October 28th, 1932. Vol. 3, No. 19.

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

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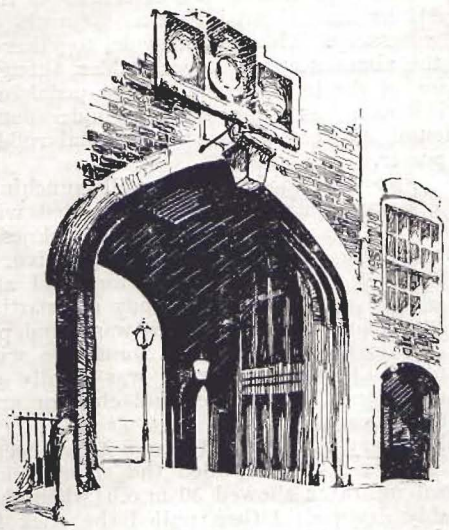
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The offices of "The Sailplane & Glider" overlook this famous old gateway, the Chancery Lane entrance to Lincoln's Inn.

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BRITISH DESIGN AND CONSTRUCTION.

IT has frequently been stated that in soaring flight everything depends on the pilot. Anybody who has seen one of the German leaders or one of our own more experienced pilots handling a machine, likewise anyone who has read the absorbing pages of Kronfeld's book, will readily admit that there is a great deal of truth in this statement. But it is equally true that the best pilot cannot progress very far unless he has at his disposal a good performance machine of suitable design and construction.

One of the most fascinating aspects of the development of the Gliding Movement in Germany during the last twelve years has been the evolution of new types of motorless aircraft, culminating in the high performance sailplanes which have been seen at the Wasserkuppe in recent years, and with which everybody is now familiar. With the long lead gained by Germany it was obvious that when gliding was revived in this country three years ago the only sure way to progress at the beginning was to benefit by the German experience and adopt the machines which had proved satisfactory in that country.

Although from the very outset initiative has been shown by both clubs and individuals in building their own machines from working drawings obtained from Germany, there are very healthy signs that we are advancing rapidly beyond this stage and are launching out into new sailplane designs and methods of construction.

Perhaps the best example of British construction using a German design is the FALCON which put up such a pleasing performance at the recent Competitions at Askam. Apart from certain minor modifications, this machine, which was constructed by Mr. Slingsby, of Scarborough, is a copy of the FALKE. Nevertheless, its excellent performance is a very great testimonial to Mr. Slingsby's constructional work. During the first test flight he soared the machine for over 12 minutes—incidentally his first soaring flight. It is so stable that it will fly "hands off" for really long periods. Mr. Buxton found this useful during his recent distance flight from Askam to Coniston when he was able to get out his map and calculate from the contours, distance and estimated gliding angle what height he would require to fly back on the Coniston ridge.

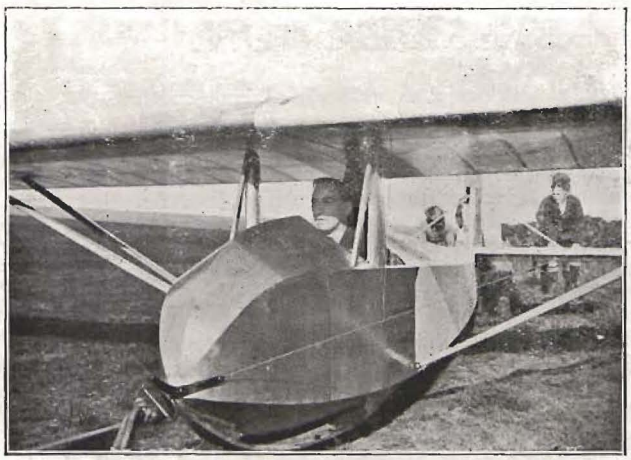
The FALCON has been very thoroughly tested under varying conditions. Mr. Slingsby wanders with it all over the country, rarely using the same site two weeks in succession. Its robust construction and good performance render it eminently suitable for advanced training purposes. We understand that its owner is prepared to construct a similar machine to sell at £95.

During the last few weeks visitors to the London Gliding Club's ground at Dunstable have seen two

machines flying almost continuously at week-ends and creating a big impression by their performances. We refer to the SCUD II. and the CRESTED WREN. Both these machines are not only of British construction throughout, but also of British design. The SCUD II., which was designed by Mr. L. E. Baynes and constructed by Messrs. E. D. Abbott, of Farnham, for Mr. Buxton, was described in detail in THE SAILPLANE of September 23rd. In the present issue its owner gives further particulars with regard to its flying properties.

The CRESTED WREN was designed and constructed by Corporal Manuel, who must ever rank as one of the pioneer constructors of motorless aircraft in this country. It has recently been acquired, and is held in joint ownership, by three pilots of the London Gliding Club. This machine, like the SCUD, is very efficient. This is all the more remarkable when it is realised that it has been designed entirely by eye and has no "paper" performance. It is very easily rigged and works well on the controls. Its controllability, indeed, appears to be one of its most outstanding features. Another point in its favour is the relatively small crew required for launching, seven men being sufficient under normal conditions. We are told that Corporal Manual is now constructing a second WREN to sell for £82, and that there is a possibility of his setting up next year as a constructor.

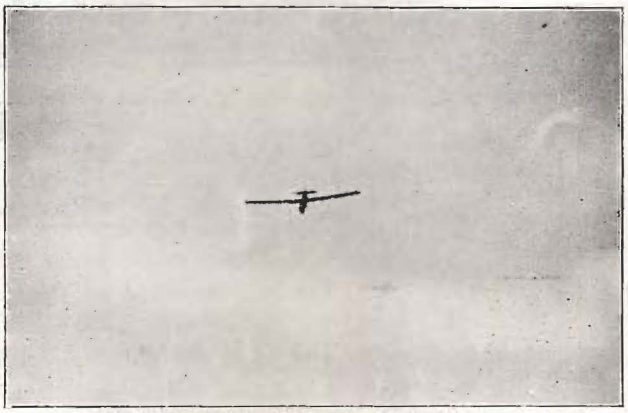
One feature common to all three machines is the relatively small span, which is in the neighbourhood of 40 feet; this conforms to the most recent trend in sailplane design, to which reference has been made on more than one occasion recently in THE SAILPLANE. There seems little doubt in the case of the SCUD and the CRESTED WREN that a high degree of efficiency has been combined with good manœuvrability and we may thus expect to see some record distance flights put up with these machines next year. With the older proven types for elementary and intermediate training we are now equipped with British machines for advanced training and high performance work and, with all three machines on the market it is hoped that clubs and private owners will make an effort to secure one or other of these during the coming year and thus increase the standard of performance throughout the country. It is hoped, too, that these recent developments are but the beginning of an era of British sailplane design which will raise performance in this country to a level comparable with that which has now marked the German Gliding Movement for so long.



A "Close-up" of Mr. Slingsby in the "British Falcon."

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MORE ABOUT THE "SCUD II."



The new SCUD is intended to achieve high efficiency by very careful design to give low structure weight (the span loading is approximately the same as that of the PROFESSOR) and good manœuvrability.

The first tests were carried out at Askam during the 1932 Competition and showed that adjustments to controls were necessary. These were made, together with a change in the ailerons and a larger rudder, though with the alteration of the leverage of the foot pedals, so that they should move less for a greater rudder deflection, this was found unnecessary as the original rudder has plenty of power.

The take-off is very good, and a small launching crew only is necessary. This was to be expected with the small weight of the machine, but the quickness with which it leaves the ground is really impressive.

In the air, the machine is stable fore and aft, and pleasantly sensitive, while the ailerons are particularly effective. In the first soaring flight it was found possible to fly backwards into the bowl at Dunstable with full aileron control although the wind was hardly greater than stalling speed. The rudder and elevator are very effective at all speeds.

The stall is very gradual. It has not yet been fully tried out, but on a test I pulled the stick back until the air speed indicator showed 30 m.p.h when the nose unmistakeably dropped; I then pulled the stick further back and the same things occurred again so that as far as could be judged the machine is very safe in this way.

Thus stalling speed is at about 30 m.p.h. by air speed indicator (which, of course, cannot be quite accurate due to position error of the pitot head. Competent opinion holds that the instrument probably reads a little high) and 35 m.p.h. seems to be a comfortable flying speed. The maximum speed reached so far is 70 m.p.h. at which everything was normal.

As far as one can judge from the first soaring tests, the SCUD is a machine of high efficiency with remarkable controllability and good stability combined, so that with its handy size and quick erection time it should be an ideal sailplane for distance and cloud flights.

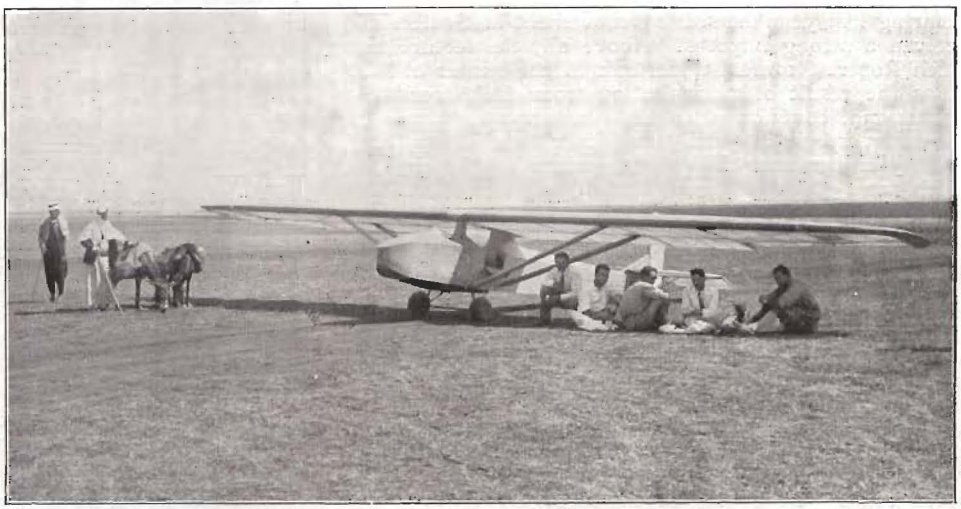
G. M. B.

BROADCASTING FROM A SAILPLANE.

The latest development reported from the United States is a broadcast talk from a sailplane in flight. Jack O'Meara, after an aero-tow over New York City, carried out a soaring flight of approximately one hour. He carried a short wave radio set (5m. wave, two-way communication) and his talk was broadcast through one of the New York broadcasting stations.

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NEWS FROM OVERSEAS



Lunch hour at the Carmel Gliding Club.

PALESTINE (THE CARMEL GLIDING CLUB).

We claim the position of "Latest Joined Recruit" amongst gliding clubs. A notice appeared in THE SAILPLANE of October 14th.

Our activities started in September of this year, and consist of gliding meetings once a week and a lecture once a fortnight, both these meetings being well attended always. As yet we have no glider of our own, but Capt. Yates, of the Portsmouth and Southsea Gliding Club, is instructing us on his two-seater B.A.C. VII. FUSILIER until such time as we can acquire one of our own.

We and all future gliding in Palestine must thank him for this generous act, as without it we would not have been able to join in this finest of sports for some time to come.

Everyone is as keen as mustard and our instruction is taken very seriously. Capt. Yates's reports on individual progress of members are most encouraging and satisfactory, giving great hopes for the future.

All of our members enjoy reading THE SAILPLANE and we have already several subscribers.

UNITED STATES.

During the National Air Races at Cleveland, Ohio, Martin Schempp carried out daily demonstration soaring flights above the airport with his SCHLOSS MAINBERG sailplane. Using a Taylor Cup lightplane with a 35 h.p. Continental engine, he was towed up to 1,500 feet and on one afternoon, with favourable thermal conditions, soared to 2,400 feet His longest soaring flight above the airport lasted 55 minutes.

Mr. Bodenlos, flying a Cadet Utility Glider at the Municipal Airport at Akron, Ohio, with an auto-tow start, soared along the huge Zeppelin dock for 40 minutes.

At a soaring expedition to the Alleghenny Mountains, organised by the Haller School of Soaring Flight, Pittsburg, late in September, one of the students, Mr. Emerson Melhouse, on his first soaring flight (shock cord launch) reached an altitude of 2,500 feet above the starting point. He was flying a HALLER HAWK sailplane.

The Soaring Society of America is to be continued, and it is hoped that it will grow into a strong national organisation.

FRANCE.

It is reported that M. Alfred Duprat, starting from the sand dunes near Bordeaux, carried out a flight of over 30 miles. He was forced down by bad weather.

GERMANY.

On October 9th, Anna Reitsch, a 19-year-old German girl, flew for 5 hours 15 minutes at Riesen Gebirge—a very fine performance.

AUSTRIA

The gold medal "For Merit" has been conferred upon Herr Robert Kronfeld by Dr. Miklas, President of the Austrian Republic.

POLAND.

An intensive training meeting is being held at Bezmiechowa and concludes on Oct. 29th. Several pilots have carried out flights of 4 hours and one a flight of 7 hours. On one occasion a height of 3,000 feet above the starting point was reached. One distance flight of 10 miles was accomplished. Further details will be given in THE SAILPLANE after the conclusion of the meeting.

RUSSIA.

A report from Moscow states that the first "post and passenger glider route" has been opened by the Civil Air Fleet Department of the Soviet Union, and that "big gliders" built in Russia are being used for the route, which is in Central Asia on the Armu-Darvia River. We have no further information on this subject so are unable to say whether the scheme (assuming the report is authentic) is an attempt to commercialise aeroplane towing in Russia, or whether it is even more ambitious!

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THE TRAINING OF GLIDING INSTRUCTORS IN SWITZERLAND.

(Translated by Dr. A. E. SLATER.)

During last year the soaring movement in Switzerland received a strong impetus. Above all, the lecture tour which Robert Kronfeld undertook in the winter of 1930-31, as the result of an invitation from the Aeroclub of Switzerland, contributed to the new impulse which the movement received. All those interested in sporting, military and soaring flight were present at the lectures, which were given at Berne, Zurich, St. Gall, Biehl and Basle, and, at the lecture in Berne, representatives of the Federal Air Office co-operated in laying down certain lines of procedure, which were based on previous Swiss experience and supplemented by experience in Germany.

The summer brought the flights of Günther Groenhoff on the Jungfrau Joch, as also the Swiss expedition on the Jungfrau Joch, and by this means several fine soaring flights were achieved.

In the meantime, the Aeroclub of Switzerland, upon whom the organisation of Swiss gliding depends, got to work and set up a control which brought many things which could well be copied by other countries.

The gliding and towed-flying course held by the Swiss Aero Club in the period March 31st to April 8th, 1932, will prove of extraordinary advantage for the further development of soaring flight in Switzerland in the future.

It is undoubtedly the quality of the instructors which determines the future development of the movement, and the Areoclub of Switzerland has certainly been right in doing its utmost *from the very start* to allow no fault to arise in this respect.

The course was under the direction of the Aeroclub of Switzerland, while the organisation was taken over by the Berne Aero Club. In the actual flying instructors' course the opportunity was given to the instructors of acquiring theoretical and practical knowledge under the direction of experienced experts. Furthermore, the opportunity had been given for all to help themselves by mutual exchange of views upon their experiences. By this means uniform and practical instruction for all groups was made possible. Furthermore, the purpose of the course also included the training of new gliding instructors. The machines were provided by the Berne Aero Club, as well as later by the Basle section of the Swiss Aero Club.

A special facility which was provided for all those taking part in the course was that the Aero Club repaid their travelling expenses and also paid them compensation for each day of their stay.

In the first place, those who took the flying instructors' course were already competent gliding instructors, or power-flying instructors who wanted to extend their knowledge of motorless flight. The so-called "instructor-candidates," that is, those who were as yet without practical experience, had, according to the conditions of entry, to have passed the "B" test and to have been recommended by the leader of the group to which they belonged.

The Swiss Aero Club engaged Herr Robert Kronfeld to co-operate with the Swiss gliding pilots, and upon him devolved that part of the instruction regarding which little experience had yet been gained in Switzerland.

The following lectures were included in the theoretical course:

Aerodynamics.—Lecturer: Ing. Belart, of the Federal Air Office.

Statics (with slides).—Lecturers: Schreiber and Oberlt. Gerber.

Aircraft Science.—Lecturer: Schreiber.

Meteorology.—Dir. Pillichody, Director of the Berne Aerodrome.

Regulations.—Hauptmann Köhli, General Secretary of the Swiss Aero Club.

Technique of Gliding and Soaring Instruction.—Section I.—General: Dir. Pillichody. Section II.—Elementary and Advanced Instruction (Theory of Thermic and Cloud Flying): Kronfeld. Section I.: Choice of Aircraft. Section II.: The Instruc-

Public Lecture: Kronfeld.

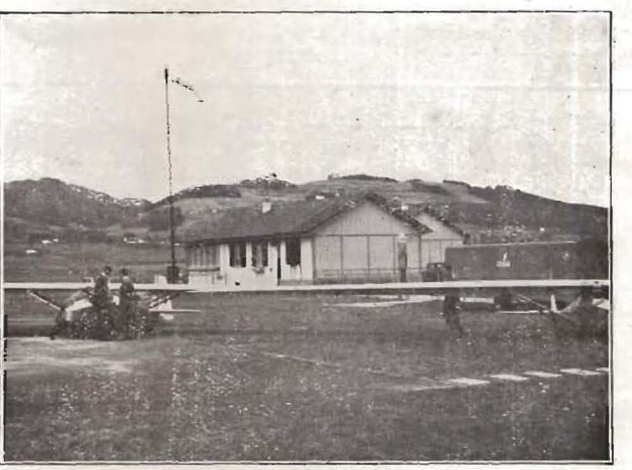
The number of soaring pilots who have so far carried out cloud flights and thermic flights is none too large. The demonstrations of Kronfeld, who not only was the first to perform cloud-soaring flights, but also, as flying instructor in the Rhön has taught them systematically, raised so much the more interest on that account among the Swiss flying instructors. Thus one could at his lectures draw upon his very valuable experiences, as practitioner and teacher, concerning the problems of the gliding instructor and of gliding instruction, as well as about towed flight.

The practical exercises for the training of flying instructors were carried out on the Längenberg in the neighbourhood of Berne and for the elementary schooling a KASSEL 12 was obtained, while for the advanced instruction a PRÜFLING, a PROFESSOR and a KASSEL 25 were used. The instruction was especially in the hands of Oberlt. Gerber, who had been trained in the Rhön and had attended a towed-flight course in Darmstadt, under Robert Kronfeld.

At the towed flying course, which took place after the gliding instructors' course, in the first place pilots were to be trained for towed flying, and also the experiences of the flying instructors were to be extended into this sphere. Further, the opportunity was given of acquiring the Swiss towed-flight certificate, for which one must carry out eight towed flights. The course took place on the Belpmoos aerodrome, a good aerodrome near Berne.

To do the towing, a D.H. MOTH was used, which proved itself very suitable. Similarly, the KASSEL 25 showed





Left: The Swiss Aero Club "Professor" starting. Right: Two "Kassel 25's" on Belpmoos Aerodrome.

good qualities, also in towed flight.

The whole course presented a gratifying picture of enthusiasm for soaring flight, which is beginning to prosper in Switzerland as it already does in Germany. Both during the flying instructors' course and during the towed-flight course a whole collection of certificates were obtained, in the doing of which it was hardly to be helped that there was a certain amount of "matchwood," as in every part of the world where gliding is being taught. Certainly the Swiss gliding movement has much for which to thank the Aero Club of Switzerland, whose untiring General Secretary, Hauptmann Köhli, can be regarded not untruthfully as the spiritual head of the whole business; also the Berne Aero Club and their director of instruction, Oberlt. Gerber, in that they were able in a truly professional manner to bring the course to a successful conclusion. The Federal Air Office, which was represented by Ing. Gsell and Ing. Belart, showed itself delightfully human and as little official as possible. The Swiss-built PRÜFLING, and the PROFESSOR, which had been constructed with first-class workmanship by the Swiss, were brought into use just as much as the KASSEL 12 and the two KASSEL 25's, which had been supplied from Germany. Finally, the co-operation of the Swiss pilots with Robert Kronfeld showed what forward strides could be made with the help of the best human and sporting comradeship.

IMPORTANT NOTICE.

THE SAILPLANE AND GLIDER is published on the 2nd and 4th Fridays in each month.

Club News and Copy intended for a particular issue must reach the Editor not later than the first post on Thursday morning of the week preceding publication.

Subscriptions and renewals should in future be sent to THE SAILPLANE AND GLIDER, 43, Chancery Lane, London, W.C.2.

Copy and instructions for advertisements are required at least ten days prior to date of publication of the issue for which they are intended.

PRELIMINARY SURVEY OF BLACK COMBE AS A SOARING SITE.

By C. H. LATIMER NEEDHAM, M.Sc., F.R.Ae.S.



Black Combe.

Black Combe is situated at the south end of the range of hills running from the Duddon Sands, north-west of Barrow-in-Furness, towards the Scafell Pikes (3,210 ft.) in the north. On the west side is the Irish Sea and to the east are the Ulverston Hills, the Furness Club gliding ground over which the 1932 Competitions were held.

The height of Black Combe is just under 2,000 ft., and this is more or less maintained to, and well beyond Sca Fell. There is a good road round the base of the hill from Broughton in the east to Whicham, south, and to Bootle and Ravenglass in the west, and a track crosses the range from Duddon to Bootle over which there will be little difficulty in transporting machines during the summer at least.

The map shows a track up the south face from Whicham directly to the top, but so far this has not been explored, and there is some doubt whether it is suitable for motor cars. If this proves right it will be necessary to make a new track running south from the Duddon-Bootle track already referred to.

It is possible to soar over the Combe in any wind direction, although the Whitbeck side, facing W. and W.S.W. is undoubtedly the best. The hill over this part is very steep, rising 1,000 ft. in half a mile, or one in two and a half, and has a fairly even surface. It faces directly on to the sea and into the prevailing wind, and, since there are no obstructions, it should provide soaring conditions perhaps as good as any in Europe. *The one disadvantage is the amount of cloud that forms over the crest due to the moisture laden winds.*

On the occasion of our visit several seagulls were peacefully soaring at a tremendous altitude.

To the south-east the face is equally steep, but is somewhat serrated by ravines, whilst there are several long ridges facing towards the north which rise almost 1,000 ft. above the Duddon-Bootle track. Facing east, the hill is also very steep, but it is very rough, with rugged crags and tree-covered slopes.

On the whole, the surface of the hills is smooth, being covered with grass and some bracken, but small or medium sized boulders are plentiful, although it should be possible to find a number of clear spaces which could be used for landing purposes. There are quite good fields and sands at the base of the hill.

Distance flights could be carried out in most directions except to the west; the following being suggested routes: Cockermouth, Keswick, Penrith and Kendal, and perhaps via the Furness site, and with aid of clouds to Lancaster, and then down the western side of the Bowland Forest Hills, Preston and Blackburn.

It is not recommended that the site should be used for training purposes as it is not considered suitable, especially with the fine Furness site so close at hand, but for competitions where high performance is required it should prove one of the best in the country.

A small farm was noticed at the foot of the northern slopes which might prove of considerable assistance as headquarters.

It is considered that Black Combe compares very favourably, both for soaring conditions and situation relative to the surrounding country, with the Wasserkuppe, except for the difficulty caused by cloud formation mentioned previously.

It will be remembered that under the title "The Ideal Site for Soaring Competitions," published in THE SAILPLANE for April 1st, 1932, the writer put forward a formula for obtaining comparative values for various sites.

The values thus found for a number of soaring grounds in this country gave figures at 49, 55 and 63 for Dunstable, Itford and the South Downs respectively, and it is of some interest to note that on the same basis the value of 75 is found for the Askam-in-Furness site, and as high as 90 for Black Combe. This does not, of course, allow for probable adverse effect of cloud formation, mentioned above, and further information on this point would be of considerable value.

BIRD FLIGHT. I.

By C. H. LATIMER-NEEDHAM, M.Sc., F.R.Ae.S.

[This is the first of a series of articles on "Bird Flight," written specially for THE SAILPLANE *by Capt. Needham, who has made a special study of the subject, particularly in relation to gliding and soaring.*

The subjects covered will include: exact function of wings in flapping flight; path traced by body and speed; soaring flight wing shapes and wing loadings.—ED.]

Preface.

Much has already been learnt from the flight of birds, but there are many more secrets of Nature waiting to be wrested and applied to mechanical flight for its general improvement. Who will say that the greatest masters and exponents of the art of flight, the creatures of the air, whose development has slowly and steadily evolved through the ages, have nothing more to teach us?

Watch the swift flight and rapid manœuvres of the swallow as it darts hither and thither in search of food; the vertical ascent of the wood-pigeon amongst the thickly wooded trees; the endless, and seemingly effortless, sailing flight of the albatross and the graceful soaring of the seagull, to say nothing of the marvellous migratory feats that have always filled observers with a sense of wonder and of awe.

There are those to-day who believe in the ornithopter as the future means of aerial locomotion, who believe that greater efficiency can be obtained by the flapping wing than by the revolving propellor. And they may yet be proved right, but it is of no use merely constructing a machine with wings that are forced up and down without first understanding the principles underlying flapping flight.

Bird flight is essentially simple, but many of the simplest things in life have presented the greatest difficulty to discoverers.

In the past, the attention of many has been given to the study of bird flight, including such well-known names as Leonardo da Vinci, in the 15th and 16th centuries; Sir George Cayley; Lilienthal, the "Father of Gliding"; Pettigrew; Mouillard; Prof. Marey and Sir Hiram Maxim. Most of these have left written records of their work. Although, as might be expected, in the light of present-day knowledge, there are fundamental mistakes, wrong assumptions and faulty reasoning, there is, nevertheless, a great deal of useful matter contained in the works referred to.

Analysis of Wing Movements in Flapping Flight.

The most valuable part of Marey's work* relates to experiments with birds in which actual measurements were made to ascertain the period of wing beat, the path traced by the wing, the path traced by the body, and the position of the wing relative to the bird throughout the entire stroke, and on these findings the work immediately following is largely based.

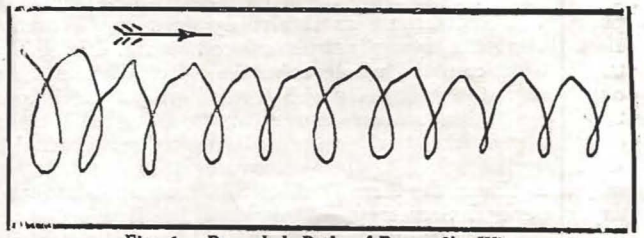


Fig. 1. Recorded Path of Buzzard's Wing

* "Animal Mechanism," Prof. E. J. Marey. 1874.

Professor Marey went to great pains to analyse the movements of birds' wings, and made very elaborate experiments which must have taken much time to carry through. In all these tests the bird was harnessed to recording apparatus. But, despite all the care that was taken, the records are sadly incomplete in many respects of fundamental importance, so that the results are of qualitative rather than quantitive value.

Of the birds experimented on, no mention is made of their weight, span or wing area, nor, unfortunately, was the speed of flight recorded, nor was the exact position of attachment of the apparatus to the bird's wing given, whilst no scales are supplied for the diagrams, except in one case, which recorded the vibrations of a tuning fork and thus made it possible to reconstruct the scale.

A brief description of the measuring apparatus used may be of interest. The bird selected for most experiments was the buzzard, since a fairly large bird was required to carry the somewhat heavy mechanism. Two small air-drums, set at 90 degrees to each other, so that one faced directly upwards and the other forwards, were mounted on the bird's back and held in position by suitable harness. Each drum was connected by means of a tube to a corresponding drum at the recording end of the apparatus so that any movement of a lever connected with the drum on the bird gave similar movement to a lever on the other drum by means of displacement of air. Both drums were not employed in all the tests, but only when required.

In the first experiments the lever was connected to the bird's wing in order to obtain the trajectory, but in the later tests, in which the body movement was traced, the levers were replaced by a lead weight so that the inertia forces caused the diaphrams of the drums to deflect.

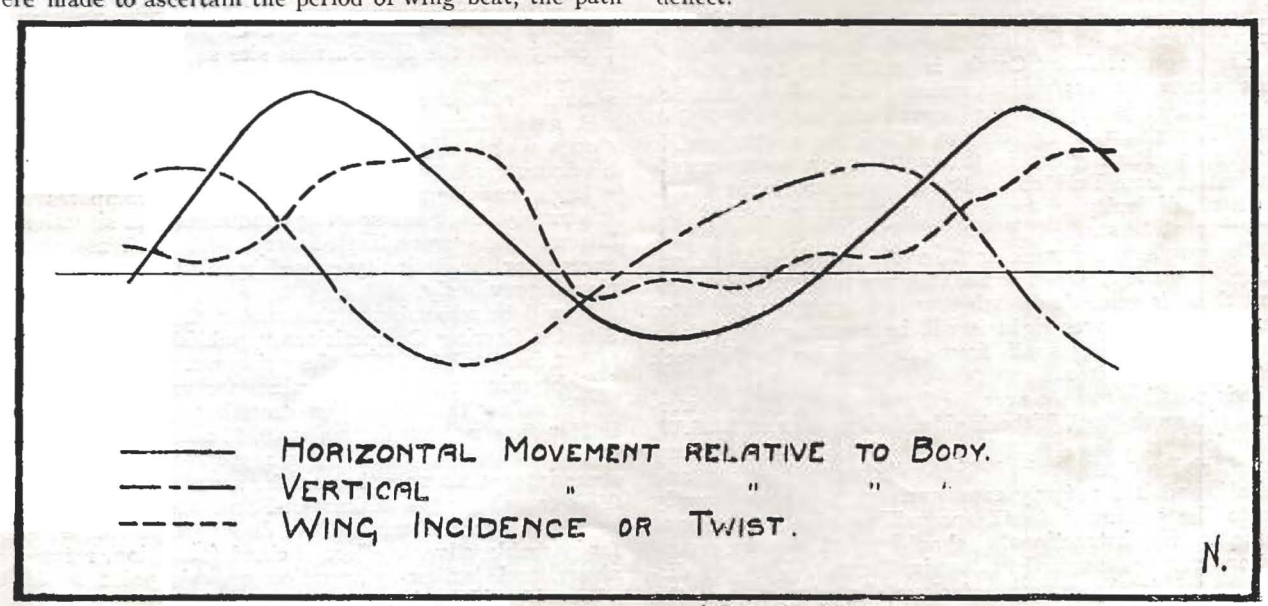


Fig. 2.—Component Movements of Buzzard's Wing.

In all this work there are three factors that should be borne in mind, as undoubtedly, they must have had some effect on the movements recorded:

(a) The bird was laden with apparatus;
(b) The bird must have been under the influence of fright to some extent; and
(c) The duration of flight was of hardly sufficient length to allow the bird to attain its normal movements.

Trajectory of Wing.

For these experiments the lever mentioned above was connected to the metacarpal bone of the thumb of the bird, at roughly half span, so that the measurements recorded must be taken as those appertaining to that part of the wing only. The recording lever traced a curve on a revolving cylinder, the speed of which is not stated.

Fig. 1 is reproduced from "Animal Mechanism," and from this it is immediately apparent that the wing movements are different at the commencement from those of steady flight. The initial strokes are deeper and are made with greater speed than in the later stages, as is indicated by the larger loops. This would be expected from the fact that greater exertion is required during the period of initial acceleration.

However, the curve is of little value for further analysis since neither the height scale nor the time scale is given. It may be pointed out that even if the horizontal scale were extended so that the distance travelled per beat were made to correspond proportionately to the depth of stroke, the diagram would still not give the true path of flight. The vertical displacements shown are relative to the bird's body and the combined movements are necessary to obtain the flight path.

In the next experiments to be considered, the true path of the wing relative to the body was found. This was done by measuring simultaneously, on separate recording drums, the vertical and horizontal movements of the wing, together with its angular positions.

These curves are given on one diagram, Fig. 2. The curve indicating wing twist, shown dotted in the diagram, is obtained from measurements at the scapulo-humeral joint, for which purpose a rod extended along the bird's wing, with a lever fixed at right angles to the rod and attached to the feathers so that twisting of the wing gave a corresponding turn to the rod. The curve indicates the movement of the wing trailing-edge above and below the neutral position, but, by adding a constant amount of 30 degress to the angles thus found, the wing angle to the horizon is obtained.

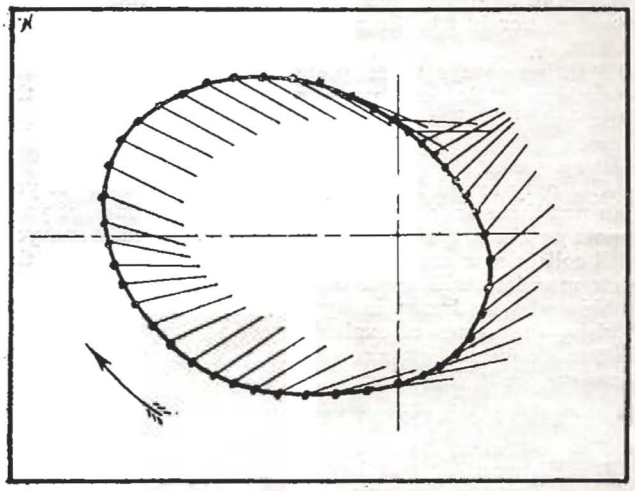


Fig. 3. Path and Inclination of Buzzard's Wing (Marey)

From the given curves it is possible to construct Fig. 3, which shows the path traced by the wing *relative to the body*, and the inclination of the wing throughout the stroke. The dots on the curve represent equal time intervals.

It should be noticed that Fig. 3 refers to one portion only of the wing. If the process had been repeated at several points along the span the results would have been of considerably greater value.

The experiment was repeated with a different bird, the pigeon, in which case a similar diagram was obtained, but with the difference that the elliptical path was rather flatter.

It is suggested by Marey that only an up-and-down motion of the wing is possible by the bird's muscular system and that the forwards and backwards movement is due to the action of the air on the wing. This is probably true to a large extent, but obviously there must be some resisting force which comes into action at the vertical extremities of the stroke.

It is readily understandable that depression of a wing with a rigid front and flexible trailing portion would result in a lowering of the leading edge. The air reaction would then be inclined forward which, in turn, would force the whole wing forward, the converse taking place during the up-stroke.

This principle was enunciated by Leonardo da Vinci† over four hundred years ago when he stated: "We may reasonably say that the bones of the wing will always be lower in the depression of the wings than any part of the wing; and in the elevation these wing bones will be higher than any part of the wing." Unfortunately, da Vinci did not take his deductions sufficiently far so that he missed the forward effect that must obviously result from a descending wing with leading-edge depressed, for he states elsewhere that "The birds . . . are in the habit of beating their wings downwards and behind them, downwards to the extent necessary to prevent the bird from descending and behind when they wish to advance with greater speed."

An examination of Fig. 3 discloses a large positive angle of incidence during the early part of the down stroke, which, at first, tends to upset this theory, but it must be remembered that during flight a wing has very considerable wash-out towards the tip and it is quite certain that the positive incidence for the portion of the wing illustrated in the figure would become negative at the wing-tip. More will be said about this later.

However, in a correcting note, Marey does suggest that the diagram should be rotated clockwise to some extent, owing to the apparatus attached to the bird causing it to fly with head depressed. No suggested amount is given for this correction, but it might be reasonably safe to use an angle of five degrees; in other words, all incidences would be reduced by this amount.

Any attempt to obtain mechanical flapping flight should give full consideration to the circular motion present in bird flight and, furthermore, the main ribs (taking the place of feathers) should be so designed that they "give" to the air forces and thus adjust both the inclination of the main plane and the shape of the wing section.

† "On the Flight of Birds," Leonardo da Vinci.

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THE GLIDING MOVEMENT AND ITS CONTROL.

By SEBERT HUMPHRIES.

[*The following article, which is definitely of a controversial nature, has been communicated by Mr. Humphries and is published with a view to eliciting the ideas on this momentous subject of other readers of* THE SAILPLANE *who have the future welfare of the Gliding Movement at heart. The Editor accepts no responsibility for the views expressed.*]

GENERAL AXIOMS.

1. Motorless Flying is NOT a National Service.

An *ab initio* pupil can obtain his "C" certificate in a period which seems to range from six months to infinity, with an average of about 18 months. If he later does about a couple of hours dual and ½-hour solo in power-planes he is then more or less on a par with an *ab initio* power-pupil who has done about 8 hours dual and a hour solo. Nine hours in power-planes could comfortably be put through in a week. The fit man in the street is therefore no more than one week behind the newly-fledged "C" pilot so far as ordinary aeroplane pilotage is concerned.

2. It is a Pure Sport.

The skilled amateur yachtsman makes good material for the R.N.V.R.; the footballer and rock-climber for the Infantry; the shopkeeper and clerk for the Army Ordinance Corps. Yet none of these people expect charitable financial support in their peace-time pursuits. Why should motorless fliers consider themselves to be in a different category?

3. It must be taken seriously or else left alone.

Club after club has been disintegrated by half-wits who take up gliding with an attitude of half-frivolous, half-frightened idiocy, or—even worse—with nothing but a desire to show off to their girl friends. Such people invariably fade out. Either they scare themselves stiff or else they crash, or both. In any case they do nothing but harm, both to their wretched club and to motorless flying as a whole.

Only fixity of purpose, a healthy trepidation, and sheer cold hard thinking will make a decent pilot.

4. It is NOT Cheap.

You cannot receive something for nothing. Either you will pay at the rate of a few guineas a year, paddle about on the edge of things for a short time, and then depart, or else you will harden your heart, lash out anything from £50 to £100 per year, here, there and everywhere, and have some fun. Which is it to be? In for a penny, in for a pound? Or just a temporary messing about?

5. It is Hard Work.

You cannot merely loll in the sunshine and wait for your turn. Things don't work out that way. You definitely must work: launching, retrieving, building, repairing, scrounging, and dozens of odd jobs.

6. You cannot afford to be self-centred.

Fundamentally, flying, like hunting and many other sports, can be remarkably selfish. But you will find in any case that the more you help other people, the more other people are likely to help you.

Don't get all worked up when a contemporary makes faster progress than yourself. Baron von Richthofen is said to have gone through 50 hours dual before he went solo. So just keep plugging along systematically, and whatever else you do don't rot your morale by persistent railing against fortune.

7. You Need Infinite Patience.

In the early stage an *ab initio* pupil is kept happy with a gentle slope, a fairly calm day and a ZÖGLING. In an advanced stage flights become more scarce but far longer, the unit of time now being half an hour instead of half a minute. In either stage you have plenty of fun.

But there is a long intermediate period when gliding becomes the most exasperating pursuit in the world. Everything seems to be against you—wind, weather, the fates, everything. Days come when you feel sure that at last you can take your "C," but your instructor says that it is too rough for you. On another day the machine is smashed just before your turn comes round, or else the wind drops. For weeks the wind blows the wrong way; then you miss a week-end, and all your friends make the flight of their life.

You certainly need patience.

AXIOMS OF RUNNING A SUCCESSFUL CLUB.

1. Above all, Leadership.

A small band of pre-war aeroplane pilots, suitably backed up, set the London Club aeronautically on its feet. The word of such men was, and is, law, and good law at that. They set up a tradition of passionless flying infinitely to be preferred to the products of childish recklessness and ungoverned ignorance.

2. Finance.

Unreasoning optimism is hopeless. Two and two have a way of making four in spite of all our prayers. If a club is being administered sanely and if it is still short of funds, then more money must be extracted from the club members.

3. Site.

First, safety. Then, and only then, a gradual trend towards heroics. Don't be prematurely discontented with a safe site. Better a whole ZÖGLING than a smashed AUSTRIA. A club's motto might well be "Make haste slowly."

4. Value for Money.

There is only one way to hold your members: give them value for their money. Once you have lost a member he will never come back. Once bit, twice shy. Conversely a satisfied member is your best advertisement.

5. Advanced Training

No club can afford to run high-efficiency machines. Therefore, as a club, concentrate on primaries and secondaries, and rely on the fanaticism of your trained men for the rest. They will become so bitten with a passion for soaring that they will sell all that they possess in order to supply themselves with a decent machine. Like all other people, they get what they want it they want it hard enough.

Here are some of the methods *already in use* by which "C" pilots raise the necessary funds: Moving into cheaper lodgings, foregoing tobacco and alcohol, substituting nose-bags for square meals, raising the bank overdraft to the limit, cutting out expensive evenings, forsaking past hobbies, hypothecating windfalls to aeronautics. One "C" pilot admitted that he had not had a lunch for six months, nor had he been to the pictures at his own expense.

All these ways seem preferable to a mere impotent moaning. "Put not your trust in princes," says the fanatical "C" pilot, knowing his Bible from school-chapel days.

6. Propaganda.

The only sound form of propaganda is *results*. If you can put three or four machines in the air at once, if your pilots go about the country and soar here and there, you will collect new members, even from the moon. And the new members will be of the right type; not the form of rabbit who is drawn in by high-sounding prospectuses and by the names of exalted pseudo-patrons.

Extract from a letter received to-day from a "C" pilot-constructor: "Your club is the goods. Am joining."

AXIOMS OF AN IDEAL CONTROLLING BODY.

1. The Controlling Body is not a Nursemaid.

It will ascertain whether your machine is safe and it will give you a few tips if you ask for them. It may even be able to stop you from making a fool, or a corpse, of yourself. But it is not going to hold your hand.

2. It does not waste its time and money on Propaganda.

Propaganda and the answering of silly questions are expensive hobbies, entailing a West End office and a full-time secretarial and clerical staff. Verbal propaganda as distinct from the silent propaganda of results, and the

sticking of flags into maps to show the nominal breadth of the movement, have just about as lasting an effect as the beating of a drum in front of a booth at a fair.

3. It is air-minded.

For example, if your club wants to have a machine or site tested, the ideal controlling body will recommend to you an experienced man who will come and put you straight. Such a man might also help you out with temporary instructional troubles.

4. It does not stand for any nonsense.

Either you obey the orders of your controlling body or else you let yourself in for a state of anarchy which will be irrevocably followed, sooner or later, by martial law—probably the heavy hand of an angry Air Ministry. Which is it to be, voluntary obedience or enforced obedience?

5. It costs little.

If the controlling body runs a full-time secretary and clerk, and dwells in a hired office, its minimum annual running costs cannot be less than about £650 per annum. Its main function, or time-wasting device, can then be the spreading of propaganda and the answering of silly questions, as aforesaid. At present in the whole country there are less than 50 motorless machines possessing certificates of airworthiness. £650 is raving madness.

The ideal body, being purely a law-giver and controller, is a part-time job costing far less. It is housed and staffed by an existing major organisation, e.g., the Royal Aero Club, or even the august Air Ministry It is allowed to have a council composed of motorless fliers (as distinct from penguins), inasmuch as such a council has been known to produce an occasional good idea, and serves as a suitable exhaust pipe for heated opinions and air. But the council of the ideal body is ultimately under the thumb of the parent organisation.

6. Its Source of Income.

Not charity, nor wheels of fortune, nor singing in the streets. Possibly a small subsidy from the Air Ministry, who might otherwise have to do the controlling direct. Proceeds from charges for certificates of airworthiness, certificates of proficiency, passenger-carrying permits, any other form of licence; proceeds from sales of log-books, blue-prints, instruments, maps; a small poll-tax on members of affiliated clubs.

Total required, say, £200 per annum.

7. It protects motorless flying from abuses.

Most of us spend the week in work and look to motorless flying to provide recreation. The controlling body will protect the sporting status of motorless flying, will endeavour to make it resemble amateur yachting rather than dirt-track racing or professional football or any other such gladiatorial pastime. Such protection comes directly under the heading of legislation and control, and calls for no enlargement of the duties of administration.



The "Crested Wren" flying over the "Valiant Sailor" site at Folkestone.

THE CHAIRMAN OF THE CONTEST COMMITTEE EXPRESSES HIS THANKS.

Sir,—In connection with the recent B.G.A. Competitions held at Askam-in-Furness, may I take this belated opportunity of thanking on behalf of the Organising Committee all who assisted at the meeting?

Pressure of business has prevented this appreciation being sent earlier, but time cannot lessen one's sincerity in assessing the value of the large amount of voluntary work which was undertaken.

Our Movement stands on firm foundations when such a meeting, organised in just a matter of six weeks, can produce the wholehearted co-operation shown by so many people. It is said that virtue brings its own reward, and in this case I would say that their efforts have produced the first milestone of British Gliding progress—namely, recorded flights by British pilots on British machines, of a standard of which we may all be proud.

Let us go forward now with greater determination to even better results next year. Gliding is *our* sport, to make or mar, and if the spirit shown at Askam continues, it is well and truly MADE.

Yours faithfully,

FREDERIC PILLING,

Chairman, Contests Committee, B.G.A.



Launch of the "Falcon" at Askam. This machine rose to 1,700 feet above start and also made an observed flight of 13½ miles to the head of Coniston Water, thereby winning the Wakefield Trophy.

CORRESPONDENCE.

THE PRIMARY v. THE TWO-SEATER AS A TRAINING MACHINE.

Sir,—It is with great interest that I have read—not once but many times—Mr. Culver's letter, "The Primary v. the Two-Seater as a Training Machine" (No. 17, vol. 3), and I am finally forced to the conclusion, after very careful perusal of what he has written, that his letter embodies no argument whatever for or against either method of instruction—rather is it a résumé of what the London Gliding Club has done during the past 2½ years.

Admitted that only a pilot with considerable air experience should be allowed to instruct on dual machines, then for the pupils' safety and well-being of the glider, an instructor who is teaching *ab initios* to fly solo-primaries must also possess the same qualifications. A man does not need to be a dog to write about dogs, but an instructor training from the ground needs something more than an ability to impart the elementary principles of flight to a pupil or recite his mistakes as viewed from the "deck." If a man is not competent to instruct in the air he is much less qualified to instruct from below.

Using the shock cord method of launching a primary, it is some considerable time before an *ab initio* feels anything at all on the stick His mind is fully occupied in trying to think ahead of the high initial acceleration of the machine, and, invariably, at least two or three dozen launches are necessary before the pupil overcomes the complete "black-out" sensation. Granted that all this training is done on the ground—but what a waste of time also with the possibility that, when he does get a few feet in the air on a 10 or 15 seconds hop, the glider does something of which he has had no previous experience, and a crash is the inevitable result.

With auto-towing and a dual controlled two-seater the pupil is taken into the air immediately and commences his training in the very element which is to become his realm. Whilst acquiring the very essential "air sense" he learns to "feel" the controls and, in a short space of time, is able to carry out simple operations under the watchful eye and ready hand of his master. The bugbear of the majority of *ab initio* pupils—landings—is non-existent, for the instructor "puts her down" until such time as the pupil, flying confidently, has no fear or chaos of thoughts as he approaches the ground. Preliminary training flights of one or two minutes' duration can be made from good altitudes, and consequently, a member can be instructed up to the "B" stage in a fraction of the time usually devoted to solo primaries.

Mr. Culver stresses unduly "the biggest and most successful club in the country." Has he paused to consider one very important reason why the L.G.C. "has trained at least twice as many *ab initios* to 'C' standard as all the rest of the clubs and other institutions in the country put together"? I mean the enormous population the club has to draw upon for its flying members, associate members, subscribers and interested people.

Every club has had experience of the member who enrols full of enthusiasm and, after a month or two, "fades away" through various reasons: progress too slow commensurate with the amount of work required of him; he discovers that learning to glide is much more difficult than anticipated; lack of "air-sense" which results in "nerves" or "wind-up." If a Club is operating in a district embracing millions such members can and will be replaced at a steady rate with no falling off in membership strength, and consequently no loss of revenue.

A Club in this happy position is thus able to provide the essentials for successful training and soaring—a good site, hangars, and, most important of all, efficient machines. All of the foregoing are obtained out of the income derived from a large membership, from subscriptions, training and flying charges, bar profits, and other incidentals which are the natural outcome of a good club house.

This explains very conclusively why Mr. Culver's proud boast regarding the number of London Gliding Club "C" pilots can be substantiated.

We in the North are as keen and enthusiastic as any of our comrades in the L.G.C. to the extent that, having no funds, we must ourselves build efficient machines or modify primary types to enable us to realise our ambitions and soar.

In what way does the challenge contained in the last paragraph of Mr. Culver's letter provide definite proof, or a line of reasonable argument, that solo primaries are better than dual-controlled two-seaters? The L.G.C. has had two and a half years in which to train their "C" pilots by the former method of instruction, and I aver, without fear of contradiction, that it has taken months to turn out a genuine *ab initio* "C" pilot in spite of the facilities provided at Tottenhoe and an easy soaring site where one has "all the world" in which to land at the bottom. With an auto-towed two-seater and a capable instructor, an absolute beginner would obtain his "C" ticket in half the time required on a solo primary.

If some useful purpose would be served to the Gliding Movement by such a challenge, then I hasten to state it would be taken up with alacrity. I have in mind at least six pilots who could with success compete against the London Gliding Club's *ab initios*, AND without danger of losing valuable marks consequent upon breakages due to bad landings—especially on a site where landing, either on top or below, calls for considerable skill.

Askam provides concrete evidence that the London Gliding Club's pilots are far from being at home on a site which entails skill and experience in the most difficult phase of flying—spot landings on terrain broken up by small fields bounded by numerous walls, hedges, telegraph wires and trees. During the Askam Meeting the three L.G.C. machines were on several occasions rendered unserviceable by bad landings. Had the pilots at the conclusion of their flights landed at Tottenhoe or on a similar open site, I contend no damage would have been sustained. A large open area in which to land begets confidence, but a landing ground of only two or three acres with obstructing walls requires more than luck to negotiate safely.

Let Mr. Culver confine his challenge to the subject heading of his letter, i.e., "The Primary v. the Two-Seater as a Training Machine." Let him couch his challenge in terms similar to the following: "I am prepared to select a team of six beginners to train on a primary against another team of six *ab initios* receiving instruction on a dual two-seater. I contend that my pupils will obtain their 'C' tickets and become efficient pilots in less time than the two-seater class."

Such a challenge would not digress and would provide material both for thought and practical application, the trend of which would be keenly followed by all Clubs with a final result which would prove of inestimable value.

L. E. FALLA.

Sir,—In reply to Mr. Culver's letter versus Primary or two-seater for instructional purposes, I certainly do not recollect making such a sweeping statement that it is not possible for clubs to instruct beginners by the primary method. I suppose I have instructed as many *ab initios* by this method as any other individual in this country, and have found it very satisfactory up to a point.

I take it a great number of readers will wonder how this matter arose at the Council Meeting. We were discussing the position of the clubs in general throughout the country. It appears that the majority are in a very bad financial position, and I gave it as my view that the chief reasons were due to clubs crashing the primary machines in the early stages, and not having sufficient funds to stand the expense of such repairs. I considered it was the Council's duty to advise new clubs, or clubs

going through the reconstructive stages, and to draw their attention to the two-seater for instruction purposes. Naturally, as Mr. Culver says, this calls for a competent instructor. I consider this absolutely essential in either case. Because a pilot has obtained his "C" he is by no means qualified to instruct, as Mr. Culver suggests. During my service in the R.F.C. I passed as an "A" class instructor, and I have had dozens of first-class pilots through my hands whom I have had to turn down when looking for instructors. A man may be a good pilot but a bad instructor.

For a new club starting off I should suggest a two-seater with towing equipment for dual control, and a nacelled R.F.D. which would be used for all qualifying flights, including "C's." By giving a course of dual control you impart confidence into the pupil when he is in the air, and he therefore pays more attention to the action of the controls, etc. By the old method, when commencing, 90 per cent. of pupils forget all about the controls once they are in the air, and hope for the best. In the early days of flying, one must remember there was no dual control, but the pilots knew what effect their controls had, and although this is explained at length to beginners, it is quite a long period before they realise their effect and have confidence in them. I wonder if Mr. Culver recollects at one of the early demonstrations going into detail at great length in explaining how to do it, etc., etc., and to see the would-be pilot do a perfectly good cartwheel—no, not at Stoke Park! I wonder how many times this has occurred throughout the country? I maintain this would never happen after dual instruction, but I do not say that crashes will be entirely eliminated, as you often get up against the pupil who defies all instruction, and pulls the stick back because he wants his "A," with the usual result—broken fuselage.

I well remember one such keen pupil who, after having done this twice, deserted the club and decided the only way to get on was to have a course of dual control in a two-seater; naturally, he soon obtained his A, B, and C certificates.

A great number of people after reading this will say, "Yes, it's all very nice, but where's the money coming from?" If clubs and people intending to form same can get out of their heads that gliding costs nothing we shall then get a move on. Gliding is quite an expensive sport, but a club run on business lines, starting off with the right equipment and a good ground, *must* go ahead.

Mr. Culver's last paragraph reminds me of the pilot who has done about half an hour's solo and has got to the greatest danger of all—over-confidence.

A. N. STRATTON.

THE PEDAL SAILPLANE.

Sir,—I would like to raise a point regarding the possibility of a pedal sailplane. My personal opinion is that it is feasible, and will eventually be adopted; although I do not for a moment think that, by the aid of a pedalled contrivance, it would be possible to take off from the ground solely by one's own energy.

I do think, however, that by means of a pedal arrangement and properly geared propeller, one could, once in the air, hold one's own height, or a least reduce the rate of fall considerably.

By taking advantage of various deflections and thermals as is normally done, it would open up a new field with endless possibilities.

R. GILBANK.

[This is a question often asked.

The minimum power required to propel a man-carrying machine is of the order of 2 h.p. A man is able to exert roughly ½ h.p. for a short period only, or about ⅛ h.p. fairly continuously, which would be considerably reduced by the friction of the transmission and again by the propeller losses.

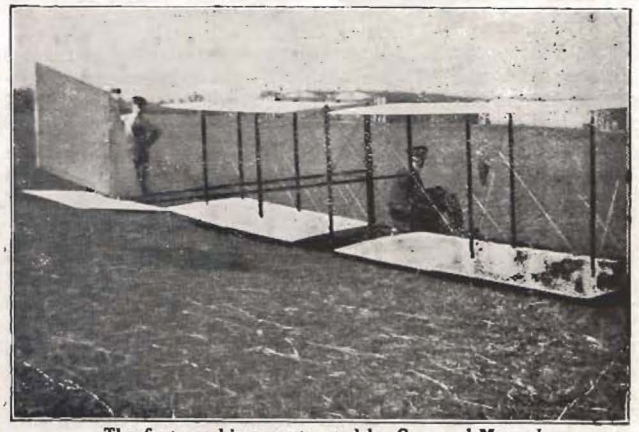
Hence it is seen that very little assistance is likely to be obtained by this method, and it is very doubtful whether the extra expense and complications would be worth while.]

AMATEUR DESIGN AND CONSTRUCTION.

Sir,—May I make a suggestion for improving THE SAILPLANE? Why not publish drawings of successful machines? Although my circumstances do not allow me to build a machine, and if they did I would design it myself, one can derive any amount of fun from criticising other people's designs. I think this partly explains the popularity of those American magazines which regularly publish drawings of gliders and light aeroplanes. I know that the members of our club spend large sums on them.

Seriously, though, I think you should encourage amateur design and construction a little more. Perhaps the American method of building a 'plane in a backyard and teaching yourself to fly in it, is going a bit too far, but still, it is the right spirit. W. E. HICK.

[We are always ready to consider new glider or sailplane designs and constructional details, as Mr. Hick will agree if he will only refer to back numbers of THE SAILPLANE. It is always our endeavour, however, to give prominence to the flying and operational side. Design and construction are interesting and, indeed, essential in their place, but it is performance in the air that really counts. Nevertheless, with the advent of the shorter winter days, when flying activities are, necessarily, somewhat restricted, our correspondent may look forward to seeing more space devoted to that aspect of the subject which appears to appeal to him most.—ED.]



The first machine constructed by Corporal Manuel, the Designer of the "Crested Wren."

OFFICIAL NOTICE

DIARY OF FORTHCOMING EVENTS.

Monday, November 21st, at 6.30 p.m. in the Library of the Royal Aeronautical Society, Albemarle Street, W.1. — Council Meeting, British Gliding Association.

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

LONDON GLIDING CLUB NEWS.



Corporal Manuel starting off at Dunstable in the "Crested Wren."

Sunday, October 9th.

Yesterday, auto-launching of the Watson R.F.D. in a misdirected and gentle breeze. To-day, a light air from the west, averaging about 4 m.p.h., until the usual Sunday downpour, whereafter the usual Sunday calm. HOLS and WREN were palpably delayed in their descents but, since they were unable to hold up indefinitely, the long run of soaring Sundays (five in succession) was broken. Anyhow, the air was utterly bumpless and very refreshing to storm-tossed nerves. A visiting MOTH reported conditions at large to be like silk.

The Watson R.F.D. was launched repeatedly from the hill-top; the old original R.F.D. ground-hopped; PROFESSOR I. was thrown 500 yards at the time with assorted pilots, finishing up just about as high as she started.

Collins tested the home-built HAWK from Oxford, eventually taking her twice off the hill-top. She behaved in a perfectly orderly manner and ought to be able to soar decently, if not sensationally.

The re-conditioning of the PRÜFLING is in sight, thanks to Slingsby's gift of ribs, but Collins is still struggling along with certain sticky messes which once formed parts of a delightful KASSEL 20. Even in the absence of these machines, which are in the workshop, the three hangars are full to bursting. But the three cars might be garaged by roughly roofing the space between two hangars, and the POPPENHAUSEN two-seater might well be paid off and sold. The KASSEL two-seater is all we need in this direction at present.

Sunday, October 16th.

Five machines soared yesterday afternoon; to-day five were soaring simultaneously, out of a total of seven. Of the seven, five are privately owned. The CRESTED WREN piled up six hours' flying time with three pilots, Major Petre having now joined in. Pidsley obtained his "B" in the Watson R.F.D. and his "C" in Capt. Hiscox's HOLS.

One of the SCUD's voyages lasted for two hours and reached a huge but vague height under a cloud. The WREN's longest trip was 3 hours and 10 minutes, at an authentic maximum height (also while under a cloud) of 800 feet above the hill-top, her average height being round about 600 to 700 feet. The best height for the Club PROFESSOR was 450 feet. The Watson R.F.D. soared repeatedly, landed on the top with Richardson, and was banged on the hill-side by a subsequent pilot. The HAWK's longest flight was about 20 minutes.

As flown by the local wizardry, the KASSEL two-seater with passenger soared for about 20 minutes and landed on the top. HOLS soared off and on all the week-end.

That, if you add it up, makes seven. To detail the history of it all would need a special supplement. On the flat the Imperial College Club celebrated their arrival by elementary instruction in a pre-Flood R.F.D., partly normal and partly abnormal; also by giving us really generous help with the launching of some of our beginners in our old R.F.D.

The weather was clearly good. Sunday started with a wind that would have sustained a tea-tray in steady flight. Just as the bulk of the members began to arrive, it died down, causing language; but by 1 p.m. it freshened up to about 15-20 m.p.h. At teatime it faded again, and the wind-stocking at the club-house fell dead, or at any rate moribund.

At this period the big KASSEL took off with passenger, and to the stupefaction of everybody (including, possibly, the pilot) proceeded to soar with some feet to spare. By cold, accurate pilotage she stuck it out indefinitely and even took a turn or two towards the Zoo. The WREN was therefore given a hearty launch which shot her up permanently to utterly tranquil soaring conditions 200 feet above the hill, where she stayed until an hour after sunset. Unfortunately, the SCUD was being dismantled at the time; otherwise there might have been an amusing test. As it was, the WREN soared indefinitely with a 12-stone pilot, giving the go-by to three other machines that could not get within 150 feet of her.

Three morals may emerge:—

(1) The WREN is astonishingly efficient, considering her age and small size.

(2) She has benefited greatly from her new coat of seaplane varnish. *(Verbum sapienti sat est.)*

(3) There is a catch in these *dead-smooth* winds.

There is a layer of good lift *high above the ridge*, this layer riding up from the plain on a long gradient of comparatively still air which is trapped against the hill-side. If only the machines can reach the good lift by virtue of a violent launch, then easy soaring follows. The arrival of gusty conditions would break up the big pad of still air, the gusty wind would hammer direct on the unpadded face of the hill, and the lift would be good right down to a point well below the ridge-top. This is admittedly theory, but it seems to fit the facts.

That there was a good wind over the plain was shown by the smoke streaming away horizontally from two distant factory chimneys, perhaps 250 feet high. That the WREN was in a fair wind was evident from her slightly oblique angle to her course.

Yet a spectator at the club-house or on the top of the hill was in practically a dead calm, i.e., he was immersed in the imprisoned pad of still air. Therefore, have a monster launch and make the most of it. Unto him who hath height shall more be given; from him who hath no height shall even that much be taken away.

A SAILPLANE COMPETITION.

Until further notice a year's subscription to THE SAILPLANE will be presented for the best photograph received during any one month, illustrating any feature of the Gliding Movement such as the activities of Clubs, etc.

Photographs, which must be original, should be addressed, "The Editor of THE SAILPLANE, British Gliding Association, 43, Chancery Lane, London, W.C.2." Envelopes should be marked "Competition" in the top left-hand corner. The competitors name and address, and club (if any) should be written on the back of the photograph. Descriptive matter, which should be brief, should be written on the back of the photograph or on a separate sheet of paper.

The Editor reserves the right to publish any photograph submitted whether a winning photograph or otherwise. The Editor's decision on all matters will be final.

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Many advertisers have supported the "Sailplane & Glider" as a gesture of friendliness to a publication unique in the worlds of pioneering effort and sport, without calculating with too great a nicety the immediate and tangible benefits that might accrue from their investment.

The following letter from the President of the Central Scotland Air Yachting Club indicates that readers appreciate this fact, and that they are acting in that spirit which places business dealings on the right plane—a level free from depressions and adverse conditions, economic and otherwise.

Glasgow,

September 12, 1932.

The Editor, "The Sailplane."

Dear Sir,

It has been on my mind for a couple of months to let you know that I was able to put some business of a friend of mine in Glasgow in the way of your Advertisers, Messrs. Austin, Reed & Co., purely because they support the "Sailplane."

I naturally propose to follow suit myself as soon as occasion arises.

Messrs. Reed might like to know that their advertisements have been worth at least £11 to them which otherwise would have gone elsewhere.

Yours faithfully,

(Signed) E. T. H. GODFREY.

The "Sailplane & Glider" circulates in every country in Europe (except Russia and Scandinavia), Canada, Australia, New Zealand, South Africa, British East Africa, Egypt, Palestine, the United States of America and South America.

The nature of its circulation is such that each issue has at least 5000 readers, all of whom are equipped with Purchasing Power and the desire to apply it in any direction that will help the Gliding Movement.

Copy and instructions for advertisements should be sent to the Advertisement Manager, *The Sailplane & Glider*, 43 Chancery Lane. London, W.C.2., at least ten days prior to the date of publication of the issue in which the advertisements are to appear. Rates on application.

Telephone—HOLborn 0309.

our upstairs place



HE sat in the club smoking-room talking impressively of his visit to America. New York, he said, was undoubtedly the world's finest city. The shops, for instance, were breath-taking, particularly a new shop for men which he had visited.

At that point a friend who had been listening tolerantly suggested that perhaps he had not seen Austin Reed's shop in Regent Street. Oh, yes! he had bought collars there, and thought it quite a pleasant place. The friend asked if he had seen the whole building? "*The whole building? Why! is there an upstairs place?*"

So they took him to Regent Street in a taxi, presented him to our manager, and said gently, "*This gentleman asks if you have an upstairs place.*" Swaying slightly, the manager decided that the situation called for immediate action, and there and then arranged a Grand Tour.

From the top of the building they showed him the view of the Regent Street Quadrant, and took him through the airy workrooms where the New Tailoring adjustments are made, into the Tudor Gallery with its oak beams. He was shown the Tudor Floor, its magnificent fireplace, the Tropical Department with its red lacquer panelling and its mural paintings of our Overseas Empire. From there they took him to the Ballroom Corner, with its constant artificial lighting—the ideal place to select evening clothes—on to the New Tailoring Floor, and into the Louis XIV salon, the most luxurious place in London for choosing shirt patterns.



They astonished him yet again with the twenty-four chair barber's shop which is under the command of an expert who has travelled thousands of miles to make sure that the equipment is the best in the world.

The effect upon our visitor was most gratifying from a national point of view. In fact, we understand that he now refers to his recent trip to New York as an excursion into a pleasant but old-world atmosphere.

AUSTIN REED
of REGENT STREET

AUSTIN REED LTD. LONDON
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