain storms, the wind moderated and veered to West and Mr. Dent, an *ab initio*, did a "C" test. His "A" and "B" tests were mentioned in consecutive numbers of THE SAILPLANE.

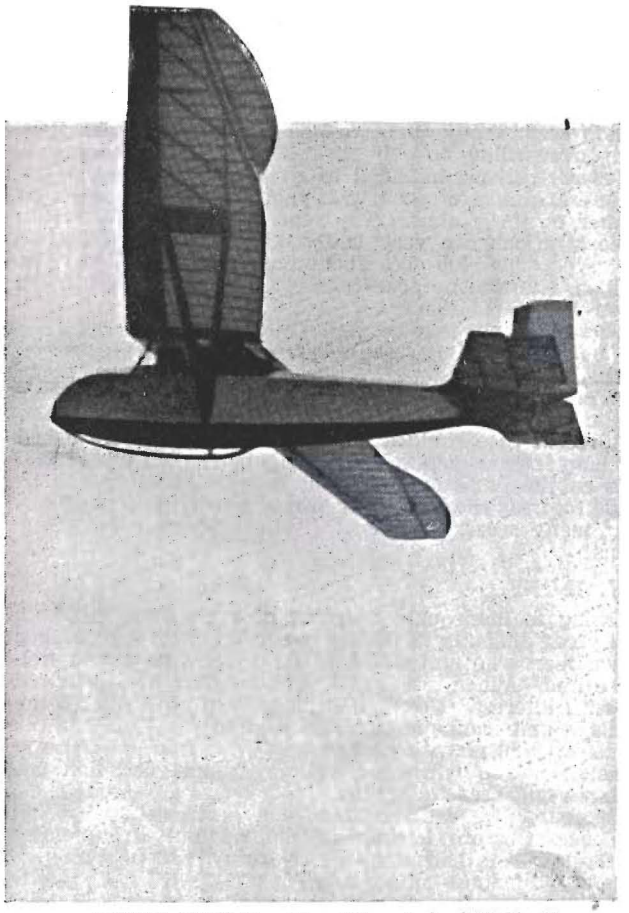
On Friday there was a strong and bumpy West wind. The PRUFLING took off first and made four soaring flights and five very prolonged glides during the day.

There was a good attendance of members at the gliding ground on Aug. 24, and although the weather was not suitable for soaring, a fair amount of elementary instruction was given on the ZOGLING and DAGLING and the Club 2-seater was busily engaged on passenger flights.

Mr. Humphries attempted his qualifying flight for a 'B" certicate in dead calm and did 56 seconds which everyone agreed was one of the finest flights ever done on the DAGLING. Several 45 seconds were flown as qualifying flights for the "B" certificate.

The operations of the 2-seater as a passenger carrier proved a material benefit to the Club funds and is likely to operate every week-end in future.

[*The London Club is to be congratulated on securing another* AB INITIO *"C" in the person of Mr. Dent.*—ED.]



HOME BUILT.—Mr. Slingsby's "Falke."

A NEW CLUB FOR LEICESTER.

According to THE MARKET HARBOROUGH ADVERTISER the suggestion that a Glider Club should be formed by the members of the staff was considered at a meeting of the employees of the Croft Granite Brick and Concrete Co., Ltd., held at Croft on Aug 13.

It was stated that a primary type glider with an elastic catapult now in the possession of the Leicestershire Glider Club was available, and that a field at Thorleston, near Croft, could be secured.

About 30 members of the Croft Granite Brick and Concrete Co., Ltd., are interested in the proposal, and the suggestion that the members of the Leicestershire Glider Club might be invited to join the Croft Glider Club is now under consideration.

The idea was originated by Mr. R. H. Ball, a former R.A.F. wireless operator and Mr. L. E. Headley, an ex-R.A.F. pilot, both of whom are in the employ of the Croft Granite Brick and Concrete Company Limited.

DISPLAYS THAT DISGUST US

Having read the advice on gliding demonstrations given in the B.G.A. Handbook, I am feeling rather unhappy. Not because of the B.G.A. advice, which is good, but because of demonstrations which are very bad.

Some gliding clubs are always ready to help others. Others seem ready to be helped without, unfortunately, being over-willing to help themselves.

Demonstrations, intended to raise revenue and do the movement a spot of good with publicity, often accomplish neither of these aims. The reasons are (a) That the demonstrations are very badly organised, and (b) that the responsible club goes about the job in a half-hearted fashion, showing no sense of helpfulness or gratitude to those who assist them.

These remarks may seem to be a little "hot" but they are only too true of same displays which have occurred in the South of England. I speak from experience; members of my club have been the victims of such slap-dash methods.

A recent case rankles with us sorely. We were asked for help from a distant club and gave it with all willingness on the understanding that a contribution would be made towards the heavy expense of moving two machines over many scores of miles. What did we get for our pains?

ALL ALONE.

Owing to inadequate marking of routes our members had great difficulty in finding the flying site. An advance guard man who arrived at 11 p.m. found no-one to welcome him. When we rigged our machines people looked on with interest. No-one offered to help. We did all the haulage and manhandling incidental to our share in the demonstration and we packed up afterwards without any assistance—and without a solitary thank-you from the club we had been toiling for.

Of course we were all put to a great deal of inconvenience. Our own happy week-end was cut out and some of the members had ventured so far abroad to their private disadvantage as business men. We are all heart-and-soul for co-operation, but we shall think twice before we embark on such an undertaking again.

Others who were billed to assist in this particular demonstration did not turn up at all. The weather was against the event but quite apart from that, only good fortune saved it from being a fiasco. Perhaps it would be a good plan to oblige every individual or organisation undertaking to assist in a display to deposit £5 good-faith money with the B.G.A., cash to be forfeited should the entrant be absent without a good reason. Teams and machines that don't turn up are nearly as unlovable as the clubs that don't help them when they do.

The Editor is very proud of the amateur status of The Movement. So is Dorset, but if amateurism is to be an excuse for haphazard activities and unenthusiastic amateurishness, the sooner we pack up the better.

A FEW QUESTIONS.

Clubs considering the holding of demonstrations might put themselves through the following catechism:—

Have we got more than three members who are willing to put heart and soul into the job?

Have we got 20 men who can take their hands out of their pockets and take charge of visitors, look after the crowds, mark the roads **clearly,** patrol the car parks, retrieve machines, distribute literature, etc.

Have we got the resources to run a display at all? After all, the police, the A.A., the St. John Ambulance Brigade, the Boy Scouts and the newspapers will all help us, so will it be very hard?

Will we approach land-owners **and** tenants of any grounds we are likely to use in any way and see that they do not object? Will we have the courtesy to clear up litter and thank those who help us?

Will we have a key-man for the organisation whom all workers will obey? Shall we take risks or have a first-aid tent.

Shall we let the public down by engaging "doubtful starters"?

Shall we make sure who will come?

Shall we have a programme? If so, shall we stick to it?

Does a display justify the effort in our case? Does the date clash with the Muggleton Tennis tournament? Can we make £50 out of it?

Really, I don't mean to be frivolous. It is a fact that displays are held without proper consideration of these factors.

THE GUINEA "SUB."

Mr. W. S. Bullivant showed zeal for The Movement in the last SAILPLANE. In an interesting contribution he rather suggested that a subscription of £1 1s. is rediculously low. Well, it is quite a good average payment. Dorset Club has two machines, a magnificent site all its very own, a hangar, a clubhouse, an old car, a trailer, an oil engine and whole stacks of gadgets, and is solvent on the guinea subscription. We find it hard enough to get members at that figure, and we are nervous of raising it at all. Clubs with wills of their own will make money and the club bank balance is usually in direct proportion to the keenness of the brigade.

On the other hand, Mr. Bullivant's scheme of club amalgamation for the formation of gliding schools seems excellent. Such amalgamations under responsible auspices would be facilitated by a Government grant to the B.G.A., which in the opinion of the writer is more than due.

B.G.A. HANDBOOK.

Apart from a size which keeps it out of members' pockets the B.G.A.'s Handbook is a thoroughly workmanlike product, complementary to the GLIDING Year Book and necessary for the library of every club. The handbook reveals the regrettable fact that the B.G.A. is not numerically as strong as those it caters for. The number of clubs which have joined up in 1931 amounts only to five—out of a total of 41 affiliated.—"DORSET GLIDER."

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