THE SAILPLANE & GLIDER

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

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

OFFICIAL ORGAN OF THE BRITISH GLIDING ASSOCIATION.

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Subscription Rates [Post Free]: Annual 10s. 0d.; Half-Yearly, 5s. 6d., Single Copies 1s.

Vol. 5. No. 1. January 1934. **Published on the 2nd Tuesday of Each Month**

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ONE OF NATURE'S SAILPLANES.



A gannet in soaring flight at Bass Rock, August, 1933: Span, 6 feet; weight, 6 lbs. Photo by Capt. C. H. Latimer-Needham, the first of whose new series of articles on the Soaring Flight of Birds appears in this issue.

THE SAILPLANE AND GLIDER

43, CHANCERY LANE, W.C.2. JANUARY, 1934

1933 and 1934.

The year 1933 has been a great year for soaring. The progress in this country has been immense. But it has been a progress in quality, not quantity. There has, we think, been little change in the number of persons forming what is known as "The Gliding Movement." The change has been one of flying skill. Large numbers of pilots have progressed from the gliding to the soaring stage. Others have progressed from simple soaring along a hill to soaring across country and up into cloudland. For the first time our pilots have climbed in the invisible thermal currents whose successful utilisation is one of the most difficult feats of soaring flight. Climbs of over 1,000 feet in sailplanes were achieved time and again during the summer, and a new British cross-country record of 22 miles was set up in August. The London Gliding Club have piled up an incredible number of hours' soaring during the year. The Ulster Club have earned everybody's admiration for their achievements on their multiplicity of soaring sites among the mountains. Other Clubs also have improved their flying technique to such an extent that we are expecting great things from them in 1934. And now comes the scheme to set up a permanent site on Sutton Bank in Yorkshire. This is the most promising development, we think, since motorless flying was revived in this country four years ago.

We look forward impatiently to what 1934 has to offer.

D. F. DENT.

We have to record with deep regret the death, after a short illness, of David F. Dent, of the London Gliding Club.

Mr. Dent joined the London Club in the spring of 1931, as a direct result of hearing a talk on gliding and soaring given on the wireless by the Master of Sempill. He had previously done a good deal of sailing, mostly based on Holyhead, but had no previous flying experience. In spite of this he made phenomenal progress, gaining the unique distinction, for an *ab initio*, of taking his "A," "B" and "C" certificates in three successive months, his certificate number being 173, and the dates of the qualifying flights, June 28th, July 19th and August 28th, 1931, respectively.

His outstanding qualities were his initiative and his inventive genius; an appreciation of his work for the London Club will be found among the Club News. Perhaps his greatest contribution to the progress of soaring flight in this country was his invention of a new type of variometer, which can be produced at a price within the means of every soaring pilot, the cost being only a fraction of that of reliable instruments hitherto available. It is this instrument which made possible the big stride forward which soaring flight has made in this country during the past year, and, it is to be hoped, will be responsible for still greater achievements in the future.

Two of David Dent's brothers also took up gliding at his instigation, one of whom attended a course at the Grunau School in Silesia in the summer of 1931. The other, J. C. Dent, a power pilot, took his "C" on the London Club's ground last year.

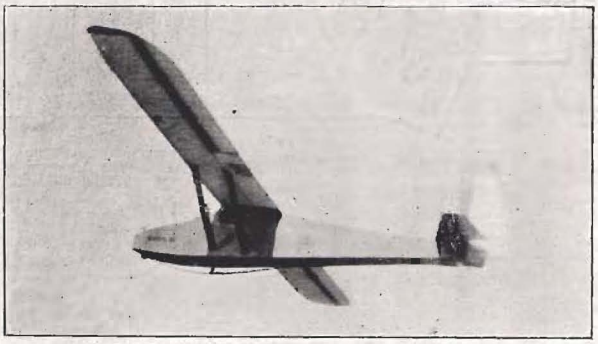
We extend our sympathy to his family on behalf of all those engaged in gliding and soaring in this country.

SOARING EXPEDITION TO SOUTH AMERICA.

At last the soaring possibilities of the tropics are to be explored by sailplane pilots.

An expedition for this purpose left Hamburg on Jan. 5th in the Hamburg-Amerika liner "Monte Pascoat" for Rio de Janeiro, Sao Paulo and Natal (S. America). Wolf Hirth is taking his MOAZAGOTL, Peter Riedel the historic FAFNIR (on which the late G. Groenhoff set up the present world's distance record of 156 miles in 1931), Heinrich Dittmar his home-made and home-designed CONDOR, and Hannal Reitsch her GRUNAU BABY II. A MESSERSCHMITT M23 aeroplane is also being taken, and Dipl. Ing. Harth is in the party, which will be under the leadership of Professor Georgii.

The expedition will be away two months. The air currents are to be investigated in Brazil and the East of the Continent, and especially the air conditions over the large forests and along the coastlines.



The late D. F. Dent flying his "Kassel 20."

GLIDING CERTIFICATES.

The following gliding certificates have been issued. The columns show: No. of certficate, name, Club and date of qualifying flight, which in each case took place in 1933:—

"A" Certificates.

348	H. T. Testar	London	Sept. 24th.
349	H. Shatwell	Manchester ...	Oct. 29th.
350	W. E. Godson	Manchester ...	Oct. 29th.
351	J. N. Saunders ...	Manchester ...	Oct. 29th.

"B" Certficates.

202	J. A. Lawford	Southdown ...	May 7th.
351	J. N. Saunders	Manchester ...	Oct. 29th.

"C" Certificate.

202	J. A. Lawford	Southdown ...	Apr. 17th.

The previous list appeared in our last issue, p. 226.

PHOTOGRAPHS WANTED.

At the Science Museum, South Kensington, motorless flying is among the subjects upon which lectures are given. The Museum possesses many good slides showing foreign sailplanes, but few showing gliding and soaring activities in this country. Those who possess such photographs, especially close-ups of British gliders and sailplanes in flight, would be doing a service if they would lend them to the Science Museum to enable slides to be made for lecturing purposes. Either prints or negatives will do: the latter for preference.

THE SCHOOLBOYS' OWN EXHIBITION.

At this Exhibition, to which THE SAILPLANE was invited, those interested in motor-assisted aviation were well catered for. Gliding, however, was repesented solely by three books on the subject, displayed on publishers' bookstalls. We learned that one or two copies of one of them (the cheapest) had been sold, but the other two had not sold at all.

The first albatross we have ever seen was hanging, stuffed, above the stall belonging to H.M. training ship "Worcester."

At another part of the Exhibition was a small dummy aeroplane in which, for sixpence, one could sit and work the controls for five minutes or so, the aeroplane responding by changing its atttiude accordingly. The several boys who were seen trying the machine were so engrossed by the actions of the control-stick that they forgot all about the rudder. Gliding pupils often behave in the same way. There seems to be something unnatural about a rudder in the air; the birds haven't any, and many humans take to it with difficulty.

Hamley's had set up an immense sort of aviary where their F.R.O.G. models could disport themselves harmlessly.

A new model-making firm is "Xactus," who sell outfits for making neat little scale models of balsa wood. The first issue of the firm's journal describes a new way of flying model gliders. You fix the glider (which should be of balsa) by one wing-tip to the end of the line of a fishing rod, or similar apparatus improvised from a cane and twine. You then whirl it round your head, letting out more line as the machine gets up speed. This requires a little practice, but it is said that a speed of 60 miles an hour can be got out of the model when the whirling circle has become really large.

AN ITALIAN FLIGHT.

Early in December an Italian pilot was launched on a home-built glider from the top of Mount Quarnan in Northern Italy, 4,501 feet high, and remained in the air for 11 hrs. 37 mins. His name is Ugo Zannier, a young Fascist from Gemona, and it was reported to be his first glider flight. The machine resembles a ZÖGLING, with added nacelle and rounded wing-tips.

THE SUTTON BANK SCHEME

[*The following circular has been sent out to all likely to be interested, on the authority of the Committees of the Ilkley and District Gliding Club and of the Bradford and County Gliding Club.*]

It has been realised for some time that the greatest need of the Gliding movement in this country is the establishment of an organization which would offer permanent facilities on a site from which flights of the highest performance are possible.

A tentative scheme has been worked out whereby this can be accomplished on the following lines :—

1. The Bradford and Ilkley Clubs would merge to form the nucleus of a Yorkshire Gliding Club, and would place their assets at the disposal of the new organization.

2. The new Club would be formed as a Limited Liability Company with a capital of probably £500. Shares would be voluntarily taken up by members and supporters.

3. Unless a superior site were put forward, Sutton Bank, Yorks, would be the soaring site of the Club. A hangar and workshop would be erected, and club-house facilities provided in some form or other.

4. The annual subscription would be Three Guineas for flying members and Half-a-Guinea for non-flying members. In addition, members flying *Club* maintained machines would pay flying fees or a weekly sum irrespective of flying, towards wages of a ground engineer.

5. A resident ground engineer would be employed for the maintenance of Club equipment. His wages would be obtained from the sources outlined above.

6. Facilities available at Sutton Bank would be soaring (solo and dual instruction), flat training and winch launching (solo and dual). There is also good landing ground for power machines.

7. The new organization would run a School section for training its members, and regular facilities would be provided as long as required. An ab-initio's course would ordinarily include flat training, dual instruction, winch launching and soaring at Sutton Bank, and intermediate slope flying at another approved School centre.

We are of the opinion that the future of the movement in the north depends on the success of this scheme, which depends on the support which is forthcoming.

This letter is to ask for YOUR active support, by guaranteeing to become a member and/or take up a certain number of shares in the Club Company.

A great deal of preliminary work in connection with the project has already been done and guarantees of support have been obtained from pilots and others in different parts of the country. All we require before going ahead with the scheme is the promise of sufficient members and capital to establish and maintain the organization on a sound financial basis—with a guarantee that its financial stability is assured for at least the first two years.

Everything, therefore, depends on the response to this circular letter, and we ask you to support this project to the very best of your ability and help to prove that the Gliding Movement in this country, although unsubsidised by our Government, is determined to spare no effort to keep pace with the development of motorless flying in other countries where generous subsidies are granted.

WILLIAM E. DINSDALE,
Chairman, Ilkley & District Gliding Club.

NORMAN H. SHARPE,
Chairman, Bradford & County Gliding Club.

15, Kirkgate, Bradford, Yorks.

MORE REFLECTIONS ON THE "SCUD II"

By PILOT A.

The notes by "Die-Hard" in the last issue of THE SAILPLANE may require a certain amount of modification, owing to a fact of which he was not, I think, in possession. The particular machine he flew was especially *made* for "giants." So he musn't criticise the unfortunate designer because with many groans he was made to put several inches on the nose of the fuselage; because the stick was rigged to be at arm's length for a normally-proportioned pilot; or even because he (Die-hard) is psychologically suited to a position in front of the wing.

The average psychology does, I think, prefer the additional feeling of safety inspired by having a nice fat spar in front to take the crash. In a WREN, for instance, the pilot is definitely too near the accident. It is difficult to imagine a pilot in such a machine emerging unharmed from a spin; it is no use telling me that one pilot has done so : miracles don't count. Admittedly the view upwards must suffer in the SCUD, but that is perhaps secondary in a forty-footer, really an intermediate type of machine.



G. M. Buxton, the "giant" for whom this particular "Scud II." was made, soaring it at Sutton Bank.

Incidentally, with reference to the expedition to Eastbourne described, I may say, that, in a conscientious effort to do the right thing, I wrote immediately after to the Eastbourne Downs Preservation Committee and asked if they would sanction a repetition of our (surely harmless) expedition, and have just received a reply that they are "unable to permit gliding on the Downs." Now, even dogs are permitted on the Downs, and motor racecourses are seriously considered. Why should the harmless casual glider be regarded as a pariah?

There are several morals pointed by this sad little story.

[A further reply to "Die Hard," by the designer of the SCUD II, will be found in our correspondence columns. "Die-Hard's article, which appeared in our last issue (p. 224), described an excursion to Eastbourne by "Owner Pilot A" and himself (Pilot "B") and gave also his impressions of the SCUD II, which he was flying for the first time. Each pilot flew for about 25 minutes along the hills behind the town, after which Pilot A soared out over the sea in the rising current to windward of Beachy Head.

Pilot A's suggestion that a machine of 40 ft. span must necessarily be of "intermediate" type cannot be allowed to go unchallenged. The intermediate, or secondary, type bridges the gap between the primary training machine and the high-performance sailplane used by fully fledged pilots. It is true that, in the B.G.A. Regulations issued for the Huish meeting last year, machines of 40 ft. span were classed as secondaries for Competition purposes. But the once orthodox view, that for best quality soaring a big span to give low sinking speed and fine gliding angle is needed, was challenged three years ago by a new school of thought which asserted that these factors might be sacrificed to some extent to obtain good manœvrability for picking up thermal currents, and that for this purpose a relatively small span of about 40 ft. is best. The very successful Darmstadt WIND-SPIEL was built in accordance with these latter views, which, we undersand, also played a part in the choice of a 40-foot span for the SCUD.—ED.].

BIRD FLIGHT XI:

THE SOARING FLIGHT OF BIRDS

By C. H. Latimer-Needham, M.Sc. (Eng.), F.R.Ae.S., F.Z.S.

In the earlier contributions of this work, the problem of flapping flight has been dealt with, as it was felt that a good general understanding of the principles involved serves as a good groundwork for the study of soaring flight.

The latter method of flight is likely to prove of greater use to the exponents of mechanical flight, although the value of a proper understanding of flapping propulsion cannot be lightly assessed. Those interested in the design and operation of gliders will undoubtedly find more of interest in the present section.

Soaring flight has deeply puzzled many observers in the past, due chiefly to two reasons, the first of which is a lack of knowledge of aerodynamics and the second being the fact that several methods of soaring flight are practised, and often combinations of two or more methods, which has given rise to considerable confusion.

There are two main categories into which soaring flight may be divided, and these are:

(1) static soaring, and
(2) dynamic soaring.

In "static" soaring flight the bird depends entirely on rising air or air with a vertical component, whilst "dynamic" soaring is carried out by the exploitation of horizontal winds of varying velocities. These two distinct methods were first realized by Rayleigh,* who, in 1883, laid down these conditions and first used the terms "static" and "dynamic" as applied to soaring flight.

Static Soaring Flight.

There are several methods of soaring flight practised by birds, in which rising air is made use of to compensate for the sinking speed of the body; in fact there is abundant evidence to show that all methods known and used by man to fly are brought into service, and it is even probable that, if any of these modes of flight had not been discovered by bird life, many of the well-known larger species might well have become extinct long ere now. It is hoped to show at a later date that, without the possibility of soaring flight, many of the larger birds would be condemned at the best to an earth-bound existence and in all probability would have been unable to survive at all. Fortunately for us, this very expediency in the history of bird life has in no small measure been the means of expediting man's conquest of the air, for it was to the soaring flight of birds that the early experimenters, such as Lilienthal† and others, owed most of their inspiration and derived the benefits accruing from actual demonstration and example. It is perhaps to be wondered at that only during quite recent years have we been able to imitate the feathered forerunners of aerial propulsion.

The two methods of static soaring most generally employed are the utilisation of wind deflection currents and the phenomenon brought about by the expansion of air due to solar heating, or, more correctly, the reflection of solar radiation. Each is widely used; the former in almost all parts of the globe, whilst the latter is confined more to the tropical and sub-tropical regions, where most of the bigger species are to be found.

Wind Deflection Soaring.

This mode of flight is employed by many of the medium-sized birds, of which well-known examples are the rook, crow, hawk and the various types of sea-gulls, gannets and others, whilst many of the larger species, the eagle, vulture, stork, etc., make use of it on occasion when sun soarability is absent or as auxiliary to thermal soaring flight when available. It is interesting to note that the smaller of the birds mentioned avail themselves of this source of lift largely for pleasure, but in certain cases for getting from place to place and sometimes for climbing to their nests, whereas the large heavy birds depend on this and other methods of soaring for getting their livelihood.

As instances of the utility of wind deflection, may be mentioned the colonies of kittiwake gulls which nest high up on the faces of the rugged chasms that exist on the south and west sides of the islands around our coasts. Their many visits with food for the fledglings are helped to no small extent by the up-winds blowing through the openings, and the parent birds may be seen encircling the chasms two or three times in order to be carried without effort to their nests. Gulls and gannets may be seen gracefully sailing round the coast when a wind blows in from the sea and are thus enabled to move to other hunting grounds at little expenditure of energy on their part.

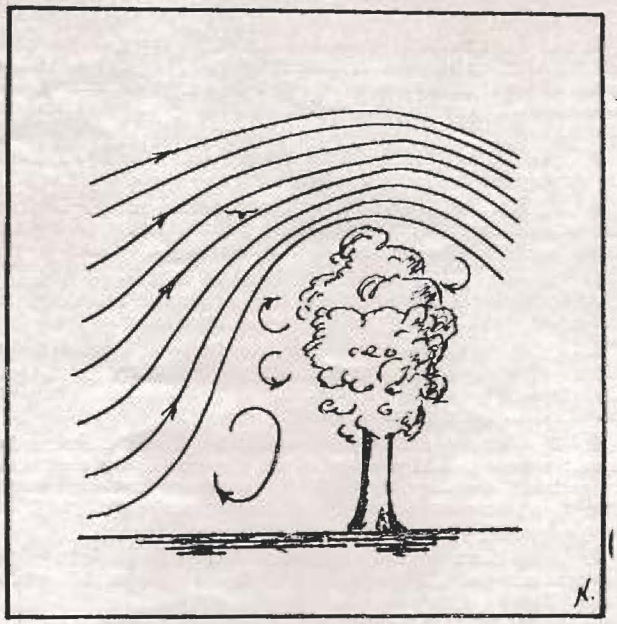


Fig. 1. Wind deflection soaring.

The explanation of wind deflection soaring, or hill soaring as it is often called, is too well-known to-day to need much elaboration here. In brief, when hills, cliffs, or other objects, such as a line of trees, houses, etc., lie in the path of a wind, the airflow is forced to rise and so pass over the top of the obstacle, and any objects present in this air region, such as birds and insects, are given an upward component of movement also.

Thus a 10 m.p.h. wind, deflected upwards at an angle of 45 deg., has a vertical velocity component of 10 × sin. 45 deg. = 7.07 m.p.h., assuming that the wind speed remains unchanged during the passage over the obstacle, whereas in fact it is increased owing to the restricted space in which the flow takes place. Since an average sinking speed of soaring birds is somewhere about 2 ft./sec., representing gliding angles of 1 in 22 and 1 in 44 at flight speeds of 30 and 60 m.p.h. respectively, it is seen that soaring flight is easily achieved under the supposed conditions.

It will be noted, however, that this method of flight cannot be carried out in the absence of wind, or over very flat country, or water, and is at all times restricted to the regions immediately windward of the protruding objects.

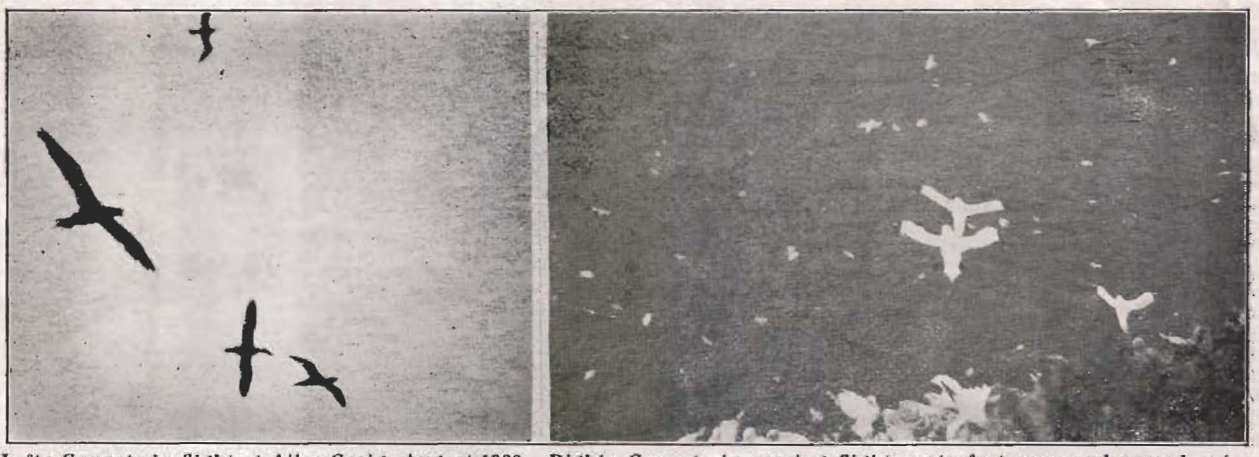
During the B.G.A. gliding meeting at Huish in the summer of 1933 a large number of swifts was noticed on several occasions in continuous soaring flight along the windward side of the hills in search of flies.

Thermal Convection Soaring Flight.

This is brought about by the radiation of heat from the sun, of which only a minute quantity is received by the air by direct absorption from the passage of the heat rays. On arrival at the earth's surface, the heat is intercepted, with a consequent warming up of the surface layer, which in turn gives off heat to the air in contact with it.

The increased temperature causes a rise of pressure and thus the air expands with a resultant lowering of density, or, in other words, the air becomes lighter and tends to rise. This tendency varies from place to place owing to the different rates of heat absorption and radiation of different parts of the earth's surface, i.e., forest, rock, sand, fields, swamps and lakes, and of the surface covering, grass, ploughed land, ripening corn, etc. Other factors which affect the air temperature are the slope of ground relative to the direction of the sun's rays, the amount of heat being more or less proportional to the angle formed, varying from a maximum when the rays are perpendicular to the surface

* "Aerodonetics," by F. W. Lanchester.
† "Der Vogelflug als Grundlage der Fliegkunst," O. Lilienthal, Berlin, 1889.



Left: Gannets in flight at Ailsa Graig, August 1933. Right: Gannets in soaring flight; note feet open and spread out sideways.

and decreasing to a minimum where the ground is actually in the shade; the presence of clouds; and the nature of the ground just below the surface.

It is obvious, therefore, that the tendency for the air to rise must vary from place to place, and a "break through" will take place where the heat is most intense. The actual flow of the air depends on the local conditions and on the quantity and relative density of the heated air, so that it may take the form of bubbles, columns or extensive masses.

The "bubble" theory was first expounded by Wolfram Hirth, the well-known soaring pilot and pioneer of thermal soaring flight, in a lecture to the London Gliding Club, at Dunstable, in December, 1932.*

When the region of warm air first forms it takes the shape of a stratum close to the ground, its ascent probably being somewhat delayed at first by friction with the contacting surface, but with decreasing density a break-away is inevitable. The liberated air ascends like a hot-air balloon with increasing velocity up to a certain height, after which, cooling down having taken place, the heat and pressure differences within and without the bubble become less pronounced, and the upward velocity commences to fall off again. If the bubble contains moist air it will give rise to the formation of a small cumulus cloud on reaching the condensation base. Thus are formed the small puffy clouds of a warm clear day.

Obviously, the size and ascending velocity of these hot-air bubbles are dependent on the conditions prevailing, but certain measurements have been attempted by Hirth, whilst in soaring flight, and these are given below: Diameter—300 ft. or more; and ascending speed—15 ft./sec., a good average figure being about 9 ft./sec. The presence of wind upsets the formation of heat bubbles and in high wind formation may not be possible at all.

It is interesting to note that Hirth mentioned that "in cross-country soaring *thermals might be detected by looking for soaring birds, or butterflies, that had been carried high.*" (Italics added.)

Further support for the bubble theory is found in Hankin's "Animal Flight," p. 98,† wherein is stated: "Before widespread soarability is established it sometimes happens that soarability for cheels occurs for a few minutes over a small area. As this temporary soarability dies away the cheels that had been circling (with gain of height) may glide down steeply and settle."

As the earth's surface becomes hotter, and especially in tropical regions, the warm air is produced with greater rapidity so that the series of bubbles becomes one continuous stream or chimney of rising air. Thus Hankin notes that "Five *columns* of cheels were up."

Other observations as noted by Hankin are: "(At) morning flight these birds (vultures, etc.), cease flapping at a height of 10 to 20 metres above the ground . . . (but) during the heat of day . . . within 4 or 5 metres of the ground. They then fly in circles, with complete absence of propulsive movement and eventually reach a height of 800 metres or more," and "The time of commencement of circling of cheels is usually about 9.30 a.m. during December. As the weather gets warmer the time gets earlier, month by month, till in June cheels are able to circle a little after 7 a.m.," whilst he quotes another writer as saying: "Vultures in Simla at a height of about 7,000 feet in the Himalaya Mountains . . . start their flight in summer between six and seven o'clock in the morning, but in winter not till nearly nine o'clock."

According to Hirth, thermals in Europe begin to be effective about 10 a.m. in the summer, reach their greatest strength about mid-day and decline to almost zero by late afternoon. Quite strong thermal currents have, however, been known by the writer to exist during summer evenings and on occasion just about sunset.

Further evidence on this point was furnished by Sqdn. Ldr. G. M. Dyott, writing on his experiences of flying in Peru,* who wrote: "The conditions of the atmosphere could

* "The Possibilities of Air Navigation in Peru," *The Aeroplane*, 18-6-19.



Wind deflection soaring: mass soaring by Gannets at Bass Rock, August, 1933.

* See THE SAILPLANE AND GLIDER, Vol. 4, Nos. 1 and 2, of Jan. 20th and Feb. 3rd, 1933.

† "Animal Flight," by E. H. Hankin, M.A., ScD., London, 1913.

flight in calm, still air with considerable effort, and they depend on horizontal or vertical air currents to keep aloft for any time. About 8 or 9 o'clock in the morning they all leave their nesting places and beat the air, sometimes giving it up immediately and losing so much altitude that they would be unable to regain their perch, and would have to take refuge on a lower ledge or some dried-up tree in the valley. As soon as conditions for soaring flight prevailed, they would all be circling and circling until lost in the blue. Invariably they seemed to prefer the sides of the valleys . . . (and) close observation showed that the air in the centre of the valley (shade) was almost always descending. Towards half-past four all the heat eddies had stopped, and down would come the turkey buzzards to rest for the night. Frequently, if their return was postponed till a late hour, their landing on tree-tops was very strenuous, as, unable to support themselves in the falling air, they would fall like a lump of lead on an extending branch, and there remain till the morning."

On several occasions the writer has observed large numbers of sea-birds circling upwards in a thermal column of perhaps 100-200 feet in diameter, to a height of some two thousand feet at which point they have glided off in several directions, although sometimes there has appeared to be a common objective. The following is a description recorded at the time, of one such instance that was observed from the Island of Skomer, off the S.W. Coast of Wales, on August 8th, 1933.

During the whole day the sun has been beating down on to the sun-baked island, with hardly a cloud in the sky, but now some snowy-white cumuli begin to form immediately over the island, which indicates that the warm air is streaming upwards. Apparently one or two sea-birds become aware of this thermal column, in which they commence circling, and at the same time utter yells that attract other birds from all directions. Almost every bird in the neighbourhood seems to fly towards the newly found source of lift and changes from flapping to effortless wheeling flight as soon as it arrives. Thus the rotating column of birds, of all sizes and species, grows higher and higher, with the latest arrivals always entering at the base of the ever expanding mass, whilst their several calls mingle into one din of sound.

Higher and higher goes the column, until an estimated height of two thousand feet is reached, from which point the top-most birds break away to glide serenly in all directions. Some loose feathers also are noticed rising in the thermal way. For an hour the whirling and crying lasts, when it is noticed that the cloud is dispersing, and no longer are the gulls able to romp and gambol in Nature's escalade. Again the sky is blue and all is quietness.

Some idea of the diameter of the thermal columns may be gained by the size of the circle described by the various species of birds. Thus for the Indian birds recorded by Hankin, the column diameters are: Cheel, 40 ft.*; vulture, 130 to 170 ft.; and cranes 600 ft. or more, but the method of grouping for circling also may have some bearing on this point, for whereas the vultures are observed to merely keep within the circular column, cranes, on the other hand, fly in a tight formation with the centre of the circle as pivot and maintain their position with remarkable regularity. At

*Note.—The average time taken by a cheel to complete one circle is roughly 10 seconds. If the diameter is only 40 ft., the speed of flight works out at just over 12½ ft. per second, which is very low indeed. If a value of 35 ft. per second (24 m.p.h nearly) is assumed, the circle diameter works out at 110 ft.



A formation flight at slow speed: High Veldt Vulture of South Africa; Span, 8½ ft.; weight, 18½ lbs.
Photo by L. S. Vine, Esq., Transvaal.

the end of the climb the formation changes to the well-known spear-head which is rigidly adhered to during the glide away. Hankin timed one such ascent and found that a height of 1,200 metres was gained in one quarter of an hour, roughly, 4,000 ft. in 15 minutes or 4 feet per second. If a sinking speed of 3 ft./second is added to this, the average speed of the up-current would appear to be about 7 ft. per second.

Another of Hankin's observations, which may be brought in here, relates to the angle of bank employed by vultures under various conditions. "The amount of canting (in soaring flight, given as from 30 deg. to 60 deg. with the horizon) varies at different times without any very obvious cause. I have formed the impression that in ease-circling there is less canting than there usually is in circling with effort to gain height." This suggests that when conditions are not very soarable, the bird endeavours to keen within a bubble, or column, of rising air of comparatively small diameter by banking steeply. It may be argued against this that steep banking must be accompanied by greater forward speed and consequent increased drag with a steeper gliding angle, but it must be appreciated that increase of speed in the case of a bird results in decreased drag coefficients of both body and wing owing to compression of the feathers in the former case and straightening of the wing camber in the latter,* and therefore the drag increase may be small and will be compensated for by the lift obtained from the rising air. When the angle of bank is large, for turning in a small circle, the bird is likely to make use of its full wing spread and a moderately low speed of flight, but with proper allowance made for the greater wing loading due to the banking. See Fig. 3.

Now the lowest speed of gliding flight of the vulture is about 26 ft. per second, but if the angle of bank is 60 deg. the wing loading is doubled for which an increase of speed to about 35 ft. per second is necessary.

*As speed increases, wing incidence decreases, and this is accompanied by a backward movement of the centre of pressure which tends to straighten the secondary feathers.

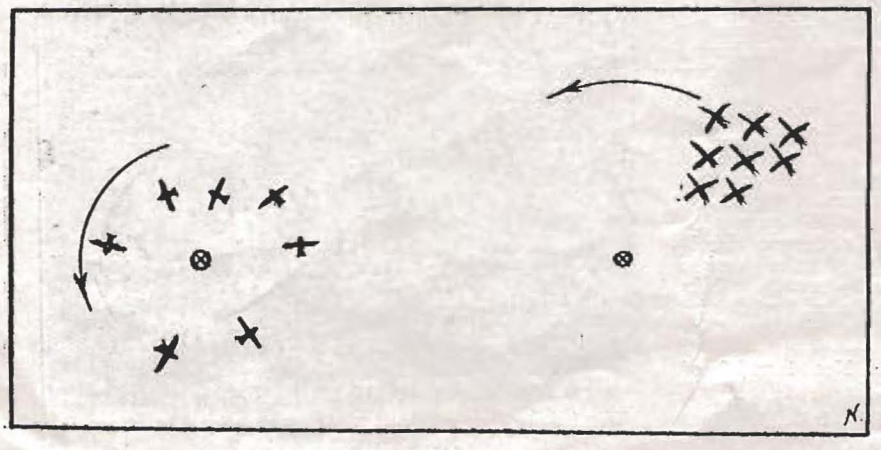


Fig. 2. Soaring Flight of Vultures and Cranes.

Inserting these values in the formula tan theta = V^2/gr, r is found to be 22 ft. and the diameter of circle is 44 ft. For an angle of bank of 30deg. and a speed range of from 30 to 55 ft. per second, the circle diameter becomes from 100 to 226 ft. approximately.

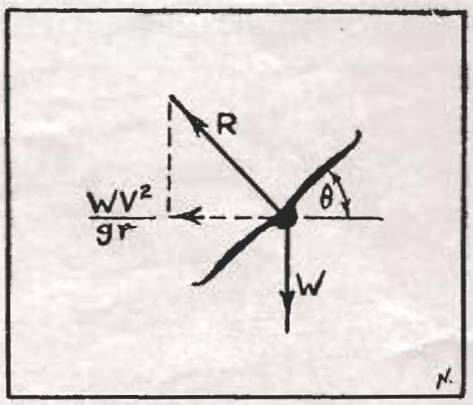
It may be mentioned that Hankin states that the angle of bank decreases from the maximum given above on the down-wind part of the track (this aspect will be more fully dealt with later) and if this is so, the smallest diameter for circling flight will be larger than the 44 ft. found by calculation.

Thus it would seem that the diameter of rising columns of air made use of by birds for soaring flight varies generally from about 100 ft. to 200 ft., but on occasions may be considerably larger.

There are occasions, especially in the tropics, on which the soarability of the air appears to be very great indeed and on which birds seem to be able to glide with ease in all directions, without the need for circling or being restricted to any particular regions. Thus Hankin states that sometimes "birds are able to travel for miles in a straight line with no discoverable movements of the wings or deflections from their course" and without loss of height.

Such occasions may arise when a strong sun breaks through a sky that has been overcast for some hours, and particularly after rain when the upper air is cold, and when the temperature gradient or lapse rate is high. There may thus be one huge, more or less uniform, movement due to the rapid heating up of the whole surface stratum of the air.

(*All rights reserved.*)



$R = \frac{W}{\cos\theta}$. $\theta = 60°$. $R = 2W$.

Fig. 3. Forces acting on Bird in Circling Flight.

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GLIDING IN TASMANIA

[*The Tasmanian Glider Club commenced operations on September 26th, 1929, that is, some months before the present revival of gliding started in this country; the last news of their activities appeared in* THE SAILPLANE *of December 30th, 1932. We are delighted to have received the following letter from the hon. Secretary of the Club, and to know that, though born in 1929, it is still going strong.*]

Having just read about a dozen back numbers of your journal, I was struck by the progress that has been made by some of the Gliding Clubs in the old country. I feel that there is still some hope for our club if we persist on building machines when they are crashed.

The Tasmanian Glider Club still continues to crash along, despite the bad times and lack of support. Bad luck has dogged our steps ever since we lost our first machine, DRAG-AN-FLY, with its hangar during a storm.

DRAG-AN-FLY II. has been very unlucky, although it seemed a good glider to fly. Both of these machines were primary gliders of the ZOGLING type. Eleven months ago one of our members crashed on his first flight; with a nacelle attached he dived over the edge of a 75-ft. hill, and on pulling out of the dive held the stick back until the glider stalled, with the result that it nosed over and did a complete cartwheel into the side of the hill. One wing was squashed right into the side of the centre section, and the other badly damaged; our new nacelle and the centre section was also a bad sight. This episode cost us nine months of the best flying weather, a Christmas and Easter camp, and nearly emptied our coffers.

Repairs were carried out by the rigger crew in time to resume flying in the spring, when the glider was taken out and tested.

Spring lambs were there to greet us, and the owners of the property asked if operations could not be put off until lambing was over; the use of the terrain being free, we had to grant his wishes. Another two months' delay and our members fed up to the collar stud, so that when flying was resumed our ground crew was a very light one, which made us rely on the help of friends and visitors.

Quite recently four members turned up at the terrain and proceeded to rig the glider. On lifting one of the wings a large sized rat ran out of the root end; on further investigation it was found that a nest of the air-minded little animals had found its way through a hole chewed through the side.

The glider was in temporary storage in a wool shed, the wings being on their edge. The rodents had carried about four or five pounds of wool and other debris into the wing and packed same along the front spar, around our control cables. This lot held up the flying operations for one-and-a-half hours.

The nest was easily removed with a wire hook, but the rats would not consent to leave; the wing was given plenty of shaking and turning whilst the rats ran up and down the ribs like sailors defying the united effort of the club.

Finally, when we had about given up all hope, Brown, who is learning to smoke a pipe, tried the effect of his tobacco on the rats.

Believe me, those rats started to panic right away, and came out for fresh air, deciding to meet a sudden death, rather than suffer the fumes of that good old English briar. Three of their number met an awful death, with two survivors, one of which made 19 glides as a stowaway; he evidently was able to hold his breath and remained inside with the smoke.

This rat had the honour of taking part in our first attempt at auto-launching, which was tried when we had driven the spectators away by working them on the starting rope.

Having prepared for a situation such as this, Dixon, the constructor, instructor, secretary and factotum of the club, brought to light an extra 120 feet of new manilla rope, making a single rope of 240 feet when attached to the rope used on the shock cord; our solid 1-inch rubber rope was used double so as to damp out shocks. (Stranded shock cord is not procurable in this country.)

Brown gave the glider her first try out by the auto-launch method in a 15 m.p.h. breeze, which proved ideal, followed by Dixon and Howe, who is the treasurer. These members managed to get three flights each, having to do turns in order to lose height, so that they could land within the field. All of the flights lasted over 60 seconds.

Trouble hit us hard the following week-end when a crew of four men and a small boy started operations in a slight breeze. Of the three members who had tried the auto-launching, each had a flight, which was critically viewed by the holder of the club duration record of 2½ mins.

Wilmot had his own ideas of how it should be done, and, contrary to warnings about pulling up too steeply on the start, flew her like a BULLDOG and lost his rope during the climb, and found himself stalled at about 80 ft. The old "Ford" bolted with the rope. Not wishing to let himself down in the eyes of the other members, Wilmot, who had heard the shouts of the instructor, endeavoured to pull off a turn, and, thinking that he was Mr. Collins of the London Club, gave her a hefty bank and lots of rudder. Don't try to imagine the rest; you couldn't! I think you would call it a stalled turn, but we, being Australian, didn't call it that.

DRAG-AN-FLY II. didn't fly, and made a complete turn in the spin before the hook struck the deck. Visions of flowers and black coats, when out from under the mess crawled Freddy with two feet of king-post and the seat back strapped to him, which proves that our 6-inch safety-belt is quite strong enough. His words were: "Well, that finishes that." He had said, as the Yanks say: "A mouthful."

The rigger crew are again busy building a complete new centre-section and outrigger and some repairs to the wings.

Some goat said in a book that repairs of a ZOGLING were not difficult; he should join this club.

We still have hopes of holding a camp at Christmas, with a machine that will be altered in appearance, as the wings are going to have struts to brace them and the cabane will not be built on to the centre-section.

If nothing else, it will delude the public into believing that we have made some progress.

Greetings from the Tasmanian Glider Club.

CHAS. E. DIXON,
Hon. Secretary.

QUOITS FOR GLIDERS!

By P. H. Baster.

"Everything is O.K.; signal the towing car to start; cheerio! Now I slide gently over our well-known strand at Magilligan, my speed gradually increasing.

"The A.S.I. is registering 45 kms. Now just be patient and wait for the surge of speed. Here it is! Now I am lifted gently off the ground, and sail away into the air at the end of a 1,000 foot rope.

"Steadily climbing; altimeter gradually showing up to about 500 ft. This will do nicely, so I pull the handle of the quick release. I listen for, and hear, the familiar 'click' which it always gives.

"Now I turn towards the cliff to reap the benefits of the up-currents that should be there.

"Hullo! my A.S.I. reading is 70 kms., so I pull the nose up a bit. Somehow this does not seem to have any effect; the joystick is well back but the A.S.I. remains at 70.

"Oh! may be the cable was not cast-off properly, so I pull the handle a second time. The failure to hear any further 'click' indicates to me that the release has already worked O.K. Still I do not like this 70 kms. on the A.S.I., but I go on over the railway telegraph wires, road, bungalows, etc., and over the top of the cliff.

"Then I turn westward for the other end of the beach. As I am over the cliff I hear a very peculiar rumbling in the fuselage, sounding like control wires flapping about inside.

"I am worried, and the fact that I have little or no control with my elevator does not make my mind any easier.

"I head out towards the sand, hoping to be able to reach the sea should anything unforseen happen. As I proceed this noise continues, and then suddenly the machine seems to give two or three surges or leaps, and I hear and feel a hard wrench, the machine shooting violently forward and downward.

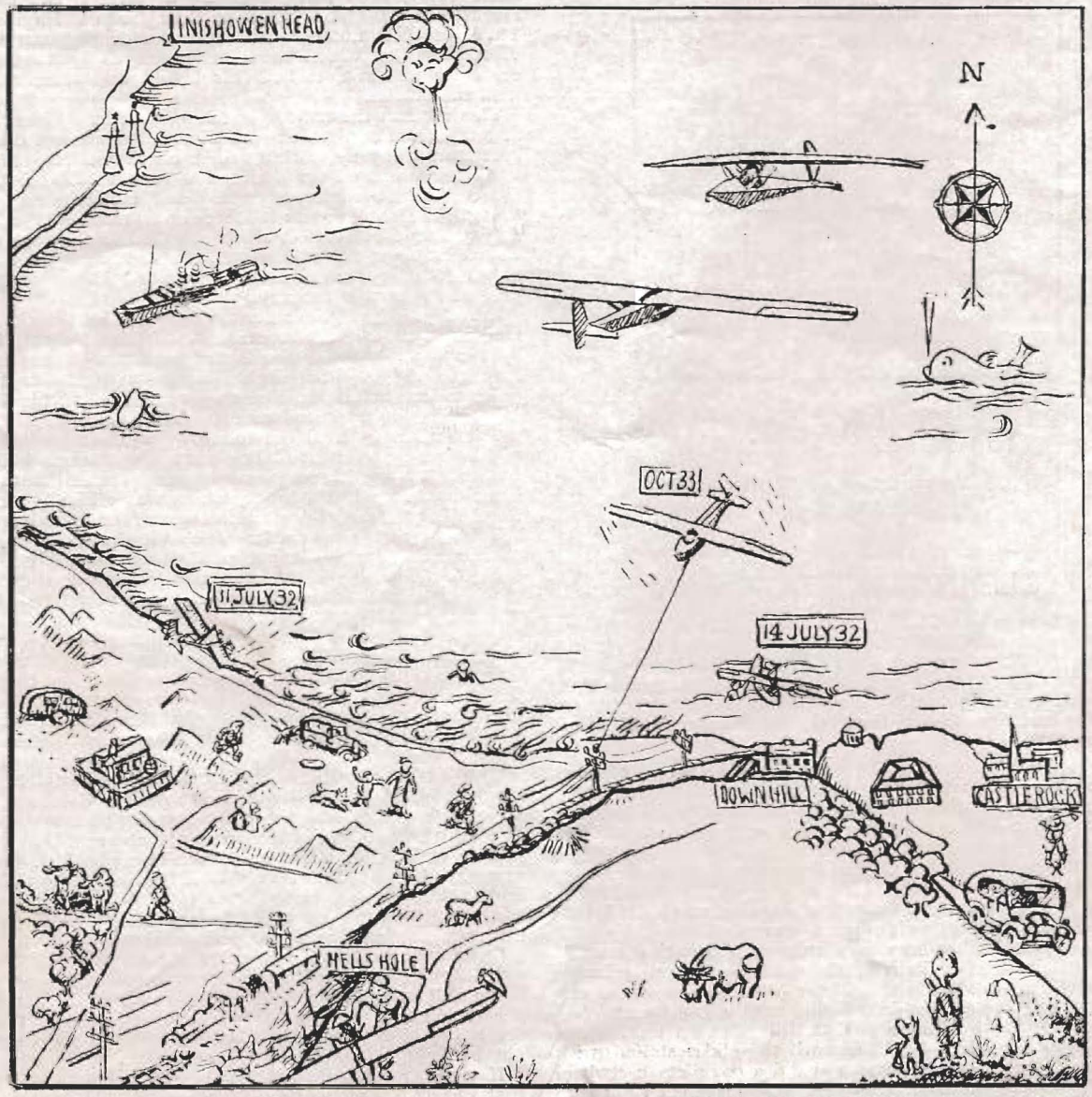
"I am afraid to look round at the tail, as it feels as if the whole thing is missing! To my relief, however, the machine settles down to a more normal flying speed, and very soon I am once again safely on the sand."

So much for the actual flight.

* * *

I jumped out of the cockpit and on examination found the machine to be quite intact. Even the tail was in its normal position and functioning properly.

Our ground-engineer came running up expressing grave doubts as to my sobriety. Then the towing car came along, the driver anxiously enquiring how I had fared on the flight. He told me that after seeing the customary "dip" of the glider at the end of the tow, he had noticed that the cable



A reproduction of the Ulster Club's Christmas card for 1933, showing the scene of the episode described in an accompanying article. The North Wind (as depicted) provides uplift for soaring by blowing at the Magilligan cliffs, which overlook the railway and are seen from the rear.

did not detach itself from the machine, so he had had to use the quick-release on the car, and had been watching me trail the cable all over the cliffs, etc.

This was evidently the cause of the rumbling noise which I had heard, the fuselage acting as a sounding-board to the wire.

On proceeding to look for the cable, we found the sailplane end of it about 500 yards from my landing place. Following it up we came across the other end (which consists of a large iron ring 3 ins. or so in diameter) neatly encircling the top insulator of a telegraph pole beside the railway track!

The next movement was to hurry up and remove this before a train should come along, so we had to search for a long stick of sorts, eventually finding a wireless pole eminently suitable, which we borrowed for the job.

The cause of the whole trouble seems to have been that an oval iron link, at the glider end of the cable, opened and jammed itself between the two side plates of the quick release, the sudden jerk at the end tearing it loose when the ring became fouled over the insulator.

How the ring did become so caught remains a riddle which must be put down to some freakish prank played by the little god "chance."

In conclusion, let me advise anyone using auto-towing methods not to use a link inside a partially enclosed quick release fitting. It is preferable (as we have since proved) just to form a non-slip loop in the end of the cable. Had this been done, the incident as related above could not have occurred.

"COLD FRONT" CLOUDS OVER SWITZERLAND

E. S.E. S. S.W.



Fig. 1. An approaching "front" seen from St. Gallen. Note the thick bank of cumulus-nimbus on the horizon between S. and S.W.

[*The following letter and accompanying photographs have been sent us by Otto Frischknecht, formerly of the London Gliding Club, more recently a member of a working and flying group at Reutlingen in Germany, and now returned to his Gliding Club at St. Gallen in Switzerland.*]

I am glad to send you some photos I took last summer, and am hoping that they will be of some use to you.

Encouraged by your very interesting articles on meteorology and cloud formation, I tried to make my own observations on this subject.

The enclosed pictures were taken on August 22nd, 1933, at St. Gallen (Switzerland), showing the approach of a cold front after a three days' period of continuous rainfall. On the morning of August 22nd there was only a little rain, followed by heavy rain showers at noon. Then the weather cleared up slightly. At 3 p.m. a rain front passed by, after which the sun was shining till 4 o'clock. Then a new front approached, moving from west to east.

Fig. 1 was taken at 4 p.m. In the east there is a sheet of ripple-like white clouds, probably belonging to the former front. Then follows a portion of cloudless sky, while in the west new front-clouds are approaching. There was great wind speed, as can easily be seen from the dislocation of the nearest clouds, the interval between each photo (of the panorama) being about 15 to 20 seconds.

Fig. 2 shows a part of Fig. 1 five minutes later, and Fig. 3 was taken at 4.10 p.m., looking westwards. Shortly afterwards the first clouds arrived, rather low and at high speed. At 4.30 the sky was totally covered and visibity became bad. The rain arrived at 4.45 and lasted till 5.10. At 5.40 it cleared up again, and at 6.30 a new front approached.

The next day the weather became fine.

OTTO FRISCHKNECHT.

Some Remarks.

It so happens that Herr Frischknecht's photographs were taken on the day before Mr. Collins's 20-mile flight from Dunstable to Barnet (the present British soaring record), and that a rather similar front passed over Dunstable at 9 a.m. on the morning of the 23rd, two hours before Mr. Collins's flight commenced and 4½ hours before he set off across country. It was described in a letter from Mr. G. L. Bell, published in our issue of October last. In our comments on Mr. Bell's letter, we defined this as a minor front such as one often gets when the *main* cold front of a depression has gone by, and mentioned that sometimes a succession of such minor fronts may pass over at intervals of an hour or so. This is exactly what happened at St. Gallen, the intervals between the fronts being 2 or 3 hours. The main front at St. Gallen appears from the weather map to have passed over on the 20th; it was a remarkable specimen, stretching right across Europe from the middle of Portugal to Silesia, and was moving slowly south-east. The main front at Dunstable passed over during the night of the 22nd, and only one minor front appears to have followed it. The air in such weather conditions is usually rather unstable; that is, up-currents readily form; hence Mr. Collins's ability to do a cross-country flight. But the passage of a minor front, such as that illustrated, is likely to bring a body of rising air of greater volume and greater permanence than that of the haphazard up-currents that form between mules, and to be of correspondingly more use to the sailplane pilot.



Fig. 2. Part of the same view 5 minutes later.



Fig. 3. A still later view, looking westwards towards the approaching "front."

HAY, HAY, FEVER, AND CUMULUS CLOUDS

AND SOME METEOROLOGICAL COMMENTS THEREON.

A letter published in the *Meteorological Magazine* for December, 1933, provides striking confirmation of the fact that cumulus clouds are formed in air which has risen from heated ground and may even contain air which has been practically in contact with the ground itself; it also gives one to wonder whether a sailplane pilot could not use his sense of smell in addition to other means at present available for finding thermal currents. The letter, which was written by Flight-Lieut. R. G. Veryard, the meteorological officer attached to No. 1 Group R.A.F., Peshawar, India, reads as follows:—

"Recently, whilst flying over the Tochi Valley in Waziristan (with the object of taking dry and wet bulb temperature readings in and near cumulus cloud), my pilot and I had a rather unpleasant but interesting experience.

"We entered a patch of cumulus, which was about 100 ft. thick, at approximately 6,900 ft. above the ground, the time being 10 h. 30 m. I.S.T. Immediately, I noticed a smell of hay and felt a tickling sensation in my nose. My eyes began to water, and I sneezed frequently until we emerged from the cloud. On landing shortly afterwards I saw that my pilot had also been affected. His eyes and nose were still in a lachrymose condition! He, too, stated that he could "smell" the cloud.

"We had both observed that on the hillside below the patch of cumulus there was a party of villagers busily winnowing, and there appears to be little doubt that fine particles of chaff and pollen had been lifted into the cloud by convection currents. We did not experience any bumpiness just below the cloud, but from 3,000 ft. down to the ground the air was very turbulent.

"The dry and wet bulb readings taken on the way down from 6,000 ft. were as follows:—

Height.	*Dry.*	*Wet.*
Ground level	91	80
1,000 ft.	84	74
2,000 ft.	78	69
3,000 ft.	72	64
4,000 ft.	69	61
5,000 ft.	65	58
6,000 ft.	61	54

"It will be observed that the lapse-rate was super-adiabatic from ground-level to 3,000 ft., hence the ascending currents and consequent turbulence. The temperature readings just below, in, and outside the cloud have not been given, as they will be included in a set of similar observations to be published at a later date. I may add that I, personally, am subject to catarrh, but that my pilot had never experienced 'hay-fever' before!"

But England Can Go One Better.

It is generally supposed, and rightly, that thermal currents in the tropics are a good deal more powerful than those to be met with in this country. It is rather surprising to learn, therefore, that while Indian thermals are content with raising small particles of chaff and pollen, our own native ones can manage whole bundles of hay in bulk, as is shown by the following account taken from the *Daily Mail* of June 23rd, 1932:—

"Exclamations of amazement burst from the lips of crowds of people in Bedford-road and Bearton-road, Hitchin, Hertfordshire, last evening when little bundles which floated gently down to earth from a height of 500 ft. in the sky turned out to be—newly gathered hay!

"The phenomenon was first noticed about 6 p.m. when tiny objects seemed to detach themselves *from a solitary cloud*. (Our italics.)

"At first they looked like toy balloons or parachutes dropped from an invisible aeroplane. Then they seemed to 'explode,' and the mystified crowd assumed they were dummy shells used in target practice in the neighbourhood. Some timid watchers sought shelter, but then the mysterious 'puffs' settled and proved to be harmless.

"'Some of the bundles were quite big,' said Mr. Thomas Foster. 'They fell over a wide area. There was practically no wind at the time and they floated to the ground almost vertically. It struck me that a whirlwind had lifted off half a hay rick and carried the hay *just under the only cloud* in the sky.' (Our italics again.)

"Mrs. W. Carling, of Bedford-road, told a *Daily Mail* reporter that the hay took quite three minutes to come down."

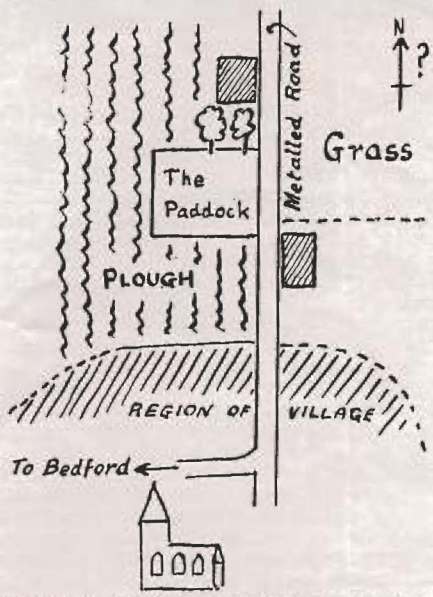
This piece of news elicited a letter from a correspondent who wrote that "two years ago my brother and I witnessed a similar phenomenon while playing golf at Letchworth, which is only about two miles from the scene of the present occurrence. On that occasion, also, the weather was perfectly calm. . . ."

The original ascent of what must have been the same hay was described thus by the *Bedfordshire Times*:—

"An unusual sight was witnessed by many of the inhabitants of Nothill and Ickwell on Wednesday afternoon. A whirlwind sprang up in a field of hay, took quite a load of hay straight up for about 1,000 feet, and blew it southwards to Old Warden." The phenomenon at Hitchin is then described as having taken place later on the same day.

We are indebted to Mr. G. L. Bell, of the London Gliding Club for calling our attention to this strange occurrence, and for sending the newspaper cuttings. Mr. Bell also went to the trouble of visiting the place on his bicycle and, after some trouble, locating the field from which the hay was blown up. He writes as follows:—

"The alleged field is really a paddock with one small plum tree in the middle, and about 50-70 yards square. As far as I could gather from the farmer who owned it, to N., W. and S. of the field was plough, with, certainly, grass to E. (See accompanying sketch.) The country all around is very flat, but with many big trees, not in clumps but scattered evenly. Many houses are but 100 yards away. The hay had only been cut that morning so must still have been comparatively damp. The old fellow said that if it had been dry the whole lot would have been taken up."



Situation of the Paddock from which hay was drawn up, to fall again later from beneath a cumulus cloud.

The farmer said he had never seen such a 'whirlywind' before in his life. Since there is no suggestion of the whirlwind having travelled across the field, Mr. Bell thinks it reasonable to assume that the hay itself (probably having dried considerably on the surface) caused the upwind, which developed a rotary motion. He suggests the field should be marked in large letters with the slightly altered version of a familiar notice: GOOD PUSH-UP HERE FOR SAILPLANES. Since, in the example described, a cloud was formed at its top, the rising column of air must have been pretty wide at that height, with plenty of circling room for a sailplane agile enough to dodge the clumps of hay; but lower down it must have been too violent and too concentrated for anything but an autogiro to soar in.

The "Lapse Rate."

To revert to Flt.-Lt. Veryard's letter. We have published his table of temperatures in full because it gives an opportunity of explaining the meaning of the "lapse rate" and of such terms as "stable" and "unstable air." This has not been done since Capt. F. Entwistle's lecture was reported in our issue of March 15th, 1932, so it is about time, as a reader has reminded us, for another attempt to be made.

The lapse rate of the atmosphere is of the utmost importance to every sailplane pilot, and is worth any amount of trouble to try to understand. It varies from day to day, and on it depends the tendency of up-currents to persist or to die out.

The temperature of the air is different at different heights; it is usually much colder high up than it is near the ground, so that anyone going up through the atmosphere finds the air around becoming gradually cooler. The precise rate at which it gets cooler is the "lapse rate." It will be seen from the table (in the "dry" column, which shows the actual temperature of the air) that the lapse rate on that day began by being 6 or 7 degrees (Fahrenheit) per 1,000 feet, and then, at 3,000 feet up, changed suddenly to only 3 or 4 degrees per 1,000 feet. Below 3,000 ft. the lapse rate was large, above 3,000 ft. it was small.

Now the reason why the flyers found the air below 3,000 ft. "very turbulent" was simply that the lapse rate was large, and that, when it is large, up and down currents easily form and tend to persist and grow bigger. The air is then described as "unstable" because each little bit of it won't stay put, but wants to move up or down.

Above 3,000 ft., below the cloud, they "did not experience any bumpiness." Why? Because the lapse rate was small, and up and down movements of the air tended to die out; the air was "stable." Even the big thermal current from the hayfield, shooting up from below into this stable layer, was brought to a stop before it had got any higher than 7,000 feet (the cloud was encountered at 6,900 ft., and was 100 feet thick).

Why the lapse rate has this peculiar influence can be best understood with the help of the table. It must be said first that when air is caused to rise its pressure decreases (there is less of the atmosphere on top of it), and, by a physical law, it consequently expands and gets colder. Actually it becomes about 5 degrees colder for every 1,000 feet it goes up, and this is called the *adiabatic* rate of cooling. Now take some of that air at ground level, said to be at a temperature of 91 degrees, and move it up to 1,000 feet. It will then have lost 5 degrees of heat, and its temperature will be about 86 degrees, or two degrees hotter than the surrounding air, which at that height was only 84 degrees according to the table. Being hotter than the air around it, our risen air will go up further of its own accord. Arrived at 3,000 ft., it will be 4 degrees hotter than its surroundings and so will continue its upward rush faster than ever. Then it will get into the "stable" air, and its upward pace will diminish until, at 6,000 ft., its temperature will have fallen to about 61 degrees, the same as the air around it, and it will rise no more. Actually the thermal current from the hayfield must have been hotter than 91 degrees when it left the ground (that is in fact why it started at all), and, as related, the air in it rose as far as 7,000 feet.

Now take some of the air at 3,000 feet (of temperature 72 degrees) and try to get that to go up. It won't, because if it does, it will become colder than the air surrounding it. Work it out from the table, and see.

Why this difference in behaviour? The answer is simple: the lapse rate below 3,000 ft. was *more* than 5 degrees per 1,000 feet; it was more than the "adiabatic" rate, and is called by the writer "super-adiabatic." Above 3,000 ft. the lapse rate is less than adiabatic, and the air is stable. (N.B.—This figure of 5 degrees per 1,000 feet is taken as a round number for convenience; it is not quite accurate.)

Dry Bulb and Wet Bulb

While we are about it, we may as well say something of these too, since they also are mentioned in the Flight-Lieut.'s letter.

The wet bulb thermometer has its bulb wrapped round with a piece of damp cloth; it is simply a device for measuring the amount of water vapour in the air. If the air is very dry, moisture evaporates easily off the cloth, and the thermometer bulb is caused to cool down several degrees (just as our own bodies cool when we perspire, and do so better in dry air). If there is much moisture in the air, the wet bulb will cool less effectively. The meteorologist reads both the dry (or ordinary) and the wet bulb thermometers, applies a complicated formula, and then knows how much water vapour the air about him contains.

What really matters is not the actual amount of moisture in the air, but the amount of water vapour it *does* hold compared with the amount it *can* hold (called "relative humidity"). When air is going up in a thermal current, the amount it *can* hold gets less and less (owing to expansion and cooling) until at last it may become even less than what the air *does* hold, in which case some of the water vapour condenses into fine water droplets and cloud is produced.

In the table given, it will be seen that the difference between "dry" and "wet" bulb readings gets less and less as we go up. No doubt in the cloud there would have been no difference at all; water could not then evaporate off the damp cloth because the air was what is called "saturated"; it held as much moisture as it could. And that is why the level of the base of a cumulus cloud is termed the "saturation level." But it is the "saturation level" only for the air that has come up in a thermal current from the comparatively moist region near the ground. The air between the cumulus clouds is comparatively dry; it is nowhere near its own "saturation level," and so it remains clear.

GLIDING AND THE GERMAN SPORTS BADGE.

The way in which Gliding in Germany is given equal status with other sports is shown by the regulations for the German "Sports Badge," which are described in an interesting article in *The Times*. The essential point of this badge is that it can be gained for all-round efficiency only, and in consequence has done much to prevent the "curse of specialization" in athletics there. The regulations are complicated, but roughly speaking there are five tests in all cases, the first being invariably swimming; the second is high or long jumping, and the third running. For the fourth, the candidate has a wide choice ranging from discus or spear throwing to skating, rowing, canoeing, shooting and motorless flying (whether the "A," "B" or "C" test is not stated). The fifth test is of the endurance type, such as long-distance running, swimming or cycling. It would not be a bad idea to include duration flying in sailplanes among the endurance tests; perhaps this will happen some day.

CORRESPONDENCE

"DIE-HARD" AND THE "SCUD II."

Sir,

I am sorry to see that the bee in "Die-Hard's" bonnet has been getting busy again and, having already libelled several excellent foreign machines, he now inflicts himself on SCUD II.

It seems a pity THE SAILPLANE cannot obtain the services of unbiased and expert pilots, with some experience of the different types, to write these criticisms. Such reports, carefully written and without prejudice, would be of real interest and value to all concerned. As it is, the well informed say, "Oh no one takes what old H—— says seriously," and letters appear in the following issues of THE SAILPLANE to that effect, all of which seems rather a waste of space. Nevertheless, I think the article in question calls for few remarks for the benefit of those not so well informed.

"Die-Hard's" main grievance seems to be that, being a small man, he found that to reach the pedals he had to practically lie down to it with his legs outstretched and the stick at arm's length. If he had troubled to enquire the reason he would have been told that this particular SCUD II was designed and constructed with extra length in leg, arm and body reach to accommodate the out-size owner of 6ft. and several inches complete with parachute!

It is not surprising therefore that "Die-Hard" being a relatively small man should have found his position "grim." An average size pilot finds a standard SCUD II quite comfortable and normal.

Regarding the symptoms of Claustrophobia which he says were awakened by his position under the wing, I would point out that this machine was not designed for people suffering from mental diseases, but rather for those with an instinct for self-preservation who appreciate the additional safety of such a cockpit position.

The rudder he thinks is "altogether delightful." This rather reminds me of the remarks of one of the owners after the first test flight of this machine at Barrow with the very same rudder—"The rudder would be all right if there were two more of exactly similar area arranged on each side!" Not wishing to do anything so drastic right away, I thought a good start would be to have one made with a 30 per cent. increase in area. This was duly supplied, but later discarded in favour of the original rudder as it was found to be too powerful. So it is now kept in readiness for people like "Die-Hard." However, he finds the rudder "delightful." He must have seen this over-size one in the trailer.

He would like the ailerons more "snappy." One is here

reminded that a co-owner with "Die-Hard" of the machine which is referred to for comparison, a very experienced pilot, at first criticised the SCUD II ailerons as being too sensitive and powerful and requiring a very small stick movement compared with anything that he had been accustomed to. But after a little experience he got used to this and appreciated the improved control and accuracy with which the machine could be flown.

So what is a wretched designer to believe? If he tries to find these things out for himself his nervous state would cause wing flutter, which again would be unfair on the machine.

It seems that only criticisms of really experienced pilots should be taken seriously, and it would be a good idea if, in future, SCUDS were offered with three sizes of cockpit—"small men's," "medium men's" and "out-size," with three sizes of each control for every cockpit size!

L. E. BAYNES,
Designer of Scud Sailplanes.

THE FUTURE OF THE GLIDING MOVEMENT.

Sir,

Few will deny that the recent rumblings and grumblings that have been heard, indicate that a crisis is at hand in the management of the Gliding Movement of this country; neither should they deny that a solution of the present difficulties must be found, and that quickly, unless the movement as a whole is to suffer.

Let us face the facts boldly as they exist to-day:—

On the practical side, excellent progress has been made, and every penny received has been poured into machines, maintenance, equipment, rents, etc.; most clubs will be finishing their year without two pennies to rub together. Great technical and practical progress has been made, and enthusiasm is at a high pitch.

On the Executive side, a great appeal was launched early in the year, and this was nobly supported by Lord Wakefield. It must unfortunately be recorded that practically all the proceeds of this appeal, as well as ordinary income, have been absorbed by the Organisation's office expenses and salaries, and very little assistance has been given to the movement itself.

In plain words, overhead expenses of the Organisation are altogether out of proportion to its income and size. This, in my opinion, is one of the reasons for its failure to function.

I submit that the remedy lies in CONSOLIDATION. The movement is neither big enough, nor can it afford, to run several secretarial organisations. It therefore appears that the only possible course is for the practical side to absorb the executive side, and to form one common secretarial and organising unit, which could, at the same time, manage the official paper.

I suggest that the largest club be approached on these lines, and smaller clubs asked to nominate representatives.

This, I believe, would be a solution to the great difficulty which has existed from the commencement, viz.: instead of money flowing from Clubs to the organising body, as it has in the past, this arrangement should enable the flow to be reversed to the great benefit of the Clubs, and the money would then reach the source for which it was subscribed.

This is, I realise, a contentious matter, and some may say that the Governing body has organised several successful competitions. That is true, but they have not been run with the money subscribed by members, but have financed themselves on the field of action, owing to the splendid performance of the pilots taking part.

The majority of such pilots will agree that the organisation of such meetings left much to be desired, not through any neglect of the controlling officials, but rather to their inability to realise the actual requirements of the pilots.

I should like to add that these are entirely my own private and personal views.

If, however, there are enough in the movement who are in agreement with these views, and they would be good enough to advise me, I should be pleased to make representations in the right quarter, on these lines.

C. ESFEN HARDWICK,
Heathercroft, Endwood Drive, Streetly, Staffs

SOME QUESTIONS AND MORE "POLITICS."

Sir,

I am continuously impressed by the immense scope of your knowledge concerning motorless flight. Can you answer the following questions, in terms of percentage, please?

1. How many B.G.A. members do *not* appear in the current list of subscribers to the SAILPLANE?

2. How many members of the B.G.A. Council have *not* left the ground in a glider during the past twelve months?

3. How many members of the Council have *not* soared a machine at least half a dozen times, for at least five minutes at a time (a) in their life, (b) during the past twelve months?

Mr. Wills's letters continue to be admirable. It is fortifying to know that he agrees on £100 as a reasonable maximum for annual cost of administration. But he is discreetly silent on at least one point.

You will recall that the Gilbert-and-Sullivan Duke of Plaza Toro led his regiment from behind . . . except in retreat, when his place was at the fore. It would seem that this distinguished gentleman was long ago adopted by the B.G.A. as its patron saint and guiding star. His discharge is overdue.

Sooner or later the B.G.A. Council must consist only of active sailplane pilots, drawn from Barrow, Bradford, Derby, Dorset, London, Scarborough, Sussex, Ulster, and any other honest-to-goodness area that presents itself. For a definition of the word "active," see 3 (b) above. There must never, in high places, be any taint of log-rolling, strap-hanging, busy-bodying, "me-too"-ing . . . call it what you will. Nor must we ducklings ever have an uneasy feeling that we are being foster-mothered by a self-appointed, self-seeking, overlarge, earth-bound, cackling hen with an infinite appetite, few maternal instincts, and fewer scruples.

In order to obtain a council on scrupulous motorless-minded lines, every group or club possessing a minimum of, say, 4 active "C" pilots should be asked to nominate one of the four as council-member. A club possessing 12 or more active "C" pilots, all subscribing to the club, might be allowed to nominate two of them as council members; for two dozen "C" pilots, 3 nominees, and so on. Voting papers would be sent out to all "C" pilots, active and passive, the names and addresses to be obtained from the Royal Aero Club's records. Or, better still, voting could be done through THE SAILPLANE.

The completed council would always be limited to a maximum of nine members, five forming a quorum, bona fide deputies being allowed. Meetings would be quarterly. The council would be empowered to co-opt benevolent experts. It would appoint an executive committee, and small subcommittees for special purposes. All its officers, without exception, would be selected from its own council members. *Deus* and *dea, ex machina* would be rigorously eschewed.

Expenditure would be strictly limited to £100 annually. Income in excess of this figure would be hypothecated to a fund for the making of loans to bona-fide club supplicants. But there would never be any sweepstakery, beggary, newspaper stunting, lionising dances, tragic appeals to the nation's patriots, nor other such proceedings. A stalwart independence is vital.

The body need have no fixed locus. The secretary-treasurer would publish his home address in THE SAILPLANE. Being honorary, he would be exempt from excessive criticism and could well afford to ignore expensive demands for information sent in to him by the hordes of busybodies who are only interested in motorless flight as an abstract proposition. His name might well be P. A. Wills, who can and does soar freely and who palpably possesses a constructive mind.

The choice of chairman will make all the difference between success and failure. Success is certain if the council is controlled either by Hardwick, Major Petre, or S'ingsby. I do not know of any other practical men in the movement who so well combine horse-sense with honesty of purpose, tact, goodwill and experience.

Having already plenty to do and therefore no irons in this particular fire, I retain an obstinate, if only nominal, anonymity.

THIRTY HOURS.

[All B.G.A. members now get THE SAILPLANE free. Previous to this arrangement, about 14 per cent. were subscribers, about 6 per cent. on the Free List, and of the remaining odd 80 per cent., a few *may* have obtained copies through newsagents.

We do not know (except in a few cases) who are the club representatives on the council, so cannot answer questions 2 and 3. The Acting Treasurer has soared at least six times for over 5 minutes in the past year, but we have no information that anyone else on the council has done so.—ED.]

LEADERSHIP.

Among those who glide great distances it is becoming fashionable to scoff at those who show their interest in gliding otherwise than in a glider. Even THE SAILPLANE would seem to have been tempted with this tendency when it suggests that certain individuals, who have taken a keen interest in gliding without actively practising the art, were wrongly described as "leaders" in an evening paper. It

wishes to confine the right of leadership to those who actively take part in the attack, and quotes as an example that the leader of this year's Everest expedition accompanied the party all the way to the Himalayas, and presumably took part in the final attempts on the mountain.

I believe that there have been "leaders" of previous expeditions, however, who have led from the base and have not lost caste. If I am right such men would have been appointed for their organising abilities, their knowledge of mountains in general and powers of inspiring others. Would THE SAILPLANE deny the title of "Leader" to Lord Haig in the War, even if he has never fired a shot or waved his sword in front of advancing troops. Even if Lord Wakefield has never sat in an aeroplane, a motor car or motor boat, I suggest that he will and may be regarded as a leader in aviation, motoring and motor-boating.

The two "leaders" referred to in THE SAILPLANE, as well as others who have been interested in gliding, have not frequently been seen in gliders. The reasons may or may not include timidity, old age, an anxious wife, exposure, lack of time or opportunity. Whatever it is does not concern us, and may be regarded as their business.

A great deal of their time and not a little of their money has been devoted by persons such as these to gliding (we must be careful to avoid "gliding movement") and, although we may perhaps be permitted to tease them a little from time to time, it would be most unwise to allow our chaff to be tinged with malice or to let them feel that their services are unwelcome.

There are probably very many different reasons why individuals become concerned with gliding: in many cases it is because, being purely selfish, they wish to enjoy the sensations and adventures of gliding in their own person. Such should encourage the efforts of others as tending to give them better equipment and knowledge.

Others, from patriotic motives, may concern themselves with gliding either because they consider that another war is inevitable or because they think that it will help industry or even just that it is just "good for the country." These people will tend to emphasise the "Youth of Britain" aspect and will only be doing their duty in doing so.

Again some are reputed to be active from a desire to achieve personal glory and power. Surely it would be stupid for us, whose motives are pure, not to take every advantage of those whose motives are unintelligent. We should not only encourage all they do for us, but encourage them in their vainglory to even greater efforts.

The way to get the best machines, equipment, and organisation, in other words, the best gliding and enjoyment in gliding, not only for ourselves but for others, will be attained by hard work in the air and on the ground, by avoidance of friction and charity towards those whose opinions do not always coincide with our own.

"AGNOSTIC"

[Reference to our remarks will show that we stated that "evidently the word 'leader' is capable of more than one meaning," and did not therefore "confine the right of leadership" as alleged.

What we *would* like to do is to confine the right of leadership to those who are genuinely interested in the actual flying and in the progress of those who actually fly, and we think that the wish to rope in the "Youth of Britain" should arise, if it all, as a direct outcome of that genuine interest.

The press paragraph quoted gave a discourse on the actual *flying* of gliders, what it feels like, and what it teaches as compared with power flying; it then, to point the moral, gave the names of two "leaders" who do not fly gliders at all. What sort of propaganda has been put out for gliding and soaring in the last four years, if this is all the press has to show for it?

The intended leader of the 1924 Everest expedition was taken ill and ceased to lead it. As for Lord Haig, politicians as well as generals are described as "leaders" in war time. The essential difference is that a general keeps *in touch with* his troops, and takes a genuine interest in their day-to-day doings, whereas for the political "leader" an army's achievements are regarded only too often as counters in some game of his own.

Still, we congratulate "Agnostic" on his able defence of the non-flyers, a class, by the way, to which he does not belong. They have been attacked from more than one quarter, and it certainly was time someone rallied to their support. Let us "take every advantage of" them by all means, but we must see that the process is not reversed. Where the advantage is mutual and the motives on both sides are commendable, we must of course welcome co-operation for our mutual benefit. The meteorologists, for instance, have every right to study vertical air movements if they want to, without being expected to fly in them. Similarly with other technical experts. But, if we ever get that Technical Research Institute, we may be sure that all glider pilots will welcome it, not as a mere publicity stunt to be staffed and run any old how as long as it is there to be mentioned among the propaganda, but as something which will help them in their flying. How many of our non-pilots would take the same attitude on that or on any other such matter? —Ed.]

MR. WAPLINGTON AND OURSELVES.

Sir,

May I reply to your attack on me, arising out of my letter on page 217 of the November issue.

I would first of all like to suggest that Mr. Wills's letter, as he himself states, was not a letter criticising the B.G.A. It did however refer to a matter which had at that time not been made public, either by the Council of the British Gliding Association or the Committee of the London Gliding Club. The correspondence on the matter was still in progress, and if I am correct in my recollection of what happened at the last Council meeting, it was the view of the Council that the matter was still *sub judice*, and they felt that it was neither fair to them or to the Committee of the London Club, that a letter referring to the dispute should have been published without reference to those concerned.

I admit that my letter was not drafted by the Council, and it is possible that I may have misunderstood their wishes. I can only assert that the letter in question was not repudiated or criticised at the December meeting of the Council.

Even if the Editor's informants are right and I have mistaken a general discussion for directions, I naturally very much resent the imputation contained in your remarks that my letter was not written in good faith.

I have always been given to understand that the Editor of THE SAILPLANE was in no way subservient to myself as Secretary of the B.G.A. I therefore assumed that I was entitled to make such representations to him as to the wisdom of publishing matter which might damage the Association, in the same way as I should be at liberty to attempt to persuade the Editor of any other journal who might by courtesy show me a letter submitted to him.

J. L. R. WAPLINGTON,
Hon. Secretary, British Gliding Association.

Our own views are as follows:

Mr. Wills's letter did criticise the B.G.A., in that he accused the Association of deliberately suppressing the news that the London Gliding Club had disaffiliated.

The question of the Club's disaffiliation was not *sub judice*, since the decision to disaffiliate had already been made. The news of this decision had been made public by members of the L.G.C. Committee, who announced it in their Club House under no pledge of secrecy; moreover, we have not received from the Club Committee any complaint that we have published something they wished to keep hushed up. The only reference to any dispute in Mr. Wills's letter was an allegation that the two bodies have been "at loggerheads for years" and a request to us to give "the history of the struggle"; the present dispute, as the published correspondence shows, concerns the question whether the Club were justified in disaffiliating, and was not referred to in his letter.

Next, as to Mr. Waplington's letter to us, written just after the October Council meeting, in which he stated that the B.G.A. Council regretted that we had published Mr. Wills's letter. In spite of Mr. Waplington's suggestions that there is some doubt on the matter, we can only assert that there is no doubt that he was not authorised by the Council to make such a statement. Our resentment at being thus misled is fully equal to his own resentment at believing that we have imputed to him a lack of good faith. We accept Mr. Waplington's statement that he believed his letter to be an expression of the Council's wishes, and on our part wish to make it clear that no imputation to the contrary was intended in our remarks in the last issue.

As regards "the wisdom of publishing matter which might damage the Association," we must insist that our readers have every right to discuss the Association's policy in THE SAILPLANE, as well as to demand that important items of news, such as the disaffiliation of one of the largest and most active Clubs, be not suppressed on any pretext.

There are thus still remaining some differences of opinion between Mr. Waplington and ourselves, upon which we can only agree to differ. And, since disagreements within the Gliding Movement are so often ascribed to personal quarrels, we are glad to assure readers that, in this case at least, no personal quarrel is involved.—ED.]

NEWS FROM THE CLUBS.



The Portsmouth Club's towing car, ex-taxi, refuses to do its stuff.

BRADFORD AND COUNTY GLIDING CLUB.

December, 1933.—Week-end fogs still frustrate our intentions. Twice only, during the last month, have we rigged a machine and given ground training at Baildon Moor to a few of our promising lads and short hill-top flights to one or two "A" pilots, while occasionally, one or other of the old hands sneaks into the cockpit and meanders through a flat calm, down to the golf course fairway. What a beautiful landing surface that fairway offers for those who can hit it. For those who can't, there is, of course, the "rough," and the term is no exaggeration where Baildon Moor is concerned. A machine landing there, and seen from the distance, resembles nothing so much as an infuriated cockroach bucking its tail over its back apparently in an effort to avenge itself on the careless pilot.

The highest score on the Reservoir target now goes to Alderson, who nearly scored a bull a fortnight ago. The distance between the nose of his machine and the reservoir was hardly worth mentioning. We saw a bowler measuring it in "feet and fingers."

The Proposed All-Yorkshire Club.

On December 16th, the first official meeting of representatives of the various Yorkshire gliding clubs and other private enthusiasts was held in Bradford, to consider proposals for the formation of an all Yorkshire club operating from Sutton Bank. After discussion, all present expressed their approval of the scheme, and on Sunday, December 17th, a deputation went to Sutton Bank to reconnoitre amongst the local landowners and farmers. We now wait, with interest, for their report.

LONDON GLIDING CLUB.

Sunday, Dec. 10th.—At first, hand launches of the DICKSON, PRÜFLING and WILLOW WREN (recently repaired), into a steady north-easterly breeze. Then somebody suggested the winch, but a good proportion of the remaining daylight was spent in fixing it up. Flying recommenced, and all went well until the WILLOW WREN, after its usual fly round after the cast-off, came down and overshot the landing ground, vanishing behind the hangars at great speed with a following wind. A car went in chase, and the WREN was found lying with a large bite out of its left wing where it had hit a post carrying the high tension cables. (We have four of these posts, and two have now been flown into.) Apparent explanation: the pilot hadn't allowed for the up-current caused by the wind striking the south side of the further gully, which bounced him back into the air every time he tried to get to earth. Among those who disantled the WREN was one of its shareholders, just arrived from Cambridge in the hope of getting a flight in it before dark.

Sunday, Dec. 17th.—Light east wind. Two members given repeated launches in the open DAGLING. Launching team generously provided by our German visitors, in lieu of club members who mostly preferred to stay indoors (though some actually braved the elements later on). Imperial College started earlier and finished later.

Dec. 27th.—An increasing number of our pilots are being removed in strait-waistcoats. We are still cursed with the most shocking run of adverse weather within living memory. All we can do is to paddle about with elementary instruction, winch-launches, and slidings down from the hill-top. Even the hanger and club-house water-butts can no longer provide water for radiators, and the dark homeward roads are hideous with fog.

On Christmas Eve the CRESTED WREN rebelled, and for no suitable reason stayed up for 7 minutes, odd. The pilot, taken by surprise, was brought down by the distraction of a running nose and an abortive attempt to button up his overalls, the machine having about three feet of height to spare above failure-level. Other machines at best failed on the first about-turn.

Gruesome news-value is possibly provided by the smash-up of the WILLOW WREN, which was flown, again for no suitable reason, slap into a high-tension pole (see Notes for December 10th). Damage to the pilot was limited to his morale. The machine has been out of luck from her birth. Speaking philosophically and with hand on heart, I swear that she was a joy to fly and deserved a far better career.

The death of David Dent deprives the Club of one of those rare stalwarts who insistently put far more into the Club than they take out.

His purchase of the KASSEL 20 from Germany pointed the way to the development of private ownership, without which the Club would never have gone forward. His purchase of the KASSEL 2-seater supplied a means for dual-instruction and passenger-carrying. His invention of a simple variometer has enormously raised the standard of intelligence in pilotage. His habitual courage of thought and breadth of vision cannot be replaced. That he always refused to be hypnotised by tradition was best-shown by his first soaring flight, a spectacle not good to watch but a monument of courage and nervous self-control.

Sunday, Dec. 31st.—The old year went out grimly with a northerly air and a small attendance of members. The PRÜFLING, CRESTED WREN, HOL'S and open R.F.D. were launched repeatedly from the hill-top, and the PRÜFLING was also auto-launched on the flat. Up-currents were entirely absent. Such days are extraordinarily hard work and one finishes up as dead-beat as after a violent rugger-match. But the balancing entry consists of an almost complete absence of waiting-list for every machine.

All the same, one prays nightly that the present fit of apathy towards gliding generally is only transient. Even our accepted barrack-room-lawyers are almost silent, their style being further cramped by their inability to write letters to THE SAILPLANE more than once a month. At this rate we shall arrive at the day when we have a slap-up controlling body, but no troops to be controlled.

ROCHDALE GLIDING CLUB.

Nov. 25th.—Only three members arrived to rig and test the DICKSON, which was acquired in a damaged condition a few months ago, and which has been repaired by Club members. When DICKSON was rigged, we three were about to give up any hopes of any gliding, when five local lads came up the lane at the double, so we each managed to get a slide.

Dec. 2nd.—Same three members, so we inspected DICKSON and did a few small jobs, but did not rig.

Dec. 9th.—No operations as wind was about 30 m.p.h., and the mercury had dropped out of the thermometer.

Dec. 16th.—No wind for a change and visibility about 50 yards. Three members had slides on DICKSON, when visibility went to zero. One new member and four prospective members this week, so things are beginning to look better.

ULSTER GLIDING AND AVIATION CLUB.

Sunday, Nov. 19th.—KASSEL 20 towed at Magilligan. Douglas, with three flights of a very steady and promising nature, got his "A" with a 31 seconds' effort and one of his "B" qualifying flights with 58 seconds.

A. N. Other flew the machine back to the start point in each case. No soaring to-day as the wind was extremely light from about due East.

We are indebted to Mr. McKay of the Downhill Hotel (who, by the way, is an ardent follower of our activities and but waits the arrival of a two-seater to see what his excellent "pub" looks like from the air). He has erected a splendid shed some 50 ft. x 15 ft. in which we can store our machines without charge. This sort of practical interest is most

A GLIDING CLUB FOR AMPLEFORTH.

Much help was given during the Sutton Bank meeting of last October by a volunteer working party from Ampleforth College, a few miles away. The autumn number of the *Ampleforth Journal* states that a gliding club has now been formed in the School, and it is hoped in the near future to find means of acquiring a machine. Mr. J. P. Dewsbery, who holds the unofficial British height record for sailplanes, is an old Amplefordian.

A SYSTEM OF SIGNALLING.

Many Clubs have felt the need of a system of signalling between the bottom and top of their hill or between the Clubhouse and the scene of flying operations. But as a rule nobody troubles to work out anything really comprehensive, and few people in the gliding movement besides Mr. Laver know the Morse Code. Simple signs such as for starting and stopping a winch are often used, while one club even varies the signals to the auto-launching car according to the strength of launch required, and the clubhouse dinner bell's message is often understood after several repetitions. Some means of signifying the state of health of a pilot who has made an abnormal landing is also badly needed, as a substitute for the present habit of seizing the nearest Club member with medical qualifications and rushing him off at break-neck speed to view the body.

The following, which has been communicated by the Newcastle Gliding Club, is a system of signals used by Mr. Addyman, which he has pasted on to his light-wind sailplane ZEPHYR.

A dot is signified by raising the wing from the ground to a horiozual position, and a dash is done by raising the wing from the ground at one end until it is touching at the other.

The signals are used when the pilot lands at the bottom of the hill and wishes to communicate with the crew at the top.

.	Come with everything.
. .	,, ,, trailer.
. . .	,, ,, bungy.
. . . .	,, alone.
. . . . .	,, with crew.
–	Stay where you are.
– –	Go back to H.Q.
– – –	I am staying here.
– – – –	I am de-rigging.
– – – – –	I am going home.
. –	Both O.K.
. – –	Glider O.K.
. – – –	Both bust.
. – – – –	Glider bust.
– .	Bring repair outfit.
– . .	Bring ambulance.
–	Conditions not O.K.
– . . .	Conditions O.K.
– – .	Bring pegging-down gear.
– – . .	Bring grub.
– – . . .	Bring tent, etc.
– . –	Landing crew wanted.
– . – .	Horse wanted.

We trust the penultimate word is not a misprint for

NOTICE TO SUBSCRIBERS.

Subscribers are particularly requested to send all subscriptions, and enquiries concerning subscriptions, etc., to the publishers of "The Sailplane and Glider" at "The Sailplane" offices, 43, Chancery Lane, London, W.C.2.

OFFICIAL NOTICES

COUNCIL MEETING.

The 54th Council Meeting of the British Gliding Association, Ltd., was held in the Library of the Royal Aeronautical Society on Monday, December 11th, 1933, at 6.30 p.m.

Present: Sir Gilbert Walker, Capt. C. H. Latimer Needham, Capt. A. N. Stratton, Dr. A. E. Slater, Mr. G. T. Richards, Mr. W. O. Manning, Mr. L. Howard-Flanders, Mr. P. A. Wills, Mr. G. H. Lee, Mr. E. G. Sanguinetti, Mr. S. Whidborne (Hon. Treasurer), and Mr. J. L. R. Waplington (Hon. Secretary).

In the absence of the Chairman, Capt. Latimer Needham was elected Chairman for the meeting.

Among the business transacted was the following:—

The Honorary Treasurership.—It was resolved that Mr. P. A. Wills be nominated Honorary Treasurer for 1934; also that Mr. Wills be appointed Assistant Honorary Treasurer for the period ending at the Annual General Meeting, and that he be co-opted a Member of the Council.

"Zoning" Scheme.—Capt. Latimer Needham submitted a scheme to Council whereby affiliated clubs should divide themselves into a number of zones for the mutual benefit and protection of the clubs, each zone to have its own committee to deal with local problems and from whom delegates shall be elected to attend the meetings of the B.G.A. Council to watch the interests of the clubs and to represent their views on national matters. It was resolved that the matter be considered by the Finance and General Purposes Committee forthwith, that the latter circulate their recommendations to members of Council, and that a meeting of Council be duly called to dispose of the matter.

Donations.—A hearty vote of thanks was accorded to Mr. Grahame-White, Sir Harry Brittain, Mr. C. R. Fairey and Col. Moore-Brabazon for their donations to the funds of the Association.

The 1934 Soaring Competition.—It was resolved that the 1934 B.G.A. Soaring Competition be held at Sutton Bank, from the 1st to 9th September inclusive, and that the arrangements be made public forthwith; also that the contests for the distance, duration and altitude trophies be open throughout the period October 9th, 1933, to the last day of the 1934 Competition.

New Members.—Miss R. H. Sinclair, Mr. J. Laver, Mr. P. A. Wills and Mr. H. C. Bergel were elected to membership.

"The Sailplane."—Mr. H. C. Bergel was appointed Manager of THE SAILPLANE, and it was resolved that he be invited to attend all Council meetings.

Annual General Meeting.

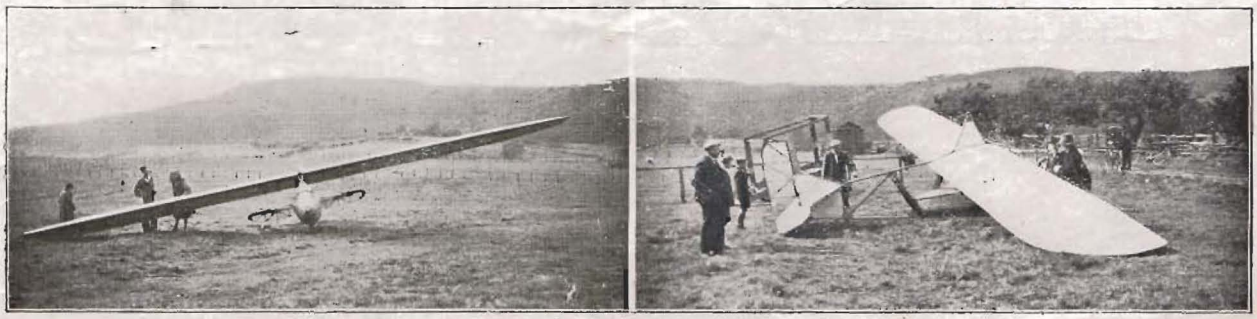
The Annual General Meeting of the British Gliding Association will be held in the Library of the Royal Aeronautical Society, 7, Albemarle St., W.1, on Friday, February 23rd, at 7 p.m.

It will be preceded by a Council Meeting at 6 p.m.

THE BRITISH RECORD FOR MODELS.

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